PRODUCT CATALOG

# "Apollo" COMMERCIAL PRODUCTS

"Apollo" Flow Controls

- BALL VALVES
- BUTTERFLY VALVES
- ACTUATION
- SAFETY RELIEF VALVES
- HYDRONIC & STEAM HEATING
- MIXING VALVES
- WATER PRESSURE REDUCING VALVES
- GATE, GLOBE & CHECK VALVES
- BACKFLOW PREVENTION
- STRAINERS
- LIQUID LEVEL GAUGES
- PLUMBING SPECIALTIES

PRODUCT CATALOG

# CONTENTS



LEADFREE CERTIFIED

LEADFREE OPTIONS

THROUGHOUT THIS CATALOG, PRODUCTS THAT ARE CERTIFIED **LEAD FREE*** OR HAVE A **LEAD FREE*** OPTION WILL BE IDENTIFIED WITH THESE LOGOS.

*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.

Conbraco Industries offers a wide range of Apollo® products for potable and non-potable applications. When the use of lead free valves is required by code, specification or legislation, it is the sole responsibility of our customers to ensure that only lead free Apollo® products are installed in systems intended for potable water service. Further information related to our product offering and the U.S. Safe Drinking Water Act (SDWA) is available at www.apollovalves.com/lead_free or by contacting Conbraco Customer Service.

** Any imported products will be clearly identified as "Apollo International™" or "Conbraco™ International".

## TABLE OF CONTENTS BY SERIES No.



New Product or Option

"Apollo" COMMERCIAL PRODUCTS

# TABLE OF CONTENTS

## TABLE OF CONTENTS BY MODEL No.



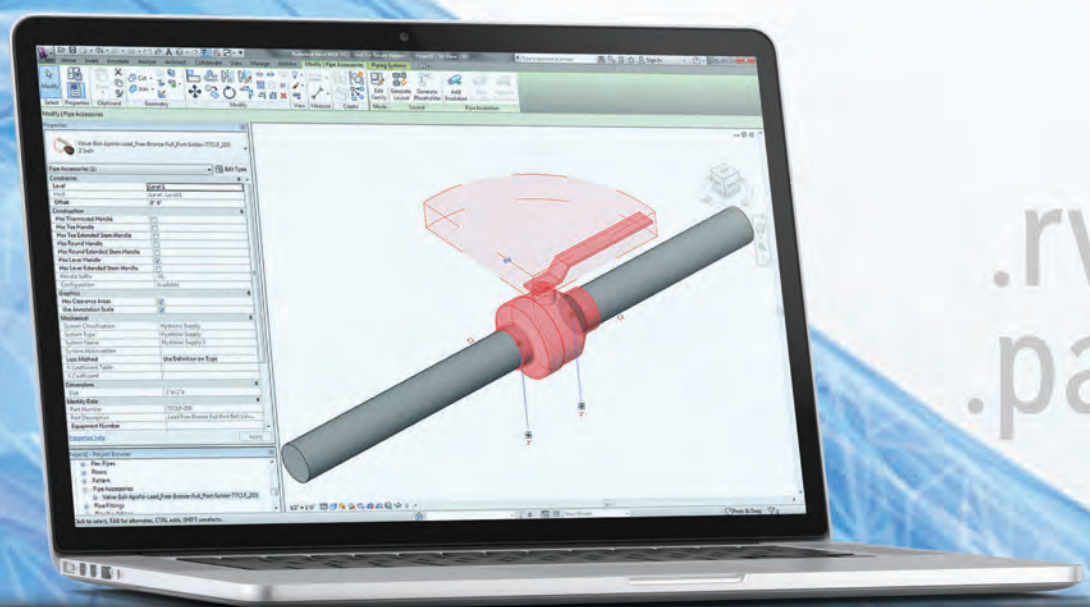
New Product or Option

AUTODESK
REVIT

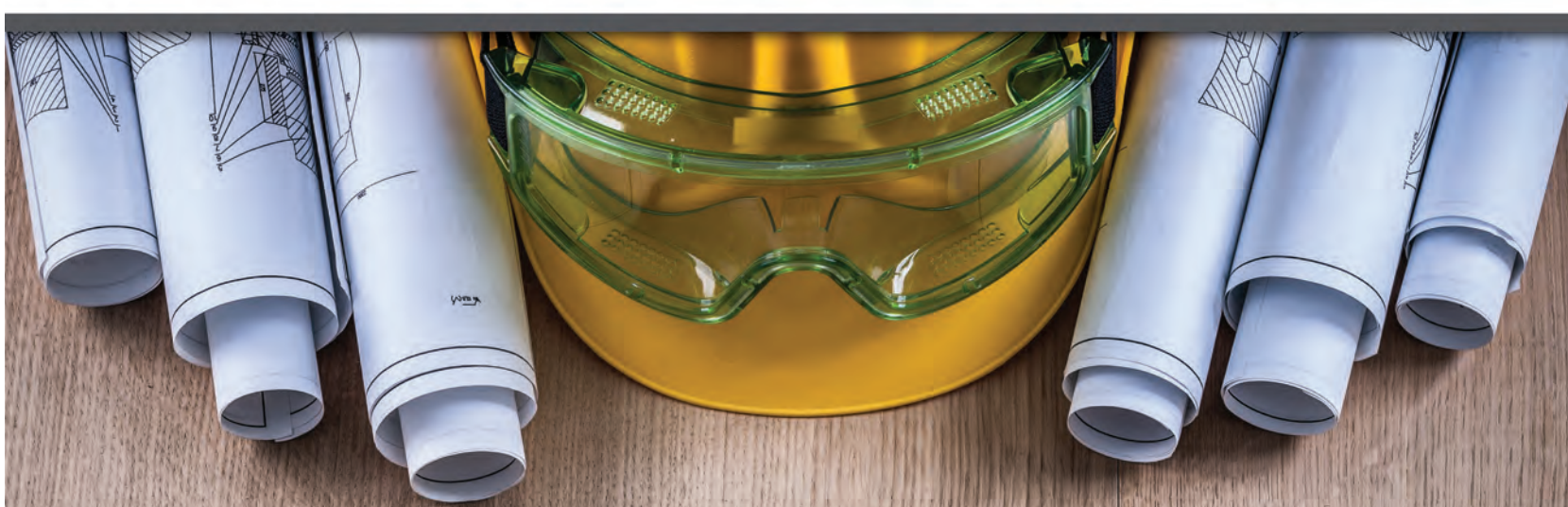
AUTODESK®
SEEK

## Download 3D CAD Revit - BIM models at:

# apollovalves.com/autodesk



.rvt | .dwg
.par | .sat
| .itm



## Download MasterSpec specification sections at:

# apollovalves.com/masterspec

Find us in
MASTERSPEC®
building specs done right

# LEADFREE OPTIONS

Certified by Truesdail Laboratories

*products include:*

| SERIES | SIZES | DESCRIPTION | CONNECTIONS |
|---|---|---|---|
| 16LF | 1/2" - 3/4" | Pressure Relief Valve | NPT |
| 215/230[1] | 2" - 24" | High Performance Butterfly Valve | Lug, Wafer |
| 20LF-100 | 1/2" | Water Gauge | NPT |
| 30LF | 1/4" – 3" | Bronze Gate Valve | NPT, Solder, Press |
| 33LF | 1/4" – 2" | Bronze Globe Valve | NPT, Solder, Press |
| 34ALF | 1/2" - 1" | Mixing Valve | NPT, Solder, PEX, CPVC |
| 34BLF | 1/2" - 1" | Mixing Valve | NPT, Solder, PEX, CPVC |
| 34CLF | 3/4" - 2" | Mixing Valve | NPT |
| 34DLF | 3/8" | Mixing Valve | Compression |
| 36LF | 1/2" - 2" | Water Pressure Reducing Valve | NPT, Solder, PEX, CPVC |
| 36CLF | 1/2" - 1" | Water Pressure Reducing Valve | NPT, Solder, PEX, CPVC, Push, Press |
| 36ELF | 1/2" - 2" | Water Pressure Reducing Valve | NPT, Solder, PEX, CPVC, Push, Press |
| 36HLF | 1/2" - 3" | Water Pressure Reducing Valve | NPT, Flanged |
| 38LF-100 | 1/4" -2" | Atmospheric Vacuum Breaker | NPT |
| 40LF-000 | 1/8" | Freeze Protection Valve | NPT |
| 40LF-300 | 1/2" - 1" | Dual Check Valve | NPT, NPSM, BSPP |
| 40LF-400 | 1/2" - 3/4" | Dual Check with Atmospheric Port | NPT, Solder, BSPP |
| 40XT[1] | 3/4" | Expansion Tanks, Potable | NPT |
| 4ALF-100 | 1/2" - 2" | Double Check Valve | NPT |
| 4ALF-100 | 2 1/2" - 12" | Double Check Valve | Flanged, Grooved |
| 4ALF-200 | 1/2" - 2" | Reduced Pressure Assembly | NPT |
| 4ALF-200 | 2-1/2" - 12" | Reduced Pressure Assembly | Flanged, Grooved |
| 4ANLF-100 | 2-1/2" - 12" | Double Check Valve | Flanged, Grooved |
| 4ANLF-200 | 2-1/2" - 12" | Reduced Pressure Assembly | Flanged, Grooved |
| 4C100 | 1/4" - 3/8" | Carbonated Beverage Backflow Preventer | NPT, Flare |
| 4FPLF300 | 1" - 1-1/4" | Residential F.P. Dual Check Valve | NPT, NPSM |
| 4NLF300 | 3/8" - 1" | Dual Check Valve | NPT, NPSM, BSPP |
| 4SG100 | 2-1/2" - 6" | Double Check Valve | Flanged, Grooved |
| 59LF | 1/8" – 4" | Strainer, Bronze | NPT, Push, Press |
| 6GA | 2" – 24" | Cast Iron Gate Valve | Flanged |
| 6GB | 2" – 10" | Cast Iron Globe Valve | Flanged |
| 6PLF[1] | 2" – 10" | Cast Iron Ball Valve | Flanged |
| 6SC | 2" – 20" | Cast Iron Globe Check Valve | Flanged |
| 6WC | 2" – 24" | Cast Iron Check Valve | Wafer |
| 61LF100 | 1/4" – 3" | Check Valve, Bronze, Ball Cone | NPT, Push |
| 61LF500 | 3/8" - 3/4" | Check valve, Bronze, Soft Seat | NPT |
| 61YLF | 1/4" – 2" | Swing Check, Bronze | NPT, Solder, Press |
| 70LF | 1/4" - 4" | Ball Valve, Bronze | NPT, Solder |
| 70LF-HC | 1/2" - 1" | Ball Valve, Bronze, Hose Cap & Chain | NPT, Solder |
| 76 | 1/4" - 3" | Ball Valve, SS Standard Port | NPT |
| 76F | 1/2" - 2" | Ball Valve, SS Full Port | NPT |
| 77CLF-A | 1/4" - 2-1/2" | Ball Valve, Bronze | NPT, Solder |
| 77FLF | 1/4" - 4" | Ball Valve, Brass | NPT, Solder |
| 77VLF | 1/2" - 4" | Ball Valve, Brass | Pres |
| 77WLF | 1/2" - 2" | Ball Valve, Bronze | Press |
| 77WLF-HC | 1/2" – 3/4" | Ball Valve, Bronze, Hose Cap & Chain | Press |
| 78LF-RV | 3/4" | Ball Valve, Thermal Expansion Relief | NPT, Solder, PEX, Push |
| 82LF | 1/4" - 2-1/2" | Ball Valve, Bronze, 3 Piece | NPT, Solder / Brazed |
| 86A | 1/4" - 2" | Ball Valve, SS 3 Piece 1500 CWP | NPT, SW, BW |
| 86B | 1/4" - 2" | Ball Valve, SS 3 Piece Class 600 | NPT, SW, BW |
| 87A-200 | 1/2" - 4" | Ball Valve, SS ASME 150# | Flanged |
| 94ALF-A[1] | 1/4" - 4" | Ball Valve, Brass | NPT, Solder |
| 94VLF-A[1] | 1/2" - 4" | Ball Valve, Brass | Press |
| 94XLF[1] | 1/2" – 1" | Ball Valve, Lead Free Brass | PEX |
| 95ALF[1] | 1/2" - 1" | Ball Valve, Brass, Stop and waste | NPT, Solder |
| LC149[1] | 2" - 12" | Butterfly Valve | Lug |
| LD/WD 141[1] | 2" - 24" | Butterfly Valve | Lug, Wafer |
| LD/WD 145 | 2" - 12" | Butterfly Valve | Lug, Wafer |

[1]*Apollo International*

*List is not all inclusive; other lead free products available.
See individual product pages or submittals for lead free options.

Your **SINGLE SOURCE**
# SOLUTION
for PRESS TECHNOLOGY


"Apollo" **PRESS**

# AMERICAN MADE QUALITY
you can depend on.

- Mechanical **Leak Before Press®** on small diameter, within a 120 degree turn.
- VISUAL and Mechanical Leak Before Press® feature on our large diameter fittings.
- Patented stainless steel grab ring on large diameter 2-1/2" - 4"
- Unique Floating flanges can be put back in place during installation.

"Apollo" **Piping Systems**

# **Building** More Efficiency.

"Apollo" Valves / Elkhart Products Corporation EPC / LASCO FITTINGS, INC / SHURJOINT®

**press**.apollovalves.com

customer service (704) 841-6000

AALBERTS INDUSTRIES

# CERTIFICATIONS

- AMERICAN SOCIETY OF MECHANICAL ENGINEERS
- AMERICAN SOCIETY OF SANITARY ENGINEERING
- CSA INTERNATIONAL
- CONFORMITÉ EUROPÉENE/PRESSURE EQUIPMENT DIRECTIVE
- UNIFORM PLUMBING CODE
- NATIONAL SANITATION FOUNDATION
- UNDERWRITERS LABORATORY
- TRUESDAIL LABORATORIES
- TÜV RHEINLAND
- NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS
- FACTORY MUTUAL
- INTERNATIONAL CODE COUNCIL
- AMERICAN NATIONAL STANDARDS INSTITUTE
- MANUFACTURERS STANDARDIZATION SOCIETY

*New!*

NEW **PRODUCTS**

# NEW PRODUCTS

## LD/WD 141 SERIES — BUTTERFLY VALVE

LEADFREE CERTIFIED

Wafer
2" - 12"

Lug
2" - 24"

The Apollo International® LD141/WD141 Series Ductile Iron Butterfly Valves are ideal for use in industrial and commercial/HVAC/mechanical & plumbing applications. The WD141 Series is a wafer style valve and the LD141 Series is a companion lug style. Available in sizes 2" - 24" lug and 2" - 12" wafer.
**Now third party certified NSF/ANSI 61 Water Quality**.

- Sizes: 2" - 24"
- Compatible with ANSI 125# & 150# Flanges
- ISO 5211 Top Plate Allows Choice of Apollo Pneumatic Actuators and Manual Operators
- Conforms to MSS SP-67 & API 609
- LD141 Series Suitable for End-of-Line Service to Rated Pressure
- 3"-12" Meet Performance Requirements of AWWA C-504
- NSF/ANSI 61 Water Quality
  *does not apply to ductile iron disc or Viton seats
- NSF/ANSI 372 Lead Free

## LD/WD 145 SERIES — BUTTERFLY VALVE

LEADFREE CERTIFIED

Wafer
2" - 12"

Lug
2" - 24"

The Apollo® LD/WD Series ductile iron butterfly valves are ideal for use in industrial and HVAC/mechanical & plumbing applications. The WD Series is a wafer style valve and the LD Series is a lug style.
**Now third party certified NSF/ANSI 61 Water Quality.**

- Sizes: 2" - 12"
- Compatible with ANSI 125# & 150# Flanges
- ISO 5211 Top Plate Allows Choice of Apollo Pneumatic Actuators and Manual Operators
- Conforms to MSS SP-67 & API 609
- LD145 Series Suitable for End-of-Line Service to Rated Pressure
- 3"-12" Meet Performance Requirements of AWWA C-504
- NSF/ANSI 61 Water Quality*
  *does not apply to ductile iron disc or Viton seats
- NSF/ANSI 372 Lead Free

## LC149 SERIES — BUTTERFLY VALVE

LEADFREE CERTIFIED

The Apollo International® LC149 Series Contractor Grade Cast Iron Butterfly Valves are ideal for use in Industrial and commercial/HVAC/mechanical applications. The LC149 Series is a lug style valve designed to be economical yet have high pressure capabilities. Available in sizes 2" - 12".
**Now third party certified NSF/ANSI 61 Water Quality.**

- Compatible with ANSI 125# & 150# Flanges
- ISO 5211 Top Plate Allows Choice of
- Apollo® Pneumatic Actuators and
- Manual Operators
- "Double-D" Stem Design
- LC149 Series Suitable for End-of-Line Service to Rated Pressure
- Conforms to MSS SP-67 & API 609
- Extended Neck for up to 2" of Insulation
- NSF/ANSI 61 Water Quality
- NSF/ANSI 372 Lead Free

## PRE-LF (36ELF) SERIES — WATER PRESSURE REDUCING VALVES

LEADFREE CERTIFIED

Now available in sizes 1/2" - 2", the new large diameter Apollo® Lead Free* Pressure Reducing Valve Model PRE (36ELF Series) is designed to conserve water and protect water distribution systems by automatically reducing elevated supply pressures. The dezincification resistant bronze body, stainless steel adjusting screw and dielectric polymer cage provide maximum corrosion resistance. Designed for easy in-line servicing with simple cartridge removal. Proudly Made in the USA. Now also available with optional bronze cap in all sizes (1/2" - 2").

## TPK TAILPIECE KITS

LEAD FREE CERTIFIED

Tail Piece Kits to fit 36E and 36ELF water pressure reducing valves, sizes 1/2", 3/4" and 1". Each kit comes with one union nut, tailpiece and washer. Available tailpieces are FNPT (threaded), solder, Press, CPVC and PEX connections. Tailpiece Kits allow for flexibility and customization without the inventory investment of complete finished valves.

## 77C-A SERIES BALL VALVE

The next generation Apollo® 77C-A "Contractor Series" full port bronze ball valve incorporates all the popular features of the original 77C series while adding thicker seats, stronger lever handles, improved stem packing adjustment, strengthened retainer sealing and 150 SWP markings. Proudly Made in the USA. Sizes 1/4" - 2 1/2".

## 77CLF-A SERIES BALL VALVE

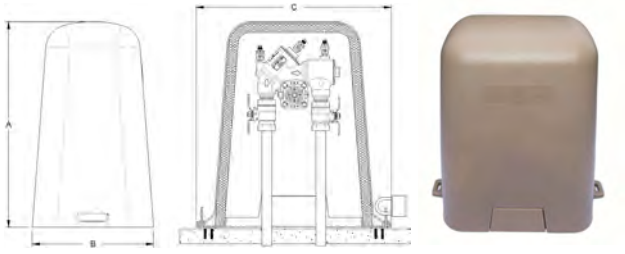
LEAD FREE CERTIFIED

The next generation Apollo® 77CLF-A "Contractor Series" full port Lead Free bronze ball valve incorporates all the popular features of the original 77CLF series while adding thicker seats, stronger lever handles, improved stem packing adjustment, strengthened retainer sealing and 150 SWP markings. Proudly Made in the USA. Sizes 1/4" - 2 1/2".

## RP 4AN SERIES REDUCED PRESSURE PRINCIPLE

LEAD FREE OPTIONS

The new model RP 4AN and RPLF 4AN has the smallest footprint in the industry and provides maximum protection to the potable water supply. With a specifically designed enclosure to take advantage of the small size, the RP 4AN alllows above-ground installlation easier to blend in with the landscaping. Available in 3/4" and 1" sizes, standard and lead free materials.



Optional Enclosure

## DCAP SERIES DUAL CHECK WITH ATMOSPHERIC PORT BACKFLOW PREVENTER

LEAD FREE OPTIONS

US Patent Pending | Sizes 1/2", 3/4"

The new Apollo® DCAP Series Backflow Preventer is designed to protect residential and commercial water supply lines from back-siphonage or back-pressure of non-potable (non-hazardous) substances. It has an intermediate atmospheric vent to insure protection from backflow conditions. It consists of two independently acting and spring-loaded check valves in a corrosion resistant material. Lead free option available.

# NEW PRODUCTS

## YCF SERIES — CLASS 125 WYE STRAINER

LEAD FREE CERTIFIED

The new Apollo International® YCF Wye strainers are now NSF/ANSI 372 certified lead free and all are coated with FDA CFR21 epoxy both inside and outside. ANSI 125# sizes 2" - 12". 200 CWP/150 SWP

## FFB (35-603-BF) SERIES — COMBINATION BACKFLOW PREVENTER AND FEED REGULATOR

35-603-BF Series offers positive protection against backflow when supply pressure falls below system pressure.

- New Design Dual Check With Atmospheric Port (DCAP) Backflow Device
- Designed for Continuous Pressure, Hot or Cold Water Service
- Fast-Fill Lever on Regulator
- Built In Stainless Steel Strainer
- Maximum Supply Pressure: 100 Psig
- Maximum Temperature: 210°F
- Backflow Device is ASSE and CSA Listed

## GATE, GLOBE & CHECK VAVLES — CAST IRON

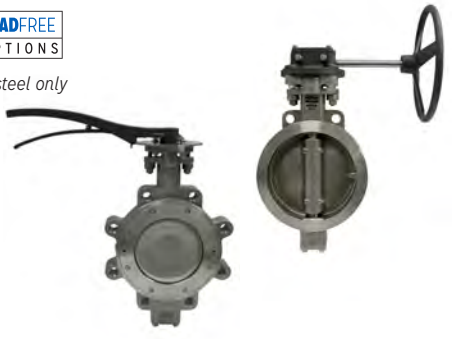
LEAD FREE CERTIFIED

The new Apollo International™ cast iron gate, globe and check valves provide full flow capabilities. These valve can reliably be installed in plumbing and heating systems (or building service piping). Valves are MSS SP-70 compliant and new -LF models include NSF lead free certifications.
**Now third party certified NSF/ANSI 61 Water Quality**
**Now third party certified NSF/ANSI 372 Lead Free**

## 215, 230, 260 SERIES — HIGH PERFORMANCE BUTTERFLY VALVES

LEAD FREE OPTIONS

*stainless steel only



Apollo International™ 215, 230, 260 Series double offset high performance butterfly valves are available in wafer or lug body design. Series 215 (Class 150) 2"-30", Series 230 (Class 300) 2"-24" and Series 260 (Class 600) 2" - 12". Available materials include WCB carbon steel or NSF/ANSI 61 and 372 certified lead free CF8M stainless steel.

# BALL **VALVES**

## APOLLO® BALL VALVE NUMBERING SYSTEM

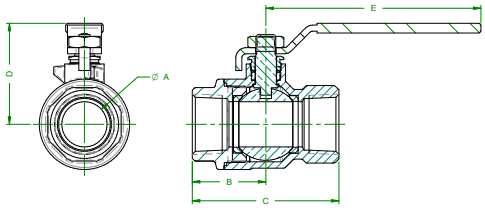
### APOLLO NUMBERING SYSTEM FORMULA: 70 - 105 - 01

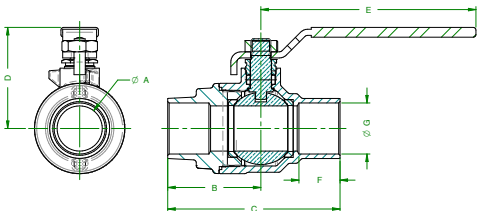
| XX - | X | X | X | - XX |
|---|---|---|---|---|
| SERIES | CONFIGURATION | VARIATIONS | SIZE* | OPTIONS |
| 32 Bronze Ball Valve, Regular-Port, NPT | 1 = FNPT | 4 = 316 Stainless Steel Ball & Stem | 1 = 1/4" | -01 = Standard |
| 50 Bronze Gas Valve, CSA & UL Listed | 2 = Solder | 9 = Pinned Retainer | 2 = 3/8" | -02 = Grounded |
| 51 Bronze Gas Valve, CSA | 3 = Union End NPT | | 3 = 1/2" | -04 = 2-1/4" Stem Extension |
| **6PLF** Lead Free Cast Iron, Ball Valve, Full-Port, Flanged, International | 6 = 3-Way NPT | | 4 = 3/4" | -07 = Tee Handle |
| | 7 = Full-Port Refrigeration Valves | | 5 = 1" | -08 = 90˚ Reversed Stem |
| | 8 = Male X FNPT | | 6 = 1-1/4" | -10 = Stainless Steel Lever & Nut |
| | 9 = 3-Way Solder | | 7 = 1-1/2" | -11 = Therma-Seal™ Insulating Handle |
| 70 Bronze Ball Valve | | | 8 = 2" | -12 = Stamped "157 SWP" & Bagged |
| 70HC Bronze Ball Valve with Hose Cap | | | 9 = 2-1/2" | -13 = Stamped "157 SWP" |
| 70LF Lead Free** Bronze Ball Valve | | | 0 = 3" | -14 = Side Vented Ball (uni-directional) |
| 70LFHC Lead Free** Bronze Ball Valve with Hose Cap | | | A = 4" | -15 = Round Handle, Steel |
| 71 Bronze Ball Valve with Pads | | | | -16 = Chain Lever - Vertical |
| 75 Bronze Ball Valve, Std. Port, Padlocking | | | | -17 = Rough Chrome Plated |
| 77 Bronze Full-Port Ball Valve | | | | -18 = Plain Yellow Grip |
| 77C Bronze Ball Valve, Full Port, Contractor Grade | | | | -19 = Lock Plate |
| 77CLF Lead Free** Bronze Ball Valve, Full Port | | | | -20 = Slot Vented Ball (bi-directional) |
| 77D Bronze Ball Valve, Full Port, Direct Mount for Actuators | | | | -21 = UHMWPE Trim (non-PTFE) |
| | | | | -24 = Graphite Packing |
| **77F** Brass Ball Valve, Full Port, USA | | | | -27 = Stainless Steel Latch-Lock Lever & Nut |
| **77FLF** Lead Free** Brass Ball Valve, Full Port | | | | -30 = Cam-Lock and Grounded |
| **77V** APOLLOXPRESS® Brass Ball Valve | | | | -32 = Stainless Steel Tee Handle & Nut |
| **77VLF** Lead Free** APOLLOXPRESS® Brass Ball Valve | | | | -35 = VTFE Trim (PTFE) |
| 77W Bronze BV, Full Port, APOLLOXPRESS® | | | | -36 = Stainless Steel Hi-Rise Round Handle, Stainless Steel Nut |
| 77WLF Lead Free ** Bronze BV, Full Port, APOLLOXPRESS® | | | | -39 = SS Hi-rise Locking Round Handle, SS Nut |
| 78 Specialty Valves | | | | -40 = Cyl-Loc and Grounded |
| 79 Refrigerant Ball Valves | | | | -41 = Automatic Drain |
| 77B Bronze Ball Valve, Side Tap | | | | -45 = Less Lever and Nut |
| 7K Bronze Ball Valve, with Drain | | | | -46 = Latch-Lock Lever - Lock in Closed Position Only |
| 80 Bronze Ball Valve, UL Listed | | | | -47 = SS Oval Latch-Lock Handle & Nut |
| 82 Bronze Three-Piece Full-Port Ball Valve | | | | -48 = SS Oval Handle (No Latch) & Nut |
| 82LF Lead Free** Bronze Three-Piece Full-Port | | | | -49 = Assembled Dry |
| 9A Bronze, Unibody, Heavy Pattern | | | | -50 = 2-1/4" Carbon Steel Locking Stem Extension |
| 90 Bronze, Unibody, UL Listed Ball Valve | | | | -56 = Multifill Seats & Packing |
| 94A Brass, Full-Port, UL Listed, International | | | | -57 = Oxygen Cleaned |
| 94ALF-A Lead Free** Brass, Full Port, International | | | | -58 = Chain Lever - Horizontal |
| 94MBV Brass Mini-Ball Valve, Std. Port, International | | | | -59 = SS External Trim - 3-pc. Valves & Flange |
| **94XLF** Lead Free** Brass Ball Valve, PEX, Int'l | | | | -60 = Grounded Ball & Stem |
| **94VLF** Lead Free** Brass Press Ball Valve, Int'l | | | | -62 = Body Center Section (82 Series) |
| **95ALF** Lead Free** Brass Stop & Waste Valve, Int'l | | | | -63 = NPT x Solder (-100-63-NPT Body; -200-63-Sweat Body) |
| | | | | -64 = 250 SWP |
| | | | | -65 = Multifill Seats & Graphite Packing |
| | | | | -72 = RTFE Packing |
| | | | | -91 = Locking SS Tee (3/4" and 1") |
| | | | | -92 = Balancing Stop |
| | | | | -94 = -04 & Balancing stop |
| | | | | -BC = Ball Check |
| | | | | -HC = Hose Thread and Cap Option |
| | | | | -SV = Safety vent - 77-100/7K-100 series (Auto drain) |
| | | | | -SW = Limit switch mounted |
| | | | | -TH = Tested, Hydrostatic |
| | | | | -TC = Tested, Hydrostatic, w/certification |
| | | | | -TW = Tested, Hydrostatic, w/witness and certification |

***BODY SIZE WHEN ENDS ARE MIXED**
NOTE: NOT ALL VARIATIONS AND FEATURES ARE AVAILABLE ON SAME VALVE. CONSULT CONBRACO REPRESENTATIVE.

****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.

## 77C-100/200-A SERIES CONTRACTOR SERIES FULL PORT BRONZE BALL VALVE WITH SOLID BALL





Apollo's solid ball design delivers true full-port performance with 100% American construction. The next generation mod -"A" adds a new beefier lever, simplified packing adjustment, wider seats and stem packing and a 150 SWP body marking.

### FEATURES

- ASTM Grade Bronze Castings
- Solid Brass Ball, Plated
- 600 psig CWP, Non-Shock
- 150 SWP Steam Rating
- Generous RPTFE Seats and Stem Packing
- Adjustable Stem Packing
- Blowout-Proof Stem Design
- Vacuum Service to 29 in. Hg
- Full-Port Design Through 2-1/2"
- ANSI B16.18 Solder End Version Available as 77C-200 Series
- CSAB51-CRN OC10908.5C
- MSS SP110 Compliant
- IAPMO R&T / UPC-IGC Z1157
- **Proudly Made in USA**

### OPTIONS*

- (-01) Standard Lever and Trim
- (-04) 2-1/4" Stem Extension
- (-07) CS Tee Handle
- (-10) Stainless Steel. Handle and Nut
- (-11) Therma-Seal™ Insulating Tee
- (-27) Locking Handle
- (-50) 2-1/4" Locking Stem Extension
- (-94) 2-1/4" Stem Extension and Balancing Stop
- Reversible Handle Option
- **SS Vented Ball and Stem (77C140 and 77C240 Series)**
- **77C-ULA UL258 Fire Protection Trim & Drain Option** New!
- Other Handle Options Available
- Also Available in a Lead Free Version as the 77CLF-A Series

**Lever option kits for the 77C and 77C-A models differ. Refer to the latest Apollo® kit listing or contact Apollo® Tech Support for assistance.*

### DIMENSIONS

| Part Number | Size (in.) | Dimensions (in.) | | | | | | | $C_v$ | Wt.* (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | | |
| **THREADED** | | | | | | | | | | |
| **77C-101-01A** | 1/4 | 0.37 | 0.88 | 1.8 | 1.65 | 2.82 | - | - | 5 | 0.6 |
| **77C-102-01A** | 3/8 | 0.37 | 0.94 | 1.86 | 1.65 | 2.82 | - | - | 7 | 0.5 |
| **77C-103-01A** | 1/2 | 0.50 | 1.15 | 2.29 | 1.79 | 3.82 | - | - | 16 | 0.96 |
| **77C-104-01A** | 3/4 | 0.75 | 1.34 | 2.67 | 1.91 | 3.82 | - | - | 36 | 1.34 |
| **77C-105-01A** | 1 | 1.00 | 1.63 | 3.24 | 2.24 | 4.72 | - | - | 68 | 2.36 |
| **77C-106-01A** | 1-1/4 | 1.25 | 1.9 | 3.75 | 2.46 | 4.72 | - | - | 125 | 5.07 |
| **77C-107-01A** | 1-1/2 | 1.50 | 2.06 | 4.11 | 2.9 | 5.37 | - | - | 177 | 4.96 |
| **77C-108-01A** | 2 | 2.00 | 2.43 | 4.85 | 3.68 | 7.72 | - | - | 389 | 10.06 |
| **77C-109-01A** | 2-1/2 | 2.50 | 3.03 | 6.02 | 4.13 | 7.72 | - | - | 503 | 16.2 |
| **SOLDER** | | | | | | | | | | |
| **77C-202-01A** | 3/8 | 0.37 | 1.24 | 2.17 | 1.65 | 2.82 | 0.41 | 0.50 | 7 | 0.6 |
| **77C-203-01A** | 1/2 | 0.50 | 1.36 | 2.47 | 1.79 | 3.82 | 0.50 | 0.63 | 16 | 0.6 |
| **77C-204-01A** | 3/4 | 0.75 | 1.73 | 3.20 | 1.91 | 3.82 | 0.75 | 0.88 | 36 | 1.0 |
| **77C-205-01A** | 1 | 1.00 | 2.06 | 3.81 | 2.24 | 4.72 | 0.91 | 1.13 | 68 | 1.6 |
| **77C-206-01A** | 1-1/4 | 1.25 | 2.22 | 4.21 | 2.46 | 4.72 | 0.97 | 1.38 | 125 | 3.9 |
| **77C-207-01A** | 1-1/2 | 1.50 | 2.53 | 4.90 | 2.9 | 5.37 | 1.09 | 1.63 | 177 | 4.3 |
| **77C-208-01A** | 2 | 2.00 | 3.15 | 6.07 | 3.68 | 7.72 | 1.34 | 2.13 | 389 | 7.6 |
| **77C-209-01A** | 2-1/2 | 2.50 | 3.78 | 7.17 | 4.13 | 7.72 | 1.48 | 2.63 | 503 | 15.9 |

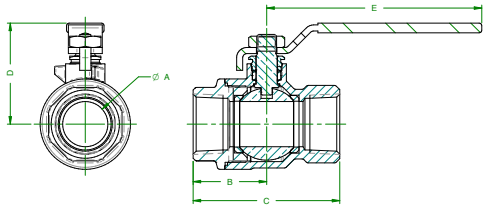
**Weights based on Standard Configuration*

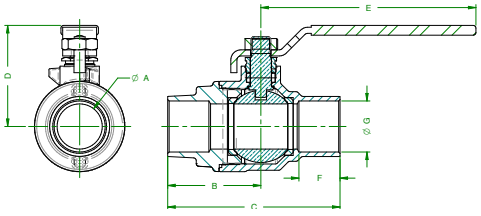
**77C-2xxA intended for soft solder installation using solders with melting temperature of < 500°F.

## 77CLF-100/200-A SERIES CONTRACTOR SERIES FULL PORT BRONZE BALL VALVE WITH SOLID BALL

LEADFREE CERTIFIED

New! ENHANCED DESIGN




Apollo's solid ball design delivers true full-port performance with 100% American construction. The next generation mod -"A" adds a new beefier lever, simplified packing adjustment, wider seats and stem packing and a 150 SWP body marking.

### FEATURES

- ASTM Grade Bronze Castings
- Solid Brass Ball, Plated
- 600 psig CWP, Non-Shock
- 150 SWP Steam Rating
- Generous RPTFE Seats and Stem Packing
- Adjustable Stem Packing
- Blowout-Proof Stem Design
- EZ-Solder™ Lead Free Bronze
- Vacuum Service to 29 in. Hg
- Full-Port Design Through 2-1/2"
- ANSI B16.18 Solder End Version Available as 77C-200 Series
- CSAB51-CRN OC10908.5C
- MSS SP110 Compliant
- IAPMO R&T / UPC-IGC Z1157
- **Proudly Made in USA**

### OPTIONS*

- (-01) Standard Lever and Trim
- (-04) 2-1/4" Stem Extension
- (-07) CS Tee Handle
- (-10) Stainless Steel. Handle and Nut
- (-11) Therma-Seal™ Insulating Tee
- (-27) Locking Handle
- (-50) 2-1/4" Locking Stem Extension
- (-94) 2-1/4" Stem Extension and Balancing Stop
- Reversible Handle Option
- **SS Vented Ball and Stem (77C140 and 77C240 Series)**
- **77C-ULA UL258 Fire Protection Trim & Drain Option**
- Other Handle Options Available
- Also Available in Standard Bronze as the 77C-A Series

**Lever option kits for the 77C and 77C-A models differ. Refer to the latest Apollo® kit listing or contact Apollo® Tech Support for assistance.*

### DIMENSIONS

| Part Number | Size (in.) | Dimensions (in.) | | | | | | | $C_v$ | Wt.* (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | | |
| **THREADED** | | | | | | | | | | |
| **77CLF-101-01A** | 1/4 | 0.37 | 0.88 | 1.8 | 1.65 | 2.82 | - | - | 5 | 0.6 |
| **77CLF-102-01A** | 3/8 | 0.37 | 0.94 | 1.86 | 1.65 | 2.82 | - | - | 7 | 0.5 |
| **77CLF-103-01A** | 1/2 | 0.50 | 1.15 | 2.29 | 1.79 | 3.82 | - | - | 16 | 0.96 |
| **77CLF-104-01A** | 3/4 | 0.75 | 1.34 | 2.67 | 1.91 | 3.82 | - | - | 36 | 1.34 |
| **77CLF-105-01A** | 1 | 1.00 | 1.63 | 3.24 | 2.24 | 4.72 | - | - | 68 | 2.36 |
| **77CLF-106-01A** | 1-1/4 | 1.25 | 1.9 | 3.75 | 2.46 | 4.72 | - | - | 125 | 5.07 |
| **77CLF-107-01A** | 1-1/2 | 1.50 | 2.06 | 4.11 | 2.9 | 5.37 | - | - | 177 | 4.96 |
| **77CLF-108-01A** | 2 | 2.00 | 2.43 | 4.85 | 3.68 | 7.72 | - | - | 389 | 10.06 |
| **77CLF-109-01A** | 2-1/2 | 2.50 | 3.03 | 6.02 | 4.13 | 7.72 | - | - | 503 | 16.2 |
| **SOLDER** | | | | | | | | | | |
| **77CLF-202-01A** | 3/8 | 0.37 | 1.24 | 2.17 | 1.65 | 2.82 | 0.41 | 0.50 | 7 | 0.6 |
| **77CLF-203-01A** | 1/2 | 0.50 | 1.36 | 2.47 | 1.79 | 3.82 | 0.50 | 0.63 | 16 | 0.6 |
| **77CLF-204-01A** | 3/4 | 0.75 | 1.73 | 3.20 | 1.91 | 3.82 | 0.75 | 0.88 | 36 | 1.0 |
| **77CLF-205-01A** | 1 | 1.00 | 2.06 | 3.81 | 2.24 | 4.72 | 0.91 | 1.13 | 68 | 1.6 |
| **77CLF-206-01A** | 1-1/4 | 1.25 | 2.22 | 4.21 | 2.46 | 4.72 | 0.97 | 1.38 | 125 | 3.9 |
| **77CLF-207-01A** | 1-1/2 | 1.50 | 2.53 | 4.90 | 2.9 | 5.37 | 1.09 | 1.63 | 177 | 4.3 |
| **77CLF-208-01A** | 2 | 2.00 | 3.15 | 6.07 | 3.68 | 7.72 | 1.34 | 2.13 | 389 | 7.6 |
| **77CLF-209-01A** | 2-1/2 | 2.50 | 3.78 | 7.17 | 4.13 | 7.72 | 1.48 | 2.63 | 503 | 15.9 |

**Weights based on Standard Configuration*

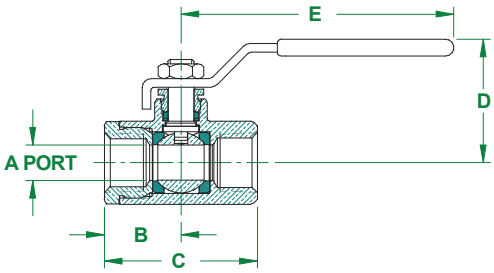
**77CLF-2xxA intended for soft solder installation using solders with melting temperature of < 500°F.

## 70-100/200 SERIES — BRONZE BALL VALVE


The Apollo® 70 Series is the most widely used and trusted bronze ball valve in the industry. It features blowout-proof stem, RPTFE seats and stuffing box ring and plated brass ball.

### FEATURES

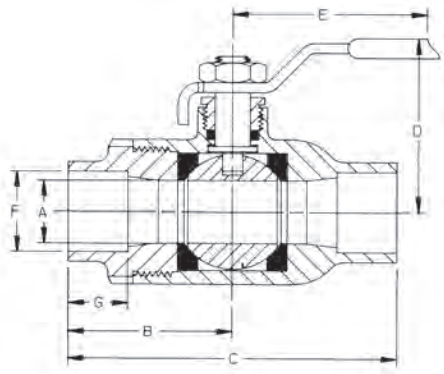
- Heavy Pattern Construction
- Rated 600 psig CWP, Non-Shock
- 150 psig for Saturated Steam
- Optional 250 SWP Configuration
- Vacuum Service to 29 in. Hg
- Adjustable Packing Gland
- Multiple Options and Configurations Available
- Lead Free Option (70LF)
- 100% Tested
- **Made in USA**




### DIMENSIONS

| Part Number | Size (In.) | Dimensions (In.) | | | | | Wt. (Lbs.) |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **70-101-01** | 1/4" | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | 0.60 |
| **70-102-01** | 3/8" | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | 0.56 |
| **70-103-01** | 1/2" | 0.50 | 1.12 | 2.17 | 1.75 | 3.87 | 0.63 |
| **70-104-01** | 3/4" | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 1.39 |
| **70-105-01** | 1" | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 | 1.72 |
| **70-106-01** | 1-1/4" | 1.00 | 2.00 | 4.00 | 2.62 | 5.50 | 3.26 |
| **70-107-01** | 1-1/2" | 1.25 | 2.18 | 4.37 | 3.06 | 8.00 | 4.61 |
| **70-108-01** | 2" | 1.50 | 2.34 | 4.68 | 3.25 | 8.00 | 6.06 |
| **70-109-01A** | 2-1/2" | 2.00 | 3.12 | 6.25 | 3.72 | 8.00 | 17.25 |
| **70-100-01** | 3" | 2.50 | 3.37 | 6.75 | 4.12 | 8.00 | 18.60 |
| **70-10A-01** | 4" | 3.12 | 3.68 | 7.37 | 5.25 | 10.00 | 25.50 |

*NOTE: 1/4", 3/8", and 1/2" are full port.*

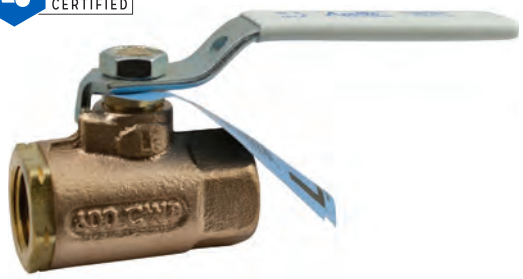



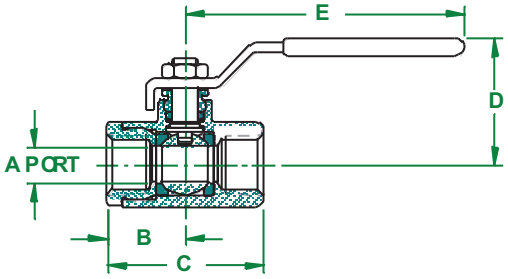

| Part Number | Size (in.) | Dimensions (in.)* | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G |
| | | | | **SOLDER** | | | | |
| **70-202-01** | 3/8 | 0.37 | 1.28 | 2.56 | 1.75 | 3.87 | 0.505 | 0.37 |
| **70-203-01** | 1/2 | 0.50 | 1.43 | 2.87 | 1.75 | 3.87 | 0.63 | 0.50 |
| **70-204-01** | 3/4 | 0.68 | 1.93 | 3.87 | 2.12 | 4.87 | 0.88 | 0.75 |
| **70-205-01** | 1 | 0.87 | 2.25 | 4.50 | 2.25 | 4.87 | 1.13 | 0.90 |
| **70-206-01** | 1-1/4 | 1.00 | 2.31 | 4.62 | 2.62 | 5.50 | 1.38 | 0.96 |
| **70-207-01** | 1-1/2 | 1.25 | 2.62 | 5.25 | 3.06 | 8.00 | 1.63 | 1.09 |
| **70-208-01** | 2 | 1.50 | 3.18 | 6.37 | 3.25 | 8.00 | 2.13 | 1.34 |
| **70-209-01A** | 2-1/2 | 2.00 | 3.74 | 7.51 | 3.72 | 8.00 | 2.63 | 1.48 |
| **70-200-01** | 3 | 2.50 | 4.12 | 8.25 | 4.12 | 8.00 | 3.13 | 1.67 |
| **70-20A-01** | 4 | 3.12 | 4.61 | 9.22 | 5.22 | 9.94 | 4.13 | 2.16 |

**Based on 70-200-01 – Dimensions may vary with options.*
*Soldering temperature: 500°F or less*
*NOTE: 1/4", 3/8", and 1/2" are full port.*

## 70LF-100/200 SERIES BRONZE BALL VALVE

LEADFREE CERTIFIED






The Apollo® 70LF series is the most widely used and trusted lead free bronze ball valve in the industry. It features blowout-proof stem, RPTFE seats and stuffing box ring and plated brass ball.

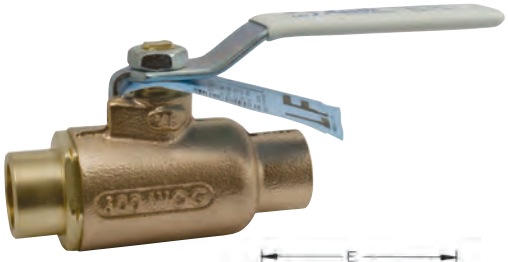
### FEATURES

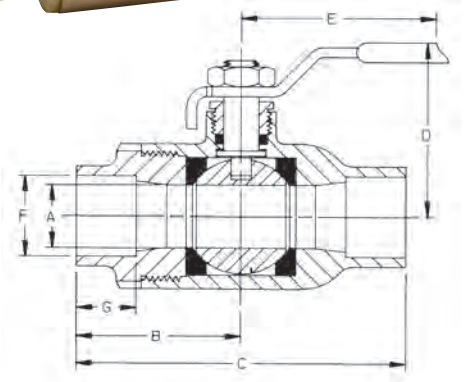
- Heavy Pattern Construction
- EZ-Solder™ Lead Free Bronze
- Solders Just Like Standard Bronze
- Rated 600 psig CWP, Non-Shock
- 150 psig for Saturated Steam
- 100% Factory Tested
- Vacuum Service to 29 in. Hg
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free
- Adjustable Packing Gland
- Multiple Options and Configurations Available

### DIMENSIONS

| Part Number | Size (in.) | Dimensions (in.) | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| 70LF-101-01 | 1/4" | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | 0.60 |
| 70LF-102-01 | 3/8" | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | 0.56 |
| 70LF-103-01 | 1/2" | 0.50 | 1.12 | 2.25 | 1.75 | 3.87 | 0.63 |
| 70LF-104-01 | 3/4" | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 1.39 |
| 70LF-105-01 | 1" | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 | 1.72 |
| 70LF-106-01 | 1-1/4" | 1.00 | 2.00 | 4.00 | 2.62 | 5.50 | 3.26 |
| 70LF-107-01 | 1-1/2" | 1.25 | 2.18 | 4.37 | 3.06 | 8.00 | 4.61 |
| 70LF-108-01 | 2" | 1.50 | 2.34 | 4.68 | 3.25 | 8.00 | 6.06 |
| 70LF-109-01 | 2-1/2" | 2.00 | 3.12 | 6.25 | 3.72 | 8.00 | 13.96 |
| 70LF-100-01 | 3" | 2.50 | 3.37 | 6.75 | 4.12 | 8.00 | 18.60 |
| 70LF-10A-01 | 4" | 3.12 | 3.68 | 7.37 | 5.25 | 10.00 | 25.50 |

*NOTE: 1/4", 3/8", and 1/2" are full port.*






| Part Number | Size (in.) | Dimensions (in.)* | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G |
| | | SOLDER | | | | | | |
| 70LF-202-01 | 3/8 | 0.37 | 1.28 | 2.56 | 1.75 | 3.87 | 0.505 | 0.37 |
| 70LF-203-01 | 1/2 | 0.50 | 1.43 | 2.87 | 1.75 | 3.87 | 0.63 | 0.50 |
| 70LF-204-01 | 3/4 | 0.68 | 1.93 | 3.87 | 2.12 | 4.87 | 0.88 | 0.75 |
| 70LF-205-01 | 1 | 0.87 | 2.25 | 4.50 | 2.25 | 4.87 | 1.13 | 0.90 |
| 70LF-206-01 | 1-1/4 | 1.00 | 2.31 | 4.62 | 2.62 | 5.50 | 1.38 | 0.96 |
| 70LF-207-01 | 1-1/2 | 1.25 | 2.62 | 5.25 | 3.06 | 8.00 | 1.63 | 1.09 |
| 70LF-208-01 | 2 | 1.50 | 3.18 | 6.37 | 3.25 | 8.00 | 2.13 | 1.34 |
| 70LF-209-01A | 2-1/2 | 2.00 | 3.74 | 7.51 | 3.72 | 8.00 | 2.63 | 1.48 |
| 70LF-200-01 | 3 | 2.50 | 4.12 | 8.25 | 4.12 | 8.00 | 3.13 | 1.67 |
| 70LF-20A-01 | 4 | 3.12 | 4.61 | 9.22 | 5.22 | 9.94 | 4.13 | 2.16 |

**Based on 70-200-01 – Dimensions may vary with options.*
*Soldering temperature: 500°F or less*
*NOTE: 1/4", 3/8", and 1/2" are full port.*

**70LF-2xxA intended for soft solder installation using solders with melting temperature of < 500°F.

## 70-HC SERIES — HOSE CAP & CHAIN VALVE


### CAP & CHAIN VALVE WITH 3/4" HOSE CONNECTION, HEAVY BRASS CAP AND REVERSE HANDLE

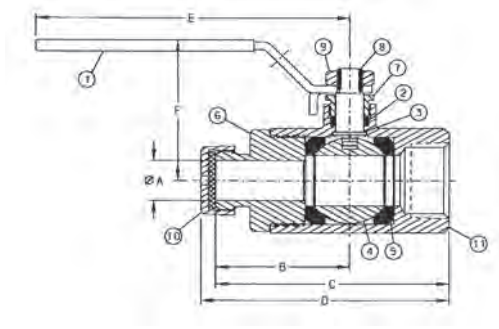
Ideally suited for draining or sampling of HVAC or potable water systems, these valves allow direct connections to hoses. Valve features a securely attached cover (includes chain) which prevents damage to hose threads. -200 model designed for soft soldering into lines without disassembly.

### FEATURES

- Heavy Pattern Construction
- Reverse Lever is Standard for Easier Installation
- Stainless Steel Lever & Nut Standard
- NPT and Solder Connections
- EZ-Solder™ Lead Free Bronze
- ASTM B584 Bronze
- Blowout-Proof Stem Design
- RPTFE Seats and Stuffing Box Ring
- Adjustable Packing Gland
- Vacuum Service to 29 in. Hg
- Maximum Pressure: 600 psi CWP
- Temperature Rating: 200°F
- Full Pressure Rated Brass Hose Cap
- Now with Stronger Stainless Steel Ball Chain *New!*

### OPTIONS

- (-11) Therma-Seal™ Insulating Tee
- Stainless Steel Ball and Stem (70-24x-HC/70LF-24X-HC)
- 70LF is NSF 61 and NSF 372 Certified Lead Free




### DIMENSIONS

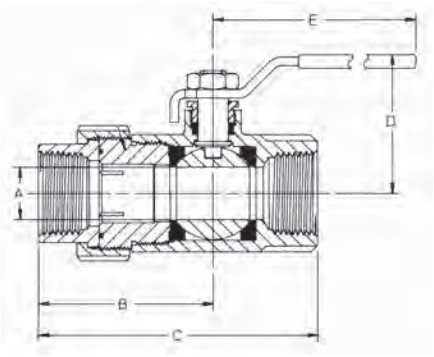
| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F |
| 70-103-HC | 70LF-103-HC | 1/2 NPT x 3/4 Hose | 0.50 | 1.68 | 2.81 | 2.97 | 3.87 | 1.75 |
| 70-104-HC | 70LF-104-HC | 3/4 NPT x 3/4 Hose | 0.68 | 1.96 | 3.50 | 3.67 | 4.87 | 2.12 |
| 70-105-HC | 70LF-105-HC | 1 NPT x 3/4 Hose | 0.87 | 2.24 | 3.92 | 4.16 | 5.28 | 2.43 |
| 70-203-HC | 70LF-203-HC | 1/2 Solder x 3/4 Hose | 0.50 | 1.68 | 3.14 | 3.28 | 3.89 | 1.75 |
| 70-204-HC | 70LF-204-HC | 3/4 Solder x 3/4 Hose | 0.68 | 1.96 | 3.94 | 4.09 | 4.89 | 2.12 |
| 70-205-HC | - | 1 Solder x 3/4 Hose | 0.87 | 2.24 | 4.49 | 4.73 | 5.28 | 2.43 |

## 70-300/400 SERIES — BALL VALVE WITH FNPT X UNION END

This valve combines a pipe union with ball valve shut-off; it saves time and labor by eliminating the need for extra connections. Viton O-ring sealed union requires light torque for proper seal.

### FEATURES

- ASTM B584 Bronze
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- 600 psig CWP, Non-Shock
- NPT and Solder Union Connection
- Vacuum Service to 29 in. Hg
- 70LF-300/400 Series Feature EZ-Solder™ Lead Free Bronze

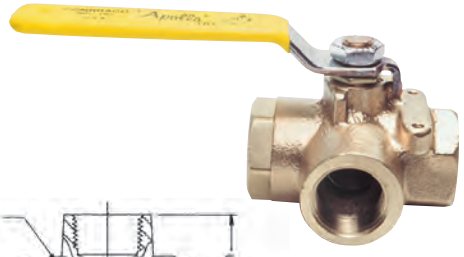



### DIMENSIONS

| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| **THREADED** | | | | | | | |
| **70-301-01** | – | 1/4 | 0.37 | 1.90 | 2.93 | 1.75 | 3.87 |
| **70-302-01** | – | 3/8 | 0.37 | 1.90 | 2.93 | 1.75 | 3.87 |
| **70-303-01** | **70LF-303-01** | 1/2 | 0.50 | 2.01 | 3.14 | 1.81 | 3.87 |
| **70-304-01** | **70LF-304-01** | 3/4 | 0.68 | 2.46 | 3.96 | 2.12 | 4.87 |
| **70-305-01A** | **70LF-305-01A** | 1 | 0.87 | 2.84 | 4.52 | 2.25 | 4.87 |
| **70-306-01** | **70LF-306-01** | 1-1/4 | 1.00 | 2.68 | 4.68 | 2.62 | 5.50 |
| **70-307-01** | **70LF-307-01** | 1-1/2 | 1.25 | 2.87 | 5.06 | 3.05 | 8.00 |
| **70-308-01** | **70LF-308-01** | 2 | 1.50 | 3.25 | 5.59 | 3.24 | 8.00 |
| **SOLDER** | | | | | | | |
| **70-403-01** | – | 1/2 | 0.50 | 2.00 | 3.43 | 1.75 | 3.87 |
| **70-404-01** | **70LF-404-01** | 3/4 | 0.68 | 2.62 | 4.56 | 2.06 | 4.78 |
| **70-405-01A** | **70LF-405-01A** | 1 | 0.87 | 2.87 | 5.66 | 2.25 | 4.78 |
| **70-406-01** | **70LF-406-01** | 1-1/4 | 1.00 | 2.87 | 5.18 | 2.62 | 5.50 |
| **70-407-01** | **70LF-407-01** | 1-1/2 | 1.25 | 2.92 | 5.53 | 3.10 | 8.00 |
| **70-408-01** | **70LF-408-01** | 2 | 1.50 | 3.50 | 6.75 | 3.24 | 8.00 |

*NOTE: 1/4", 3/8", and 1/2" are full port.*

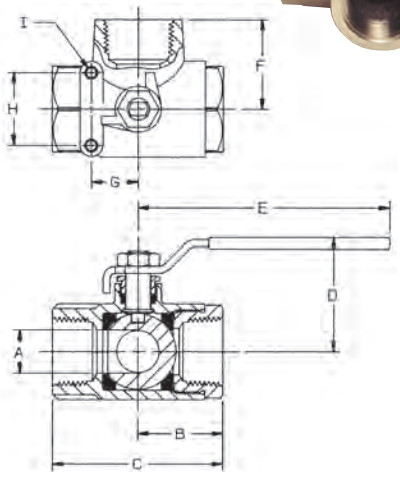
## 70-600 SERIES — THREADED 3-WAY DIVERTER BALL VALVE



Ideal for applications requiring flow diversion, this valve combines the features of two valves. Its large ports make tank selection and fluid transfers quicker and easier. Easy quarter-turn operation.

### FEATURES

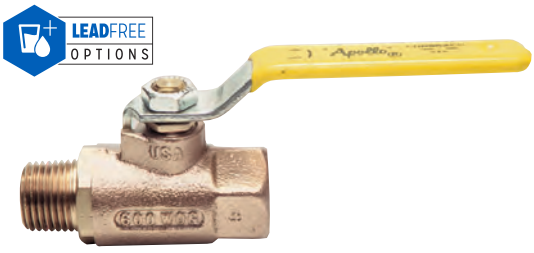
- Simple Quarter-Turn Operation
- ASTM B584 Bronze
- 400 psig CWP, Non-Shock
- Blowout-Proof Stem
- Adjustable Stem Packing
- Vacuum Service to 29 in. Hg
- See 70-900 for Solder Version

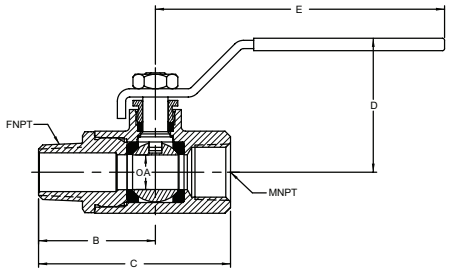



### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I |
| **70-601-01** | 1/4 | 0.37 | 1.12 | 2.32 | 1.80 | 3.88 | 1.18 | 0.875 | 1.37 | 10-24 |
| **70-602-01** | 3/8 | 0.37 | 1.12 | 2.32 | 1.80 | 3.88 | 1.18 | 0.875 | 1.37 | 10-24 |
| **70-603-01** | 1/2 | 0.50 | 1.09 | 2.25 | 1.75 | 3.87 | 1.18 | 0.87 | 1.37 | 10-24 |
| **70-604-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 1.62 | 0.87 | 1.37 | 10-24 |
| **70-605-01** | 1 | 0.81 | 1.59 | 3.18 | 2.25 | 4.87 | 1.71 | 0.87 | 1.37 | 10-24 |
| **70-606-01** | 1-1/4 | 1.00 | 1.97 | 3.95 | 2.69 | 5.50 | 2.01 | 0.93 | 1.50 | 1/4-20 |
| **70-607-01** | 1-1/2 | 1.25 | 2.21 | 4.40 | 2.87 | 5.50 | 2.38 | 0.94 | 1.50 | 1/4-20 |
| **70-608-01** | 2 | 1.50 | 2.34 | 4.69 | 3.00 | 5.50 | 2.50 | 0.94 | 1.50 | 1/4-20 |

## 70-800 SERIES — MALE x FEMALE NPT BALL VALVE




Eliminates need for extra nipple when connecting to female connection to save time and labor. Ruggedly built for lasting performance with chromium-plated ball and blowout-proof stem.

### FEATURES

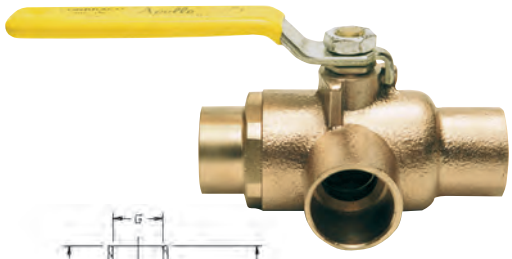
- 600 psig CWP, Non-Shock
- 150 SWP Steam Rating
- RPTFE Seats and Stuffing Box Ring
- Adjustable Stem Packing
- Vacuum Service to 29 in. Hg

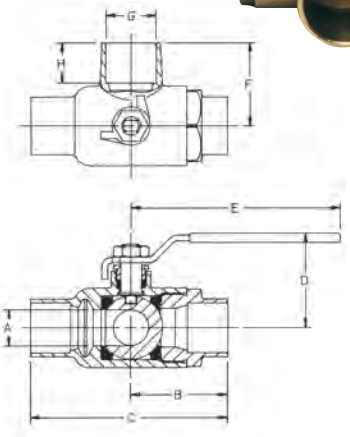
### DIMENSIONS

| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| **70-801-01** | – | 1/4 | 0.37 | 1.40 | 2.43 | 1.75 | 3.87 |
| **70-802-01** | – | 3/8 | 0.37 | 1.46 | 2.50 | 1.75 | 3.87 |
| **70-803-01** | **70LF-803-01** | 1/2 | 0.50 | 1.68 | 2.81 | 1.81 | 3.87 |
| **70-804-01** | **70LF-804-01** | 3/4 | 0.68 | 2.00 | 3.50 | 2.12 | 4.87 |
| **70-805-01** | **70LF-805-01** | 1 | 0.87 | 2.31 | 4.00 | 2.25 | 4.87 |
| **70-806-01** | **70LF-806-01** | 1-1/4 | 1.00 | 2.31 | 4.31 | 2.62 | 5.50 |
| **70-807-01** | – | 1-1/2 | 1.25 | 3.00 | 5.18 | 3.06 | 8.00 |

*NOTE: 1/4", 3/8", and 1/2" are full port.*

## 70-900 SERIES — SOLDER 3-WAY DIVERTER BALL VALVE






Tank selection and fluid transfers are easier because of large port diameters. The valve is 100% air tested under water. Designed to be soft soldered without disassembly.

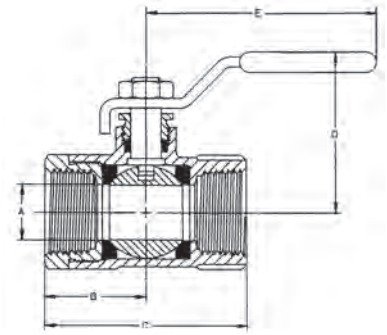
### FEATURES

- Simple Quarter-Turn Operation
- ASTM B584 Bronze
- 400 psig CWP, Non-Shock
- Blowout-Proof Stem
- Adjustable Packing
- See 70-600 for NPT Version
- **Made in USA**

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H |
| **70-903-01** | 1/2 | 0.50 | 1.44 | 2.87 | 1.75 | 3.87 | 1.34 | 0.628 | 0.50 |
| **70-904-01** | 3/4 | 0.68 | 1.94 | 3.87 | 2.12 | 4.87 | 1.69 | 0.878 | 0.90 |
| **70-905-01** | 1 | 0.81 | 2.19 | 4.42 | 2.25 | 4.87 | 1.87 | 1.129 | 0.90 |

## 32-100 SERIES — REGULAR PORT, THREADED END, BRONZE BALL VALVE

NPT threaded ball valve rated to 400 psig CWP, non-shock and 125 psig for saturated steam. Blowout-proof stem design with adjustable packing gland.

### FEATURES

- ASTM B584 Bronze
- PTFE Seats and MPTFE Stuffing Box Ring
- **Made in USA**

### OPTIONS

- (-04) 2-1/4" Stem Extension
- (-07) CS Tee Handle
- (-15) Round Handle
- (-27) Locking Handle

### DIMENSIONS

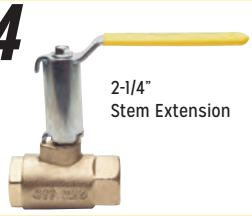
| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **32-101-01** | 1/4 | 0.37 | 0.80 | 1.60 | 1.65 | 2.87 |
| **32-102-01** | 3/8 | 0.37 | 0.80 | 1.60 | 1.65 | 2.87 |
| **32-103-01** | 1/2 | 0.40 | 1.00 | 2.00 | 1.68 | 2.87 |
| **32-104-01** | 3/4 | 0.65 | 1.20 | 2.41 | 1.90 | 3.87 |
| **32-105-01** | 1 | 0.75 | 1.55 | 3.09 | 2.18 | 4.87 |
| **32-106-01** | 1-1/4 | 1.00 | 1.72 | 3.44 | 2.53 | 5.50 |
| **32-107-01** | 1-1/2 | 1.12 | 1.93 | 3.87 | 2.69 | 5.50 |
| **32-108-01** | 2 | 1.50 | 2.17 | 4.37 | 2.94 | 5.50 |

## COMMON BALL VALVE OPTIONS

Apollo® offers these options on the 70 Series as well as many other valve series. Note: Not all options are available on all sizes and models. Review the latest submittal sheet or contact the factory to determine availability. Most available as a factory installed option or as a kit for field installation or retrofit.

**Suffix No.**

**-04**




**STANDARD BALL VALVE WITH STEM EXTENSION**
A plated steel stem extension to accommodate 2" thick pipe insulation or to relocate handle position.

**-07**

**TEE HANDLE**
Plated steel tee handle is ideal when space is limited and where safety is a consideration. Handle still provides visual indication of OPEN or CLOSED position.

**-08**

**90° REVERSED STEM**
Used in applications when handle is required to be in a parallel position when closed.

**-10**

**STAINLESS STEEL LEVER AND NUT**
Additional corrosion resistance for damp or marine installations.

**-11**

**THERMA-SEAL® HANDLE (UL 2043 LISTING)**
The Therma-Seal® thermal insulating tee-handle is designed to be use in applications where vapor barrier piping insulation is required. Manufactured from high strength glass reinforced nylon, these handles are ideally suited for the toughest commercial and industrial applications. Handles are available as a factory installed option (-11 option suffix) or as a retro fit kit. UL 2043 listed for plenum installations.

**-16/-58**

**CHAIN LEVER BALL VALVES**
Reliable quarter turn operation in overhead applications. A favorite for use in industrial environments.

- -16 for valve in vertical position
- -58 for valve in horizontal position

## COMMON BALL VALVE OPTIONS

**Suffix No.**

**-17**

### ROUGH CHROME PLATING

Use where a clean, bright finish is required or for matching up with other chrome-plated equipment.

**-27**

### STAINLESS STEEL LATCH LOCK - LOCKING LEVER HANDLE

Sliding lock mechanism secures handle in open or closed position. Valve can also be padlocked open or closed.

**-30**

### CAM-LOCK® HANDLE

Patented Cam-Lock® handle gives valve extra protection against accidental operation. Reliable quarter-turn shut-off from a versatile, ruggedly built valve.

- RPTFE Seats and Stuffing Box Ring
- Rated 600 psig CWP, Non-Shock
- Available for the Following Series: 70, 71, 73A, 76, 82, 83, 86, 87, 89, 9A, 92, and 96

**-32/-83**

### STAINLESS STEEL TEE HANDLE AND NUT

Increased corrosion resistance versus the plated steel -07 option.

- -32 for standard bronze
- -83 for 77B/77BLF and 77C/77CLF Series

**-41**

### BALL VALVE WITH AUTOMATIC DRAIN

When this valve is closed for maintenance of pneumatic tool, downstream pressure from valve to tool is automatically drained to atmosphere to prevent accidental operation of the tool, causing possible injury.

- Conforms to certain OSHA requirements in pneumatic installations
- Easy, safe maintenance of pneumatic tools
- Cannot be used where drained media could cause damage
- Temperature range: 50°F to 200°F
- Rated 125 psig CWP, non-shock air or water
- Includes directional arrow for correct installation
- Available with latch lock option, specify -27 -41 suffix
- Available for the following Series: 70, 71, 75, and 78

**-48**

### STAINLESS STEEL OVAL HANDLE

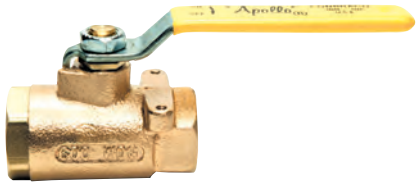
- Available for the following Series: 70, 71, 73A, 76, 76F, 77, 82, 83, 85, 86, 89, 9A, 92 and 96
- Resistant to accidental operation

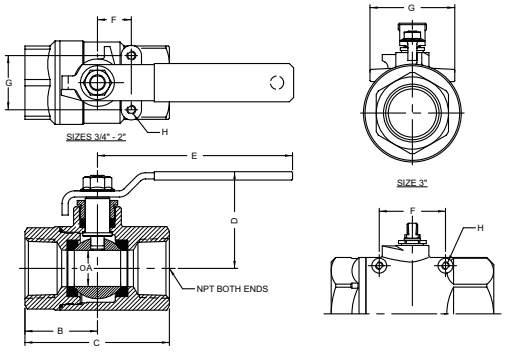
**-94**

### BALL VALVE WITH BALANCING STOP AND STEM EXTENSION

Ideal for HVAC systems. Stop plate and a 2-1/4" stem extension combination to accommodate insulation and handle repositioning. *Contact customer service for exact handle dimensions*

## 71-100 SERIES — BALL VALVE WITH MOUNTING PAD






Designed to easily accommodate spring return handle, actuator or simple panel mounting. Threaded end connections with RPTFE seats and stuffing box ring.

### FEATURES

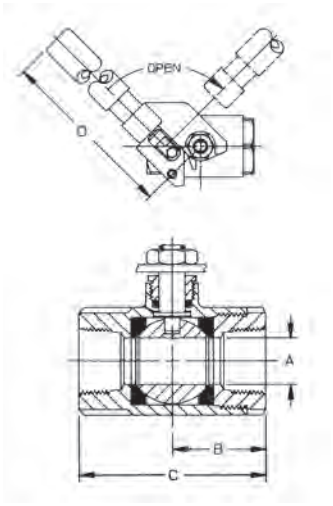
- 3/4" to 3" models (See 77 Series for 1/4" - 1/2")
- 600 CWP Non-Shock
- Blowout-Proof Stem
- ASTM B584 Bronze
- Round Handle Option
- Adjustable Packing

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H |
| **71-104-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 0.87 | 1.37 | 10-24 NC |
| **71-105-01** | 1 | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 | 0.87 | 1.37 | 10-24 NC |
| **71-106-01** | 1-1/4 | 1.00 | 2.00 | 4.00 | 2.62 | 5.50 | 0.93 | 1.50 | 1/4-20 NC |
| **71-107-01** | 1-1/2 | 1.25 | 2.18 | 4.37 | 2.87 | 8.00 | 0.93 | 1.50 | 1/4-20 NC |
| **71-108-01** | 2 | 1.50 | 2.34 | 4.68 | 3.06 | 8.00 | 0.93 | 1.50 | 1/4-20 NC |
| **71-100-01** | 3 | 2.50 | 3.37 | 6.75 | 4.12 | 8.00 | 3.37 | 2.75 | 1/4-20 NC |

Actuation assistance available on page 78, with the Apollo® Actuator Wizard located at actuatorwizard.conbraco.com or by calling customer support at (704)841-6000.

## 71-500 SERIES — CAST BRONZE BALL VALVE SPRING RETURN HANDLE


Ideal in applications where the valve must be in OFF position at all times such as feeding fuel lines. Can be used in reverse with 90° reverse stem option. Basic configuration: spring return to CLOSED. All lever components are stainless steel.

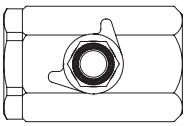
### FEATURES

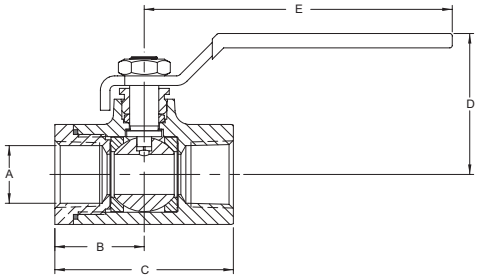
- Rated 600 psig CWP, Non-Shock
- 150 psig for Saturated Steam
- (-08) Spring Return to OPEN

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| **71-501-01** | 1/4 | 0.43 | 1.12 | 2.25 | 7.00 |
| **71-502-01** | 3/8 | 0.50 | 1.12 | 2.25 | 7.00 |
| **71-503-01** | 1/2 | 0.50 | 1.12 | 2.25 | 7.00 |
| **71-504-01** | 3/4 | 0.68 | 1.50 | 3.00 | 7.00 |
| **71-505-01** | 1 | 0.87 | 1.68 | 3.37 | 7.00 |
| **71-506-01** | 1-1/4 | 1.00 | 2.00 | 4.00 | 9.00 |
| **71-507-01** | 1-1/2 | 1.25 | 2.18 | 4.37 | 9.00 |
| **71-508-01** | 2 | 1.50 | 2.34 | 4.68 | 9.00 |

## 73A-100 SERIES — FORGED CARBON STEEL BALL VALVE






Threaded, 2 piece design, 1/4" to 1" 2000 psig CWP, 1-1/4" to 2" 1500 psig CWP Cold Non-Shock. 150 psig Saturated Steam.

### FEATURES

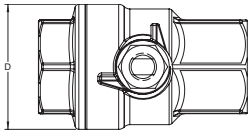
- RPTFE seats & packing
- Forged Construction
- Raised Handle Stops
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- Zinc phosphate Corrosion Protection
- (-24) Fire Safe to API 607 4th Edition, Class 600 Burn
- AAR Approved #E999032
- Vacuum Service to 29 inches Hg.

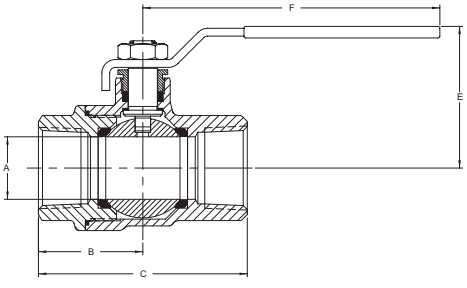
### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **73A-101-01A** | 1/4" | .37 | 1.02 | 2.30 | 1.72 | 3.85 |
| **73A-102-01A** | 3/8" | .37 | 1.08 | 2.37 | 1.72 | 3.85 |
| **73A-103-01A** | 1/2" | .50 | 1.18 | 2.31 | 1.78 | 3.85 |
| **73A-104-01A** | 3/4" | .68 | 1.57 | 3.07 | 2.07 | 4.75 |
| **73A-105-01A** | 1" | .87 | 1.73 | 3.40 | 2.18 | 4.75 |
| **73A-106-01** | 1-1/4" | 1.00 | 1.98 | 3.97 | 2.72 | 5.50 |
| **73A-107-01** | 1-1/2" | 1.25 | 2.14 | 4.32 | 3.12 | 7.75 |
| **73A-108-01** | 2" | 1.50 | 2.73 | 5.44 | 3.27 | 7.75 |

## 76F-100-A SERIES — STAINLESS STEEL FULL PORT BALL VALVE

LEADFREE CERTIFIED






Threaded, 2 piece design, 1/2"-2" 1000 psig CWP Cold Non-Shock, 150 psig. Saturated Steam, Vacuum Service to 29 inches Hg.

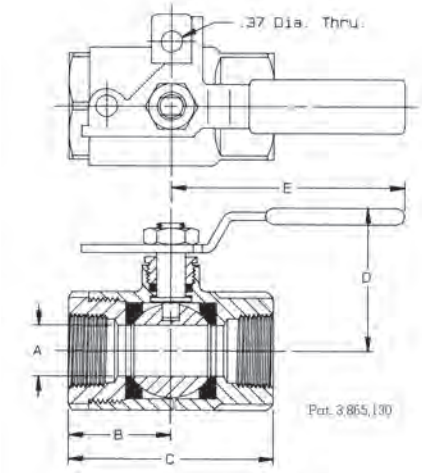
### FEATURES

- 316 SS Investment Cast Components
- RPTFE Seats
- Two-Piece Body
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- Meets NACE MR-01-75-2000
- SS Lever and Nut
- (-11) Therma-Seal™ Insulating Tee
- (-24) Certified to API 607, 6th Edition, Class 600 Burn
- (-27) Locking Handle
- Standard Valve is Certified Lead Free
- NSF/ANSI-61-G, NSF/ANSI 372 Lead Free

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | Wt. |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | |
| **76F-101-01** | 1/4" | 0.37 | 0.95 | 1.91 | 1.12 | 1.60 | 3.85 | 0.47 |
| **76F-102-01** | 3/8" | 0.37 | 0.95 | 1.91 | 1.12 | 1.60 | 3.85 | 0.44 |
| **76F-103-01A** | 1/2" | .50 | 1.21 | 2.35 | 1.27 | 1.73 | 3.85 | 0.57 |
| **76F-104-01A** | 3/4" | .75 | 1.39 | 2.77 | 1.62 | 1.96 | 3.85 | 0.91 |
| **76F-105-01A** | 1" | 1.00 | 1.67 | 3.34 | 2.00 | 2.27 | 4.75 | 1.38 |
| **76F-106-01A** | 1-1/4" | 1.25 | 1.96 | 3.92 | 2.73 | 3.21 | 7.77 | 4.17 |
| **76F-107-01A** | 1-1/2" | 1.50 | 2.05 | 4.10 | 2.92 | 3.31 | 7.77 | 4.69 |
| **76F-108-01A** | 2" | 2.00 | 2.37 | 4.74 | 3.75 | 3.69 | 7.77 | 6.90 |

## 75-100-41 SERIES — PADLOCKING BALL VALVE WITH AUTOMATIC DRAIN




Meets OSHA standards and provides for easy, safe maintenance of pneumatic tools. Valve drains downstream pressure for safety when lever is closed. Valve can be padlocked OPEN or CLOSED with same hardware.

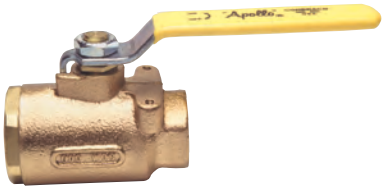
### FEATURES

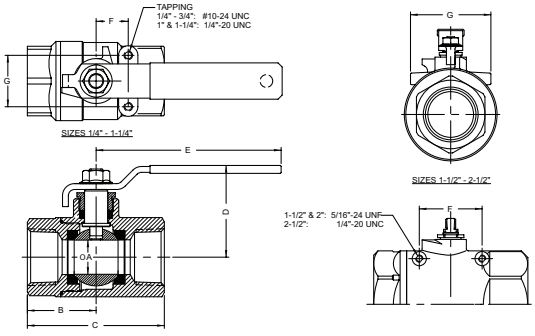
- Blowout-proof Stem Design
- Adjustable Packing Gland
- ASTM B584 Bronze
- RPTFE Seats and Stuffing Box Ring
- Pad Lock Lever
- Rated to 600 psi CWP - 150 SWP
- Temperature Range: 50°F to 200°F
- Valve Without Drain Option (suffix -01)

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **75-101-41** | 1/4 | 0.43 | 1.12 | 2.25 | 1.81 | 3.00 |
| **75-102-41** | 3/8 | 0.50 | 1.12 | 2.25 | 1.81 | 3.00 |
| **75-103-41** | 1/2 | 0.50 | 1.12 | 2.25 | 1.81 | 3.00 |
| **75-104-41** | 3/4 | 0.87 | 1.68 | 3.37 | 2.25 | 3.87 |
| **75-105-41** | 1 | 0.87 | 1.68 | 3.37 | 2.25 | 3.87 |
| **75-106-41** | 1-1/4 | 1.00 | 2.00 | 4.00 | 2.62 | 5.50 |
| **75-107-41** | 1-1/2 | 1.25 | 2.16 | 4.37 | 2.87 | 5.50 |
| **75-108-41** | 2 | 1.50 | 2.34 | 4.68 | 3.06 | 5.50 |

## 77-100 SERIES — HEAVY DUTY FULL PORT NPT PANEL MOUNT BALL VALVE






Designed for easy actuator mounting or panel mounting where highest $C_v$ values are desired. RPTFE seats and stuffing box ring. Also available with 250 lb. steam trim option.

### FEATURES

- Mounting Pad
- ASTM B584 Bronze
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- Full Flow, Minimum Pressure Drop
- 600 CWP, Non-Shock Pressure Rating
- 150 SWP Steam Rating
- Chain Lever Kits Available 3/4"- 2-1/2" (-16, -58)

### OPTIONS

- (-27) Locking Handle
- (-92) Balance Stop

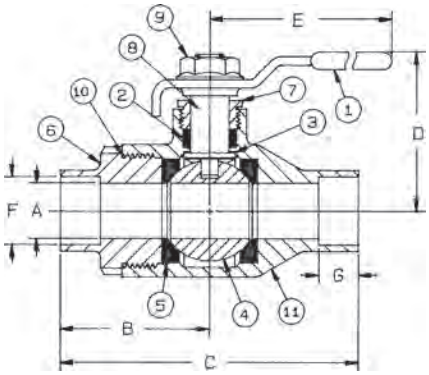
### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | Cv* |
| **77-101-01** | 1/4 | 0.43 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 | 8.1 |
| **77-102-01** | 3/8 | 0.50 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 | 15 |
| **77-103-01** | 1/2 | 0.50 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 | 15 |
| **77-104-01** | 3/4 | 0.81 | 1.56 | 3.12 | 2.12 | 4.87 | 0.87 | 1.37 | 51 |
| **77-105-01** | 1 | 1.00 | 1.81 | 3.62 | 2.62 | 5.50 | 0.93 | 1.50 | 68 |
| **77-106-01** | 1-1/4 | 1.25 | 2.12 | 4.25 | 2.87 | 5.50 | 0.93 | 1.50 | 125 |
| **77-107-01** | 1-1/2 | 1.50 | 2.37 | 4.75 | 3.34 | 8.00 | 2.08 | 3.06 | 177 |
| **77-108-01** | 2 | 2.00 | 2.65 | 5.37 | 3.71 | 8.00 | 2.41 | 3.52 | 389 |
| **77-109-01** | 2-1/2 | 2.50 | 3.25 | 6.50 | 4.12 | 8.00 | 2.75 | 3.37 | 503 |

* *The Cv factor is the gallons of water per minute that the valve will pass with 1 psig pressure drop.*

Actuation assistance available on page 78, with the Apollo® Actuator Wizard located at actuatorwizard.conbraco.com or by calling customer support at (704)841-6000.

## 77-200 SERIES — HEAVY DUTY FULL PORT SOLDER END BALL VALVE




Designed to be soldered into lines without disassembly. This allows a factory tested valve to be installed without disturbing the seats and seals. Designed for soft solder with melt points less than 500°F.

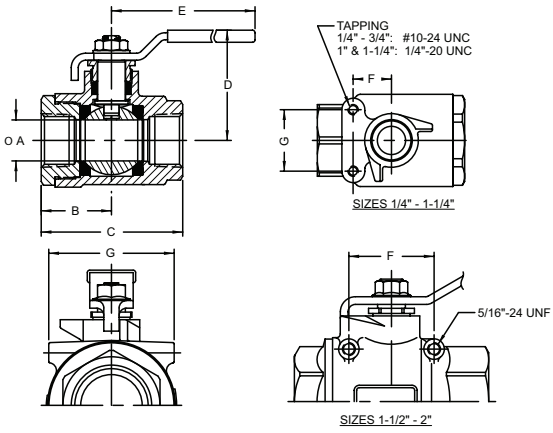
### FEATURES

- Heavy Duty Cast Bronze Body
- Chromium Plated Ball
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- Full Flow, Minimum Pressure Drop
- 600 CWP, Non-Shock Pressure Rating
- 150 SWP

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G |
| **77-204-01** | 3/4 | 0.81 | 2.12 | 4.12 | 2.12 | 4.87 | 0.88 | 0.75 |
| **77-205-01** | 1 | 1.00 | 2.33 | 4.60 | 2.62 | 5.50 | 1.13 | 0.90 |
| **77-206-01** | 1-1/4 | 1.25 | 2.60 | 5.15 | 2.87 | 5.50 | 1.38 | 0.96 |
| **77-207-01** | 1-1/2 | 1.50 | 3.00 | 6.00 | 3.34 | 8.00 | 1.63 | 1.09 |
| **77-208-01** | 2 | 2.00 | 3.62 | 7.24 | 3.71 | 8.00 | 2.13 | 1.34 |
| **77-209-01** | 2-1/2 | 2.50 | 3.93 | 7.87 | 4.12 | 8.00 | 2.63 | 1.48 |

## 77-900 SERIES — FULL PORT SAE STRAIGHT-THREAD BALL VALVE




Valve connections are designed for extended leak-free and energy saving performance in a broad range of applications, especially in manufacturing environments.

### FEATURES

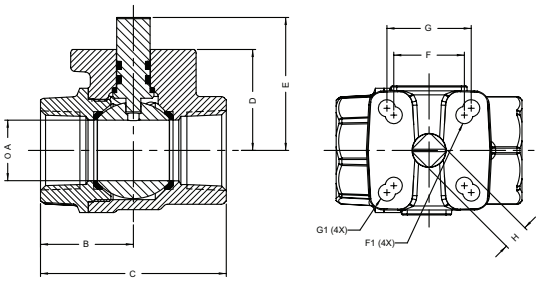
- Mounting Pad for Easy Actuation
- 600 CWP Non-Shock
- 150 SWP
- ASTM B584 Bronze
- SAE J1926-1 (ISO 11926-1) Connections
- RPTFE Seats & Packing
- Blowout-Proof Stem and Lever Handle Standard
- Adjustable Packing Gland
- Full Port
- Straight Thread with O-Ring Boss Connection

### DIMENSIONS

| Model Number | Nom. Tube O.D. (in.) | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G |
| **77-901-01** | 1/4 | 7/16-20 | 0.43 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 |
| **77-902-01** | 3/8 | 9/16-18 | 0.50 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 |
| **77-903-01** | 1/2 | 3/4-16 | 0.50 | 1.12 | 2.25 | 1.81 | 3.87 | 0.50 | 1.12 |
| **77-904-01** | 3/4 | 11/16-12 | 0.81 | 1.56 | 3.12 | 2.12 | 4.87 | 0.87 | 1.37 |
| **77-905-01** | 1 | 15/16-12 | 1.00 | 1.81 | 3.62 | 2.62 | 5.50 | 0.93 | 1.50 |
| **77-906-01** | 1-1/4 | 1-5/8-12 | 1.25 | 2.12 | 4.25 | 2.87 | 5.50 | 0.93 | 1.50 |
| **77-907-01** | 1-1/2 | 1-7/8-12 | 1.50 | 2.37 | 4.75 | 3.34 | 8.00 | 2.08 | 3.06 |
| **77-908-01** | 2 | 2-1/2-12 | 2.00 | 2.65 | 5.37 | 3.71 | 8.00 | 2.41 | 3.52 |

Actuation assistance available on page 78, with the Apollo® Actuator Wizard located at actuatorwizard.conbraco.com or by calling customer support at (704)841-6000.

## 77D SERIES — DIRECT ISO MOUNTING PAD




Apollo's solid stainless steel ball design in a bronze valve with an integral ISO 5211 mounting pad with 100% American construction.

### FEATURES

- 600 CWP Pressure Rating
- Multi-Fill Seats and Stem Bearing
- Blowout-Proof Stem Design
- Vacuum Service to 29 in. Hg
- High Cycle Dual O-Ring Stem Seal Design
- EPDM is Standard. Most Liquids and Gases are Compatible with the O-Ring Seals
- Ball is Slot Vented to Equalize Cavity and Line Pressure
- MSS SP-110 Compliant
- Direct Mount Actuator Ready

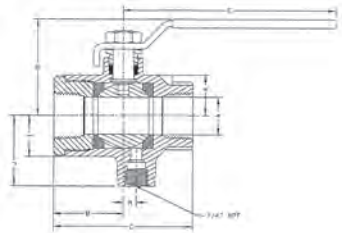
### SEATS

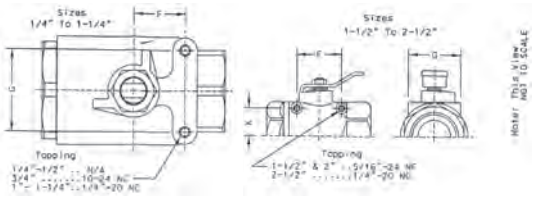
| Suffix | Material | Temp Range | Steam (max) |
|---|---|---|---|
| **-01E (std)** | EPDM | -20 to 400°F | 150 SWP @ 366°F |
| **-01N** | Nitrile | -20 to 250°F | 15 SWP @ 250°F |
| **-01V** | Viton | -20 to 400°F | 50 SWP @ 297°F |

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | 0F1 | G | 0G1 | H |
| **77D-143-01E** | 1/2 | 0.50 | 1.15 | 2.25 | 1.00 | 1.37 | 0.997 | 0.224 | 1.167 | 0.281 | 0.275 |
| **77D-144-01E** | 3/4 | 0.75 | 1.33 | 2.65 | 1.38 | 1.79 | 1.167 | 0.281 | 1.392 | 0.281 | 0.275 |
| **77D-145-01E** | 1 | 1.00 | 1.54 | 3.07 | 1.67 | 2.20 | 1.167 | 0.281 | 1.392 | 0.281 | 0.430 |
| **77D-147-01E** | 1-1/2 | 1.50 | 2.12 | 4.23 | 2.31 | 3.05 | N/A | N/A | 1.949 | 0.344 | 0.551 |
| **77D-148-01E** | 2 | 2.00 | 2.43 | 4.85 | 2.68 | 3.43 | N/A | N/A | 1.949 | 0.344 | 0.551 |

## 7K-100 SERIES — SAFETY EXHAUST VALVE WITH 1/4" NPT TAP FOR DRAIN






For use on pneumatic equipment. Furnished with a 1/4" NPT tapped drain to accommodate a muffler or to pipe the exhausted air to a safe location.

### FEATURES

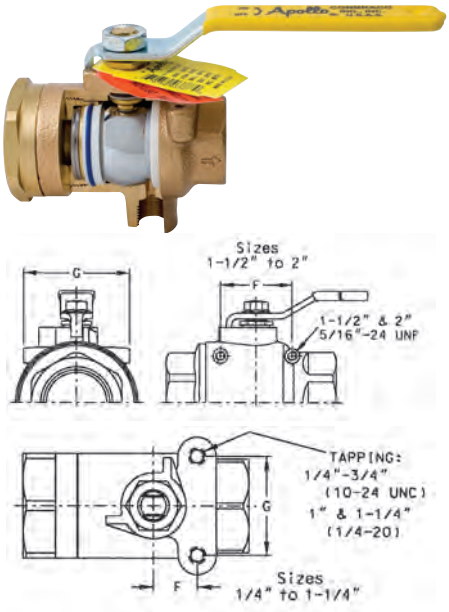
- Safely Vents Compressed Air (or Other Non-Hazardous Gases) From Piping Downstream of the Closed Valve
- Sizes 1/4" - 2-1/2"
- FNPT Threads
- Rated 125 psig-Air or Water, CWP, Non-Shock
- Temperature Range: +50°F - +200°F
- Optional Stainless Steel Latch Lock Handle that Locks in Closed Position Only, Specify Suffix (-46)

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | I | J | K |
| **7K-101-01** | 1/4 | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | N/A | N/A | 0.09 | 0.53 | 1.18 | N/A |
| **7K-102-01** | 3/8 | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 | N/A | N/A | 0.09 | 0.53 | 1.18 | N/A |
| **7K-103-01** | 1/2 | 0.50 | 1.10 | 2.19 | 1.75 | 3.87 | N/A | N/A | 0.12 | 0.59 | 1.25 | N/A |
| **7K-104-01** | 3/4 | 0.81 | 1.56 | 3.12 | 2.12 | 4.78 | 0.87 | 1.37 | 0.29 | 0.90 | 1.56 | 0.90 |
| **7K-105-01** | 1 | 1.00 | 1.80 | 3.61 | 2.62 | 5.50 | 0.93 | 1.50 | 0.31 | 1.12 | 1.78 | 1.12 |
| **7K-106-01** | 1-1/4 | 1.25 | 2.12 | 4.25 | 2.87 | 5.50 | 0.93 | 1.50 | 0.37 | 1.37 | 2.03 | 1.37 |
| **7K-107-01** | 1-1/2 | 1.50 | 2.37 | 4.74 | 3.30 | 7.78 | 2.08 | 3.06 | 0.50 | 1.56 | 2.21 | 1.28 |
| **7K-108-01** | 2 | 2.00 | 2.70 | 5.38 | 3.71 | 7.78 | 2.41 | 3.52 | 0.62 | 2.03 | 2.68 | 1.56 |
| **7K-109-01** | 2-1/2 | 2.50 | 3.25 | 6.50 | 4.05 | 7.78 | 2.75 | 3.37 | 1.09 | 2.34 | 3.00 | 2.00 |

*Also available in 70 & 77 Series as - 41 option (without tapped drain)*

## 7K-SV SERIES — SECURE-VENT FEATURE (-SV)




*(7K-SV Series Shown)*

Available on the Apollo® 77 and 7K full port bronze ball valves. Safely vents compressed air (or other non-hazardous gases) from piping downstream of the closed valve.

### FEATURES

- Reliable Shut-Off and Venting
- Pressure Rating: 200 psig CWP, Non-Shock
- Temperature Range: -20°F to 200°F
- Economical "No Leakage" Operation
- Belleville Spring Live-Loaded Active Upstream Seating
- Available with a Full Complement of Handles

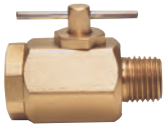
### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G |
| 7K-101-SV | 1/4 | 0.43 | 1.43 | 2.52 | 1.76 | 3.88 | 0.50 | 1.12 |
| 7K-102-SV | 3/8 | 0.50 | 1.60 | 2.69 | 1.76 | 3.88 | 0.50 | 1.12 |
| 7K-103-SV | 1/2 | 0.50 | 1.50 | 2.59 | 1.76 | 3.88 | 0.50 | 1.12 |
| 7K-104-SV | 3/4 | 0.81 | 1.82 | 3.37 | 2.16 | 5.43 | 0.87 | 1.37 |
| 7K-105-SV | 1 | 1.00 | 2.05 | 3.86 | 2.69 | 5.43 | 0.93 | 1.50 |
| 7K-106-SV | 11/4 | 1.25 | 2.37 | 4.50 | 2.91 | 5.43 | 0.93 | 1.50 |
| 7K-107-SV | 11/2 | 1.50 | 2.37 | 7.78 | 3.31 | 7.78 | 2.08 | 3.06 |
| 7K-108-SV | 2 | 2.00 | 3.00 | 5.69 | 3.73 | 7.78 | 2.40 | 3.52 |

## 78-260/290 SERIES — INSTRUMENTATION BALL VALVES / TEST COCKS

LEADFREE OPTIONS

78LF-290: BRONZE



78-261: BRASS

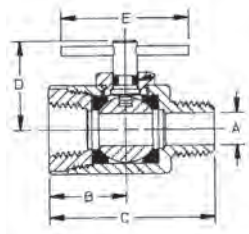
Brass and bronze instrumentation ball valves and backflow test cocks. Male x female threaded. 400 psig CWP, non-shock. Air and liquid service.

### FEATURES

- Micro-Finish Ball
- Blowout-Proof Stem Design
- PTFE Seats
- Nitrile Stem Seal
- Plated Steel Tee Handle
- Compact Design
- Optional Mixed End Fittings Available

### BRASS INSTRUMENTATION BALL VALVE - TEE HANDLE

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | Cv* | Wt. |
| 78-261-05 | 1/4M x 1/4F | 0.31 | 0.43 | 1.43 | 0.87 | 1.25 | 5.50 | 0.19 |



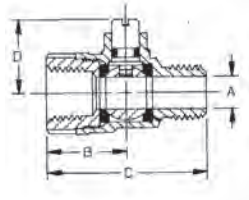

BRONZE VALVES - TEE

### BRONZE INSTRUMENTATION BALL VALVE (INTERNATIONAL) - SCREW SLOT - LEAD FREE

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | Cv* | Wt. |
| 78LF-290-01 | 1/8M x 1/4F | 0.21 | 0.80 | 1.60 | 0.72 | N/A | 4.00 | 0.19 |
| 78LF-291-01 | 1/4M x 1/4F | 0.31 | 0.80 | 1.60 | 0.72 | N/A | 5.50 | 0.19 |
| 78LF-292-01 | 1/8 x 1/4 SAE | 0.21 | 0.80 | 1.60 | 0.72 | N/A | 4.00 | 0.19 |
| 78LF-293-01 | 1/4 x 1/4 SAE | 0.31 | 0.80 | 1.60 | 0.72 | N/A | 5.50 | 0.19 |

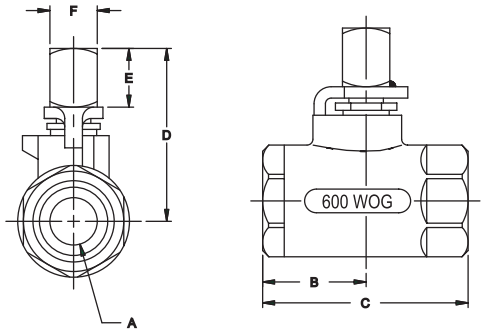
**The Cv factor is the gallons of water per minute that the valve will pass with a 1 psig pressure drop.*

**Also see 94MBV Instrumentation Ball Valve*




BRONZE VALVES - SLOT

## 78-130 SERIES — FEMALE END IRRIGATION VALVE (UNDERGROUND SERVICE)




Ideal for underground or below grade applications. This series (3/8"-2" FNPT) features a square head nut welded to the stem to allow operations with a ground key from standard grade.

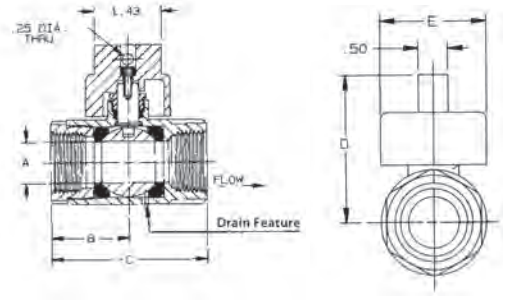
### OPTIONS

- (-41) Auto-Drain (Directional)

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F |
| **78-132-01** | 3/8 | 0.37 | 1.03 | 2.06 | 1.75 | 0.62 | 0.50 |
| **78-133-01** | 1/2 | 0.50 | 1.09 | 2.18 | 1.83 | 0.62 | 0.50 |
| **78-134-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 0.62 | 0.62 |
| **78-135-01** | 1 | 0.87 | 1.68 | 3.37 | 2.25 | 0.62 | 0.62 |
| **78-136-01** | 1 1/4 | 1.00 | 2.00 | 4.00 | 2.88 | 0.75 | 0.75 |
| **78-137-01** | 1 1/2 | 1.25 | 2.18 | 4.38 | 3.06 | 0.75 | 0.75 |
| **78-138-01** | 2 | 1.50 | 2.34 | 4.68 | 3.25 | 0.75 | 0.75 |

## 78-620 SERIES — BRONZE NPT IRRIGATION VALVE WITH AUTO-DRAIN




Ideal for underground use or where drained media will not cause damage. Heavy pattern design features ASTM B584 bronze body.

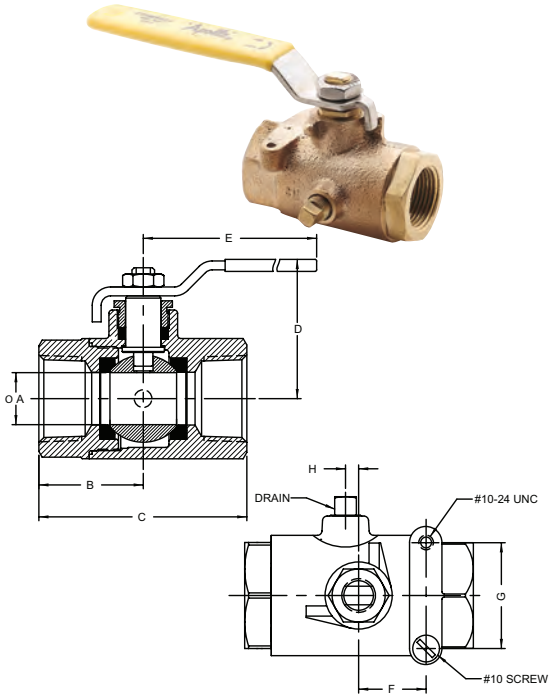
### FEATURES

- Auto-Drain Feature (When Valve is in Closed Position) is Standard
- Adjustable Packing Gland
- RPTFE Seats and Seals
- Stainless Steel Cover
- 200 psig Water, CWP, Non-Shock
- Temperature Range +50°F to 200°F

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **78-621-01** | 3/4 | 0.68 | 1.47 | 2.96 | 2.40 | 1.81 |
| **78-622-01** | 1 | 0.87 | 1.66 | 3.34 | 2.53 | 1.81 |
| **78-623-01** | 1-1/4 | 1.00 | 1.98 | 3.97 | 3.00 | 2.50 |
| **78-624-01** | 1-1/2 | 1.25 | 2.12 | 4.28 | 3.18 | 2.50 |
| **78-625-01** | 2 | 1.50 | 2.35 | 4.67 | 3.37 | 2.50 |

## 78-660 & 962 SERIES — BRONZE PURGE & DRAIN BALL VALVE (CENTER DRAIN)




Center tap drain allows for winterization or purge and drain function. Features bronze body with built-in mounting pad for panel mounting or actuation. Ideal for hydronic heating and marine applications. downstream of the closed valve.

### FEATURES

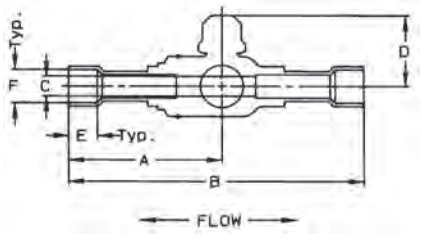
- 1/8" NPT Side Tap and Plug
- RPTFE Seats and Stuffing Box Ring
- Stainless Steel Lever and Nut
- Blowout-Proof Stem
- 600 psig CWP, Non-Shock
- Adjustable Packing
- Drainable Ball Cavity to Prevent Freezing

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H |
| **78-664-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 0.87 | 1.37 | 0.17 |
| **78-665-01** | 1 | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 | 0.87 | 1.37 | 0.21 |
| **78-667-01** | 1-1/2 | 1.25 | 2.18 | 4.37 | 3.05 | 8.00 | 0.93 | 1.50 | 0.40 |
| **78-962-01** | 2 | 1.50 | 2.34 | 4.68 | 3.24 | 8.00 | 0.93 | 1.50 | 0.45 |

Actuation assistance available on page 78, with the Apollo® Actuator Wizard located at actuatorwizard.conbraco.com or by calling customer support at (704)841-6000.

## 79-700 SERIES — UL LISTED REFRIGERANT BALL VALVE ASSEMBLY




Complete hermetically welded assembly includes copper extensions and forged brass refrigerant ball valve with capped, triple-sealed stem to minimize leaks.

### FEATURES

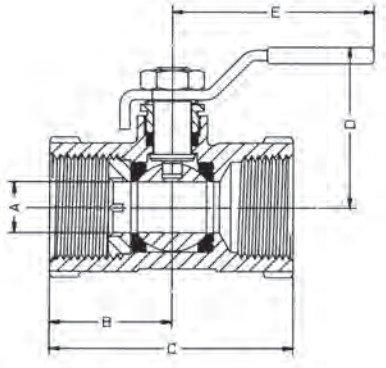
- Chrome Plated Ball
- RPTFE Seats and Seals
- Full Port Through 2-5/8"
- Bi-Directional Flow Design
- Sizes RANGE: 3/8" - 3-1/8" O.D. Tube
- All Sizes UL Listed - SFJQ
- Rated 500 psig CWP, Non-Shock
- For Use With Refrigerant Group 2 Fluids

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | $C_v$* |
| **79-701-01** | 3/8 | 3.38 | 6.45 | 0.45 | 1.56 | 0.38 | 0.38 | 8.5 |
| **79-702-01** | 1/2 | 3.38 | 6.45 | 0.45 | 1.56 | 0.38 | 0.50 | 8.5 |
| **79-703-01** | 5/8 | 3.56 | 6.82 | 0.50 | 1.56 | 0.50 | 0.62 | 9.8 |
| **79-704-01** | 7/8 | 3.91 | 7.53 | 0.68 | 1.79 | 0.75 | 0.87 | 32.0 |
| **79-705-01** | 1-1/8 | 4.39 | 8.51 | 0.87 | 1.98 | 0.90 | 1.12 | 44.0 |
| **79-706-01** | 1-3/8 | 4.42 | 8.94 | 1.25 | 2.62 | 0.96 | 1.38 | 66.0 |
| **79-707-01** | 1-5/8 | 4.55 | 9.19 | 1.25 | 2.62 | 1.09 | 1.62 | 148.0 |
| **79-708-01** | 2-1/8 | 5.16 | 10.31 | 1.50 | 2.93 | 1.34 | 2.12 | 218.0 |
| **79-709-01** | 2-5/8 | 6.50 | 13.00 | 2.50 | 3.90 | 1.48 | 2.62 | 440.0 |
| **79-600-01** | 3-1/8 | 7.00 | 14.00 | 2.50 | 3.90 | 1.67 | 3.12 | 390.0 |

**The $C_v$ factor is the gallons of water per minute that the valve will pass with 1 psig pressure drop.*

## 9A-100 SERIES — HEAVY PATTERN UNIBODY THREADED BALL VALVE




One piece bronze valve eliminates leak paths. Features static grounding devices and adjustable packing gland. Lever handle standard.

### FEATURES
- Rated 600 psig CWP, Non-Shock
- 50 SWP
- Blowout-Proof Stem Design

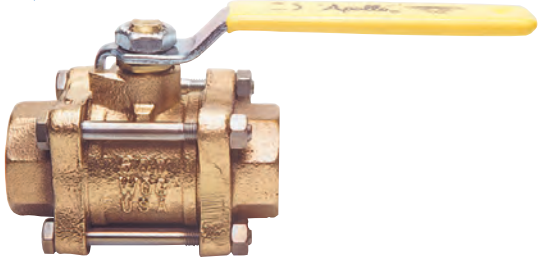
### OPTIONS
- (-30) Cam Lock
- (-15) Round Handle
- (-27) Latch Lock Handle

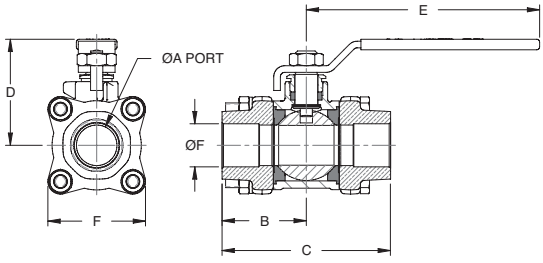
### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| 9A-101-01 | 1/4 | 0.37 | 1.34 | 2.59 | 1.68 | 3.87 |
| 9A-102-01 | 3/8 | 0.37 | 1.34 | 2.59 | 1.68 | 3.87 |
| 9A-103-01 | 1/2 | 0.37 | 1.34 | 2.59 | 1.81 | 3.87 |
| 9A-104-01 | 3/4 | 0.50 | 1.44 | 2.84 | 1.84 | 3.87 |
| 9A-105-01 | 1 | 0.62 | 1.72 | 3.28 | 2.00 | 4.87 |
| 9A-106-01 | 1-1/4 | 0.81 | 1.94 | 3.84 | 2.18 | 4.87 |
| 9A-107-01 | 1-1/2 | 1.00 | 2.06 | 4.00 | 2.68 | 5.50 |
| 9A-108-01 | 2 | 1.25 | 2.29 | 4.56 | 2.87 | 5.50 |

## 82-100 SERIES — FULL PORT BRONZE THREE-PIECE VALVE

LEADFREE OPTIONS






This inline-repairable threaded ball valve offers RPTFE seats and seals and a 600 CWP, non-shock rating.

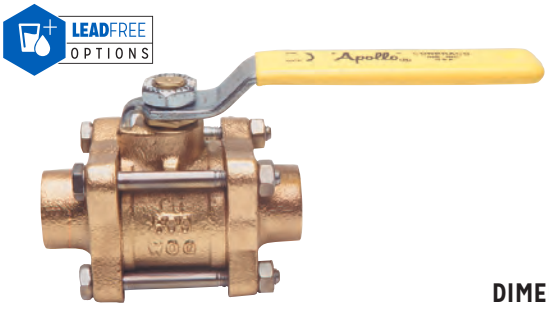
### FEATURES
- ASTM B584 Bronze Body and Ends
- SAE Grade 8 Body Bolts
- Adjustable Packing Nut
- Full Port Flow
- 600 CWP, 150 SWP (3"-4" 400 CWP, 150 SWP)
- Numerous Options Available
- 82-14X with SS Ball and Stem Option

### Lead Free Option (82LF)
- NSF/ANSI 61-G and NSF/ANSI 372 Lead Free
- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag

### DIMENSIONS

| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E |
| 82-101-01 | 82LF-101-01 | 1/4 | 0.43 | 1.28 | 2.56 | 1.81 | 3.87 |
| 82-102-01 | 82LF-102-01 | 3/8 | 0.50 | 1.28 | 2.56 | 1.81 | 3.87 |
| 82-103-01 | 82LF-103-01 | 1/2 | 0.62 | 1.40 | 2.81 | 1.93 | 4.78 |
| 82-104-01 | 82LF-104-01 | 3/4 | 0.81 | 1.71 | 3.43 | 2.18 | 4.78 |
| 82-105-01 | 82LF-105-01 | 1 | 1.00 | 1.93 | 3.87 | 2.62 | 5.50 |
| 82-106-01 | 82LF-106-01 | 1-1/4 | 1.25 | 2.37 | 4.75 | 2.87 | 5.50 |
| 82-107-01 | 82LF-107-01 | 1-1/2 | 1.50 | 2.62 | 5.25 | 3.37 | 8.00 |
| 82-108-01 | 82LF-108-01 | 2 | 2.00 | 3.01 | 6.03 | 3.68 | 8.00 |
| 82-109-01 | 82LF-109-01 | 2-1/2 | 2.50 | 3.62 | 7.25 | 5.14 | 9.75 |
| 82A-140-01 | - | 3 | 3.00 | 4.18 | 8.37 | 8.10 | 19.13 |
| 82A-14A-01 | - | 4 | 4.00 | 5.43 | 10.86 | 8.88 | 19.13 |

## 82-200 SERIES — FULL PORT BRONZE THREE-PIECE SOLDER/BRAZED END VALVE



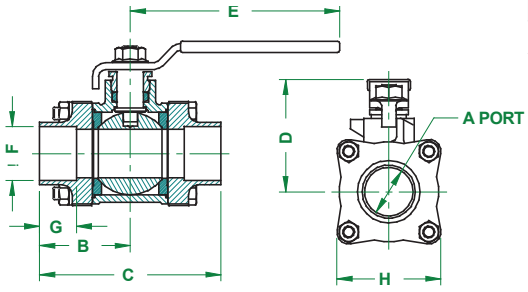
Valve features full port and is easily repaired inline. Designed for soft soldering or brazed* installation. Includes RPTFE seats and seals.

### FEATURES

- ASTM B584 Bronze
- SAE Grade 8 Body Bolts
- 600 CWP, Non-Shock
- 150 SWP Steam Rating
- 82-24X with SS Ball and Stem Option

**Lead Free option (82LF)**

- EZ-Solder™ Lead Free Bronze
- NSF/ANSI 61-G and NSF/ANSI 372 Lead Free
- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag

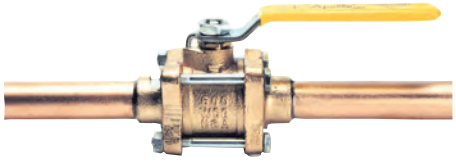


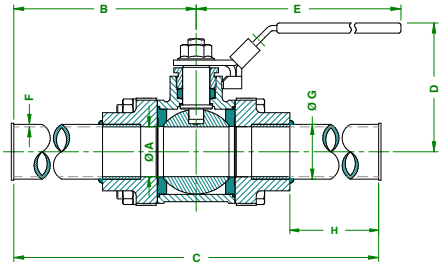

### DIMENSIONS

| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | G | H |
| 82-202-01 | 82LF-202-01 | 3/8 | 0.44 | 1.28 | 2.56 | 1.81 | 3.87 | 0.50 | 0.38 | 1.60 |
| 82-203-01 | 82LF-203-01 | 1/2 | 0.56 | 1.40 | 2.81 | 1.93 | 4.87 | 0.63 | 0.50 | 1.78 |
| 82-204-01 | 82LF-204-01 | 3/4 | 0.83 | 1.71 | 3.43 | 2.18 | 4.87 | 0.88 | 0.75 | 1.98 |
| 82-205-01 | 82LF-205-01 | 1 | 1.00 | 1.93 | 3.87 | 2.62 | 5.50 | 1.13 | 0.90 | 2.22 |
| 82-206-01 | 82LF-206-01 | 1-1/4 | 1.25 | 2.37 | 4.75 | 2.87 | 5.50 | 1.38 | 0.97 | 2.70 |
| 82-207-01 | 82LF-207-01 | 1-1/2 | 1.50 | 2.62 | 5.25 | 3.37 | 8.00 | 1.63 | 1.09 | 3.03 |
| 82-208-01 | 82LF-208-01 | 2 | 2.00 | 3.01 | 6.03 | 3.68 | 8.00 | 2.13 | 1.34 | 3.87 |
| 82-209-01 | 82LF-209-01 | 2-1/2 | 2.50 | 3.62 | 7.25 | 5.14 | 9.75 | 2.63 | 1.47 | 5.05 |
| 82A-240-01 | - | 3 | 3.00 | 4.18 | 8.37 | 8.10 | 19.13 | 3.13 | 1.66 | 5.82 |
| 82A-24A-01 | - | 4 | 4.00 | 5.43 | 10.86 | 8.88 | 19.13 | 4.13 | 2.16 | 7.77 |

**82LF-2xxA intended for soft solder installation using solders with melting temperature of < 500°F.

## 82-200/82-240 SERIES — MALE EXTENSIONS - NO GAUGE PORTS






### DIMENSIONS

| Standard | | Oxygen Cleaned | | | | | Size (in.) | Dimensions (In.) | | | | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trim Plated Part Number | 316SS Ball & Stem Part Number | Trim Plated Part Number | 316SS Ball & Stem Part Number | 316SS Ball, Stem & Ext. Trim Part Number | Trim Plated Part Number | 316SS Ball & Stem Part Number | | A | B | C | D | E | F | G | H | |
| w/ non Locking Handle | | w/ non Locking Handle | | | w/ Locking Handle | | | | | | | | | | | |
| 82-203-B8 | 82-243-A8 | 82-203-K1 | 82-243-K1 | 82-243-C4 | 82-203-G3 | 82-243-G3 | 1/2" | 5/8 | 0.62 | 0.049 | 13.81 | 2.00 | 4.87 | 6.00 | 5.50 | 1.66 |
| 82-204-A8 | 82-244-B3 | 82-204-K1 | 82-244-K1 | 82-244-C6 | 82-204-G3 | 82-244-G3 | 3/4" | 7/8 | 0.81 | 0.065 | 13.93 | 2.18 | 4.87 | 6.00 | 5.25 | 2.37 |
| 82-205-B7 | 82-245-B1 | 82-205-K1 | 82-245-K1 | 82-245-E3 | 82-205-G3 | 82-245-G3 | 1" | 1-1/8 | 1.00 | 0.065 | 14.04 | 2.62 | 5.50 | 6.00 | 5.09 | 3.43 |
| 82-206-B7 | 82-246-B0 | 82-206-K1 | 82-246-K1 | 82-246-C0 | 82-206-G3 | 82-246-G3 | 1-1/4" | 1-3/8 | 1.25 | 0.065 | 14.75 | 2.89 | 5.50 | 6.00 | 5.03 | 5.52 |
| 82-207-B2 | 82-247-B2 | 82-207-K1 | 82-247-K1 | 82-247-C6 | 82-207-G3 | 82-247-G3 | 1-1/2" | 1-5/8 | 1.50 | 0.072 | 15.07 | 3.37 | 8.00 | 6.00 | 4.91 | 8.51 |
| 82-208-B7 | 82-248-B2 | 82-208-K1 | 82-248-K1 | 82-248-C4 | 82-208-G3 | 82-248-G3 | 2" | 2-1/8 | 2.00 | 0.083 | 15.23 | 3.70 | 8.00 | 6.00 | 4.66 | 14.20 |
| 82-209-A2 | 82-249-A2 | 82-209-K1 | 82-249-K1 | - | 82-209-G3 | 82-249-G3 | 2-1/2" | 2-5/8 | 2.50 | 0.095 | 23.51 | 5.14 | 9.38 | 9.60 | 8.13 | 26.8 |
| - | 82A-240-A2 | - | 82A-240-K1 | - | - | - | 3" | 3-1/8 | 3.00 | 0.109 | 24.00 | 6.77 | 18.00* | 9.40 | 7.76 | 42.24 |
| - | 82A-24A-A0 | - | 82A-24A-K1 | | | | 4" | 4-1/8 | 4.00 | 0.134 | 25.50 | 8.26 | 18.00* | 9.41 | 7.25 | 106.0 |

** 3" & 4" valves are equipped with adjustable lever handles. Locking adjustable length handles standard.*

## 82-200/82-240 SERIES THREE-PIECE FULL PORT VALVE WITH BRAZED TUBE EXTENSIONS

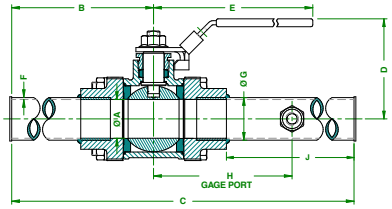
### "F1 - 1 Gauge Port", "F3 - 2 Gauge Ports", & "No Gauge Port" Configurations

- Bronze Valve Body & End Caps
- RPTFE Seats and Stem Packing
- 600 psig CWP Non-Shock (3" & 4" 400 CWP)
- Vacuum Service to 29" Hg
- Full Port in All Sizes
- Blowout-Proof Stem Design
- Adjustable Packing Nut
- In-Line Repairable
- Latch Lock Handle
- Cleaned and Bagged for Oxygen
- Service per CGA G4.1 & NFPA 99
- Factory Brazed Male Extensions Allow Solder or Brazed Installation Without Disassembly
- Type K Copper Tubing Brazed Into Both End Caps
- **Made in USA**

### OUTSIDE THE ZONE BOX

NFPA 99 requires the valves to be secured in the open position. For medical gas applications that are Outside-the-Zone-Box, Apollo® offers three standard configurations: "F1" (1 gauge port), "F3" (2 gauge ports) & no gauge ports.

## 82-200-F1/82-240-F1 SERIES MALE EXTENSIONS - 1 GAUGE PORT

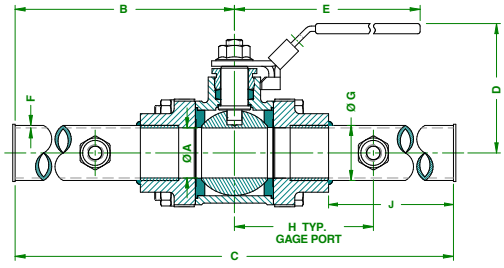



### DIMENSIONS

| Oxygen Cleaned | | | | | Size (in.) | Dimensions (in.) | | | | | | | | | WT. (LBS.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trim Plated Part Number | 316SS Ball & Stem Part Number | Trim Plated Part Number | 316SS Ball & Stem Part Number | 316SS Ball, Stem & Ext. Trim Part Number | | A | B | C | D | E | F | G | H | J | |
| w/ Locking Handle | | w/ non Locking Handle | | | | | | | | | | | | | |
| 82-203-F1 | 82-243-F1 | 82-203-F2 | 82-243-F2 | 82-243-E9 | 1/2" | 0.62 | 6.91 | 17.41 | 2.23 | 5.31 | 0.049 | 0.625 | 7.15 | 9.10 | 1.66 |
| 82-204-F1 | 82-244-F1 | 82-204-F2 | 82-244-F2 | 82-244-E9 | 3/4" | 0.81 | 6.97 | 17.47 | 2.41 | 5.31 | 0.065 | 0.75 | 7.22 | 8.78 | 2.37 |
| 82-205-F1 | 82-245-F1 | 82-205-F2 | 82-245-F2 | 82-245-E9 | 1" | 1.00 | 7.03 | 17.62 | 3.01 | 6.29 | 0.065 | 1.25 | 7.28 | 5.09 | 3.43 |
| 82-206-F1 | 82-246-F1 | 82-206-F2 | 82-246-F2 | 82-246-E9 | 1-1/4" | 1.25 | 7.38 | 22.71 | 3.22 | 6.29 | 0.065 | 1.375 | 7.00 | 12.97 | 5.50 |
| 82-207-F1 | 82-247-F1 | 82-207-F2 | 82-247-F2 | 82-247-E9 | 1-1/2" | 1.50 | 7.50 | 22.57 | 4.04 | 8.93 | 0.072 | 1.625 | 6.74 | 12.48 | 8.51 |
| 82-208-F1 | 82-248-F1 | 82-208-F2 | 82-248-F2 | 82-248-E9 | 2" | 2.00 | 7.74 | 22.58 | 4.15 | 8.93 | 0.083 | 2.125 | 6.51 | 11.76 | 14.0 |
| 82-209-F1 | 82-249-F1 | 82-209-F2 | 82-249-F2 | 82-249-E9 | 2-1/2" | 2.50 | 11.75 | 23.50 | 5.31 | 10.06 | 0.095 | 2.50 | 6.38 | 8.13 | 26.81 |
| - | 82A-240-F1 | - | - | 82A-240-E9 | 3" | 3.00 | 11.94 | 23.87 | 8.10 | 18.00* | 0.0450 | 3.00 | 7.75 | 7.76 | 42.24 |
| - | 82A-24A-F1 | - | - | 82A-24A-E9 | 4" | 4.00 | 12.68 | 25.37 | 8.88 | 18.00* | 0.0700 | 4.00 | 8.00 | 7.25 | 106.0 |

** 3" & 4" valves are equipped with adjustable lever handles. Locking adjustable length handles standard.*

## 82-200-F3/82-240-F3 SERIES MALE EXTENSIONS - 2 GAUGE PORTS

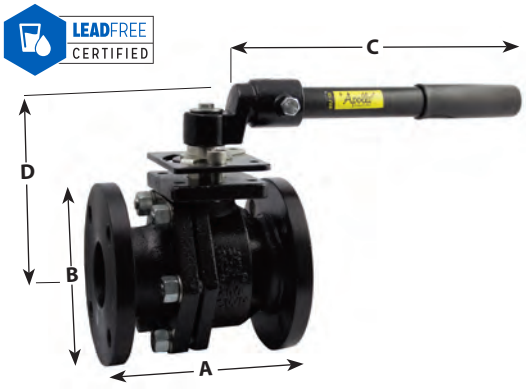



### DIMENSIONS

| Oxygen Cleaned w/ Locking Handle | | Size (in.) | Dimensions (in.) | | | | | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trim Plated Part Number | 316SS Ball & Stem Part Number | | A | B | C | D | E | F | G | H | J | |
| 82-203-F3 | 82-243-F3 | 1/2" | 0.62 | 12.27 | 24.53 | 2.23 | 5.31 | 0.049 | 0.625 | 4.25 | 10.84 | 1.66 |
| 82-204-F3 | 82-244-F3 | 3/4" | 0.81 | 12.25 | 24.50 | 2.41 | 5.31 | 0.065 | 0.75 | 4.24 | 10.53 | 2.37 |
| 82-205-F3 | 82-245-F3 | 1" | 1.00 | 12.30 | 24.60 | 3.01 | 6.29 | 0.065 | 1.25 | 4.24 | 10.32 | 3.43 |
| 82-206-F3 | 82-246-F3 | 1-1/4" | 1.25 | 12.23 | 24.46 | 3.22 | 6.29 | 0.065 | 1.375 | 4.23 | 9.89 | 5.50 |
| 82-207-F3 | 82-247-F3 | 1-1/2" | 1.50 | 12.25 | 24.50 | 4.04 | 8.93 | 0.072 | 1.625 | 4.25 | 9.63 | 8.51 |
| 82-208-F3 | 82-248-F3 | 2" | 2.00 | 12.25 | 24.50 | 4.15 | 8.93 | 0.083 | 2.125 | 4.25 | 9.18 | 14.0 |
| 82-209-F3 | 82-249-F3 | 2-1/2" | 2.50 | 11.75 | 23.50 | 5.31 | 10.06 | 0.095 | 2.50 | 6.38 | 8.13 | 26.81 |
| - | 82A-240-F3 | 3" | 3.00 | 11.94 | 23.87 | 8.10 | 18* | .0450 | 3.00 | 7.75 | 7.78 | 42.24 |
| - | 82A-24A-F3 | 4" | 4.00 | 12.68 | 25.37 | 8.88 | 18* | .0700 | 4.00 | 8.00 | 7.25 | 106.0 |

** 3" & 4" valves are equipped with adjustable lever handles. Locking adjustable length handles standard.*

## 6PLF SERIES — CAST IRON CLASS 125 FLANGED BALL VALVE - LEAD FREE




The cast iron/epoxy coated, Class 125 Apollo International™ 6PLF Series Lead Free* Ball Valves offer unobstructed turbulence-free flow that gate and butterfly valves can't match. Compact design and low profile handle for easy installation in tight areas. Ideal for both potable water and general HVAC applications.

### FEATURES

- A126 Class B Cast Iron Body with FDA Food-Grade Epoxy Powder Coat
- Stainless Steel Ball & Stem
- PTFE Seats
- 200 CWP
- ISO 5211 Mounting Pad for Easy Actuation
- Adjustable Stem Packing
- Full Port Through 6"
- Vacuum Service to 29 in Hg
- Lever Handles 2-6"; Gear Operators 8-10"
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free
- ANSI B16.10 Face-to-Face Dimensions Allow Direct Replacement of Comparable Gate Valves

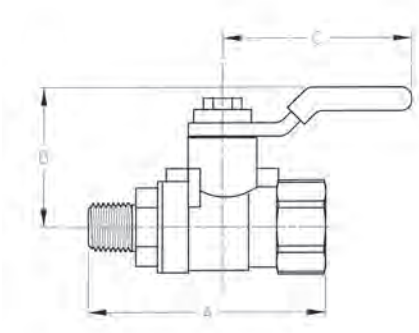
***Not for Steam Service**

### DIMENSIONS

| LF Model Number | Size (in.) | Dimensions (in.) | | | | Wt. | Actuation Kit | Description |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | | | |
| **6PLF-208-01** | 2 | 7.00 | 6.00 | 12.20 | 6.50 | 22.70 | **78253001** | KIT, MTG, 6PLF208 TO A0150 |
| **6PLF-209-01** | 2-1/2 | 7.50 | 7.00 | 13.78 | 7.42 | 36.73 | **78253101** | KIT, MTG, 6PLF209 TO A0150 |
| **6PLF-200-01** | 3 | 8.00 | 7.50 | 13.78 | 8.17 | 46.63 | **78253201** | KIT, MTG, 6PLF200 TO A0150 |
| **6PLF-20A-01** | 4 | 9.00 | 9.00 | 15.75 | 9.00 | 71.83 | **78253301** | KIT, MTG, 6PLF20A TO A0350/0600 |
| **6PLF-20C-01** | 6 | 10.50 | 11.00 | 30.00 | 11.32 | 111.99 | **78253401** | KIT, MTG, 6PLF20C TO A0950 |
| **6PLF-20E-01*** | 8 | 11.50 | 13.50 | 30.00 | 11.32 | 210.54 | **78253501** | KIT, MTG, 6PLF20E/20G TO A01600/A2500 |
| **6PLF-20G-01*** | 10 | 13.00 | 16.00 | 33.00 | 13.05 | 294.10 | **78253501** | KIT, MTG, 6PLF20E/20G TO A01600/A2500 |

**Gear Operated*

## 94 MBV SERIES — MINI BALL VALVE GAS RATED - APOLLO INTERNATIONAL™

Designed for commercial and light industrial use. Full port, constructed of heavy-duty forged brass, PTFE seats and gland follower with double viton o-rings, to prevent stem leakage.

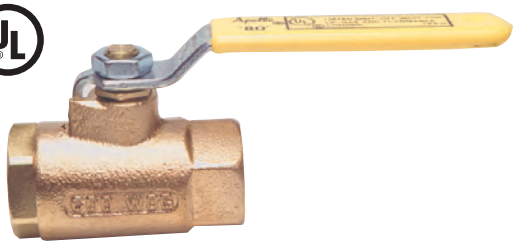
### FEATURES

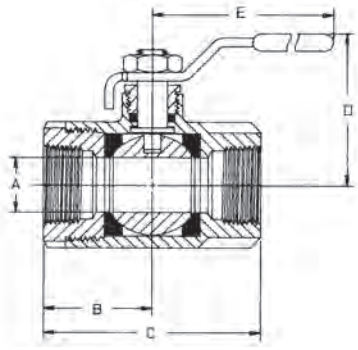
- Reversible Handle
- Blowout-Proof Stem
- Double Viton O-Ring Stem Seals
- Large Raised Wrench Flats
- Chrome Plated Brass Ball
- Ideal for Use as a Gas or Gauge Cock
- Maximum 600 psig at 100°F, Non-Shock
- Temperature Range: -40°F to 300°F
- ANSI Z21.15-2009 / CSA 9.1-2009 (1/2 psi) - Manually Operated Gas Valves for Appliances.
- ASME B16.44-2002 - Manually Operated Metallic Gas Valves for Use in Above Ground Piping Systems (2 and 5 psig)
- MSS-SP110 Compliant

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | Port (Dia.) | Wt. (lbs.) |
|---|---|---|---|---|---|---|
| | | A | B | C | | |
| **94-MBV-01** | 1/4 FNPT x 1/8 MNPT | 1.95 | 1.09 | 1.71 | 0.31 | 0.19 |
| **94-MBV-02** | 1/4 FNPT x 1/4 MNPT | 1.95 | 1.09 | 1.71 | 0.31 | 0.20 |
| **94-MBV-03** | 1/4 FNPT x 1/4 FNPT | 1.68 | 1.09 | 1.71 | 0.31 | 0.17 |
| **94-MBV-04** | 1/8 FNPT x 1/8 MNPT | 1.95 | 1.09 | 1.71 | 0.31 | 0.16 |
| **94-MBV-05** | 1/8 FNPT x 1/8 FNPT | 1.68 | 1.09 | 1.71 | 0.31 | 0.16 |

## 80-100 SERIES — UL LISTED GAS BRONZE SHUT-OFF VALVE






UL listed and designed as safe shut-off valve for LP gas, natural gas, flammable liquids and heated oil. Features easy quarter-turn ON/OFF, a large port to reduce pressure drop and NPT connections.

### FEATURES

- RPTFE Seats and Seals
- Rated 600 psig CWP, Non-Shock
- 250 psig LP Gas
- (-07) Tee Handle
- (-27) Latch Lock Handle
- (-57) Oxygen Cleaned

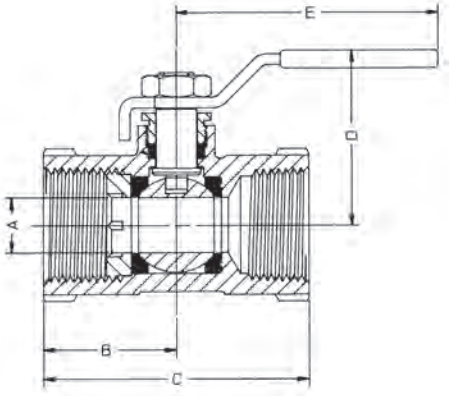
### UL LISTED

- YQNZ - UL1477
- YRBX - UL842
- YRPV - UL842
- YSDT - UL125
- MHKZ - UL842

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **80-101-01** | 1/4 | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 |
| **80-102-01** | 3/8 | 0.37 | 1.03 | 2.06 | 1.75 | 3.87 |
| **80-103-01** | 1/2 | 0.50 | 1.12 | 2.25 | 1.81 | 3.87 |
| **80-104-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 |
| **80-105-01** | 1 | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 |
| **80-106-01** | 1-1/4 | 1.00 | 2.00 | 4.00 | 2.62 | 5.50 |
| **80-107-01** | 1-1/2 | 1.25 | 2.18 | 4.37 | 2.87 | 5.50 |
| **80-108-01** | 2 | 1.50 | 2.34 | 4.68 | 3.06 | 5.50 |
| **80-109-01** | 2-1/2 | 2.50 | 3.25 | 6.50 | 4.12 | 8.00 |
| **80-100-01** | 3 | 2.50 | 3.37 | 6.75 | 4.12 | 8.00 |

## 90-100 SERIES — UL LISTED UNIBODY BRONZE THREADED BALL VALVE




A compact valve that's UL listed at 400 psig CWP, non-shock for fuel, inert gases and flammable liquids. Features ASTM Grade Bronze body, RPTFE seats and seals.

### FEATURES

- Blowout-Proof Stem Design
- One Piece Bronze Body
- Reduced Port
- (-07) Tee Handle Optional

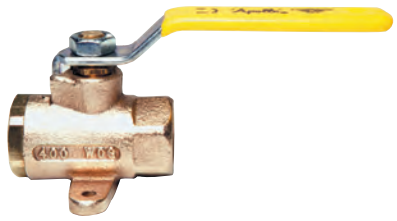
### UL LISTED

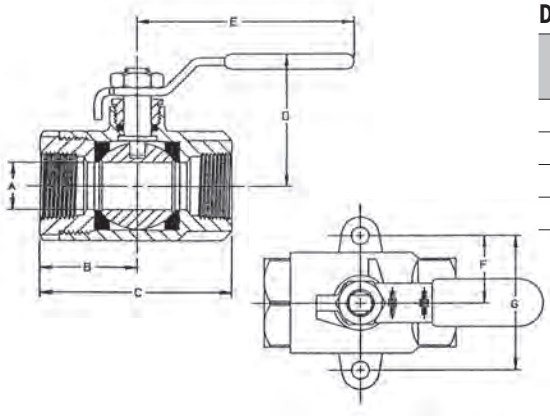
- YQNZ - UL1477
- YRBX - UL842
- YRPV - UL842

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **90-103-01A** | 1/2 | 0.37 | 1.14 | 2.15 | 1.68 | 3.87 |
| **90-104-01A** | 3/4 | 0.50 | 1.36 | 2.61 | 1.75 | 3.87 |
| **90-105-01A** | 1 | 0.62 | 1.50 | 2.90 | 2.00 | 4.87 |
| **90-106-01A** | 1-1/4 | 0.81 | 1.81 | 3.50 | 2.18 | 4.87 |
| **90-107-01A** | 1-1/2 | 1.00 | 2.06 | 3.79 | 2.62 | 5.50 |
| **90-108-01A** | 2 | 1.25 | 2.43 | 4.42 | 2.81 | 5.50 |

## 78-256 SERIES — MULTI PURPOSE SHUT-OFF VALVE WITH MOUNTING EARS






Excellent for use with liquid fuels and often specified as a fuel tank shut-off valve in marine applications. All wetted parts are brass or cast bronze. Mounting ears for easy, positive installation.

### FEATURES

- 400 psig CWP, Non-Shock
- Tested to 100 psig Air Under Water
- NPT Threaded, Both Ends
- RPTFE Seats and Seals
- (-07) Tee Handle Optional

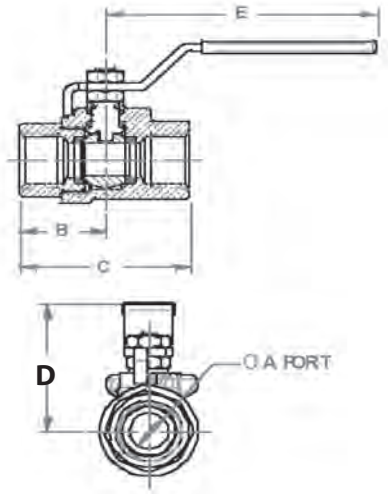
### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G |
| **78-248-01** | 1/4 | 0.43 | 1.12 | 2.25 | 1.78 | 3.87 | 0.93 | 1.87 |
| **78-250-01** | 3/8 | 0.43 | 1.12 | 2.25 | 1.78 | 3.87 | 0.93 | 1.87 |
| **78-256-01** | 1/2 | 0.50 | 1.12 | 2.25 | 1.78 | 3.87 | 0.93 | 1.87 |
| **78-438-01** | 3/4 | 0.68 | 1.50 | 3.00 | 2.12 | 4.87 | 1.06 | 2.12 |

## 77G-UL SERIES — FULL PORT CSA/UL BRONZE GAS SHUT-OFF VALVE

C SP US

UL




UL and CSA listed fuel shut off valve that features a durable bronze body, premium "multi-fill" MPTFE seats and stem packing, and a "Solid Ball" design that delivers true full port flow performance.

### FEATURES

- Blowout-Proof Stem Design
- ASTM B584 Bronze
- Maximum Body Pressure: 600 psig CWP
- CSA Rating: 125 psig
- CSA Rating: -20°F to 150°F
- UL Rating: 250 psig max @ 125°F
- MSS SP-110 ball valves
- CSA to ASME B16.33, 125
- CGA 3.16-M88, 125

### UL LISTED

- YSDT
- YQNZ
- YRBX
- YRPV
- YRPV7
- YRBX7
- MHKZ7
- YSDT7

### DIMENSIONS

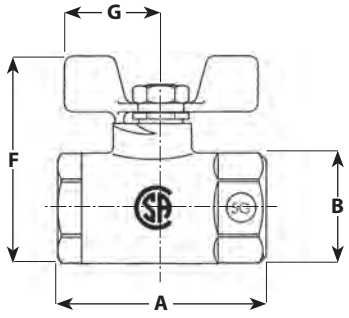
| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **77G-103-UL** | 1/2 | 0.50 | 1.19 | 2.35 | 1.80 | 3.74 | 0.68 |
| **77G-104-UL** | 3/4 | 0.75 | 1.42 | 2.74 | 1.98 | 4.78 | 1.26 |
| **77G-105-UL** | 1 | 1.00 | 1.64 | 3.18 | 2.18 | 4.78 | 2.08 |

## GB-10 SERIES — CSA GAS SHUT-OFF VALVE

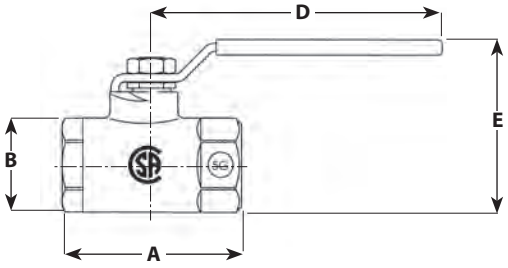
Manual shut-off valves engineered specifically for low pressure gas service. Canadian Standard Association design and capacity certified with American-made quality. High-copper content body, chrome-plated ball, and PTFE seats.

### FEATURES

- Complies with ANSI Z21.15, CR91-002, and ASME 16.44
- Use with Natural, Manufactured, Mixed and Liquefied Petroleum Gases, LP Gas-Air Mixtures
- Temperature Range: 32°F - 125°F at Pressures of 1/2 and 5 psig
- (-01) Standard Die-Cast Zinc "Wing" Handle Epoxy Coated
- (-L1) Lever Hanlde or (-T1) Tee Handle Options
- **Made in USA**




Standard - Yellow Die-Cast Zinc "Wing Handle"




Optional – Stainless Steel "Lever Handle"

### DIMENSIONS

| Model Number | Size (in.) | Connection | BTU/ Hr* | Dimensions (in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | F | G |
| **51GB-201** | 3/8 | 3/8 NPT | 318,700 | 2.04 | 1.06 | 0.38 | 3.85 | 2.24 | 2.20 | 0.81 |
| **51GB-301** | 1/2 | 1/2 NPT | 623,750 | 2.24 | 1.18 | 0.50 | 3.85 | 2.30 | 2.24 | 0.81 |
| **51GB-401** | 3/4 | 3/4 NPT | 1,265,000 | 2.97 | 1.55 | 0.69 | 4.75 | 2.85 | 2.90 | 1.00 |
| **51GB-501** | 1 | 1 NPT | 2,037,500 | 3.33 | 1.81 | 0.88 | 4.75 | 3.10 | 3.15 | 1.00 |

**Capacity based on a gas having a heating value of 1000 Btu/cubic feet and an S.G. of 0.64 at a P.D. of 1" W.C.*

## GB-15 SERIES — GAS BALL VALVE - APOLLO INTERNATIONAL™

Designed for natural gas, manufactured and mixed gas, liquefied petroleum gases and LP gas-air mixture applications.

### FEATURES

- ANSI Z21.15 (Appliance & Hose)/CGA9.1(1/2 psi)
- ASME B16.44 (5 psi)
- UL Guide YRBX (Flammable Liquid Shut-Off)
- UL Guide MHKZ (Manual Valves)
- UL Guide YRPV (Gas Shut-Off -250#)
- UL Guide YSDT (LP Gas)

### DIMENSIONS

| Model Number | Part Number | Size & End Connection (in.) |
|---|---|---|
| **GB-15** | 51GF301A | 1/2 FNPT x 1/2 FNPT |
| **GB-15** | 51GF401A | 3/4 FNPT x 3/4 FNPT |

## GB-50/GB-50A SERIES — CSA GAS SHUT-OFF VALVE

GB-50

GB-50A

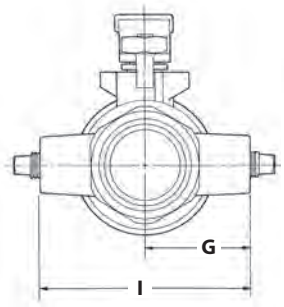
Designed for "main burner" applications with cast-in single or dual pilot tap. ASTM B584 bronze body, chrome-plated ball, brass stem, retainer and gland screws for corrosion resistance.

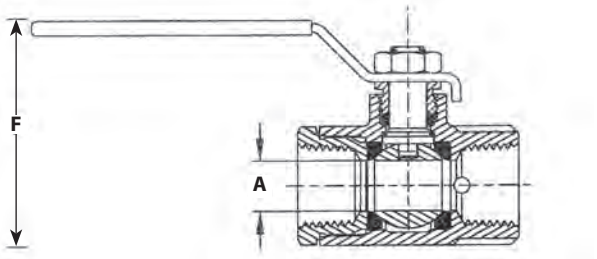
### FEATURES

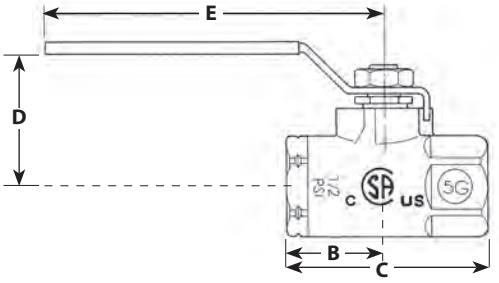
- For Natural Gas, Manufactured and Mixed Gas, Liquefied Petroleum Gases and LP Gas-Air Mixtures
- Rated Pressures of 1/2 and 5 psig
- Standard Connection is FNPT x FNPT
- High BTU Capacity
- Reversible Plated Steel Lever Handle.
- (-07) Tee Handle Optional

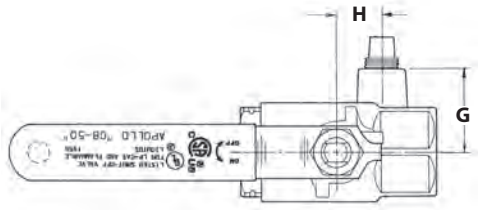
### APPROVALS

- ANSI Z21.15, CGA9.1
- ASME B16.44 (2 and 5 psig)
- MSS-SP110
- UL Guide YRBX
- UL Guide MHKZ
- UL Guide YRPV
- UL Guide YSDT
- UL 125, UL 842




### DIMENSIONS

| Model No. Single Tapped | Model No. Dual Tapped | Size (in.) | Tapping | Dimensions (in.) | | | | | | | | | Capacity BTU/Hr. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | F | G | H | I | |
| 50GB-301 | -- | 1/2 | 1/8 | 0.50 | 1.11 | 2.25 | 1.68 | 3.85 | 2.27 | 1.00 | 0.53 | - | 693,000 |
| 50GB-401 | 50GB-401A | 3/4 | 1/8 | 0.75 | 1.26 | 2.67 | 1.93 | 3.85 | 2.72 | 1.12 | 0.75 | 2.24 | 1,258,000 |
| 50GB-501 | 50GB-501A | 1 | 1/8 | 1.00 | 1.65 | 3.42 | 2.19 | 4.78 | 3.18 | 1.53 | 0.94 | 3.06 | 3,144,000 |
| 50GB-601 | 50GB-601A | 1-1/4 | 1/8 | 1.25 | 1.87 | 3.86 | 2.37 | 4.78 | 3.56 | 1.62 | 1.15 | 3.24 | 6,441,000 |
| 50GB-701 | 50GB-701A | 1-1/2 | 1/8 | 1.50 | 2.05 | 4.22 | 2.81 | 5.40 | 4.21 | 1.81 | 1.31 | 3.62 | 7,745,000 |
| 50GB-801 | 50GB-801A | 2 | 1/8 | 2.00 | 2.48 | 5.02 | 3.18 | 5.40 | 4.93 | 2.18 | 1.68 | 4.36 | 14,741,000 |
| 50GB-5A1 | 50GB-5A1A | 1 | 1/4 | 1.00 | 1.65 | 3.42 | 2.19 | 4.78 | 3.18 | 1.53 | 0.94 | 3.06 | 3,144,000 |
| 50GB-6A1 | 50GB-6A1A | 1-1/4 | 1/4 | 1.25 | 1.87 | 3.86 | 2.37 | 4.78 | 3.56 | 1.62 | 1.15 | 3.24 | 6,441,000 |
| 50GB-7A1 | 50GB-7A1A | 1-1/2 | 1/4 | 1.50 | 2.05 | 4.22 | 2.81 | 5.40 | 4.21 | 1.81 | 1.31 | 3.62 | 7,745,000 |
| 50GB-8A1 | 50GB-8A1A | 2 | 1/4 | 2.00 | 2.48 | 5.02 | 3.18 | 5.40 | 4.93 | 2.18 | 1.68 | 4.36 | 14,741,000 |

**Note: Capacities based on 1000 Btu/cubic feet gas at 0.64 specific gravity, at a P.D. of 1" W.C.*

## 78-124/78-125 SERIES — 5-PORT TANK SELECTOR

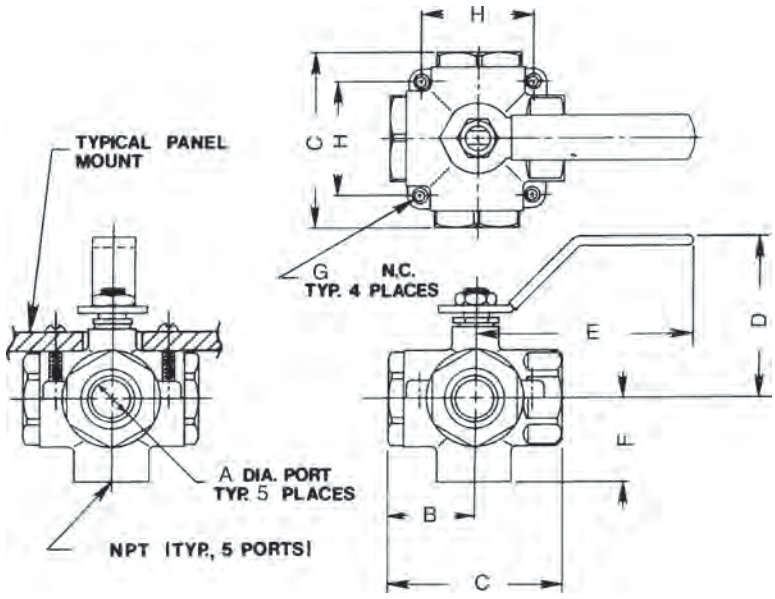
Unique ball design allows for higher flow capacities. Five port construction allows access to four tanks using only one valve.

### FEATURES

- Five NPT Connections
- Bronze Ball Valve with Stainless Steel Lever and Nut
- PTFE Seats and RPTFE Stem Packing
- Stem Packing Adjustable for Wear
- Non-Lubricated
- 50 psig Pressure Rating
- Operation: Four Selected Inlets Feed One Common Outlet
- Pointer on Handle Indicates the Selected inlet
- Easy Mounting Design

### DIMENSIONS

| Series Number | Size (in.) | Dimensions (in.) | | | | | | | | Wt./100 (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | |
| **78-124-01** | 1/2 | 0.50 | 1.26 | 2.52 | 2.27 | 3.53 | 1.12 | 10-24 | 1.40 | 106 |
| **78-125-01A** | 3/4 | 0.75 | 1.56 | 3.12 | 2.93 | 3.87 | 1.53 | 1/4-20 | 1.98 | 264 |



## 77F/77FLF SERIES — FULL PORT THREADED FORGED BRASS BALL VALVE

The Apollo® 77F Series is a full port forged brass ball valve suitable for a wide range of plumbing and heating applications. These NPT threaded or solder, 2-piece valves combine reliable operation with maximum economy. Valves include most pertinent agency approvals. **Proudly Made in the USA.**

### FEATURES

- Heavy Pattern Forged Design
- Full Port Flow
- Superior RPTFE Seats and Packing
- Adjustable Stem Packing
- Blowout-Proof Stem
- Corrosion Resistant Materials
- 100% Factory Tested
- Popular Lever Options and Stainless Steel Trim Available
- Silicone Free Assembly
- **Made in USA, ARRA compliant**
- Rating: 600 CWP (1/4" - 2")
- Rating: 400 CWP (2-1/2" - 4")
- Steam Rating: 150 psi SWP
- Vacuum Service to 29 in. Hg

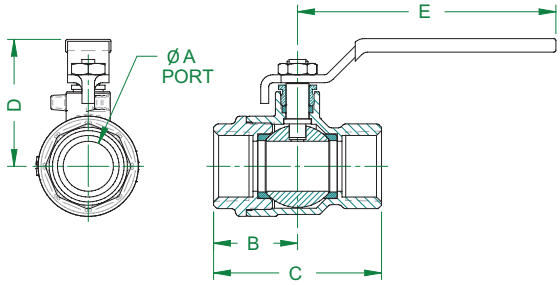
### 77FLF FEATURES

- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag
- EZ-Solder™ Lead Free Brass
- Lead Free Dezincification Resistant Brass
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free
- Rating: 600 CWP (1/4" - 2")
- Rating: 400 CWP (2-1/2" - 4")
- Steam Rating: 150 psi SWP
- Vacuum Service to 29 in. Hg

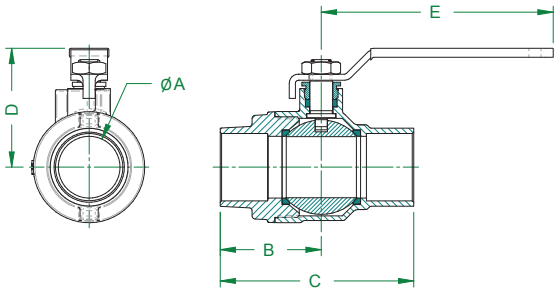
### APPROVALS

- MSS-SP-110
- IAPMO IGC-157 Ball Valves
- CGA 3.16 (125 PSI)
- CGA CR91-002 (5 PSI)
- ANSI Z21.15/CSA 9.1 (1/2 PSI)
- ASME B16.44 (5 PSI)
- ASME B16.33 (125 PSI) (1/2" – 2")
- FM 1140 (1/4" – 2")
- UL Guides: YSDT, MHKZ, YQNZ, YRBX & YRPV
- UL Guide VQGU (1/4" – 2")

Large Diameter



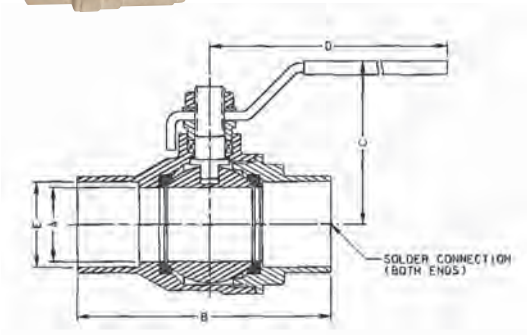

Large Diameter

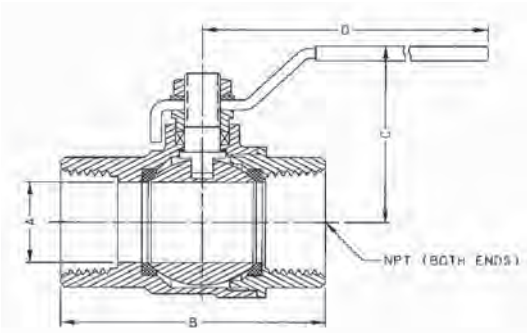



### DIMENSIONS

| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | |
| **THREADED** | | | | | | | | |
| 77F-101-01 | 77FLF-101-01 | 1/4" | 0.38 | 0.81 | 1.62 | 1.61 | 2.85 | 0.3 |
| 77F-102-01 | 77FLF-102-01 | 3/8" | 0.38 | 0.85 | 1.70 | 1.61 | 2.85 | 0.3 |
| 77F-103-01 | 77FLF-103-01 | 1/2" | 0.50 | 1.14 | 2.25 | 1.66 | 2.85 | 0.5 |
| 77F-104-01 | 77FLF-104-01 | 3/4" | 0.75 | 1.26 | 2.51 | 1.91 | 3.86 | 0.8 |
| 77F-105-01 | 77FLF-105-01 | 1" | 1.00 | 1.60 | 3.20 | 2.11 | 3.86 | 1.3 |
| 77F-106-01 | 77FLF-106-01 | 1-1/4" | 1.25 | 1.73 | 3.46 | 2.44 | 4.75 | 2.1 |
| 77F-107-01 | 77FLF-107-01 | 1-1/2" | 1.50 | 2.00 | 4.00 | 2.91 | 5.42 | 3.2 |
| 77F-108-01 | 77FLF-108-01 | 2" | 2.00 | 2.37 | 4.74 | 3.69 | 7.77 | 5.6 |
| 77F-109-01 | 77FLF-109-01 | 2-1/2" | 2.50 | 2.99 | 5.98 | 4.14 | 7.77 | 12.8 |
| 77F-100-01 | 77FLF-100-01 | 3" | 3.00 | 3.52 | 7.05 | 5.03 | 9.92 | 19.7 |
| 77F-10A-01 | 77FLF-14A-01 | 4" | 4.00 | 3.83 | 7.65 | 5.70 | 14.78 | 25.5 |
| **SOLDER** | | | | | | | | |
| 77F-203-01 | 77FLF-203-01 | 1/2" | 0.50 | 1.37 | 2.37 | 1.66 | 2.85 | 0.4 |
| 77F-204-01 | 77FLF-204-01 | 3/4" | 0.75 | 1.72 | 3.13 | 1.91 | 3.86 | 0.9 |
| 77F-205-01 | 77FLF-205-01 | 1" | 1.00 | 2.01 | 3.73 | 2.11 | 3.86 | 1.3 |
| 77F-206-01 | 77FLF-206-01 | 1-1/4" | 1.25 | 2.07 | 3.97 | 2.44 | 4.75 | 2.0 |
| 77F-207-01 | 77FLF-207-01 | 1-1/2" | 1.50 | 2.42 | 4.69 | 2.91 | 5.42 | 3.3 |
| 77F-208-01 | 77FLF-208-01 | 2" | 2.00 | 2.91 | 5.82 | 3.69 | 7.77 | 5.6 |
| 77F-209-01 | 77FLF-209-01 | 2-1/2" | 2.50 | 3.68 | 7.05 | 4.14 | 7.77 | 11.6 |
| 77F-200-01 | 77FLF-200-01 | 3" | 3.00 | 4.26 | 8.15 | 5.03 | 9.92 | 19.3 |
| 77F-20A-01 | 77FLF-24A-01 | 4" | 4.00 | 4.82 | 9.57 | 5.70 | 14.78 | 25.6 |

## 94A SERIES — ECONOMY FULL PORT BALL VALVE - APOLLO INTERNATIONAL™




These full port ball valves with forged brass body are UL listed and CSA approved. Ideal for general purpose non-potable applications including air, gas, HVAC, irrigation, fire protection, etc.

### FEATURES

- Adjustable Stem Packing Nut
- Meets MSS SP110 Requirements
- 600 CWP Non-Shock (1/4" - 2")
- Stem Seal O-Ring (Solder Version)
- 400 CWP Non-Shock (2-1/2" - 4")
- 2-1/4" Memory Stop Kit Option
- 100% Factory Tested
- Lead Free Option (94ALF-A)

### APPROVALS

**CSA Listed**

(File # 226234) per the following standards:

- CAN 1-9.1 1/2 psig
- CGA 3.16 125 psig
- CGA CR91-002 5 psig
- ANSI Z21.15 1/2 psig
- ASME B16.44 5 psig
- ANSI/ASME B16.33 125 psig

**UL listed**

- Guides YQNZ, YRBX, YRPV,
- YSDT and MHKZ (1/4" - 4" NPT only)
- UL 258 – VQGU Fire Protection Trim & Drain 175# max (1/4" – 2")

**FM 1140 Fire Protection Quick Opening Valves**

- *Gas approvals apply to NPT models only

### DIMENSIONS

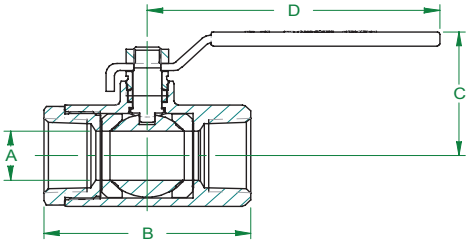
| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **THREADED** | | | | | | | |
| **94A-101-01** | 1/4" | 0.395 | 1.746 | 1.840 | 3.543 | – | 0.33 |
| **94A-102-01** | 3/8" | 0.407 | 1.756 | 1.840 | 3.543 | – | 0.30 |
| **94A-103-01** | 1/2" | 0.583 | 2.047 | 1.921 | 3.543 | – | 0.44 |
| **94A-104-01** | 3/4" | 0.748 | 2.362 | 2.087 | 3.780 | – | 0.66 |
| **94A-105-01** | 1" | 0.945 | 2.756 | 2.559 | 4.528 | – | 1.10 |
| **94A-106-01** | 1-1/4" | 1.260 | 3.307 | 2.953 | 4.528 | – | 1.57 |
| **94A-107-01** | 1-1/2" | 1.575 | 3.661 | 3.346 | 5.512 | – | 2.40 |
| **94A-108-01** | 2" | 1.969 | 4.181 | 3.681 | 5.512 | – | 3.37 |
| **94A-109-01** | 2-1/2" | 2.520 | 5.378 | 4.764 | 8.661 | – | 7.60 |
| **94A-100-01** | 3" | 2.953 | 6.039 | 5.079 | 8.661 | – | 9.36 |
| **94A-10A-01** | 4" | 3.898 | 7.386 | 5.866 | 9.606 | – | 16.85 |
| **SOLDER** | | | | | | | |
| **94A-203-01** | 1/2" | 0.583 | 2.047 | 1.839 | 3.543 | 0.630 | 0.38 |
| **94A-204-01** | 3/4" | 0.748 | 2.748 | 1.996 | 3.780 | 0.878 | 0.64 |
| **94A-205-01** | 1" | 0.945 | 3.228 | 2.441 | 4.528 | 1.130 | 0.99 |
| **94A-206-01** | 1-1/4" | 1.260 | 3.819 | 2.854 | 4.528 | 1.378 | 1.40 |
| **94A-207-01** | 1-1/2" | 1.575 | 4.425 | 3.169 | 5.512 | 1.630 | 2.17 |
| **94A-208-01** | 2" | 1.969 | 5.315 | 3.449 | 5.512 | 2.130 | 2.97 |
| **94A-209-01** | 2-1/2" | 2.520 | 6.283 | 4.764 | 8.661 | 2.630 | 6.36 |
| **94A-200-01** | 3" | 2.953 | 7.150 | 5.079 | 8.661 | 3.130 | 8.32 |
| **94A-20A-01** | 4" | 3.945 | 9.276 | 5.866 | 9.606 | 4.130 | 15.78 |

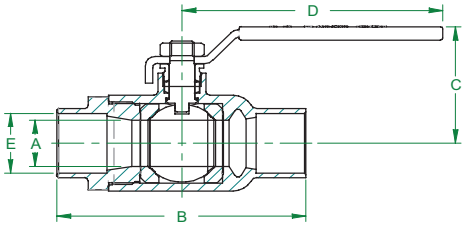
### 94A OPTIONS

| Size | Replacement Handles | 2-1/4" Stem Extension + Memory Stop Kit |
|---|---|---|
| 1/4"-3/8" | W932400 | 78217101 |
| 1/2" | W932500 | 78217201 |
| 3/4" | W936000 | 78217301 |
| 1" | W932600 | 78217401 |
| 1-1/4" | W932700 | 78217501 |
| 1-1/2"-2" | W932800 | 78217601 |
| 2-1/2"-3" | W932900 | 78217701 |
| 4" | W933000 | 78217801 |

*- Kits do not include stem nut*
*- Replacement handles are not UL marked*

## 94ALF-A SERIES — ECONOMY FULL PORT BALL VALVE - APOLLO INTERNATIONAL™




These Lead Free ball valves with forged DZR brass body are UL listed and CSA approved. Ideal for plumbing and heating, fuel gas, fire protection and other general purpose applications.

### FEATURES

- Lead Free* Materials and Certification
- Solders Like Standard Brass
- Distinctive White "Lead Free" Handle Grip and Blue "Lead Free" Hang Tag
- 2-Piece, Full-Port Design
- Blowout-Proof Stem
- Adjustable Stem Packing Nut
- Multiple Agency Approvals
- Stem Seal O-Ring (Solder Version)
- Valve Design Rating: 600 CWP – 1/4 to 2" , 400 CWP – 2-1/2" to 4"
- Temperature Range: -20°F to 366°F
- 100% Factory Tested

### APPROVALS

- MSS SP-110 - Ball Valves
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free
- IAPMO IGC 157 (cUPC)
- ANSI Z21.15 (½ psi) (CSA 9.1) (1/4" – 2")
- ASME B16.44 (5 psi) (CR91-002) (1/4" – 2")
- ASME B16.33 (125 psi) (CGA 3.16) (1/4" – 2")
- UL: Guides YQNZ, YRBX, YRPV, YSDT and MHKZ (1/4" - 4" NPT only)
- UL 258 – VQGU Fire Protection Trim & Drain 175# max (1/4" – 2")
- FM 1140 (1/4" - 2" NPT & Solder) Fire Protection Quick Opening Valves

*Gas approvals apply to NPT models only

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **THREADED** | | | | | | | |
| **94ALF-101-01A** | 1/4" | 0.39 | 1.76 | 1.73 | 3.54 | - | 0.29 |
| **94ALF-102-01A** | 3/8" | 0.39 | 1.76 | 1.73 | 3.54 | - | 0.30 |
| **94ALF-103-01A** | 1/2" | 0.59 | 2.05 | 1.94 | 3.54 | - | 0.44 |
| **94ALF-104-01A** | 3/4" | 0.75 | 2.36 | 2.11 | 3.78 | - | 0.71 |
| **94ALF-105-01A** | 1" | 0.95 | 2.76 | 2.58 | 4.53 | - | 1.10 |
| **94ALF-106-01A** | 1-1/4" | 1.26 | 3.31 | 2.96 | 4.53 | - | 1.63 |
| **94ALF-107-01A** | 1-1/2" | 1.58 | 3.66 | 3.37 | 5.51 | - | 2.41 |
| **94ALF-108-01A** | 2" | 1.97 | 4.18 | 3.70 | 5.51 | - | 3.66 |
| **94ALF-109-01A** | 2-1/2" | 2.52 | 5.38 | 4.76 | 8.66 | - | 7.60 |
| **94ALF-100-01A** | 3" | 2.95 | 6.04 | 5.08 | 8.66 | - | 9.60 |
| **94ALF-10A-01A** | 4" | 3.90 | 7.39 | 5.86 | 9.61 | - | 21.00 |
| **SOLDER** | | | | | | | |
| **94ALF-203-01A** | 1/2" | 0.59 | 2.05 | 1.84 | 3.54 | 0.63 | 0.40 |
| **94ALF-204-01A** | 3/4" | 0.75 | 2.75 | 2.00 | 3.78 | 0.88 | 0.68 |
| **94ALF-205-01A** | 1" | 0.95 | 3.23 | 2.45 | 4.53 | 1.13 | 1.15 |
| **94ALF-206-01A** | 1-1/4" | 1.26 | 3.82 | 2.86 | 4.53 | 1.38 | 1.53 |
| **94ALF-207-01A** | 1-1/2" | 1.57 | 4.43 | 3.17 | 5.51 | 1.63 | 2.31 |
| **94ALF-208-01A** | 2" | 1.96 | 5.38 | 3.49 | 5.51 | 2.13 | 3.77 |
| **94ALF-209-01A** | 2-1/2" | 2.52 | 6.28 | 4.76 | 8.66 | 2.63 | 6.79 |
| **94ALF-200-01A** | 3" | 2.92 | 7.15 | 5.08 | 8.66 | 3.13 | 8.67 |
| **94ALF-20A-01A** | 4" | 3.90 | 9.28 | 5.87 | 9.61 | 4.13 | 16.67 |

**94ALF-2xx-01A intended for soft solder installation using solders with melting temperature of < 500°F.

### 94ALF-A OPTIONS

| Size | Replacement Handles | 2-1/4" Stem Extension + Memory Stop Kit |
|---|---|---|
| 1/4"-3/8" | W234700 | 78217101 |
| 1/2" | W234800 | 78217201 |
| 3/4" | W234900 | 78217301 |
| 1" | W235000 | 78217401 |
| 1-1/4" | W235100 | 78217501 |
| 1-1/2"-2" | W235200 | 78217601 |
| 2-1/2"-3" | W235300 | 78217701 |
| 4" | W273800 | 78217801 |

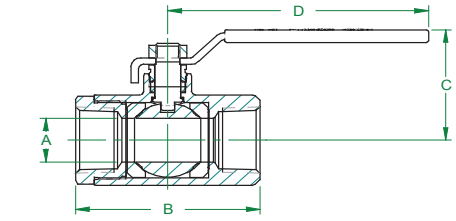
*- Kits do not include stem nut*
*- Replacement handles are not UL marked*

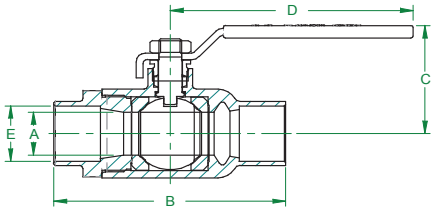
## 95ALF SERIES — FULL PORT STOP & WASTE BALL VALVE

The **Apollo International™** 95ALF Lead Free forged DZR brass ball valves combine reliable operation with maximum economy. Ideal for plumbing or hydronic systems where draining is required. Valves are certified by IAPMO and ANSI 3rd party certified lead free.

### FEATURES

- Lead Free Materials and Certification
- Blowout-Proof Stem Design
- Adjustable Stem Packing Nut
- Drain Port with Finger Tight Shut-Off
- Fast, Quarter-Turn Operation
- Valve Design Rating: 600 CWP
- Temperature Range: 32°F to 250°F
- IAPMO IGC157
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free




### DIMENSIONS

| LF Model Number | Size (in.) | Dimensions (in.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **THREADED** | | | | | | |
| **95ALF-103-01** | 1/2 | 0.59 | 2.24 | 1.78 | 3.74 | - |
| **95ALF-104-01** | 3/4 | 0.79 | 2.53 | 2.09 | 3.94 | - |
| **95ALF-105-01** | 1 | 0.98 | 3.15 | 2.36 | 4.33 | - |
| **SOLDER** | | | | | | |
| **95ALF-203-01** | 1/2 | 0.59 | 2.12 | 1.78 | 3.74 | 0.63 |
| **95ALF-204-01** | 3/4 | 0.79 | 2.87 | 1.94 | 3.94 | 0.88 |
| **95ALF-205-01** | 1 | 0.98 | 3.53 | 2.36 | 4.33 | 1.13 |

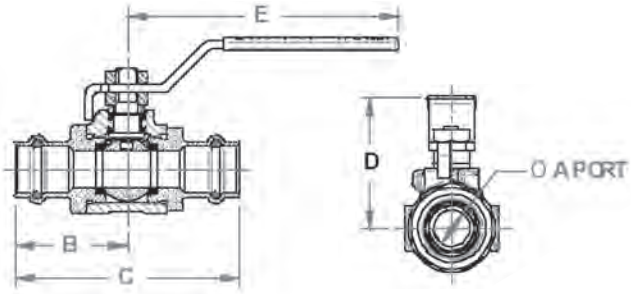
**95ALF-2xx-01 intended for soft solder installation using solders with melting temperature of < 500°F.

## 77W SERIES — APOLLOPRESS® BRONZE FULL PORT BALL VALVE

Apollo® 77W Series APOLLOPRESS® ball valves install in seconds, but the valve and the connection are made to last. Ideal for mechanical and heating systems. Not for use with natural gas.

### FEATURES

- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- 50 CWP, Non-Shock to 250°F max.
- MSS SP-110 Ball Valves
- Adjustable Stem Packing
- Excellent for Hydronic Heating (90% Glycol max)
- Popular Lever Options and Stainless Steel Trim Available
- **Made in the USA**




### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **77W-103-01** | 1/2 | 0.50 | 1.54 | 3.08 | 1.50 | 3.74 | 0.6 |
| **77W-104-01** | 3/4 | 0.75 | 1.78 | 3.55 | 2.01 | 4.78 | 1.1 |
| **77W-105-01** | 1 | 1.00 | 1.93 | 3.86 | 2.20 | 4.78 | 1.8 |
| **77W-106-01** | 1-1/4 | 1.25 | 2.44 | 4.87 | 3.13 | 7.04 | 4.3 |
| **77W-107-01** | 1-1/2 | 1.50 | 2.91 | 5.81 | 3.10 | 7.04 | 4.6 |
| **77W-108-01** | 2 | 2.00 | 3.74 | 7.47 | 3.48 | 7.04 | 8.2 |

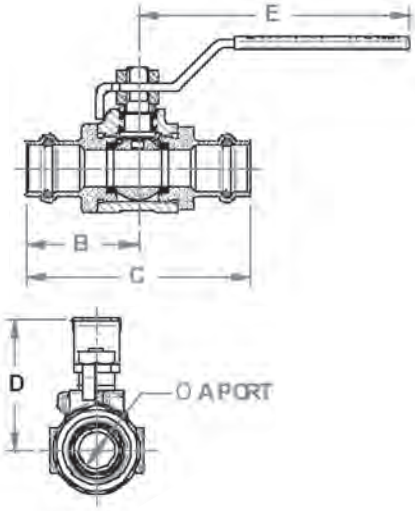
## 77WLF SERIES — APOLLOPRESS® LEAD FREE BRONZE FULL PORT BALL VALVE

LEADFREE CERTIFIED

Apollo® 77W Series APOLLOPRESS® ball valves install in seconds, but the valve and the connection are made to last. Ideal for mechanical and heating systems. Not for use with natural gas.

### FEATURES

- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- 250 CWP, Non-Shock to 250°F max.
- MSS SP-110 Ball Valves
- NSF/ANSI 61-8 (2010) Compliant
- NSF/ANSI 372 Lead Free
- Adjustable Stem Packing
- Excellent for Hydronic Heating (90% Glycol max)
- Popular Lever Options and SS Trim Available
- **Made in the USA**

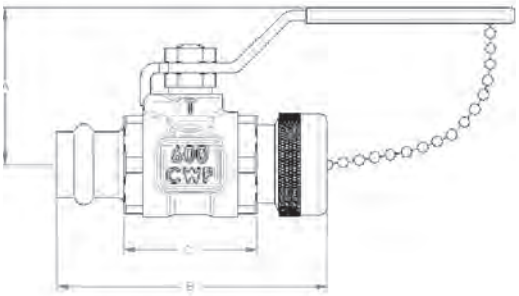



### DIMENSIONS

| LF Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **77WLF-103-01** | 1/2 | 0.50 | 1.54 | 3.08 | 1.50 | 3.74 | 0.6 |
| **77WLF-104-01** | 3/4 | 0.75 | 1.78 | 3.55 | 2.01 | 4.78 | 1.1 |
| **77WLF-105-01** | 1 | 1.00 | 1.93 | 3.86 | 2.20 | 4.78 | 1.8 |
| **77WLF-106-01** | 1-1/4 | 1.25 | 2.44 | 4.87 | 3.13 | 7.04 | 4.3 |
| **77WLF-107-01** | 1-1/2 | 1.50 | 2.91 | 5.81 | 3.10 | 7.04 | 4.6 |
| **77WLF-108-01** | 2 | 2.00 | 3.74 | 7.47 | 3.48 | 7.04 | 8.2 |

## 77W-HC SERIES — APOLLOPRESS® BRONZE HOSE CAP & CHAIN BALL VALVE

LEADFREE OPTIONS



Designed for direct mechanical connection to ASTM B88-Type K, L, and M copper tubing in the hard drawn condition for sizes 1/2"-3/4". Valves feature a 3/4" hose thread connection with heavy brass cap to protect the threads and is full pressure rated. Not for use with natural gas.

### FEATURES

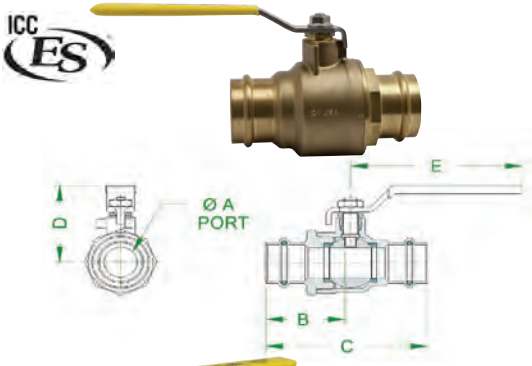
- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- MSS SP-110 Ball Valves
- NSF/ANSI 61-G Compliant (77WLF-HC)
- Adjustable Stem Packing
- 250 CWP, Non-Shock to 250°F max.
- Excellent for Hydronic Heating (90% Glycol max)
- Compatible with Most 77C Series Options
- Heavy Brass Dust Cover is Full Pressure Rated
- Popular Lever and Trim Options Available
- Now with Stronger Stainless Steel Ball Chain *New!*
- **Made in USA**

### DIMENSIONS

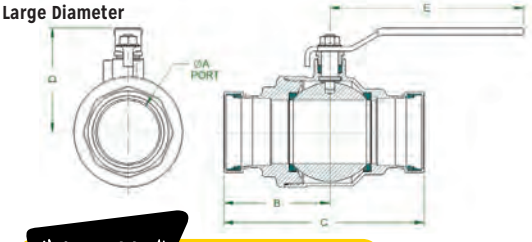
| Model Number | LF Model Number | Size (in.) | Dimensions (in.) | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| **77W-103-HC** | **77WLF-103-HC** | 1/2 | 1.80 | 3.12 | 1.54 | 0.61 |
| **77W-104-HC** | **77WLF-104-HC** | 3/4 | 2.01 | 3.45 | 1.72 | 1.09 |

## 77V SERIES — APOLLOPRESS® BRASS BALL VALVE

ICC ES




Large Diameter




The APOLLOPRESS® 77V Series two-piece press ball valve is ideal for installation in most HVAC systems. Features Leak Before Press® technology and 250 psig maximum working pressure. Proudly Made in the USA.

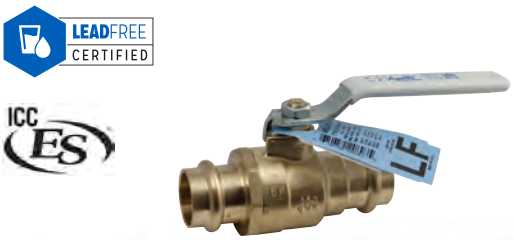
### FEATURES

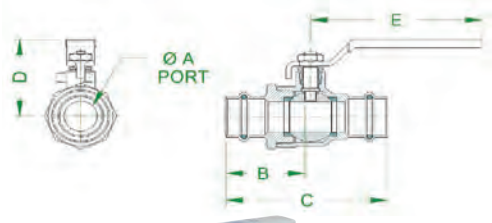
- 2 Piece, Heavy Pattern Forged Design
- Full Port Flow
- Max. Operating Pressure 250 psi
- Temperature Range: 0°F - 250°F
- Superior RPTFE Seats and Packing
- Adjustable Stem packing
- Rigid® XL Press Tool Compatible
  2-1/2" - 4" are XLC Compatible
- Blow-out Proof Stem
- Corrosion Resistant Materials
- Silicone Free Assembly
- 100% Factory Tested
- MSS SP-110 Ball Valves
- Directive 2011/65/CE (RoHS)
- Popular Lever Options and SS Trim Available
- **Made in USA, ARRA Compliant**

### DIMENSIONS

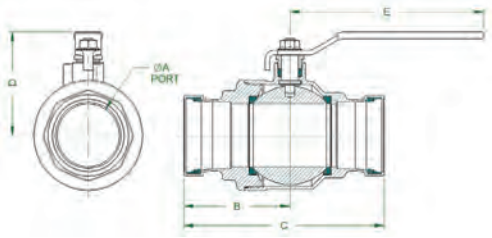
| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **77V-103-01** | 1/2" | 0.50 | 1.57 | 2.89 | 1.66 | 2.85 | 0.4 |
| **77V-104-01** | 3/4" | 0.75 | 1.90 | 3.63 | 1.91 | 3.86 | 0.9 |
| **77V-105-01** | 1" | 1.00 | 2.20 | 3.88 | 2.11 | 3.86 | 1.2 |
| **77V-106-01** | 1-1/4" | 1.25 | 2.23 | 4.22 | 2.44 | 4.75 | 2.3 |
| **77V-107-01** | 1-1/2" | 1.50 | 2.84 | 5.45 | 2.91 | 5.42 | 3.4 |
| **77V-108-01** | 2" | 2.00 | 3.40 | 6.57 | 3.69 | 7.77 | 6.0 |
| **77V-109-01** | 2-1/2" | 2.50 | 4.26 | 8.04 | 4.13 | 7.77 | 12.0 |
| **77V-100-01** | 3" | 3.00 | 5.10 | 9.45 | 5.03 | 9.92 | 19.5 |
| **77V-10A-01** | 4" | 4.00 | 5.20 | 10.35 | 5.70 | 14.78 | 26.0 |

## 77VLF SERIES — APOLLOPRESS® LEAD FREE BRASS BALL VALVE






Large Diameter




The APOLLOPRESS® 77VLF Series Lead Free two-piece press ball valve is ideal for installation in most plumbing and heating systems, including potable water. Features Leak Before Press® technology and 250 psig maximum working pressure. Proudly Made in the USA.

### FEATURES

- Lead Free, ANSI 3rd Party Certified
- 2 Piece, heavy Pattern Forged Design
- Dezincification resistant Materials
- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag
- Full Port flow
- Superior RPTFE Seats and Packing
- Adjustable Stem Packing
- Ridgid® XL Press Tool compatible 2-1/2" - 4" are XLC Compatible
- Blowout-Proof Stem
- Silicone Free Assembly
- 100% Factory Tested
- Maximum Operating Pressure: 250 psi
- Temperature Range: 0°F - 250°F
- MSS SP-110 Ball Valves
- NSF/ANSI 61-G
- NSF/ANSI 372 Lead Free
- IAPMO IGC-157 Ball Valves
- Directive 2011/65/CE (RoHS)
- Popular Lever Options and SS Trim Available
- **Made in USA, ARRA Compliant**

### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| **77VLF-103-01** | 1/2" | 0.50 | 1.57 | 2.89 | 1.66 | 2.85 | 0.4 |
| **77VLF-104-01** | 3/4" | 0.75 | 1.90 | 3.63 | 1.91 | 3.86 | 0.9 |
| **77VLF-105-01** | 1" | 1.00 | 2.20 | 3.88 | 2.11 | 3.86 | 1.2 |
| **77VLF-106-01** | 1-1/4" | 1.25 | 2.23 | 4.22 | 2.44 | 4.75 | 2.3 |
| **77VLF-107-01** | 1-1/2" | 1.50 | 2.84 | 5.45 | 2.91 | 5.42 | 3.4 |
| **77VLF-108-01** | 2" | 2.00 | 3.40 | 6.57 | 3.69 | 7.77 | 6.0 |
| **77VLF-109-01** | 2-1/2" | 2.50 | 4.26 | 8.04 | 4.13 | 7.77 | 12.0 |
| **77VLF-100-01** | 3" | 3.00 | 5.10 | 9.45 | 5.03 | 9.92 | 19.5 |
| **77VLF-14A-01** | 4" | 4.00 | 5.20 | 10.35 | 5.70 | 14.78 | 26.0 |

## 94VLF-A SERIES — APOLLOPRESS® LEAD FREE BALL VALVET

The **CONBRACO™ INTERNATIONAL** 94VLF Series Lead Free two-piece press ball valve is ideal for installation in most plumbing and heating systems, including potable water.

### FEATURES

- Lead Free, ANSI 3rd Party Certified
- Full Port Flow
- PTFE Seats and Packing
- Adjustable Stem Packing
- Ridgid® XL Press Tool Compatible 2-1/2" - 4" are XLC Compatible
- Corrosion Resistant Materials
- 100% Factory Tested
- 2 Year Warranty

### PERFORMANCE RATING

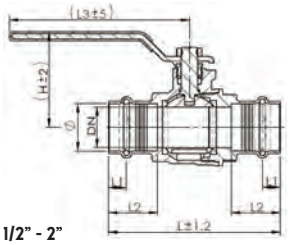
- Maximum Operating Pressure 250 psig
- Temperature Range: 0°F - 250°F

### APPROVALS

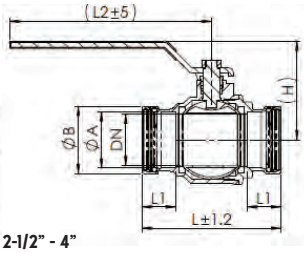
- MSS SP-110 Ball Valves
- NSF/ANSI 61 Section 8
- NSF/ANSI 372 - 3rd Party Certified
- IAPMO IGC-157-2013 Ball Valves

### APPROVED APPLICATIONS

- Water (Including Potable Water)
- Hydronic Heating (90% Glycol max)
- Not Suitable for Flammable Gas Service
- Designed for Direct Mechanical Connection to ASTM B88-Type K, L, and M Copper Tubing in the Hard Drawn Condition
- Not Compatible with Soft Annealed Copper Tubing




1/2" - 2"




2-1/2" - 4"

* ± tolerances shown apply only to mm, not inches

### DIMENSIONS

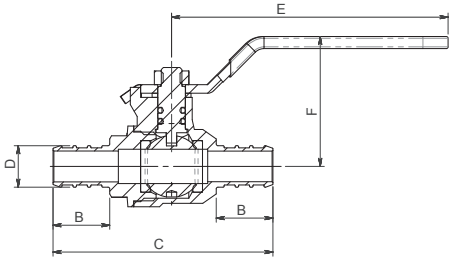
| MODEL NUMBER | SIZE (IN.) | DIMENSIONS (IN.) (MM) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DN | Ø | A | B | L | L1 | L2 | L3 | H |
| 94VLF-103-01A | 1/2" | 14.5 | 0.63 (16.1) | - | - | 3.41 (86.6) | 0.43 (11) | 1.1 (28) | 3.82 (97) | 1.66 (42.2) |
| 94VLF-104-01A | 3/4" | 19 | 0.86 (22.5) | - | - | 3.85 (97.9) | 0.43 (11) | 1.18 (30) | 3.82 (97) | 1.92 (48.7) |
| 94VLF-105-01A | 1" | 25 | 1.13 (28.8) | - | - | 4.13 (105) | 0.43 (11) | 1.18 (30) | 4.41 (112) | 2.3 (58.5) |
| 94VLF-106-01A | 1-1/4" | 32 | 1.39 (35.2) | - | - | 4.59 (116.5) | 0.43 (11) | 1.18 (30) | 5.2 (132) | 2.73 (69.3) |
| 94VLF-107-01A | 1-1/2" | 39 | 1.63 (41.5) | - | - | 5.16 (131.1) | 0.51 (13) | 1.38 (35) | 5.2 (132) | 2.93 (74.5) |
| 94VLF-108-01A | 2" | 50 | 2.13 (54.2) | - | - | 6.00 (152.5) | 0.63 (16) | 1.57 (40) | 6.44 (163.5) | 3.46 (88) |
| 94VLF-109-01A | 2-1/2" | 61.5 | - | 2.64 (67) | 3.15 (80) | 6.5 (165) | 1.57 (40) | 9.45 (240) | - | 4.61 (117) |
| 94VLF-100-01A | 3" | 73.5 | - | 3.13 (79.6) | 3.66 (93) | 7.38 (187.5) | 1.77 (45) | 9.45 (240) | - | 4.96 (126) |
| 94VLF-10A-01A | 4" | 97.5 | - | 4.14 (105.1) | 4.69 (119) | 9.21 (234) | 2.13 (54) | 9.45 (240) | - | 5.91 (150) |

## 94XLF SERIES — APOLLOPEX® BALL VALVE

The Apollo International™ 94XLF Lead Free* DZR forged brass ball valves combine reliable operation with maximum economy. Ideal for plumbing and heating applications including potable water. Valves are ANSI 3rd party Lead Free* certified and listed to NSF 14, NSF 61 and NSF 372.

### FEATURES

- Lead Free* DZR Materials and Certification
- ASTM F1807 PEX Design
- Easily Identifiable "Lead Free" White Handle Grip
- Double O-Ring Stem Seal
- Blowout-Proof Stem Design
- Silicone Free Assembly




### DIMENSIONS

| Model Number | Size (in.) | Dimensions (in.) | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|
| | | B | C | D | E | F | |
| 94XLF-103-01 | 1/2 | 0.65 | 2.52 | .47 | 3.17 | 1.49 | .25 |
| 94XLF-104-01 | 3/4 | 0.65 | 2.62 | .67 | 3.17 | 1.57 | .41 |
| 94XLF-105-01 | 1 | 0.80 | 2.91 | .86 | 3.17 | 1.57 | .57 |


APOLLO
1 USA
"Apollo"
CONBRACO
IND., INC.
U.S.A. 16"
ON
OFF

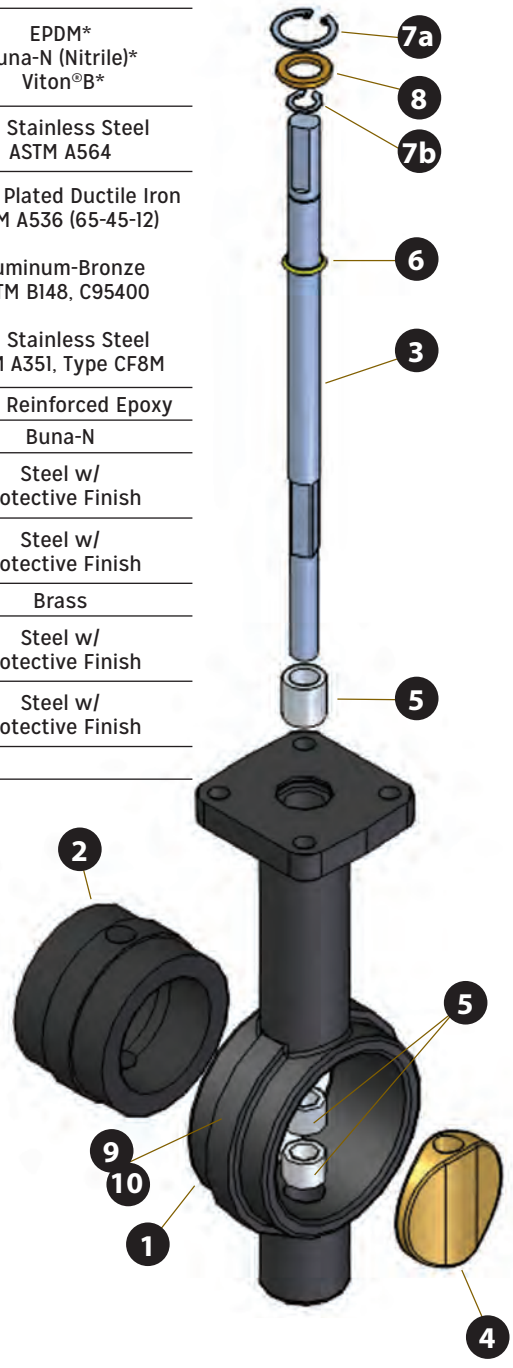
# BUTTERFLY VALVES

## LD/WD 141 & LD/WD 145 SERIES

### STANDARD MATERIALS LIST

| | | |
|---|---|---|
| 1 | **BODY** | Ductile Iron<br>ASTM A536 (65-45-12) |
| 2 | **SEAT** | EPDM*<br>Buna-N (Nitrile)*<br>Viton®B* |
| 3 | **SHAFT** | 416 Stainless Steel<br>ASTM A564 |
| 4 | **DISC** | Nickel Plated Ductile Iron<br>ASTM A536 (65-45-12)<br><br>Aluminum-Bronze<br>ASTM B148, C95400<br><br>316 Stainless Steel<br>ASTM A351, Type CF8M |
| 5 | **BUSHING** | Glass Reinforced Epoxy |
| 6 | **STEM SEAL** | Buna-N |
| 7a | **RETAINER** | Steel w/<br>Protective Finish |
| 7b | **RETAINER** | Steel w/<br>Protective Finish |
| 8 | **WASHER** | Brass |
| 9 | **SET SCREWS (FLAT POINT)** | Steel w/<br>Protective Finish |
| 10 | **SET SCREWS (CONE POINT)** | Steel w/<br>Protective Finish |
| 11 | **NAMEPLATE** | |

WD141 – Wafer Design Shown




**PRESSURE RATING**
- 2" - 12": 200 psi
- 14" - 24": 150 psi

**APOLLO INTERNATIONAL™**
- WD141: One-Piece Wafer-Style, Sizes 2" - 12"
- LD141: Lug Valves, Sizes 2" - 24"

**APOLLO® ASSEMBLED & TESTED IN USA**
- WD145: One-Piece Wafer-Style, Sizes 2" to 12"
- LD145: Lug Valves, Sizes 2" to 12"

**CERTIFICATION**
- Certified to NSF/ANSI 372 Lead Free and NSF/ANSI 61 Water Quality*
- Registered Under Canadian Registration Number CRN# 0C12102.8CL

*NSF 61 does not apply to ductile iron disc option

**BODY DESIGN**
- Ductile Iron ASTM A536
- WD Model: A One-Piece Wafer Design with Flange Locating Holes in Larger Sizes (8" to 12")
- LD Model: Valves are Full Lug with Tapped Lugs, to ANSI 125/150 Drilling. Face-to-Face Dimensions Meet Universal Interchangeability Standards Outlined in MSS SP-67 and API 609
- Models Come Equipped with an Extended Neck Providing at least 2" Clearance Between the Valve Top Plate and Pipe Flange to Allow Ease of Insulation Installation

**BLOWOUT-PROOF SEAT WITH MOLDED IN STIFFENER RING**
- Isolates Body from Process Media
- Valves are Equipped with a Stretch-Resistant, Non-Collapsible Blowout-Proof Seat
- Phenolic Stiffener Ring (2"-12")
- Aluminum Stiffener Ring (14"-24" LD141 Only)

**SEAT – NO GASKETS REQUIRED**
- Seat Design Eliminates the Need for Flange Gaskets
- Installs between standard ANSI 125/150 Flanges

**MOUNTING FLANGE FOR ACTUATOR**
- ISO 5211 Standard Cast in Top Plate
- Designed to Dimensions for Easy Mounting of Apollo® Actuators and Manual Operators

**THROUGH SHAFT**
- Assures Positive Disc Positioning and Dependable Performance

**STEM SEAL**
- Shaft Equipped with Weather Seal to Prevent External Media from Entering the Shaft Bore

**SQUARE SHAFT-TO-DISC CONNECTION**
- Provides a Robust Shaft-to-Disc Connection Without Pins or Bolts
- Easy Maintenance

**THREE BUSHINGS**
- Supports Shaft at Three Locations to Enhance Shaft Alignment and Absorb Actuator Side Thrusts

**PROFILED DISC DESIGN**
- Precision Machined Disc Edge Creates Bubble Tight shutoff, Primary Seal.
- Polished Disc Edge Ensures Long Seat Life, Minimal Torque

**SHAFT SEAL**
- The Shaft Diameter is Greater than the Diameter of the Seat's Shaft Hole Creating a Robust Shaft Seal
- The Stiffening Ring Molded into the Seat Guards Against Distortion, a Frequent Cause of Shaft Leakage

**END OF LINE SERVICE**
- All LD Model Valves are Equipped with Retainer Screws for Dead End service: 2" thru 12" to 200 psig

**TESTING**
- All Valves are 100% Factory Tested Before Shipping

## LD/WD 141 & LD/WD 145 SERIES SPECIFICATIONS

- WD - Ductile Iron, Wafer Body Design
  LD - Ductile Iron, Single Flange, Lug Body Design
- Designed to Fully Comply with **MSS SP-25**, **MSS SP-67**, and **API 609**
- Meets the Intent and Passed AWWA C-504 Section 5* Proof of Design Tests
- NSF/ANSI 372 "Lead Free" in Compliance with the U.S. Safe Drinking Water Act effective January 4, 2014
- NSF/ANSI 61 "Water Quality" (Bronze and Stainless Steel Disc and EPDM and Buna-N (Nitrile) Seats Only)
- Extended Neck to Allow up to 2" of Insulation
- Dead-End Service: Lug Style Valves are Suitable for End of Line Service to their Rated Pressure Without the Use of a Downstream Flange (2" - 12" only)
- Ideal for ON/OFF and Throttling Service
- Designed for Extended Service with Minimal Wear and Maintenance. No Regular Lubrication is Necessary
- Compatible with ASME Class 125 and Class 150 Weld Neck or Slip-On Flanges
- Larger Wafer Body Design Includes Four Alignment Holes 8" to 12" (DN200 to DN300) WD Models
- Polyester Body Coating:
  Resistant to Ultra-Violet Radiation
  Resists a Broad Range of Chemicals Including Dilute Acids,Alkalis, Solvents Alcohols, Greases, and Oils
  Resists Most Impacts Without Chipping or Cracking
- Cartridge Style Seat:
  Isolates Body and Stem from the Media Provides Mating Flange Seals Eliminating the Need for Separate Flange Gaskets Provides Positive Shut-Off of Line Media at Rated Pressures
- EPDM and Buna-N (Nitrile) Seats are Food Grade as Standard
- Profiled Disc Design Assures Bubble-Tight Shut-Off, Minimal Torque and Longer Seal Life
- Double-D shaft Drive 2" to 14" (DN50 - DN350)
  Round and Keyed Shaft Drive 16" to 24" (DN400 - DN600)
- Blowout-Proof Shaft
- Upper and Lower Shaft Bearing Ensure Longer Seat Life and Lower Operating Torque
- Actuator Mounting Flange (top plate) Conforms to ISO 5211 Which Allows Choice of Lever Operators, Gears and Direct Mounting of Many Apollo® Pneumatic and Electric Actuators
- *Specification Applies to 3" - 24" Valves

### SIZE RANGE

141 Series: Apollo International™

| | |
|---|---|
| WD141 (Wafer Body Design): | 2"-12" (DN50 - DN300) |
| LD141 (Single Flange Body Design): | 2"-24" (DN50 - DN600) |

145 Series: Assembled & Tested in USA

| | |
|---|---|
| WD145 (Wafer Body Design): | 2"-12" (DN50 - DN300) |
| LD145 (Single Flange Body Design): | 2"-12" (DN50 - DN300) |

### PRESSURE-TEMPERATURE RATING AT 100°F (37.8°C)

All Body, Disc, Seat Combinations

| | | |
|---|---|---|
| 2"-12" | (DN50 - DN300) | 200 psi (13.8 bar) |
| 14"-24" | (DN350 - DN600) | 150 psi (10.3 bar) |
| All Sizes – Vacuum Rating | | 29 in. Hg (737 mm Hg) |

### TEMPERATURE RATING - SEATS

| | |
|---|---|
| EPDM | -20° F to 250° F Intermittent, 225° F Continuous (-29° C to 107° C) |
| Buna-N (Nitrile) | 10° F to 180° F (-12° C to 82° C) |
| Viton® B | -20° F to 300° F (-29° C to 149° C) |

### FLANGE DRILLING

ANSI 125/150 Drilling Standard
WD - Wafer Body Design: 8"to 12" (DN200 to DN300) Include Two Alignment Holes

### TESTING

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

### SHUTOFF PERFORMANCE

Zero Leakage. Bi-directional, Bubble Tight. All Sizes

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. LD's and WD's are bubble tight, which exceeds Class VI requirements.

## OPTIONS

The following options are available factory installed on any of the LD or WD Series Apollo® Butterfly Valves.

The LC149 series are available either with the standard 10-position handle or with the optional gear operator on sizes 8" and larger. The other options may be purchased in kit form and installed by the user or distributor.

### BARE STEM (MODEL CODE SUFFIX 0)
Select this suffix to specify a butterfly valve without a handle, gear operator or actuator.

### TEN (10) POSITION HANDLE (SUFFIX 1)
The 10 position handle is the most common manual operator for valves 8" and smaller. (It can be specified on valves through 12" size.) The 10 position handle allows the valve to be set in any one of ten positions between fully open and fully closed (approximately 10 degree increments).

### GEAR OPERATOR (SUFFIX 2)
Although the option is available for any size of valve, it is commonly used on valves larger than 6", and is the only manual option offered for valves 14" and larger. All gear operators feature a self-locking design preventing back driving of the gear and drifting in the disc's position. All gear operators are weather resistant and permanently lubricated. They are equipped with position indicators and adjustable travel stops.

### INFINITE POSITION HANDLE (SUFFIX 3)
This option allows the valve to be set at any degree of open and is available for valves 2" through 12".

### LOCKING HANDLE WITH 10 POSITION PLATE (SUFFIX 4)
The option adds a locking device to "suffix 1".

### GEAR OPERATOR w/ CHAINWHEEL (SUFFIX 5)
A manual gear with chainwheel allows an overhead valve to be opened or closed from a location lower than the valve.

### LOCKING GEAR OPERATOR (SUFFIX 7)
A manual gear with lock-out option allows the manual gear to be locked with a padlock.

### LOCKING GEAR OPERATOR w/CHAINWHEEL (SUFFIX 8)
Combination of both chainwheel operator (suffix 5) and the locking device (suffix 7) are also available to work in conjunction with the gear operators described under "suffix 2".

### SELF LOCKING GEAR OPERATORS
Self locking manual gear operators are available for all Apollo® WD and LD Series butterfly valves for heavy duty ON/OFF and throttling service. Gear operators are completely weatherproof and self-lubricating; they're equipped with position indicators and adjustable travel stops. Chainwheel operators are available. **All units feature 12" handwheels with gearing for each size to keep rim pull at 50# or less.**

### HANDLE AND NOTCH PLATE KITS
Handle and notch plate kits are supplied for manual operation, ON/OFF and throttling service. Kit provides positive disc position indication for 2" to 12" WD and LD Series butterfly valves. Locking handle and infinite position handle are also available.

### APOLLO® ACTUATORS
Apollo® Actuators are available as double acting or as spring return and come with a wide variety of corrosion resistant coatings for use in most any application. Standard features include external travel stop adjustments, high temperature, low friction bearings and seals. Mounting kits are available for ease of installation.

**Butterfly valves require pneumatic actuators with dual (open & close) limit stops.**

Apollo® butterfly valves are designed for installation between ANSI Class 125/150 lb. weld-neck or slip-on flanges. While we suggest use of weld neck flanges, Apollo® models are configured to also accept slip-on flanges that eliminate failures associated with conventional butterfly valves. Be sure to properly align flange and valve when using raised face flanges. Type C stub end flanges are not recommended.

Apollo® butterfly valves can be used with schedule 40 and schedule 80 steel pipe. When the valve is properly centered between flanges, the disc of an open butterfly valve will not contact the inside diameter of schedule 40 or schedule 80 steel pipe.

Caution: Adjacent piping and components with reduced inside diameters (Lined pipe, Schedule 80 plastic pipe, As-cast rough fittings, etc) could cause disc-pipe contact which could damage the valve's disc and shaft.

## INSTALLING WD/LD SERIES VALVES

Begin by positioning the disc at partially open; maintain the disc within the body face-to-face. After positioning the valve body between flanges, install flange bolts.

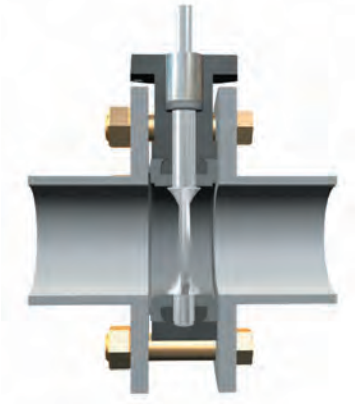
**DO NOT USE FLANGE GASKETS.** Before tightening flange bolts, adjust disc to the full open position. This helps assure proper alignment and clearance between the outside diameter of the disc and the inside diameter of the pipe. Hand tighten the bolts and then wrench tighten in stages following the proper sequential bolt order for the flange. After tightening, rotate disc carefully to closed position to assure proper outside diameter clearance.

## MAINTENANCE

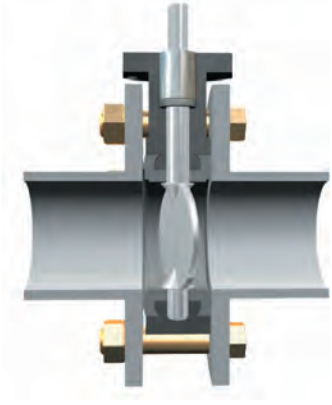
Apollo® butterfly valves are designed for extended service with minimal wear and servicing. No regular lubrication is needed. In case of replacement, put disc in a near closed position and remove from line, spread flanges and support the valve while removing flange bolts.

Always depressurize a piping system when removing a manual or power actuator or performing valve maintenance.

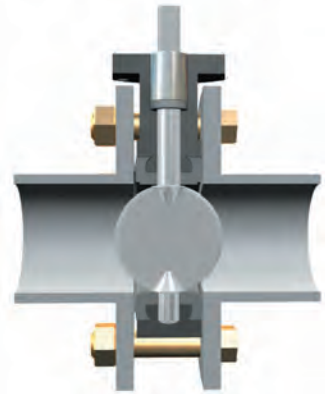
For additional details see appropriate Installation Operation & Maintenance Manual.
(LD141 - I979900, LD145 - I981800, LC149 - I980700)



CLOSED

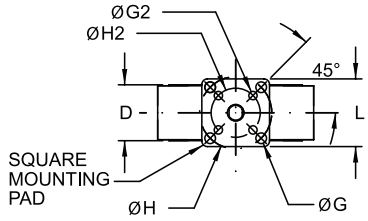


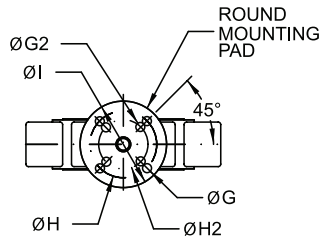
PARTIALLY OPEN



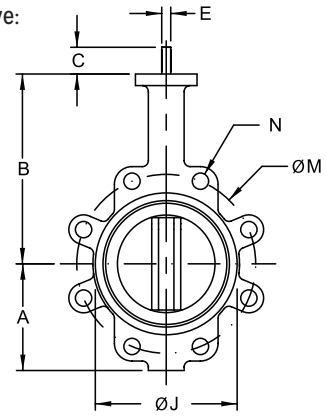
OPEN

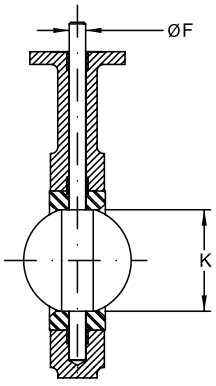
## LD MODEL 2" - 12" 14" - 24"



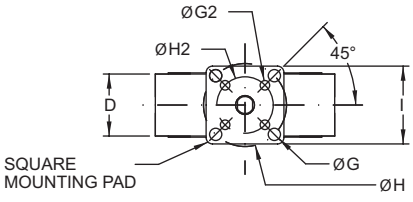

Shaft Drive:
Double-D

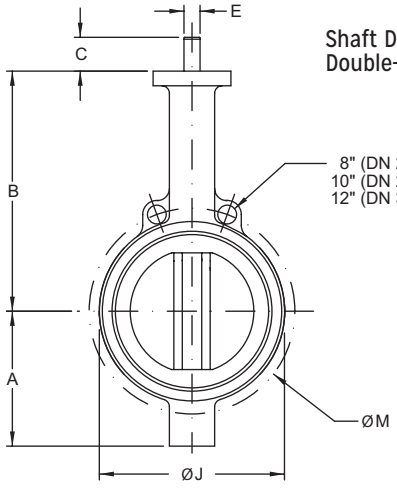



Shaft Drive:
Double-D (14")
Round & Keyed (16" & larger)

## WD MODEL 2" - 12"




Shaft Drive:
Double-D

8" (DN 200) : 2 HOLES, 0.98" DIAMETER
10" (DN 250) : 2 HOLES, 0.98" DIAMETER
12" (DN 300) : 2 HOLES, 0.98" DIAMETER

## LD/WD 141 & LD/WD 145 SERIES — DIMENSIONS

### DIMENSIONS

| Size Inches | Size DN | Dimensions in Inches – 141 & 145 Series | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | ØF | ØG | ØG2 | Key |
| 2 | 50 | 3.25 | 6.38 | 1.25 | 1.75 | 0.394 | 0.496 | 0.375 | -- | -- |
| 2-1/2 | 65 | 3.75 | 6.88 | 1.25 | 1.88 | 0.394 | 0.496 | 0.375 | -- | -- |
| 3 | 80 | 4.00 | 7.13 | 1.25 | 1.88 | 0.394 | 0.496 | 0.375 | -- | -- |
| 4 | 100 | 4.88 | 7.88 | 1.25 | 2.13 | 0.472 | 0.621 | 0.375 | -- | -- |
| 5 | 125 | 5.38 | 8.38 | 1.25 | 2.25 | 0.551 | 0.745 | 0.375 | -- | -- |
| 6 | 150 | 5.88 | 8.88 | 1.25 | 2.25 | 0.551 | 0.745 | 0.375 | -- | -- |
| 8 | 200 | 7.13 | 10.25 | 1.75 | 2.50 | 0.669 | 0.870 | 0.563 | 0.438 | -- |
| 10 | 250 | 8.25 | 11.50 | 1.88 | 2.75 | 0.866 | 1.120 | 0.563 | 0.438 | -- |
| 12 | 300 | 9.75 | 13.25 | 1.88 | 3.13 | 0.945 | 1.244 | 0.563 | -- | -- |
| 14 | 350 | 11.00 | 14.50 | 1.88 | 3.13 | 0.945 | 1.244 | 0.563 | -- | -- |
| 16 | 400 | 12.00 | 15.75 | 2.00 | 3.50 | | 1.313 | 0.563 | -- | .313 sq |
| 18 | 450 | 14.38 | 16.63 | 2.00 | 4.25 | | 1.500 | 0.813 | -- | .375 sq |
| 20 | 500 | 14.63 | 18.88 | 2.50 | 5.25 | | 1.625 | 0.813 | -- | .375 sq |
| 24 | 600 | 18.00 | 22.13 | 2.75 | 6.13 | | 2.000 | 0.813 | -- | .500 sq |

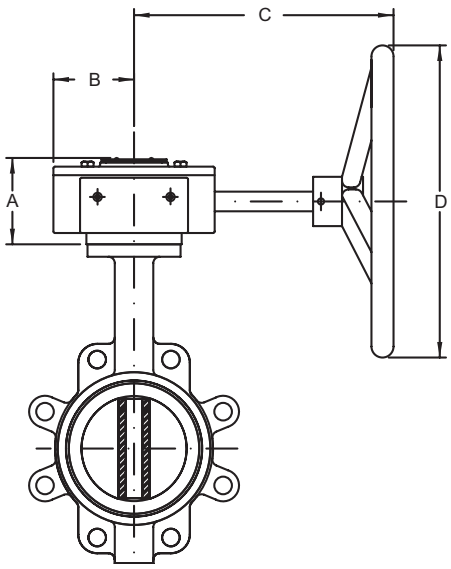
### DIMENSIONS

| Size Inches | Dimensions in Inches – 141 & 145 Series | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ØH | ØH2 | ØI | ØJ | K | L | M | N (# Holes) | N (Tap UNC) |
| 2 | 2.756 | -- | 2.70 | 4.00 | 2.09 | 1.113 | 4.75 | 4 | .625-11 |
| 2-1/2 | 2.756 | -- | 2.70 | 4.75 | 2.54 | 1.706 | 5.50 | 4 | .625-11 |
| 3 | 2.756 | -- | 2.70 | 5.13 | 3.09 | 2.450 | 6.00 | 4 | .625-11 |
| 4 | 2.756 | -- | 2.70 | 6.75 | 4.09 | 3.488 | 7.50 | 8 | .625-11 |
| 5 | 2.756 | -- | 2.70 | 7.75 | 4.85 | 4.296 | 8.50 | 8 | .750-10 |
| 6 | 2.756 | -- | 2.70 | 8.63 | 6.13 | 5.697 | 9.50 | 8 | .750-10 |
| 8 | 4.921 | 4.015 | 4.61 | 10.56 | 7.89 | 7.468 | 11.75 | 8 | .750-10 |
| 10 | 4.921 | 4.015 | 4.61 | 13.06 | 9.89 | 9.484 | 14.25 | 12 | .875-9 |
| 12 | 4.921 | -- | 4.61 | 16.00 | 11.89 | 11.456 | 17.00 | 12 | .875-9 |
| 14 | 4.921 | -- | ø5.91 | 17.13 | 13.38 | 13.000 | 18.75 | 12 | 1.00-8 |
| 16 | 4.921 | -- | ø5.91 | 20.00 | 15.38 | 14.970 | 21.25 | 16 | 1.00-8 |
| 18 | 6.496 | -- | ø8.27 | 21.38 | 17.38 | 16.847 | 22.75 | 16 | 1.125-7 |
| 20 | 6.496 | -- | ø8.27 | 23.31 | 19.38 | 18.650 | 25.00 | 20 | 1.125-7 |
| 24 | 6.496 | -- | ø8.27 | 27.88 | 23.38 | 22.558 | 29.50 | 20 | 1.125-7 |

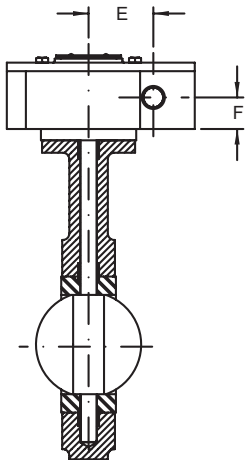
### APPROXIMATE WEIGHT FOR BARE SHAFT VALVE

| Valve Size | | WD Model Lbs (kg) | LD Model Lbs (kg) | Valve Size | | WD Model Lbs (kg) | LD Model Lbs (kg) |
|---|---|---|---|---|---|---|---|
| Inches | DN | | | Inches | DN | | |
| 2 | 50 | 6 (2.7) | 8 (3.6) | 10 | 250 | 44 (20.0) | 62 (28.1) |
| 2.5 | 65 | 6 (2.7) | 10 (4.5) | 12 | 300 | 70 (31.8) | 97 (44.0) |
| 3 | 80 | 7(3.2) | 11 (5.0) | 14 | 350 | | 148 (67.1) |
| 4 | 100 | 11 (5.0) | 17 (7.7) | 16 | 400 | | 206 (93.4) |
| 5 | 125 | 13 (5.9) | 20 (9.1) | 18 | 450 | | 277 (125.6) |
| 6 | 150 | 16 (7.3) | 23 (10.4) | 20 | 500 | | 410 (186.0) |
| 8 | 200 | 29 (13.2) | 39 (17.7) | 24 | 600 | | 592 (268.5) |

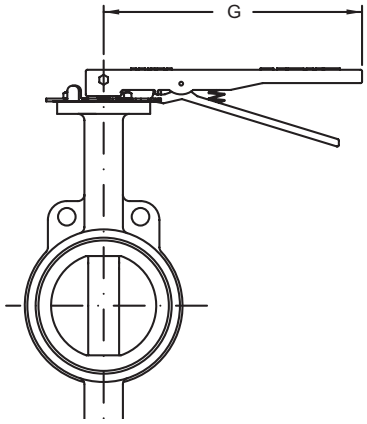
## 141 & 145 SERIES HANDLE & GEAR DIMENSIONS




with Manual Gear




with Manual Gear




with Handle

**All Gear Operators supplied with 12" Handwheels with gearing to provide RIM pull at 50# or less**

### DIMENSIONS

| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F | G |
| 2" | 50 | 30:1 | 3.4 | 3.0 | 9.2 | 11.9 | 2.5 | 1.5 | 10.5 |
| 2.5" | 65 | 30:1 | 3.4 | 3.0 | 9.2 | 11.9 | 2.5 | 1.5 | 10.5 |
| 3" | 80 | 30:1 | 3.4 | 3.0 | 9.2 | 11.9 | 2.5 | 1.5 | 10.5 |
| 4" | 100 | 30:1 | 3.4 | 3.0 | 9.2 | 11.9 | 2.5 | 1.5 | 10.5 |
| 5" | 125 | 30:1 | 3.4 | 3.0 | 9.2 | 11.9 | 2.5 | 1.5 | 10.5 |
| 6" | 150 | 30:1 | 3.4 | 3.1 | 8.9 | 11.9 | 2.5 | 1.5 | 10.5 |
| 8" | 200 | 50:1 | 3.4 | 3.3 | 8.9 | 11.9 | 3.0 | 1.6 | 14.0 |
| 10" | 250 | 50:1 | 3.4 | 3.3 | 8.9 | 11.9 | 3.0 | 1.6 | 14.3 |
| 12" | 300 | 50:1 | 3.4 | 3.3 | 8.9 | 11.9 | 3.0 | 1.6 | 14.3 |
| 14"* | 350* | 50:1 | 3.4 | 3.3 | 8.9 | 11.9 | 3.0 | 1.6 | -- |
| 16"* | 400* | 80:1 | 4.8 | 5.1 | 11.8 | 11.9 | 4.7 | 2.3 | -- |
| 18"* | 450* | 80:1 | 4.8 | 5.1 | 11.8 | 11.9 | 4.7 | 2.3 | -- |
| 20"* | 500* | 300:1 | 5.9 | 5.1 | 13.8 | 11.9 | 4.7 | 2.8 | -- |
| 24"* | 600* | 300:1 | 5.9 | 5.1 | 13.8 | 11.9 | 4.7 | 2.8 | -- |
| 30"* | 750* | 640:1 | 4.9 | 5.1 | 11.9 | 15.7 | 7.8 | 5.0 | -- |
| 36"* | 900* | 640:1 | 4.9 | 5.1 | 11.9 | 15.7 | 9.0 | 5.0 | -- |

** LD141 Series only*

## 141 / 145 & 149 SERIES OPERATING TORQUE

All torque valves shown in the chart are for wet (water and other non-lubricating media) on-off service. For dry services (non-lubricating, dry gas media) multiply the values by 1.15. For lubricous services (clean, non-abrasive lubricating media) multiply values by 0.85.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help ensure correct selection of actuation.

### TORQUE RATING (ft./lbs,)

| Valve Size | | Full Rated Pressures (psig) | | | |
|---|---|---|---|---|---|
| Inches | DN | ΔP 50 | ΔP 100 | ΔP 150 | ΔP 200 |
| 2 | 50 | 100 | 106 | 111 | 117 |
| 2.5 | 65 | 150 | 163 | 176 | 189 |
| 3 | 80 | 207 | 220 | 232 | 244 |
| 4 | 100 | 290 | 323 | 357 | 390 |
| 5 | 125 | 423 | 481 | 540 | 598 |
| 6 | 150 | 599 | 691 | 783 | 875 |
| 8 | 200 | 1060 | 1183 | 1307 | 1430 |
| 10 | 250 | 1671 | 1872 | 2074 | 2275 |
| 12 | 300 | 2568 | 2795 | 3023 | 3250 |
| 14* | 350* | 2640 | 3070 | 3500 | N/A |
| 16* | 400* | 4260 | 4880 | 5500 | N/A |
| 18* | 450* | 6287 | 7243 | 8200 | N/A |
| 20* | 500* | 8360 | 9180 | 10000 | N/A |
| 24* | 600* | 15427 | 16813 | 18200 | N/A |

** LD141 only*

## 141 / 145 & 149 SERIES VELOCITY LIMITS

- For ON/OFF Services
- Non-Abrasive Liquids - 30 feet/sec (9m/sec)
- Gases - 175 feet/sec (54m/sec)

## 141 / 145 & 149 SERIES $C_v$ Data

Cv values (US gallons per minute) represent the flow of 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/cm2. To convert Cv to Kv, multiply the Cv by 0.8569.

### RATED FLOW COEFFICIENT (CV)

| Valve Size | | Angle of Disc Opening (degrees) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | 10˚ | 20˚ | 30˚ | 40˚ | 50˚ | 60˚ | 70˚ | 80˚ | 90˚ |
| 2 | 50 | 0.06 | 3 | 7 | 15 | 27 | 44 | 70 | 105 | 115 |
| 2.5 | 65 | 0.10 | 6 | 12 | 25 | 45 | 75 | 119 | 178 | 196 |
| 3 | 80 | 0.20 | 9 | 18 | 39 | 70 | 116 | 183 | 275 | 302 |
| 4 | 100 | 0.30 | 17 | 36 | 78 | 139 | 230 | 364 | 546 | 600 |
| 5 | 125 | 0.50 | 29 | 61 | 133 | 237 | 392 | 620 | 930 | 1022 |
| 6 | 150 | 0.80 | 45 | 95 | 205 | 366 | 605 | 958 | 1437 | 1579 |
| 8 | 200 | 2 | 89 | 188 | 408 | 727 | 1202 | 1903 | 2854 | 3136 |
| 10 | 250 | 3 | 151 | 320 | 694 | 1237 | 2047 | 3240 | 4859 | 5340 |
| 12 | 300 | 4 | 234 | 495 | 1072 | 1911 | 3162 | 5005 | 7507 | 8250 |
| 14* | 350* | 6 | 338 | 715 | 1549 | 2761 | 4568 | 7230 | 10844 | 11917 |
| 16* | 400* | 8 | 464 | 983 | 2130 | 3797 | 6282 | 9942 | 14913 | 16388 |
| 18* | 450* | 11 | 615 | 1302 | 2822 | 5028 | 8320 | 13168 | 19752 | 21705 |
| 20* | 500* | 14 | 791 | 1674 | 3628 | 6465 | 10698 | 16931 | 25396 | 27908 |
| 24* | 600* | 22 | 1222 | 2587 | 5605 | 9989 | 16528 | 26157 | 39236 | 43116 |

** LD141 only*

*This chart should be used as a general guide. For additional Cv information, consult the **Engineering and Application Data Section.** Cv = the volume of water in U.S. gallons per minute that will pass through a given valve opening with a pressure drop of 1 psig at room temperature.*

## LD/WD 141 & LD/WD 145 SERIES

### LD/WD 141 APOLLO INTERNATIONAL™

LEADFREE CERTIFIED

WD 141
Wafer
2" - 12"

LD 141
Lug
2" - 24"

The Apollo® LD/WD Series ductile iron butterfly valves are ideal for use in industrial and HVAC/mechanical applications. The WD Series is a wafer style valve and the LD Series is a lug style.

#### FEATURES

- Compatible with ANSI 125# & 150# Flanges
- ISO 5211 Top Plate Allows Choice of Apollo® Actuators and Manual Operators
- Conforms to MSS SP-67 & API 609
- LD141 and LD145 Series Suitable for End of Line Service to Rated Pressure (2" - 24")
- 3"-24" Meet Performance Requirements of AWWA C-504
- Certified NSF/ANSI 372 Lead Free
- Certified NSF/ANSI 61 Water Quality*
- Registered Under Canadian Registration Number CRN# 0C12102.8CL

*Applies to Bronze and Stainless Steel Disc Models

#### OPTIONS

- 10 Position Handle
- Gear Operator
- Infinite Position Handle
- Locking Handle
- Gear Operator with Chain Wheel
- Locking Gear Operator
- Locking Gear Operator with Chain Wheel
- Pneumatic Actuation
- Electric Actuation
- (-SF) Silicone Free Assembly Option (145 Series)

### LD/WD 145 MADE IN USA

LEADFREE CERTIFIED

New!

WD 145
Wafer
2" - 12"

LD 145
Lug
2" - 12"

#### PRESSURE-TEMPERATURE RATING @ 100° F (37.8° C)

- All Body, Disc, Seat Combinations:

2"-12" (DN50 - DN300) 200 psi (13.8 bar)
14"-24" (DN350 - DN600) 150 psi (10.3 bar)

- All Sizes – Vacuum Rating: 29 in. Hg

#### TORQUE RATING (in./lbs.)

| Valve Size[1] | | Full Rated Pressures (psig) | | | |
|---|---|---|---|---|---|
| Inches | DN | ΔP50 | ΔP100 | ΔP150 | ΔP200 |
| 2 | 50 | 100 | 106 | 111 | 117 |
| 2.5 | 65 | 150 | 163 | 176 | 189 |
| 3 | 80 | 207 | 220 | 232 | 244 |
| 4 | 100 | 290 | 323 | 357 | 390 |
| 5 | 125 | 423 | 481 | 540 | 598 |
| 6 | 150 | 599 | 691 | 783 | 875 |
| 8 | 200 | 1060 | 1183 | 1307 | 1430 |
| 10 | 250 | 1671 | 1872 | 2074 | 2275 |
| 12 | 300 | 2568 | 2795 | 3023 | 3250 |
| 14 | 350 | 2640 | 3070 | 3500 | N/A |
| 16 | 400 | 4260 | 4880 | 5500 | N/A |
| 18 | 450 | 6287 | 7243 | 8200 | N/A |
| 20 | 500 | 8360 | 9180 | 10000 | N/A |
| 24 | 600 | 15427 | 16813 | 18200 | N/A |

[1] LD (2"-24"); WD (2"-12"); LC (2"-12")
Sizes 28"-48": Contact factory for availability.

Actuation assistance available on page 78, with the Apollo® Actuator Wizard located at actuatorwizard.conbraco.com or by calling customer support at (704)841-6000.

## LD141 SERIES — APOLLO INTERNATIONAL™

New!

The large diameter Apollo Internationall™ LD141 Series Ductile Iron Butterfly Valves are ideal for use in Industrial and Commercial/HVAC/Mechanical applications. The LD141 Series is lug style butterfly valve. Available in sizes 28" - 48".

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- ISO 5211 Top Plate Allows Choice of Apollo® Pneumatic Actuators and Gear Operators
- Conforms to MSS SP-67 & API 609
- Suitable for End of Line Service to Rated Pressure

### PERFORMANCE RATING
- Pressure Rating: 28" to 48": 150 psi

### MATERIAL OPTIONS
**Body**
- Ductile Iron ASTM A536, (65-45-12)

**Seat Material**
- EPDM: -4°F to 248°F Intermittent
- BUNA-N: 14°F to 212°F

**Disc Material**
- Aluminum Bronze
- Ductile Iron A536 Nickel Plated
- 316 Stainless Steel, CF8M

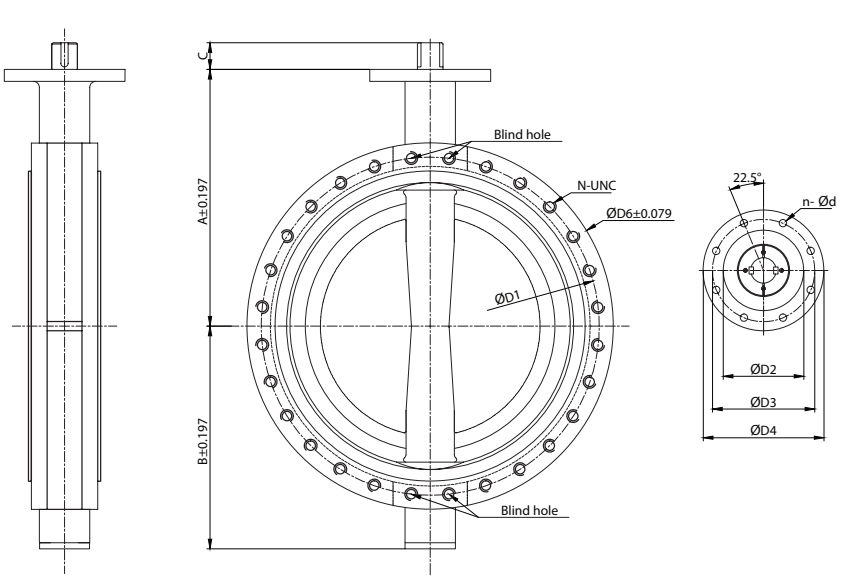
### OPERATOR
- (-0) - None
- (-2) - Gear Operator (12" Handwheels)
- (-5) - Gear Operator w/ Chain Wheel
- (-7) - Locking Gear Operator
- (-8) - Locking Gear Operator w/ Chain Wheel

### STANDARD MATERIAL LIST

| | |
|---|---|
| **BODY** | Ductile Iron ASTM A536 |
| **BUSHINGS** | Bronze |
| **STEM SEAL** | Buna-N |
| **SHAFT** | 416 SS |
| **SEAT** | EPDM |
| | Buna-N (Nitrile) |
| **DISC** | Aluminum Bronze |
| | Ductile Iron / A536 Nickle Plated |
| | 316 Stainless Steel / CF8M |

### DIMENSIONS

| Size (.in) | Dimensions (.in) | | | | | | | | | | | | Weight (.lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | ØD1 | ØD2 | ØD3 | ØD4 | ØD5 | ØD6 | n-unc | n-Ød | |
| **28** | 25.00 | 21.18 | 2.598 | 6.496 | 33.99 | 7.87 | 10.00 | 11.81 | 2.494 | 36.42 | 28 - 1-1/4 | 8-0.709 | 648 |
| **30** | 26.57 | 22.05 | 2.598 | 6.496 | 36.00 | 7.87 | 10.00 | 11.81 | 2.494 | 38.78 | 28 - 1-1/4 | 8-0.709 | 728 |
| **32** | 26.61 | 23.66 | 2.598 | 7.480 | 38.50 | 7.87 | 10.00 | 11.81 | 2.494 | 41.73 | 28 - 1-1/2 | 8-0.709 | 772 |
| **36** | 30.39 | 25.79 | 4.65 | 7.874 | 42.75 | 7.87 | 10.00 | 11.81 | 2.95 | 46.06 | 32 - 1-1/2 | 8-0.709 | 1162 |
| **40** | 31.30 | 28.50 | 5.59 | 8.50 | 47.24 | 7.87 | 10.00 | 11.81 | 3.35 | 50.79 | 36 - 1-1/2 | 8-0.709 | 1526 |
| **42** | 33.78 | 30.59 | 5.91 | 9.88 | 49.50 | 7.87 | 10.00 | 11.81 | 3.74 | 52.95 | 36 - 1-1/2 | 8-0.709 | 2138 |
| **48** | 37.13 | 32.48 | 5.91 | 10.87 | 56.00 | 9.06 | 11.73 | 13.78 | 4.13 | 59.45 | 44 - 1-1/2 | 8-0.866 | 2686 |



## LC149 SERIES — APOLLO INTERNATIONAL™ - CONTRACTOR GRADE

LEADFREE CERTIFIED

The LC149 Series Cast Iron Butterfly Valves are ideal for use in Industrial and HVAC/Mechanical applications. The LC149 Series is a lug style valve designed to be economical yet full featured.

### STANDARD MATERIALS

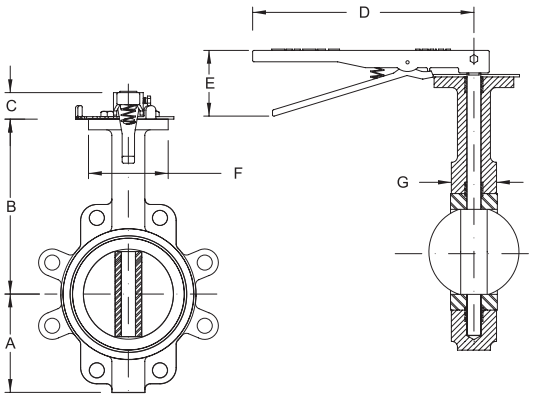
- Body — Cast Iron, ASTM A126 Class B
- Disc — Aluminum Bronze, ASTM B148-C95400
- Shaft — Stainless Steel, ASTM A276, Type 416
- Seat — Black EPDM (FDA Food Grade) with Phenolic Backing
- Bushings — PTFE
- Stem Seal — EPDM

### PERFORMANCE RATING

- Max Operating Pressure: 200 psi (13.8 bar)
- Temperature Range: -30°F @ 225°F

### APPROVALS

- NSF/ANSI 372 Lead Free
- NSF/ANSI 61 Water Quality
- Registered Under Canadian Registration Number CRN# 0C12102.8CL

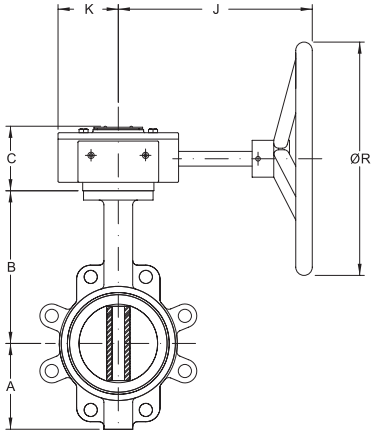


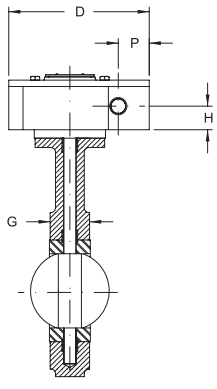

### DIMENSIONS - 149 Series with Handle

| Size (in) | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| 2 | 3.25 | 6.38 | 1.25 | 10.5 | 3.1 | 2.70 | 1.75 |
| 2-1/2 | 3.75 | 6.88 | 1.25 | 10.5 | 3.1 | 2.70 | 1.88 |
| 3 | 4.00 | 7.13 | 1.25 | 10.5 | 3.1 | 2.70 | 1.88 |
| 4 | 4.88 | 7.88 | 1.25 | 10.5 | 3.1 | 2.70 | 2.13 |
| 5 | 5.38 | 8.38 | 1.25 | 10.5 | 3.1 | 2.70 | 2.25 |
| 6 | 5.88 | 8.88 | 1.25 | 10.5 | 3.1 | 2.70 | 2.25 |
| 8 | 7.13 | 10.25 | 1.75 | 14.3 | 3.5 | 4.61 | 2.50 |
| 10 | 8.25 | 11.50 | 1.88 | 14.3 | 3.5 | 4.61 | 2.75 |
| 12 | 9.75 | 13.25 | 1.88 | 14.3 | 3.5 | 4.61 | 3.13 |

### DIMENSIONS - 149 Series with Optional Gear Operator

| Size (in) | Dimensions (.in) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | G | H | J | K | P | ØR |
| 8 | 7.13 | 10.25 | 3.38 | 8.00 | 2.50 | 1.62 | 9.48 | 3.25 | 1.50 | 11.88 |
| 10 | 8.25 | 11.50 | 3.38 | 8.00 | 2.75 | 1.62 | 9.48 | 3.25 | 1.50 | 11.88 |
| 12 | 9.75 | 13.25 | 3.38 | 8.00 | 3.13 | 1.62 | 9.48 | 3.25 | 1.50 | 11.88 |



## PART NUMBER MATRIX (2" - 24")

| LD | 141 | 06 | B | E | 1 | 1 -A (LD ONLY) |
|---|---|---|---|---|---|---|
| **MODEL** | **SERIES** | **SIZE (IN.)** | **DISC MATERIAL** | **SEAT MATERIAL** | **SHAFT** | **OPERATOR** |
| **LD** = Lug Body<br>**WD** = Wafer Body | **141** = Apollo International™ (Ductile Iron)<br>**145** = Assembled & Tested in USA (Ductile Iron) | **02** = 2"<br>**25** = 2.5"<br>**03** = 3"<br>**04** = 4"<br>**05** = 5"<br>**06** = 6"<br>**08** = 8"<br>**10** = 10"<br>**12** = 12" | **B** = Aluminum Bronze<br>**D** = Ductile Iron A536 Nickel Plated<br>**S** = Stainless Steel, CF8M | **E** = Black EPDM**<br>-30° F to 275° F<br>-34° C to 135° C<br>**N** = Black BUNA-N**<br>10° F to 180° F<br>-12° C to 82° C<br>**V** = Black Viton® B †<br>-20° F to 300° F<br>-29° C to 149° C<br>(145 Series Only)<br><br>** *FDA Food Grade* | **1**= Std. 416 SS | **0** = Bare Shaft<br>**1** = 10 Position Handle<br>**2** = Gear Operator - Direct Mount<br>**3** = Infinite Position Handle<br>**4** = Locking Handle<br>**5** = Gear Operator w/ Chainwheel<br>**7** = Locking Gear Operator<br>**8** = Locking Gear Operator w/Chainwheel<br>**-SF**= Silicone Free Assembly (145 Series Only) |
| | **141** = Sizes 14"- 24"<br><br>**NOTE: LD-141 lug style only** | **14** = 14"<br>**16** = 16"<br>**18** = 18"<br>**20** = 20"<br>**24** = 24" | | | | |

**Certification** - Product complies with NSF/ANSI 372 and NSF/ANSI 61 lead content requirements.
**NSF 61 does not apply to ductile iron disc*
*†Viton is primarily used for process applications, and has not been included in the scope of our Lead Free approvals*

**EXAMPLE:**
**WD141-06-BE-11 =** 6" WD141 Series, Ductile Iron Wafer Body, Aluminum Bronze Disc, Black EPDM Seat, 416 SS Shaft with 10 Position Handle

## PART NUMBER MATRIX (28" - 48")

| WD | 141 | 06 | B | E | 1 | 2 |
|---|---|---|---|---|---|---|
| **MODEL** | **SERIES** | **SIZE (IN.)** | **DISC MATERIAL** | **SEAT MATERIAL** | **SHAFT** | **OPERATOR** |
| **LD** = Lug Body | **141** = Apollo International™ (Ductile Iron) | **28** = 28"<br>**30** = 30"<br>**32** = 32"<br>**36** = 36"<br>**40** = 40"<br>**42** = 42"<br>**48** = 48" | **B** = Aluminum Bronze<br>**D** = Ductile Iron A536 Nickel Plated<br>**S** = Stainless Steel, CF8M | **E** = Black EPDM**<br>-30° F to 275° F<br>-34° C to 135° C<br>**N** = Black BUNA-N**<br>10° F to 180° F<br>-12° C to 82° C<br>** *FDA Food Grade* | **1**= Std. 416 SS | **0** = Bare Shaft<br>**2** = Gear Operator - Direct Mount<br>**5** = Gear Operator w/ Chainwheel<br>**7** = Locking Gear Operator<br>**8** = Locking Gear Operator w/Chainwheel |

## PART NUMBER MATRIX

| LC149 | 06 | 2 |
|---|---|---|
| **SERIES** | **SIZE (IN.)** | **OPERATOR** |
| **LC149** = Cast Iron Lug Body<br>Aluminum Bronze Disc<br>416 SS Shaft<br>Black EPDM Seat | **02** = 2"<br>**25** = 2.5"<br>**03** = 3"<br>**04** = 4"<br>**05** = 5"<br>**06** = 6"<br>**08** = 8"<br>**10** = 10"<br>**12** = 12" | **1** = 10 Position Handle (2" - 12")<br>**2** = Gear Operator (8" - 12" only) |

**Certification** - Product complies with NSF/ANSI 372 and NSF/ANSI 61 lead content requirements.
*†Viton is primarily used for process applications, and has not been included in the scope of our Lead Free approvals*

**EXAMPLE:**
**LC149-06-1:** 6" LC149 Series, Cast Iron Body, Aluminum Bronze Disc, Black EPDM Seat, 416 SS Shaft with 10 Position Handle

## PRICING

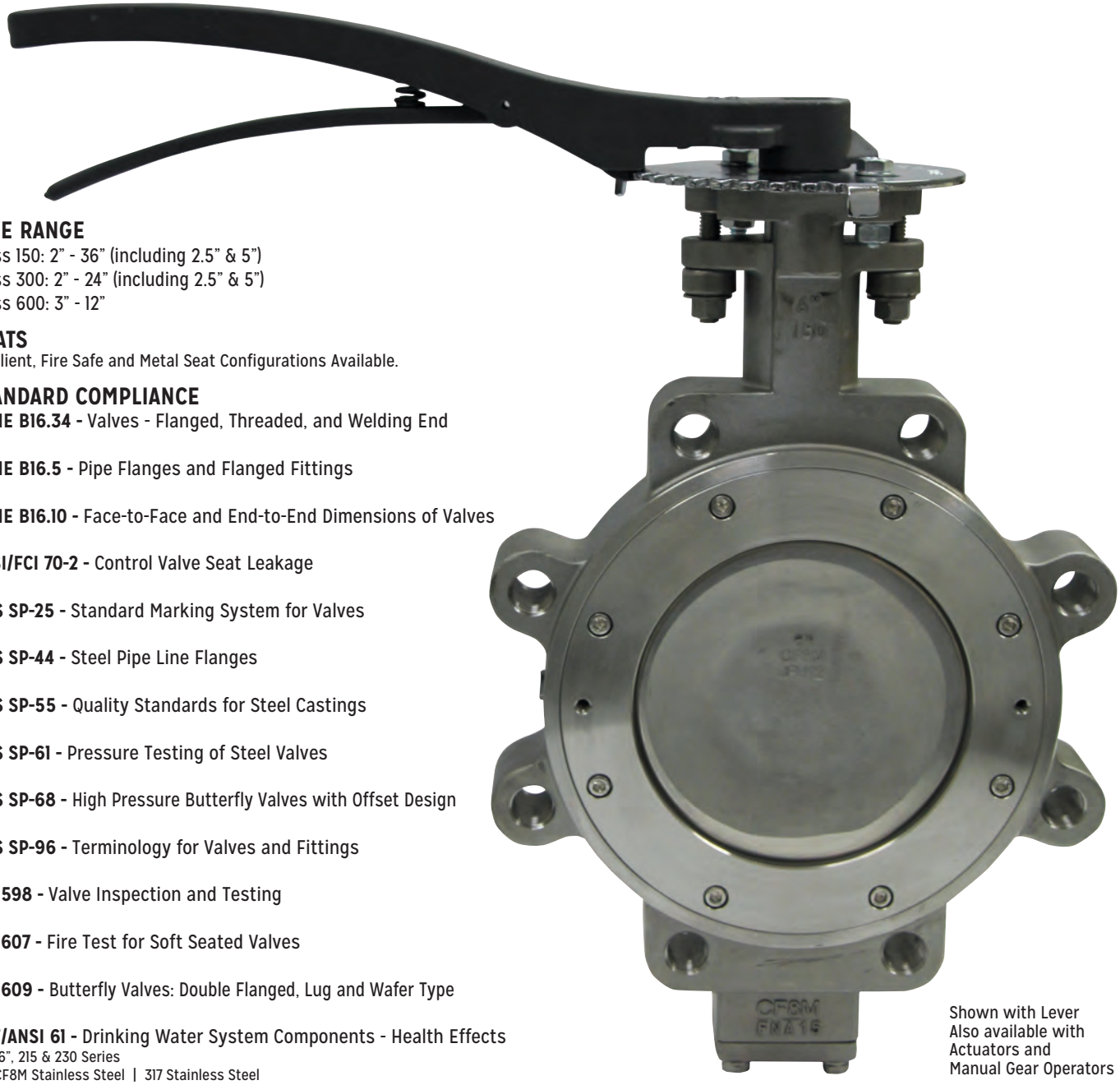
Pricing of valves and options may be accessed through published price list BFPL9000 or by authorized Apollo® Online users.

The Apollo® LD/WD Series Ductile Iron Butterfly Valves offer reliable performance in a wide range of applications; on/off, throttling, control isolation, flow balancing and diversion. Ideal for use in Industrial and HVAC/Mechanical applications.

Service compatibility is dependant on several factors; the corrosion resistance of the disc and shaft and the chemical resistance of the seat (liner) and required temperature range. Erosion resistance also affects material selection when dealing with abrasive slurries.

| **EPDM Cartridge Style Seat**<br>**Ethylene propylene rubber** | **Buna-N Cartridge Style Seat**<br>**Nitrile rubber**<br>**Also known as NBR** | **Viton® B Cartridge Style Seat**<br>**Fluorocarbon rubber** |
|---|---|---|
| Temperature rated from -20°F to 250°F Intermittent, 225°F Continuous | Temperature rated from 10°F to 180°F | Temperature rated from -20°F to 300°F |
| **Typical applications:**<br>• Food Grade EPDM is Standard<br>• Typically offered for general service and elevated temperatures<br>• Hot water<br>• Chilled water<br>• Glycols<br>• Detergents<br>• Phosphate esters<br>• Ketones<br>• Alcohols<br>• Low Pressure Steam<br>• Dilute acids<br>• Phosphate based hydraulic oils and fluids<br>• Silicone greases and oils<br>• Alkalies | **Typical applications:**<br>• Food Grade Buna-N is Standard<br>• Good for most general services<br>• Water – ambient temperature<br>• Vacuum<br>• Compressed air<br>• Salt solutions<br>• Alkaline solutions<br>• Dilute acids<br>• Petroleum oils & fluids<br>• Silicone oils & greases<br>• Ethylene glycol | **Typical applications:**<br>• A fluorocarbon rubber with a wide spectrum of chemical resistance (exceptional resistance to oils and chemicals at higher temperatures).<br>• A fluorocarbon rubber that typically has better chemical resistance than Buna-N.<br>• Hydrocarbons<br>• Mineral acids<br>• Alcohols |
| ⦸ EPDM is not recommended for any hydrocarbon-based oils, petroleum oils, hydrocarbon-based lubricants, or di-ester based lubricants, or air systems with hydrocarbons. | ⦸ Buna-N can swell in hot water applications, and increase operating torque.<br><br>⦸ Buna-N is NOT recommended for strong oxidizing agents, nitrated hydrocarbons, Aromatic hydrocarbons (benzene, toluene, xylene), acetates, phenols, aldehydes, gasolines with additives, Automotive brake fluid, Halogen derivatives (carbon tetrachloride, trichloroethylene), Ketones (MEK, acetone), Phosphate ester hydraulic fluids (Skydrol®, Pydraul®), Strong acids, ozone | ⦸ Viton® can swell in higher temperature water applications.<br><br>⦸ At low temperatures, Viton® 's flexibility decreases (hardens), which often increases operating torque.<br><br>⦸ Viton® is not recommended for ketones, Skydrol fluids, amines, anhydrous ammonia, low molecular weight esters and ethers, hot hydrofluoric chlorosulfonic acids. |

## 215 / 230 & 260 SERIES — DOUBLE OFFSET HIGH PERFORMANCE




Shown with Lever
Also available with
Actuators and
Manual Gear Operators

### SIZE RANGE
Class 150: 2" - 36" (including 2.5" & 5")
Class 300: 2" - 24" (including 2.5" & 5")
Class 600: 3" - 12"

### SEATS
Resilient, Fire Safe and Metal Seat Configurations Available.

### STANDARD COMPLIANCE
**ASME B16.34 -** Valves - Flanged, Threaded, and Welding End

**ASME B16.5 -** Pipe Flanges and Flanged Fittings

**ASME B16.10 -** Face-to-Face and End-to-End Dimensions of Valves

**ANSI/FCI 70-2 -** Control Valve Seat Leakage

**MSS SP-25 -** Standard Marking System for Valves

**MSS SP-44 -** Steel Pipe Line Flanges

**MSS SP-55 -** Quality Standards for Steel Castings

**MSS SP-61 -** Pressure Testing of Steel Valves

**MSS SP-68 -** High Pressure Butterfly Valves with Offset Design

**MSS SP-96 -** Terminology for Valves and Fittings

**API 598 -** Valve Inspection and Testing

**API 607 -** Fire Test for Soft Seated Valves

**API 609 -** Butterfly Valves: Double Flanged, Lug and Wafer Type

**NSF/ANSI 61 -** Drinking Water System Components - Health Effects
2"- 36", 215 & 230 Series
316/CF8M Stainless Steel | 317 Stainless Steel
Duplex Stainless Steel | Super Duplex Stainless Steel

**NSF/ANSI 372 -** Drinking Water System Components - Lead Content
2"- 36", 215 & 230 Series
316/CF8M Stainless Steel | 317 Stainless Steel
Duplex Stainless Steel | Super Duplex Stainless Steel

CE Marked and Documented Valves that Conform to the European Pressure Equipment Directive (PED) 97/23/EC are Available in ANSI Class 150/300/600 Including Resilient, Fire Safe and Metal Seat Configurations (sizes 2"-24" only)

CRN No. 0C17459.5CL

## 215 / 230 & 260 SERIES ADVANTAGES

**ISO 5211 MOUNTING FLANGE**
Universal mounting dimensions simplify valve actuation. Allows for direct mounting of several actuators.

**ROCKER PACKING GLAND**
Shaped packing gland compensates for uneven adjustment of gland nuts.

**STEM PACKING**
V-ring PTFE, UHMWPE or flat graphite provides positive sealing.

**EXTENDED NECK**
Allows for 2" of pipe insulation.

**BODY**
Robust one-piece casting in WCB carbon steel or CF8M stainless steel. Available in wafer & lug style.

**POSITIVE CAST DISC STOP**
Prevents seat damage from over-travel of the disc beyond the closed position. (not visible)

**JACKING TAPS**
Allows the use of seat retainer bolts to aid in retainer removal.

**SEAT RETAINER**
Reliable multi-bolt retainer holds and supports the seat. Standard valves are suitable for bi-directional dead-end service at the full pressure-temperature rating of the valve. Same material as body material.

**CORROSION PROTECTION**
Polyamide epoxy primer with high performance polyurethane topcoat is the standard finish for carbon steel valve bodies.

**STEM (BLOWOUT-PROOF)**
17-4 PH stainless steel stem with high strength, and good corrosion resistance. Designed per API 609 standard.

**ANTI-EXTRUSION RING (UNDER STEM SEALS)**
Prevents the extrusion of stem seals, maintaining optimum seal.

**BEARING (UPPER)**
Full length provides maximum stem support. Made of 316 SS/PTFE.

**SEAT**
An advanced free floating, pressure assisted, solid seat design provides an interference and pressure assisted seal. This creates a positive seal under both low and high pressure requirements. The seat does not rely on any secondary components to hold it in place, assuring longer service life with less maintenance.

**TANGENTIAL DISC PINS**
17-4 PH stainless steel disc pins are tangentially positioned, placing them in compression rather than shear. This robust joint design eliminates potential failure of the disc-stem connection.

**DISC**
Standard material is 316 stainless steel.

**BEARING (LOWER)**
Full length provides maximum stem support. Made of 316 SS/PTFE.

**THRUST RING**
Centers the disc. Ensures tight shutoff and long service life. Made of 316 stainless steel.

**END CAP SEAL**
Made of PTFE, UHMWPE or graphite.

## 215 / 230 & 260 SERIES — DOUBLE OFFSET HIGH PERFORMANCE

LEADFREE CERTIFIED

*New!*

Apollo International™ 215, 230, 260 Series double offset high performance butterfly valves are available in wafer or lug body design. Stainless steel valves are certified lead-free with stainless steel disc and 17-4PH stainless steel stem.

### FEATURES

- 215 Series Class 150# Carbon Steel (CWP 285) and 316 SS (CWP 275) 2" to 36"
- 230 Series Class 300# Carbon Steel (CWP 740) and 316 SS (CWP 720) 2" - 24"
- 260 Series Class 600# Carbon Steel (CWP 1480) and 316 SS (CWP 1440) 3"- 12"
- ISO 5211 Mounting Flange Allows Choice of Apollo® Actuators and Manual Operators
- Multi-Bolt Retainer Holds and Supports the Seat.Standard Valves are Suitable for Bi-Directional Dead-EndService at the Full Pressure-Temperature Rating of the Valve. Same Material as the Body
- Well-suited for a wide range of liquid and Steam Applications, Defined in the High Performance Butterfly Valve Pressure-Temperature Charts
- Vacuum Service to 29" Hg
- Soft Seats Made from TFM 1700
- UHMWPE Available on Request

### APPROVALS

- NSF/ANSI 61 Water Quality
  2"- 36", 215 & 230 Series
  316/CF8M Stainless Steel | 317 Stainless Steel
  Duplex Stainless Steel | Super Duplex Stainless Steel
- NSF/ANSI 372 Lead Free
  2"- 36", 215 & 230 Series
  316/CF8M Stainless Steel | 317 Stainless Steel
  Duplex Stainless Steel | Super Duplex Stainless Steel
- CE/(PED) 97/23/EC Models are Available
- CRN No. 0C17459.5CL
- Registered under Canadian Registration Number CRN# 0C12102.8CL

### PART NUMBER MATRIX

| 2 | 15 | L | 06 | C | S | P | 8T | A | 0 |
|---|---|---|---|---|---|---|---|---|---|
| **VALVE TYPE** | **CLASS** | **VALVE STYLE** | **SIZE** | **BODY MATERIAL** | **DISC MATERIAL** | **STEM MATERIAL** | **SEAT MATERIAL** | **SPECIAL SERVICE** | **OPERATOR** |
| **2** - Double Offset | **15** (150)<br>**30** (300)<br>**60** (600)[1] | **L** - Lug<br>**W** - Wafer | **02** (2")<br>**25** (2.5")<br>**03** (3")<br>**04** (4")<br>**05** (5")<br>**06** (6")<br>**08** (8")<br>**10** (10")<br>**12** (12")<br>**14** (14")<br>**16** (16")<br>**18** (18")<br>**20** (20")<br>**24** (24")<br>**30** (30")[2]<br>**36** (36")[2] | **C** - Carbon Steel<br>**S** - 316 SS<br>**A** - Alloy 20<br>**B** - 317 SS<br>**H** - Hastelloy C<br>**J** - Duplex<br>**K** - Super Duplex<br>**M** - Monel | **S** - 316 SS<br>**A** - Alloy 20<br>**B** - 317 SS<br>**H** - Hastelloy C<br>**J** - Duplex<br>**K** - Super Duplex<br>**M** - Monel | **P** - 17-4 PH SS<br>**A** - Alloy 20<br>**B** - 317 SS<br>**H** - Hastelloy C<br>**J** - Duplex<br>**K** - Super Duplex<br>**M** - Monel<br>**S** - 316 SS | **8T** - RTFM (TFM 1700 w/Glass)<br>**2F** - TFM/Inconel, Graphite Seals (Fire Safe)<br>**2M** - 316SS (Metal Seated)<br>**21** - UHMWPE[3] | **A** - Standard Apollo | **0** - Bare Stem<br>**1** - Lever Operator[4]<br>**2** - Worm Gear Operator<br>**5** - Worm Gear Operator w/ Chain Wheel<br>**7** - Locking Worm Gear Operator<br>**8** - Locking Worm Gear Operator w/ Chain Wheel |

[1] Class 600 valves available in sizes 3" through 12" (excluding 5" size)
[2] 215L Only
[3] UHMWPE not available in Class 600
[4] Standard handle can be locked in the full open or fully closed position.
Lever operators are available with 2"-12" class 150 valves (215), and 2"-10" class 300 valves (230)
See table for Lever Handle Availability & Maximum Differential Pressure

**EXAMPLE:**
**215L06CSP8TA0** = 6" Class 150 Lug, Carbon Steel Body, SS Disc, 17-4 PH Stem, TFM 1700 Seats, Standard Service, Bare Stem

***Safety Warning:***
*Gear operators are normally specified for larger high performance butterfly valves because the force of the pipeline flow on the disc can be too great to safely use a handle.*

## LEVER HANDLE AVAILABILITY & MAXIMUM DIFFERENTIAL PRESSURE

| | | | SOFT SEAT (CODES: 8T & 21) | | FIRE-SAFE SEAT (CODE: 2F) | | METAL SEAT (CODE: 2M) | |
|---|---|---|---|---|---|---|---|---|
| | | | PSI | bar | PSI | bar | PSI | bar |
| **Class 150** | 215 | 2"-6" | Full Rating | | Full Rating | | Full Rating | |
| | | 8" | 150 | 10.3 | Not Available | | Not Available | |
| | | 10"-12" | 50 | 3.4 | Not Available | | Not Available | |
| **Class 300** | 230 | 2"-4" | Full Rating | | Full Rating | | Full Rating | |
| | | 6"-8" | 150 | 10.3 | Not Available | | Not Available | |
| | | 10" | 50 | 3.4 | Not Available | | Not Available | |

## 215 / 230 & 260 SERIES RESILIENT SEAT

### CLASS 150 - 2" THRU 24", 30", 36" | CLASS 300 - 2" THRU 24" | CLASS 600 - 3" THRU 12"

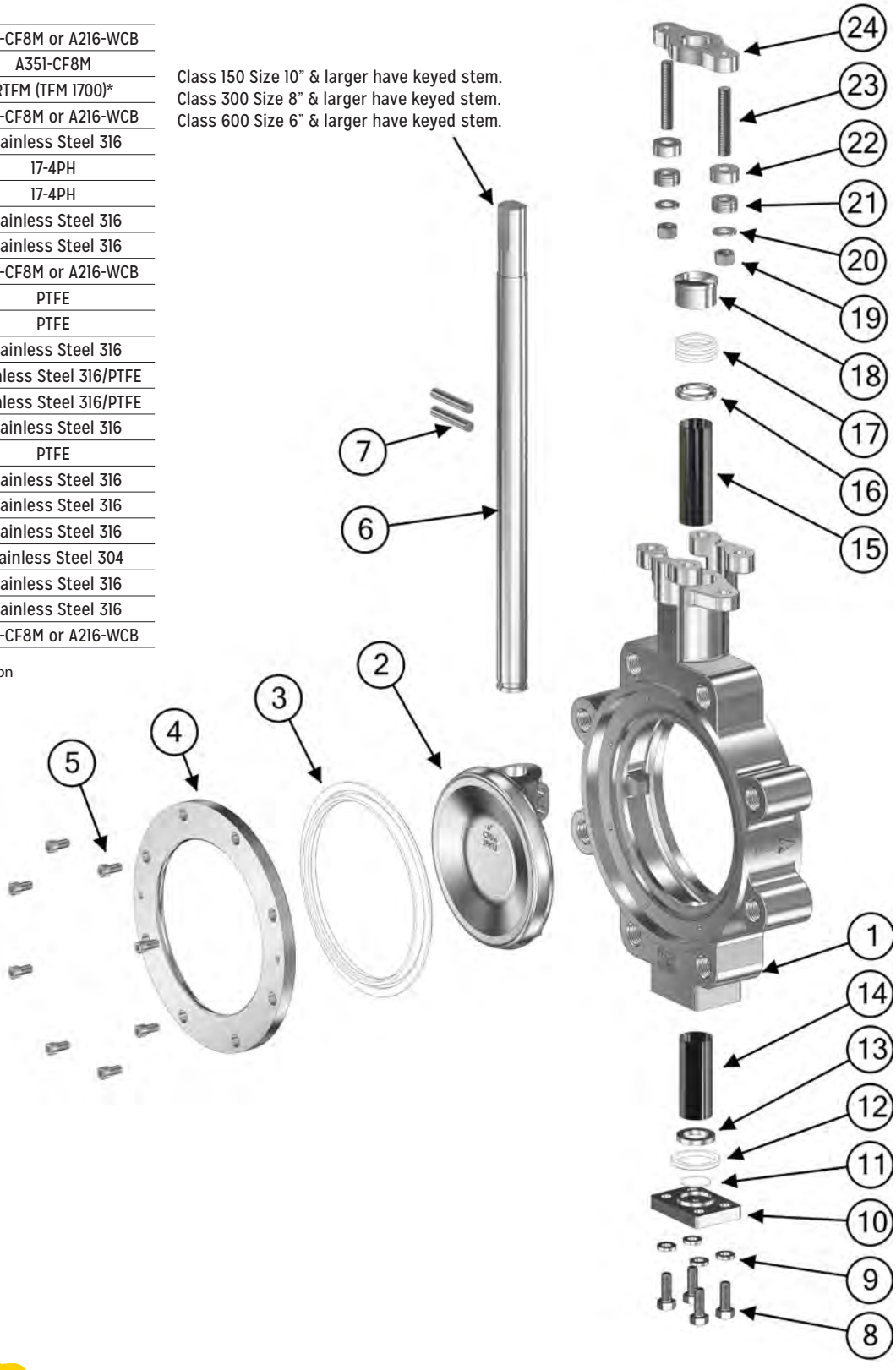
#### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | BODY | A351-CF8M or A216-WCB |
| 2 | DISC | A351-CF8M |
| 3 | SEAT | RTFM (TFM 1700)* |
| 4 | SEAT RETAINER | A351-CF8M or A216-WCB |
| 5 | SEAT RETAINER BOLT | Stainless Steel 316 |
| 6 | STEM | 17-4PH |
| 7 | DISC PIN | 17-4PH |
| 8 | END CAP BOLT | Stainless Steel 316 |
| 9 | WASHER | Stainless Steel 316 |
| 10 | END CAP | A351-CF8M or A216-WCB |
| 11 | SPACER | PTFE |
| 12 | END CAP SEAL | PTFE |
| 13 | THRUST RING | Stainless Steel 316 |
| 14 | LOWER BEARING | Stainless Steel 316/PTFE |
| 15 | UPPER BEARING | Stainless Steel 316/PTFE |
| 16 | ANTI-EXTRUSION RING | Stainless Steel 316 |
| 17 | STEM PACKING | PTFE |
| 18 | PACKING GLAND | Stainless Steel 316 |
| 19 | GLAND NUT | Stainless Steel 316 |
| 20 | WASHER | Stainless Steel 316 |
| 21 | DISC SPRING | Stainless Steel 304 |
| 22 | DISC SPRING RETAINER | Stainless Steel 316 |
| 23 | GLAND STUDS | Stainless Steel 316 |
| 24 | GLAND PLATE | A351-CF8M or A216-WCB |

* TFM 1700 modified PTFE is a next-generation PTFE with improved properties. Added glass further improves the seat providing greater wear resistance and a higher modulus.

Lug Design Shown

Class 150 Size 10" & larger have keyed stem.
Class 300 Size 8" & larger have keyed stem.
Class 600 Size 6" & larger have keyed stem.



## 215 / 230 & 260 SERIES FIRE SAFE SEAT

### CLASS 150 - 2" THRU 24" | CLASS 300 - 2" THRU 24" | CLASS 600 - 3" THRU 12"

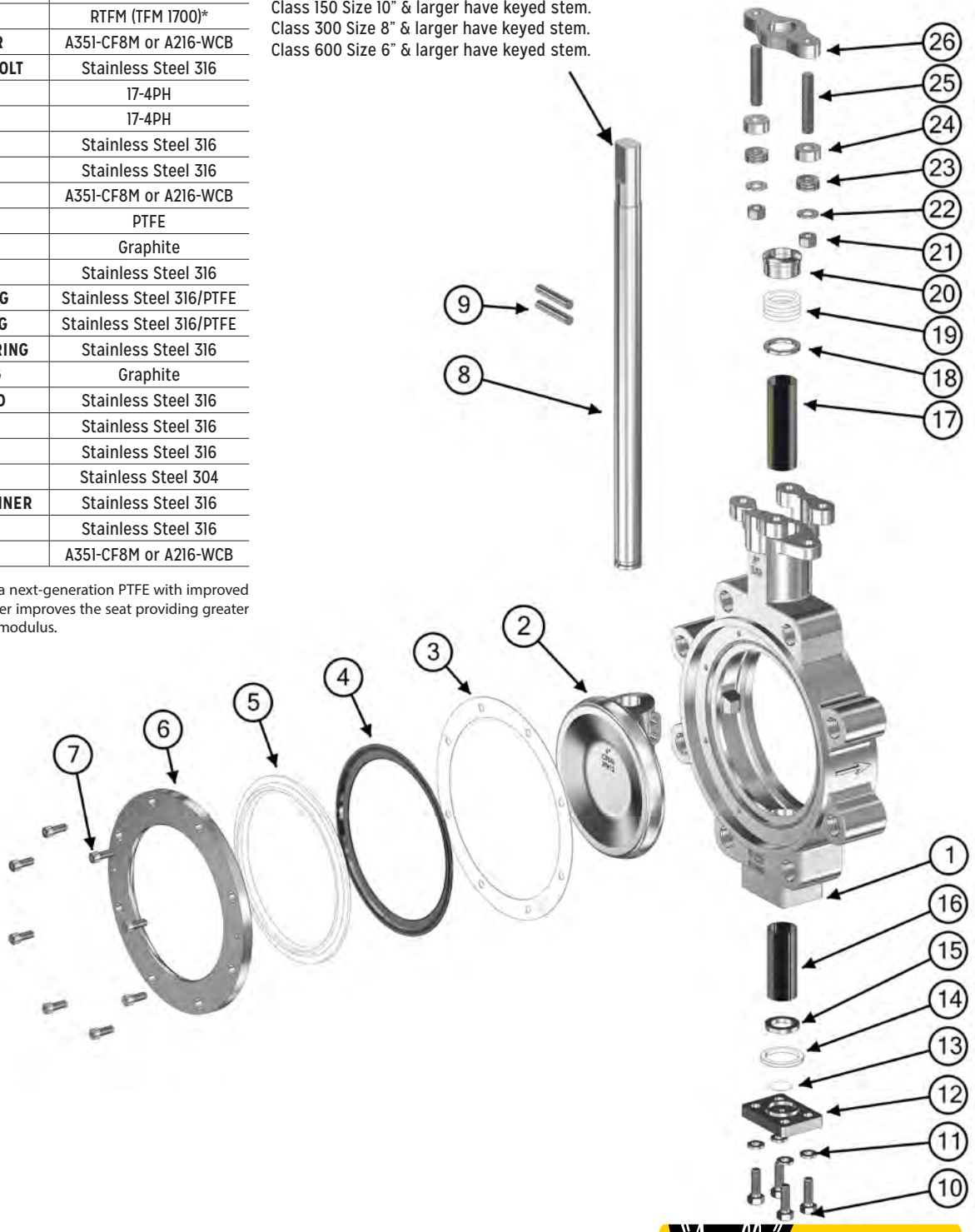
#### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | **BODY** | A351-CF8M or A216-WCB |
| 2 | **DISC** | A351-CF8M |
| 3 | **BODY SEAL** | Graphite |
| 4 | **METAL SEAT** | Inconel 718 |
| 5 | **SEAT** | RTFM (TFM 1700)* |
| 6 | **SEAT RETAINER** | A351-CF8M or A216-WCB |
| 7 | **SEAT RETAINER BOLT** | Stainless Steel 316 |
| 8 | **STEM** | 17-4PH |
| 9 | **DISC PIN** | 17-4PH |
| 10 | **END CAP BOLT** | Stainless Steel 316 |
| 11 | **WASHER** | Stainless Steel 316 |
| 12 | **END CAP** | A351-CF8M or A216-WCB |
| 13 | **SPACER** | PTFE |
| 14 | **END CAP SEAL** | Graphite |
| 15 | **THRUST RING** | Stainless Steel 316 |
| 16 | **LOWER BEARING** | Stainless Steel 316/PTFE |
| 17 | **UPPER BEARING** | Stainless Steel 316/PTFE |
| 18 | **ANTI-EXTRUSION RING** | Stainless Steel 316 |
| 19 | **STEM PACKING** | Graphite |
| 20 | **PACKING GLAND** | Stainless Steel 316 |
| 21 | **GLAND NUT** | Stainless Steel 316 |
| 22 | **WASHER** | Stainless Steel 316 |
| 23 | **DISC SPRING** | Stainless Steel 304 |
| 24 | **DISC SPRING RETAINER** | Stainless Steel 316 |
| 25 | **GLAND STUDS** | Stainless Steel 316 |
| 26 | **GLAND PLATE** | A351-CF8M or A216-WCB |

* TFM 1700 modified PTFE is a next-generation PTFE with improved properties. Added glass further improves the seat providing greater wear resistance and a higher modulus.

Lug Design Shown

Class 150 Size 10" & larger have keyed stem.
Class 300 Size 8" & larger have keyed stem.
Class 600 Size 6" & larger have keyed stem.



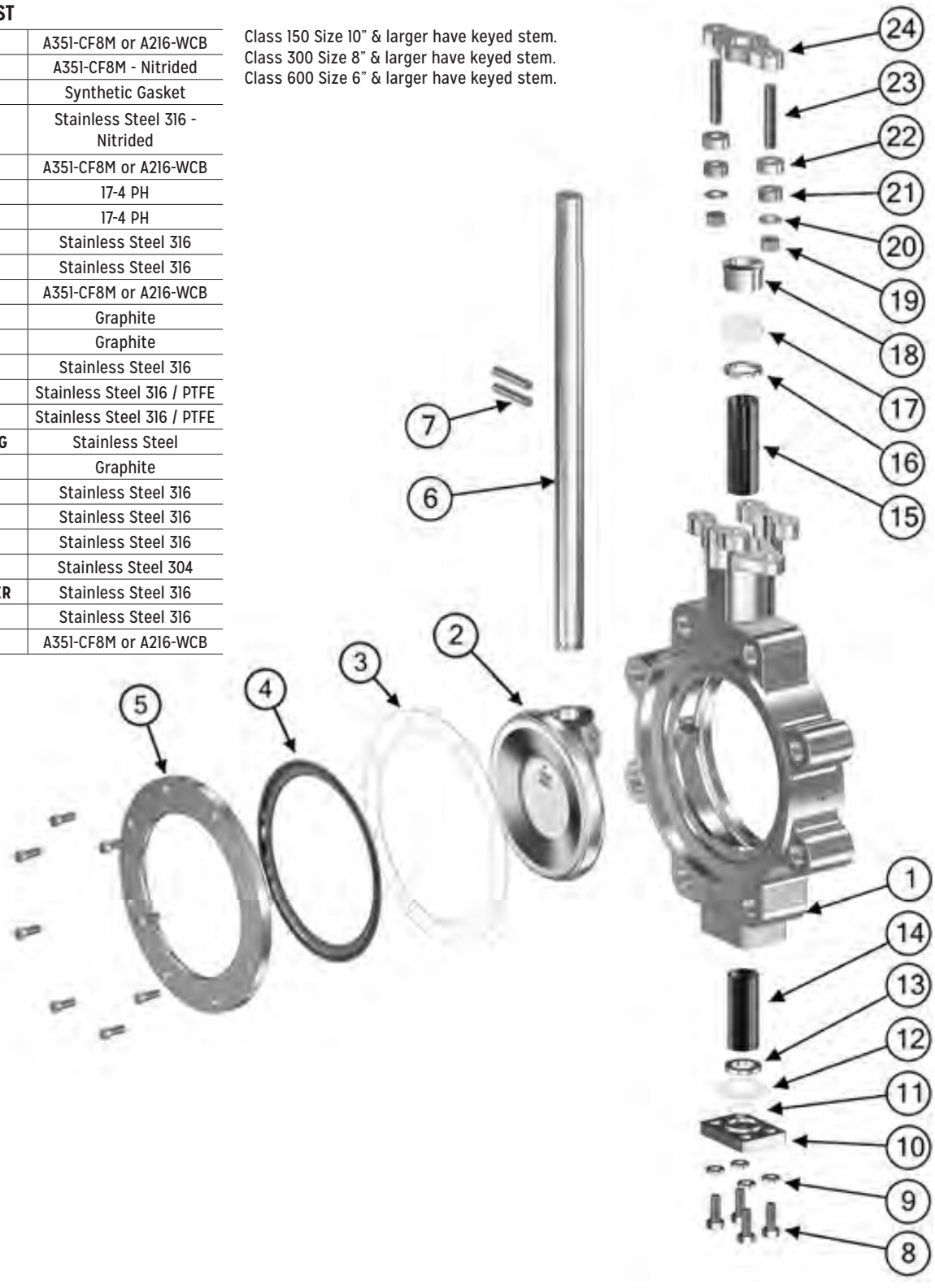
## 215 / 230 & 260 SERIES METAL SEAT

### STANDARD MATERIAL LIST

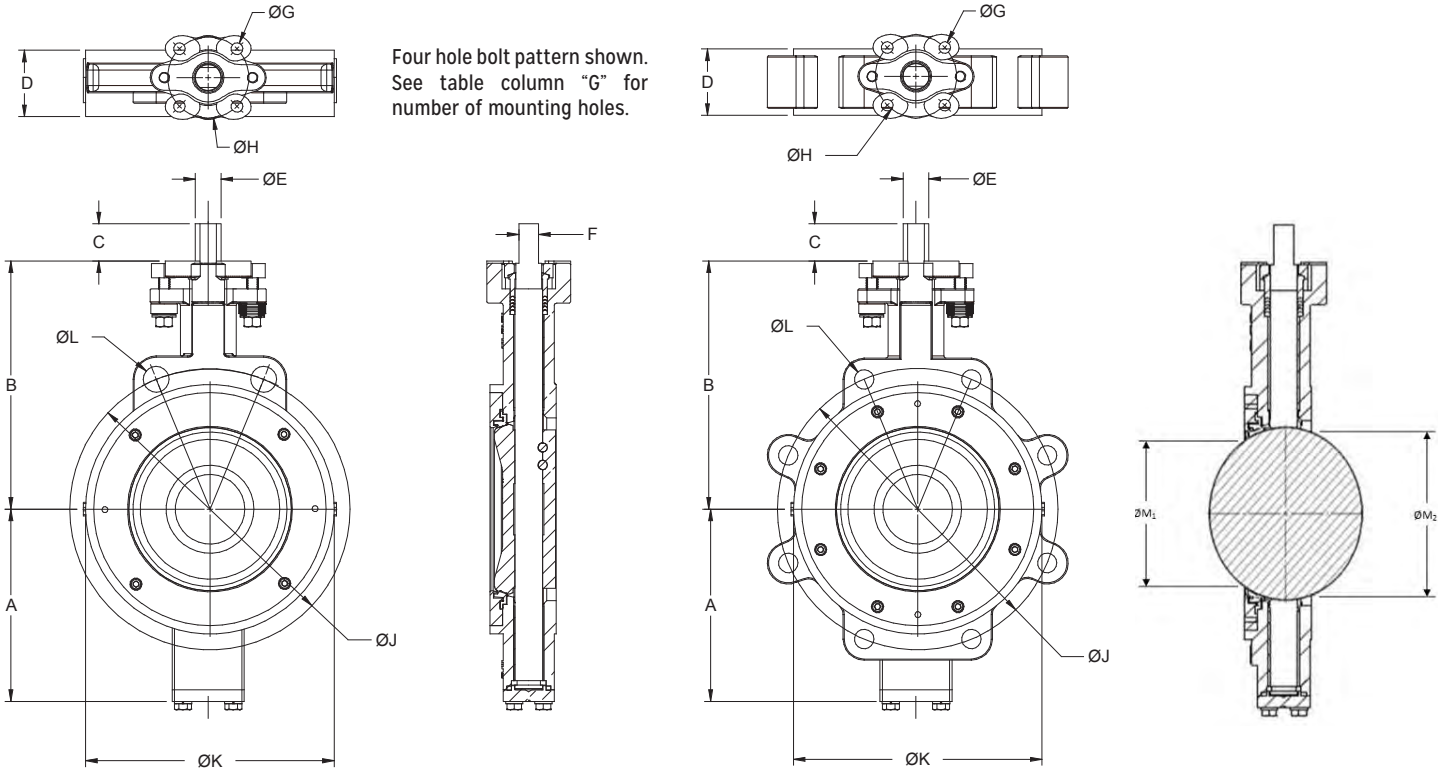
| | | |
|---|---|---|
| 1 | **BODY** | A351-CF8M or A216-WCB |
| 2 | **DISC** | A351-CF8M - Nitrided |
| 3 | **BODY SEAL** | Synthetic Gasket |
| 4 | **SEAT** | Stainless Steel 316 - Nitrided |
| 5 | **SEAT RETAINER** | A351-CF8M or A216-WCB |
| 6 | **STEM** | 17-4 PH |
| 7 | **DISC PIN** | 17-4 PH |
| 8 | **END CAP BOLT** | Stainless Steel 316 |
| 9 | **WASHER** | Stainless Steel 316 |
| 10 | **END CAP** | A351-CF8M or A216-WCB |
| 11 | **SPACER** | Graphite |
| 12 | **END CAP SEAL** | Graphite |
| 13 | **THRUST RING** | Stainless Steel 316 |
| 14 | **LOWER BEARING** | Stainless Steel 316 / PTFE |
| 15 | **UPPER BEARING** | Stainless Steel 316 / PTFE |
| 16 | **ANTI-EXTRUSION RING** | Stainless Steel |
| 17 | **STEM PACKING** | Graphite |
| 18 | **PACKING GLAND** | Stainless Steel 316 |
| 19 | **GLAND NUT** | Stainless Steel 316 |
| 20 | **WASHER** | Stainless Steel 316 |
| 21 | **DISC SPRING** | Stainless Steel 304 |
| 22 | **DISC SPRING RETAINER** | Stainless Steel 316 |
| 23 | **GLAND STUDS** | Stainless Steel 316 |
| 24 | **GLAND PLATE** | A351-CF8M or A216-WCB |

Lug Design Shown

Class 150 Size 10" & larger have keyed stem.
Class 300 Size 8" & larger have keyed stem.
Class 600 Size 6" & larger have keyed stem.



## 215L/215W SERIES CLASS 150 - 2" THRU 36"



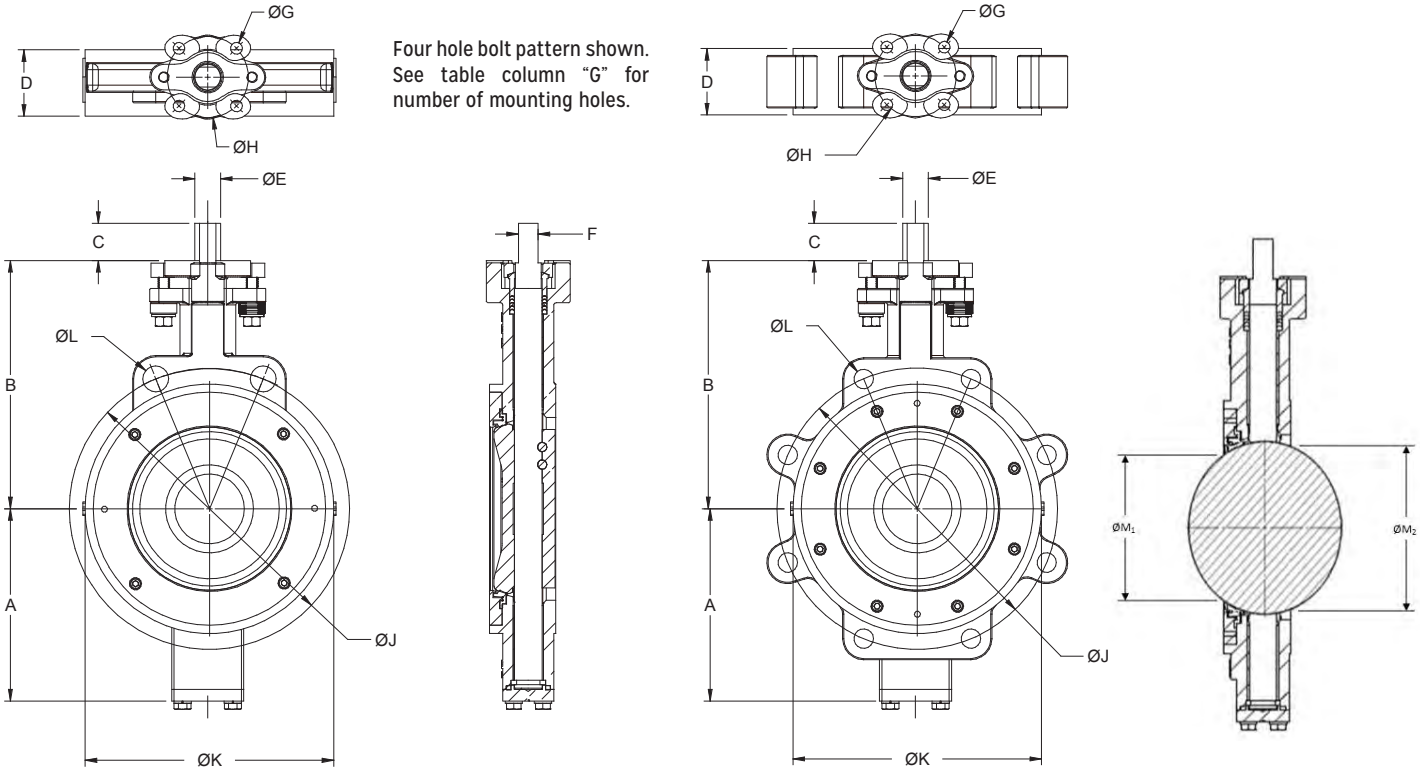

WAFER LUG

### 150 CLASS DOUBLE-D AND KEYED STEM

| SIZE INCHES | SIZE DN | DIMENSIONS IN INCHES | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | ØE | F | KEY | ØG | ØH** | ØJ | ØK | ØL Wafer | ØL Lug | ØM1 | ØM2 |
| 2 | 50 | 3.622 | 5.276 | 1.102 | 1.693 | 0.476 | 0.354 | -- | 4 x 0.394 | 2.756 (F07) | 4.75 | 4.09 | 2 x 0.669 | 4x5/8"-11UNC-2B | 0.50 | 1.64 |
| 2.5 | 65 | 4.016 | 5.787 | 1.102 | 1.850 | 0.555 | 0.433 | -- | 4 x 0.394 | 2.756 (F07) | 5.50 | 4.72 | 2 x 0.748 | 4x5/8"-11UNC-2B | 1.48 | 2.06 |
| 3 | 80 | 4.331 | 6.142 | 1.102 | 1.890 | 0.555 | 0.433 | -- | 4 x 0.394 | 2.756 (F07) | 6.00 | 4.92 | 2 x 0.748 | 4x5/8"-11UNC-2B | 1.67 | 2.58 |
| 4 | 100 | 4.764 | 7.008 | 1.260 | 2.126 | 0.713 | 0.551 | -- | 4 x 0.394 | 2.756 (F07) | 7.50 | 6.10 | 2 x 0.748 | 8x5/8"-11UNC-2B | 2.76 | 3.46 |
| 5 | 125 | 5.591 | 7.598 | 1.260 | 2.244 | 0.874 | 0.669 | -- | 4 x 0.394 | 2.756 (F07) | 8.50 | 7.24 | 2 x 0.874 | 8x3/4"-10UNC-2B | 3.94 | 4.49 |
| 6 | 150 | 6.496 | 8.386 | 1.259 | 2.244 | 0.874 | 0.669 | -- | 4 x 0.394 | 2.756 (F07) | 9.50 | 8.43 | 2 x 0.874 | 8x3/4"-10UNC-2B | 5.02 | 5.46 |
| 8 | 200 | 7.165 | 9.449 | 1.260 | 2.520 | 0.992 | 0.748 | -- | 4 x 0.551 | 4.921 (F12) | 11.75 | 10.55 | 2 x 0.874 | 8x3/4"-10UNC-2B | 6.95 | 7.26 |
| 10 | 250 | 8.386 | 10.827 | 2.165 | 2.795 | 1.102 | -- | 0.313 | 4 x 0.551 | 4.921 (F12) | 14.25 | 12.68 | 2 x 0.984 | 12x7/8"-9UNC-2B | 8.85 | 9.15 |
| 12 | 300 | 10.236 | 12.283 | 2.165 | 3.189 | 1.417 | -- | 0.375 | 4 x 0.551 | 4.921 (F12) | 17.00 | 14.92 | 2 x 0.984 | 12x7/8"-9UNC-2B | 10.37 | 10.70 |
| 14 | 350 | 11.811 | 13.307 | 2.559 | 3.622 | 1.654 | -- | 0.437 | 4 x 0.709 | 5.512 (F14) | 18.75 | 16.14 | 2 x 1.118 | 12x1"-8UNC-2B | 11.89 | 12.25 |
| 16 | 400 | 13.307 | 15.354 | 3.150 | 4.016 | 1.969 | -- | 0.500 | 4 x 0.866 | 6.496 (F16) | 21.25 | 18.43 | 2 x 1.118 | 16x1"-8UNC-2B | 13.59 | 13.94 |
| 18 | 450 | 14.803 | 16.732 | 3.149 | 4.488 | 1.969 | -- | 0.500 | 4 x 0.866 | 6.496 (F16) | 22.75 | 20.94 | 4 x 1.240 | 16x1-1/8"-8UN-2B | 15.65 | 15.91 |
| 20 | 500 | 15.748 | 17.717 | 4.331 | 5.000 | 2.362 | -- | 0.625 | 4 x 0.866 | 6.496 (F16) | 25.00 | 22.99 | 4 x 1-1/8"-8UN-2B | 20x1-1/8"-8UN-2B | 17.50 | 17.72 |
| 24 | 600 | 18.622 | 20.787 | 4.331 | 6.063 | 2.559 | -- | 0.750 | 8 x 0.748 | 10.000 (F25) | 29.50 | 27.24 | 4 x 1-1/4"-8UN-2B | 20x1-1/4"-8UN-2B | 20.94 | 21.01 |
| *30 | 750 | 23.228 | 25.315 | 4.331 | 7.480 | 3.150 | -- | 0.875 | 8 x 0.748 | 10.000 (F25) | 36.00 | 36.42 | -- | 28X1-1/4"-8UN-2B | 26.22 | 26.28 |
| *36 | 850 | 26.575 | 28.740 | 4.331 | 7.992 | 3.150 | -- | 0.875 | 8 x 0.906 | 11.732 (F30) | 42.75 | 45.28 | -- | 32X1-1/2"-8UN-2B | 32.29 | 32.35 |

**30" & 36" are Class 150 Lug Style only.*
*** ISO 5211 mounting/drilling pattern (F size) shown in parentheses.*

## 230L/230W SERIES CLASS 300 - 2" THRU 24"

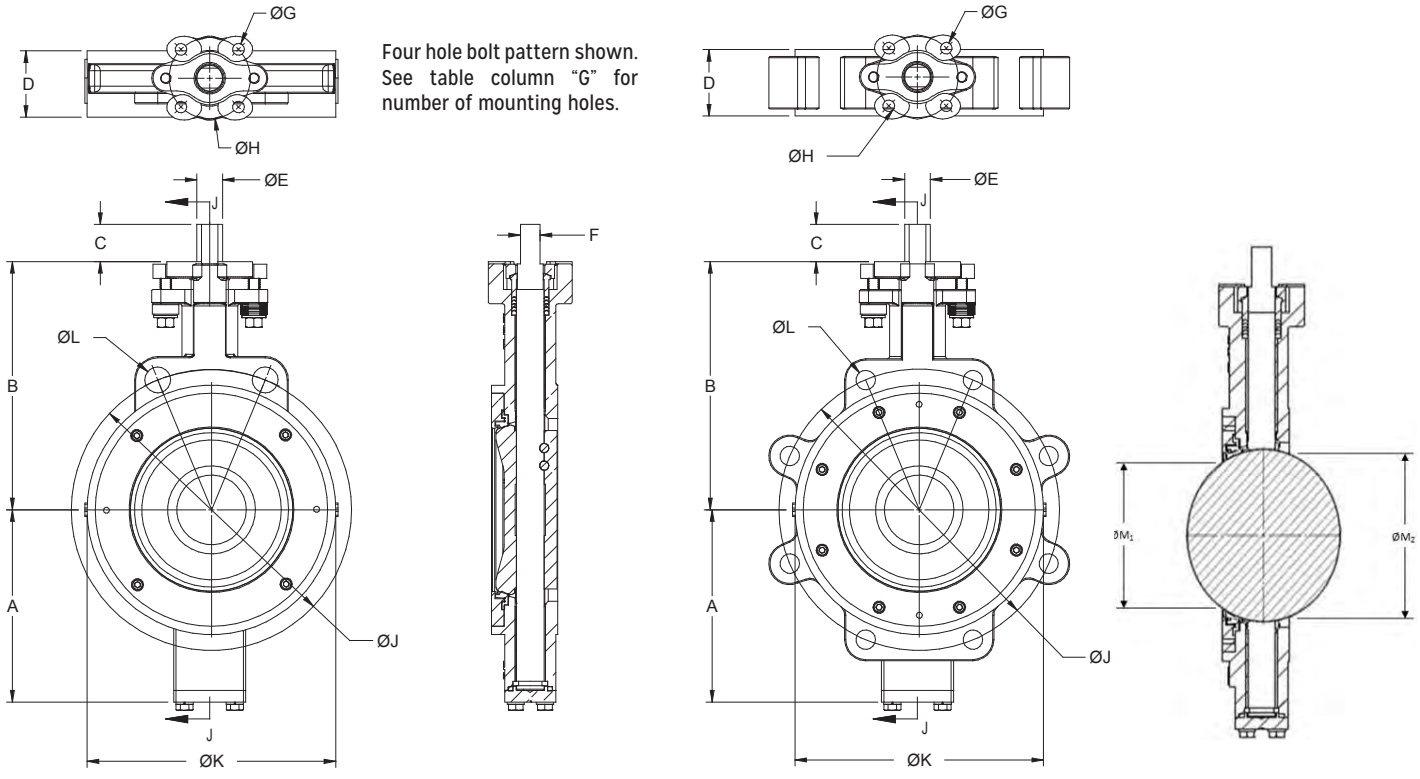



### 300 CLASS DOUBLE-D AND KEYED STEM

| SIZE INCHES | SIZE DN | DIMENSIONS IN INCHES | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | ØE | F | KEY | ØG | ØH** | ØJ | ØK | ØL Wafer | ØL Lug | ØM1 | ØM2 |
| 2 | 50 | 3.622 | 5.276 | 1.102 | 1.693 | 0.476 | 0.354 | -- | 4 x 0.394 | 2.756 (F07) | 5.00 | 4.17 | 2 x 0.709 | 8x5/8"-11UNC-2B | 0.50 | 1.64 |
| 2.5 | 65 | 4.016 | 5.787 | 1.102 | 1.850 | 0.555 | 0.433 | -- | 4 x 0.394 | 2.756 (F07) | 5.88 | 4.72 | 2 x 0.874 | 8x3/4"-10UNC-2B | 1.48 | 2.06 |
| 3 | 80 | 4.331 | 6.142 | 1.102 | 1.890 | 0.555 | 0.433 | -- | 4 x 0.394 | 2.756 (F07) | 6.62 | 4.92 | 2 x 0.874 | 8x3/4"-10UNC-2B | 1.67 | 2.58 |
| 4 | 100 | 4.764 | 7.008 | 1.260 | 2.126 | 0.713 | 0.551 | -- | 4 x 0.394 | 2.756 (F07) | 7.88 | 6.10 | 2 x 0.874 | 8x3/4"-10UNC-2B | 2.76 | 3.46 |
| 5 | 125 | 5.591 | 7.598 | 1.260 | 2.244 | 0.874 | 0.669 | -- | 4 x 0.472 | 4.016 (F10) | 9.25 | 7.24 | 2 x 0.874 | 8x3/4"-10UNC-2B | 3.94 | 4.49 |
| 6 | 150 | 6.496 | 8.386 | 1.259 | 2.323 | 0.874 | 0.669 | -- | 4 x 0.472 | 4.016 (F10) | 10.62 | 8.43 | 2 x 0.874 | 12x3/4"-10UNC-2B | 4.93 | 5.46 |
| 8 | 200 | 8.268 | 10.157 | 2.165 | 2.874 | 1.102 | -- | 0.313 | 4 x 0.551 | 4.921 (F12) | 13.00 | 10.55 | 2 x 0.984 | 12x7/8"-9UNC-2B | 6.73 | 7.19 |
| 10 | 250 | 9.449 | 11.417 | 2.165 | 3.268 | 1.417 | -- | 0.375 | 4 x 0.551 | 4.921 (F12) | 15.25 | 12.72 | 4 x 1"-8UNC-2B | 16x1"-8UNC-2B | 8.44 | 8.85 |
| 12 | 300 | 10.63 | 12.795 | 2.559 | 3.662 | 1.654 | -- | 0.437 | 4 x 0.709 | 5.512 (F14) | 17.75 | 15.04 | 4 x 1-1/8"-8UN-2B | 16x1-1/8"-8UN-2B | 10.17 | 10.62 |
| 14 | 350 | 12.756 | 14.764 | 3.150 | 4.606 | 1.969 | -- | 0.500 | 4 x 0.866 | 6.496 (F16) | 20.25 | 16.14 | 4 x 1-1/8"-8UN-2B | 20x1-1/8"-8UN-2B | 11.55 | 11.89 |
| 16 | 400 | 14.37 | 16.732 | 3.149 | 5.236 | 1.969 | -- | 0.500 | 4 x 0.866 | 6.496 (F16) | 22.50 | 18.43 | 4 x 1-1/4"-8UN-2B | 20x1-1/4"-8UN-2B | 13.21 | 13.55 |
| 18 | 450 | 16.043 | 18.209 | 4.331 | 5.866 | 2.362 | -- | 0.625 | 8 x 0.748 | 10.000 (F25) | 24.75 | 20.94 | 4 x 1-1/4"-8UN-2B | 24x1-1/4"-8UN-2B | 15.36 | 15.54 |
| 20 | 500 | 17.795 | 19.882 | 4.331 | 6.260 | 2.835 | -- | 0.750 | 8 x 0.748 | 10.000 (F25) | 27.00 | 22.99 | 4 x 1-1/4"-8UN-2B | 24x1-1/4"-8UN-2B | 16.93 | 17.27 |
| 24 | 600 | 20.315 | 22.835 | 4.331 | 7.126 | 3.150 | -- | 0.875 | 8 x 0.748 | 10.000 (F25) | 32.00 | 27.24 | 4 x 1-1/2"-8UN-2B | 24x1-1/2"-8UN-2B | 20.57 | 20.57 |

*** ISO 5211 mounting/drilling pattern (F size) shown in parentheses.*

## 260L/260W SERIES CLASS 600 - 3" THRU 12"




### 600 CLASS DOUBLE-D AND KEYED STEM

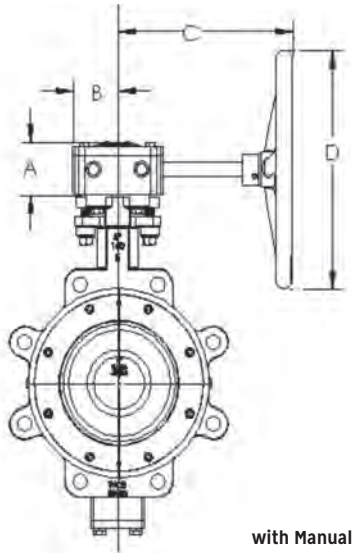
| SIZE INCHES | SIZE DN | DIMENSIONS IN INCHES | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | ØE | F | KEY | ØG | ØH** | ØJ | ØK | ØL Wafer | ØL Lug | ØM1 | ØM2 |
| 3 | 80 | 4.705 | 6.496 | 1.260 | 2.126 | 0.713 | 0.551 | -- | 4 x 0.394 | 2.756 (F07) | 6.62 | 5.71 | 2 x 0.866 | 8 x 3/4"-10 UNC-2B | 1.87 | 2.68 |
| 4 | 100 | 5.748 | 7.717 | 1.260 | 2.520 | 0.874 | 0.669 | -- | 4 x 0.551 | 4.921 (F12) | 8.50 | 6.85 | 2 x 0.984 | 8 x 7/8"-9 UNC-2B | 2.79 | 3.37 |
| 6 | 150 | 7.953 | 9.724 | 2.165 | 3.071 | 1.417 | -- | 0.375 | 4 x 0.551 | 4.921 (F12) | 11.50 | 9.45 | 4 x 1"-8UNC-2B | 12 x 1"-8 UNC-2B | 4.52 | 5.26 |
| 8 | 200 | 9.528 | 11.614 | 3.150 | 4.016 | 1.890 | -- | 0.500 | 4 x 0.906 | 6.496 (F16) | 13.75 | 11.65 | 4 x 1-1/8"-8UN-2B | 12 x 1-1/8"-8 UN-2B | 6.14 | 6.82 |
| 10 | 250 | 11.024 | 13.386 | 3.150 | 4.606 | 1.969 | -- | 0.500 | 4 x 0.906 | 6.496 (F16) | 17.00 | 13.86 | 4 x 1-1/4"-8UN-2B | 16 x 1-1/4"-8 UN-2B | 7.99 | 8.61 |
| 12 | 300 | 12.913 | 15.354 | 4.331 | 5.512 | 2.362 | -- | 0.625 | 8 x 0.709 | 10.000 (F25) | 19.25 | 16.34 | 4 x 1-1/4"-8UN-2B | 20 x 1-1/4"-8 UN-2B | 9.56 | 10.13 |

*(5" size not available)*
*** ISO 5211 mounting/drilling pattern (F size) shown in parentheses.*

## RTFM & UHMWPE SEAT — HANDLE & GEAR DIMENSIONS

### CLASS 150 – RTFM & UHMWPE SEAT

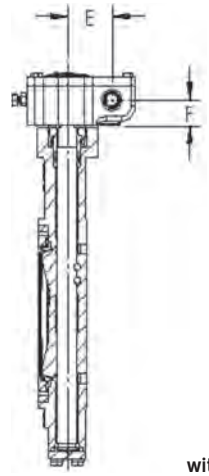
| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F | G |
| 2" | 50 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 2.5" | 65 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 4" | 100 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 5" | 125 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 6" | 150 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 8" | 200 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | — |
| 10" | 250 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | — |
| 12" | 300 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 | — |
| 14" | 350 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 16" | 400 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 18" | 450 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 20" | 500 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 24" | 600 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 30" | 750 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |
| 36" | 850 | 60:1 | 8.15 | 9.06 | 20.90 | 24.00 | 8.26 | 4.29 | — |




with Manual Gear

### CLASS 300 – RTFM & UHMWPE SEAT

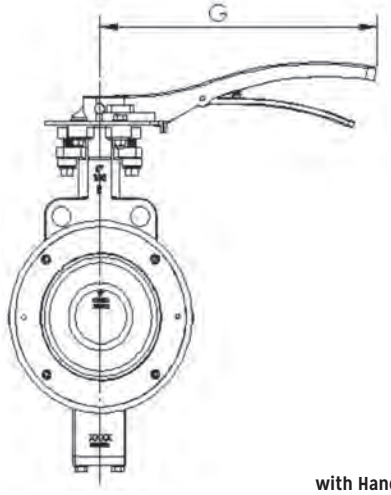
| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F | G |
| 2" | 50 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 2.5" | 65 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 4" | 100 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 5" | 125 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | 12.82 |
| 6" | 150 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | 12.82 |
| 8" | 200 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 | — |
| 10" | 250 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 | — |
| 12" | 300 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 14" | 350 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 16" | 400 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 18" | 450 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 20" | 500 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |
| 24" | 600 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |




with Manual Gear

### CLASS 600 – RTFM & UHMWPE SEAT

| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | |
|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 |
| 4" | 100 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 |
| 6" | 150 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 |
| 8" | 200 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 |
| 10" | 250 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 |
| 12" | 300 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 |

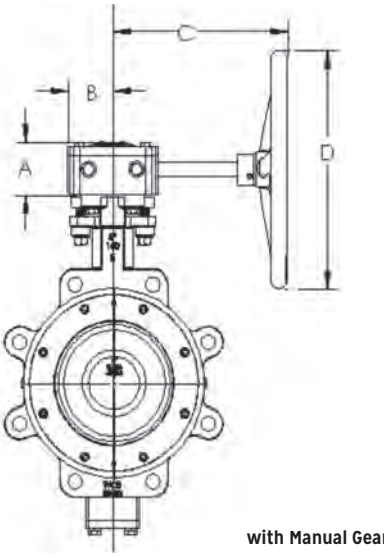



with Handle

## FIRE SAFE & METAL SEAT — HANDLE & GEAR DIMENSIONS

### CLASS 150 – FIRE SAFE & METAL SEAT

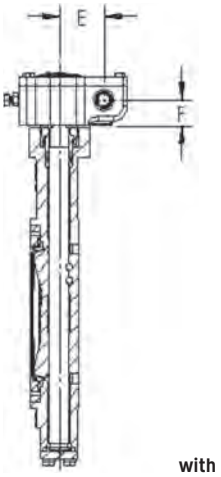
| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F | G |
| 2" | 50 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 2.5" | 65 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 4" | 100 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 5" | 125 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 6" | 150 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 8" | 200 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | — |
| 10" | 250 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 | — |
| 12" | 300 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 14" | 350 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 16" | 400 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 18" | 450 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 20" | 500 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 24" | 600 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |




with Manual Gear

### CLASS 300 – FIRE SAFE & METAL SEAT

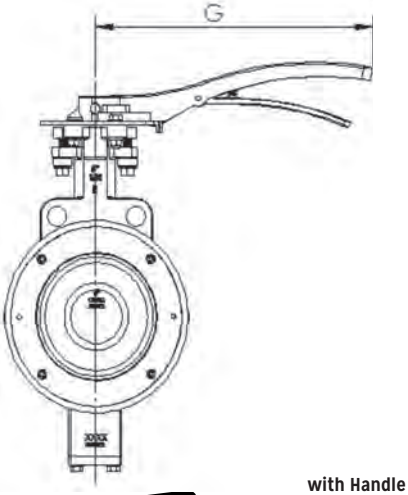
| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F | G |
| 2" | 50 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 2.5" | 65 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 8.82 |
| 4" | 100 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 | 12.82 |
| 5" | 125 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | 12.82 |
| 6" | 150 | 37:1 | 2.76 | 2.11 | 10.94 | 11.81 | 2.09 | 1.50 | 12.82 |
| 8" | 200 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 | — |
| 10" | 250 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 12" | 300 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 | — |
| 14" | 350 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 16" | 400 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 | — |
| 18" | 450 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |
| 20" | 500 | 70:1 | 6.65 | 7.48 | 18.90 | 24.00 | 7.00 | 3.54 | — |
| 24" | 600 | 60:1 | 8.15 | 9.06 | 20.90 | 24.00 | 8.26 | 4.29 | — |



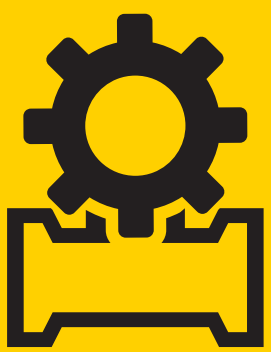

with Manual Gear

### CLASS 600 – FIRE SAFE & METAL SEAT

| Valve Size | | Gear Ratio | Dimensions (.in) | | | | | |
|---|---|---|---|---|---|---|---|---|
| Inches | DN | | A | B | C | D | E | F |
| 3" | 80 | 37:1 | 2.24 | 2.11 | 7.87 | 11.81 | 2.09 | 1.14 |
| 4" | 100 | 34:1 | 3.43 | 2.50 | 12.87 | 11.81 | 2.80 | 1.59 |
| 6" | 150 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 |
| 8" | 200 | 55:1 | 4.06 | 4.39 | 13.07 | 15.75 | 4.11 | 1.93 |
| 10" | 250 | 52:1 | 4.96 | 4.92 | 13.11 | 15.75 | 5.12 | 2.40 |
| 12" | 300 | 70:1 | 8.86 | 5.91 | 15.04 | 17.72 | 9.02 | 3.23 |




with Handle



ACTUATION

## PNEUMATIC RACK & PINION ACTUATORS


Designed and manufactured for the ultimate in durability and reliability, the new Apollo® pneumatic rack & pinion actuators provide outstanding service life.

Apollo® rack & pinion actuators have replaceable insert drive adapters in all but the largest models, and many units have dual "F" series bolt patterns. The numerous actuator drive and bolt pattern combinations allow direct mounting of several valve styles.

### FEATURES

- Cast Aluminum Body and Die Cast Aluminum End Caps with Yellow Chromate Powder Coat Finish
- Hard Anodized Die Cast Aluminum Pistons
- Hard-Coat Anodized Finished Aluminum Alloy Pinion
- Hard-Coat Anodized Finished Extruded Alumnium Drive Inserts
- Delta-Tone® Coated Preloaded Concentric Springs
- Polyoxymethylene (POM) Bushings
- O-Ring Seals
  Standard Temp. (-4°F to 180°F): Buna-N
  High Temp. (-4°F to 250°F): Fluorocarbon
  Low Temp. (-40°F to 180°F): Silicone
- Stainless Steel or Delta-Tone® Coated Capscrews, Nuts & Other Hardware

### BENEFITS

- Compact Rack & Pinion Design
- Quarter-Turn Operation
- Designed for Use on a Variety of Valve Types: Ball Valves, Butterfly Valves, Plug Valves
- Applicable to Damper and Door Openers
- Both Double-Acting and Spring-Return Units
- Double-Acting Torque Outputs from 220 in-lbs to 3547 in-lbs with an 80 psi Air Supply
- Removable/Replaceable Drive Inserts*
- Pre-Loaded Spring Assemblies
- ISO 5211 Valve Mounting
- NAMUR (VDI/VDE 3845) Accessory Mounts
- ATEC Classification II, 2 GD, Zones 1 or 2 (Gases) and 21 or 22 (Dust)
- Anti Blowout Pinion Design
- Maximum Pressure Rating: 116 psig (8 bar)
- Compatible Media: Clean, Dry Air, Filtered Non-corrosive Gas or Light Hydraulic Oil
- Pre-lubricated for the Life of the Actuator
- Chromate Corrosion Protection on all Aluminum Components
- Each Unit is Serialized
- 5 Year Apollo® Warranty

*A wide selection of standard inserts are available for square, DIN, and Double-D drives.

### PART NUMBER MATRIX

| A | S | 0350 | N | 04 | A | C | A |
|---|---|---|---|---|---|---|---|
| PREFIX | ACTION | SIZE | SEAL OPTION | SPRING SET | INSERTS | FAIL POSITION | REVISION |
| A | D = DOUBLE ACTING<br>S = SPRING RETURN<br>K = KIT | 0025<br>0040<br>0065<br>0100<br>0150<br>0200<br>0350<br>0600 | N = NITRILE<br>H = FLOUROCARBON<br>L = SILICONE | 00 (DA)<br>02<br>03<br>04<br>05<br>06<br>08 | A = STANDARD SQUARE<br>B = WITHOUT INSERT | C = FAIL CLOSED (FC)<br>F = FAIL OPEN (FO)<br>D = NO SPRING | A |

## AE SERIES ELECTRIC ACTUATOR

5 YEAR WARRANTY DOMESTIC MADE

Ruggedly built and designed for easy installation, new Apollo® AE Series electric actuators deliver the most standard features and performance in their class. **Now CSA listed all sizes as standard.**

### FEATURES

**FIVE OUTPUT TORQUES, ONE HOUSING**

- 200, 400, 600, 800 and 1,000 inch-pounds
- Long Service Life
- Anodized Die Cast Aluminum Housing
- Fiberglass Reinforced Nylon Cover Resists Corrosion
- Nitrile Gasket and Seals Cover all Penetration Points in Housing and Cover
- Precision Cut and Heat Treated Alloy Spur Gears
- Permanently Lubricated Enclosed Gear Train
- NEMA 4, 4X

**EASY TO USE**

- Two Separate 1/2" NPT Conduit Entrances for Easier Wiring and Signal Separation
- 12-Position Pre-Wired Terminal Strip Includes Standard Connections for Remote open/closed position indicators; Lots of Room for Wiring Options
- Unrestricted Mounting Orientation
- Built-In Thermal Overload Protection in all AC Motor Actuators
- Limit Switches Have an 11 Amp Rating at 115 VAC
- High Visibility Valve Position Indicator Standard on all Models

**MANY STANDARD FEATURES**

- Stainless Steel Push-and-Turn Manual Override Shaft, Position Indicator Shaft and Female Output
- ISO 5211 F07 Drive Output Reduces Inventory of Mounting Kits
- 115 AC & 220 AC Models Feature a 25% Duty Cycle Below 100˚F (24AC – 20% Duty Cycle Below 100˚F)
- 12 and 24 DC – All DC Voltage Models Provide 100% Duty Cycle for 1 Hour After Which DC Motor is Reduced to 80% Duty Cycle
- Reversible Rotation

**BROAD TEMPERATURE RANGE**

- Operates From -40˚F (When Equipped with 15 Watt Heater and Thermostat) to 150˚F

**AVAILABLE OPTIONS**

- Actuators can be Ordered with One, Two or Three Additional Limit Switches
- For Low Temperatures, Actuators Can Be Equipped With A Thermostatically Controlled Heater Element
- Motor Brake is Necessary When Mounting Actuator to a Butterfly Valve

### 4-20mA POSITIONER FEATURES (P - OPTION)

**ADVANCED PROTECTION FEATURES**

- Stall Detection - Motor Will Not Burn Out from Stalling
- Fault Signal - Fault LED on DHC-100 front panel
- Duty Cycle Protection:
  - Allows Actuators Rated for 25% Duty or More, to be Safely Modulated
  - Activates Prior to Tripping of Thermal Overload Protector, which Prevents Long Shut Down Periods due to tripping Thermal Overload Protector; Allows the Actuator to Continue to Move to Set-Point at a 25% Duty Cycle Speed

**PERFORMANCE FEATURES**

- High Resolution (± 0.1°) - 450 Points of Resolution on a 1/4 Turn Valve
- Dynamic Braking - Stops Motor Before Changing Actuator Direction and before Mechanical Brake Engages, which Reduces Brake Wear
- Adaptive Control - Designed to Maintain High Resolution and Accuracy by Continuously Monitoring and Compensating for Actuator Backlash, Motor Coast, and Load Changes to Eliminate Positioner Deadband

### 4-20mA POSITION TRANSMITTER FEATURES (T - OPTION)

- High Resolution Feedback Transmitter:
  - Provides Voltage or mA Output that can be set for any Range 0 to 10 VDC in 0.0016 V steps or 0 to 20 mA in 0.0031 mA steps)
- Auto/Manual Station (Local Control Unit - LCU)
- Polarity Detection

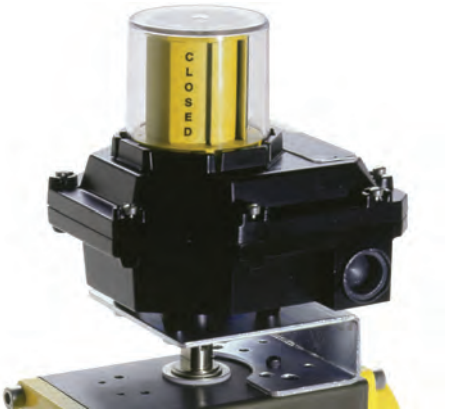
### PART NUMBER MATRIX

| AE - | 400 - | 3 | BF |
|---|---|---|---|
| PREFIX | TORQUE (LB - IN) | VOLTAGE | OPTIONS |
| AE | 200 | 1 = 115 vac | 0 = Standard |
| | 400 | 2 = 24 vac | A = One extra switch & cam* |
| | 600 | 3 = 220 vac | B = Two extra switches & cams* |
| | 800 | | C = Three extra switches and cams* |
| | 1000 | 4 = 12 vdc | D = Heater and Thermostat (15 watt) |
| | Enter all digits of Torque Value | 5 = 24 vdc | F = Motor Brake (115 VAC & 24 VAC Only) |
| | | | H = Tropical Heater (15 watts) |
| | | | P = Positioner 4-20 mA |
| | | | T = Transmitter 4-20 mA |

*AE will always be the first two characters of the part number, all digits from torque value must be entered into part number (i.e. 400, 1000, etc.) Only use one digit for voltage depiction (i.e. 1-5). For the options listing you may use more than one character, up to three, (i.e. O, AD or BD etc.)*
**Not availble with "P" option*

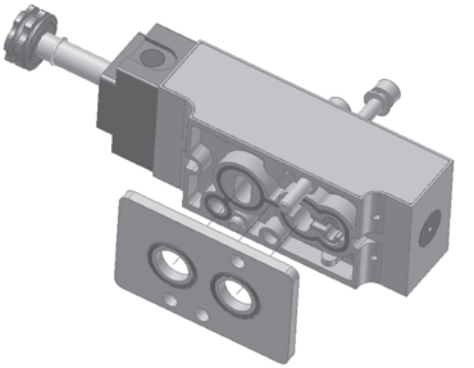
**EXAMPLE:**
**AE-400-3BF:** 400 lb. in.; 220 VAC; 2 extra switches and cams, motor brake
**AE-1000-1D:** 1000 lb. in.; 115 VAC; Heater and thermostat

## ACCESSORIES




### VALVE POSITION MONITORS

Here's the ultimate in valve monitoring: Position monitors feature a high visibility, color-coded indicator to display valve position. All monitors are designed to correspond to the latest NAMUR standard for actuator/position monitoring units. Plated steel or stainless steel mounting kits are available to provide a pre-engineered mounting solution for maximizing position monitor performance and direct mounting to actuators. Multiple brands available.



### SOLENOIDS

Apollo® actuators can be supplied with solenoids manufactured by AVC (Automatic Valve Company). Our 3/4 way, field convertible, direct mount (NAMUR pattern) solenoid valves feature a variety of interchangeable integrated molded coils. They're compatible with both spring return and double acting actuators.

### POSITIONERS

Apollo® valve positioners are excellent tools for increasing the gain of your valve package, often reducing your actuator size due to your increased ability to accurately control higher air deliveries, and the flexibility to add options and accessories to complete your control package's performance.

Their simple design makes PMV positioners (shown here) easy to understand, calibrate and repair. Rugged construction provides operation in a variety of tough applications. Compact size minimizes space requirements. A complete package means the user can select the right positioner for his application. A bright indicator makes it easy for operators to visually check the valve position. Spool valve design requires very little maintenance. The electro-pneumatic unit eliminates the need for an extra product and additional connections. PMV positioners are proven products recognized for providing years of reliable service. Other brands are also available from your Apollo® distributor.

Apollo® offers both pneumatic and electro-pneumatic positioners as standard. Pneumatic positioners may be used on either double acting or spring return actuators. The anodized aluminum housing provides excellent product integrity and good corrosion resistance. Options include special coatings, stainless steel housings and a variety of accessory items which can help you meet your most demanding control applications.

# SAFETY RELIEF **VALVES**

## PRESSURE RELIEF VALVE SELECTION CHART

| Model | Material Body / Trim | Inlet Sizes Min / Max, in. | Inlet Sizes Min / Max, mm. | Connections | | CE/PED Available | Set Pressures Min / Max, PSIG | Set Pressures Min / Max, barg | Temperature Max, ˚F | Temperature Max, ˚C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | NPT | Flanged | | | | | |
| **ASME Section I - Steam Power Boilers** | | | | | | | | | | |
| 19M | Bronze / Brass | 1/2 - 2 1/2 | DN 15 - 65 | X | | X | 15 - 250 | 1.0 - 17.2 | 406˚F | 207.7˚C |
| 19K | Bronze / Brass | 1/2 - 2 1/2 | DN 15 - 65 | X | | X | 15 - 250 | 1.0 - 17.2 | 406˚F | 207.7˚C |
| 19L | Bronze / Stainless | 1/2 - 2 1/2 | DN 15 - 65 | X | | X | 15 - 250 | 1.0 - 17.2 | 406˚F | 207.7˚C |
| 19S | Bronze / Stainless | 1/2 - 2 1/2 | DN 15 - 65 | X | | X | 15 - 300 | 1.0 - 20.7 | 422˚F | 216.7˚C |
| 29 | Bronze / Brass | 3/8 - 1 1/4 | DN 10 - 32 | X | | X | 30 - 200 | 2.0 - 13.8 | 406˚F | 207.7˚C |
| 119 | Cast Iron / Stainless | 1-1/2 - 6 | DN 40 - 150 | X | X | X | 15 - 250 | 1.0 - 17.2 | 450˚F | 232.2˚C |
| **ASME Section IV - Low Pressure Steam Heating Boilers** | | | | | | | | | | |
| 12 | Bronze / Brass | 2 - 3 | DN 50 - 80 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-101 | Bronze / Brass | 3/4 | DN 20 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-202 | Bronze / Brass | 1 | DN 25 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-211 | Bronze / Brass | 3/4 | DN 20 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-213 | Bronze / Brass | 1-1/4 | DN 32 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-214 | Bronze / Brass | 1-1/2 | DN 40 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 13-510 | Bronze / Brass | 3/4 | DN 20 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| 14-200 | Bronze / Brass | 2 - 3 | DN 50 - 80 | X | | | 5 - 15 | 0.34 - 1.0 | 250˚F | 121.1˚C |
| **ASME Section IV - Hot Water Heating & Supply Boilers** | | | | | | | | | | |
| 10-100 | Bronze / Brass | 3/4 | DN 20 | X | | | 20 - 65 | 1.4 - 4.5 | 250˚F | 121.1˚C |
| 10-300 | Bronze / Brass | 3/4 | DN 20 | X | | | 20 - 65 | 1.4 - 4.5 | 250˚F | 121.1˚C |
| 10-400 | Bronze / Brass | 3/4 | DN 20 | X | | | 30 | 2.0 | 250˚F | 121.1˚C |
| 10-410 | Bronze / Brass | 3/4 | DN 20 | X | | | 20 - 80 | 1.4 - 5.5 | 250˚F | 121.1˚C |
| 10-600, 10-610 | Bronze / Brass | 3/4 - 2 | DN 20 - 50 | X | | X | 15 - 160 | 1.0 - 11.0 | 250˚F | 121.1˚C |
| 10-624, 10-634 | Bronze / Brass | 3/4 | DN 20 | X | | | 30 - 150 | 2.0 - 10.3 | 250˚F | 121.1˚C |
| 17-401 | Bronze / Brass | 1/2 | DN 15 | X | | | 75 - 160 | 5.2 - 11.0 | 250˚F | 121.1˚C |
| 17-402 | Bronze / Brass | 3/4 | DN 20 | X | | | 75 - 150 | 5.2 - 10.3 | 250˚F | 121.1˚C |
| 18C-400 | Bronze / Brass | 1/2 - 3/4 | DN 15 - 20 | X | | | 125 - 175 | 8.61 - 12.1 | 210˚F | 98.9˚C |
| 18C-500 | Bronze / Stainless | 3/4 - 2 | DN 20 - 50 | X | | | 75 - 150 | 5.2 - 10.3 | 210˚F | 98.9˚C |
| **ASME Section VIII Air / Gases** | | | | | | | | | | |
| 15 | Brass | 1/4 - 1 | DN 8 - 25 | X | | X | 15 - 250 | 1.0 - 17.2 | 325˚F | 162.8˚C |
| 19M | Bronze / Brass | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 8 - 300 | 0.55 - 20.7 | 406˚F | 207.7˚C |
| 19K | Bronze / Brass | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 15 - 300 | 1.0 - 20.7 | 406˚F | 207.7˚C |
| 19L | Bronze / Stainless | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 15 - 300 | 1.0 - 20.7 | 406˚F | 207.7˚C |
| 19S | Bronze / Stainless | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 8 - 300 | 0.55 - 20.7 | 422˚F | 216.7˚C |
| 29 | Bronze / Brass | 3/8 - 1-1/4 | DN 10 - 32 | X | | X | 30 - 200 | 2.0 - 13.8 | 406˚F | 207.7˚C |
| 119 | Cast Iron / Stainless | 1-1/2 - 6 | DN 40 - 150 | X | X | X | 8 - 250 | 0.55 - 17.2 | 450˚F | 232.2˚C |
| 510 | Bronze / Brass | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 300 | 0.55 - 20.7 | 406˚F | 207.7˚C |
| 520 | Bronze / Stainless | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 1200 | 0.55 - 82.7 | 422˚F | 216.7˚C |
| 530 | Steel / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 1200 | 0.55 - 82.7 | 800˚F | 426.7˚C |
| 540 | Stainless / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 1200 | 0.55 - 82.7 | 800˚F | 426.7˚C |
| **ASME Section VIII Steam** | | | | | | | | | | |
| 10-322 | Brass | 3/4 | DN 20 | X | | X | 15 - 60 | 1.0 - 4.1 | 325˚F | 162.8˚C |
| 10-512 | Brass | 1/2 | DN 15 | X | | X | 9 - 60 | 0.62 - 4.1 | 325˚F | 162.8˚C |
| 19M | Bronze / Brass | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 8 - 250 | 0.55 - 17.2 | 406˚F | 207.7˚C |
| 19K | Bronze / Brass | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 15 - 250 | 1.0 - 17.2 | 406˚F | 207.7˚C |
| 19L | Bronze / Stainless | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 15 - 250 | 1.0 - 17.2 | 406˚F | 207.7˚C |
| 19S | Bronze / Stainless | 1/2 - 2-1/2 | DN 15 - 65 | X | | X | 8 - 300 | 0.55 - 20.7 | 422˚F | 216.7˚C |
| 29 | Bronze / Brass | 3/8 - 1-1/4 | DN 10 - 32 | X | | X | 30 - 200 | 2.0 - 13.8 | 406˚F | 207.7˚C |
| 119 | Cast Iron / Stainless | 1-1/2 - 6 | DN 40 - 150 | X | X | X | 8 - 250 | 0.55 - 17.2 | 450˚F | 232.2˚C |
| 510 | Bronze / Brass | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 250 | 0.55 - 17.2 | 406˚F | 207.7˚C |
| 520 | Bronze / Stainless | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 300 | 0.55 - 20.7 | 422˚F | 216.7˚C |
| 530 | Steel / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 900 | 0.55 - 62.1 | 800˚F | 426.7˚C |
| 540 | Stainless / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 900 | 0.55 - 62.1 | 800˚F | 426.7˚C |
| **ASME Section VIII Liquid** | | | | | | | | | | |
| 510 | Bronze / Brass | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 300 | 0.55 - 20.7 | 406˚F | 207.7˚C |
| 520 | Bronze / Stainless | 1/2 - 2 | DN 15 - 50 | X | | X | 8 - 1200 | 0.55 - 82.7 | 422˚F | 216.7˚C |
| 530 | CS / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 1200 | 0.55 - 82.7 | 800˚F | 426.7˚C |
| 540 | Stainless / Stainless | 1/2 - 2 | DN 15 - 50 | X | X | X | 8 - 1200 | 0.55 - 82.7 | 800˚F | 426.7˚C |
| **Non-Code, Vacuum & Miscellaneous Products** | | | | | | | | | | |
| 14-400, 14-500 | Low Pressure Air | 2 - 3 | DN 50 - 80 | X | | | 4 - 22 | 0.3 - 1.52 | 400˚F | 204.4˚C |
| 14-600 | Vacuum Relief | 2 - 3 | DN 50 - 80 | X | | | 8 - 30 HG | 203 - 762 mm. HG | 400˚F | 204.4˚C |
| 16-200 | Liquids | 1/2 | DN 15 | X | | | 30 - 80 | 2.1 - 12.4 | 120˚F | 48.9˚C |
| 16-501 | Adj. Liquid Bypass | 1/2 | DN 15 | X | | | 50 - 600 | 0 - 41.4 | 200˚F | 93.3˚C |
| 16-503, 16-504 | Calibrated Liquid Relief | 1/2 - 3/4 | DN 15 -20 | X | | | 50 - 175 | 3.4 - 12.1 | 200˚F | 93.3˚C |
| Drip Pan Elbows | Steam Discharge | 3/4 - 8 | DN 20 - 200 | X | X | | N/A | N/A | 450˚F | 232.2˚C |

## 10 (RVW) SERIES — HOT WATER BOILER SAFETY RELIEF

HV

10-102
10-303

10-104
10-301

10-321


10-407
10-417


10-408
10-418

10-624
10-634 OEM

Brass/bronze safety relief valves protect ASME Section IV hot water heating boilers and hydronic heating systems. High capacity design features corrosion resistant construction. Brass, satin or polished chrome finishes available.

### ASME Section IV
- Inlet Size 3/4" - Outlet - 3/4" & 1"
- Factory Set Pressure 20-150 psi
- Maximum Temperature Service: 250°F

### APPLICATIONS
- Ideal for Use With Hot Water Boilers and Hydronic Heating Systems

### FEATURES
- Pressures From 20 to 150 psig
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- Stainless Steel Springs Standard
- 10-624/634 are Ideal for Use in Various Plumbing Systems, Commercial Boiler Applications and Swimming Pool Heaters
- 10-418/417 are Ideal for Use in Swimming Pool Heater Applications

### OPTIONS
- Models 10-104 and 10-301 are Available with Optional Satin or Polished Chrome Finish
- 10-321 Available in Polished Chrome Only

### AVAILABLE CONFIGURATIONS

| Model Number | Size(in./mm.) | | Certified Pressure Range psig | Height (in./mm.) | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | | |
| 10-102 | 3/4F | 1F | 20-60 | 3.94 | 105 |
| | 20 F | 25 F | | 100 | 47.7 |
| 10-104 | 3/4 M | 1 F | 20-60 | 3.75 | 109 |
| | 20 M | 25 F | | 95 | 49.5 |
| 10-301 | 3/4 M | 3/4 F | 20-60 | 3.75 | 114 |
| | 20 M | 20 F | | 95 | 51.8 |
| 10-303 | 3/4 F | 3/4 F | 20-60 | 3.94 | 115 |
| | 20 F | 20 F | | 100 | 52.3 |
| 10-321 | 3/4 M | 3/4 F | 20-60 | 3.75 | 123 |
| | 20 M | 20 F | | 95 | 55.9 |
| 10-407 | 3/4 M | 3/4 F | 30 | 3 | 62 |
| | 20 M | 20 F | | 76 | 28.2 |
| 10-408 | 3/4 F | 3/4 F | 30 | 2.75 | 65 |
| | 20 F | 20 F | | 70 | 29.5 |
| 10-417 | 3/4 M | 3/4 F | 20-80 | 3 | 62 |
| | 20 M | 20 F | | 76 | 28.1 |
| 10-418 | 3/4 F | 3/4 F | 20-80 | 2.75 | 65 |
| | 20 F | 20 F | | 70 | 29.5 |
| 10-624 | 3/4 M | 3/4 F | 30-150 | 4.62 | 106 |
| | 20 M | 20 F | | 117 | 48.2 |
| 10-634 | 3/4 F | 3/4 F | 30-150 | 4.62 | 106 |
| | 20 F | 20 F | | 117 | 48.2 |

## 10 (RVW) SERIES — HOT WATER BOILER SAFETY RELIEF

### ASME SECTION IV - HOT WATER

British thermal units per hour (kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS BTU/Hr.

| Model No. | 10-102 10-104 | 10-301 10-303 | 10-321 | 10-407 10-408 | 10-417 10-418 | 10-624 10-634 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | - | 225,000 | 175,000 | - | - | - |
| 10* | - | 295,000 | 230,000 | - | - | - |
| 15 | - | 365,000 | 285,000 | - | - | - |
| 20 | 545,000 | 420,000 | 325,000 | - | 377,000 | - |
| 25 | 625,000 | 485,000 | 375,000 | - | 427,000 | - |
| 30 | 710,000 | 550,000 | 425,000 | 535,000 | 477,000 | 689000 |
| 35 | 790,000 | 610,000 | 475,000 | - | 532,000 | 769000 |
| 40 | 870,000 | 675,000 | 525,000 | - | 587,000 | 848000 |
| 45 | 955,000 | 740,000 | 575,000 | - | 642,000 | 928,000 |
| 50 | 1,035,000 | 805,000 | 625,000 | - | 697,000 | 1,007,000 |
| 55 | 1,115,000 | 870,000 | 675,000 | - | 752,000 | 1,087,000 |
| 60 | 1,200,000 | 935,000 | 725,000 | - | 807,000 | 1,166,000 |
| 65 | - | - | - | - | 862,000 | 1,246,000 |
| 70 | - | - | - | - | 917,000 | 1,325,000 |
| 75 | - | - | - | - | 972,000 | 1,405,000 |
| 80 | - | - | - | - | 1,027,000 | 1,484,000 |
| 85 | - | - | - | - | - | 1,564,000 |
| 90 | - | - | - | - | - | 1,643,000 |
| 95 | - | - | - | - | - | 1,723,000 |
| 100 | - | - | - | - | - | 1,802,000 |
| 105 | - | - | - | - | - | 1,882,000 |
| 110 | - | - | - | - | - | 1,961,000 |
| 115 | - | - | - | - | - | 2,041,000 |
| 120 | - | - | - | - | - | 2,120,000 |
| 125 | - | - | - | - | - | 2,199,000 |
| 130 | - | - | - | - | - | 2,279,000 |
| 135 | - | - | - | - | - | 2,358,000 |
| 140 | - | - | - | - | - | 2,438,000 |
| 145 | - | - | - | - | - | 2,517,000 |
| 150 | - | - | - | - | - | 2,597,000 |

### METRIC UNITS Kcal/Hr.

| Model No. | 10-102 10-104 | 10-301 10-303 | 10-321 | 10-407 10-408 | 10-417 10-418 | 10-624 10-634 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.34 | - | 57 | 44 | - | - | - |
| 0.69 | - | 74 | 58 | - | - | - |
| 1.03 | | 92 | 72 | - | - | - |
| 1.38 | 137 | 106 | 82 | - | 95 | - |
| 1.72 | 158 | 122 | 95 | - | 108 | - |
| 2.07 | 179 | 139 | 107 | 135 | 120 | 174 |
| 2.41 | 199 | 154 | 120 | - | 134 | 194 |
| 2.76 | 219 | 170 | 132 | - | 148 | 214 |
| 3.10 | 241 | 187 | 145 | - | 162 | 234 |
| 3.45 | 261 | 203 | 158 | - | 176 | 254 |
| 3.80 | 281 | 219 | 170 | - | 190 | 274 |
| 4.14 | 303 | 236 | 183 | - | 204 | 294 |
| 4.48 | - | - | - | - | 217 | 314 |
| 4.83 | - | - | - | - | 231 | 334 |
| 5.17 | - | - | - | - | 245 | 354 |
| 5.51 | - | - | - | - | 259 | 374 |
| 5.86 | - | - | - | - | - | 394 |
| 6.20 | - | - | - | - | - | 414 |
| 6.55 | - | - | - | - | - | 435 |
| 6.89 | - | - | - | - | - | 454 |
| 7.24 | - | - | - | - | - | 475 |
| 7.58 | - | - | - | - | - | 495 |
| 7.93 | - | - | - | - | - | 515 |
| 8.27 | - | - | - | - | - | 535 |
| 8.62 | - | - | - | - | - | 555 |
| 8.96 | - | - | - | - | - | 575 |
| 9.31 | - | - | - | - | - | 595 |
| 9.65 | - | - | - | - | - | 615 |
| 10.00 | - | - | - | - | - | 635 |
| 10.34 | - | - | - | - | - | 655 |

** Pressure settings below 15 psi are non-ASME Code.*

### P/N SUFFIX KEY

| Set Pressure psig | Exterior Finish | | |
|---|---|---|---|
| | Plain Brass | Satin Chrome | Polished Chrome |
| 20 | -02 | -41 | -67 |
| 22 | -03 | -42 | -68 |
| 25 | -04 | -43 | -69 |
| 30 | -05 | -44 | -70 |
| 35 | -06 | -45 | -71 |
| 40 | -07 | -46 | -72 |
| 43 | -08 | -47 | -73 |
| 45 | -09 | -48 | -74 |
| 50 | -10 | -49 | -75 |
| 55 | -11 | -50 | -76 |
| 60 | -12 | -51 | -77 |
| 65 | -13 | | |
| 70 | -14 | | |
| 75 | -15 | | |
| 80 | -16 | | |

### ORDERING CODE

Use two-digit suffix number to indicate set pressure and body finish.
Suffix for 10-624 / 10-634 models is actual set pressure in psig.

**EXAMPLE:**

**10-301-44** = 3/4" 10-301 set @ 30 psig, satin chrome finish.

**10-624-125** = 3/4" 10-624 set @ 125 psig (plain bronze finish only)

*NOTE:*

- *Model 10-321 available in polished chrome finish only.*
- *All other models are furnished with plain bronze finish.*
- *Model 10-104 and 10-301 available with optional satin or polished chrome finish.*

## 10-322 (RVS32) & 10-512 (RVS52) SERIES — OEM STYLE STEAM SAFETY RELIEF

ASME UV CE

10-512

10-322

National Board capacity-certified safety valves; brass body with optional satin or polished chrome finish. Protects against excess pressure from thermal expansion and steam caused by failure of BTU input controls.

### ASME Section VIII
- Sizes 1/2" and 3/4"
- Factory Set Pressures 15 to 60 psig @ 312˚F max
- National Board Certified Capacity

### APPLICATIONS
- Ideally suited for OEM applications such as steam carpet and jewelry cleaners, autoclaves, sterilizers, commercial pressure cookers, steam jacketed kettles, dental equipment, coffee makers and similar equipment.

### FEATURES
- Stainless Steel Springs
- Small Physical Size
- Discharge Capacities to 725 lbs./hr.
- Soft Seating for Exceptional Seat Tightness
- Pressure Settings 15 to 60 psig
- 10-322 in Polished Chrome Only (10-322-P)
- CRN 0G8547.5C, Registered in all Canadian Provinces and Territories
- More Descriptive Model Numbering System

### OPTIONS
(Model 10-512 Only)
- Satin or Polished Chrome Finish
- Stainless Steel Wetted Trim
- BSP Pipe Connections
- CE/PED Compliance

### P/N SUFFIX KEY

| Set Pressure psig | *Certified Capacities | |
|---|---|---|
| | 10.322 lbs.hr. | 15.512 lbs.hr |
| 15 | - | 151 |
| 20 | 325 | 178 |
| 25 | 375 | 205 |
| 30 | 425 | 232 |
| 35 | 475 | 258 |
| 40 | 525 | 285 |
| 45 | 575 | 312 |
| 50 | 625 | 339 |
| 55 | 675 | 366 |
| 60 | 725 | 392 |

** ASME (UV) Rating – 90% of actual capacity at 10% accumulation. Capacity in lbs. of saturated steam per hour.*

### AVAILABLE CONFIGURATIONS

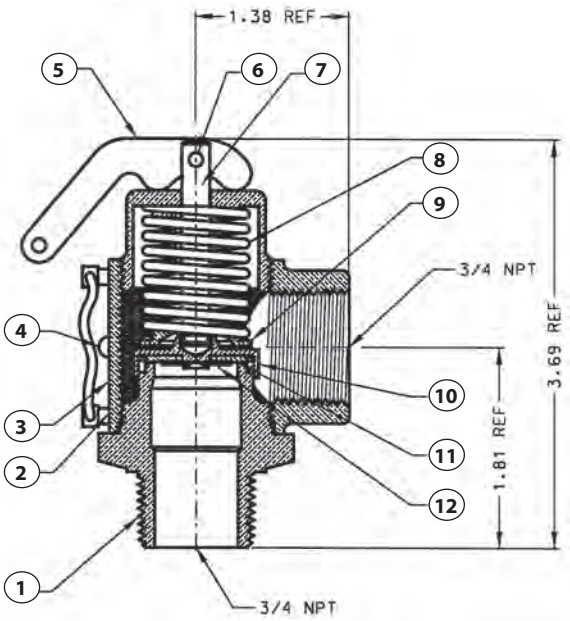
| Model Number | Size (in./mm.) | | Set Pressure Range psig | Height (in./mm.) | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | | |
| 10-322 | 3/4 M | 3/4 F | 20-60 | 3.75 | 128 |
| | 20 | 20 | | 95 | 58.2 |
| 10-512 | 1/2 M | 1/2 F | 15-60 | 2.62 | 58 |
| | 15 | 15 | | 67 | 26.4 |

### PART NUMBER MATRIX

| 10 - X | -X | -XX | -X |
|---|---|---|---|
| MODEL AND SIZE (IN.) | FINISH | SET PRESSURE | OPTIONS |
| 512 = 1/2 x 1/2 | B = Plain Brass | Set Pressure in PSIG | B = BSPP connections |
| 322 = 3/4 x 3/4 | S = Satin Chrome | (2 Digits) | CE = PED/CE |
| | P = Polished Chrome | | S = Stainless Steel Trim |
| | | | V = Viton® Seat |
| | | | X = Blank Outlet not Threaded |

**EXAMPLE:**
**10-322-P-20** = 3/4" 10-322 set @ 20 psig, polished chrome finish.
*NOTE:*
- *Model 10-322 available in polished chrome finish only.*
- *Valves may be set for any pressure between 15 and 60 psig.*

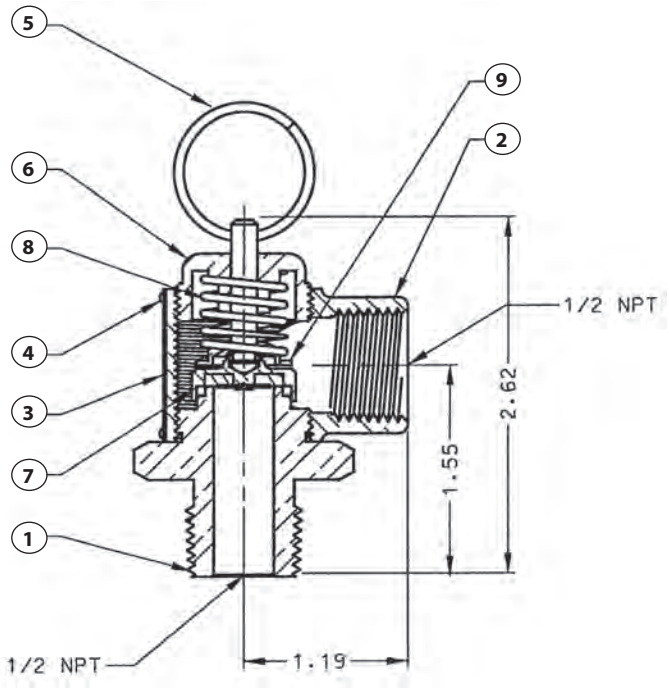
## 10-322 (RVS32) OEM STYLE STEAM SAFETY RELIEF




### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | **NOZZLE** | Brass, ASTM B-16 |
| 2 | **BODY** | Brass, ASTM B-16 |
| 3 | **NAMEPLATE** | Aluminum |
| 4 | **DRIVE SCREW** | Steel, Zinc Plated |
| 5 | **HANDLE** | Steel, Zinc Plated |
| 6 | **COTTER PIN** | Steel, Zinc Plated |
| 7 | **STEM** | Brass, ASTM B-16 |
| 8 | **SPRING** | Stainless Steel |
| 9 | **SPRING WASHER** | Brass, ASTM B-16 |
| 10 | **DISC** | Brass, ASTM B-16 |
| 11 | **SEAT** | Teflon® Faced EPDM |
| 12 | **WASHER** | Brass, ASTM B-16 |

## 10-512 (RVS52) OEM STYLE STEAM SAFETY RELIEF



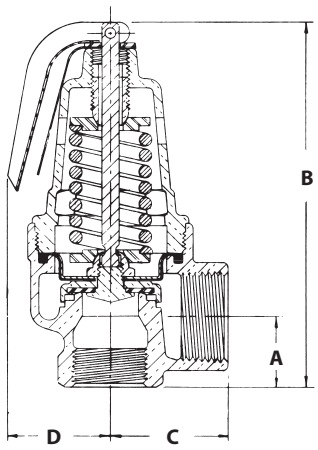

### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | NOZZLE | Brass, ASTM B-16 |
| 2 | BODY | Brass, ASTM B-16 |
| 3 | NAMEPLATE | Aluminum |
| 4 | DRIVE SCREW | Steel, Zinc Plated |
| 5 | PULL RING | Steel, Zinc Plated |
| 6 | CAP | Brass, ASTM B-16 |
| 7 | DISC ASSEMBLY | Brass, Silicone |
| 8 | SPRING | Stainless Steel |
| 9 | SPRING WASHER | Brass, ASTM B-16 |

Model 10-512 available with optional stainless steel wetted trim. Nozzle, disc holder and disc washer are type 316 stainless steel.

## 10-600 (RVW) SERIES — HIGH CAPACITY HOT WATER BOILER SAFETY RELIEF

HV




High-capacity heating system valves with female inlet and standard or expanded female outlet. Elevated seat for drainage of water away from seat area. Entire pressure range is National Board capacity certified.

### ASME Section IV
- Inlet Sizes 3/4" to 2"
- Factory Set Pressures from 15-160 psig
- Maximum Temperature Service 250°F

### APPLICATIONS
- Hot water heating boilers and hot water supply systems

### FEATURES
- High BTU Capacity Rating
- Silicone Seat
- Fabric Reinforced Molded Diaphragm Isolates Spring from Water at all Times
- Bronze Body and Spring Cage
- Registered in Canadian Provinces and Territories, CRN #0G8547.5C
- Protects Against Excessive Water Pressure Due to Failure of Controls to Regulate BTU Input

### AVAILABLE CONFIGURATIONS

| Model Number | Size(in./mm.) | | Certified Pressure Range psig | Wt./100 (lbs./kg.) | Dimensions (in./mm.) | | | |
|---|---|---|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | | A | B | C | D |
| 10-604 | 3/4F | 3/4F | 15-160 | 232 | 1.03 | 5.25 | 1.62 | 1.56 |
| | 20 | 20 | | 105.2 | 26 | 133 | 41 | 39 |
| 10-614 | 3/4F | 1 F | 15-160 | 226 | 1.03 | 5.25 | 1.72 | 1.56 |
| | 20 | 25 | | 102.5 | 26 | 133 | 43 | 39 |
| 10-605 | 1F | 1F | 15-160 | 410 | 1.25 | 6.69 | 2.00 | 2.00 |
| | 25 | 25 | | 185.9 | 31 | 169 | 50 | 50 |
| 10-615 | 1 F | 1-1/4F | 15-160 | 390 | 1.25 | 6.69 | 2.00 | 2.00 |
| | 25 | 32 | | 176.9 | 31 | 169 | 50 | 50 |
| 10-606 | 1-1/4F | 1-1/4F | 15-160 | 795 | 1.25 | 8.37 | 2.47 | 2.62 |
| | 32 | 32 | | 360.5 | 31 | 212 | 63 | 67 |
| 10-616 | 1-1/4F | 1-1/2F | 15-160 | 755 | 1.25 | 8.37 | 2.47 | 2.62 |
| | 32 | 40 | | 342.4 | 31 | 212 | 63 | 67 |
| 10-607 | 1-1/2F | 1-1/2F | 15-160 | 1100 | 2.00 | 10.75 | 2.75 | 3.12 |
| | 40 | 40 | | 498.9 | 50 | 273 | 69 | 79 |
| 10-617 | 1-1/2F | 2F | 15-160 | 1145 | 2.00 | 10.75 | 2.75 | 3.12 |
| | 40 | 50 | | 519.3 | 50 | 273 | 69 | 79 |
| 10-608 | 2F | 2F | 15-160 | 2375 | 2.19 | 14.00 | 3.69 | 3.50 |
| | 50 | 50 | | 1077.1 | 55 | 355 | 93 | 88 |
| 10-618 | 2F | 2-1/2F | 15-160 | 2315 | 2.19 | 14.00 | 3.66 | 3.50 |
| | 50 | 65 | | 1049.9 | 55 | 355 | 92 | 88 |

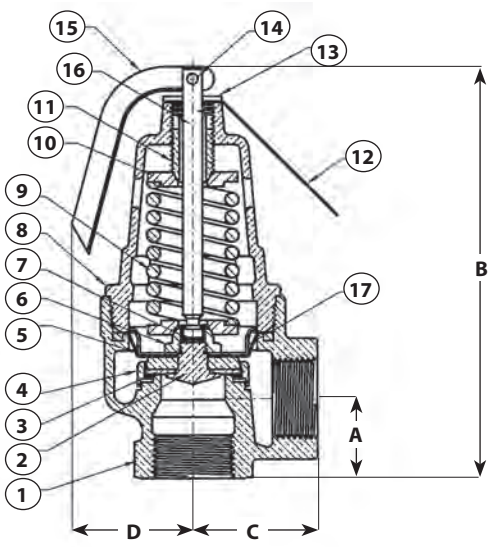
### P/N SUFFIX KEY

| Set Pressure psig | Suffix | Set Pressure psig | Suffix |
|---|---|---|---|
| 15 | -01 | 85 | -17 |
| 20 | -02 | 90 | -18 |
| 22 | -03 | 95 | -19 |
| 25 | -04 | 100 | -20 |
| 30 | -05 | 105 | -21 |
| 35 | -06 | 110 | -22 |
| 40 | -07 | 115 | -23 |
| 43 | -08 | 120 | -24 |
| 45 | -09 | 125 | -25 |
| 50 | -10 | 130 | -30 |
| 55 | -11 | 135 | -31 |
| 60 | -12 | 140 | -32 |
| 65 | -13 | 145 | -33 |
| 70 | -14 | 150 | -34 |
| 75 | -15 | 155 | -35 |
| 80 | -16 | 160 | -36 |

### ORDERING CODE
Use two-digit suffix number to indicate Inlet x Outlet size and set pressure.

**EXAMPLE:**
**10-615-12** = 1"x 1-1/4" 10-610 set 60 psig
**10-608-05** = 2"x 2" 10-600 set 30 psig

## 10-600 (RVW) SERIES — HIGH CAPACITY HOT WATER BOILER SAFETY RELIEF




### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | BODY | Bronze Alloy C84400 |
| 2 | SEAT INSERT | Brass, ASTM B-16 |
| 3 | SEAT | Silicone |
| 4 | DISC | Brass ASTM B-16 |
| 5 | DIAPHRAGM | Fabric Reinforce EPDM |
| 6 | STEM NUT | Steel, Plated |
| 7 | SPACER | Silicone |
| 8 | CAP | Bronze Alloy C84400 |
| 9 | SPRING | PLAted ASTM A228 |
| 10 | SPRING WASHER | AISI 12L14 Steel |
| 11 | ADJ. SCREW | Brass, ASTM B-16 |
| 12 | NAMEPLATE | Aluminum |
| 13 | LIFT WASHER | Steel, Plated |
| 14 | HANDLE RIVET | Steel, Plated |
| 15 | LIFT HANDLE | Steel, Plated |
| 16 | STEM NUT | Steel, Plated |
| 17 | DIAPHRAGM RET. | Steel, Plated |

### ASME SECTION IV HOT WATER

British thermal units per hour (kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS BTU/Hr.

| Model No. | 10-604 3/4 x 3/4 | 10-605 1 x 1 | 10-606 1-1/4 x 1-1/4 | 10-607 1-1/2 x 1-1/2 | 10-608 2 x 2 |
|---|---|---|---|---|---|
| Set Pressure psig | | | | | |
| 15 | 541,000 | 876,000 | 1,515,000 | 2,061,000 | 3,397,000 |
| 20 | 636,000 | 1,030,000 | 1,782,000 | 2,424,000 | 3,996,000 |
| 25 | 732,000 | 1,185,000 | 2,049,000 | 2,788,000 | 4,595,000 |
| 30 | 827,000 | 1,339,000 | 2,316,000 | 3,151,000 | 5,193,000 |
| 35 | 923,000 | 1,493,000 | 2,583,000 | 3,514,000 | 5,792,000 |
| 40 | 1,018,000 | 1,648,000 | 2,850,000 | 3,878,000 | 6,391,000 |
| 45 | 1,113,000 | 1,802,000 | 3,117,000 | 4,241,000 | 6,990,000 |
| 50 | 1,209,000 | 1,956,000 | 3,384,000 | 4,604,000 | 7,589,000 |
| 55 | 1,304,000 | 2,111,000 | 3,651,000 | 4,968,000 | 8,188,000 |
| 60 | 1,399,000 | 2,265,000 | 3,918,000 | 5,331,000 | 8,786,000 |
| 65 | 1,495,000 | 2,420,000 | 4,185,000 | 5,694,000 | 9,385,000 |
| 70 | 1,590,000 | 2,574,000 | 4,453,000 | 6,058,000 | 9,984,000 |
| 75 | 1,686,000 | 2,728,000 | 4,720,000 | 6,421,000 | 10,583,000 |
| 80 | 1,781,000 | 2,883,000 | 4,987,000 | 6,784,000 | 11,182,000 |
| 85 | 1,876,000 | 3,037,000 | 5,254,000 | 7,148,000 | 11,780,000 |
| 90 | 1,972,000 | 3,192,000 | 5,521,000 | 7,511,000 | 12,379,000 |
| 95 | 2,067,000 | 3,346,000 | 5,788,000 | 7,874,000 | 12,978,000 |
| 100 | 2,162,000 | 3,500,000 | 6,055,000 | 8,238,000 | 13,577,000 |
| 105 | 2,258,000 | 3,655,000 | 6,322,000 | 8,601,000 | 14,176,000 |
| 110 | 2,353,000 | 3,809,000 | 6,589,000 | 8,964,000 | 14,775,000 |
| 115 | 2,449,000 | 3,963,000 | 6,856,000 | 9,327,000 | 15,373,000 |
| 120 | 2,544,000 | 4,118,000 | 7,123,000 | 9,691,000 | 15,972,000 |
| 125 | 2,639,000 | 4,272,000 | 7,390,000 | 10,054,000 | 16,571,000 |
| 130 | 2,735,000 | 4,427,000 | 7,657,000 | 10,417,000 | 17,170,000 |
| 135 | 2,830,000 | 4,581,000 | 7,924,000 | 10,781,000 | 17,769,000 |
| 140 | 2,925,000 | 4,735,000 | 8,191,000 | 11,144,000 | 18,368,000 |
| 145 | 3,021,000 | 4,890,000 | 8,458,000 | 11,507,000 | 18,966,000 |
| 150 | 3,116,000 | 5,044,000 | 8,725,000 | 11,871,000 | 19,565,000 |
| 155 | 3,212,000 | 5,199,000 | 8,992,000 | 12,234,000 | 20,164,000 |
| 160 | 3,307,000 | 5,353,000 | 9,260,000 | 12,597,000 | 20,763,000 |

### METRIC UNITS Kcal/Hr.

| Model No. | 10-604 20 x 20 | 10-605 25 x 25 | 10-606 32 x 32 | 10-607 40 x 40 | 10-608 50x 50 |
|---|---|---|---|---|---|
| Set Pressure barg | | | | | |
| 1.03 | 136 | 221 | 382 | 520 | 857 |
| 1.38 | 160 | 260 | 449 | 611 | 1,008 |
| 1.72 | 185 | 299 | 517 | 703 | 1,159 |
| 2.07 | 209 | 351 | 584 | 795 | 1,310 |
| 2.41 | 233 | 377 | 651 | 886 | 1,461 |
| 2.76 | 257 | 416 | 719 | 978 | 1,612 |
| 3.10 | 281 | 454 | 786 | 1,070 | 1,763 |
| 3.45 | 305 | 493 | 853 | 1,161 | 1,914 |
| 3.79 | 329 | 532 | 921 | 1,253 | 2,065 |
| 4.14 | 353 | 571 | 988 | 1,344 | 2,219 |
| 4.48 | 377 | 610 | 1,055 | 1,436 | 2,367 |
| 4.83 | 401 | 649 | 1,123 | 1,528 | 2,518 |
| 5.17 | 425 | 688 | 1,190 | 1,619 | 2,669 |
| 5.51 | 449 | 727 | 1,258 | 1,711 | 2,820 |
| 5.86 | 473 | 766 | 1,325 | 1,803 | 2,971 |
| 6.20 | 497 | 805 | 1,393 | 1,894 | 3,122 |
| 6.55 | 521 | 844 | 1,560 | 1,986 | 3,273 |
| 6.89 | 545 | 883 | 1,527 | 2,076 | 3,424 |
| 7.24 | 569 | 922 | 1,594 | 2,169 | 3,575 |
| 7.58 | 593 | 961 | 1,662 | 2,261 | 3,726 |
| 7.93 | 618 | 999 | 1,729 | 2,352 | 3,877 |
| 8.27 | 642 | 1,039 | 1,796 | 2,444 | 4,028 |
| 8.62 | 666 | 1,077 | 1,864 | 2,536 | 4,179 |
| 8.96 | 690 | 1,116 | 1,931 | 2,627 | 4,330 |
| 9.31 | 714 | 1,155 | 1,998 | 2,719 | 4,481 |
| 9.65 | 738 | 1,194 | 2,066 | 2,811 | 4,632 |
| 10.00 | 762 | 1,233 | 2,133 | 2,902 | 4,783 |
| 10.34 | 786 | 1,272 | 2,200 | 2,994 | 4,934 |
| 10.69 | 810 | 1,311 | 2,268 | 3,085 | 5,085 |
| 11.03 | 834 | 1,350 | 2,335 | 3,177 | 5,236 |

## 10-610 (RVW) SERIES HIGH CAPACITY HOT WATER BOILER SAFETY RELIEF

### ASME SECTION IV - HOT WATER

British thermal units per hour (kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS BTU/Hr.**

| Model No. | 10-614 3/4 x 1 | 10-615 1 x 1-1/4 | 10-616 1-1/4 x 1-1/2 | 10-617 1-1/2 x 2 | 10-618 2 x 2-1/2 |
|---|---|---|---|---|---|
| Set Pressure psig | | | | | |
| 15 | 635,000 | 1,027,000 | 1,777,000 | 2,417,000 | 3,984,000 |
| 20 | 746,000 | 1,208,000 | 2,090,000 | 2,843,000 | 4,686,000 |
| 25 | 858,000 | 1,389,000 | 2,403,000 | 3,270,000 | 5,389,000 |
| 30 | 970,000 | 1,570,000 | 2,716,000 | 3,696,000 | 6,091,000 |
| 35 | 1,082,000 | 1,751,000 | 3,030,000 | 4,122,000 | 6,793,000 |
| 40 | 1,194,000 | 1,933,000 | 3,343,000 | 4,548,000 | 7,496,000 |
| 45 | 1,306,000 | 2,114,000 | 3,656,000 | 4,974,000 | 8,198,000 |
| 50 | 1,418,000 | 2,295,000 | 3,969,000 | 5,400,000 | 8,900,000 |
| 55 | 1,529,000 | 2,476,000 | 4,283,000 | 5,826,000 | 9,603,000 |
| 60 | 1,641,000 | 2,657,000 | 4,596,000 | 6,252,000 | 10,305,000 |
| 65 | 1,753,000 | 2,838,000 | 4,909,000 | 6,679,000 | 11,007,000 |
| 70 | 1,865,000 | 3,019,000 | 5,222,000 | 7,105,000 | 11,710,000 |
| 75 | 1,977,000 | 3,200,000 | 5,535,000 | 7,531,000 | 12,412,000 |
| 80 | 2,089,000 | 3,381,000 | 5,849,000 | 7,957,000 | 13,114,000 |
| 85 | 2,201,000 | 3,562,000 | 6,162,000 | 8,383,000 | 13,817,000 |
| 90 | 2,313,000 | 3,743,000 | 6,475,000 | 8,809,000 | 14,519,000 |
| 95 | 2,424,000 | 3,924,000 | 6,788,000 | 9,235,000 | 15,221,000 |
| 100 | 2,536,000 | 4,105,000 | 7,101,000 | 9,661,000 | 15,924,000 |
| 105 | 2,648,000 | 4,286,000 | 7,415,000 | 10,088,000 | 16,626,000 |
| 110 | 2,760,000 | 4,468,000 | 7,728,000 | 10,514,000 | 17,328,000 |
| 115 | 2,872,000 | 4,649,000 | 8,041,000 | 10,940,000 | 18,031,000 |
| 120 | 2,984,000 | 4,830,000 | 8,354,000 | 11,366,000 | 18,733,000 |
| 125 | 3,096,000 | 5,011,000 | 8,668,000 | 11,792,000 | 19,435,000 |
| 130 | 3,207,000 | 5,192,000 | 8,981,000 | 12,218,000 | 20,138,000 |
| 135 | 3,319,000 | 5,373,000 | 9,294,000 | 12,644,000 | 20,840,000 |
| 140 | 3,431,000 | 5,554,000 | 9,607,000 | 13,070,000 | 21,543,000 |
| 145 | 3,543,000 | 5,735,000 | 9,920,000 | 13,497,000 | 22,245,000 |
| 150 | 3,655,000 | 5,916,000 | 10,234,000 | 13,923,000 | 22,947,000 |
| 155 | 3,767,000 | 6,097,000 | 10,547,000 | 14,349,000 | 23,650,000 |
| 160 | 3,879,000 | 6,278,000 | 10,860,000 | 14,775,000 | 24,352,000 |

**METRIC UNITS Kcal/Hr.**

| Model No. | 10-614 20 x 25 | 10-615 25 x 32 | 10-616 32 x 40 | 10-617 40 x 50 | 10-618 50 x 65 |
|---|---|---|---|---|---|
| Set Pressure barg | | | | | |
| 1.03 | 160 | 259 | 448 | 610 | 1,005 |
| 1.38 | 188 | 305 | 527 | 717 | 1,182 |
| 1.72 | 216 | 350 | 606 | 825 | 1,359 |
| 2.07 | 245 | 396 | 645 | 932 | 1,536 |
| 2.41 | 273 | 442 | 765 | 1,040 | 1,713 |
| 2.76 | 301 | 488 | 843 | 1,147 | 1,890 |
| 3.10 | 329 | 533 | 922 | 1,254 | 2,067 |
| 3.45 | 358 | 579 | 932 | 1,362 | 2,244 |
| 3.79 | 386 | 624 | 1,080 | 1,469 | 2,422 |
| 4.14 | 414 | 670 | 1,159 | 1,577 | 2,599 |
| 4.48 | 442 | 716 | 1,238 | 1,684 | 2,776 |
| 4.83 | 470 | 761 | 1,317 | 1,792 | 2,953 |
| 5.17 | 498 | 807 | 1,396 | 1,899 | 3,130 |
| 5.51 | 527 | 827 | 1,475 | 2,007 | 3,307 |
| 5.86 | 555 | 898 | 1,554 | 2,114 | 3,485 |
| 6.20 | 583 | 944 | 1,633 | 2,222 | 3,662 |
| 6.55 | 611 | 990 | 1,712 | 2,329 | 3,839 |
| 6.89 | 640 | 1,035 | 1,791 | 2,437 | 4,016 |
| 7.24 | 668 | 1,081 | 1,870 | 2,544 | 4,193 |
| 7.58 | 696 | 1,127 | 1,949 | 2,652 | 4,370 |
| 7.93 | 724 | 1,172 | 2,028 | 2,759 | 4,547 |
| 8.27 | 752 | 1,218 | 2,107 | 2,866 | 4,724 |
| 8.62 | 781 | 1,264 | 2,186 | 2,974 | 4,901 |
| 8.96 | 809 | 1,309 | 2,265 | 3,081 | 5,079 |
| 9.31 | 837 | 1,355 | 2,344 | 3,189 | 5,256 |
| 9.65 | 865 | 1,401 | 2,423 | 3,296 | 5,433 |
| 10.00 | 893 | 1,446 | 2,502 | 3,404 | 5,610 |
| 10.34 | 922 | 1,492 | 2,581 | 3,511 | 5,787 |
| 10.69 | 950 | 1,538 | 2,660 | 3,619 | 5,964 |
| 11.03 | 978 | 1,583 | 2,739 | 3,726 | 6,141 |

## 12-200 (RVS12) SERIES — LOW PRESSURE STEAM HEATING BOILER SAFETY

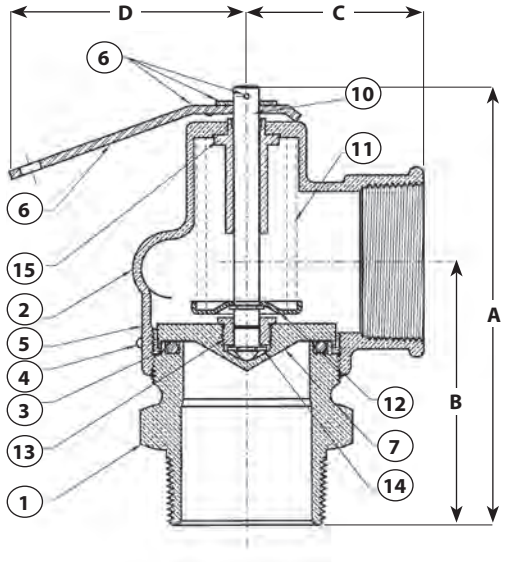
ASME HV

Medium capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation. Ideal for OEM applications.

### ASME Section IV
- Sizes 2", 2-1/2" and 3"
- Factory Set Pressures 5-15 psi

### APPLICATIONS
- Medium and Large Commercial and Industrial Steam Heating and Processing Boilers

### FEATURES
- All Bronze Construction
- PTFE-Coated O-Ring Seat Seal
- 3/8" NPT Side Tapping for Drain
- Rust-Proofed Steel Spring
- Top Guided, High Capacity Design
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- National Board Certified at 15 psig




### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) | | Wt./Ea. (lbs./kg.) | Dimensions (in./mm.) | | | |
|---|---|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | A | B | C | D |
| 12-205 | 2M | 2F | 5.1 | 6.00 | 3.75 | 2.62 | 4.00 |
| | 50 | 50 | 2.3 | 152 | 95 | 67 | 102 |
| 12-206 | 2-1/2M | 2-1/2F | 8.4 | 8.50 | 5.25 | 3.06 | 4.00 |
| | 65 | 65 | 3.8 | 216 | 133 | 78 | 102 |
| 12-208 | 3M | 3F | 11.6 | 9.50 | 6.00 | 3.75 | 4.00 |
| | 80 | 80 | 5.3 | 241 | 152 | 95 | 102 |

### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | NOZZLE | Bronze, ASTM B584 |
| 2 | BODY | Bronze, ASTM B584 |
| 3 | O-RING | Teflon® Coated EPDM |
| 4 | DRIVE SCREW | AISI 1010 Plated CR Steel |
| 5 | NAMEPLATE | Aluminum |
| 6 | HANDLE ASSEMBLY | Steel, Plated |
| 7 | DISC | Brass, ASTM B-16 |
| 10 | STEM | Brass, ASTM B-16 |
| 11 | SPRING | Stainless Steel |
| 12 | SPR. WASHER | AISI 1010 Plated CR Steel |
| 13 | STEM NUT | Brass, ASTM B-16 |
| 14 | RETAINER RING | Brass, ASTM B-16 |
| 15 | GUIDE | Brass, ASTM B-16 |

### P/N SUFFIX KEY

| Set Pressure psig | Suffix |
|---|---|
| 5 | -03 |
| 6 | -04 |
| 8 | -05 |
| 10 | -06 |
| 12 | -07 |
| 15 | -08 |

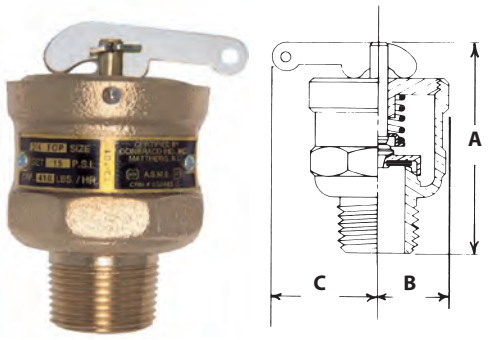
### ORDERING CODE
Use two-digit suffix number to indicate set pressure and body finish.

**EXAMPLE:**
**12-205-08** = 2" 12 Series set 15 psig

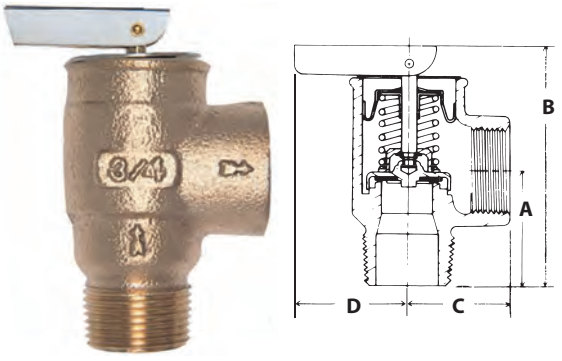
## 13 (RVS13) SERIES — LOW PRESSURE STEAM HEATING BOILER SAFETY

HV

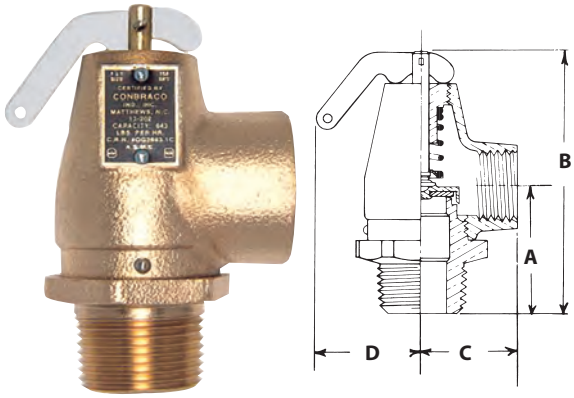
ASME Section IV bronze safety valves protect small to medium low pressure steam heating boilers. Three design configurations feature top guiding and raised seating area for extended service life. Available top and side discharge models.




13-101




13-511




13-200

### ASME Section IV
- Inlet Sizes 3/4" to 2"
- Factory Set Pressures from 5-15 psig

### APPLICATIONS
- Low Pressure Steam Heating and Supply Boilers

### FEATURES
- Flat Seat, PTFE Faced Disc for Positive Seal
- Standard Set Pressure of 15 psig
- Positive Drainage of Condensate from Seat Area
- No. 13-101 is Top Outlet Discharge
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- ASME and National Board Certified at 15 psig

### OPTIONS
- Satin or Polished Chrome Finishes

### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) | | Wt./100 (lbs./kg.) | Dimensions (in./mm.) | | | |
|---|---|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | A | B | C | D |
| 13-101 | 3/4 M | Top | 64 | 2.87 | 0.94 | 1.25 | – |
| | 20 | | 29.0 | 73 | 23 | 31 | – |
| 13-211 | 3/4 M | 3/4 F | 107 | 1.81 | 3.69 | 1.44 | 1.41 |
| | 20 | 20 | 48.5 | 46 | 93 | 36 | 35 |
| 13-202 | 1 M | 1 F | 110 | 2.06 | 3.87 | 1.53 | 1.41 |
| | 25 | 25 | 49.9 | 52 | 98 | 39 | 35 |
| 13-213 | 1-1/4 M | 1-1/2 F | 218 | 2.53 | 4.50 | 1.87 | 1.50 |
| | 32 | 40 | 98.9 | 64 | 114 | 47 | 38 |
| 13-214 | 1-1/2 M | 2 F | 320 | 3 | 5.25 | 2.19 | 1.81 |
| | 40 | 50 | 145.1 | 76 | 133 | 55 | 46 |
| 13-511 | 3/4 M | 3/4 F | 62 | 1.69 | 3.25 | 1.19 | 1.25 |
| | 20 | 20 | 28.1 | 42 | 82 | 30 | 31 |
| 13-512 | 3/4 F | 3/4 F | 59 | 1.19 | 2.75 | 1.19 | 1.25 |
| | 20 | 20 | 26.8 | 30 | 69 | 30 | 31 |

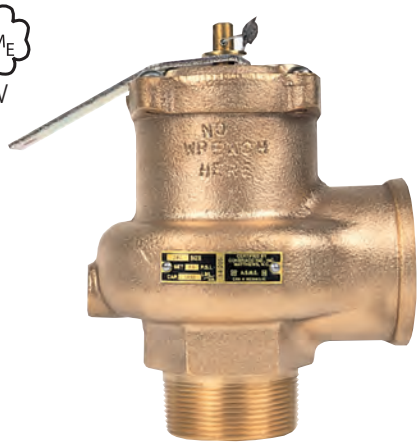
### PART NUMBER MATRIX

| 13 - XXX | -X | -XX | -X |
|---|---|---|---|
| MODEL | FINISH | SET PRESSURE | OPTIONS |
| 101= 3/4"M x Top | B = Plain Brass | Set Pressure in PSIG | A = Air Service (Non-ASME) |
| 211 = 3/4"M x 3/4"F | S = Satin Chrome* | (2 Digits) | |
| 202 = 1"M x 1"F | P = Polished Chrome* | | |
| 213 = 1-1/4"M x 1-1/2"F | *Available on select models | | |
| 214 = 1-1/2"M x 2"F | | | |
| 511 = 3/4"M x 3/4"F | | | |
| 512 = 3/4" F x 3/4"F | | | |

**EXAMPLE:**
**13-511-B15** = 3/4" 13-511 set at 15 psig

## 14-200 (RSV14) SERIES — LOW PRESSURE STEAM HEATING SAFETY

ASME HV

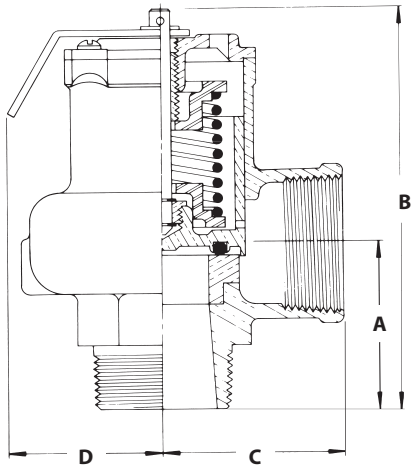


### ASME Section IV
- Sizes 2", 2-1/2" and 3"
- Factory Set Pressures 5-15 psi

### APPLICATIONS
- The 14 Series is an ASME Section IV High Capacity Steam Safety Valve for Use With Medium and Large Size Commercial and Industrial Heating Boilers

### FEATURES
- One Piece Body, All Bronze Construction
- Rust-Proofed Steel Spring
- Chrome Plated Seat, PTFE Coated Disc
- PTFE Coated EPDM O-Ring for Positive Sseal
- 3/8" NPT Side Tapping for Drain Connection
- Valves are Capacity Certified by the National Board at 15 psig Only, in Accordance with ASME Boiler and Pressure Vessel Code Section IV
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C

### OPTIONS
- (-G) Test Gag Available to Prevent the Valve from Opening During Hydrostatic Boiler Testing




### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) | | Wt./Ea. (lbs./kg.) | Dimensions (in./mm.) | | | |
|---|---|---|---|---|---|---|---|
| | Inlet NPT | Outlet NPT | | A | B | C | D |
| 14-205 | 2M | 2F | 8.4 | 3.00 | 7.12 | 3.12 | 4.00 |
| | 50M | 50F | 3.8 | 76 | 181 | 79 | 101 |
| 14-206 | 2-1/2M | 2-1/2F | 13.0 | 3.50 | 8.25 | 3.50 | 4.00 |
| | 65M | 65F | 5.9 | 88 | 209 | 88 | 101 |
| 14-207 | 3M | 3F | 17.0 | 4.12 | 9.37 | 3.87 | 4.00 |
| | 80M | 80F | 7.7 | 104 | 238 | 98 | 101 |

### P/N SUFFIX KEY

| Set Pressure psig | Suffix |
|---|---|
| 5 | -03 |
| 6 | -04 |
| 8 | -05 |
| 10 | -06 |
| 12 | -07 |
| 15 | -08 |

### ORDERING CODE
Use model number and two digit suffix number to indicate size and set pressure.

**EXAMPLE:**
**14-206-08** = 2-1/2" valve set 15 psig
Note:
- ASME IV and NB certified capacities at 15 psi only
- Valves may be set for any pressure between 5 and 15 psi. Consult factory for set pressures not listed.
- To specify test gag option add "G" to suffix.

## 12, 13 & 14 SERIES LOW PRESSURE STEAM HEATING BOILER SAFETY

### ASME SECTION IV - STEAM

Pounds per hour (kilograms per hour) saturated steam at 33-1/3% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS BTU/Hr.

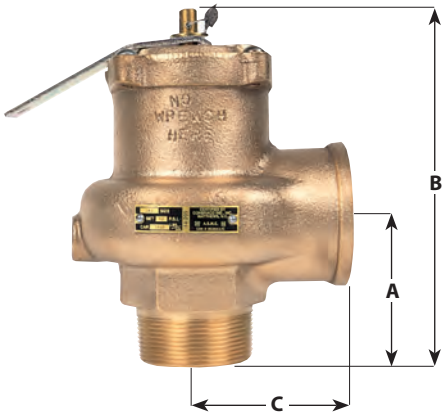
| Model No. (in.) | 12-205 2 x 2 | 12-206 2-1/2 x 2-1/2 | 12-208 3 x 3 | 13-101 3/4 | 13-202 1 x 1 | 13-211 3/4 x 3/4 | 13-213 1-1/4 x 1-1/2 | 13-214 1-1/2 x 2 | 13-511 13-512 3/4 x 3/4 | 14-205 2 x 2 | 14-206 2-1/2 x 2-1/2 | 14-207 3 x 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | | | | | | | |
| 5* | 1,439 | 2,043 | 2,855 | 333 | 374 | 290 | 699 | 1,106 | 213 | 1,815 | 2,695 | 3,944 |
| 10* | 1,969 | 2,786 | 3,478 | 372 | 509 | 383 | 950 | 1,503 | 310 | 2,483 | 3,686 | 5,394 |
| 15 | 2,500 | 3,529 | 4,100 | 410 | 643 | 475 | 1,200 | 1,900 | 407 | 3,150 | 4,676 | 6,843 |

### METRIC UNITS Kcal/Hr.

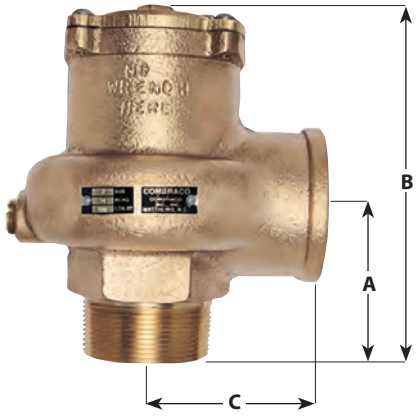
| Model No. (mm.) | 12-205 50 x 50 | 12-206 65 x 65 | 12-208 80 x 80 | 13-101 20 | 13-202 25 x 25 | 13-211 20x20 | 13-213 32 x 40 | 13-214 40 x 50 | 13-511 13-512 20 x 20 | 14-205 50 x 50 | 14-206 65 x 65 | 14-207 80 x 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | | | | | | | |
| 0.34 | 653 | 927 | 1,295 | 151 | 170 | 131 | 317 | 502 | 97 | 823 | 1,222 | 1,789 |
| 0.69 | 893 | 1,264 | 1,577 | 169 | 231 | 174 | 431 | 682 | 141 | 1,126 | 1,672 | 2,447 |
| 1.03 | 1,134 | 1,601 | 1,860 | 186 | 292 | 215 | 544 | 862 | 185 | 1,429 | 2,121 | 3,103 |

**ASME Section IV and NB certified capacities at 15 psi only.*
*Valves may be set for any pressure between 5 and 15 psi. Consult factory for set pressures not listed.*

## 14-400 & 14-500 (RVA14) SERIES — LOW PRESSURE AIR RELIEF




**14-400**
**w/ LIFT LEVER**




**14-500**
**SEALED CAP**

High volume air relief valves designed for low pressure/high volume air and gas service. Rugged bronze construction features elastomer soft seating and TFE coated discs for dependable operation.

- Inlet Sizes 2", 2 1/2" and 3"
- Factory Set Pressures 4 to 22 psig @ 400°F max.

### APPLICATIONS

- Non-ASME Code Air and Gas Service
- Low Pressure, High Volume Blowers and Compressors
- Bulk Hauling Tanks, Trailers and Rail Cars
- Powdered Solids / Bulk Handling
- Pneumatic Conveying Equipment

### FEATURES

- Vibration Resistant Soft Seat is Standard
- Stainless Steel Spring
- One Piece Corrosion Resistant Bronze Body Design
- High Flow "Top-Guided" Design

### OPTIONS

- Model 14-400 with Test Lever
- Model 14-500 with Plain Cap, Weather Resistant Sealed Body

### AVAILABLE CONFIGURATIONS

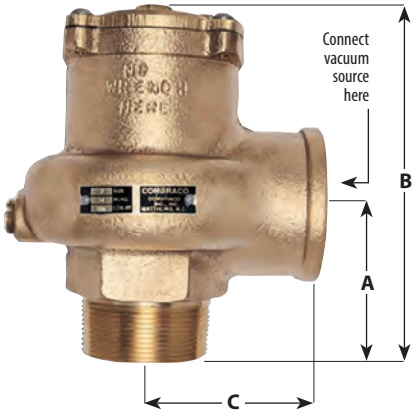
| Model Number | Size (in./mm.) | Dimensions (in./mm.) | | | Wt./Ea. (lbs./kg.) |
|---|---|---|---|---|---|
| | | A | B | C | |
| 14-X05 | 2 x 2 | 3 | 6-1/2 | 3-1/8 | 8.4 |
| | 50M x 50F | 76 | 165 | 79 | 3.81 |
| 14-X06 | 2-1/2 x 2-1/2 | 3-1/2 | 7-5/8 | 3-1/2 | 12.5 |
| | 65M x 65F | 89 | 194 | 89 | 5.7 |
| 14-X07 | 3 x 3 | 4-1/8 | 8-3/4 | 3-7/8 | 17.0 |
| | 80M x 80F | 105 | 222 | 98 | 7.7 |

### PART NUMBER MATRIX

| 14 | -X | -XX | -X |
|---|---|---|---|
| SERIES NUMBER | BODY/CAP STYLE AND SERVICE | INLET CONNECTION | RELIEF PRESSURE |
| 14 = Base Model No. | 4 = Air Relief, with Test Lever<br>5 = Air Relief, Plain Cap | 05 = 2" NPT<br>06 = 2 1/2" NPT<br>07 = 3" NPT | Set Pressure in PSIG (2 Digits) |

**EXAMPLE:**
**14-406 12** = 2-1/2" 14 Series air relief valve set at 12 psig, with lift lever
**14-505-08** = 2" air relief valve set at 8 psig, with sealed cap

## 14-600 (RVA14) SERIES VACUUM RELIEF




14-600

High flow vacuum relief valves feature one piece cast bronze bodies. Teflon coated discs and elastomer soft seating provide accurate and dependable operation.

- Connection Sizes 2", 2 1/2" and 3"
- Relief Settings 8" to 30" Hg @ 400°F max.

### APPLICATIONS

- High Volume Vacuum Systems
- Bulk Hauling Tanks and Trailers
- Powdered Solids / Bulk Handling
- Pneumatic Conveying Equipment

### FEATURES

- Weather Resistant Construction
- Elastomer Soft Seat is Vibration Resistant
- Stainless Steel Spring
- One Piece Corrosion Resistant Bronze Body Design
- High Capacity "Top-Guided" Design
- TFE / Chrome Plated Internals

### AVAILABLE CONFIGURATIONS

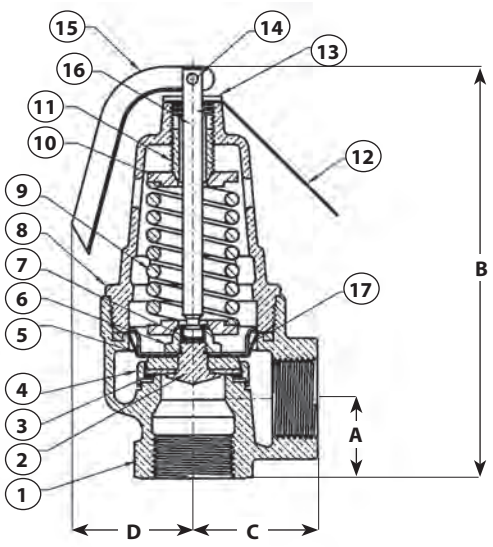
| Model Number | Size (in./mm.) | Dimensions (in./mm.) | | | Wt./Ea. (lbs./kg.) |
|---|---|---|---|---|---|
| | | A | B | C | |
| 14-605 | 2 x 2 | 3 | 6-1/2 | 3-1/8 | 8.4 |
| | 50M x 50F | 76 | 165 | 79 | 3.81 |
| 14-606 | 2-1/2 x 2-1/2 | 3-1/2 | 7-5/8 | 3-1/2 | 11.8 |
| | 65M x 65F | 89 | 194 | 89 | 5.4 |
| 14-607 | 3 x 3 | 4-1/8 | 8-3/4 | 3-7/8 | 16.3 |
| | 80M x 80F | 105 | 222 | 98 | 7.4 |

### PART NUMBER MATRIX

| 14 | -6 | -0X | -VXX |
|---|---|---|---|
| SERIES NUMBER | BODY/CAP STYLE AND SERVICE | INLET CONNECTION | RELIEF PRESSURE |
| 14 = Base Model No. | 6 = Vacuum Relief | 05 = 2" NPT<br>06 = 2 1/2" NPT<br>07 = 3" NPT | Vacuum Relief Setting, HG "V" Prefix + Inches Mercury ("V" + 2 Digits) |

**EXAMPLE:**
**14-607-V14** = 3" vacuum relief valve set at 14 in. Hg

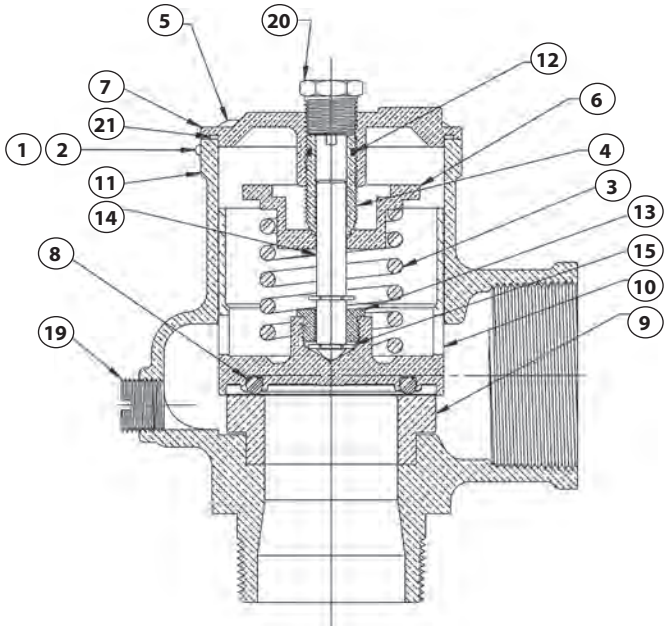
## 14-400 (RVA14) SERIES — LOW PRESSURE AIR RELIEF




### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | NAMEPLATE | Aluminum |
| 2 | DRIVESCREWS (2) | Steel, Plated |
| 3 | SPRING | Stainless Steel |
| 4 | ADJUSTING SCREW | Brass, ASTM B-16 |
| 5 | CAP SCREW (4) | Steel, Plated |
| 6 | SPRING WASHER | Brass, ASTM B-16 |
| 7 | CAP | Bronze, ASTM B-584 |
| 8 | SEAT-O-RING | Silicone |
| 9 | SEAT INSERT | Brass, ASTM B-16 |
| 10 | DISC | Bronze ,ASTM B-584 |
| 11 | BODY | Bronze, ASTM B-584 |
| 12 | FRICTION RING | EPDM |
| 13 | STEM NUT | Brass, ASTM B-16 |
| 14 | STEM | Brass, ASTM B-16 |
| 15 | RETAINING RING | Steel, Plated |
| 16 | LIFT WASHER | Steel, Plated |
| 17 | LIFT LEVER | Steel, Plated |
| 18 | ROLL PIN | Steel, Plated |
| 19 | PLUG | Brass, ASTM B-16 |
| 20 | PLUG | Brass, ASTM B-16 |
| 21 | CAP SEAL O-RING | Silicone |

## 14-500 & 14-600 (RVA14) SERIES




### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | NAMEPLATE | Aluminum |
| 2 | DRIVESCREWS (2) | Steel, Plated |
| 3 | SPRING | Stainless Steel |
| 4 | ADJUSTING SCREW | Brass, ASTM B-16 |
| 5 | CAP SCREW (4) | Steel, Plated |
| 6 | SPRING WASHER | Brass, ASTM B-16 |
| 7 | CAP | Bronze, ASTM B-584 |
| 8 | SEAT-O-RING | Silicone |
| 9 | SEAT INSERT | Brass, ASTM B-16 |
| 10 | DISC | Bronze ,ASTM B-584 |
| 11 | BODY | Bronze, ASTM B-584 |
| 12 | FRICTION RING | EPDM |
| 13 | STEM NUT | Brass, ASTM B-16 |
| 14 | STEM | Brass, ASTM B-16 |
| 15 | RETAINING RING | Steel, Plated |
| 16 | LIFT WASHER | Steel, Plated |
| 17 | LIFT LEVER | Steel, Plated |
| 18 | ROLL PIN | Steel, Plated |
| 19 | PLUG | Brass, ASTM B-16 |
| 20 | PLUG | Brass, ASTM B-16 |
| 21 | CAP SEAL O-RING | Silicone |

## 14-400 & 14-500 SERIES — LOW PRESSURE AIR RELIEF

### NON-CODE AIR RELIEF CAPACITIES

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure.

**US CUSTOMARY UNITS SCFM AIR** | **METRIC UNITS Nm3/Hr. AIR**

| Ordering Suffix | Model No.<br>Size (in.)<br>Area (in.²) | 14-405<br>14-505<br>2 x 2<br>2.238 | 14-406<br>14-506<br>2-1/2 x 2-1/2<br>3.339 | 14-407<br>14-507<br>3 x 3<br>5.155 | Model No.<br>Size (mm.)<br>Area (cm²) | 14-405<br>14-505<br>50 x 50<br>14.438 | 14-406<br>14-506<br>65 x 65<br>21.544 | 14-407<br>14-507<br>80 x 80<br>33.259 |
|---|---|---|---|---|---|---|---|---|
| | Set Pressure psig | | | | Set Pressure barg | | | |
| -04 | 4 | 615 | 914 | 1338 | .28 | 988 | 1469 | 2151 |
| -05 | 5 | 651 | 967 | 1415 | .34 | 1046 | 1554 | 2275 |
| -06 | 6 | 687 | 1020 | 1492 | .41 | 1104 | 1639 | 2398 |
| -07 | 7 | 722 | 1072 | 1569 | .48 | 1161 | 1724 | 2522 |
| -08 | 8 | 758 | 1125 | 1646 | .55 | 1218 | 1809 | 2646 |
| -09 | 9 | 793 | 1178 | 1723 | .62 | 1275 | 1893 | 2770 |
| -10 | 10 | 829 | 1231 | 1801 | .69 | 1332 | 1978 | 2894 |
| -11 | 11 | 864 | 1283 | 1878 | .76 | 1389 | 2063 | 3018 |
| -12 | 12 | 900 | 1336 | 1955 | .83 | 1446 | 2147 | 3142 |
| -13 | 13 | 935 | 1389 | 2032 | .90 | 1503 | 2232 | 3266 |
| -14 | 14 | 971 | 1441 | 2109 | .97 | 1560 | 2317 | 3390 |
| -15 | 15 | 1006 | 1494 | 2186 | 1.03 | 1617 | 2402 | 3514 |
| -16 | 16 | 1041 | 1547 | 2263 | 1.10 | 1673 | 2487 | 3638 |
| -17 | 17 | 1076 | 1600 | 2340 | 1.17 | 1730 | 2572 | 3761 |
| -18 | 18 | 1111 | 1653 | 2417 | 1.24 | 1786 | 2657 | 3885 |
| -19 | 19 | 1146 | 1706 | 2494 | 1.31 | 1842 | 2742 | 4009 |
| -20 | 20 | 1181 | 1756 | 2571 | 1.38 | 1899 | 2823 | 4133 |
| -21 | 21 | 1216 | 1809 | 2648 | 1.45 | 1955 | 2907 | 4257 |
| -22 | 22 | 1252 | 1861 | 2725 | 1.52 | 2012 | 2992 | 4381 |

## 14-600 SERIES — VACUUM RELIEF

### VACUUM AIR RELIEF CAPACITIES

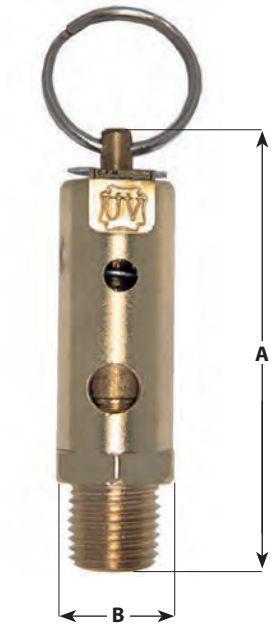
Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure.

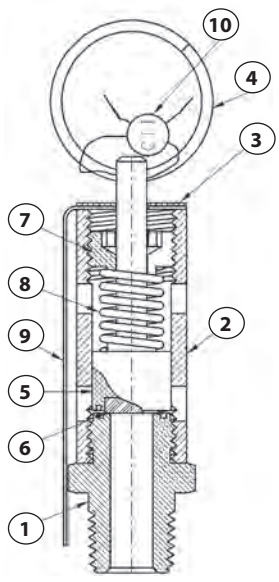
**US CUSTOMARY UNITS SCFM AIR** | **METRIC UNITS Nm3/Hr. AIR**

| Ordering Suffix | Model No.<br>Size (in.)<br>Area (in.²) | 14-605<br>2 x 2<br>2.238 | 14-606<br>2-1/2 x 2-1/2<br>3.339 | 14-607<br>3 x 3<br>5.155 | Model No.<br>Size (mm.)<br>Area (cm²) | 14-605<br>50 x 50<br>14.438 | 14-606<br>65 x 65<br>21.544 | 14-607<br>80 x 80<br>33.259 |
|---|---|---|---|---|---|---|---|---|
| | Relief Setting (in. Hg) | | | | Relief Setting (mm. Hg) | | | |
| V08 | 8 | 395 | 600 | 865 | 203 | 635 | 964 | 1390 |
| V09 | 9 | 405 | 618 | 890 | 229 | 651 | 993 | 1431 |
| V10 | 10 | 415 | 635 | 915 | 254 | 667 | 1021 | 1471 |
| V11 | 11 | 421 | 642 | 927 | 279 | 676 | 1479 | 2132 |
| V12 | 12 | 426 | 649 | 939 | 305 | 685 | 1043 | 1509 |
| V13 | 13 | 430 | 653 | 943 | 330 | 691 | 1050 | 1516 |
| V14 | 14 | 430 | 653 | 943 | 356 | 691 | 1050 | 1516 |
| V15 | 15 | 430 | 653 | 943 | 381 | 691 | 1050 | 1516 |
| V20 | 20 | 430 | 653 | 943 | 508 | 691 | 1050 | 1516 |
| V25 | 25 | 430 | 653 | 943 | 635 | 691 | 1050 | 1516 |
| V30 | 30 | 430 | 653 | 943 | 762 | 691 | 1050 | 1516 |

## 15 (RVA15) SERIES — AIR RELIEF

ASME
UV
CE




Rugged design 15 Series air relief valves provide dependable overpressure protection at an economical price. Top guided design features brass construction and resilient seating for superior performance. Widely used by OEM's and for aftermarket replacement.

### ASME Section VIII

- Sizes 1/4" and 1"
- Factory Set Pressures 15 to 250 psig
- Maximum Temperature: 325° F

### APPLICATIONS

- Ideal for a Wide Range of Air and Inert Gas Applications Including Compressors, Intercoolers, Dryers, Receivers, Control and Instrument Air Lines, and Pressurized Systems and Equipment

### FEATURES

- National Board Certified 15 psig thru 250 psig
- Stainless Steel Springs
- Viton O-Ring Seat
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- ASTM B16 Brass Body
- RoHS Compliant Materials
- European Pressure Equipment Directive Compliant Option (CE/PED)

### AVAILABLE CONFIGURATIONS

| Model Number | Inlet Size (in./mm.) | Dimensions (in./mm.) | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|
| | | A | B | |
| 15-112 | 1/4 NPT | 2.62 | 0.78 | 18.5 |
| | 8 | 66 | 20 | 8.4 |
| 15-115 | 3/8 NPT | 3.25 | 1.12 | 42.2 |
| | 10 | 82 | 28 | 19.2 |
| 15-117 | 1/2 NPT | 3.37 | 1.12 | 45.3 |
| | 15 | 85 | 28 | 20.6 |
| 15-118 | 3/4 NPT | 4.06 | 1.21 | 58 |
| | 20 | 105 | 30 | 26.4 |
| 15-119 | 1 NPT | 5.12 | 1.87 | 153 |
| | 25 | 130 | 47 | 69.5 |

### PART NUMBER MATRIX

| 15-XXX | -X | -XXX | -XX |
|---|---|---|---|
| MODEL AND SIZE (IN.) | FINISH | SET PRESSURE | OPTIONS |
| 112 = 1/4 NPT<br>115 = 3/8 NPT<br>117 = 1/2 NPT<br>118 = 3/4 NPT<br>119 = 1 NPT | B = Plain Brass | Set Pressure in PSIG | CE = PED/CE<br>Q = Performance (Calibration) Test Reports |

### STANDARD MATERIALS LIST

| | | |
|---|---|---|
| 1 | NOZZLE | Brass, ASTM B-16 |
| 2 | BODY | Brass, ASTM B-16 |
| 3 | NAMEPLATE | Aluminum |
| 4 | PULL RING | Pltd. AISI 1018 CRS |
| 5 | DISC/STEM | Brass, ASTM B-16 |
| 6 | SEAT | Viton |
| 7 | CAP | Brass, ASTM B-16 |
| 8 | SPRING | ASTM A-227 Steel |
| 9 | INST. TAG | Paper |
| 10 | LEAD SEAL | Lead |

**EXAMPLE:**
**15 117 B 165** = 1/2" 15 Series set at 165 psig.

## 15 (RVA15) SERIES AIR RELIEF

### ASME Section VIII - Air

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS SCFM AIR**

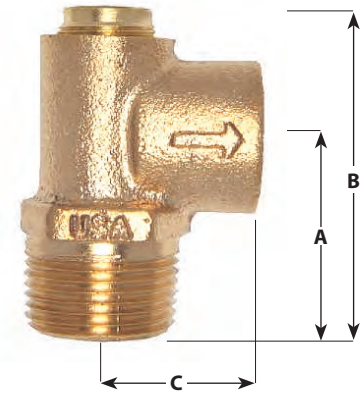
| Model No. Size (in.) | 15-112 1/4 | 15-115 & 117 3/8 & 1/2 | 15-118 3/4 | 15-119 1 |
|---|---|---|---|---|
| Set Pressure psig | | | | |
| 15 | 24 | 60 | 107 | 222 |
| 20 | 28 | 70 | 124 | 256 |
| 25 | 32 | 79 | 140 | 290 |
| 30 | 35 | 88 | 156 | 323 |
| 35 | 39 | 98 | 174 | 361 |
| 40 | 43 | 109 | 193 | 398 |
| 45 | 47 | 119 | 211 | 435 |
| 50 | 51 | 128 | 229 | 473 |
| 55 | 55 | 139 | 247 | 510 |
| 60 | 60 | 149 | 265 | 547 |
| 65 | 64 | 159 | 283 | 584 |
| 70 | 68 | 170 | 301 | 622 |
| 75 | 72 | 179 | 319 | 659 |
| 80 | 76 | 190 | 337 | 696 |
| 85 | 80 | 200 | 355 | 734 |
| 90 | 84 | 210 | 373 | 771 |
| 95 | 88 | 220 | 391 | 808 |
| 100 | 92 | 230 | 409 | 845 |
| 105 | 96 | 241 | 427 | 883 |
| 110 | 100 | 251 | 445 | 920 |
| 115 | 104 | 261 | 463 | 957 |
| 120 | 108 | 271 | 481 | 995 |
| 125 | 112 | 281 | 499 | 1,032 |
| 130 | 116 | 292 | 517 | 1,069 |
| 135 | 120 | 302 | 535 | 1,106 |
| 140 | 124 | 312 | 553 | 1,144 |
| 145 | 129 | 322 | 571 | 1,181 |
| 150 | 133 | 332 | 589 | 1,218 |
| 155 | 137 | 342 | 607 | 1,256 |
| 160 | 141 | 353 | 625 | 1,293 |
| 165 | 145 | 363 | 644 | 1,330 |
| 170 | 149 | 373 | 662 | 1,368 |
| 175 | 153 | 383 | 680 | 1,405 |
| 180 | 157 | 393 | 698 | 1,442 |
| 185 | 161 | 403 | 716 | 1,479 |
| 190 | 165 | 414 | 734 | 1,517 |
| 195 | 169 | 424 | 752 | 1,554 |
| 200 | 173 | 432 | 770 | 1,591 |
| 205 | 177 | 444 | 788 | 1,629 |
| 210 | 181 | 454 | 806 | 1,666 |
| 215 | 185 | 464 | 824 | 1,703 |
| 220 | 189 | 475 | 842 | 1,740 |
| 225 | 194 | 484 | 860 | 1,778 |
| 230 | 198 | 495 | 878 | 1,815 |
| 235 | 202 | 505 | 896 | 1,852 |
| 240 | 206 | 515 | 914 | 1,890 |
| 245 | 210 | 525 | 932 | 1,927 |
| 250 | 214 | 535 | 950 | 1,964 |

**METRIC UNITS Nm3/Hr. AIR**

| Model No. Size (mm) | 15-112 8 | 15-115 & 117 10 & 15 | 15-118 20 | 15-119 25 |
|---|---|---|---|---|
| Set Pressure barg | | | | |
| 1.03 | 39 | 96 | 172 | 357 |
| 1.38 | 45 | 112 | 199 | 411 |
| 1.72 | 51 | 127 | 225 | 466 |
| 2.07 | 57 | 141 | 251 | 519 |
| 2.41 | 63 | 157 | 280 | 580 |
| 2.76 | 69 | 175 | 310 | 640 |
| 3.10 | 75 | 191 | 339 | 699 |
| 3.45 | 82 | 206 | 368 | 760 |
| 3.79 | 88 | 223 | 397 | 820 |
| 4.14 | 96 | 239 | 426 | 879 |
| 4.48 | 103 | 255 | 455 | 939 |
| 4.83 | 109 | 273 | 484 | 1,000 |
| 5.17 | 116 | 288 | 513 | 1,059 |
| 5.51 | 122 | 305 | 542 | 1,119 |
| 5.86 | 129 | 321 | 571 | 1,180 |
| 6.20 | 135 | 337 | 600 | 1,239 |
| 6.55 | 141 | 354 | 628 | 1,299 |
| 6.89 | 148 | 370 | 657 | 1,358 |
| 7.24 | 154 | 387 | 686 | 1,419 |
| 7.58 | 161 | 403 | 715 | 1,479 |
| 7.93 | 167 | 419 | 744 | 1,538 |
| 8.27 | 174 | 436 | 773 | 1,599 |
| 8.62 | 180 | 452 | 802 | 1,659 |
| 8.96 | 186 | 469 | 831 | 1,718 |
| 9.31 | 193 | 485 | 860 | 1,778 |
| 9.65 | 199 | 501 | 889 | 1,839 |
| 10.00 | 207 | 518 | 918 | 1,898 |
| 10.34 | 214 | 534 | 947 | 1,958 |
| 10.69 | 220 | 550 | 976 | 2,019 |
| 11.03 | 227 | 567 | 1,005 | 2,078 |
| 11.38 | 233 | 583 | 1,035 | 2,138 |
| 11.72 | 239 | 600 | 1,064 | 2,199 |
| 12.06 | 246 | 616 | 1,093 | 2,258 |
| 12.41 | 252 | 632 | 1,122 | 2,318 |
| 12.75 | 259 | 648 | 1,151 | 2,377 |
| 13.10 | 265 | 665 | 1,180 | 2,439 |
| 13.44 | 272 | 681 | 1,209 | 2,498 |
| 13.79 | 278 | 694 | 1,238 | 2,557 |
| 14.13 | 285 | 714 | 1,267 | 2,619 |
| 14.48 | 291 | 730 | 1,296 | 2,678 |
| 14.82 | 298 | 746 | 1,325 | 2,738 |
| 15.17 | 305 | 763 | 1,353 | 2,797 |
| 15.51 | 311 | 778 | 1,382 | 2,858 |
| 15.86 | 318 | 796 | 1,411 | 2,918 |
| 16.20 | 324 | 812 | 1,440 | 2,977 |
| 16.55 | 331 | 828 | 1,469 | 3,038 |
| 16.89 | 337 | 844 | 1,498 | 3,098 |
| 17.24 | 344 | 860 | 1,527 | 3,157 |

## 16-200 (RVW16) SERIES — GENERAL PURPOSE PRESSURE RELIEF

LEADFREE OPTIONS




Pressure relief valves relieve excess pressure in cold water supply systems, storage tanks, well pumps. Also suitable for air, oil and other non-hazardous liquids.

### FEATURES

- Standard Pressure Settings from 50 to 175 psi
- Cast Bronze Body, Stainless Steel Pprings
- Silicone Soft Seat Ensures Seat Tightness, Extended Service Life
- All Valves are 100% Factory Tested
- Maximum Recommended Service Temperature: 120˚F
- Lead Free Option, Model 16LF is NSF/ANSI 372 Lead Free

### AVAILABLE CONFIGURATIONS

| Model Number | LF Model Number | Inlet Size (in./mm.) | Dimensions (in./mm.) | | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| 16-202 | 16LF-202 | 1/2 M X 1/2 F | 1.41 | 2.12 | 1.00 | 33 |
| | | 15 M x 15 F | 36 | 54 | 25 | 15 |
| 16-203 | 16LF-203 | 3/4 M x 1/2 F | 1.41 | 2.50 | 1.00 | 37.5 |
| | | 20 M x 15 F | 36 | 63 | 25 | 17 |

### ORDERING CODE

Use model number and two digit suffix number to indicate size and set pressure.

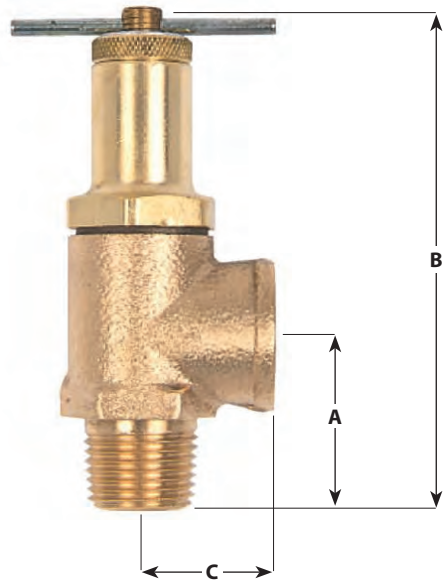
### P/N SUFFIX KEY

| Set Pressure psig | Suffix |
|---|---|
| 50 | -01 |
| 75 | -02 |
| 100 | -03 |
| 125 | -04 |
| 150 | -05 |
| 175 | -06 |

**EXAMPLE:**
**16-202-03** = 1/2" model set at 100 psig
NOTE:
- Valves may be set for any pressure between 30 and 180 psi. Consult factory for pressure settings not shown.

## 16-501 (RVW16) SERIES — GENERAL PURPOSE LIQUID RELIEF

LEADFREE OPTIONS




Adjustable relief valves protect equipment by providing low volume liquid relief or bypass control. Excess volume may be discharged back to the low pressure source. Ideal for agricultural sprayers and simple commercial or industrial pressurized systems.

### FEATURES

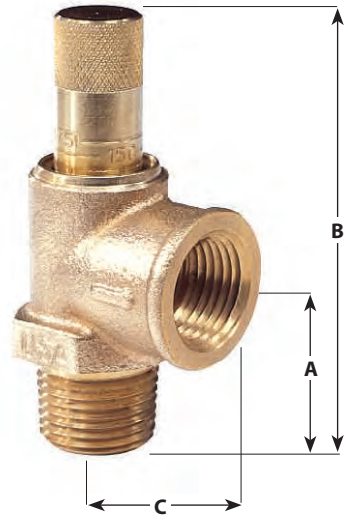
- Adjustable Relief Settings, in Two Ranges to 600 psi
- Cast Bronze Body, Stainless Steel Springs
- Choice of Nitrile (Buna) or PTFE Soft Seats
- Knurled Locknut Locks Pressure Adjustment
- Viton Stem Seal, Polypropylene Body Gasket
- Maximum Recommended Service Temperature: 200˚F

### AVAILABLE CONFIGURATIONS

| Model Number | Inlet Size (in./mm.) | Relief Range | Seat Material | Dimensions (in./mm.) | | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| **16-501-01** | 1/2 M X 1/2 F 15 M x 15 F | 50 - 250 | Nitrile | 1.29 33 | 4.12 105 | 1.00 25 | 62 28 |
| **16-501-02** | | 250 - 600 | | | | | |
| **16-501-25** | | 50 - 250 | PTFE | | | | |
| **16-501-60** | | 250 - 600 | | | | | |

## 16-503 & 16-504 (RVW16) SERIES — GENERAL PURPOSE LIQUID RELIEF

LEADFREE OPTIONS




Calibrated pressure relief valve allows for in-line pressure adjustments without the need for a pressure gauge. Provides static overpressure protection for liquid filled systems such as well pumps, tanks, fire protection systems.

### FEATURES

- Choice of 1/2" or 3/4" Inlet Connection
- Factory Preset at 100 psi
- Pressure Range 50 to 175 psi, Calibrated in 25 psi Increments
- Cast Bronze Body, Stainless Steel Spring
- Silicone Soft Seat, EPDM Cap Seal
- Maximum Recommended Srvice Temperature: 200˚F
- Lead Free Option, Model 16LF is NSF/ANSI 372 Lead Free

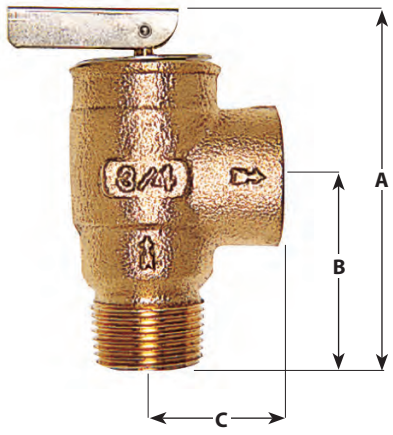
### AVAILABLE CONFIGURATIONS

| Model Number | LF Model Number | Inlet Size (in./mm.) | Dimensions (in./mm.) | | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| **16-503-01** | **16LF-503-01** | 1/2 M X 1/2 F 15 M x 15 F | 1.31 33 | 3.44 87 | 1.00 25 | 37 17 |
| **16-504-01** | **16LF-504-01** | 3/4 M X 1/2 F 20 M x 15 F | | | | |

## 17-400 (RVW17) SERIES — PRESSURE ONLY HOT WATER RELIEF

ASME HV

C SP US




17-400 series pressure only relief valves are engineered to protect against excessive pressure buildup due to thermal expansion in hot water supply systems. Both models are CSA certified to ANSI Z21.22 "Relief Valves for Hot Water Supply Systems". In addition the 17-402 is design certified to ASME Section IV for hot water relief.

- Connection Sizes 1/2" (Model 17-401) and 3/4" (Model 17-402)
- CSA Vertified to ANSI Z21.22
- Pressure Settings 75 thru 150 psi @ 250°F max.
- ASME Section IV Hot Water, Model 17-402 Only

### APPLICATIONS

- **Model 17-401**: Overpressure Protection of Domestic Tankless Water Heaters. Also Ideal for Protecting Plumbing and Well Systems, Small Liquid Filled Vessels and Similar Equipment from Thermal Expansion or Pressure Surges
- **Model 17-402:** In Addition to the Above, also Suitable for ASME Section IV Hot Water Heating and Supply Boilers and Storage Tanks

### FEATURES

- Cast Bronze Body, Stainless Steel Springs
- Soft Seat for Durability, Extended Service Life
- Conforms to HUD / FHA Requirements
- CSA Certified to ANSI Z21.22
- CSA B-51, CRN 0G8547.5C

### AVAILABLE CONFIGURATIONS

| Model Number | Inlet Size (in./mm.) | CSA Capacity Rating | ASME Capacity Rating | Dimensions (in./mm.) | | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| **17-401** | 1/2 M X 1/2 F | 15,000 | – | 3.26 | 1.73 | 1.16 | 57 |
| | 15 M X 15 F | | | 83 | 44 | 29 | 26 |
| **17-402** | 3/4 M X 3/4 F | 200,000 | See table below | 3.14 | 1.62 | 1.13 | 53 |
| | 20 M X 20 F | | | 80 | 41 | 29 | 24 |

### ORDERING CODE

Use model number and two-digit suffix number to indicate size and set pressure.

### P/N SUFFIX KEY

| Set Pressure psig | Suffix | Btu/hr. ASME Sec. IV 17-402 |
|---|---|---|
| 75 | -01 | 505,000 |
| 100 | -02 | 648,000 |
| 125 | -03 | 791,000 |
| 150 | -04 | 934,000 |
| 160 | -05 | – |

**EXAMPLE:**

**17-401-03** = 1/2" model 17 set @ 125 psig.

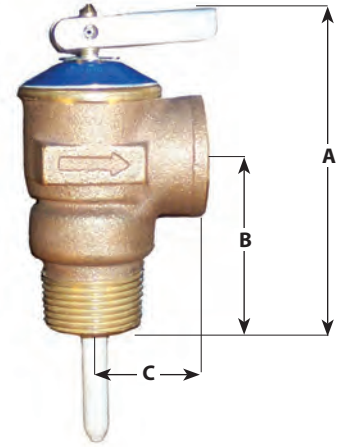
**17-402-04** = 3/4" model 17 set @ 150 psig.

NOTE:

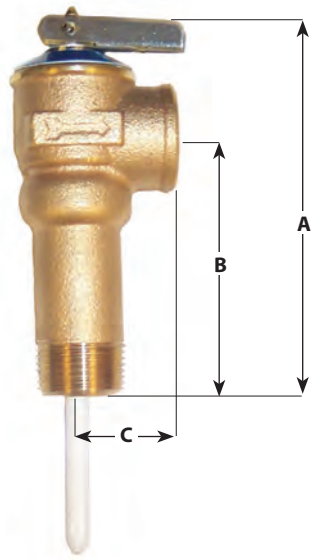
- Valves may be set for any pressure between 70 and 175 psi. Consult factory for pressure settings not shown.
- ASME Section IV certified model 17-402 only, pressure settings 75 to 150 psig.

## 18C-400 (TP) & 18C-402X (TPX) SERIES — WATER HEATER T&P RELIEF

HV




18C-400




18C-402X
EXTENDED SHANK

**Special statement regarding T&P Valves and compliance to the Lead Free requirements of the U.S. Safe Drinking Water Act.**

Effective January 4th 2014 the SDWA requires that pipes, fittings or fixtures used to convey or dispense potable water must be lead free. Further clarification has been provided by the EPA in a document titled "Summary of the Reduction of Lead In Drinking Water Act and frequently Asked Questions". The latest document can be viewed on our website: www.apollovalves.com/lead_free; click on the NEW EPA FAQ link.

FAQ #6 states that water heaters are covered by the Act and must comply. However most water heater OEM's are certifying their heaters as complete assemblies using non-Lead Free T&P valves due to their relatively small wetted surface area.

FAQ #23 acknowledges this and states that replacement parts (including T&P valves) need not be lead free as long as the entire water heater with all installed components overall device would meet the Lead Free requirements of the Act.

Automatic temperature and pressure relief valves feature unique non-metallic coating which protects the element against galvanic and electromechanical corrosion by isolating it from the heated water. This coating is electrostatically applied for uniform coverage, then thermobonded, resulting in optimum adhesion for extended service life.

- CSA Design Certified at all Settings to ANSI Z21.22
- ASME Section IV rRted at 125 and 150 psig Settings for 3/4 NPT Only

### APPLICATIONS
- Temperature and Pressure Protection for Hot Water Heaters and Storage Tanks

### FEATURES
- Meets HUD/FHA Requirements
- Cast Bronze Body, Stainless Steel Spring
- Rated @ 210°F Maximum
- Registered in all Canadian Provinces and Territories
- ASME Capacity cCertified to 500,000 BTUhr.

### OPTIONS
- Model 18C-402X Features a Body Inlet Extended 2" for Insulated Vessels

### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) | Element Length (in./mm.) | CSA Capacity Rating Btu/HR | Dimensions (in./mm.) | | | Wt./100 (lbs./kg.) |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| 18C-401 | 1/2 M x 1/2 F | 1.44, 3 & 8" | 15,000 | 3.25 | 1.75 | 1.13 | 64 |
| | 15 M x 15 F | 37, 76 & 200 | | 83 | 44 | 29 | 29 |
| 18C-402 | 3/4 M x 3/4 F | 1.44 | 95,000 | 3.25 | 1.75 | 1.13 | 64 |
| | 20 M x 20 F | 37 | | 83 | 44 | 29 | 29 |
| 18C-402 | 3/4 M x 3/4 F | 3 & 8" | 105,000 | 3.25 | 1.75 | 1.13 | 64 |
| | 20 M x 20 F | 76 & 200 | | 83 | 44 | 29 | 29 |
| 18C-402X | 3/4 M x 3/4 F | 3" | 105,000 | 4.51 | 2.97 | 1.13 | 75 |
| | 20 M x 20 F | 76 | | 115 | 75 | 29 | 34 |

### ORDERING CODE
Use model number and two-digit suffix number to indicate size and set pressure.

### P/N SUFFIX KEY - MODEL 18C-401

| Set Pressure psig | Coated Element Length (in.) | |
|---|---|---|
| | 1.44 | 3 |
| 125 | -27 | -29 |
| 150 | -28 | -30 |

**EXAMPLE:**
**18C-402X-38** = 3/4" model 18C-402X set @ 150 psig with 3" element.
**18C-402-30** = 3/4" model 18C-402 set @ 150 psig with 3" element.

### P/N SUFFIX KEY - MODEL 18C-402X

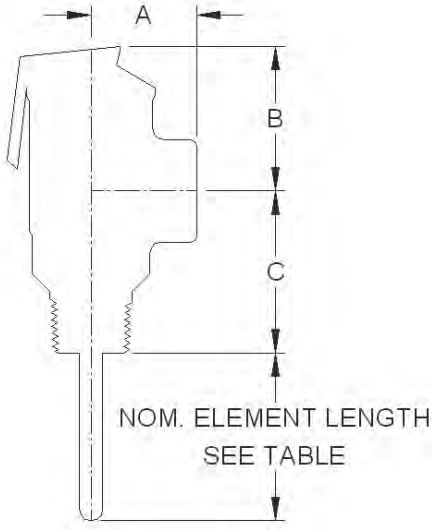
| Set Pressure psig | Coated Element Length (in.) |
|---|---|
| | 3 |
| 125 | -39 |
| 150 | -38 |

### P/N SUFFIX KEY - MODEL 18C-402

| Set Pressure psig | Coated Element Length (in.) | | |
|---|---|---|---|
| | 1.44 | 3 | 8 |
| 125 | -27 | -29 | -36 |
| 150 | -28 | -30 | -37 |
| 175 | | -24 | |

## 18C (TPC) SERIES — BRONZE HIGH CAPACITY COMMERCIAL T&P

HV




The Apollo® 18C-500 Series bronze automatic temperature and pressure relief valves are used for protection of high capacity commercial hot water heaters and storage tanks.

### FEATURES

- ASME Section IV Certified Capacity
- 3/4" thru 2" NPT Connections
- CSA Listed and Certified to ANSI Z21.22
- 125 and 150 psig Set Pressures at 210°F max
- Coated Element Protects Against Corrosion
- SS Elements (1-1/2" and 2")
- ASME Section IV Heating Boilers
- Canadian Registration Number CSA- 0G1438.6C

### CAPACITY

| Part Number | Size (in.) | Element Length (in.) | Inlet Type | CSA Capacity Rating Btu/HR | *ASME Cap. Rating BTU/HR |
|---|---|---|---|---|---|
| **18C5113125** | 3/4" | 2.69" | M | 185,000 | 1,619,000 |
| **18C5113150** | 3/4" | 2.69" | M | 185,000 | 1,912,000 |
| **18C5115125** | 3/4" | 4.38" | M | 205,000 | 1,619,000 |
| **18C5115150** | 3/4" | 4.38" | M | 205,000 | 1,912,000 |
| **18C5118125** | 3/4" | 7.56" | M | 205,000 | 1,619,000 |
| **18C5118150** | 3/4" | 7.56" | M | 205,000 | 1,912,000 |
| **18C5123125** | 3/4" | 2.88" | F | 185,000 | 1,619,000 |
| **18C5123150** | 3/4" | 2.88" | F | 185,000 | 1,912,000 |
| **18C5125125** | 3/4" | 4.56" | F | 205,000 | 1,619,000 |
| **18C5125150** | 3/4" | 4.56" | F | 205,000 | 1,912,000 |
| **18C5128125** | 3/4" | 7.75" | F | 205,000 | 1,619,000 |
| **18C5128150** | 3/4" | 7.75" | F | 205,000 | 1,912,000 |
| **18C5213125** | 1" | 3.06" | M | 500,000 | 1,825,000 |
| **18C5213150** | 1" | 3.06" | M | 500,000 | 2,155,000 |
| **18C5215125** | 1" | 4.75" | M | 500,000 | 1,825,000 |
| **18C5215150** | 1" | 4.75" | M | 500,000 | 2,155,000 |
| **18C5225125** | 1" | 4.75" | F | 750,000 | 3,070,000 |
| **18C5225150** | 1" | 4.75" | F | 750,000 | 3,625,000 |
| **18C5228125** | 1" | 8.13" | F | 750,000 | 3,070,000 |
| **18C5228150** | 1" | 8.13" | F | 750,000 | 3,625,000 |
| **18C5314125** | 1-1/4" x 1" | 3.97" | M | 750,000 | 3,070,000 |
| **18C5314150** | 1-1/4" x 1" | 3.97" | M | 750,000 | 3,625,000 |
| **18C5424125** | 1-1/2" | 4.13" | F | 1,200,000 | 5,125,000 |
| **18C5424150** | 1-1/2" | 4.13" | F | 1,200,000 | 6,050,000 |
| **18C5513125** | 2" x 1-1/2" | 3.25" | M | 1,200,000 | 5,125,000 |
| **18C5513150** | 2" x 1-1/2" | 3.25" | M | 1,200,000 | 6,050,000 |

** National Board certified capacity per ASME Section IV-Heating Boilers*

### AVAILABLE CONFIGURATIONS

| Model Number | Inlet Size (in./mm.) | Dimensions (in./mm.) | | |
|---|---|---|---|---|
| | | A | B | C |
| **18C511** | 3/4" M x 3/4" FNPT | 1.50 | 3.47 | 2.53 |
| | (20) | (40) | (88) | (64) |
| **18C512** | 3/4" F x 3/4" FNPT | 1.50 | 3.47 | 2.35 |
| | (20) | (40) | (88) | (60) |
| **18C521** | 1" M x 1" FNPT | 1.56 | 3.47 | 2.38 |
| | (25) | (40) | (88) | (60) |
| **18C522** | 1" F x 1" FNPT | 1.56 | 3.47 | 2.13 |
| | (25) | (40) | (88) | (54) |
| **18C531** | 1-1/4" M x 1" FNPT | 1.75 | 4.34 | 1.91 |
| | (32) | (44) | (110) | (49) |
| **18C542** | 1-1/2" M x 1-1/2" FNPT | 2.47 | 5.84 | 1.71 |
| | (40) | (63) | (148) | (43) |
| **18C551** | 2" M x 1-1/2" FNPT | 2.47 | 5.84 | 259 |
| | (50) | (63) | (148) | (66) |

**Special statement regarding T&P Valves and compliance to the Lead Free requirements of the U.S. Safe Drinking Water Act.**

Effective January 4th 2014 the SDWA requires that pipes, fittings or fixtures used to convey or dispense potable water must be lead free. Further clarification has been provided by the EPA in a document titled "Summary of the Reduction of Lead In Drinking Water Act and frequently Asked Questions". The latest document can be viewed on our website: www.apollovalves.com/lead_free; click on the NEW EPA FAQ link.

FAQ #6 states that water heaters are covered by the Act and must comply. However most water heater OEM's are certifying their heaters as complete assemblies using non-Lead Free T&P valves due to their relatively small wetted surface area.

FAQ #23 acknowledges this and states that replacement parts (including T&P valves) need not be lead free as long as the entire water heater with all installed components overall device would meet the Lead Free requirements of the Act.

## 19 SERIES — BRONZE SAFETY VALVE

UV / V

A dependable cast bronze high capacity safety valve ideal for use on all types of boilers, piping systems and unfired pressure vessels. This rugged design features top guided alignment for enhanced performance and reliability. Other features include optional metal seating, optional stainless steel wetted trim in all sizes, and a new, more descriptive model numbering system. Flow ratings are National Board certified in accordance with ASME sections I and VIII.

### ASME SECTIONs I AND VIII

- Sizes 1/2" thru 2-1/2"
- Factory Set Pressures 5 to 300 psig
- Maximum Temperature: 406°F (Model 19S: 422°F)

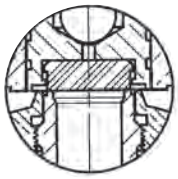
### APPLICATIONS

- Overpressure Protection of Steam Boilers, Sterilizers, Distillers, Cookers, and Pressure Reducing Stations.
- Pneumatic Conveying Equipment, Air Compressors, Receivers and Dryers. Steam, Air and Gas Accumulators, Pressure Vessels and Pressure Piping Systems.

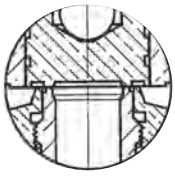
### FEATURES

- Wide Wrenching Hex for Easier, Faster Installations
- Stainless Steel Springs are Standard
- Teflon® PFA Seat Resists Corrosive Boiler Chemicals and Excessive Vibration
- High-Capacity Full Nozzle Design Available in Six Orifice Sizes
- Two Control Rings for Maximum Performance and Adjustability
- Short "Tuned" Blow Down Minimizes Product Loss
- Tapped Body Drain Allows Piping of Condensate Safely Away From Equipment
- Reduced Repair Costs: Soft Seat Easily Replaced
- Registered in all Canadian Provinces Under CSA B51 CRN OG8547.5C

### SEATS



**SOFT SEAT**
**MODEL 19K - BRASS**
**MODEL 19L - STAINLESS**



**METAL-TO-METAL SEAT**
**MODEL 19M - BRASS**
**MODEL 19S - STAINLESS**

### OPTIONS

- Choice of Teflon® or Metal-to-Metal Seating
- Steam Set Pressures to 300 psi @ 422°F (Model 19S, Stainless Steel Trim)
- 316 Stainless Steel Wetted Trim Available for all Sizes
- Anti-Vibration Dampened Lifting Lever
- Oxygen Cleaned
- European Pressure Equipment Directive Compliant Option (CE/PED)

### TRIM STYLES

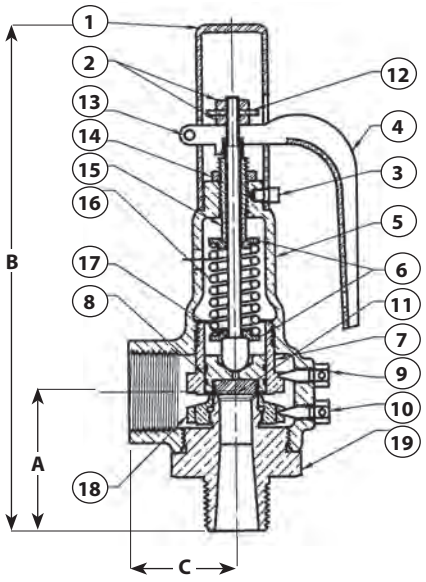
| Series | 19K | 19M | 19L | 19S |
|---|---|---|---|---|
| **Trim** | Brass | Brass | SS | SS |
| **Seat** | Teflon® | Metal to Metal | Teflon® | Metal to Metal |
| **Max. Set - Steam** | 250 | 250 | 250 | 300 |
| **Max. Set - Air/Gas** | 300 | 300 | 300 | 300 |
| **Max. Temperature** | 406°F | 406°F | 406°F | 422°F |

### PART NUMBER MATRIX

| 19M | D | C | K | 165 | A |
|---|---|---|---|---|---|
| **BASE MODEL NUMBER** | **ORIFICE LETTER** | **INLET SIZE (IN.) NPT** | **ASME CODE AND SERVICE** | **SET PRESSURE IN PSI** | **SPECIAL OPTIONS** |
| 19K = Brass Trim/Teflon Seat | D | C = 1/2 | A = Sect. I Steam | | A = Anti-vibration trim |
| 19M = Brass Trim/Metal Seat | E | D = 3/4 | K = Sect. VIII Air | | CE = CE/PED Compliant |
| 19L = Stainless Trim/Teflon Seat | F | E = 1 | L = Sect. VIII Steam | | Q = Performance (Calibration) test report |
| 19S = Stainless Trim/Metal Seat | G | F = 1-1/4 | N = Non-Code Air | | X = Oxygen cleaning |
| | H | G = 1-1/2 | P = Non-Code Steam | | * Other suffixes - factory issued |
| | J | H = 2 | | | |
| | | J = 2-1/2 | | | |

**EXAMPLE:**
**19K-DCL150** = Safety Relief Sect. VIII Steam @ 150 psig

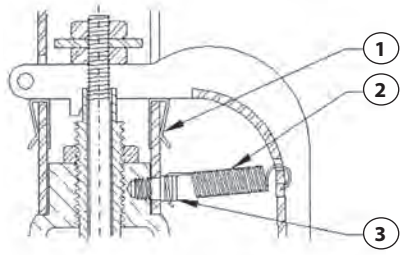
## 19 SERIES BRONZE SAFETY VALVE




### STANDARD MATERIAL LIST

| | | 19K, 19M | 19L, 19S |
|---|---|---|---|
| 1 | CAP | Brass | Brass |
| 2 | STEM NUT (2) | Steel, Plated | Steel, Plated |
| 3 | CAP LOCK SCREW | Brass | Brass |
| 4 | LIFT LEVER | Steel - Plated | Steel, Plated |
| 5 | BODY | Bronze | Bronze |
| 6 | SPRING WASHER (2) | Brass | Brass |
| 7 | GUIDE RING | Brass | Brass |
| 8 | DISC | Brass | Stainless Steel |
| 9 | GUIDE RING SCREW | Brass | Brass |
| 10 | NOZZLE RING SCREW | Brass | Brass |
| 11 | SEAT INSERT-19K &19L | PFA Teflon® | PFA Teflon® |
| 12 | LIFT WASHER | Steel, Plated | Steel, Plated |
| 13 | LEVER PIN | Steel, Plated | Steel, Plated |
| 14 | ADJ. SCREW LOCK NUT | Steel, Plated | Steel, Plated |
| 15 | ADJUSTING SCREW | Brass | Brass |
| 16 | SPRING | Stainless Steel | Stainless Steel |
| 17 | STEM | Stainless Steel | Stainless Steel |
| 18 | NOZZLE RING | Brass | Brass |
| 19 | NOZZLE | Brass | Stainless Steel |
| - | NAMEPLATE | Stainless Steel | Stainless Steel |
| - | SEAL AND WIRE | Lead/SS* | Lead/SS* |

** Alum/SS on CE models*




### 19 SERIES WITH OPTION "A" ANTI-VIBRATION TRIM

| | | |
|---|---|---|
| 1 | FRICTION CLIP (4) | Steel, Plated |
| 2 | EXTENSION SPRING | Stainless Steel |
| 3 | CAP LOCK SCREW | Stainless Steel |

*Note: Preparation includes threadlocking of all internal threaded connections.*

### AVAILABLE CONFIGURATIONS

| Old Model Number | New Model Number | Orifice Letter | Size (in./mm) Inlet x Outlet | Dimensions (in./mm.) A | B | C | Wt./Ea. (lbs./kg.) |
|---|---|---|---|---|---|---|---|
| 19-202 | 19*DC | D | 1/2 X 3/4 | 2.21 | 6.52 | 1.37 | 1.6 |
| | | | 15 x 20 | 56 | 166 | 35 | .73 |
| 19-301 | 19*DD | D | 3/4 X 3/4 | 2.21 | 6.52 | 1.37 | 1.6 |
| | | | 20 x 20 | 56 | 166 | 35 | .73 |
| 19-302 | 19*ED | E | 3/4 X 1 | 2.50 | 7.16 | 1.75 | 2.0 |
| | | | 20 x 25 | 64 | 182 | 44 | .91 |
| 19-401 | 19*EE | E | 1 X 1 | 2.64 | 7.30 | 1.75 | 2.2 |
| | | | 25 x 25 | 67 | 185 | 44 | 1.0 |
| 19-402 | 19*FE | F | 1 X 1-1/4 | 2.95 | 9.34 | 2.00 | 4.1 |
| | | | 25 x 32 | 75 | 237 | 51 | 1.9 |
| 19-501 | 19*FF | F | 1-1/4 X 1-1/4 | 2.95 | 9.34 | 2.00 | 4.3 |
| | | | 32 x 32 | 75 | 237 | 51 | 2.0 |
| 19-502 | 19*GF | G | 1-1/4 X 1-1/2 | 3.38 | 11.01 | 2.37 | 7.4 |
| | | | 32 x 40 | 86 | 280 | 60 | 3.4 |
| 19-601 | 19*GG | G | 1-1/2 X 1-1/2 | 3.38 | 11.01 | 2.37 | 7.6 |
| | | | 40 x 40 | 86 | 280 | 60 | 3.4 |
| 19-602 | 19*HG | H | 1-1/2 X 2 | 3.63 | 11.96 | 2.75 | 11.5 |
| | | | 40 x 50 | 92 | 304 | 70 | 5.2 |
| 19-701 | 19*HH | H | 2 X 2 | 3.63 | 11.96 | 2.75 | 11.6 |
| | | | 50 x 50 | 92 | 304 | 70 | 5.3 |
| | 19*JG[1] | J | 1-1/2F X 2-1/2 | 3.80 | 14.00 | 3.50 | 20.0 |
| | | | 40 x 65 | 97 | 356 | 89 | 9.1 |
| 19-702 | 19*JH | J | 2 X 2-1/2 | 4.06 | 14.25 | 3.50 | 19.9 |
| | | | 50 x 65 | 103 | 362 | 89 | 9.0 |
| 19-801 | 19*JJ | J | 2-1/2 X 2-1/2 | 4.50 | 14.68 | 3.50 | 20.8 |
| | | | 65 x 65 | 114 | 373 | 89 | 9.4 |

** Specify trim letter*
*1: Available in bronze trim only, Model 19KJG & 19MJG.*
*Connections are 1-1/2" FNPT x 2-1/2" FNPT.*

## 19 SERIES BRONZE SAFETY VALVE

### ASME SECTION I - STEAM

ounds per hour (kilograms per hour) saturated steam @ 3% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS BTU/Hr.

| Orifice Letter Area in.$^2$ | D 0.129 | E 0.230 | F 0.359 | G 0.589 | H 0.919 | J 1.509 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 15 | 174 | 310 | 484 | 794 | 1,240 | 2,035 |
| 20 | 201 | 359 | 561 | 920 | 1,435 | 2,356 |
| 25 | 229 | 408 | 637 | 1,045 | 1,631 | 2,677 |
| 30 | 256 | 457 | 713 | 1,170 | 1,826 | 2,998 |
| 35 | 284 | 506 | 790 | 1,296 | 2,022 | 3,319 |
| 40 | 311 | 555 | 866 | 1,421 | 2,217 | 3,641 |
| 45 | 339 | 604 | 942 | 1,546 | 2,413 | 3,962 |
| 50 | 366 | 653 | 1,019 | 1,672 | 2,608 | 4,283 |
| 55 | 394 | 702 | 1,095 | 1,797 | 2,804 | 4,604 |
| 60 | 421 | 751 | 1,172 | 1,922 | 2,999 | 4,925 |
| 65 | 448 | 800 | 1,248 | 2,048 | 3,195 | 5,246 |
| 70 | 476 | 849 | 1,326 | 2,175 | 3,394 | 5,573 |
| 75 | 505 | 900 | 1,405 | 2,304 | 3,596 | 5,904 |
| 80 | 533 | 950 | 1,483 | 2,433 | 3,797 | 6,234 |
| 85 | 561 | 1,001 | 1,562 | 2,563 | 3,998 | 6,565 |
| 90 | 590 | 1,051 | 1,641 | 2,692 | 4,200 | 6,896 |
| 95 | 618 | 1,101 | 1,719 | 2,821 | 4,401 | 7,226 |
| 100 | 646 | 1,152 | 1,798 | 2,950 | 4,602 | 7,557 |
| 105 | 674 | 1,202 | 1,877 | 3,079 | 4,804 | 7,888 |
| 110 | 703 | 1,253 | 1,955 | 3,208 | 5,005 | 8,218 |
| 115 | 731 | 1,303 | 2034 | 3,337 | 5,207 | 8,549 |
| 120 | 759 | 1,353 | 2,113 | 3,466 | 5,408 | 8,880 |
| 125 | 787 | 1,404 | 2,191 | 3,595 | 5,609 | 9,210 |
| 130 | 816 | 1,454 | 2,270 | 3,724 | 5,811 | 9,541 |
| 135 | 844 | 1,505 | 2,349 | 3,853 | 6,012 | 9,872 |
| 140 | 872 | 1,555 | 2,427 | 3,982 | 6,213 | 10,202 |
| 145 | 900 | 1,605 | 2,506 | 4,111 | 6,415 | 10,533 |
| 150 | 929 | 1,656 | 2,585 | 4,240 | 6,616 | 10,864 |
| 160 | 985 | 1,757 | 2,742 | 4,499 | 7,019 | 11,525 |
| 170 | 1,042 | 1,857 | 2,899 | 4,757 | 7,422 | 12,186 |
| 180 | 1,098 | 1,958 | 3,057 | 5,015 | 7,824 | 12,848 |
| 190 | 1,155 | 2,059 | 3,214 | 5,273 | 8,227 | 13,509 |
| 200 | 1,211 | 2,160 | 3,371 | 5,531 | 8,630 | 14,170 |
| 210 | 1,268 | 2,261 | 3,529 | 5,789 | 9,033 | 14,832 |
| 220 | 1,324 | 2,361 | 3,686 | 6,047 | 9,436 | 15,493 |
| 230 | 1,381 | 2,462 | 3,843 | 6,305 | 9,838 | 16,154 |
| 240 | 1,438 | 2,563 | 4,001 | 6,564 | 10,241 | 16,816 |
| 250 | 1,494 | 2,664 | 4,158 | 6,822 | 10,644 | 17,477 |
| 255 | 1,522 | 2,714 | 4,237 | 6,951 | 10,845 | 17,808 |
| 260 | 1,551 | 2,765 | 4,315 | 7,080 | 11,047 | 18,138 |
| 265 | 1,579 | 2,815 | 4,394 | 7,209 | 11,248 | 18,469 |
| 270 | 1,607 | 2,865 | 4,473 | 7,338 | 11,449 | 18,800 |
| 275 | 1,635 | 2,916 | 4,551 | 7,467 | 11,651 | 19,130 |
| 280 | 1,664 | 2,966 | 4,630 | 7,596 | 11,852 | 19,461 |
| 285 | 1,692 | 3,017 | 4,709 | 7,725 | 12,053 | 19,792 |
| 290 | 1,720 | 3,067 | 4,787 | 7,854 | 12,255 | 20,122 |
| 295 | 1,748 | 3,117 | 4,866 | 7,983 | 12,456 | 20,453 |
| 300 | 1,777 | 3,168 | 4,945 | 8,112 | 12,658 | 20,784 |
| Approx. 1 psi increments | 5.7 | 10.0 | 15.6 | 25.8 | 40.2 | 66.0 |

### METRIC UNITS Kcal/Hr.

| Orifice Letter Area cm.$^2$ | D 0.835 | E 1.483 | F 2.315 | G 3.800 | H 5.932 | J 9.733 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.34 | - | - | - | - | - | - |
| 0.69 | - | - | - | - | - | - |
| 1.1 | 81 | 145 | 226 | 371 | 579 | 951 |
| 1.5 | 96 | 171 | 266 | 437 | 682 | 1,120 |
| 2 | 114 | 203 | 317 | 519 | 811 | 1,331 |
| 2.5 | 132 | 235 | 367 | 602 | 940 | 1,542 |
| 3 | 150 | 267 | 417 | 684 | 1,068 | 1,753 |
| 3.5 | 168 | 299 | 467 | 767 | 1,197 | 1,964 |
| 4 | 186 | 331 | 517 | 849 | 1,326 | 2,175 |
| 4.5 | 204 | 364 | 568 | 932 | 1,454 | 2,386 |
| 5 | 222 | 397 | 619 | 1,016 | 1,586 | 2,602 |
| 5.5 | 241 | 430 | 671 | 1,101 | 1,719 | 2,820 |
| 6 | 259 | 463 | 723 | 1,186 | 1,851 | 3,037 |
| 6.5 | 278 | 496 | 774 | 1,271 | 1,984 | 3,255 |
| 7 | 296 | 529 | 826 | 1,356 | 2,116 | 3,472 |
| 7.5 | 315 | 562 | 878 | 1,440 | 2,249 | 3,690 |
| 8 | 334 | 595 | 929 | 1,525 | 2,381 | 3,907 |
| 8.5 | 352 | 628 | 981 | 1,610 | 2,514 | 4,125 |
| 9 | 371 | 662 | 1,033 | 1,695 | 2,646 | 4,342 |
| 9.5 | 389 | 695 | 1,085 | 1,780 | 2,779 | 4,559 |
| 10 | 408 | 728 | 1,136 | 1,865 | 2,911 | 4,777 |
| 10.5 | 426 | 761 | 1,188 | 1,950 | 3,044 | 4,994 |
| 11 | 445 | 794 | 1,240 | 2,035 | 3,176 | 5,212 |
| 11.5 | 464 | 827 | 1,292 | 2,120 | 3,309 | 5,429 |
| 12 | 482 | 860 | 1,343 | 2,204 | 3,441 | 5,647 |
| 12.5 | 501 | 893 | 1,395 | 2,289 | 3,574 | 5,864 |
| 13 | 519 | 927 | 1,447 | 2,374 | 3,706 | 6,082 |
| 13.5 | 538 | 960 | 1,498 | 2,459 | 3,839 | 6,299 |
| 14 | 556 | 993 | 1,550 | 2,544 | 3,971 | 6,517 |
| 15 | 594 | 1,059 | 1,654 | 2,714 | 4,236 | 6,951 |
| 16 | 631 | 1,125 | 1,757 | 2,884 | 4,501 | 7,386 |
| 17 | 668 | 1,192 | 1,861 | 3,053 | 4,767 | 7,821 |
| 18 | 705 | 1,258 | 1,964 | 3,223 | 5,032 | 8,256 |
| 19 | 742 | 1,324 | 2,067 | 3,393 | 5,297 | 8,691 |
| 20 | 779 | 1,390 | 2,171 | 3,563 | 5,562 | 9,126 |
| 20.7 | 805 | 1,437 | 2,243 | 3,682 | 5,747 | 9,430 |
| Approx. 0.1 barg increments | 3.7 | 6.6 | 10.3 | 17.0 | 26.5 | 43.5 |

*Note:*

*Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.*

## 19 SERIES BRONZE SAFETY VALVE

### ASME SECTION VIII - STEAM

Pounds per hour (kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS Lbs./Hr.**

| Orifice Letter Area in.² | D 0.129 | E 0.230 | F 0.359 | G 0.589 | H 0.919 | J 1.509 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | 122 | 218 | 340 | 558 | 871 | 1,429 |
| 10* | 167 | 298 | 466 | 765 | 1,193 | 1,958 |
| 15 | 179 | 320 | 499 | 820 | 1,279 | 2,100 |
| 20 | 207 | 369 | 576 | 945 | 1,474 | 2,421 |
| 25 | 234 | 418 | 652 | 1,070 | 1,670 | 2,742 |
| 30 | 262 | 467 | 729 | 1,195 | 1,865 | 3,063 |
| 35 | 292 | 521 | 813 | 1,333 | 2,080 | 3,416 |
| 40 | 322 | 574 | 897 | 1,471 | 2,295 | 3,769 |
| 45 | 352 | 628 | 981 | 1,609 | 2,510 | 4,122 |
| 50 | 383 | 682 | 1,065 | 1,747 | 2,725 | 4,475 |
| 55 | 413 | 736 | 1,149 | 1,885 | 2,941 | 4,828 |
| 60 | 443 | 790 | 1,233 | 2,022 | 3,156 | 5,181 |
| 65 | 473 | 844 | 1,317 | 2,160 | 3,371 | 5,535 |
| 70 | 503 | 897 | 1,401 | 2,298 | 3,586 | 5,888 |
| 75 | 534 | 951 | 1,485 | 2,436 | 3,801 | 6,241 |
| 80 | 564 | 1,005 | 1,569 | 2,574 | 4,016 | 6,594 |
| 85 | 594 | 1,059 | 1,653 | 2,712 | 4,231 | 6,947 |
| 90 | 624 | 1,113 | 1,737 | 2,849 | 4,446 | 7,300 |
| 95 | 654 | 1,167 | 1,821 | 2,987 | 4,661 | 7,653 |
| 100 | 684 | 1,220 | 1,905 | 3,125 | 4,876 | 8,007 |
| 105 | 715 | 1,274 | 1,989 | 3,263 | 5,091 | 8,360 |
| 110 | 745 | 1,328 | 2,073 | 3,401 | 5,306 | 8,713 |
| 115 | 775 | 1,382 | 2,157 | 3,539 | 5,521 | 9,066 |
| 120 | 805 | 1,436 | 2,241 | 3677 | 5,736 | 9,419 |
| 125 | 835 | 1,489 | 2,325 | 3,814 | 5,951 | 9,772 |
| 130 | 866 | 1,543 | 2,409 | 3,952 | 6,167 | 10,125 |
| 135 | 896 | 1,597 | 2,493 | 4,090 | 6,382 | 10,479 |
| 140 | 926 | 1,651 | 2,577 | 4,228 | 6,597 | 10,832 |
| 145 | 956 | 1,705 | 2,661 | 4,366 | 6,812 | 11,185 |
| 150 | 986 | 1,759 | 2,745 | 4,504 | 7,027 | 11,538 |
| 155 | 1,017 | 1,812 | 2,829 | 4,641 | 7,242 | 11,891 |
| 160 | 1,047 | 1,866 | 2,913 | 4,779 | 7,457 | 12,244 |
| 165 | 1,077 | 1,920 | 2,997 | 4,917 | 7,672 | 12,597 |
| 170 | 1,107 | 1,974 | 3,081 | 5,055 | 7,887 | 12,951 |
| 180 | 1,167 | 2,082 | 3,249 | 5,331 | 8,317 | 13,657 |
| 190 | 1,228 | 2,189 | 3,417 | 5,606 | 8,747 | 14,363 |
| 200 | 1,288 | 2,297 | 3,585 | 5,882 | 9,177 | 15,069 |
| 210 | 1,349 | 2,405 | 3,753 | 6,158 | 9,608 | 15,776 |
| 220 | 1,409 | 2,512 | 3,921 | 6,433 | 10,038 | 16,482 |
| 230 | 1,469 | 2,620 | 4,089 | 6,709 | 10,468 | 17,188 |
| 240 | 1,530 | 2,727 | 4,257 | 6,985 | 10,898 | 17,894 |
| 250 | 1,590 | 2,835 | 4,425 | 7,260 | 11,328 | 18,601 |
| 255 | 1,620 | 2,889 | 4,509 | 7,398 | 11,543 | 18,954 |
| 260 | 1,651 | 2,943 | 4,593 | 7,536 | 11,758 | 19,307 |
| 265 | 1,681 | 2,997 | 4,677 | 7,674 | 11,973 | 19,660 |
| 270 | 1,711 | 3,050 | 4,761 | 7,812 | 12,188 | 20,013 |
| 275 | 1,741 | 3,104 | 4,845 | 7,950 | 12,403 | 20,366 |
| 280 | 1,771 | 3,158 | 4,929 | 8,087 | 12,618 | 20,720 |
| 285 | 1,801 | 3,212 | 5,013 | 8,225 | 12,834 | 21,073 |
| 290 | 1,832 | 3,266 | 5,097 | 8,363 | 13,049 | 21,426 |
| 295 | 1,862 | 3,320 | 5,181 | 8,501 | 13,264 | 21,779 |
| 300 | 1,892 | 3,373 | 5,265 | 8,639 | 13,479 | 22,132 |
| Approx. 1 psi increments | 6.0 | 10.8 | 16.8 | 27.6 | 43.0 | 70.6 |

**METRIC UNITS Kg./Hr.**

| Orifice Letter Area cm.² | D 0.835 | E 1.483 | F 2.315 | G 3.800 | H 5.932 | J 9.733 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.34* | 55 | 99 | 154 | 253 | 395 | 648 |
| 0.69* | 76 | 135 | 211 | 347 | 541 | 888 |
| 1.1 | 84 | 149 | 233 | 382 | 597 | 980 |
| 1.5 | 98 | 175 | 273 | 448 | 700 | 1,149 |
| 2 | 116 | 207 | 323 | 531 | 829 | 1,360 |
| 2.5 | 136 | 242 | 378 | 620 | 968 | 1,589 |
| 3 | 156 | 277 | 433 | 711 | 1,110 | 1,821 |
| 3.5 | 175 | 313 | 489 | 802 | 1,251 | 2,054 |
| 4 | 195 | 348 | 544 | 892 | 1,393 | 2,286 |
| 4.5 | 215 | 384 | 599 | 983 | 1,535 | 2,518 |
| 5 | 235 | 419 | 654 | 1,074 | 1,676 | 2,750 |
| 5.5 | 255 | 454 | 709 | 1,164 | 1,818 | 2,982 |
| 6 | 274 | 490 | 765 | 1,255 | 1,959 | 3,215 |
| 6.5 | 294 | 525 | 820 | 1,346 | 2,101 | 3,447 |
| 7 | 314 | 561 | 875 | 1,436 | 2,242 | 3,679 |
| 7.5 | 334 | 596 | 930 | 1,527 | 2,384 | 3,911 |
| 8 | 354 | 631 | 986 | 1,618 | 2,525 | 4,144 |
| 8.5 | 374 | 667 | 1,041 | 1,708 | 2,667 | 4,376 |
| 9 | 393 | 702 | 1,096 | 1,799 | 2,808 | 4,608 |
| 9.5 | 413 | 737 | 1,151 | 1,890 | 2,950 | 4,840 |
| 10 | 433 | 773 | 1,207 | 1,980 | 3,091 | 5,072 |
| 10.5 | 453 | 808 | 1,262 | 2,071 | 3,233 | 5,305 |
| 11 | 473 | 844 | 1,317 | 2,162 | 3,374 | 5,537 |
| 11.5 | 493 | 879 | 1,372 | 2,252 | 3,516 | 5,769 |
| 12 | 512 | 914 | 1,428 | 2,343 | 3,657 | 6,001 |
| 12.5 | 532 | 950 | 1,483 | 2,434 | 3,799 | 6,234 |
| 13 | 552 | 985 | 1,538 | 2,524 | 3,941 | 6,466 |
| 13.5 | 572 | 1,021 | 1,593 | 2,615 | 4,082 | 6,698 |
| 14 | 592 | 1,056 | 1,649 | 2,706 | 4,224 | 6,930 |
| 15 | 631 | 1,127 | 1,759 | 2,887 | 4,507 | 7,395 |
| 16 | 671 | 1,197 | 1,870 | 3,068 | 4,790 | 7,859 |
| 17 | 711 | 1,268 | 1,980 | 3,250 | 5,073 | 8,324 |
| 18 | 750 | 1,339 | 2,091 | 3,431 | 5,356 | 8,788 |
| 19 | 790 | 1,410 | 2,201 | 3,612 | 5,639 | 9,253 |
| 20 | 830 | 1,480 | 2,312 | 3,794 | 5,922 | 9,717 |
| 20.7 | 857 | 1,530 | 2,389 | 3,920 | 6,120 | 10,042 |
| Approx. 0.1 barg increments | 4.0 | 7.1 | 11.5 | 18.1 | 28.3 | 46.4 |

*Note:*

*Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.*

**Settings below 15 psi (1.1 barg) are non-ASME code.*

## 19 SERIES BRONZE SAFETY VALVE

### ASME SECTION VIII - AIR

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS SCFM

| Orifice Letter Area in.$^2$ | D 0.129 | E 0.230 | F 0.359 | G 0.589 | H 0.919 | J 1.509 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | 39 | 69 | 108 | 178 | 277 | 455 |
| 10* | 54 | 97 | 151 | 248 | 387 | 635 |
| 15 | 64 | 114 | 178 | 292 | 455 | 747 |
| 20 | 74 | 131 | 205 | 336 | 525 | 862 |
| 25 | 83 | 149 | 232 | 381 | 594 | 976 |
| 30 | 93 | 166 | 259 | 426 | 664 | 1,090 |
| 35 | 104 | 185 | 289 | 475 | 740 | 1,216 |
| 40 | 115 | 204 | 319 | 524 | 817 | 1,342 |
| 45 | 125 | 224 | 349 | 573 | 894 | 1,467 |
| 50 | 136 | 243 | 379 | 622 | 970 | 1,593 |
| 55 | 147 | 262 | 409 | 671 | 1,047 | 1,719 |
| 60 | 158 | 281 | 439 | 720 | 1,123 | 1,844 |
| 65 | 168 | 300 | 469 | 769 | 1,200 | 1,970 |
| 70 | 179 | 319 | 499 | 818 | 1,276 | 2,096 |
| 75 | 190 | 339 | 528 | 867 | 1,353 | 2,221 |
| 80 | 201 | 358 | 558 | 916 | 1,429 | 2,347 |
| 85 | 211 | 377 | 588 | 965 | 1,506 | 2,473 |
| 90 | 222 | 396 | 618 | 1,014 | 1,583 | 2,598 |
| 95 | 233 | 415 | 648 | 1,063 | 1,659 | 2,724 |
| 100 | 244 | 434 | 678 | 1,112 | 1,736 | 2,850 |
| 105 | 254 | 454 | 708 | 1,161 | 1,812 | 2,976 |
| 110 | 265 | 473 | 738 | 1,211 | 1,889 | 3,101 |
| 115 | 276 | 492 | 768 | 1,260 | 1,965 | 3,227 |
| 120 | 287 | 511 | 798 | 1,309 | 2,042 | 3,353 |
| 125 | 297 | 530 | 828 | 1,358 | 2,118 | 3,478 |
| 130 | 308 | 549 | 857 | 1,407 | 2,195 | 3,604 |
| 135 | 319 | 568 | 887 | 1,456 | 2,271 | 3,730 |
| 140 | 330 | 588 | 917 | 1,505 | 2,348 | 3,855 |
| 145 | 340 | 607 | 947 | 1,554 | 2,425 | 3,981 |
| 150 | 351 | 626 | 977 | 1,603 | 2,501 | 4,107 |
| 160 | 373 | 664 | 1,037 | 1,701 | 2,654 | 4,358 |
| 165 | 383 | 683 | 1,067 | 1,750 | 2,731 | 4,484 |
| 170 | 394 | 703 | 1,097 | 1,799 | 2,807 | 4,610 |
| 180 | 416 | 741 | 1,156 | 1,897 | 2,960 | 4,861 |
| 190 | 437 | 779 | 1,216 | 1,996 | 3,114 | 5,112 |
| 200 | 459 | 818 | 1,276 | 2,094 | 3,267 | 5,364 |
| 210 | 480 | 856 | 1,336 | 2,192 | 3,420 | 5,615 |
| 220 | 502 | 894 | 1,396 | 2,290 | 3,573 | 5,867 |
| 230 | 523 | 932 | 1,456 | 2,388 | 3,726 | 6,118 |
| 240 | 545 | 971 | 1,515 | 2,486 | 3,879 | 6,369 |
| 250 | 566 | 1,009 | 1,575 | 2,584 | 4,032 | 6,621 |
| 255 | 577 | 1,028 | 1,605 | 2,633 | 4,109 | 6,746 |
| 260 | 587 | 1,047 | 1,635 | 2,682 | 4,185 | 6,872 |
| 265 | 598 | 1,067 | 1,665 | 2,731 | 4,262 | 6,998 |
| 270 | 609 | 1,086 | 1,695 | 2,781 | 4,338 | 7,124 |
| 275 | 620 | 1,105 | 1,725 | 2,830 | 4,415 | 7,249 |
| 280 | 630 | 1,124 | 1,755 | 2,879 | 4,491 | 7,375 |
| 285 | 641 | 1,143 | 1,784 | 2,928 | 4,568 | 7,501 |
| 290 | 652 | 1,162 | 1,814 | 2,977 | 4,645 | 7,626 |
| 295 | 663 | 1,182 | 1,844 | 3,026 | 4,721 | 7,752 |
| 300 | 673 | 1,201 | 1,874 | 3,075 | 4,798 | 7,878 |
| Approx. 1 psi increments | 2.1 | 3.8 | 6.0 | 9.8 | 15.3 | 25.1 |

### METRIC UNITS Nm3/Hr.

| Orifice Letter Area cm.$^2$ | D 0.835 | E 1.483 | F 2.315 | G 3.800 | H 5.932 | J 9.733 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.34* | 66 | 118 | 184 | 302 | 471 | 773 |
| 0.69* | 92 | 164 | 256 | 421 | 657 | 1,078 |
| 1.1 | 112 | 199 | 311 | 510 | 796 | 1,306 |
| 1.5 | 131 | 233 | 364 | 598 | 933 | 1,531 |
| 2 | 155 | 276 | 431 | 708 | 1,105 | 1,813 |
| 2.5 | 181 | 323 | 504 | 827 | 1,291 | 2,119 |
| 3 | 207 | 370 | 578 | 948 | 1,480 | 2,428 |
| 3.5 | 234 | 417 | 651 | 1,069 | 1,669 | 2,738 |
| 4 | 260 | 464 | 725 | 1,190 | 1,857 | 3,047 |
| 4.5 | 287 | 511 | 799 | 1,311 | 2,046 | 3,357 |
| 5 | 313 | 559 | 872 | 1,431 | 2,235 | 3,667 |
| 5.5 | 340 | 606 | 946 | 1,552 | 2,423 | 3,976 |
| 6 | 366 | 653 | 1,020 | 1,673 | 2,612 | 4,286 |
| 6.5 | 392 | 700 | 1,093 | 1,794 | 2,801 | 4,596 |
| 7 | 419 | 747 | 1,167 | 1,915 | 2,989 | 4,905 |
| 7.5 | 445 | 795 | 1,241 | 2,036 | 3,178 | 5,215 |
| 8 | 472 | 842 | 1,314 | 2,157 | 3,367 | 5,524 |
| 8.5 | 498 | 889 | 1,388 | 2,278 | 3,555 | 5,834 |
| 9 | 525 | 936 | 1,461 | 2,398 | 3,744 | 6,144 |
| 9.5 | 551 | 983 | 1,535 | 2,519 | 3,933 | 6,453 |
| 10 | 577 | 1,030 | 1,609 | 2,640 | 4,122 | 6,763 |
| 10.5 | 604 | 1,078 | 1,682 | 2,761 | 4,310 | 7,072 |
| 11 | 630 | 1,125 | 1,756 | 2,882 | 4,499 | 7,382 |
| 11.5 | 657 | 1,172 | 1,830 | 3,003 | 4,688 | 7,692 |
| 12 | 683 | 1,219 | 1,903 | 3,124 | 4,876 | 8,001 |
| 12.5 | 710 | 1,266 | 1,977 | 3,245 | 5,065 | 8,311 |
| 13 | 736 | 1,313 | 2,051 | 3,365 | 5,254 | 8,621 |
| 13.5 | 763 | 1,361 | 2,124 | 3,486 | 5,442 | 8,930 |
| 14 | 789 | 1,408 | 2,198 | 3,607 | 5,631 | 9,240 |
| 15 | 842 | 1,502 | 2,345 | 3,849 | 6,008 | 9,859 |
| 16 | 895 | 1,596 | 2,493 | 4,091 | 6,386 | 10,478 |
| 17 | 948 | 1,691 | 2,640 | 4,332 | 6,763 | 11,097 |
| 18 | 1,000 | 1,785 | 2,787 | 4,574 | 7,141 | 11,717 |
| 19 | 1,053 | 1,879 | 2,935 | 4,816 | 7,518 | 12,336 |
| 20 | 1,106 | 1,974 | 3,082 | 5,058 | 7,895 | 12,955 |
| 20.7 | 1,143 | 2,040 | 3,185 | 5,227 | 8,160 | 13,389 |
| Approx. 0.1 barg increments | 5.3 | 9.4 | 14.7 | 24.2 | 37.7 | 61.9 |

*Note:*

*To correct for temperature or specific gravities other than air (=1.0), multiply the SCFM from the capacity tables by factor Ksg*

**Settings below 15 psi (1.1 barg) are non-ASME code.*

## 29 SERIES — OEM STYLE BRONZE SAFETY VALVE

ASME
UV / V
CE

The Apollo® 29 Series is ideally suited for OEM applications where compact size, dependable performance and maximum economy are required. These rugged safety valves feature a top guided design and patented Teflon® "soft-seat" for dramatically reduced seat leakage. Flow ratings are National Board certified.

### ASME SECTIONS I AND VIII

- Sizes 3/8" - 1-1/4" NPT
- Factory Set pressures 30 to 200 psig
- Maximum Temperature: 406˚F

### APPLICATIONS

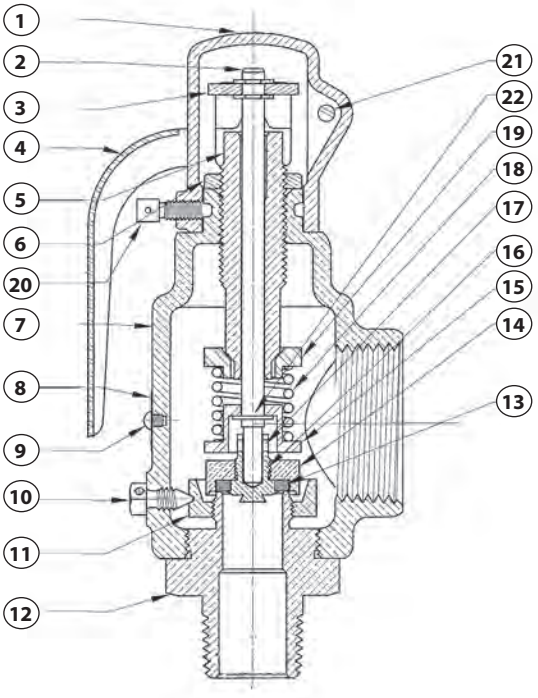
- Small to Medium Sized Steam Power Boilers, Sterilizers and Distillers, Air Compressors and Receivers, Pressure Vessels and Pressure Piping Systems

### FEATURES

- Stainless Steel Springs are Standard
- PFA Teflon® Seat Resists Corrosive Boiler Chemicals
- Rust-Proofed Steel Stem and Spring Washers
- Lower Control Ring Ensures Short, Cconsistent Blowdown
- Tapped Body Drain Allows Piping of Condensate Away from Equipment
- Reduced Repair Costs; Soft Seat Easily Replaced
- Registered in all Canadian Provinces Under CSA B51 CRN OG8547.5C

### OPTIONS

- 316 Stainless Steel Wetted Trim (29-202 & 29-303 Sizes Only)
- Oxygen Cleaned
- European Pressure Equipment Directive Compliant Option (CE/PED)

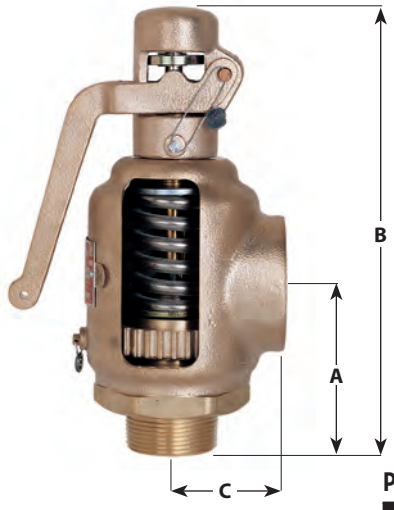



### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | **CAP** | Bronze or Brass |
| 2 | **STEM** | Steel, Plated |
| 3 | **LIFT WASHER** | Steel, Plated |
| 4 | **LIFT LEVER** | Steel, Plated |
| 5 | **ADJUSTING SCREW** | Brass |
| 6 | **LOCK NUT** | Brass |
| 7 | **BODY** | Bronze |
| 8 | **NAMEPLATE** | Stainless Steel |
| 9 | **DRIVE SCREWS** | Stainless Steel |
| 10 | **SET SCREW** | Brass |
| 11 | **BLOWDOWN RING** | Brass |
| 12 | **NOZZLE*** | Brass/Stainless |
| 13 | **SEAT INSERT** | Teflon® PFA |
| 14 | **DISC HOLDER** | Brass |
| 15 | **LOWER WASHER** | Steel, Plated |
| 16 | **SEAT RETAINER*** | Brass/Stainless |
| 17 | **STEM PIN** | Stainless Steel |
| 18 | **SPRING** | Stainless Steel |
| 19 | **UPPER WASHER** | Steel, Plated |
| 20 | **LOCK SCREW** | Steel, Plated |
| 21 | **LEVER PIN** | Steel, Plated |
| 22 | **RETAINING RING** | Stainless Steel |
| - | **SEAL & WIRE** | Lead/Steel |

**Optional stainless steel wetted trim for models 29-202XXL and 29-302XXL. Items 12 & 16 are type 316 stainless steel.*

## 29 SERIES — OEM STYLE BRONZE SAFETY VALVE




### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) | | Wt./Ea. (lbs./kg.) | Dimensions (in./mm.) | | |
|---|---|---|---|---|---|---|
| | Inlet | Outlet | | A | B | C |
| 29-102 | 3/8 | 1 | 1.30 | 2.12 | 5.40 | 1.25 |
| | 10 | 25 | .59 | 53 | 137 | 31 |
| 29-202 | 1/2 | 1 | 1.33 | 2.12 | 5.40 | 1.25 |
| | 15 | 25 | .60 | 53 | 137 | 31 |
| 29-302 | 3/4 | 1 | 1.90 | 2.12 | 5.40 | 1.25 |
| | 20 | 25 | .86 | 53 | 137 | 31 |
| 29-303 | 3/4 | 1-1/4 | 3.43 | 2.75 | 7.25 | 1.69 |
| | 20 | 32 | 1.55 | 69 | 184 | 42 |
| 29-402 | 1 | 1-1/4 | 3.43 | 2.75 | 7.25 | 1.69 |
| | 25 | 32 | 1.55 | 69 | 184 | 42 |
| 29-501 | 1-1/4 | 1-1/4 | 3.48 | 2.75 | 7.25 | 1.69 |
| | 32 | 32 | 1.58 | 69 | 184 | 42 |

### PART NUMBER MATRIX

| 29 | 202 | A | 100 | A |
|---|---|---|---|---|
| **BASE MODEL NUMBER** | **INLET X OUTLET NTNPT** | **ASME CODE & SERVICE** | **SET PRESSURE (PSI)** | **SPECIAL OPTIONS** |
| Bronze with Brass Trim and Teflon® Soft Seat | 102 = 3/8 x 1<br>202 = 1/2 x 1<br>302= 3/4 x 1<br>303 = 3/4 x 1-1/4<br>402 = 1 x 1-1/4<br>501 = 1-1/4 x 1-1/4 | A = Sec I Steam<br>K = Sec VIII Air<br>L = Sec VIII Steam | Set Pressure (PSIG)<br>(range 30-200 psig) | S = Stainless Steel Wetted Trim<br>(models 29-202 & 29-303 only)<br>C = CE/PED<br>Q = Performance (Calibration) Test Reports<br>*other suffixes - factory issued |

**Not all configurations available together*

**EXAMPLE:**
**29 202 A100** = 1/2" x 1" 29 Series set @ 100 psig, ASME Section I "V" Steam
**29 202 L40** = 1/2" x 1" 29 Series set @ 40 psig, ASME Section VIII "UV" Steam
**29 303 K200 S** = 3/4" x 1-1/4" 29 Series set @ 200 psig, ASME Section VIII "UV" Air, Stainless Steel Wetted Trim

## 29 SERIES BRONZE SAFETY

### ASME SECTION I - STEAM

Pounds per hour (kilograms per hour) saturated steam at 3% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS Lbs./Hr.**

| Model No.<br>Seat Dia. (in.) | 29-102, 29-202, 29-302<br>0.500 | 29-303, 29-402, 29-501<br>0.737 |
|---|---|---|
| Set Pressure psig | | |
| 30 | 164 | 330 |
| 35 | 182 | 367 |
| 40 | 201 | 405 |
| 45 | 220 | 442 |
| 50 | 238 | 479 |
| 55 | 257 | 517 |
| 60 | 275 | 554 |
| 65 | 294 | 591 |
| 70 | 312 | 628 |
| 75 | 331 | 664 |
| 80 | 349 | 702 |
| 85 | 368 | 739 |
| 90 | 386 | 777 |
| 95 | 405 | 814 |
| 100 | 423 | 851 |
| 105 | 442 | 888 |
| 110 | 460 | 925 |
| 115 | 479 | 963 |
| 120 | 497 | 1,000 |
| 125 | 516 | 1,036 |
| 130 | 534 | 1,074 |
| 135 | 553 | 1,112 |
| 140 | 571 | 1,149 |
| 145 | 590 | 1,186 |
| 150 | 608 | 1,223 |
| 155 | 627 | 1,261 |
| 160 | 645 | 1,298 |
| 165 | 664 | 1,335 |
| 170 | 683 | 1,372 |
| 175 | 701 | 1,409 |
| 180 | 720 | 1,447 |
| 185 | 738 | 1,484 |
| 190 | 757 | 1,521 |
| 195 | 775 | 1,558 |
| 200 | 794 | 1,596 |
| Approx. 1 psi increments | 3.7 | 7.4 |

**METRIC UNITS Kg./Hr.**

| Model No.<br>Seat Dia. (mm.) | 29-102, 29-202, 29-302<br>12.70 | 29-303, 29-402, 29-501<br>18.72 |
|---|---|---|
| Set Pressure barg | | |
| 2.1 | 77 | 155 |
| 2.5 | 86 | 174 |
| 3 | 98 | 197 |
| 3.5 | 110 | 221 |
| 4 | 122 | 245 |
| 4.5 | 134 | 269 |
| 5 | 146 | 293 |
| 5.5 | 158 | 318 |
| 6 | 170 | 342 |
| 6.5 | 182 | 367 |
| 7 | 195 | 391 |
| 7.5 | 207 | 416 |
| 8 | 219 | 440 |
| 8.5 | 231 | 465 |
| 9 | 243 | 489 |
| 9.5 | 255 | 514 |
| 10 | 268 | 538 |
| 10.5 | 280 | 563 |
| 11 | 292 | 587 |
| 11.5 | 304 | 612 |
| 12 | 316 | 636 |
| 12.5 | 329 | 661 |
| 13 | 341 | 685 |
| 13.5 | 353 | 710 |
| 13.8 | 360 | 724 |
| Approx. 0.1 barg increments | 2.44 | 4.9 |

## 29 SERIES BRONZE SAFETY

### ASME SECTION VIII - STEAM

Pounds per hour (kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS Lbs./Hr.**

| Model No.<br>Seat Dia. (in.) | 29-102, 29-202, 29-302<br>0.500 | 29-303, 29-402, 29-501<br>0.737 |
|---|---|---|
| Set Pressure psig | | |
| 30 | 164 | 330 |
| 35 | 182 | 367 |
| 40 | 201 | 405 |
| 45 | 220 | 442 |
| 50 | 238 | 479 |
| 55 | 257 | 517 |
| 60 | 275 | 554 |
| 65 | 294 | 591 |
| 70 | 312 | 628 |
| 75 | 331 | 664 |
| 80 | 349 | 702 |
| 85 | 368 | 739 |
| 90 | 386 | 777 |
| 95 | 405 | 814 |
| 100 | 423 | 851 |
| 105 | 442 | 888 |
| 110 | 460 | 925 |
| 115 | 479 | 963 |
| 120 | 497 | 1,000 |
| 125 | 516 | 1,036 |
| 130 | 534 | 1,074 |
| 135 | 553 | 1,112 |
| 140 | 571 | 1,149 |
| 145 | 590 | 1,186 |
| 150 | 608 | 1,223 |
| 155 | 627 | 1,261 |
| 160 | 645 | 1,298 |
| 165 | 664 | 1,335 |
| 170 | 683 | 1,372 |
| 175 | 701 | 1,409 |
| 180 | 720 | 1,447 |
| 185 | 738 | 1,484 |
| 190 | 757 | 1,521 |
| 195 | 775 | 1,558 |
| 200 | 794 | 1,596 |
| Approx. 1 psi increments | 3.7 | 7.4 |

**METRIC UNITS Kg./Hr.**

| Model No.<br>Seat Dia. (mm.) | 29-102, 29-202, 29-302<br>12.70 | 29-303, 29-402, 29-501<br>18.72 |
|---|---|---|
| Set Pressure barg | | |
| 2.1 | 79 | 158 |
| 2.5 | 89 | 179 |
| 3 | 102 | 205 |
| 3.5 | 115 | 231 |
| 4 | 128 | 257 |
| 4.5 | 141 | 284 |
| 5 | 154 | 310 |
| 5.5 | 167 | 336 |
| 6 | 180 | 362 |
| 6.5 | 193 | 388 |
| 7 | 206 | 414 |
| 7.5 | 219 | 441 |
| 8 | 232 | 467 |
| 8.5 | 245 | 493 |
| 9 | 258 | 519 |
| 9.5 | 271 | 545 |
| 10 | 284 | 571 |
| 10.5 | 297 | 598 |
| 11 | 310 | 624 |
| 11.5 | 323 | 650 |
| 12 | 336 | 676 |
| 12.5 | 349 | 702 |
| 13 | 362 | 728 |
| 13.5 | 375 | 755 |
| 13.8 | 383 | 770 |
| Approx. 0.1 barg increments | 2.6 | 5.22 |

## 29 SERIES BRONZE SAFETY

### ASME SECTION VIII - AIR

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS SCFM**

| Model No.<br>Seat Dia. (in.) | 29-102, 29-202, 29-302<br>0.500 | 29-303, 29-402, 29-501<br>0.737 |
|---|---|---|
| Set Pressure psig | | |
| 30 | 61 | 123 |
| 35 | 68 | 137 |
| 40 | 75 | 151 |
| 45 | 82 | 165 |
| 50 | 89 | 180 |
| 55 | 96 | 193 |
| 60 | 103 | 208 |
| 65 | 110 | 222 |
| 70 | 117 | 236 |
| 75 | 124 | 250 |
| 80 | 131 | 264 |
| 85 | 138 | 278 |
| 90 | 145 | 292 |
| 95 | 152 | 307 |
| 100 | 159 | 321 |
| 105 | 166 | 335 |
| 110 | 173 | 349 |
| 115 | 180 | 363 |
| 120 | 187 | 378 |
| 125 | 194 | 392 |
| 130 | 201 | 406 |
| 135 | 208 | 420 |
| 140 | 215 | 434 |
| 145 | 222 | 448 |
| 150 | 229 | 463 |
| 155 | 236 | 477 |
| 160 | 243 | 491 |
| 165 | 250 | 505 |
| 170 | 257 | 519 |
| 175 | 265 | 533 |
| 180 | 272 | 547 |
| 185 | 279 | 562 |
| 190 | 286 | 576 |
| 195 | 293 | 590 |
| 200 | 300 | 604 |
| Approx. 1 psi increments | 1.4 | 2.8 |

**METRIC UNITS Nm3./Hr.**

| Model No.<br>Seat Dia. (mm.) | 29-102, 29-202, 29-302<br>12.70 | 29-303, 29-402, 29-501<br>18.72 |
|---|---|---|
| Set Pressure barg | | |
| 2.1 | 105 | 210 |
| 2.5 | 118 | 238 |
| 3 | 136 | 273 |
| 3.5 | 153 | 308 |
| 4 | 170 | 342 |
| 4.5 | 188 | 377 |
| 5 | 205 | 412 |
| 5.5 | 222 | 447 |
| 6 | 240 | 482 |
| 6.5 | 257 | 516 |
| 7 | 274 | 551 |
| 7.5 | 291 | 586 |
| 8 | 309 | 621 |
| 8.5 | 326 | 655 |
| 9 | 343 | 690 |
| 9.5 | 361 | 725 |
| 10 | 378 | 760 |
| 10.5 | 395 | 795 |
| 11 | 413 | 829 |
| 11.5 | 430 | 864 |
| 12 | 447 | 899 |
| 12.5 | 464 | 934 |
| 13 | 482 | 969 |
| 13.5 | 499 | 1,003 |
| 13.8 | 509 | 1,024 |
| Approx. 0.1 barg increments | 3.46 | 6.96 |

## 119 SERIES — CAST IRON FLANGED SAFETY VALVE

UV / V

These flanged, heavy duty and high capacity safety valves are ideal for use on all types of boilers, pressure vessels and pressure piping systems. These ruggedly built valves offer you a cost-saving alternative to conventional steel bodied valves – without compromising quality or performance. These valves feature a top guided design and two control rings to ensure seat tightness, repeatable performance and extended service life. Flow ratings are National Board certified.

### ASME SECTIONS I AND VIII

- Set Pressures to 250 psig @ 450°F max
- Flanged Inlet Sizes 1 1/2" thru 6" ANSI 250 lb.
- Threaded Inlet Sizes 2" thru 3" FNPT

### APPLICATIONS

- Overpressure Protection of Steam Boilers, Deaerators, Accumulators, Pressure Reducing Stations and Pressure Piping Systems
- Pneumatic Conveying Equipment, Air and Gas Compressors, Receivers and Dryers. Per ASME Code, Cast Iron Safety Relief Valves Must Not be Used for Lethal or Flammable Fluid Service

### FEATURES

- Metal-to-Metal Seating, Lapped to Optical Flatness
- High-Capacity Semi-Nozzle Design Available in 8 Orifice Sizes
- Stainless Steel Wetted Trim is Standard
- Two Control Rings Assure Maximum Performance and Dependability
- Designed for New Installations and Replacement of Existing Valves (High Flow Rates and Face-to-Face Dimensions Enable Direct Replacement of Most Competitive Models)
- Designed for Ease of Service or Repair
- Ductile Iron Caps, Forks and Levers for Added Durability
- Registered in all Canadian Provinces Under CSA B51, CRN OG8547.5C
- **Complies with Steel Procurement Act**
- **Made in USA**

### OPTIONS

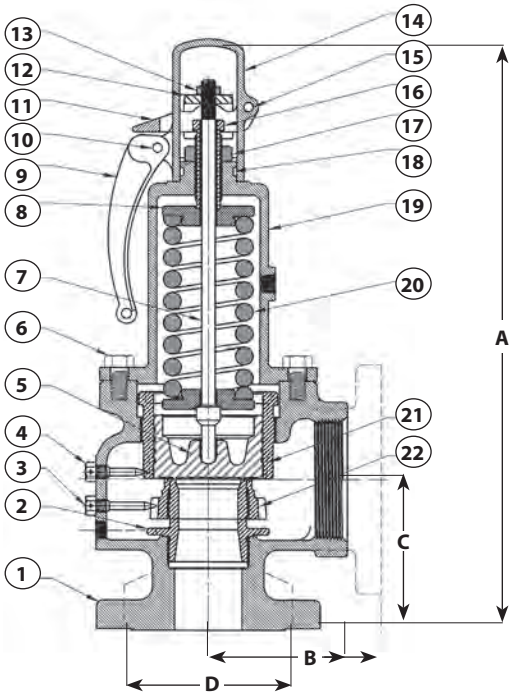
- Drip Pan Elbows for Discharge Piping
- European Pressure Equipment Directive Compliant Option (CE/PED)

### PART NUMBER MATRIX

| 119 | K | H | C | A | MAA | 0150 | Q |
|---|---|---|---|---|---|---|---|
| SERIES NUMBER | ORIFICE LETTER | INLET (IN.) | CONNECTION | SERVICE | SPECIAL OPTIONS | SET PRESSURE | SUFFIX |
| 119 = Stainless Steel Wetted Trim | The orifice letter from the Capacity Chart (pg. 39-41) | G = 1-1/2<br>H = 2<br>J = 2-1/2<br>K = 3<br>M = 4<br>P = 6 | A = FNPT x FNPT<br>C = 250# x FNPT<br>D = 250# x 125# | A = Sec I Steam<br>K = Sec VIII Air<br>L = Sec VIII Steam<br>N = Non Code Air<br>P = Non Code Steam | Factory issued letters/numbers (MAA default)<br>MCE = CE/PED | Set Pressure, PSIG (4 digits) | Q = Performance (Calibration) test reports |

**EXAMPLE:**
**119 KHC A MAA 0150** = 2" "K" 3" ASME Section I Steam, set @ 150 psig with flanged inlet
**119 QPD L MAA 0025** = 6" "K" 8" ASME Section VIII Steam, set @ 25 psig with flanged inlet

## 119 SERIES — CAST IRON FLANGED SAFETY VALVE




### STANDARD MATERIAL LIST

| | | |
|---|---|---|
| 1 | **BODY** | Gray Iron |
| 2 | **NOZZLE** | Stainless Steel |
| 3 | **NOZZLE RING SCREW** | Brass |
| 4 | **GUIDE RING SCREW** | Brass |
| 5 | **DISC** | Stainless Steel |
| 6 | **BONNET BOLT** | Steel, Plated |
| 7 | **STEM** | Steel, Plated |
| 8 | **SPRING WASHER** | Steel, Plated |
| 9 | **TEST LEVER** | Ductile Iron |
| 10 | **CLEVIS PIN** | Steel, Plated |
| 11 | **LIFTING FORK** | Ductile Iron |
| 12 | **STEM NUT** | Steel, Plated |
| 13 | **STEM NUT LOCK NUT** | Steel, Plated |
| 14 | **LIFTING CAP** | Ductile Iron |
| 15 | **CLEVIS PIN** | Steel (Plated) |
| 16 | **ADJUSTING SCREW** | Brass |
| 17 | **LOCK NUT** | Steel, Plated |
| 18 | **LIFT CAP LOCKSCREW** | Steel, Plated |
| 19 | **BONNET** | Gray Iron |
| 20 | **SPRING** | Steel, Plated or SS |
| 21 | **DISC GUIDE** | Brass or Bronze |
| 22 | **NOZZLE RING** | Brass or Bronze |
| - | **NAMEPLATE** | Aluminum |
| - | **SEAL AND WIRE** | Lead/Steel |
| - | **SEAL AND WIRE (CE)** | Aluminun/SS |

### AVAILABLE CONFIGURATIONS

| Model Number | Size (in./mm.) Inlet x Outlet | Orifice Size | Dimensions (in./mm.) A | B | C | Hex Flat D (in./mm) | Weight (lbs./kg.) |
|---|---|---|---|---|---|---|---|
| **119 JGC** | 1-1/2 250# X 2-1/2 FNPT | J | 15 | 4 | 4.31 | | 35 |
| | DN40 x DN65 | | 381 | 101 | 109 | | 15.8 |
| **119 KHC** | 2 250# X 3 FNPT | K | 16 | 4 | 4.63 | | 36 |
| | DN50 x DN80 | | 406 | 101 | 109 | | 16.3 |
| **119 KHA** | 2 FNPT X 3 FNPT | K | 16 | 4 | 4.63 | 3.75 | 37 |
| | DN50 x DN80 | | 406 | 101 | 109 | 95 | 16.7 |
| **119 KJC** | 2-1/2 250# X 3 FNPT | K | 16 | 4 | 4.63 | | 41 |
| | DN65 x DN80 | | 406 | 101 | 109 | | 18.6 |
| **119 KKC** | 3 250# X 3 FNPT | K | 16 | 4 | 4.63 | | 45 |
| | DN80 x DN80 | | 406 | 101 | 109 | | 20.5 |
| **119 LJC** | 2-1/2 250# X 4 FNPT | L | 22 | 5.13 | 5.63 | | 84 |
| | DN65 x DN100 | | 558 | 130 | 143 | | 38.1 |
| **119 LJA** | 2-1/2 FNPT X 4 FNPT | L | 22 | 5.13 | 5.63 | 5.38 | 81 |
| | DN65 x DN100 | | 558 | 130 | 143 | 136 | 36.7 |
| **119 LKC** | 3 250# X 4 FNPT | L | 22 | 5.13 | 5.63 | | 85 |
| | DN80 x DN100 | | 558 | 130 | 143 | | 38.5 |
| **119 LMC** | 4 250# X 4 FNPT | L | 22 | 5.13 | 5.63 | | 90 |
| | DN100 x DN100 | | 558 | 130 | 143 | | 40.9 |
| **119 MKA** | 3 FNPT X 4 FNPT | M | 22 | 5.13 | 5.63 | 5.38 | 80 |
| | DN80 x DN100 | | 558 | 130 | 143 | 136 | 36.2 |
| **119 MKC** | 3 250# X 4 FNPT | M | 22 | 5.13 | 5.63 | | 87 |
| | DN80 x DN100 | | 558 | 130 | 143 | | 39.4 |
| **119 MMC** | 4 250# X 4 FNPT | M | 22 | 5.13 | 5.63 | | 95 |
| | DN100 x DN100 | | 558 | 130 | 143 | | 43.2 |
| **119 NMD** | 4 250# X 6 125# | N | 28 | 7.25 | 6.75 | | 210 |
| | DN100 x DN150 | | 711 | 184 | 171 | | 95.2 |
| **119 PMD** | 4 250# X 6 125# | P | 28 | 7.25 | 6.75 | | 215 |
| | DN100 x DN150 | | 711 | 184 | 171 | | 97.5 |
| **119 QPD** | 6 250# X 8 125# | Q | 42 | 10 | 9.25 | | 530 |
| | DN150 x DN200 | | 1066 | 254 | 234 | | 240.4 |
| **119 RPD** | 6 250# X 8 125# | R | 42 | 10 | 9.25 | | 530 |
| | DN150 x DN200 | | 1066 | 254 | 234 | | 240.4 |

## 119 SERIES CAST IRON FLANGED SAFETY VALVE

### ASME SECTION I - STEAM

Pounds per hour (kilograms per hour) saturated steam at 3% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS Lbs./Hr.

| Orifice Letter Area in.² | J 1.358 | K 1.926 | L 2.99 | M 3.774 | N 4.55 | P 6.692 | Q 11.593 | R 16.786 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | | | |
| 15 | 1,947 | 2,761 | 4,286 | 5,410 | 6,522 | 9,592 | 16,617 | 24,061 |
| 20 | 2,254 | 3,196 | 4,962 | 6,263 | 7,551 | 11,105 | 19,238 | 27,856 |
| 25 | 2,561 | 3,632 | 5,638 | 7,116 | 8,579 | 12,618 | 21,859 | 31,651 |
| 30 | 2,868 | 4,067 | 6,314 | 7,969 | 9,608 | 14,131 | 24,480 | 35,446 |
| 35 | 3,175 | 4,502 | 6,990 | 8,823 | 10,637 | 15,644 | 27,101 | 39,241 |
| 40 | 3,482 | 4,938 | 7,666 | 9,676 | 11,665 | 17,157 | 29,722 | 43,036 |
| 45 | 3,789 | 5,373 | 8,342 | 10,529 | 12,694 | 18,670 | 32,343 | 46,831 |
| 50 | 4,096 | 5,809 | 9,018 | 11,382 | 13,723 | 20,183 | 34,964 | 50,626 |
| 55 | 4,403 | 6,244 | 9,694 | 12,236 | 14,751 | 21,696 | 37,585 | 54,421 |
| 60 | 4,710 | 6,680 | 10,370 | 13,089 | 15,780 | 23,209 | 40,206 | 58,216 |
| 65 | 5,017 | 7,115 | 11,046 | 13,942 | 16,809 | 24,722 | 42,827 | 62,011 |
| 70 | 5,330 | 7,559 | 11,735 | 14,812 | 17,858 | 26,265 | 45,501 | 65,882 |
| 75 | 5,646 | 8,008 | 12,432 | 15,691 | 18,918 | 27,823 | 48,200 | 69,791 |
| 80 | 5,962 | 8,456 | 13,128 | 16,570 | 19,977 | 29,382 | 50,900 | 73,700 |
| 85 | 6,279 | 8,905 | 13,824 | 17,449 | 21,037 | 30,940 | 53,600 | 77,609 |
| 90 | 6,595 | 9,353 | 14,520 | 18,328 | 22,096 | 32,498 | 56,299 | 81,518 |
| 95 | 6,911 | 9,802 | 15,217 | 19,207 | 23,156 | 34,057 | 58,999 | 85,427 |
| 100 | 7,227 | 10,250 | 15,913 | 20,085 | 24,215 | 35,615 | 61,698 | 89,336 |
| 105 | 7,544 | 10,699 | 16,609 | 20,964 | 25,275 | 37,173 | 64,398 | 93,245 |
| 110 | 7,860 | 11,147 | 17,305 | 21,843 | 26,334 | 38,732 | 67,098 | 97,154 |
| 115 | 8,176 | 11,596 | 18,002 | 22,722 | 27,394 | 40,290 | 69,797 | 101,063 |
| 120 | 8,492 | 12,044 | 18,698 | 23,601 | 28,453 | 41,848 | 72,497 | 104,971 |
| 125 | 8,809 | 12,493 | 19,394 | 24,480 | 29,513 | 43,407 | 75,197 | 108,880 |
| 130 | 9,125 | 12,941 | 20,091 | 25,358 | 30,573 | 44,965 | 77,896 | 112,789 |
| 135 | 9,441 | 13,390 | 20,787 | 26,237 | 31,632 | 46,524 | 80,596 | 116,698 |
| 140 | 9,757 | 13,838 | 21,483 | 27,116 | 32,692 | 48,082 | 83,295 | 120,607 |
| 145 | 10,073 | 14,287 | 22,179 | 27,995 | 33,751 | 49,640 | 85,995 | 124,516 |
| 150 | 10,390 | 14,735 | 22,876 | 28,874 | 34,811 | 51,199 | 88,695 | 128,425 |
| 155 | 10,706 | 15,184 | 23,572 | 29,753 | 35,870 | 52,757 | 91,394 | 132,334 |
| 160 | 11,022 | 15,632 | 24,268 | 30,631 | 36,930 | 54,315 | 94,094 | 136,243 |
| 165 | 11,338 | 16,081 | 24,964 | 31,510 | 37,989 | 55,874 | 96,794 | 140,152 |
| 170 | 11,655 | 16,529 | 25,661 | 32,389 | 39,049 | 57,432 | 99,493 | 144,061 |
| 175 | 11,971 | 16,978 | 26,357 | 33,268 | 40,108 | 58,990 | 102,193 | 147,969 |
| 180 | 12,287 | 17,426 | 27,053 | 34,147 | 41,168 | 60,549 | 104,893 | 151,878 |
| 185 | 12,603 | 17,875 | 27,750 | 35,026 | 42,228 | 62,107 | 107,592 | 155,787 |
| 190 | 12,920 | 18323 | 28,446 | 35,905 | 43,287 | 63,665 | 110,292 | 159,696 |
| 195 | 13,236 | 18772 | 29,142 | 36,783 | 44,347 | 65,224 | 112,991 | 163,605 |
| 200 | 13,552 | 19220 | 29,838 | 37,662 | 45,406 | 66,782 | 115,691 | 167,514 |
| 205 | 13,868 | 19669 | 30,535 | 38,541 | 46,466 | 68,340 | 118,391 | 171,423 |
| 210 | 14,184 | 20117 | 31,231 | 39,420 | 47,525 | 69,899 | 121,090 | 175,332 |
| 215 | 14,501 | 20566 | 31,927 | 40,299 | 48,585 | 71,457 | 123,790 | 179,241 |
| 220 | 14,817 | 21014 | 32,623 | 41,178 | 49,644 | 73,015 | 126,490 | 183,150 |
| 225 | 15,133 | 21463 | 33,320 | 42,056 | 50,704 | 74,574 | 129,189 | 187,059 |
| 230 | 15,449 | 21911 | 34,016 | 42,935 | 51,764 | 76,132 | 131,889 | 190,958 |
| 235 | 15,766 | 22360 | 34,712 | 43,814 | 52,823 | 77,691 | 134,589 | 194,876 |
| 240 | 16,082 | 22808 | 35,409 | 44,693 | 53,883 | 79,249 | 137,288 | 198,785 |
| 245 | 16,398 | 23257 | 36,105 | 45,572 | 54,942 | 80,807 | 139,988 | 202,694 |
| 250 | 16,714 | 23705 | 36,801 | 46,451 | 56,002 | 82,366 | 142,687 | 206,603 |
| Approx. 1 psi Increments | 63 | 90 | 139 | 176 | 212 | 312 | 540 | 782 |

### METRIC UNITS Kg./Hr.

| Orifice Letter Area cm.² | J 8.762 | K 12.426 | L 19.287 | M 24.347 | N 29.357 | P 43.174 | Q 74.795 | R 108.294 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | | | |
| 1.1 | 910 | 1,290 | 2,002 | 2,527 | 3,048 | 4,482 | 7,764 | 11,242 |
| 1.5 | 1,071 | 1,519 | 2,358 | 2,976 | 3,589 | 5,278 | 9,144 | 13,239 |
| 2 | 1,273 | 1,806 | 2,803 | 3,538 | 4,266 | 6,274 | 10,868 | 15,736 |
| 2.5 | 1,475 | 2,092 | 3,247 | 4,099 | 4,943 | 7,269 | 12,593 | 18,233 |
| 3 | 1,677 | 2,379 | 3,692 | 4,660 | 5,619 | 8,264 | 14,317 | 20,729 |
| 3.5 | 1,879 | 2,665 | 4,137 | 5,222 | 6,296 | 9,260 | 16,041 | 23,226 |
| 4 | 2,081 | 2,952 | 4,581 | 5,783 | 6,973 | 10,255 | 17,766 | 25,723 |
| 4.5 | 2,283 | 3,238 | 5,026 | 6,344 | 7,650 | 11,250 | 19,490 | 28,219 |
| 5 | 2,490 | 3,531 | 5,481 | 6,919 | 8,343 | 12,270 | 21,256 | 30,776 |
| 5.5 | 2,698 | 3,827 | 5,939 | 7,497 | 9,040 | 13,295 | 23,032 | 33,348 |
| 6 | 2,906 | 4,122 | 6,397 | 8,075 | 9,737 | 14,320 | 24,808 | 35,919 |
| 6.5 | 3,114 | 4,417 | 6,855 | 8,653 | 10,434 | 15,345 | 26,584 | 38,491 |
| 7 | 3,322 | 4,712 | 7,313 | 9,232 | 11,131 | 16,371 | 28,360 | 41,062 |
| 7.5 | 3,530 | 5,007 | 7,771 | 9,810 | 11,828 | 17,396 | 30,136 | 43,634 |
| 8 | 3,738 | 5,302 | 8,229 | 10,388 | 12,526 | 18,421 | 31,912 | 46,205 |
| 8.5 | 3,947 | 5,597 | 8,687 | 10,966 | 13,223 | 19,446 | 33,689 | 48,777 |
| 9 | 4,155 | 5,892 | 9,145 | 11,544 | 13,920 | 20,471 | 35,465 | 51,349 |
| 9.5 | 4,363 | 6,187 | 9,603 | 12,122 | 14,617 | 21,497 | 37,241 | 53,920 |
| 10 | 4,571 | 6,482 | 10,061 | 12,700 | 15,314 | 22,522 | 39,017 | 56,492 |
| 10.5 | 4,779 | 6,777 | 10,519 | 13,279 | 16,011 | 23,547 | 40,793 | 59,063 |
| 11 | 4,987 | 7,072 | 10,977 | 13,857 | 16,708 | 24,572 | 42,569 | 61,635 |
| 11.5 | 5,195 | 7,367 | 11,435 | 14,435 | 17,405 | 25,598 | 44,345 | 64,206 |
| 12 | 5,403 | 7,662 | 11,893 | 15,013 | 18,102 | 26,623 | 46,121 | 66,778 |
| 12.5 | 5,611 | 7,958 | 12,351 | 15,591 | 18,800 | 27,648 | 47,897 | 69,349 |
| 13 | 5,819 | 8,253 | 12,809 | 16,169 | 19,497 | 28,673 | 49,673 | 71,921 |
| 13.5 | 6,027 | 8,548 | 13,267 | 16,747 | 20,194 | 29,698 | 51,449 | 74,492 |
| 14 | 6,235 | 8,843 | 13,725 | 17,325 | 20,891 | 30,724 | 53,225 | 77,064 |
| 15 | 6,651 | 9,433 | 14,641 | 18,482 | 22,285 | 32,774 | 56,777 | 82,207 |
| 16 | 7,068 | 10,023 | 15,557 | 19,638 | 23,679 | 34,824 | 60,330 | 87,350 |
| 17 | 7,484 | 10,613 | 16,473 | 20,794 | 25,073 | 36,875 | 63,882 | 92,493 |
| Approx 0.1 barg Increments | 41.6 | 59.0 | 91.6 | 115.6 | 139.4 | 205.0 | 355.2 | 514.3 |

## 119 SERIES CAST IRON FLANGED SAFETY

### ASME SECTION VIII - STEAM

Pounds per hour (kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS Lbs./Hr.**

| Orifice Letter Area in.² | J 1.358 | K 1.926 | L 2.99 | M 3.774 | N 4.55 | P 6.692 | Q 11.593 | R 16.786 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | | | |
| 5* | 1,312 | 1,860 | 2,888 | 3,645 | 4,395 | 6,464 | 11,198 | 16,213 |
| 10* | 1,798 | 2,550 | 3,957 | 4,995 | 6,023 | 8,859 | 15,346 | 22,220 |
| 15 | 2,008 | 2,848 | 4,421 | 5,580 | 6,728 | 9,895 | 17,141 | 24,820 |
| 20 | 2,315 | 3,283 | 5,097 | 6,433 | 7,756 | 11,408 | 19,762 | 28,615 |
| 25 | 2,622 | 3,719 | 5,773 | 7,287 | 8,785 | 12,921 | 22,383 | 32,410 |
| 30 | 2,929 | 4,154 | 6,449 | 8,140 | 9,814 | 14,434 | 25,004 | 36,205 |
| 35 | 3,267 | 4,633 | 7,193 | 9,079 | 10,945 | 16,098 | 27,887 | 40,379 |
| 40 | 3,604 | 5,112 | 7,936 | 10,017 | 12,077 | 17,762 | 30,771 | 44,554 |
| 45 | 3,942 | 5,591 | 8,680 | 10,956 | 13,208 | 19,426 | 33,654 | 48,729 |
| 50 | 4,280 | 6,070 | 9,423 | 11,894 | 14,340 | 21,091 | 36,537 | 52,903 |
| 55 | 4,618 | 6,549 | 10,167 | 12,833 | 15,471 | 22,755 | 39,420 | 57,078 |
| 60 | 4,955 | 7,028 | 10,911 | 13,771 | 16,603 | 24,419 | 42,303 | 61,252 |
| 65 | 5,293 | 7,507 | 11,654 | 14,710 | 17,735 | 26,083 | 45,186 | 65,427 |
| 70 | 5,631 | 7,986 | 12,398 | 15,649 | 18,866 | 27,748 | 48,069 | 69,601 |
| 75 | 5,969 | 8,465 | 13,141 | 16,587 | 19,998 | 29,412 | 50,952 | 73,776 |
| 80 | 6,306 | 8,944 | 13,885 | 17,526 | 21,129 | 31,076 | 53,835 | 77,951 |
| 85 | 6,644 | 9,423 | 14,629 | 18,464 | 22,261 | 32,740 | 56,719 | 82,125 |
| 90 | 6,982 | 9,902 | 15,372 | 19,403 | 23,392 | 34,405 | 59,602 | 86,300 |
| 95 | 7,319 | 10,381 | 16,116 | 20,341 | 24,524 | 36,069 | 62,485 | 90,474 |
| 100 | 7,657 | 10,860 | 16,859 | 21,280 | 25,655 | 37,733 | 65,368 | 94,649 |
| 105 | 7,995 | 11,339 | 17,603 | 22,218 | 26,787 | 39,397 | 68,251 | 98,823 |
| 110 | 8,333 | 11,818 | 18,346 | 23,157 | 27,919 | 41,062 | 71,134 | 102,998 |
| 115 | 8,670 | 12,297 | 19,090 | 24,096 | 29,050 | 42,726 | 74,017 | 107,173 |
| 120 | 9,008 | 12,776 | 19,834 | 25,034 | 30,182 | 44,390 | 76,900 | 111,347 |
| 125 | 9,346 | 13,255 | 20,577 | 25,973 | 31,313 | 46,055 | 79,783 | 115,522 |
| 130 | 9,684 | 13,734 | 21,321 | 26,911 | 32,445 | 47,719 | 82,666 | 119,696 |
| 135 | 10,021 | 14,213 | 22,064 | 27,850 | 33,576 | 49,383 | 85,550 | 123,871 |
| 140 | 10,359 | 14,692 | 22,808 | 28,788 | 34,708 | 51,047 | 88,433 | 128,045 |
| 145 | 10,697 | 15,171 | 23,552 | 29,727 | 35,839 | 52,712 | 91,316 | 132,220 |
| 150 | 11,034 | 15,650 | 24,295 | 30,666 | 36,971 | 54,376 | 94,199 | 136,395 |
| 155 | 11,372 | 16,129 | 25,039 | 31,604 | 38,103 | 56,040 | 97,082 | 140,569 |
| 160 | 11,710 | 16,608 | 25,782 | 32,543 | 39,234 | 57,704 | 99,965 | 144,744 |
| 165 | 12,048 | 17,087 | 26,526 | 33,481 | 40,366 | 59,369 | 102,848 | 148,918 |
| 170 | 12,385 | 17,566 | 27,270 | 34,420 | 41,497 | 61,033 | 105,731 | 153,093 |
| 175 | 12,723 | 18,045 | 28,013 | 35,358 | 42,629 | 62,697 | 108,614 | 157,267 |
| 180 | 13,061 | 18,524 | 28,757 | 36,297 | 43,760 | 64,361 | 111,497 | 161,442 |
| 185 | 13,399 | 19,003 | 29,500 | 37,236 | 44,892 | 66,026 | 114,381 | 165,617 |
| 190 | 13,736 | 19,482 | 30,244 | 38,174 | 46,023 | 67,690 | 117,264 | 169,791 |
| 195 | 14,074 | 19,961 | 30,988 | 39,113 | 47,155 | 69,354 | 120,147 | 173,966 |
| 200 | 14,412 | 20,440 | 31,731 | 40,051 | 48,287 | 71,018 | 123,030 | 178,140 |
| 205 | 14,749 | 20,919 | 32,475 | 40,990 | 49,418 | 72,683 | 125,913 | 182,315 |
| 210 | 15,087 | 21,398 | 33,218 | 41,928 | 50,550 | 74,347 | 128,796 | 186,489 |
| 215 | 15,425 | 21,876 | 33,962 | 42,867 | 51,681 | 76,011 | 131,679 | 190,664 |
| 220 | 15,763 | 22,355 | 34,706 | 43,806 | 52,813 | 77,675 | 134,562 | 194,839 |
| 225 | 16,100 | 22,834 | 35,449 | 44,744 | 53,944 | 79,340 | 137,445 | 199,013 |
| 230 | 16,438 | 23,313 | 36,193 | 45,683 | 55,076 | 81,004 | 140,329 | 203,188 |
| 235 | 16,776 | 23,792 | 36,936 | 46,621 | 56,207 | 82,668 | 143,212 | 207,362 |
| 240 | 17,113 | 24,271 | 37,680 | 47,560 | 57,339 | 84,332 | 146,095 | 211,537 |
| 245 | 17,451 | 24,750 | 38,424 | 48,498 | 58,471 | 85,997 | 148,978 | 215,711 |
| 250 | 17,789 | 25,229 | 39,167 | 49,437 | 59,602 | 87,661 | 151,861 | 219,886 |
| Approx. 1 psi Increment | 68 | 96 | 149 | 188 | 226 | 333 | 577 | 835 |

**METRIC UNITS Kg./Hr.**

| Orifice Letter Area cm.² | J 8.762 | K 12.426 | L 19.287 | M 24.347 | N 29.357 | P 43.174 | Q 74.795 | R 108.294 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | | | |
| .34* | 590 | 836 | 1,298 | 1,639 | 1,976 | 2,906 | 5,034 | 7,289 |
| .69* | 822 | 1,165 | 1,809 | 2,283 | 2,753 | 4,049 | 7,014 | 10,155 |
| 1.1 | 937 | 1,329 | 2,064 | 2,605 | 3,141 | 4,619 | 8,002 | 11,586 |
| 1.5 | 1,099 | 1,559 | 2,419 | 3,054 | 3,682 | 5,415 | 9,382 | 13,584 |
| 2 | 1,301 | 1,845 | 2,864 | 3,615 | 4,359 | 6,411 | 11,106 | 16,080 |
| 2.5 | 1,520 | 2,156 | 3,347 | 4,225 | 5,094 | 7,492 | 12,979 | 18,792 |
| 3 | 1,743 | 2,471 | 3,836 | 4,842 | 5,839 | 8,587 | 14,876 | 21,539 |
| 3.5 | 1,965 | 2,787 | 4,325 | 5,460 | 6,583 | 9,682 | 16,773 | 24,285 |
| 4 | 2,187 | 3,102 | 4,814 | 6,077 | 7,328 | 10,777 | 18,670 | 27,031 |
| 4.5 | 2,409 | 3,417 | 5,303 | 6,695 | 8,072 | 11,872 | 20,566 | 29,778 |
| 5 | 2,632 | 3,732 | 5,793 | 7,312 | 8,817 | 12,967 | 22,463 | 32,524 |
| 5.5 | 2,854 | 4,047 | 6,282 | 7,929 | 9,561 | 14,061 | 24,360 | 35,270 |
| 6 | 3,076 | 4,362 | 6,771 | 8,547 | 10,306 | 15,156 | 26,257 | 38,017 |
| 6.5 | 3,298 | 4,677 | 7,260 | 9,164 | 11,050 | 16,251 | 28,153 | 40,763 |
| 7 | 3,520 | 4,992 | 7,749 | 9,782 | 11,795 | 17,346 | 30,050 | 43,509 |
| 7.5 | 3,743 | 5,308 | 8,238 | 10,399 | 12,539 | 18,441 | 31,947 | 46,255 |
| 8 | 3,965 | 5,623 | 8,727 | 11,017 | 13,284 | 19,536 | 33,844 | 49,002 |
| 8.5 | 4,187 | 5,938 | 9,216 | 11,634 | 14,028 | 20,631 | 35,741 | 51,748 |
| 9 | 4,409 | 6,253 | 9,706 | 12,251 | 14,773 | 21,726 | 37,637 | 54,494 |
| 9.5 | 4,631 | 6,568 | 10,195 | 12,869 | 15,517 | 22,820 | 39,534 | 57,241 |
| 10 | 4,854 | 6,883 | 10,684 | 13,486 | 16,262 | 23,915 | 41,431 | 59,987 |
| 10.5 | 5,076 | 7,198 | 11,173 | 14,104 | 17,006 | 25,010 | 43,328 | 62,733 |
| 11 | 5,298 | 7,513 | 11,662 | 14,721 | 17,750 | 26,105 | 45,224 | 65,480 |
| 11.5 | 5,520 | 7,829 | 12,151 | 15,338 | 18,495 | 27,200 | 47,121 | 68,226 |
| 12 | 5,742 | 8,144 | 12,640 | 15,956 | 19,239 | 28,295 | 49,018 | 70,972 |
| 12.5 | 5,965 | 8,459 | 13,129 | 16,573 | 19,984 | 29,390 | 50,915 | 73,718 |
| 13 | 6,187 | 8,774 | 13,618 | 17,191 | 20,728 | 30,485 | 52,811 | 76,465 |
| 13.5 | 6,409 | 9,089 | 14,108 | 17,808 | 21,473 | 31,580 | 54,708 | 79,211 |
| 14 | 6,631 | 9,404 | 14,597 | 18,426 | 22,217 | 32,674 | 56,605 | 81,957 |
| 15 | 7,076 | 10,034 | 15,575 | 19,660 | 23,706 | 34,864 | 60,399 | 87,450 |
| 16 | 7,520 | 10,665 | 16,553 | 20,895 | 25,195 | 37,054 | 64,192 | 92,943 |
| 17 | 7,964 | 11,295 | 17,531 | 22,130 | 26,684 | 39,244 | 67,986 | 98,435 |
| Approx. 0.1 barg Increment | 44.4 | 63.0 | 97.8 | 123.5 | 148.9 | 219.0 | 379.4 | 549.3 |

**Settings below 15 psi (1.1 barg) are non-ASME code.*

## 119 SERIES CAST IRON FLANGED SAFETY

### ASME SECTION VIII - AIR

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS SCFM

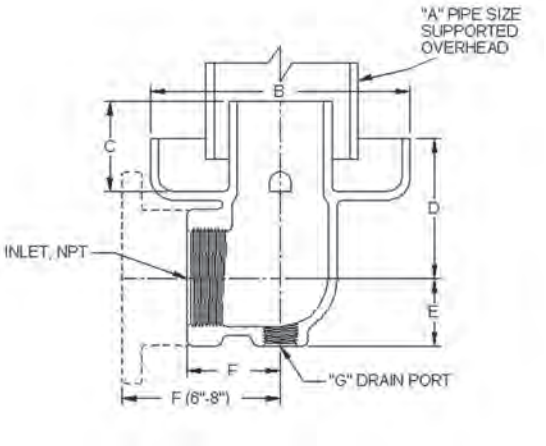
| Orifice Letter Area in.$^2$ | J 1.358 | K 1.926 | L 2.99 | M 3.774 | N 4.55 | P 6.692 | Q 11.593 | R 16.786 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | | | |
| 5* | 418 | 592 | 919 | 1,160 | 1,399 | 2,058 | 3,565 | 5,161 |
| 10* | 583 | 826 | 1,282 | 1,619 | 1,952 | 2,870 | 4,973 | 7,200 |
| 15 | 715 | 1,014 | 1,574 | 1,986 | 2,395 | 3,522 | 6,101 | 8,834 |
| 20 | 824 | 1,169 | 1,814 | 2,290 | 2,761 | 4,060 | 7,034 | 10,185 |
| 25 | 933 | 1,324 | 2,055 | 2,594 | 3,127 | 4,599 | 7,967 | 11,536 |
| 30 | 1,043 | 1,479 | 2,295 | 2,897 | 3,493 | 5,138 | 8,900 | 12,887 |
| 35 | 1,163 | 1,649 | 2,560 | 3,231 | 3,896 | 5,730 | 9,926 | 14,373 |
| 40 | 1,283 | 1,820 | 2,825 | 3,566 | 4,299 | 6,322 | 10,953 | 15,859 |
| 45 | 1,403 | 1,990 | 3,089 | 3,900 | 4,701 | 6,915 | 11,979 | 17,345 |
| 50 | 1,523 | 2,161 | 3,354 | 4,234 | 5,104 | 7,507 | 13,005 | 18,830 |
| 55 | 1,644 | 2,331 | 3,619 | 4,568 | 5,507 | 8,099 | 14,031 | 20,316 |
| 60 | 1,764 | 2,502 | 3,884 | 4,902 | 5,910 | 8,692 | 15,057 | 21,802 |
| 65 | 1,884 | 2,672 | 4,148 | 5,236 | 6,312 | 9,284 | 16,084 | 23,288 |
| 70 | 2,004 | 2,843 | 4,413 | 5,570 | 6,715 | 9,877 | 17,110 | 24,774 |
| 75 | 2,124 | 3,013 | 4,678 | 5,904 | 7,118 | 10,469 | 18,136 | 26,260 |
| 80 | 2,245 | 3,184 | 4,942 | 6,238 | 7,521 | 11,061 | 19,162 | 27,746 |
| 85 | 2,365 | 3,354 | 5,207 | 6,572 | 7,924 | 11,654 | 20,188 | 29,232 |
| 90 | 2,485 | 3,524 | 5,472 | 6,906 | 8,326 | 12,246 | 21,215 | 30,718 |
| 95 | 2,605 | 3,695 | 5,736 | 7,240 | 8,729 | 12,838 | 22,241 | 32,204 |
| 100 | 2,726 | 3,865 | 6,001 | 7,574 | 9,132 | 13,431 | 23,267 | 33,689 |
| 105 | 2,846 | 4,036 | 6,266 | 7,908 | 9,535 | 14,023 | 24,293 | 35,175 |
| 110 | 2,966 | 4,206 | 6,530 | 8,243 | 9,937 | 14,616 | 25,320 | 36,661 |
| 115 | 3,086 | 4,377 | 6,795 | 8,577 | 10,340 | 15,208 | 26,346 | 38,147 |
| 120 | 3,206 | 4,547 | 7,060 | 8,911 | 10,743 | 15,800 | 27,372 | 39,633 |
| 125 | 3,327 | 4,718 | 7,324 | 9,245 | 11,146 | 16,393 | 28,398 | 41,119 |
| 130 | 3,447 | 4,888 | 7,589 | 9,579 | 11,548 | 16,985 | 29,424 | 42,605 |
| 135 | 3,567 | 5,059 | 7,854 | 9,913 | 11,951 | 17,577 | 30,451 | 44,091 |
| 140 | 3,687 | 5,229 | 8,118 | 10,247 | 12,354 | 18,170 | 31,477 | 45,577 |
| 145 | 3,807 | 5,400 | 8,383 | 10,581 | 12,757 | 18,762 | 32,503 | 47,063 |
| 150 | 3,928 | 5,570 | 8,648 | 10,915 | 13,160 | 19,355 | 33,529 | 48,549 |
| 155 | 4,048 | 5,741 | 8,912 | 11,249 | 13,562 | 19,947 | 34,556 | 50,034 |
| 160 | 4,168 | 5,911 | 9,177 | 11,583 | 13,965 | 20,539 | 35,582 | 51,520 |
| 165 | 4,288 | 6,082 | 9,442 | 11,917 | 14,368 | 21,132 | 36,608 | 53,006 |
| 170 | 4,408 | 6,252 | 9,706 | 12,251 | 14,771 | 21,724 | 37,634 | 54,492 |
| 175 | 4,529 | 6,423 | 9,971 | 12,586 | 15,173 | 22,317 | 38,660 | 55,978 |
| 180 | 4,649 | 6,593 | 10,236 | 12,920 | 15,576 | 22,909 | 39,687 | 57,464 |
| 185 | 4,769 | 6,764 | 10,500 | 13,254 | 15,979 | 23,501 | 40,713 | 58,950 |
| 190 | 4,889 | 6,934 | 10,765 | 13,588 | 16,382 | 24,094 | 41,739 | 60,436 |
| 195 | 5,010 | 7,105 | 11,030 | 13,922 | 16,784 | 24,686 | 42,765 | 61,922 |
| 200 | 5,130 | 7,275 | 11,294 | 14,256 | 17,187 | 25,278 | 43,791 | 63,408 |
| 205 | 5,250 | 7,446 | 11,559 | 14,590 | 17,590 | 25,871 | 44,818 | 64,893 |
| 210 | 5,370 | 7,616 | 11,824 | 14,924 | 17,993 | 26,463 | 45,844 | 66,379 |
| 215 | 5,490 | 7,787 | 12,088 | 15,258 | 18,396 | 27,056 | 46,870 | 67,865 |
| 220 | 5,611 | 7,957 | 12,353 | 15,592 | 18,798 | 27,648 | 47,896 | 69,351 |
| 225 | 5,731 | 8,128 | 12,618 | 15,926 | 19,201 | 28,240 | 48,923 | 70,837 |
| 230 | 5,851 | 8,298 | 12,883 | 16,260 | 19,604 | 28,833 | 49,949 | 72,323 |
| 235 | 5,971 | 8,469 | 13,147 | 16,594 | 20,007 | 29,425 | 50,975 | 73,809 |
| 240 | 6,091 | 8,639 | 13,412 | 16,929 | 20,409 | 30,017 | 52,001 | 75,295 |
| 245 | 6,212 | 8,810 | 13,677 | 17,263 | 20,812 | 30,610 | 53,027 | 76,781 |
| 250 | 6,332 | 8,980 | 13,941 | 17,597 | 21,215 | 31,202 | 54,054 | 78,267 |
| Approx. 1 psi Increment | 24 | 34 | 53 | 67 | 81 | 118 | 205 | 297 |

### METRIC UNITS Nm3/Hr.

| Orifice Letter Area cm.$^2$ | J 8.762 | K 12.426 | L 19.287 | M 24.347 | N 29.357 | P 43.174 | Q 74.795 | R 108.294 |
|---|---|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | | | |
| 0.4* | 722 | 1,024 | 1,589 | 2,006 | 2,418 | 3,557 | 6,161 | 8,921 |
| 0.8* | 1,005 | 1,425 | 2,212 | 2,793 | 3,367 | 4,952 | 8,579 | 12,422 |
| 1.1 | 1,182 | 1,677 | 2,603 | 3,286 | 3,961 | 5,826 | 10,093 | 14,615 |
| 1.5 | 1,386 | 1,996 | 3,052 | 3,852 | 4,644 | 6,831 | 11,833 | 17,134 |
| 2 | 1,641 | 2,327 | 3,613 | 4,560 | 5,498 | 8,086 | 14,008 | 20,283 |
| 2.5 | 1,918 | 2,720 | 4,222 | 5,329 | 6,425 | 9,449 | 16,370 | 23,703 |
| 3 | 2,198 | 3,117 | 4,839 | 6,108 | 7,364 | 10,830 | 18,762 | 27,166 |
| 3.5 | 2,478 | 3,514 | 5,456 | 6,887 | 8,303 | 12,211 | 21,154 | 30,630 |
| 4 | 2,758 | 3,912 | 6,073 | 7,665 | 9,241 | 13,592 | 23,546 | 34,094 |
| 4.5 | 3,038 | 4,309 | 6,690 | 8,444 | 10,180 | 14,973 | 25,938 | 37,557 |
| 5 | 3,319 | 4,707 | 7,307 | 9,223 | 11,119 | 16,354 | 28,331 | 41,021 |
| 5.5 | 3,599 | 5,104 | 7,924 | 10,002 | 12,058 | 17,735 | 30,723 | 44,485 |
| 6 | 3,879 | 5,502 | 8,541 | 10,780 | 12,997 | 19,115 | 33,115 | 47,948 |
| 6.5 | 4,159 | 5,899 | 9,158 | 11,559 | 13,936 | 20,496 | 35,507 | 51,412 |
| 7 | 4,439 | 6,296 | 9,775 | 12,338 | 14,875 | 21,877 | 37,899 | 54,876 |
| 7.5 | 4,720 | 6,694 | 10,392 | 13,116 | 15,813 | 23,258 | 40,291 | 58,339 |
| 8 | 5,000 | 7,091 | 11,009 | 13,895 | 16,752 | 24,639 | 42,683 | 61,803 |
| 8.5 | 5,280 | 7,489 | 11,626 | 14,674 | 17,691 | 26,020 | 45,076 | 65,267 |
| 9 | 5,560 | 7,886 | 12,243 | 15,453 | 18,630 | 27,400 | 47,468 | 68,730 |
| 9.5 | 5,841 | 8,283 | 12,860 | 16,231 | 19,569 | 28,781 | 49,860 | 72,194 |
| 10 | 6,121 | 8,681 | 13,477 | 17,010 | 20,508 | 30,162 | 52,252 | 75,658 |
| 10.5 | 6,401 | 9,078 | 14,093 | 17,789 | 21,447 | 31,543 | 54,644 | 79,121 |
| 11 | 6,681 | 9,476 | 14,710 | 18,568 | 22,385 | 32,924 | 57,036 | 82,585 |
| 11.5 | 6,961 | 9,873 | 15,327 | 19,346 | 23,234 | 34,305 | 59,428 | 86,049 |
| 12 | 7,242 | 10,271 | 15,944 | 20,125 | 24,263 | 35,686 | 61,820 | 89,512 |
| 12.5 | 7,522 | 10,668 | 16,561 | 20,904 | 25,202 | 37,066 | 64,213 | 91,976 |
| 13 | 7,802 | 11,065 | 17,178 | 21,683 | 26,141 | 38,447 | 66,605 | 96,440 |
| 13.5 | 8,082 | 11,463 | 17,795 | 22,461 | 27,080 | 39,828 | 68,997 | 99,903 |
| 14 | 8,362 | 11,860 | 18,412 | 23,240 | 28,019 | 41,209 | 71,389 | 103,367 |
| 15 | 8,923 | 12,655 | 19,646 | 27,798 | 29,896 | 43,971 | 76,173 | 110,294 |
| 16 | 9,483 | 13,450 | 20,880 | 26,355 | 31,774 | 46,732 | 80,958 | 117,222 |
| 17 | 10,444 | 14,245 | 22,114 | 27,912 | 33,652 | 49,494 | 85,742 | 124,149 |
| Approx. 0.1 barg Increment | 56.0 | 79.5 | 123.4 | 155.8 | 187.8 | 276.2 | 478.4 | 692.7 |

**Settings below 15 psi (1.1 barg) are non-ASME code.*

## DRIP PAN ELBOWS (DPE)




The use of an Apollo International™ drip pan elbow is highly recommended for steam safety valve installations. The drip pan elbow connects to the valve outlet to safely direct steam discharge away from the valve and into the discharge piping. Condensate is directed to drain. Drip pans offer ideal flow characteristics, and serve to isolate the valve from piping stresses that can adversely effect safety valve performance and longevity.

- Sizes 3/4" thru 8", Flanged and Threaded Models
- Material: Gray iron ASTM A126 Class B
- Finish: Black Phosphate or Black Paint Coating

### FEATURES

- Ideal Flow Characteristics
- Directs Condensate to Drain
- Isolates Safety Valve from Piping Stresses Caused by:
  - Weight of Discharge Piping
  - Thermal Expansion
  - Reaction Forces During Valve Discharge

### INSTALLATION

- Sizes 3/4" thru 4" feature FNPT Connections and Connect Directly to the Valve Outlet by Means of a Short Pipe Nipple or with an Appropriate Companion Flange and Nipple for Flanged Outlet Connections
- Sizes 6" and 8" Have Integral Cast ANSI 125# Flanges that Bolt Directly to the Valve Outlet

### FEATURES

- Select the Drip Pan to Match the Nominal Outlet Size of the Safety Valve

### DIMENSIONS

| Part Number | Size (In.) NPS/DN | Dimensions (in./mm.) | | | | | | | Wt./Ea. (lbs./kg.) |
|---|---|---|---|---|---|---|---|---|---|
| | | A NPS/DN | B | C | D | E | F | G NPS/DN | |
| DPE 07 | 3/4 | 1-1/2 | 3.75 | 1.63 | 2.25 | 1 | 1.5 | 1/4 | 2 |
| | 20 | 40 | 95 | 41 | 57 | 25 | 40 | 8 | .9 |
| DPE 10 | 1 | 1-1/2 | 3.75 | 1.63 | 2.25 | 1 | 1.5 | 1/4 | 2 |
| | 25 | 40 | 95 | 41 | 57 | 25 | 40 | 8 | .9 |
| DPE 12 | 1-1/4 | 2 | 5.5 | 2.13 | 3.38 | 1.5 | 2.13 | 3/8 | 5 |
| | 32 | 50 | 127 | 54 | 86 | 40 | 54 | 10 | 2.1 |
| DPE 15 | 1-1/2 | 2 | 5.5 | 2.13 | 3.38 | 1.5 | 2.13 | 3/8 | 5 |
| | 40 | 50 | 127 | 54 | 86 | 40 | 54 | 10 | 2.1 |
| DPE 20 | 2 | 3 | 6.25 | 2.25 | 3.63 | 1.63 | 2.25 | 1/2 | 7 |
| | 50 | 80 | 159 | 57 | 92 | 41 | 57 | 15 | 3.2 |
| DPE 25 | 2-1/2 | 4 | 7.38 | 3 | 4.38 | 1.88 | 2.75 | 3/4 | 11 |
| | 65 | 100 | 187 | 80 | 111 | 48 | 70 | 20 | 5.0 |
| DPE 30 | 3 | 4 | 8 | 3.5 | 4.88 | 2.13 | 3.13 | 3/4 | 17 |
| | 80 | 100 | 200 | 89 | 124 | 54 | 80 | 20 | 7.7 |
| DPE 40 | 4 | 6 | 9.63 | 4.5 | 5.75 | 2.63 | 3.75 | 3/4 | 30 |
| | 100 | 150 | 245 | 114 | 146 | 67 | 95 | 20 | 13.6 |
| DPE 60 | 6 | 8 | 12.75 | 6.63 | 7.63 | 3 | 8 | 3/4 | 84 |
| | 150 | 200 | 324 | 168 | 194 | 80 | 200 | 20 | 38.1 |
| DPE 80 | 8 | 10 | 16.5 | 7.5 | 8.63 | 4.13 | 10.75 | 1 | 151 |
| | 200 | 250 | 419 | 191 | 219 | 105 | 273 | 25 | 68.5 |

## 500 SERIES MULTI-PURPOSE SAFETY RELIEF

ASME
UV
CE

Versatile safety relief valve available in bronze, carbon steel or all stainless steel construction, suitable for a wide range of steam, air, gas and liquid applications. High capacity full nozzle design is available with metal to metal, PCTFE or elastomer O-ring seating. Short tuned blowdown and backpressure tight body minimizes fugitive emissions and product losses in the event of valve operation.

### ASME SECTION VIII

- Sizes 1/2" thru 2" NPT
- Factory Set Pressure Range: 5-1200 psig @ 800°F max.

(See Pressure/temperature Limit Chart Below for Specific Ratings for Each Model)

### APPLICATIONS

- Pressure Vessels and Pressure Piping Systems
- Pumps, Tanks and Hydraulic Systems
- Thermal Relief of Liquid Filled Vessels
- Chemical, Process and Other Industrial Plants
- Power Plant Auxiliary Systems
- Cryogenic and Industrial Gases
- Air and Gas Compressors and Dryers
- Vacuum Relief

### FEATURES

- Wide Range of Materials and Options
- One Trim Design is Suitable for Steam, Air / Gas and Liquid Service
- High Capacity Full Nozzle Design
- Stainless Steel Springs
- Integral Lift Stop
- Self-Aligning Pivoting Disc
- API 527 Seat Tightness, Standard for all Models
- Tuned Blowdown - Short and Adjustable, Reduces Product Losses
- Backpressure Tight Design Minimizes Fugitive Emissions
- CSA B51 CRN OG8547.5C

### OPTIONS

- Screwed Cap Standard), Packed Lift Lever
- Test Gags
- Elastomer or PCTFE Soft Seat for Exceptional Seat Tightness
- High Temperature Alloy Springs for 550°F - 800°F Service
- Special Cleaning Available
- European Pressure Equipment Directive compliant option (CE/PED)

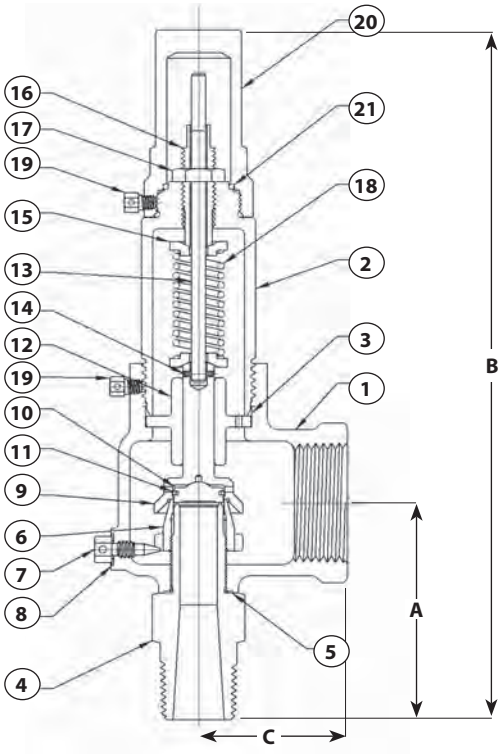
### PART NUMBER MATRIX

| 52 | 3 | J | H | B | K | M | AA | 0425 | Q |
|---|---|---|---|---|---|---|---|---|---|
| SERIES BODY/ TRIM MATERIAL | CAP | ORIFICE LETTER | INLET SIZE | CONNECTION | SERVICE | SEAT | SPECIAL OPTIONS | SET PRESSURE | SUFFIX |
| 51 = Bronze/Brass | 1 = Screwed Cap | D | C = 1/2 | B = MNPT x NPT | J = Sec VIII Liquid | M = Metal | Factory Issued Letters/Numbers for Special Options or Features | Set Pressure, PSIG (4 digits) | Q = Performance (Calibration) Test Reports |
| 52 = Bronze/Stainless | 2 = Screwed + Gag | E | D = 3/4 | D = 3/4 Outlet (Model 510 & 520 D Orifice Only) | K = Sec VIII Air/Gas | B = BUNA-N | | | |
| 53 = Carbon/Stainless | 3 = Packed Lever | F | E = 1 | | L = Sec VIII Steam | E = EPR | | | |
| 54 = All Stainless | 4 = Packed + Gag | G | F = 1-1/4 | | M = Non Code Liquid | K = PCTFE | | Vacuum "HG" | |
| | | H | G = 1-1/2 | | N = Non Code Air | N = Neoprene | "AA" = Default Setting | Prefix + 2 digits | |
| | | J | H = 2 | | P = Non Code Steam | Z = Kalrez® | "CE" = CE/PED | | |
| | | | | | Q = Vacuum | S = Silicone | "HT" = High Temp Spring | | |
| | | | | | | V = Viton | "OX" = Cleaned for Oxygen | | |

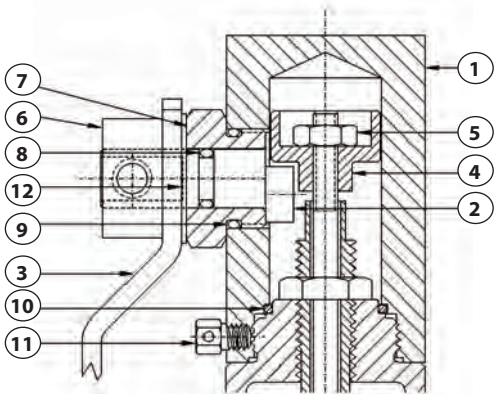
*Notes:*

1. *The ASME Code Section VIII requires a lift lever for the following services: air, steam, or hot water over 140°F*
2. *Maximum back pressure is 50 psig.*
3. *High temperature stainless steel alloy spring is required above 550°F / 288°C. Specify option "HT" (Minimum pressure setting with HT option = 138 psig)*
4. *Contact factory for pricing and availability.*

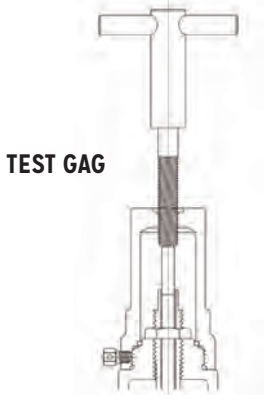
## 500 SERIES MULTI-PURPOSE SAFETY RELIEF




SCREWED CAP




PACKED LEVER



TEST GAG

### STANDARD MATERIAL LIST

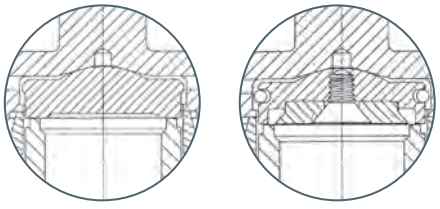
| | | 510 Series | 520 Series | 530 Series | 540 Series |
|---|---|---|---|---|---|
| 1 | BODY | Bronze, B-584-C844 | Bronze, B-584-C844 | Steel, SA-216 WCB | SS, SA-351-CF8M |
| 2 | BONNET | Brass* | Brass* | Steel** | SS Type 316*** |
| 3 | BONNET SEAL | PTFE | PTFE | PTFE | PTFE |
| 4 | NOZZLE | Brass B-16 | SS Type 316 | SS Type 316 | SS Type 316 |
| 5 | NOZZLE SEAL | PTFE | PTFE | PTFE | PTFE |
| 6 | NOZZLE RING | SS Type 316 | SS Type 316 | SS Type 316 | SS Type 316 |
| 7 | SET SCREW | Brass | Brass | SS Type 316 | SS Type 316 |
| 8 | SET SCREW SEAL | PTFE | PTFE | PTFE | PTFE |
| 9 | DISC HOLDER | Brass | SS Type 316 | SS Type 316 | SS Type 316 |
| 10 | DISC | SS Type 316 | SS type 316 | SS Type 316 | SS Type 316 |
| 11 | RETAINING RING | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| 12 | DISC GUIDE | Brass | Brass | SS Type 316 | SS Type 316 |
| 13 | STEM | Stainless Steel | Stainless Steel | SS Type 316 | SS Type 316 |
| 14 | SPRING PIN | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| 15 | SPRING WASHER | Brass | Brass | SS Type 316 | SS Type 316 |
| 16 | ADJUSTING BOLT | Brass | Brass | SS Type 316 | SS Type 316 |
| 17 | LOCK NUT | Brass | Brass | SS Type 316 | SS Type 316 |
| 18 | SPRING | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| | SPRING, HIGH TEMP. | Inconel | Inconel | Inconel | Inconel |
| 19 | LOCK SCREW | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| 20 | CAP, SCREWED | Brass | Brass | Steel | SS Type 316 |
| 21 | SEAL, CAP | Viton | Viton | Viton | Viton |
| - | NAMEPLATE | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| - | DRIVE SCREW | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| - | SEAL & WIRE | Lead/SS | Lead/SS | Lead/SS | Lead/SS |
| - | SEAL & WIRE (CE) | | | Alum/SS | Alum/SS |

*Notes:*
* *Sizes G, H and J are Cast Bronze*
** *Sizes H and J are Cast Steel*
*** *Sizes H and J are Cast Stainless Steel Type 316*

### LIFT LEVER OPTION

| | | 513/523 Series | 533 Series | 543 Series |
|---|---|---|---|---|
| 1 | CAP, PACKED LEVER | Brass | Steel | SS Type 316 |
| 2 | CAM BUSHING | Stainless Steel | Stainless Steel | Stainless Steel |
| 3 | LEVER | Stainless Steel | Stainless Steel | Stainless Steel |
| 4 | LIFT WASHER | Stainless Steel | Stainless Steel | Stainless Steel |
| 5 | LOCKNUT | Stainless Steel | Stainless Steel | Stainless Steel |
| 6 | COLLAR | Stainless Steel | Stainless Steel | Stainless Steel |
| 7 | CAM BUSHING | Brass | Stainless Steel | Stainless Steel |
| 8 | CAM O-RING | Viton | Viton | Viton |
| 9 | BUSHING O-RING | Viton | Viton | Viton |
| 10 | SEAL, CAP | Viton | Viton | Viton |
| 11 | SET SCREW | Stainless Steel | Stainless Steel | Stainless Steel |
| 12 | WASHER | PTFE | PTFE | PTFE |

### SEATS



PCTFE O-RING

## 500 SERIES MULTI-PURPOSE SAFETY RELIEF

### SOFT SEAT PRESSURE & TEMPERATURE LIMITS* - 500 SERIES

| Seat Material | Set Pressure | | Temperature | | Service Recommendations** |
|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | |
| Viton | 15 | 900 | -15°F | 400°F | Air, Benzene, Butane, Carbon Dioxide, Carbon Disulphide, Carbon Tetrachloride, Dowtherm A, Ethyl Alcohol, Ethyl Chloride, Ethylene, Ethylene Glycol, Fuel Oil, Gasoline, Hydraulic Fluid, JP-4 and -5 Fuel, Kerosene, Lube Oil, Natural Gas, Naphtha, Nitrogen, Propane, Propyl Alcohol, Propylene, Propylene Glycol, Sulphur Dioxide, Toluene, Trichlorethylene, Turpentine, Vinyl Chloride, Water |
| EPDM | 15 | 900 | -70°F | 250°F | Steam, Water, Hot Water, Acetone, Beer, Brake Fluid, Hydrogen Gas, Hydrogen Sulphide, Phosphate Ester Hydraulic Fluid, Sulphur Dioxide, Acids, Alkalis |
| Silicone | 15 | 900 | -60°F | 450°F | Air, Helium, Nitrogen, Oxygen (gaseous) |
| Neoprene | 15 | 900 | -35°F | 225°F | Air, Anhydrous Ammonia, Butane, Butyl Alcohol, Castor Oil, Denatured Alcohol, Ethanol, Ethyl Alcohol, Freon 12, 13, 14 & 22, Glycols, Natural Gas, Oxygen (gaseous), Silicate Esters |
| Nitrile / Buna-N | 15 | 900 | -30°F | 250°F | Air, Anhydrous Ammonia, Butane, Carbon Dioxide, Diesel Oil, Freon 11 & 12, Fuel Oil, Gasoline, Helium, Hydraulic Fluid (petroleum based), Hydrogen Sulphide, Hydrogen Gas, Kerosene, Lube Oil, Natural Gas, Nitrogen, Oxygen (gaseous), Propane, Propylene, Sulphur Dioxide, Vinyl Chloride |
| PCTFE | 15 | 500 | -320°F | 250°F | Cryogenic Service including Argon, Carbon Dioxide, Helium, Hydrogen, Nitrogen, Oxygen |

*Notes:*

* *Subject to valve body material pressure / temperature limitations. See chart below.*

** *Service recommendations are provided for guidance only. Material suitability and selection should be determined by the end user based on their prior experience with the service and materials involved.*

### PRESSURE AND TEMPERATURE RATINGS

| Series Body Trim | 510 Bronze Brass | 520 Bronze Stainless | 530 Carbon Steel Stainless | 540 Stainless Steel Stainless |
|---|---|---|---|---|
| Max. Set-Steam | 250 PSI | 300 PSI | 900 PSI (D/E)<br>600 PSI (F/G)<br>500 PSI (H/J) | 900 PSI (D/E)<br>600 PSI (F/G)<br>500 PSI (H/J) |
| Max. Set-Air/Gas/Liquid | 300 PSI | 1200 PSI (D)[1]<br>900 PSI (E)<br>600 PSI (F/G)<br>500 PSI (H/J) | 1200 PSI (D)[1]<br>900 PSI (E)<br>600 PSI (F/G)<br>500 PSI (H/J) | 1200 PSI (D)[1]<br>900 PSI (E)<br>600 PSI (F/G)<br>500 PSI (H/J) |
| Temp. Limits* | -320/406˚F | -320/422˚F | -20/800˚F | -320/800˚F |

[1]*Max set pressure for liquids is 1000 psi.*

*Notes:*

- *Limits based upon materials of construction and use of metal to metal seating. Refer to 500 series soft seat chart for limitations based upon elastomer.*
- *Specify "HT" high temperature Inconel springs for service temperature beyond 422˚F. (Minimum pressure setting with HT option = 138 psig)*

* *Models 510, 520 and 540 are suitable for cryogenic service to -320˚F, with choice of either "M" metal or "K" PCTFE seat options.*

### AVAILABLE CONFIGURATIONS

| Model Number | Orifice Letter | Size Inlet x Outlet | Dimensions (in./mm.) | | | Weight (Lb../kg.) |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| **5xxDC** | D | 1/2 X 1 | 2.38 | 7.5 | 1.63 | 2 |
| | | | 60 | 191 | 41 | 0.9 |
| **5xxDCD*** | D | 1/2 X 3/4 | 2.38 | 7.5 | 1.63 | 2 |
| | | | 60 | 191 | 41 | 0.9 |
| **5xxDD** | D | 3/4 X 1 | 2.38 | 7.5 | 1.63 | 2 |
| | | | 60 | 191 | 41 | 0.9 |
| **5xxDDD*** | D | 3/4 X 3/4 | 2.38 | 7.5 | 1.63 | 2 |
| | | | 60 | 191 | 41 | 0.9 |
| **5xxED** | E | 3/4 X 1-1/4 | 2.63 | 9 | 2 | 3 |
| | | | 67 | 229 | 51 | 1.4 |
| **5xxEE** | E | 1 X 1-1/4 | 2.63 | 9 | 2 | 3 |
| | | | 67 | 229 | 51 | 1.4 |
| **5xxFE** | F | 1 X 1-1/2 | 2.83 | 10.25 | 2.38 | 5 |
| | | | 73 | 260 | 60 | 2.3 |
| **5xxFF** | F | 1-1/4 X 1-1/2 | 2.83 | 10.25 | 2.38 | 5 |
| | | | 73 | 260 | 60 | 2.3 |
| **5xxGF** | G | 1-1/4 X 2 | 3.25 | 13.25 | 2.63 | 9 |
| | | | 83 | 337 | 67 | 4.1 |
| **5xxGG** | G | 1-1/2 X 2 | 3.25 | 13.25 | 2.68 | 9.5 |
| | | | 83 | 337 | 67 | 4.31 |
| **5xxHG** | H | 1-1/2 X 2-1/2 | 3.5 | 15 | 2.75 | 15.5 |
| | | | 89 | 381 | 70 | 7.0 |
| **5xxHH** | H | 2 X 2-1/2 | 3.5 | 15 | 2.75 | 16 |
| | | | 89 | 381 | 70 | 7.3 |
| **5xxJH** | J | 2 X 3 | 4 | 17 | 3.25 | 24 |
| | | | 102 | 432 | 83 | 10.9 |

** 3/4" Outlet option available with 510 and 520 bronze bodied models only.*

## 500 SERIES MULTI-PURPOSE SAFETY RELIEF

### ASME SECTION VIII - STEAM

Pounds per hour (kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

**US CUSTOMARY UNITS Lbs./Hr.**

| Orifice Letter Area (in.²) | D 0.1295 | E 0.2282 | F 0.3589 | G 0.5890 | H 0.9195 | J 1.5044 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | 122 | 216 | 339 | 557 | 869 | 1,422 |
| 10* | 168 | 295 | 465 | 762 | 1,190 | 1,947 |
| 15 | 188 | 331 | 520 | 853 | 1,332 | 2,180 |
| 20 | 216 | 381 | 600 | 984 | 1,536 | 2,513 |
| 25 | 245 | 432 | 679 | 1,114 | 1,740 | 2,846 |
| 30 | 274 | 482 | 759 | 1,245 | 1,943 | 3,180 |
| 35 | 305 | 538 | 846 | 1,388 | 2,168 | 3,546 |
| 40 | 337 | 593 | 934 | 1,532 | 2,392 | 3,913 |
| 45 | 368 | 649 | 1,021 | 1,676 | 2,616 | 4,280 |
| 50 | 400 | 705 | 1,108 | 1,819 | 2,840 | 4,646 |
| 55 | 431 | 760 | 1,196 | 1,963 | 3,064 | 5,013 |
| 60 | 463 | 816 | 1,283 | 2,106 | 3,288 | 5,380 |
| 65 | 494 | 872 | 1,371 | 2,250 | 3,512 | 5,746 |
| 70 | 526 | 927 | 1,458 | 2,393 | 3,736 | 6,113 |
| 75 | 558 | 983 | 1,546 | 2,537 | 3,960 | 6,479 |
| 80 | 589 | 1,038 | 1,633 | 2,680 | 4,184 | 6,846 |
| 85 | 621 | 1,094 | 1,721 | 2,824 | 4,408 | 7,213 |
| 90 | 652 | 1,150 | 1,808 | 2,968 | 4,632 | 7,579 |
| 95 | 684 | 1,205 | 1,896 | 3,111 | 4,857 | 7,946 |
| 100 | 715 | 1,261 | 1,983 | 3,255 | 5,081 | 8,313 |
| 125 | 873 | 1,539 | 2,421 | 3,972 | 6,201 | 10,146 |
| 150 | 1,031 | 1,817 | 2,858 | 4,690 | 7,322 | 11,979 |
| 175 | 1,189 | 2,095 | 3,295 | 5,408 | 8,442 | 13,812 |
| 200 | 1,346 | 2,373 | 3,733 | 6,126 | 9,562 | 15,645 |
| 225 | 1,504 | 2,651 | 4,170 | 6,843 | 10,683 | 17,478 |
| 250 | 1,662 | 2,929 | 4,607 | 7,561 | 11,803 | 19,312 |
| 275 | 1,820 | 3,207 | 5,045 | 8,279 | 12,924 | 21,145 |
| 300 | 1,977 | 3,485 | 5,482 | 8,997 | 14,044 | 22,978 |
| 325 | 2,135 | 3,763 | 5,919 | 9,714 | 15,165 | 24,811 |
| 350 | 2,293 | 4,041 | 6,357 | 10,432 | 16,285 | 26,644 |
| 375 | 2,451 | 4,319 | 6,794 | 11,150 | 17,405 | 28,477 |
| 400 | 2,608 | 4,597 | 7,231 | 11,867 | 18,526 | 30,311 |
| 425 | 2,766 | 4,875 | 7,669 | 12,585 | 19,646 | 32,144 |
| 450 | 2,924 | 5,153 | 8,106 | 13,303 | 20,767 | 33,977 |
| 475 | 3,082 | 5,431 | 8,543 | 14,021 | 21887 | 35,810 |
| 500 | 3,239 | 5,709 | 8,981 | 14,738 | 23,008 | 37,643 |
| 525 | 3,397 | 5,987 | 9,418 | 15,456 | - | - |
| 550 | 3,555 | 6,266 | 9,855 | 16,174 | - | - |
| 575 | 3,713 | 6,544 | 10,293 | 16,892 | - | - |
| 600 | 3,870 | 6,822 | 10,730 | 17,609 | - | - |
| 625 | 4,028 | 7,100 | - | - | - | - |
| 650 | 4,186 | 7,378 | - | - | - | - |
| 675 | 4,344 | 7,656 | - | - | - | - |
| 700 | 4,501 | 7,934 | - | - | - | - |
| 725 | 4,659 | 8,212 | - | - | - | - |
| 750 | 4,817 | 8,490 | - | - | - | - |
| 775 | 4,975 | 8,768 | - | - | - | - |
| 800 | 5,132 | 9,046 | - | - | - | - |
| 825 | 5,290 | 9,324 | - | - | - | - |
| 850 | 5,448 | 9,602 | - | - | - | - |
| 875 | 5,606 | 9,880 | - | - | - | - |
| 900 | 5,763 | 10,158 | - | - | - | - |
| Approx. 1 psi Increment | 6.3 | 11.1 | 17.5 | 28.7 | 44.8 | 73.3 |

**METRIC UNITS Kg./Hr.**

| Orifice Letter Area (cm.²) | D 0.8352 | E 1.4721 | F 2.3155 | G 3.8001 | H 5.9321 | J 9.7058 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.4* | 60 | 105 | 165 | 271 | 423 | 692 |
| 0.8* | 82 | 145 | 228 | 374 | 583 | 955 |
| 1.1 | 88 | 154 | 243 | 398 | 622 | 1,018 |
| 2 | 122 | 214 | 337 | 553 | 863 | 1,412 |
| 3 | 163 | 287 | 451 | 741 | 1,156 | 1,892 |
| 4 | 204 | 360 | 566 | 930 | 1,451 | 2,374 |
| 5 | 246 | 433 | 681 | 1,118 | 1,746 | 2,857 |
| 6 | 287 | 506 | 797 | 1,307 | 2,041 | 3,339 |
| 7 | 329 | 580 | 912 | 1,496 | 2,336 | 3,821 |
| 8 | 370 | 653 | 1,027 | 1,685 | 2,630 | 4,304 |
| 9 | 412 | 726 | 1,142 | 1,874 | 2,925 | 4,786 |
| 10 | 453 | 799 | 1,257 | 2,063 | 3,220 | 5,269 |
| 12 | 536 | 945 | 1,487 | 2,441 | 3,810 | 6,233 |
| 14 | 619 | 1,092 | 1,717 | 2,818 | 4,400 | 7,198 |
| 16 | 702 | 1,238 | 1,947 | 3,196 | 4,989 | 8,163 |
| 18 | 786 | 1,384 | 2,178 | 3,574 | 5,579 | 9,128 |
| 20 | 869 | 1,531 | 2,408 | 3,952 | 6,169 | 10,093 |
| 22 | 952 | 1,677 | 2,638 | 4,329 | 6,758 | 11,058 |
| 24 | 1,035 | 1,823 | 2,868 | 4,707 | 7,348 | 12,022 |
| 26 | 1,118 | 1,970 | 3,098 | 5,085 | 7,938 | 12,987 |
| 28 | 1,201 | 2,116 | 3,329 | 5,463 | 8,527 | 13,952 |
| 30 | 1,284 | 2,262 | 3,559 | 5,840 | 9,117 | 14,917 |
| 32 | 1,367 | 2,409 | 3,789 | 6,218 | 9,707 | 15,882 |
| 34 | 1,450 | 2,555 | 4,019 | 6,596 | 10,297 | 16,846 |
| 36 | 1,533 | 2,701 | 4,249 | 6,974 | - | - |
| 38 | 1,616 | 2,848 | 4,479 | 7,351 | - | - |
| 40 | 1,699 | 2,994 | 4,710 | 7,729 | - | - |
| 42 | 1,782 | 3,140 | - | - | - | - |
| 44 | 1,865 | 3,287 | - | - | - | - |
| 46 | 1,948 | 3,433 | - | - | - | - |
| 48 | 2,031 | 3,579 | - | - | - | - |
| 50 | 2,114 | 3,726 | - | - | - | - |
| 52 | 2,197 | 3,872 | - | - | - | - |
| 54 | 2,280 | 4,019 | - | - | - | - |
| 58 | 2,446 | 4,311 | - | - | - | - |
| 62 | 2,612 | 4,604 | - | - | - | - |
| 65 | 2,736 | - | - | - | - | - |
| 69 | 2,902 | - | - | - | - | - |
| 72 | 3,026 | - | - | - | - | - |
| 76 | 3,192 | - | - | - | - | - |
| 79 | 3,316 | - | - | - | - | - |
| 82 | 3,441 | - | - | - | - | - |
| Approx. 0.1 bar Increment | 4.15 | 7.32 | 11.51 | 18.89 | 29.48 | 48.24 |

**Maximum Set Pressure Limits for Steam Service**

510 Series - 250 psig/17.3 barg
520 Series - 300 psig/20.7 barg
530 Series - 900 psig/62.1 barg
540 Series - 900 psig/62.1 barg

*Note: For steam service beyond 300 psig or 550˚F specify option "HT" high temperature stainless steel alloy spring.*

**Pressure settings below 15 psig/1.03 barg are non-ASME code.*

## 500 SERIES MULTI-PURPOSE SAFETY RELIEF

### ASME SECTION VIII - AIR

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS SCFM

| Orifice Letter Area (in.²) | D 0.1295 | E 0.2282 | F 0.3589 | G 0.5890 | H 0.9195 | J 1.5044 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | 39 | 69 | 108 | 178 | 277 | 454 |
| 10* | 54 | 96 | 151 | 248 | 387 | 633 |
| 15 | 67 | 118 | 185 | 304 | 474 | 776 |
| 20 | 77 | 136 | 213 | 350 | 547 | 895 |
| 25 | 87 | 154 | 242 | 397 | 619 | 1,013 |
| 30 | 97 | 172 | 270 | 443 | 692 | 1,132 |
| 35 | 109 | 191 | 301 | 494 | 772 | 1,262 |
| 40 | 120 | 211 | 332 | 545 | 851 | 1,393 |
| 45 | 131 | 231 | 363 | 596 | 931 | 1,523 |
| 50 | 142 | 251 | 395 | 648 | 1,011 | 1,654 |
| 55 | 154 | 271 | 426 | 699 | 1,091 | 1,784 |
| 60 | 165 | 290 | 457 | 750 | 1,170 | 1,915 |
| 65 | 176 | 310 | 488 | 801 | 1,250 | 2,045 |
| 70 | 187 | 330 | 519 | 852 | 1,330 | 2,176 |
| 75 | 198 | 350 | 550 | 903 | 1,410 | 2,306 |
| 80 | 210 | 370 | 581 | 954 | 1,489 | 2,437 |
| 85 | 221 | 389 | 612 | 1,005 | 1,569 | 2,567 |
| 90 | 232 | 409 | 644 | 1,056 | 1,649 | 2,698 |
| 95 | 243 | 429 | 675 | 1,107 | 1,729 | 2,828 |
| 100 | 255 | 449 | 706 | 1,158 | 1,808 | 2,959 |
| 125 | 311 | 548 | 862 | 1,414 | 2,207 | 3,611 |
| 150 | 367 | 647 | 1,017 | 1,669 | 2,606 | 4,264 |
| 175 | 423 | 746 | 1,173 | 1,925 | 3,005 | 4,916 |
| 200 | 479 | 845 | 1,329 | 2,180 | 3,404 | 5,569 |
| 225 | 535 | 944 | 1,484 | 2,436 | 3,802 | 6,221 |
| 250 | 592 | 1,043 | 1,640 | 2,691 | 4,201 | 6,874 |
| 275 | 648 | 1,142 | 1,796 | 2,947 | 4,600 | 7,526 |
| 300 | 704 | 1,240 | 1,951 | 3,202 | 4,999 | 8,179 |
| 325 | 760 | 1,339 | 2,107 | 3,458 | 5,398 | 8,831 |
| 350 | 816 | 1,438 | 2,263 | 3,713 | 5,796 | 9,484 |
| 375 | 872 | 1,537 | 2,418 | 3,969 | 6,195 | 10,136 |
| 400 | 928 | 1,636 | 2,574 | 4,224 | 6,594 | 10,789 |
| 425 | 985 | 1,735 | 2,730 | 4,480 | 6,993 | 11,441 |
| 450 | 1,041 | 1,834 | 2,885 | 4,735 | 7,392 | 12,094 |
| 475 | 1,097 | 1,933 | 3,041 | 4,991 | 7,791 | 12,746 |
| 500 | 1,153 | 2,032 | 3,197 | 5,246 | 8,189 | 13,399 |
| 525 | 1,209 | 2,131 | 3,352 | 5,501 | - | - |
| 550 | 1,265 | 2,230 | 3,508 | 5,757 | - | - |
| 575 | 1,321 | 2,329 | 3,664 | 6,012 | - | - |
| 600 | 1,378 | 2,428 | 3,819 | 6,268 | - | - |
| 625 | 1,434 | 2,527 | - | - | - | - |
| 650 | 1,490 | 2,626 | - | - | - | - |
| 675 | 1,546 | 2,725 | - | - | - | - |
| 700 | 1,602 | 2,824 | - | - | - | - |
| 725 | 1,658 | 2,923 | - | - | - | - |
| 750 | 1,715 | 3,022 | - | - | - | - |
| 775 | 1,771 | 3,121 | - | - | - | - |
| 800 | 1,827 | 3,220 | - | - | - | - |
| 825 | 1,883 | 3,319 | - | - | - | - |
| 850 | 1,939 | 3,418 | - | - | - | - |
| 875 | 1,995 | 3,517 | - | - | - | - |
| 900 | 2,051 | 3,616 | | | | |
| 950 | 2,163 | - | - | - | - | - |
| 1000 | 2,276 | - | - | - | - | - |
| 1050 | 2,388 | - | - | - | - | - |
| 1100 | 2,501 | - | - | - | - | - |
| 1150 | 2,613 | - | - | - | - | - |
| 1200 | 2,725 | - | - | - | - | - |
| Approx.1 psi Increment | 2.2 | 4.0 | 6.2 | 10.2 | 16.0 | 26.1 |

### METRIC UNITS Kg./Hr.

| Orifice Letter Area (cm²) | D 0.8352 | E 1.4721 | F 2.3155 | G 3.8001 | H 5.9321 | J 9.7058 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.4* | 67 | 119 | 187 | 307 | 479 | 784 |
| 0.8* | 94 | 165 | 260 | 427 | 667 | 1,091 |
| 1.1 | 110 | 195 | 306 | 503 | 784 | 1,283 |
| 2 | 153 | 270 | 425 | 697 | 1,089 | 1,781 |
| 3 | 205 | 362 | 569 | 934 | 1,458 | 2,386 |
| 4 | 258 | 454 | 714 | 1,172 | 1,830 | 2,994 |
| 5 | 310 | 546 | 859 | 1,411 | 2,202 | 3,603 |
| 6 | 362 | 639 | 1,005 | 1,649 | 2,574 | 4,211 |
| 7 | 415 | 731 | 1,150 | 1,887 | 2,946 | 4,819 |
| 8 | 467 | 823 | 1,295 | 2,125 | 3,317 | 5,428 |
| 9 | 519 | 916 | 1,440 | 2,363 | 3,689 | 6,036 |
| 10 | 572 | 1,008 | 1,585 | 2,601 | 4,061 | 6,644 |
| 12 | 676 | 1,192 | 1,875 | 3,078 | 4,805 | 7,861 |
| 14 | 781 | 1,377 | 2,166 | 3,554 | 5,548 | 9,078 |
| 16 | 886 | 1,561 | 2,456 | 4,031 | 6,292 | 10,295 |
| 18 | 991 | 1,746 | 2,746 | 4,507 | 7,036 | 11,511 |
| 20 | 1,095 | 1,931 | 3,037 | 4,983 | 7,779 | 12,728 |
| 22 | 1,200 | 2,115 | 3,327 | 5,460 | 8,523 | 13,945 |
| 24 | 1,305 | 2,300 | 3,617 | 5,936 | 9,267 | 15,162 |
| 26 | 1,409 | 2,484 | 3,907 | 6,413 | 10,010 | 16,378 |
| 28 | 1,514 | 2,669 | 4,198 | 6,889 | 10,754 | 17,595 |
| 30 | 1,619 | 2,853 | 4,488 | 7,365 | 11,498 | 18,812 |
| 32 | 1,724 | 3,038 | 4,778 | 7,842 | 12,241 | 20,029 |
| 34 | 1,828 | 3,222 | 5,069 | 8,318 | 12,985 | 21,245 |
| 36 | 1,933 | 3,407 | 5,359 | 8,795 | - | - |
| 38 | 2,038 | 3,591 | 5,649 | 9,271 | - | - |
| 40 | 2,142 | 3,776 | 5,939 | 9,747 | - | - |
| 42 | 2,247 | 3,961 | - | - | - | - |
| 44 | 2,352 | 4,145 | - | - | - | - |
| 46 | 2,457 | 4,330 | - | - | - | - |
| 48 | 2,561 | 4,514 | - | - | - | - |
| 50 | 2,666 | 4,699 | - | - | - | - |
| 52 | 2,771 | 4,883 | - | - | - | - |
| 54 | 2,875 | 5,068 | - | - | - | - |
| 58 | 3,085 | 5,437 | - | - | - | - |
| 62 | 3,294 | 5,806 | - | - | - | - |
| 65 | 3,450 | - | - | - | - | - |
| 69 | 3,659 | - | - | - | - | - |
| 72 | 3,815 | - | - | - | - | - |
| 76 | 4,020 | - | - | - | - | - |
| 79 | 4,177 | - | - | - | - | - |
| 82 | 4,381 | - | - | - | - | - |
| Approx. 0.1 bar Increment | 5.24 | 9.23 | 14.51 | 23.82 | 37.18 | 60.84 |

**Maximum Set Pressure Limits for Air/Gas Service**

510 Series - 300 psig/20.7 barg
520 Series - 1200 psig/82.7 barg
530 Series - 1200 psig/82.7 barg
540 Series - 1200 psig/82.7 barg

**Pressure settings below 15 psig/1.03 barg are non-ASME code.*

## 500 SERIES MULTI-PURPOSE SAFETY RELIEF

### ASME SECTION VIII - WATER

U.S. gallons per minute (cubic meters per hour) of water at 10% over pressure. National Board Certified. Ratings are 90% of actual.

### US CUSTOMARY UNITS GPM

| Orifice Letter Area (in.²) | D 0.1295 | E 0.2282 | F 0.3589 | G 0.5890 | H 0.9195 | J 1.5044 |
|---|---|---|---|---|---|---|
| Set Pressure psig | | | | | | |
| 5* | 13 | 24 | 37 | 61 | 95 | 156 |
| 10* | 14 | 24 | 38 | 63 | 98 | 161 |
| 15 | 14 | 25 | 40 | 65 | 102 | 167 |
| 20 | 16 | 29 | 45 | 74 | 115 | 189 |
| 25 | 18 | 32 | 50 | 82 | 127 | 208 |
| 30 | 19 | 34 | 54 | 89 | 138 | 226 |
| 35 | 21 | 37 | 58 | 96 | 149 | 244 |
| 40 | 22 | 40 | 62 | 102 | 160 | 261 |
| 45 | 24 | 42 | 66 | 108 | 169 | 277 |
| 50 | 25 | 44 | 70 | 114 | 178 | 292 |
| 55 | 26 | 46 | 73 | 120 | 187 | 306 |
| 60 | 28 | 48 | 76 | 125 | 195 | 320 |
| 65 | 29 | 50 | 79 | 130 | 203 | 333 |
| 70 | 30 | 52 | 82 | 135 | 211 | 345 |
| 75 | 31 | 54 | 85 | 140 | 218 | 357 |
| 80 | 32 | 56 | 88 | 145 | 226 | 369 |
| 85 | 33 | 58 | 91 | 149 | 233 | 381 |
| 90 | 34 | 59 | 93 | 153 | 239 | 392 |
| 95 | 35 | 61 | 96 | 158 | 246 | 402 |
| 100 | 36 | 63 | 98 | 162 | 252 | 413 |
| 125 | 40 | 70 | 110 | 181 | 282 | 462 |
| 150 | 44 | 77 | 121 | 198 | 309 | 506 |
| 175 | 47 | 83 | 130 | 214 | 334 | 546 |
| 200 | 50 | 89 | 139 | 229 | 357 | 584 |
| 225 | 53 | 94 | 148 | 242 | 378 | 619 |
| 250 | 56 | 99 | 156 | 256 | 399 | 653 |
| 275 | 59 | 104 | 163 | 268 | 418 | 685 |
| 300 | 62 | 108 | 171 | 280 | 437 | 715 |
| 325 | 64 | 113 | 178 | 291 | 455 | 744 |
| 350 | 66 | 117 | 184 | 302 | 472 | 772 |
| 375 | 69 | 121 | 191 | 313 | 489 | 799 |
| 400 | 71 | 125 | 197 | 323 | 505 | 826 |
| 425 | 73 | 129 | 203 | 333 | 520 | 851 |
| 450 | 75 | 133 | 209 | 343 | 535 | 876 |
| 475 | 77 | 136 | 215 | 352 | 550 | 900 |
| 500 | 79 | 140 | 220 | 361 | 564 | 923 |
| 525 | 81 | 143 | 226 | 370 | - | - |
| 550 | 83 | 147 | 231 | 379 | - | - |
| 575 | 85 | 150 | 236 | 388 | - | - |
| 600 | 87 | 153 | 241 | 396 | - | - |
| 625 | 89 | 157 | - | - | - | - |
| 650 | 91 | 160 | - | - | - | - |
| 675 | 92 | 163 | - | - | - | - |
| 700 | 94 | 166 | - | - | - | - |
| 725 | 96 | 169 | - | - | - | - |
| 750 | 97 | 171 | - | - | - | - |
| 775 | 99 | 174 | - | - | - | - |
| 800 | 100 | 177 | - | - | - | - |
| 825 | 102 | 180 | - | - | - | - |
| 850 | 104 | 183 | - | - | - | - |
| 875 | 105 | 185 | - | - | - | - |
| 900 | 107 | 188 | - | - | - | - |
| 950 | 109 | - | - | - | - | - |
| 1000 | 112 | - | - | - | - | - |

### METRIC UNITS M3/Hr.

| Orifice Letter Area (cm²) | D 0.8352 | E 1.4721 | F 2.3155 | G 3.8001 | H 5.9321 | J 9.7058 |
|---|---|---|---|---|---|---|
| Set Pressure barg | | | | | | |
| 0.4* | 2.0 | 3.6 | 5.6 | 9.2 | 14.4 | 23.6 |
| 0.8* | 2.9 | 5.1 | 8.0 | 13.1 | 20.4 | 33.3 |
| 1.1 | 3.3 | 5.9 | 9.3 | 15.2 | 23.8 | 38.9 |
| 2 | 4.4 | 7.7 | 12.1 | 19.8 | 30.9 | 50.6 |
| 3 | 5.3 | 9.4 | 14.8 | 24.2 | 37.8 | 61.8 |
| 4 | 6.1 | 10.8 | 17.0 | 28.0 | 43.6 | 71.4 |
| 5 | 6.9 | 12.1 | 19.0 | 31.3 | 48.8 | 79.8 |
| 6 | 7.5 | 13.3 | 20.9 | 34.2 | 53.4 | 87.4 |
| 7 | 8.1 | 14.3 | 22.5 | 37.0 | 57.7 | 94.5 |
| 8 | 8.7 | 15.3 | 24.1 | 39.5 | 61.7 | 101.0 |
| 9 | 9.2 | 16.2 | 25.6 | 41.9 | 65.5 | 107.1 |
| 10 | 9.7 | 17.1 | 26.9 | 44.2 | 69.0 | 112.9 |
| 12 | 10.6 | 18.8 | 29.5 | 48.4 | 75.6 | 123.7 |
| 14 | 11.5 | 20.3 | 31.9 | 52.3 | 81.6 | 133.6 |
| 16 | 12.3 | 21.7 | 34.1 | 55.9 | 87.3 | 142.8 |
| 18 | 13.0 | 23.0 | 36.1 | 59.3 | 92.6 | 151.5 |
| 20 | 13.7 | 24.2 | 38.1 | 62.5 | 97.6 | 159.7 |
| 22 | 14.4 | 25.4 | 39.9 | 65.6 | 102.3 | 167.5 |
| 24 | 15.1 | 26.5 | 41.7 | 68.5 | 106.9 | 174.9 |
| 26 | 15.7 | 27.6 | 43.4 | 71.3 | 111.3 | 182.0 |
| 28 | 16.3 | 28.7 | 45.1 | 74.0 | 115.5 | 188.9 |
| 30 | 16.8 | 29.7 | 46.7 | 76.6 | 119.5 | 195.5 |
| 32 | 17.4 | 30.6 | 48.2 | 79.1 | 123.4 | 202.0 |
| 34 | 17.9 | 31.6 | 49.7 | 81.5 | 127.2 | 208.2 |
| 36 | 18.4 | 32.5 | 51.1 | 83.9 | - | - |
| 38 | 18.9 | 33.4 | 52.5 | 86.2 | - | - |
| 40 | 19.4 | 34.2 | 53.9 | 88.4 | - | - |
| 42 | 19.9 | 35.1 | - | - | - | - |
| 44 | 20.4 | 35.9 | - | - | - | - |
| 46 | 20.8 | 36.7 | - | - | - | - |
| 48 | 21.3 | 37.5 | - | - | - | - |
| 50 | 21.7 | 38.3 | - | - | - | - |
| 52 | 22.2 | 39.0 | - | - | - | - |
| 54 | 22.6 | 39.8 | - | - | - | - |
| 58 | 23.4 | 41.2 | - | - | - | - |
| 62 | 24.2 | 42.6 | - | - | - | - |
| 65 | 24.8 | - | - | - | - | - |
| 69 | 25.6 | - | - | - | - | - |

**Maximum Set Pressure Limits for Liquid Service**

510 Series - 300 psig/20.7 barg
520 Series - 1000 psig/68.9 barg
530 Series - 1000 psig/68.9 barg
540 Series - 1000 psig/68.9 barg

*Note:*

*To determine water capacity at 25% overpressure, multiply the capacity at 10% by 1.066.*

**Pressure settings below 15 psig/1.03 barg are non-ASME code.*

## EQUIVALENTS AND CONVERSION FACTORS

| TO OBTAIN | MULTIPLY THIS | BY THIS |
|---|---|---|
| Atmospheres | Kilograms per sq. cm. | 0.9678 |
| Atmospheres | Pounds per sq. inch | 0.068 |
| Bar | Pounds per sq. inch | 0.06895 |
| Barrels | Cubic feet | 0.1781 |
| Bar | KiloPascals | 0.01 |
| Bar | Atmospheres | 1.013 |
| BTU/hr | Horsepower of boiler | 33,479 |
| BTU/hr | Kilowatts/hour | 3,412 |
| BTU/hr | MBH | 1,000 |
| BTU/hr | Pounds of steam/hour | 1,000 |
| BTU/hr | Watts/hour | 3.412 |
| Centimeters | Feet | 30.48 |
| Centimeters | Inches | 2.54 |
| Centimeters | Meters | 100 |
| Centipoise | SSU | 0.2205 x SG |
| Centistoke | SSU | 0.2162 |
| Cubic centimeters | Cubic inches | 16.39 |
| Cubic centimeters | Gallons (U.S.) | 3785 |
| Cubic centimeters | Liters | 1000 |
| Cubic feet | Gallons (U.S.) | 0.1337 |
| Cubic feet | Liters | 0.03531 |
| Cubic feet per minute | Cubic meters per minute | 35.31 |
| Cubic feet per second | Gallons per minute | 0.002228 |
| Cubic inches | Gallons (U.S.) | 231 |
| Cubic inches | Gallons (Imperial) | 277.4 |
| Cubic meters per minute | Cubic feet per minute | 0.02832 |
| Cubic yards | Cubic centimeters | 0.06102 |
| Feet | Centimeters | 0.03281 |
| Feet | Inches | 0.08333 |
| Feet | Meters | 3.281 |
| Feet of water | Atmospheres | 33.96 |
| Feet of water (68˚F) | Inches of mercury (0˚C) | 1.135 |
| Feet of water (68˚F) | Pounds per sq. inch | 2.311 |
| Gallons | Cubic feet | 7.481 |
| Gallons | Cubic inches | 0.004329 |
| Gallons | Cubic meters | 264.2 |
| Gallons | Liters | 0.2642 |
| Gallons (Imperial) | Gallons (U.S.) | 0.8327 |
| Gallons (U.S.) | Barrels | 42 |
| Gallons H20 @ 60˚F (US) | Pounds | 0.1199 |
| Gallons per minute | Cubic feet per second | 448.8 |
| Gallons per minute | Cubic meters per hour | 4.403 |
| Gallons per minute | Liters per hour | 0.004403 |
| Gallons per minute liquid | Pounds per hour liquid | 0.002/Sp.Gr. |
| Grams | Pounds | 453.6 |
| Inches | Centimeters | 0.3937 |
| Inches | Meters | 39.97 |
| Inches of mercury | Atmospheres | 29.92 |
| Inches of mercury | Kilograms per sq. cm | 28.96 |
| Inches of mercury (0˚ C) | Inches of water (68°F) | 0.07343 |
| Inches of mercury (0˚C) | Feet of water (68˚F) | 0.8812 |
| Inches of mercury (0˚C) | Pounds per sq. inch | 2.036 |
| Inches of water | Atmospheres | 407.5 |
| Inches of water (68˚F) | Pounds per sq. inch | 27.73 |
| Kilograms | Pounds | 0.4536 |
| Kilograms per hour | Pounds per hour | 0.4536 |
| Kilograms per hour | Gallons per minute (60˚F) | 227.0xSG |
| Kilograms per sq. cm | KiloPascals | 0.0102 |
| Kilograms per sq. cm | Inches of mercury (0˚C) | 0.03453 |
| Kilograms per sq. cm | Bars | 1.02 |
| Kilograms per sq. cm. | Atmospheres | 1.033 |
| Kilograms per sq. cm. | Pounds per sq. inch | 0.07031 |
| KiloPascals | Pounds per sq. inch | 6.895 |
| KiloPascals | Atmospheres | 101.3 |
| KiloPascals | Bars | 100 |
| Liters | Gallons (U.S.) | 3.785 |

| TO OBTAIN | MULTIPLY THIS | BY THIS |
|---|---|---|
| Liters per minute | Gallons per minute | 3.785 |
| Liters per second | Gallons per minute | 0.06309 |
| $M^3$/hr. | Gallons per minute | 0.2271 |
| Meters | Inches | 0.0254 |
| Meters | Centimeters | 0.01 |
| Meters | Feet | 0.3048 |
| Meters of water (68˚F) | Pounds per sq. inch | 0.7043 |
| Metric tons | Pounds | 0.0004536 |
| Millimeters of mercury | Atmospheres | 760 |
| Millimeters of mercury (0˚C) | Pounds per sq. inch | 51.71 |
| Molecular weight (of gas or vapors) | Specific gravity (of gas or vapors) | 28.97 |
| $Nm^3$/day. (0˚C, 1 Bara) | Standard cubic feet per min. | 39.11 |
| $Nm^3$/hr. (0˚C, 1 Bara) | Standard cubic feet per min. | 1.63 |
| $Nm^3$/min. (0˚C, 1 Bara) | Standard cubic feet per min. | 0.02716 |
| Ounces | Grams | 0.03527 |
| Ounces | Kilograms | 35.27 |
| Ounces | Pounds | 16 |
| Pounds | Gallons of water (60˚F) | 8.337 |
| Pounds | Kilograms | 2.205 |
| Pounds | Water (cubic feet @ 60F) | 62.37 |
| Pounds per cubic foot | Kilograms per cubic meter | 0.0624 |
| Pounds per hour | Kilograms per minute | 132.3 |
| Pounds per hour liquid | Gallons of liquid per minute | 500xSp. Gr. |
| Pounds per sq. in. | Inches of water (68°F) | 0.03607 |
| Pounds per sq. in. | Kilograms per sq. cm. | 14.22 |
| Pounds per sq. in. | KiloPascals | 0.145 |
| Pounds per square inch | Inches of mercury (0˚C) | 0.4912 |
| Pounds per square inch | Atmospheres | 14.7 |
| Pounds per square inch | Bars | 14.5 |
| Pounds per square inch | Feet of water (68˚F) | 0.4328 |
| PSI | MegaPascals | 145.038 |
| SCFM | Pounds per hour | 6.324/M.W. |
| Short tons (2000 lbs.) | Kilograms | 0.001102 |
| Short tons (2000 lbs.) | Pounds | 0.0005 |
| $Sm^3$/day. | Standard cubic feet per min. | 40.78 |
| $Sm^3$/hr. | Standard cubic feet per min. | 1.699 |
| $Sm^3$/min. | Standard cubic feet per min. | 0.02832 |
| Square centimeter | Square inch | 6.4516 |
| Square inch | Square centimeter | 0.155 |
| Square millimeter | Square inch | 645.16 |
| Standard cubic ft. per day | Standard cubic feet per min. | 1440 |
| Standard cubic ft. per hr | Standard cubic feet per min. | 60 |
| Yards | Centimeters | 0.01094 |
| Yards | Feet | 0.3333 |
| Yards | Inches | 0.02778 |
| Yards | Meters | 1.094 |
| **TEMPERATURE:** | | |
| Centigrade | = 5/9 (Fahrenheit – 32) | |
| Kelvin | = Centigrade + 273 | |
| Fahrenheit | = 9/5 (Centigrade) +32 | |
| Fahrenheit | = Rankine – 460 | |
| Fahrenheit | = (9/5 Kelvin) - 460 | |

## CORRECTION FACTORS

### AIR AND GAS TEMPERATURE

To correct for temperatures other than 60°F at the valve inlet, multiply the SCFM from the capacity tables by factor $K_t$.

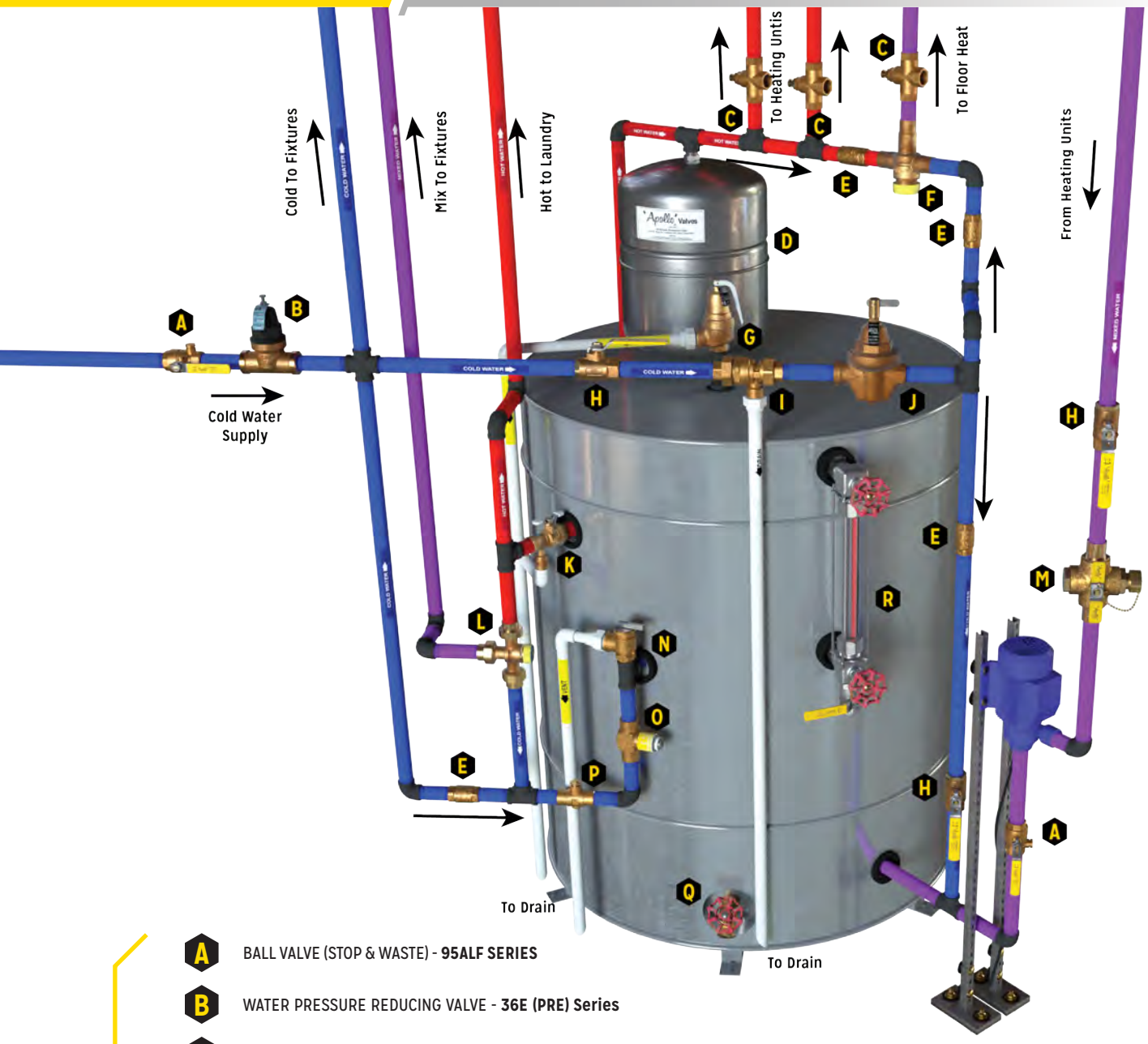
| Temp °F | $K_t$ |
|---|---|
| 0 | 1.063 |
| 10 | 1.052 |
| 20 | 1.041 |
| 30 | 1.030 |
| 40 | 1.020 |
| 50 | 1.010 |
| 60 | 1.000 |
| 70 | 0.991 |
| 80 | 0.981 |
| 90 | 0.972 |
| 100 | 0.964 |
| 120 | 0.947 |
| 140 | 0.931 |
| 160 | 0.916 |
| 180 | 0.901 |
| 200 | 0.888 |
| 220 | 0.874 |
| 240 | 0.862 |
| 260 | 0.850 |
| 280 | 0.838 |
| 300 | 0.827 |
| 320 | 0.816 |
| 340 | 0.806 |
| 360 | 0.796 |
| 380 | 0.787 |
| 400 | 0.778 |
| 420 | 0.769 |
| 440 | 0.760 |
| 460 | 0.752 |
| 480 | 0.744 |
| 500 | 0.737 |
| 550 | 0.718 |
| 600 | 0.701 |
| 650 | 0.685 |
| 700 | 0.669 |
| 750 | 0.656 |

### GAS AND LIQUID RELATIVE DENSITY

To correct for a specific gravity other than air or water (=1.0) multiply the SCFM or GPM from the capacity tables by factor $K_{sg}$.

| Specific Gravity | $K_{sg}$ |
|---|---|
| 0.10 | 3.160 |
| 0.20 | 2.240 |
| 0.30 | 1.825 |
| 0.40 | 1.580 |
| 0.50 | 1.414 |
| 0.55 | 1.350 |
| 0.60 | 1.290 |
| 0.65 | 1.240 |
| 0.70 | 1.195 |
| 0.75 | 1.155 |
| 0.80 | 1.117 |
| 0.90 | 1.085 |
| 0.95 | 1.025 |
| 1.00 | 1.00 |
| 1.05 | 0.975 |
| 1.10 | 0.955 |
| 1.15 | 0.933 |
| 1.20 | 0.913 |
| 1.25 | 0.913 |
| 1.30 | 0.877 |
| 1.40 | 0.845 |
| 1.50 | 0.817 |
| 1.60 | 0.791 |
| 1.70 | 0.768 |
| 1.80 | 0.745 |
| 1.90 | 0.725 |
| 2.00 | 0.707 |
| 2.50 | 0.633 |
| 3.00 | 0.577 |
| 3.50 | 0.535 |
| 4.00 | 0.500 |
| 4.50 | 0.471 |

HYDRONIC &
**STEAM HEATING**




- **A** BALL VALVE (STOP & WASTE) - **95ALF SERIES**
- **B** WATER PRESSURE REDUCING VALVE - **36E (PRE) Series**
- **C** HYDRONIC FLOW CHECK - **35-FC (FC) Series**
- **D** HYDRONIC EXPANSION TANK - **16-XT (EXT)**
- **E** CHECK VALVE - **61 Series**
- **F** TEMPERING VALVE - **34 (TV) Series**
- **G** SAFETY RELIEF VALVE - **RVW 60/61 (10-600) Series**
- **H** BALL VALVE - **70 Series**
- **I** DUAL CHECK BACKFLOW - **DCAP Series**
- **J** WATER REGULATOR - **FF (35) Series**
- **K** THERMAL EXPANSION CONTROL VALVE - **EXV (78-RV) Series**
- **L** MIXING VALVE- **MVA (34ALF) Series**
- **M** BALL VALVE (PURGE & BALANCE) - **78-668**
- **N** RELIEF VALVE - **RVW 17 (17-400) Series**
- **O** ORIFICE CONTROL VALVE - **FCT Series**
- **P** BALANCING VALVE - **BAV (58) Series**
- **Q** BOILER DRAIN - **31 Series**
- **R** LIQUID LEVEL GAUGE - **20-100 Series**

## 12-200 (RVS12) SERIES — LOW PRESSURE STEAM HEATING BOILER SAFETY

HV

Medium capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation. Ideal for OEM applications.

**FEATURES**

- Sizes 2", 2-1/2" and 3"
- Factory Set Pressures 5-15 psi
- All Bronze Construction
- PTFE-Coated O-Ring Seat Seal
- 3/8" NPT Side Tapping for Drain
- Rust-Proofed Steel Spring
- Top Guided, High Capacity Design
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- National Board Certified at 15 psig

## 13 (RVS13) SERIES — LOW PRESSURE STEAM HEATING BOILER SAFETY

HV

ASME Section IV bronze safety valves protect small to medium low pressure steam heating boilers. Three design configurations feature top guiding and raised seating area for extended service life. Available top and side discharge models.

## 14-200 (RSV14) SERIES — LOW PRESSURE STEAM HEATING SAFETY

HV

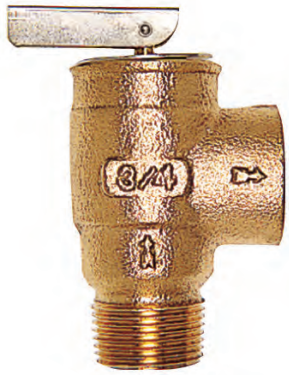
High capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation. Ideal for OEM applications.

**FEATURES**

- Sizes 2", 2-1/2" and 3"
- Factory Set Pressures 5-15 psi
- One Piece Body, All Bronze Construction
- Rust-Proofed Steel Spring
- Chrome Plated Seat, PTFE Coated Disc
- PTFE Coated EPDM O-Ring for Positive Sseal
- 3/8" NPT Side Tapping for Drain Connection
- Valves are Capacity Certified by the National Board at 15 psig Only, in Accordance with ASME Boiler and Pressure Vessel Code Section IV
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C

## 17-400 (RVW17) SERIES — PRESSURE-ONLY HOT WATER RELIEF

HV



17-400 series pressure-only relief valves are engineered to protect against excessive pressure buildup due to thermal expansion in hot water supply systems. Both models are CSA certified to ANSI Z21.22 "Relief Valves for Hot Water Supply Systems". In addition the 17-402 is design certified to ASME Section IV for hot water relief.

**FEATURES**

- Connection Sizes 1/2" (Model 17-401) and 3/4" (Model 17-402)
- CSA Vertified to ANSI Z21.22
- Pressure Settings 75 thru 150 psi @ 250˚F max.
- ASME Section IV Hot Water, Model 17-402 Only
- Cast Bronze Body, Stainless Steel Springs
- Soft Seat for Durability, Extended Service Life
- Conforms to HUD / FHA Requirements
- CSA Certified to ANSI Z21.22
- CSA B-51, CRN 0G8547.5C

## 10 (RVW30) SERIES — HOT WATER BOILER SAFETY RELIEF

Brass/bronze safety relief valves protect ASME Section IV hot water heating boilers and hydronic heating systems. High capacity design features corrosion resistant construction. Brass, satin or polished chrome finishes available.

**FEATURES**

- Inlet Size 3/4" - Outlet - 3/4" & 1"
- Factory Set Pressure 20-150 psi
- Maximum Temperature Service: 250°F Pressures From 20 to 150 psig
- Registered in all Canadian Provinces and Territories, CRN #0G8547.5C
- Stainless Steel Springs Standard
- 10-624/634 are Ideal for Use in Various Plumbing Systems, Commercial Boiler Applications and Swimming Pool Heaters
- 10-418/417 are Ideal for Use in Swimming Pool Heater Applications

## 10-600 (RVW60) SERIES — HIGH CAPACITY HOT WATER BOILER SAFETY RELIEF

ASME HV

High-capacity heating system valves with female inlet and standard or expanded female outlet. Elevated seat for drainage of water away from seat area. Entire pressure range is National Board capacity certified.

**FEATURES**

- Inlet Sizes 3/4" to 2"
- Factory Set Pressures from 15-160 psig
- Maximum Temperature Service 250°F
- High BTU Capacity Rating
- Silicone Seat
- Fabric Reinforced Molded Diaphragm
- Isolates Spring from Water at all Times
- Bronze Body and Spring Cage
- Registered in Canadian Provinces and Territories, CRN #0G8547.5C
- Protects Against Excessive Water Pressure Due to Failure of Controls to Regulate BTU Input

## 18C-400 (TP) & 18C-402X (TPX) SERIES — WATER HEATER T&P RELIEF

ASME HV  C SP US

Automatic temperature and pressure relief valves feature unique non-metallic coating which protects the element against galvanic and electromechanical corrosion by isolating it from the heated water. This coating is electrostatically applied for uniform coverage, then thermobonded, resulting in optimum adhesion for extended service life.

**FEATURES**

- Meets HUD/FHA Requirements
- Cast Bronze Body, Stainless Steel Spring
- Rated @ 210°F Maximum
- Registered in all Canadian Provinces and Territories
- ASME Capacity cCertified to 500,000 BTUhr.

## 37-200 (VR) SERIES — VACUUM RELIEF VALVE

C SP US


Designed to protect tank from collapsing during water siphoning, resulting in negative pressure. Design certified by CSA in accordance with ANSI Z21.22. Also suitable for low pressure (15 psig max) steam service.

**FEATURES**

- Maximum Temperature: 250°F
- Auto-Vacuum Relief at Less than 1" Hg
- Rated for Water Pressures to 200 psig
- Model 37-200 Brass Body (EPDM Rubber @ 2" Hg

| Series Number | Size (in.) | Venting Capacity | Wt./100 (lbs.) |
|---|---|---|---|
| **37-201-01** | 1/2 | 15 CFM | 30.4 |
| **37-202-01** | 3/4 | 16 CFM | 32.4 |

## PRE (36ELF) SERIES — WATER PRESSURE REDUCING VALVE

Designed for residential and commercial applications to protect water supplies from excessive pressure. Excellent flow performance at low pressure drop. The dezincification resistant bronze body and dielectric polymer cage provide maximum corrosion resistance. Designed for easy in-line servicing with simple cartridge removal. They meet ASSE 1003 and CSA B356 standards. They are listed with IAPMO and the city of Los Angeles.

- **FEATURES**
- Balanced Piston Design
- Sealed Cage for Vault Installations
- Built-In Thermal Expansion Bypass
- Integral Stainless Steel Strainer
- Modular Seat Disc and Strainer Cartridge
- Control Pressure Ranges: 15-75 psi and 75-150 psi
- NPT, Solder, PEX, CPVC and Press and Push Connections
- Maximum Supply Pressure: 400 psig
- Working Temperature Range: 33°F-180°F
- **100% Manufactured in USA**

- **OPTIONS** *New!*
- (-B) Bronze Cap
- 36E Non-LF Materials for Non-Potable Service, Such as Irrigation

- **APPROVALS**
- ASSE 1003
- CSA B356
- NSF/ANSI 372 Lead Free
- NSF/ANSI 61 Water Quality

## 35 (FF) SERIES — BRONZE FEED WATER PRESSURE REGULATOR

Available in 1/2" union threaded, threaded and solder union configurations. Purge lever/fast fill feature. Cartridge replaceable in-line.

**FEATURES**
- No Cage Screws to Rust
- Individually Set at 15 psig - Adjustable 10 to 25 psig
- Temperatures to 210°F
- Heavy Pattern Bronze Body and Spring Cover
- High Capacity
- In-Line Stainless Steel Strainer Standard
- Choice of Inlet Connections

| Model Number | Part Number | Size (in.) | Height (in.) | Length (in.) | Wt./100 (lbs.) |
|---|---|---|---|---|---|
| FF12 | 35-503-01 | 1/2 Union Threaded | 5.25 | 4.31 | 255 |
| FFT12 | 35-603-01 | 1/2 Threaded | 5.25 | 3.50 | 225 |
| FFS12 | 35-703-01 | 1/2 Solder Union | 5.25 | 3.18 | 232 |
| FFPR12 | 35-803-01 | 1/2 Press Union x NPT | 5.25 | 4.53 | 232 |

## FFB (35-603-BF) SERIES — COMBINATION BACKFLOW PREVENTER AND FEED REGULATOR

Positive protection against backflow when supply pressure falls below system pressure.

**FEATURES**
- New Design Dual Check With Atmospheric Port (DCAP) Backflow Device
- Designed for Continuous Pressure, Hot or Cold Water Service
- Fast-Fill Lever on Regulator
- Built In Stainless Steel Strainer
- Maximum Supply Pressure: 100 Psig
- Maximum Temperature: 210°F
- Backflow Device is ASSE and CSA Listed

| Series Number | Size (in.) | Height (in.) | Length (in.) | Net Wt. (lbs.) |
|---|---|---|---|---|
| **35603BFTT** | 1/2 Union NPT x NPT | 7.90 | 5.25 | 3.85 |
| **35603BFST** | 1/2 Solder Union x NPT | 7.90 | 5.25 | 3.85 |
| **35603BFTTC*** | 1/2 Union NPT x NPT | 7.90 | 5.25 | 3.85 |
| **35603BFSTC*** | 1/2 Solder Union x NPT | 7.90 | 5.25 | 3.85 |

* *"C" Models for Canadian market - Discharge port not threaded.*

## 58 (BAV) SERIES — BALANCING VALVE

Provide dependable hydronic control; for use with 1/2" and 3/4" copper piping. Pressure rated to 150 psig.

### FEATURES

- ASTM B584 Bronze
- EPDM O-Ring Seal
- Screw Slot Flow Adjustment
- **Made in USA**

| Series Number | Size (in.) | $C_v$ | Wt. (lbs.) |
|---|---|---|---|
| **58-003-01** | 1/2 Solder | 4 | .30 |
| **58-004-01** | 3/4 Solder | 14 | .5 |

## 34-200 SERIES — MIXING VALVE

The **Apollo® Model TV (34-200 Series) Thermostatic Mixing Valve** provides non-ASSE extension of water heater capacity and hot water temperature control in hydronic heating systems. Available in low or high temperature options for floor or baseboard applications.

### FEATURES

- Stainless Steel Spring
- Corrosion Resistant Bronze Body
- Thermoplastic Shuttle Assembly
- Solder Connections are Standard
- In-Line Repairable
- Fingertip Temperature Control
- **Made in USA - ARRA compliant**
- ***Not intended for potable water**

## MVA-LF (34ALF) SERIES/MVAH — MIXING VALVE

LEAD FREE CERTIFIED · C SP US · ASSE

**Apollo® MVA-LF Thermostatic Master Mixing Valves** are designed for ASSE 1017 "point of source" applications. They provide reliable hot water temperature control of potable and hydronic hot water distribution systems.

### FEATURES

- Superior Thermostatic Element Technology For Optimal Performance, Reliability and Accuracy
- Integral Inlet Strainers and Check Valves are Standard to Protect Against Cross-Flow and Foreign Particles in the Piping System
- Thermostat Over-Temperature Control
- Maximum Temperature Limit Option
- Fingertip Temperature Control
- Cold or Hot Water Supply Failure Shut-Off Protection
- Multiple Connection Options to Fit Your Specific Needs
- High Temperature Version For Hydronic/ Radiant Heating Applications
- Standard Materials of Construction Meet the Requirements of the EPA Safe Drinking Water Act
- Lead Free Construction Certified: 0.25% Lead Max
- **Made in USA - ARRA compliant**

## MVC/MVC-LF (34C/34CLF SERIES) — MIXING VALVE

LEAD FREE OPTIONS · ASSE

34C Series ASSE 1017 listed, high-capacity mixing valves are thermostatically controlled regulating valves designed for use in large commercial potable and non-potable hot water systems or "point of source" applications. Simple adjustment of water temperature from 90°-140°F or 130°-180°F.

### FEATURES

- Sizes: 3/4", 1", 1-1/4", 1-1/2", 2"
- Low Temperature Range: 90°-140°F
- High Temperature Range: 130°-180°F
- Threaded Connections
- Installs Easily on Heating Source
- Patented Design for Easy In-Line Maintenance
- Supply Pressures to 150 psig
- U.S. Patent No. 6,328,219
- CSA B125.01

## 77F/77FLF SERIES — FULL PORT THREADED FORGED BRASS BALL VALVE

LEAD FREE CERTIFIED

New!

FM APPROVED

The Apollo® 77F Series is a full port forged brass ball valve suitable for a wide range of plumbing and heating applications. These NPT threaded or solder, 2-piece valves combine reliable operation with maximum economy. Valves include most pertinent agency approvals. **Proudly Made in the USA.**

Large Diameter

Large Diameter

### FEATURES

- Heavy Pattern Forged Design
- Full Port Flow
- Superior RPTFE Seats and Packing
- Adjustable Stem Packing
- Blowout-Proof Stem
- Corrosion Resistant Materials
- 100% Factory Tested
- Popular Lever Options and Stainless Steel Trim Available
- Silicone Free Assembly
- **Made in USA, ARRA compliant**
- Rating: 600 CWP (1/4" - 2")
- Rating: 400 CWP (2-1/2" - 4")
- Steam Rating: 150 psi SWP
- Vacuum Service to 29 in. Hg

### 77FLF FEATURES

- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag
- EZ-Solder™ Lead Free Brass
- Lead Free Dezincification Resistant Brass
- NSF/ANSI 61-G Water Quality
- NSF/ANSI 372 Lead Free
- Rating: 600 CWP (1/4" - 2")
- Rating: 400 CWP (2-1/2" - 4")
- Steam Rating: 150 psi SWP
- Vacuum Service to 29 in. Hg

### APPROVALS

- MSS-SP-110
- IAPMO IGC-157 Ball Valves
- CGA 3.16 (125 PSI)
- CGA CR91-002 (5 PSI)
- ANSI Z21.15/CSA 9.1 (1/2 PSI)
- ASME B16.44 (5 PSI)
- ASME B16.33 (125 PSI) (1/2" – 2")
- FM 1140 (1/4" – 2")
- UL Guides: YSDT, MHKZ, YQNZ, YRBX & YRPV
- UL Guide VQGU (1/4" – 2")

## 70-100/200 SERIES — BRONZE BALL VALVE



The Apollo® 70 Series is the most widely used and trusted bronze ball valve in the industry. It features blowout-proof stem, RPTFE seats and stuffing box ring and plated brass ball.

- **FEATURES**
- Heavy Pattern Construction
- Rated 600 psig CWP, Non-Shock
- 150 psig for Saturated Steam
- Vacuum Service to 29 in. Hg
- Adjustable Packing Gland
- Multiple Options and Configurations Available
- Lead Free Option (70LF)
- 100% Tested
- **Made in USA**

## 70-HC SERIES — CAP & CHAIN VALVE


**CAP & CHAIN VALVE WITH 3/4" HOSE CONNECTION, HEAVY BRASS CAP AND REVERSE HANDLE**

Ideally suited for draining or sampling of HVAC or potable water systems, these valves allow direct connections to hoses. Valve features a securely attached cover (includes chain) which prevents damage to hose threads. -200 model designed for soft soldering into lines without disassembly.

**FEATURES**

- Heavy Pattern Construction
- Reverse Lever is Standard for Easier Installation
- Stainless Steel Lever & Nut Standard
- NPT and Solder Connections
- EZ-Solder™ Lead Free Bronze
- ASTM B584 Bronze
- Blowout-Proof Stem Design
- RPTFE Seats and Stuffing Box Ring
- Adjustable Packing Gland
- Vacuum Service to 29 in. Hg
- Maximum Pressure: 600 psi CWP
- Temperature Rating: 200°F
- Full Pressure Rated Brass Hose Cap
- Heavy Duty Stainless Steel Ball Chain

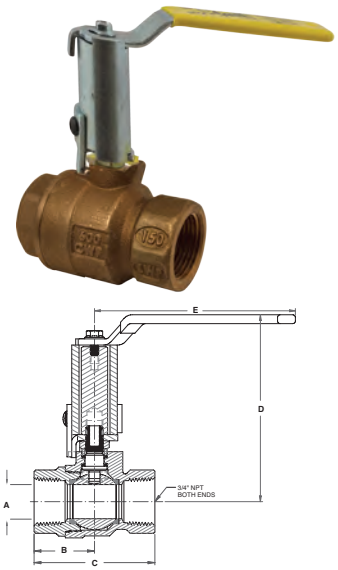
## 70-10X-92 SERIES — BALL VALVE WITH STANDARD BALANCING STOP PLATE


Designed for hydronic applications, this valve comes with a simple stop plate that fits over its standard lever handle. Also available with tee or round handles.

**FEATURES**

- Sizes 1/4" - 3"
- Chromium-Plated Ball
- RPTFE Seats and Stuffing Box Ring
- Blowout-Proof Stem
- Adjustable Packing Gland
- Rated 600 psig CWP, Non-Shock
- MSS-SP110
- CRN: 0C10908.5C
- 150 psig for Saturated Steam

## 77C-100-94-A SERIES — BALL VALVE WITH BALANCING STOP AND STEM EXTENSION




Ideal for HVAC systems. Stop plate and a 2-1/4" stem extension combination to accommodate insulation and handle repositioning.

### FEATURES

- ASTM B584 Bronze
- MPTFE Seats and Stem Packing
- Blowout-Proof Stem Design
- Adjustable Packing Gland
- 600 psig CWP, Non-Shock
- Contact Customer Service for Exact Handle Dimensions and Availability.

| Series Number | LF Series Number | Size (in.) | Dimensions (in.) | | | | | Net Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | |
| 77C-101-94-A | 77CLF-101-94-A | 1/4" | 0.37 | 1.07 | 2.09 | 3.84 | 3.74 | 0.83 |
| 77C-102-94-A | 77CLF-102-94-A | 3/8" | 0.37 | 1.07 | 2.09 | 3.84 | 3.74 | 0.79 |
| 77C-103-94-A | 77CLF-103-94-A | 1/2" | 0.50 | 1.15 | 2.25 | 3.87 | 3.74 | 0.87 |
| 77C-104-94-A | 77CLF-104-94-A | 3/4" | 0.75 | 1.32 | 2.65 | 4.10 | 4.78 | 1.99 |
| 77C-105-94-A | 77CLF-105-94-A | 1" | 1.00 | 1.53 | 3.07 | 4.29 | 4.78 | 2.16 |
| 77C-106-94-A | 77CLF-106-94-A | 1-1/4" | 1.25 | 2.04 | 4.08 | 5.24 | 7.06 | 4.63 |
| 77C-107-94-A | 77CLF-107-94-A | 1-1/2" | 1.50 | 2.21 | 4.43 | 5.40 | 7.06 | 5.03 |
| 77C-108-94-A | 77CLF-108-94-A | 2" | 2.00 | 2.76 | 5.29 | 5.93 | 7.06 | 8.33 |

## 94A SERIES — ECONOMY FULL PORT BALL VALVE - APOLLO INTERNATIONAL™

LEADFREE OPTIONS · C SA US · UL · FM APPROVED

These full port ball valves with forged brass body are UL listed and CSA approved. Ideal for general purpose non-potable applications including air, gas, HVAC, irrigation, fire protection, etc.

### FEATURES

- Adjustable Stem Packing Nut
- Meets MSS SP110 Requirements
- 600 CWP Non-Shock (1/4" - 2")
- 400 CWP Non-Shock (2-1/2" - 4")
- 2-1/4" Stem Extension with Memory Stop Option (Kit)
- 100% Factory Tested
- Lead Free Option (94ALF-A)

## 95ALF SERIES — STOP & WASTE VALVE - APOLLO INTERNATIONAL™

LEADFREE CERTIFIED

The Apollo International™ 95ALF lead free forged brass stop and waste ball valves combine reliable operation with maximum economy. Ideal for plumbing or hydronic systems where draining is required. IAPMO listed and ANSI 3rd party certified Lead Free.

### FEATURES

- Lead Free Materials and Certification
- 2 Piece, Full-Port Design
- Blowout-Proof Stem Design
- Adjustable Atem Packing Nut
- Drain Port with finger tight shut-off
- Fast, Quarter-Turn Operation

### PERFORMANCE RATING

- Valve Design Rating: 600 CWP
- Temperature Range: 32°F - 250°F

### APPROVALS

- IAPMO IGC 157
- ANSI/NSF 61-2011
- ANSI/NSF 372

### DIMENSIONS

| MODEL NUMBER | SIZE (IN.) | DIMENSIONS (IN.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **THREADED** | | | | | | |
| 95ALF-103-01 | 1/2 | 0.59 | 2.24 | 1.78 | 3.74 | - |
| 95ALF-104-01 | 3/4 | 0.79 | 2.53 | 2.09 | 3.94 | - |
| 95ALF-105-01 | 1 | 0.98 | 3.15 | 2.36 | 4.33 | - |

| MODEL NUMBER | SIZE (IN.) | DIMENSIONS (IN.) | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| **SOLDER** | | | | | | |
| 95ALF-203-01 | 1/2 | 0.59 | 2.12 | 1.78 | 3.74 | 0.63 |
| 95ALF-204-01 | 3/4 | 0.79 | 2.87 | 1.94 | 3.94 | 0.88 |
| 95ALF-205-01 | 1 | 0.98 | 3.53 | 2.36 | 4.33 | 1.13 |

## 77W SERIES — APOLLOPRESS® BRONZE FULL PORT BALL VALVE

LEADFREE OPTIONS

Apollo® 77W Series APOLLOPRESS® ball valves install in seconds, but the valve and the connection are made to last. Ideal for mechanical and heating systems. Not for use with natural gas.

### FEATURES

- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- 50 CWP, Non-Shock to 250°F max.
- MSS SP-110 Ball Valves
- Adjustable Stem Packing
- Excellent for Hydronic Heating (90% Glycol max)
- Popular Lever Options and Stainless Steel Trim Available
- **Made in the USA**

## 77W-HC SERIES — APOLLOPRESS® HOSE CAP & CHAIN BALL VALVE

LEADFREE OPTIONS

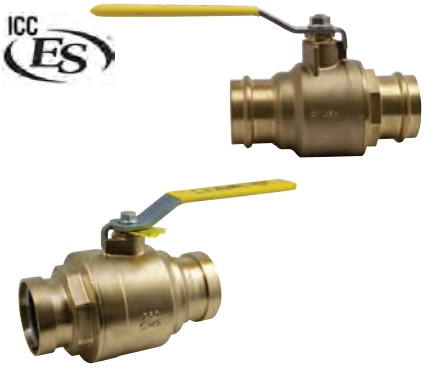
Designed for direct mechanical connection to ASTM B88-Type K,L, and M copper tubing in the hard drawn condition for sizes 1/2"-3/4". Valves feature a 3/4" hose thread connection with heavy brass cap to protect the threads and is full pressure rated. Not for use with natural gas.

### FEATURES

- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- MSS SP-110 Ball Valves
- NSF/ANSI 61-G Compliant (77WLF-HC)
- Adjustable Stem Packing
- 250 CWP, Non-Shock to 250°F max.
- Excellent for Hydronic Heating (90% Glycol max)
- Compatible with Most 77C Series Options
- Heavy Brass Dust Cover is Full Pressure Rated
- Popular Lever and Trim Options Available
- **Made in USA**

## 77V SERIES — APOLLOPRESS® BRASS BALL VALVE

ICC ES



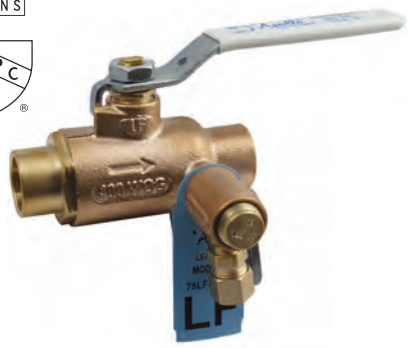
Large Diameter

The APOLLOPRESS® 77V Series two-piece press ball valve is ideal for installation in most HVAC systems. Features Leak Before Press® technology and 250 psig maximum working pressure. Proudly Made in the USA.

### FEATURES

- 2 Piece, Heavy Pattern Forged Design
- Full Port Flow
- Max. Operating Pressure 250 psi
- Temperature Range: 0°F - 250°F
- Superior RPTFE Seats and Packing
- Adjustable Stem packing
- Ridgid® XL Press Tool Compatible 2-1/2" - 4" are XLC Compatible
- Blowout-Proof Stem
- Corrosion Resistant Materials
- Silicone Free Assembly
- 100% Factory Tested
- MSS SP-110 Ball Valves
- Directive 2011/65/CE (RoHS)
- Popular Lever Options and SS Trim Available
- **Made in USA, ARRA Compliant**

## 78-RV (EXV) SERIES — SHUT-OFF VALVE WITH THERMAL EXPANSION CONTROL



The Apollo® 78RV combines thermal expansion protection and water heater shut-off in a single, simple installation. They're space saving and a less costly alternative to large expansion tanks.

### FEATURES

- 3/4" Solder, NPT, and PEX Ball Valve Connections
- Corrosion Resistant, all Bronze Materials
- Chrome-Plated Ball
- Thermal Relief Valve is Factory Preset and Sealed
- Relief Valve Features Soft Seat and Stainless Steel Spring
- Relief Valve Available with Hose Barb, 1/2" PEX, 3/8" Compression or 1/2" Combination S/Thread Fitting
- IAPMO IGC 128-2008 Approval
- Maximum Temperature: 210°F
- Meets CSA B125.1 & B125.3 Requirements
- City of Los Angeles Registered
- Multiple Relief Pressure Kit Options
- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag
- EZ-Solder™ Lead Free Bronze

### PART NUMBER MATRIX

| 78 | -X | -X | -X - RV |
|---|---|---|---|
| **SERIES** | **SIZE** | **SET PRESSURE** | **RELIEF VALVE CONNECTION** |
| 78 = Standard | 3 = 3/4 SWT | 0 = 125 psig | 4 = 3/8" Hose barb |
| 78LF = Lead Free | 4 = 3/4 THD | 1 = 100 psig | 5 = 1/2" PEX |
| | 7 = 3/4 PEX | 2 = 80 psig | 6 = 3/8" Compression |
| | | | 7 = 1/2" Solder/Thread |

## 78-RV-P (EXV) SERIES — PUSH SHUT-OFF VALVE WITH THERMAL EXPANSION CONTROL

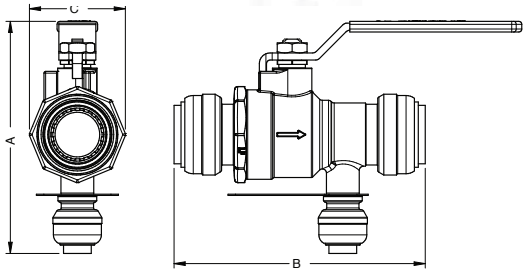
The lead free Apollo® 78-RV Series Combination Water Heater Isolation Valve/IAPMO approved Thermal Expansion Relief Device solves two Code requirements while saving time, installation space and money! Features ApolloPush technology, with fast and simple "push to connect" installation. Ideal alternative to expansion tanks in residential plumbing systems. Made in the USA, featuring lead free dezincification resistant brass materials.

### FEATURES

- Ball Valve Maximum Pressure: 200 psi
- Relief Valve Factory Set and Sealed at 125 psi Maximum
- Relief Valve Set Pressures: 80, 100, 125 psi
- Maximum Temperature: 210°F

### APPROVALS

- IAPMO IGC 128-2008
- NSF 61 Water Quality
- NSF 372 Lead Free
- CSA B125.3




### DIMENSIONS

| Size | Apollo Part Number | EPC Part Number | Dimensions (In.) | | | Port Dia. (In.) | Relief Pressure |
|---|---|---|---|---|---|---|---|
| | | | A | B | C | | |
| 3/4" | 78RV88P80 | 10177548 | 3.9 | 4.2 | 1.6 | .750 | 80 |
| 3/4" | 78RV88P100 | 10177546 | 3.9 | 4.2 | 1.6 | .750 | 100 |
| 3/4" | 78RV88P125 | 10177544 | 3.9 | 4.2 | 1.6 | .750 | 125 |

### PART NUMBER MATRIX

| 78RV | X | X | X | XXX |
|---|---|---|---|---|
| | **INLET CONNECTION** | **OUTLET CONNECTION** | **RELIEF CONNECTION** | **PRESSURE** |
| | 8 = Push | 8 = Push | P = 1/4" Push | 80 PSI<br>100 PSI<br>125 PSI |

### PUSH DEMOUNT TOOL

| Size | Apollo Part Number | EPC Part Number |
|---|---|---|
| 1/2" | D514500 | 10165630 |
| 3/4" | D514800 | 10165625 |

## GB-10 SERIES — CSA GAS SHUT-OFF VALVE

Manual shut-off valves engineered specifically for low pressure gas service. Canadian Standard Association design and capacity certified with American-made quality. High-copper content body, chrome-plated ball, and PTFE seats.

### FEATURES

- Complies with ANSI Z21.15, CR91-002, and ASME 16.44
- Use with Natural, Manufactured, Mixed and Liquefied Petroleum Gases, LP Gas-Air Mixtures
- Temperature Range: 32°F - 125°F at Pressures of 1/2 and 5 psig
- (-01) Standard Die-Cast Zinc "Wing" Handle Epoxy Coated
- (-L1) Lever Hanlde or (-T1) Tee Handle Options
- **Made in USA**

## GB-15 SERIES — GAS APPLIANCE BALL VALVE - APOLLO INTERNATIONAL™

Designed for natural gas, manufactured and mixed gas, liquefied petroleum gases and LP gas-air mixture applications.

### FEATURES

- ANSI Z21.15 (Appliance & Hose)/CGA9.1(1/2 psi)
- ASME B16.44 (5 psi)
- UL Guide YRBX (Flammable Liquid Shut-Off)
- UL Guide MHKZ (Manual Valves)
- UL Guide YRPV (Gas Shut-Off -250#)
- UL Guide YSDT (LP Gas)

## GB-50/GB-50A SERIES — CSA GAS SHUT-OFF VALVE

GB-50

GB-50A

Designed for "main burner" applications with cast-in single or dual pilot tap. ASTM B584 bronze body, chrome-plated ball, brass stem, retainer and gland screws for corrosion resistance.

### FEATURES

- For Natural Gas, Manufactured and Mixed Gas, Liquefied Petroleum Gases and LP Gas-Air Mixtures
- Rated Pressures of 1/2 and 5 psig
- Standard Connection is FNPT x FNPT
- High BTU Capacity
- Reversible Plated Steel Lever Handle.
- (-07) Tee Handle Optional

### APPROVALS

- ANSI Z21.15, CGA9.1
- ASME B16.44 (2 and 5 psig)
- MSS-SP110
- UL Guide YRBX
- UL Guide MHKZ
- UL Guide YRPV
- UL Guide YSDT
- UL 125, UL 842

## 70-100-BC SERIES — BALL VALVE WITH INTEGRAL CHECK

The 70-100-BC Series ball valve combines two functions in a single design: positive shut-off and bubble-tight check capabilities. The BC Series is a unidirectional version of the industry-standard Apollo® 70 Series ball valve. An easy flow design and superior check valve make these valves a smart choice for water or air in mechanical systems or OEM applications. Rated at 250 psi CWP and maximum temperature of 200°F.

**FEATURES**

- Blowout-Proof Stem
- RPTFE Seats and Stuffing Box Ring
- Adjustable Packing Gland
- Chrome-Plated Ball
- Positive Shut-Off and Bubble-Tight Check Capability

## 78-600 (PBS) SERIES — PURGE, BALANCE AND SHUT-OFF VALVE

Straight-through flow; all brass cover and chain prevent accidental system drainage; hose thread connection for disposal of drained media.

**FEATURES**

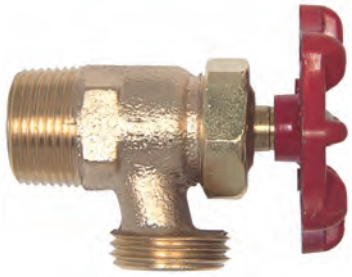
- RPTFE Seals
- Adjustable Packing
- Zinc Plated Steel Tee Handle w/ Vinyl Grips
- 600 psig CWP in Open Position

| Series Number | Description | Size (in.) | Net Wt. (lbs.) |
|---|---|---|---|
| **78-645-01** | FNPT x FNPT x Hose | 1/2 | 2.0 |
| **78-646-01** | FNPT x FNPT x Hose | 3/4 | 2.0 |
| **78-668-01** | Solder x Solder x Hose | 3/4 | 2.0 |
| **78-668-02** | Solder x Solder x Hose | 1 | 3.5 |
| **78-671-01*** | Solder x Solder x Hose | 3/4 | 1.9 |

* *Available with screwdriver slotted stainless steel stem.*

## BD90 (31-200/31-500) SERIES — 90° DRAIN VALVE

LEADFREE OPTIONS



For deluxe water heaters and low pressure boilers.

**FEATURES**

- Maximum Rated Pressure: 200 psig
- Maximum Rated Temperature: 250°F
- Red Aluminum Wheel Handle
- 31-200 Series Heavy Pattern, 3/4" MNPT Inlet
- 31-500 Series Standard Pattern, 1/2" MNPT Inlet with I.D. of NPT Thread Machined for 1/2" Copper Pipe
- (-04P) Optional Plain Finish Handle
- **Made in USA**

## BD (35-300) SERIES — BIBB FAUCET BALL VALVE

Features heavy pattern with large opening. Ideal for boiler and water heater drains, general liquid dispensing and drainage. The new 45° spout design allows for easier hose connection access.

**FEATURES**

- Chrome-Plated Finish
- Pressure Rating: 200 psig Liquid
- Maximum Temperature: 250°F
- Apollo International™

## GCB (50) SERIES — MANUAL MAIN CONTROL VALVES

CSA design certified for 1/2 psig and temperatures from 32° to 125°F. Complies to ANSI Z 21.15, CSA 9.1

**FEATURES**

- 100% Factory Tested at 10 psig
- Bronze Construction, Stainless Steel Springs
- Capacities to 7.8 Million BTU/Hour
- Equal Female Inlet/Outlet
- Bosses on Both Sides are Drilled and Tapped. Only One Side is Plugged

## GC (51) SERIES — GAS SERVICE COCKS

Tee or lever handle cocks; CSA design certified. In sizes 1/4" to 3/4".

**FEATURES**

- Capacities: 117,000 to 749,000 BTU/Hour
- Cerified to ANSI Z21.15 and CSA 9.1 (1/2 psig at Temperatures from 32°F to 125°F)
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M

## GC2 (52) SERIES — GAS SERVICE COCKS

Available with tee head, flat head, square head or lever head in sizes from 1/4" to 1". Wrench operated and tested at 125 psig.

**FEATURES**

- High Pressure Rating
- Capacities: 117,000 to 749,000 BTU/Hour
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M
- Maximum Temperature: 500°F

## GC3 (53) SERIES — GAS SERVICE COCKS

Available in male and female sizes: 1/8", 1/4" and 3/8".

**FEATURES**

- Capacities: 117,000 to 749,000 BTU/Hour
- 200 CWP
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at Temperatures from 32°F to 125°F)
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M

## GCA (54) SERIES — GAS HOSE COCKS & APPLIANCE CONNECTOR

**FEATURES**

- CSA Design Certified Bronze Gas Valves with 56,500 BTU/Hour Capacity
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psi at 32°F to 125°F)

## GCR (55) SERIES — GAS COCK WITH THROTTLE ADJUSTMENT

### FEATURES
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at 32°F to 125°F)
- Thread Size: 1/4" Male x 1/4" Female

| Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **55-302-01** | 1/4 M x 1/4 F | 33 |

## GCP (56) SERIES — GAS PILOT COCKS

### FEATURES
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at 32°F to 125°F)

| | Model Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
|  | **56-111-01** | 1/8 NPT x 1/4 Tube Plain | 15.0 |
|  | **56-112-01** | 1/8 NPT x 1/4 Tube Throttle Adjust. | 14.0 |
|  | **56-221-01** | 1/8 NPT x 1/8 FNPT Plain | 16.1 |

| | Model Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| | **56-222-01** | 1/8 NPT x 1/8 FNPT Throttle Adjust. | 16.1 |
| | **56-601-01** | 1/8 NPT x 1/4 Tube Right Hand | 17.0 |
|  | **56-602-01** | 1/8 NPT x 1/4 Tube RH Throttle Adjust | 17.0 |
| | **56-603-01** | 1/8 NPT x 1/4 Tube Left Hand. | 17.0 |
| | **56-604-01** | 1/8 NPT x 1/4 Tube LH Throttle Adjust. | 17.0 |

## 26-100/26-300 SERIES — COMPRESSION GAUGE COCKS

26-300

For draining expansion tanks, other liquid storage vessels. For condensate only. Standard finish is satin brass.

### FEATURES
- 26-100: Rated up to 125 psig
- 26-300: Soft Metal Seat/Stuffing Box Rated up to 250 psig at 400°F
- 26-310: Stainless Steel Ball Seat/Stuffing Box Rated up to 250 psig at 400°F
- 26-700: TFE Seat, Rated up to 250 psig at 400°F

## 43-100 SERIES — STEAM GAUGE COCKS

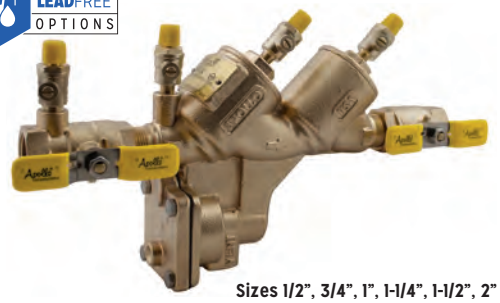
Female fitting with male union for easy installation.

### FEATURES
- Satin Brass Finish
- Standard Bottom Rated 100 SWP
- Nut Version Rated 150 SWP

### OPTIONS
- (-01) Standard Spring Bottom
- (-04) Nut Bottom

## RP 4A SERIES — REDUCED PRESSURE PRINCIPLE

LEADFREE OPTIONS



Sizes 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"

The Apollo® Series RP 4A Reduced Pressure Principle Backflow Preventer is designed to give maximum protection against backflow caused by either back-pressure or back-siphonage from substances that are hazardous. The durable but economical device is easily maintained in the line with modular check cartridge assemblies that require no special tools. It consists of two independently acting spring-loaded check valves with an automatic differential relief valve located between the check valves. All testcocks are mounted at the top of the unit to assure easy access during repair and maintenance when unit is installed in tight places.

- **FEATURES**
- Maximum Protection Against Back-Pressure/Back-Siphonage
- Modular Check Valve Cartridges w/ Easily Replaced Parts
- Reversible/Removable Chloramine-Resistant Silicone Seat Discs
- Low Head Pressure Loss
- Top Mounted Test Cocks
- Threaded Testcock Protectors
- Internal Sensing Passage
- Modular Captured Spring Relief Valve
- ASSE 1013
- CSA B64.4
- Lead-Free Option
- NSF 61/8/G/372
- Federal Public Law 111-380
- AWWA C511
- UL, ULC Classified (T2ST Option or Less Shutoffs)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- Standard with Full Port Ball Valves with Stainless Steel Handles
- Corrosion Resistant
- Maximum Working Pressure: 175 psig
- Operating Temperature Range: 33°F-180°F
- Horizontal Installation Approvals on 1/2" through 2"
- 5 Year Warranty

## AIR GAP DRAIN

For installation with RP 4A, RPDA 4A, RP 4An, RPDA 4An, and RP 40S Series Reduced Pressure Principle backflow preventers.

The Apollo® Air Gap Drain (AGD) is designed to funnel minor relief valve discharges, due to line pressure fluctuations and /or minor check valve fouling, into the drainage system. Drain piping is easily attached to the drain's threaded bottom.

Note: The AGD is designed to collect expected minor discharges due to fouled checks or pressure fluctuations but not the full discharge capacity of the relief valve.

## DCAP SERIES — DUAL CHECK WITH ATMOSPHERIC PORT BACKFLOW PREVENTER

LEADFREE OPTIONS

The Apollo® DCAP Series Backflow Preventer is designed to protect residential and commercial water supply lines from back-siphonage or back-pressure of non-potable (non-hazardous) substances. It has an intermediate atmospheric vent to insure protection from backflow conditions. It consists of two independently acting and spring-loaded check valves in a corrosion resistant material.

### FEATURES

- Corrosion Resistant
- Low Head Loss
- Independently Acting Check Valves
- Ease of Repair and Installation
- Economical
- Suitable for Hot or Cold Water Service
- Durable
- Lead Free Option
- Maximum Working Pressure: 175 psig
- ASSE 1012
- CSA B64.3
- Inlet Temperature Range: 33°F-210°F
- 5 Year Warranty
- Maximum Backflow Temperature: 250°F

## CVBE (61-500 & 61-600) SERIES — IN-LINE SOFT SEAT CHECK VALVE

LEAD FREE OPTIONS

**61-500**
**Female x Female Threaded**
**1/4" through 2"**

**61-600**
**Female x Female Sweat**
**1/2" through 2"**


The Apollo® Model CVBE check valve is ideally suited for hydronic heating and other low flow applications. The rugged bronze body and check provide reliable protection against reverse flow.

### FEATURES

- Female NPT Sizes: 1/4" to 2"
- Stainless Steel Sizes: 1/4" to 1"
- Bubble-Tight Shut-Off, Ideally Suited for Gaseous Service
- NPT Threaded; 400 psig CWP Non-Shock @ 100°F
- EPDM Check Disc (61-500)
- Viton® Check Disc (62-500)
- Straight-Through Design Minimizes Pressure Loss
- 1/2 psi Cracking Pressure
- RoHS Compliant (61LF and 62 Series)

## CVSE (62-500) SERIES — IN-LINE SOFT SEAT CHECK VALVE

LEAD FREE OPTIONS

The Apollo® Model CVSE is ideal for fluid flow applications in tough industrial environments. The stainless steel body and check provide lasting protection against reverse flow.

### FEATURES

- Bubble-Tight Shut-Off, Ideally Suited for Gaseous Service
- 400 psig CWP non-shock
- Viton® Check Disc
- Approximate Opening Pressure 1/2 psi
- RoHS Compliant
- CRN OC 11218.5C

## MODEL 101S/101S-LF — SOLDER END RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## MODEL 101T/101T-LF — NPT END RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## MODEL 102S/102S-LF — SOLDER END RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## MODEL 101T/101T-LF — NPT END NON-RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## MODEL 161S/161S-LF BRONZE DISC SWING CHECK

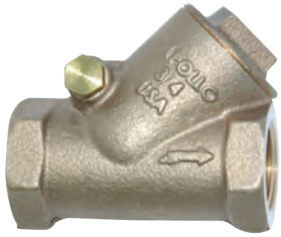
LEADFREE OPTIONS

### FEATURES
- Y-Pattern
- Solder Ends
- Metal Seat
- 200 CWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## MODEL 161T/161T-LF CLASS 125 BRONZE DISC SWING CHECK

LEADFREE OPTIONS



### FEATURES
- Y-Pattern
- NPT
- Metal Seat
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

## 59 (YB) SERIES — BRONZE WYE STRAINER

LEAD FREE OPTIONS

Large volume design for excellent protection against foreign particles in your fluid system. Corrosion-resistant bronze body and stainless steel screens provide years of service.

### FEATURES

- Blowout Ball Valve Option (1/2" - 2")
- Operating Pressure to 400 CWP at 150°F (up to 3")
- 125 psig SWP @ 350° F
- Removable Self-Aligning Screen
- Large Net Flow Area for Longer Maintenance Intervals
- 59-400 Series is Female x Male NPT (3/4" & 1" Only)
- CRN-0E 8959.5
- NSF/ANSI 372 Lead Free (59LF)
- Several Screen and Cap Options
- **Made in USA, ARRA Compliant**

## 59-300 (YBS) SERIES — BRONZE WYE STRAINER - SOLDER

LEAD FREE OPTIONS

Designed with minimal wall thickness at solder ends to allow ease of installation. Corrosion-resistant bronze bodies, stainless steel screens with large screen area.

### FEATURES

- Operating Pressures to 400 CWP at 150°F
- Sizes: 1/2" to 3" Copper Tube Size
- Optional Tapped Caps Available
- NSF/ANSI 372 Lead Free (59LF)
- 59LF features EZ-Solder™ Bronze

## YCT SERIES — CAST IRON WYE STRAINER

LEAD FREE CERTIFIED

New!

Install these durable strainers upstream in almost any application to protect valves, regulators, solenoids and meters from rust, dirt and pipe scale.

### FEATURES

- 20 Mesh Screens Standard to 2"; .045 perf. 2-1/2" to 3", Others Available
- Graphite Gasketed Cover for Easy Screen Cleaning
- Standard Tapped Cap with Plug
- Sizes: 1/4" to 3"
- Connections are NPT to ASME/ANSI B1.20.1
- Working Pressure (non-shock): CWP 400 PSI @ -20°F - 150°F SWP 250 PSI

### APPROVALS

- NSF/ANSI 372

## EXT (16XT) SERIES — EXPANSION TANKS FOR NON-POTABLE SYSTEMS

Apollo® non-potable expansion tanks help maintain balanced pressure throughout a hot water heating system by absorbing thermal expansion. Pre-pressurized, they're designed to prevent system damage and unnecessary discharges by relief valves and ensure long, trouble-free system life.

### FEATURES

- Chlorobutyl Diaphragm
- Durable Triple-Coated Epoxy Grey Finish
- Field Adjustable Charge
- Hex Flat NPT Connection
- Vertical or Horizontal Mount
- Glycol Compatible
- Drawn Steel Construction
- Maximum Pressure: 150 psi
- Maximum Temperature: 200° F
- Pre-Charge Pressure: 12 psig

| Model Number | Part Number | Capacity (gal.) | Exp. Volume (gal.) | Connection Size (NPT) | Diameter (in.) | Height (in.) | Weight (lbs.) |
|---|---|---|---|---|---|---|---|
| **EXT2** | 16XT1-04 | 2.1 | 1.2 | 1/2 | 8.5 | 12.5 | 4.25 |
| **EXT5** | 16XT3-04 | 4.8 | 3.5 | 1/2 | 11 | 15.0 | 7.5 |
| **EXT7** | 16XT5-04 | 6.0 | 4.2 | 1/2 | 11.0 | 16.63 | 8.75 |
| **EXT14** | 16XT7-04 | 14 | 5.6 | 1/2 | 15.37 | 23.5 | 19 |

## EXTP (40XT) SERIES — EXPANSION TANKS FOR POTABLE SYSTEMS

LEAD FREE CERTIFIED

NSF

UPC

Designed to protect closed water supply systems, appliances and piping from the hazards of thermal expansion, such as premature water heater failure. Installs easily on direct fired gas, oil and electric hot water heaters and storage tanks. Their pre-pressurized steel design includes an expansion membrane that stops any contact between the water and air in the tank.

### FEATURES

- Food Quality Chlorobutyl Diaphragm
- Drawn Steel Construction
- Durable Triple-Coated Epoxy Almond Finish
- Field Adjustable Pressure Setting
- Corrosion Resistant Liner Connection
- Lead Free Certified
- Maximum Pressure: 150 psi
- Maximum Temperature: 200° F
- Pre-Charge Pressure: 35 psig

| Model Number | Part Number | Capacity (gal.) | Exp. Volume (gal.) | Connection Size (NPT) | Diameter (in.) | Height (in.) | Weight (lbs.) |
|---|---|---|---|---|---|---|---|
| **EXTP2** | 40XT1-04 | 2.1 | 1.2 | 3/4 | 8.0 | 12.5 | 4.7 |
| **EXTP5** | 40XT3-04 | 4.5 | 3.2 | 3/4 | 11.0 | 15.0 | 8 |
| **EXTP10** | 40XT5-04 | 10 | 5.2 | 3/4 | 11.5 | 20 | 13.5 |

Maximum expansion volume is based on 35 psi.

## 27-400 SERIES — STEAM GAUGE SIPHON

27-401

27-402

For pressure gauge protection. Condensate trap protects dial pressure gauges from direct steam contact.

**FEATURES**

- Heavy Gauge Seamless Brass Tubing
- 27-401 is 180° loop, 27-402 is 90° loop
- Service Rating: 250 psig Saturated Steam, 400 psig at 100°F

## 20-100 SERIES — STANDARD PATTERN BRONZE WATER GAUGES

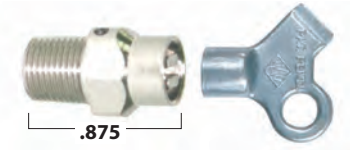
LEADFREE OPTIONS

Use for all types of liquid level verification; available with 3/8" or 1/2" NPT male pipe connections. Aluminum or plastic composition hand wheels; EPDM gauge glass gaskets standard. Other glass gaskets available.

**FEATURES**

- Ball Checks Standard on **20-150** Models
- Equipped with Two Copper Guard Rods
- Standard 1/4" Needle Drain Valve in Lower Arm
- Rated: 125 psig @ 350°F, 300 psig @ 100°F
- CRN Registered

## 27-200 (RAV) SERIES — RADIATOR AIR VALVE - APOLLO INTERNATIONAL™




Manual air purge valves for hot water radiators/heating systems.

| Series Number | Size | Net Wt. (lbs.) |
|---|---|---|
| **27-202-02** | 1/8 NPT | 2.0 |
| **H-2404-00** | Key only | 0.9 |

## Basic Heat Transfer Calculation

$$q\left(\frac{Btu}{hr}\right) = \dot{m}\ c_p\ \Delta t$$

$$\frac{Btu}{hr} = \left|\frac{lb}{hr}\right|\left|\frac{Btu}{lb.\text{-}°F}\right|\left|°F\right|$$

$$q\left(\frac{Btu}{hr}\right) = Q\ \ 500\ \ c_p\ \ \Delta t$$

$$q\ \frac{Btu}{hr} = \left|\frac{Q\ Gal}{min}\right|\left|\frac{60\ min}{hr}\right|\left|\frac{8.34\ lb}{Gal}\right|\left|\frac{Btu}{lb.\text{-}°F}\right|\left|°F\right|$$

q = heat transfer (Btu/hr.)
Q = flow rate (gpm)
$c_p$ = specific heat of fluid
Δt = change in fluid temperature °F

## Flow Rate Calculation based on $C_v$

$$Q = C_V \sqrt{\frac{\Delta P}{SG}}$$

Q = flow rate (gpm)
$C_v$ = device flow coefficient
ΔP = change in fluid pressure across the device (psi)
SG = Specific Gravity of fluid

## System Curve (Circulator performance)

$$\left(\frac{Q_2}{Q_1}\right)^2 = \left(\frac{h_2}{h_1}\right)$$

$$\left(\frac{Q_2}{Q_1}\right)^3 = \left(\frac{P_2}{P_1}\right)$$

Q = flow rate at known or new condition (gpm)
h = change in fluid head (pressure) (psi or feet head)
P = work to move fluid (pumping horsepower)

## Pressure vs. Head Conversion

$$\frac{Area}{\rho}$$

$$\left|\frac{Ft^3}{62.4\ lb.}\right|\left|\frac{144\ in^2}{1\ Ft^2}\right| = 2.31\frac{ft}{psi}$$

Relationship of Water Pressure in Feet to PSI
ρ = fluid density ($lb/ft^3$)
*Head incorporates velocity and static pressure and is typically used for expressing pressure (and pump energy) on pump curves in hydronic systems*

## Power Curve (Circulator performance)

$$P_{HP} = \frac{Q \times h}{3960 \times \eta_P}$$

$P_{HP}$ = pumping horsepower (work to move fluid)
Q = flow rate at operating condition (gpm)
h = fluid head (feet head)
$\eta_p$ = pump efficiency at operating point

**Energy:**
1 Watt hour = 3.413 btu
1 Kilowatt hour = 3,413 btu
1 Therm = 100,000 btu
1MMBtu = 1,000,000 btu

**Power and Heat Flow:**
1 Kilowatt = 3,413 btu/hr
1 Ton = 12,000 btu/hr
1 Horsepower = 0.746 kilowatt = 2546 btu/hr

**Temperature:**
°C = (°F - 32)/1.8
°F = (°C x 1.8) + 32

**Weight and Volume:**
1 Gal water = 8.34 lbs
1 Cubic foot water = 62.4 lbs
1 Cubic foot water = 7.482 gal

**Steam Conversion Factors:**
Boiler horsepower (BHP) x 34.5 = lb. of steam water per hr. (lb/hr)
Boiler horsepower (BHP) x 0.069 = Gal of water per minute (gpm)

**Making or Melting Ice:**
Latent Heat of *Fusion* – Requires 143.5 btu per lb. at 32°F

**Heating or Cooling Liquid Water:**
Sensible Heat – Requires 1 btu per lb. per °F

**Vaporizing Water (Steam):**
Latent Heat of *Vaporization* – Requires 970 btu per lb. at 14.7 psia

**Heat from Combustion:**
Natural Gas (Typical) – 1000 btu per cubic foot
Propane – 2550 per cubic foot
No. 2 Fuel Oil – 138,000 btu per gallon

| Friction | 0.85 ft/100 | 4.5 ft/100 | Heat Transfer Capacity | | | |
|---|---|---|---|---|---|---|
| Steel Pipe Size | Min Flow GPM | Max Flow GPM | Btu/Hr 20° Δt | Btu/Hr 50° Δt | Btu/Hr 12° Δt | Tons |
| ½″ | 0.75 | 2 | 20,000 | 50,000 | 12,000 | 1.00 |
| ¾″ | 1.5 | 4.25 | 42,500 | 106,250 | 25,500 | 2 |
| 1″ | 4 | 8.5 | 85,000 | 212,500 | 51,000 | 4.25 |
| 1¼″ | 7 | 17 | 170,000 | 425,000 | 102,000 | 8.5 |
| 1½″ | 10.5 | 26 | 260,000 | 650,000 | 156,000 | 13 |
| 2″ | 20 | 50 | 500,000 | 1,250,000 | 300,000 | 25 |
| 3″ | 60 | 145 | 1,450,000 | 3,625,000 | 870,000 | 72.5 |
| 4″ | 120 | 300 | 3,000,000 | 7,500,000 | 1,800,000 | 150 |
| 5″ | 220 | 525 | 5,250,000 | 13,125,000 | 3,150,000 | 262.5 |
| 6″ | 350 | 850 | 8,500,000 | 21,250,000 | 5,100,000 | 425 |
| 8″ | 700 | 1800 | 18,000,000 | 45,000,000 | 10,800,000 | 900 |
| 10″ | 1300 | 3300 | 33,000,000 | 82,500,000 | 19,800,000 | 1650 |
| 12″ | 2100 | 5250 | 52,500,000 | 131,250,000 | 31,500,000 | 2625 |

MIXING **VALVES**

## 34-200 SERIES

Apollo® 34 Series Mixing Valves help extend hot water supply and enhance the life and accuracy of hydronic thermostats in residential and small commercial systems. These valves may be used to increase draw capacity of automatic storage water heaters. They save hot water and energy by automatically regulating the mix of hot water with cold. Water temperatures can be adjusted by simply turning the yellow knob to the desired setting.

- Sizes 1/2", 3/4"; Solder
- Corrosion Resistant Bronze Body and Stainless Steel Spring
- Easy Installation
- For Tankless Coils, Water Heaters, Boilers and Solar Energy Systems
- Outlet Temperatures from 120° to 130°F (110° to 150°F Optional)

## 34ALF-H SERIES

Apollo® 34ALF-H Series Mixing Valves are ideal for use with domestic and commercial boilers and all types of radiant systems. They are available in a variety of pipe end connections and are equipped with element over-travel protection. Also the 34H Series mixing valves offer integral checks to prevent cross-connection of temperatures.

- Sizes 1/2", 3/4", 1"
- Maximum Rated Working Pressure of 125 psig
- Mixed Temperature Range of 120° to 180°F
- Corrosion Resistant Cast Bronze Body
- Union Tailpieces and Union Nuts, Standard
- Designed to Make Maintenance Fast and Easy
- Glass-Filled Noryl® Shuttle

## 34A-LF SERIES

Apollo® 34A-LF Series Mixing Valves provide thermostat control of temperatures in residential, commercial and non-potable hot water systems. They are ASSE 1017 certified and designed for use with water heaters and boilers. During operation, the valve redistributes and extends safe hot water from the heater to various sections of a building's water system. 34A-LF Series mixing valves offer integral checks to prevent cross-connection of temperatures. They also enable the contractor to direct mount the unit to the heater or boiler instead of heat trapping the valve.

- Sizes 1/2", 3/4", 1"
- Highest Flow Capacity in its Class
- Maximum Rated Working Pressure of 125 psig
- Easy Temperature Control From 85° to 140°F
- Corrosion Resistant Cast Bronze Body
- Union Tailpieces and Union Nuts, Standard
- Easily Accessible Internals Allow In-Line Servicing
- Glass-Filled Noryl® Shuttle

## 34B-LF SERIES

Apollo® 34B-LF Series thermostatic mixing valves are dual ASSE 1070 and 1017 certified for point-of-use applications and provide enough capacity to protect up to twelve separate fixtures while maintaining an accuracy of +/- 3°F. They offer easy adjustment of water temperatures. In accordance with ASSE 1070 standards, Series 34B valves come with maximum set point control features.

- Sizes 1/2", 3/4", 1"
- Controlled Temperatures from Full Cold up to 120°F.
- Corrosion Resistant Bronze Body
- Union Tailpieces and Nuts, Standard
- NPT, Solder, CPVC and PEX Connections
- In-Line Repairable
- Glass-Filled Noryl® Shuttle
- Factory Equipped with Integral Checks and Strainers
- Locking Cap Feature

## 34CLF SERIES

Apollo® 34CLF Series high capacity mixing valves are ASSE 1017 certified. Also available in a high temperature model, these large capacity valves are designed for use in large commercial and institutional hot water systems.

- Sizes 3/4"- 2"
- Industry Leading Flow Rates
- Corrosion Resistant Cast Bronze Body
- Stainless Steel and Thermoplastic Internals
- Maximum Rated Pressure of 150 Psig
- All Replaceable Parts Accessible From Single Point
- Controlled Temperature Range of 90˚ to 140˚F (130˚ to 180˚F Optional)
- In-Line Repairable
- Glass-Filled Noryl® Shuttle
- Optional Non Lead Free for Non-Potable Water

## 34D-LF SERIES

Apollo® 34D Series Thermostatic "Mini Mixer" Valves are dual ASSE 1070 certified and designed as the ultimate single fixture valve, with a mixed accuracy of +/- 2˚F. Two designs are available depending on the application; single outlet design for sensor type faucets and double outlet design for standard connections.

- Compact, Space Saving Design
- 3/8" x 3/8" Compression Connections
- Factory Equipped with Integral Checks
- Corrosion Resistant Cast Bronze Body
- Stainless and Thermoplastic Internals
- Bypass Tee Option for Cold Water Connection
- Chrome Plating Option

## 34E/34E-LF SERIES

Apollo® 34E Emergency Mixing Valves are designed to control the cold and hot water temperature to deliver tepid water at a predetermined temperature to emergency eyewash/facewash fixtures. The device provides a precise temperature and flow control in the event of cold water, hot water and thermostatic element failures. Complies with ANSI Z358.1-2009 & ASSE 1071-2008.

- Hot and Cold Water Supply Failure Protection Patented Design (US Patent 6,926,20 B2)
- Tepid Water Temperature Limit Control and Adjustment
- Tepid Water Temperature Adjustment Handle with Locking Mechanism for Tamper-Resistant Protection and Inadvertent Adjustment
- Integral Inlet Check Valves and Strainers to Provide Protection Against Cross-Flow And Foreign Particles
- Superior Thermostatic Element Technology for Optimum Reliability, Dependability and Accuracy
- Thermostatic Element Failure and Over-Travel Protection
- High Efficiency and Positive Shut-Off Check Valves
- In-Line Accessibility and Serviceability of Failure Protection Module and Mixing Valve Internal Components
- Meets the Requirements of the EPA Safe Drinking Water Act
- Corrosion Resistant Components
- Single Cartridge Design of Failure Protection Module for Easy Service and Maintenance

## 34HL SERIES

Apollo® 34HL single assembly controls mixed water temperatures to multiple-outlet shower and sink installations. It's the ideal choice in new construction or retrofits in nursing homes, prisons, hospitals, schools, gymnasiums, airports and other facilities where constant safe water temperature needs to be maintained at several outlets without the use of independent ASSE 1016 shower valves.

- Capable of Maintaining Safe, Consistent Temperature Control of Water at Low and High Flows to Within ± 3.6° F
- Provides Consistent Temperature Control at Flow Rates as High as 60 GPM and as Low as 1.5 GPM, Including Mid-Range Flow Between High and Low
- Does Not Require Recirculation Pumps Like Other Systems in Order to Achieve Low Flow Control
- Integral Strainers and Checks are Provided at the Hot and Cold Supply Inlets for Greater Reliability and Performance
- Units Can Be Mounted in Parallel for Extra Large Flow Requirements

## MVA-LF (34ALF) SERIES/MVAH HYDRONIC SERIES

LEADFREE CERTIFIED · C SP US · ASSE 1017


Apollo® MVA-LF Thermostatic Master Mixing Valves are designed for ASSE 1017 "point of source" applications. They provide reliable hot water temperature control of potable and hydronic hot water distribution systems.

### FEATURES

- Superior Thermostatic Element Technology For Optimal Performance, Reliability and Accuracy
- Integral Inlet Strainers and Check Valves are Standard to Protect Against Cross-Flow and Foreign Particles in the Piping System
- Thermostat Over-Temperature Control
- Maximum Temperature Limit Option
- Fingertip Temperature Control
- Cold or Hot Water Supply Failure Shut-Off Protection
- Multiple Connection Options to Fit Your Specific Needs
- High Temperature Version For Hydronic/Radiant Heating Applications
- Lead Free Construction Certified: 0.25% Lead max
- **Made in USA - ARRA compliant**

### OPTIONS

- (-B) Temperature Limit Stop (120° F max)
- High Temp Range (H) Radiant Heat Application 120°F - 180°F (Not ASSE Certified) See 34A-H submittal sheet

### APPROVALS

- ASSE 1017 - Temperature Actuated Mixing Valve for Hot Water Distribution Systems
- CSA B125.3 - Plumbing Supply Fittings
- NSF/ANSI 372 - Lead Free
- NSF/ANSI 61 - Water Quality

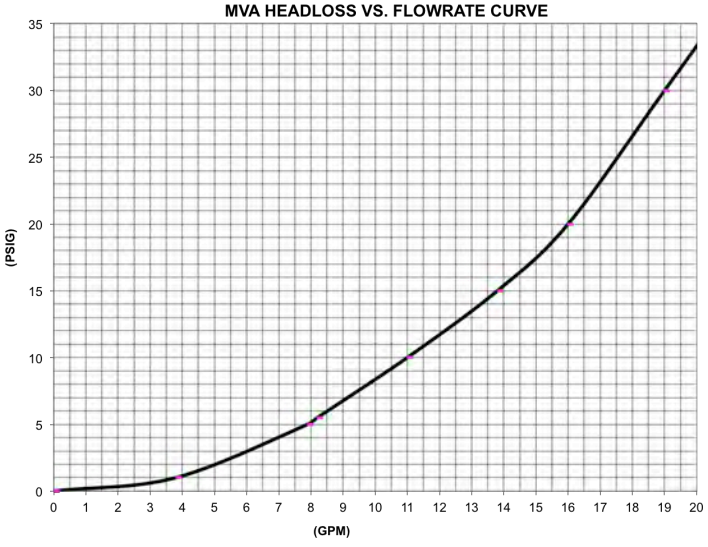
### PERFORMANCE RATING

| | |
|---|---|
| Maximum Working Pressure: | 150 psig (1034 kPa) |
| Maximum Working Temperature: | 210°F (99°C) |
| Cold Water Inlet Temperature Range: | 39°-80°F (4° - 27°C) |
| Hot Water Inlet Temperature Range: | 120° - 200°F (49° - 82°C) |
| Minimum Flow Rate: | 1/2 gpm (1.9 lpm) |
| Mixed Water Temp. Range - Standard: | 85° - 120°F |
| Mixed Water Temp. Range - High: | 120° - 180°F |
| Mixed Water Temperature Tolerance: | ±5°F (1.7°C) |
| Flow Rate at 30 psig (138 kPA): | 19 gpm (64 lpm) |
| Maximum Pressure Differential Between Hot & Cold: | 25% |

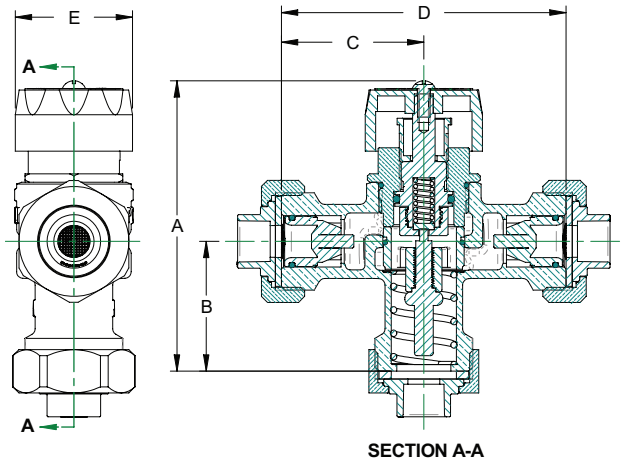
### STANDARD MATERIAL LIST

| | |
|---|---|
| **BODY** | C89836 Lead Free Bronze |
| **SHUTTLE** | Noryl® Modified PPO (Polyphenylene Oxide) |
| **SENSOR** | Copper/Wax Filled |
| **O-RING** | Chloramine Resistant EPDM |
| **SPRING** | ASTM A313 Stainless Steel |
| **CAP** | ABS (Acrylonitrile Butadiene Styrene) |

MVA HEADLOSS VS. FLOWRATE CURVE



## MVA-LF (34ALF) SERIES/MVAH HYDRONIC SERIES




| Model No. | Order No. | Connection | Dimensions (in.) | | | | | | Unit Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | |
| MVA12-LF | 34ALF213T | 1/2" FNPT | 3.73 | 2.11 | 2.28 | 4.56 | 1.87 | 0.73 | 2.8 |
| MVA34 -LF | 34ALF214T | 3/4" FNPT | | | | | | 0.77 | 2.8 |
| MVA1 -LF | 34ALF215T | 1" FNPT | | | | | 2.12 | 0.94 | 2.9 |
| MVAS12 -LF | 34ALF213S | 1/2" Solder | | | | | 1.87 | 0.81 | 2.5 |
| MVAS34 -LF | 34ALF214S | 3/4" Solder | | | | | | 0.81 | 2.6 |
| MVAS1 -LF | 34ALF215S | 1" Solder | | | | | 2.12 | 0.94 | 2.7 |
| MVAC12 -LF | 34ALF213C | 1/2" CPVC | | | | | 1.87 | 0.58 | 2.4 |
| MVAC34 -LF | 34ALF214C | 3/4" CPVC | | | | | | 0.80 | 2.4 |
| MVAC1 -LF | 34ALF215C | 1" CPVC | | | | | 2.12 | 1.09 | 2.5 |
| MVAX12 -LF | 34ALF213X | 1/2" PEX | | | | | 1.87 | 0.83 | 2.5 |
| MVAX34 -LF | 34ALF214X | 3/4" PEX | | | | | | 0.83 | 2.6 |
| MVAX1 -LF | 34ALF215X | 1" PEX | | | | | 2.12 | 1.04 | 2.7 |

| Size (in.) | Connection | Standard Temp (85° - 140°F) | | Cal. Max. Temp (120°F) | | Radiant High Temp (120° - 180°F)* | |
|---|---|---|---|---|---|---|---|
| | | Model No. | Order No. | Model No. | Order No. | Model No. | Order No. |
| 1/2" | Solder inlets X Solder outlet | **MVAS12LF** | **34ALF213S** | **MVABS12LF** | **34ALF213BS** | **MVAHS12LF** | **34ALF213HS** |
| | FNPT inlets X FNPT outlet | **MVA12LF** | **34ALF213T** | **MVAB12LF** | **34ALF213BT** | **MVAH12LF** | **34ALF213HT** |
| | CPVC inlets X CPVC outlet | **MVAC12LF** | **34ALF213C** | **MVABC12LF** | **34ALF213BC** | | |
| | PEX inlets X PEX outlet | **MVAX12LF** | **34ALF213X** | **MVABX12LF** | **34ALF213BX** | | |
| | Solder inlets X CPVC outlet | **MVASC12LF** | **34ALF213SC** | **MVABSC12LF** | **34ALF213BSC** | | |
| | FNPT inlets X CPVC outlet | **MVATC12LF** | **34ALF213TC** | **MVABTC12LF** | **34ALF213BTC** | | |
| | PEX inlets X CPVC outlet | **MVAXC12LF** | **34ALF213XC** | **MVABXC12LF** | **34ALF213BXC** | | |
| | CPVC inlets X PEX outlet | **MVACX12LF** | **34ALF213CX** | **MVABCX12LF** | **34ALF213BCX** | | |
| | PRESS inlets X PRESS outlet | **MVAPR12LF** | **34ALF213PR** | **MVABPR12LF** | **34ALF213BPR** | | |
| 3/4" | Solder inlets X Solder outlet | **MVAS34LF** | **34ALF214S** | **MVABS34LF** | **34ALF214BS** | **MVAHS34LF** | **34ALF214HS** |
| | FNPT inlets X FNPT outlet | **MVA34LF** | **34ALF214T** | **MVAB34LF** | **34ALF214BT** | **MVAH34LF** | **34ALF214HT** |
| | CPVC inlets X CPVC outlet | **MVAC34LF** | **34ALF214C** | **MVABC34LF** | **34ALF214BC** | | |
| | PEX inlets X PEX outlet | **MVAX34LF** | **34ALF214X** | **MVABX34LF** | **34ALF214BX** | | |
| | Solder inlets X CPVC outlet | **MVASC34LF** | **34ALF214SC** | **MVABSC34LF** | **34ALF214BSC** | | |
| | FNPT inlets X CPVC outlet | **MVATC34LF** | **34ALF214TC** | **MVABTC34LF** | **34ALF214BTC** | | |
| | PEX inlets X CPVC outlet | **MVAXC34LF** | **34ALF214XC** | **MVABXC34LF** | **34ALF214BXC** | | |
| | CPVC inlets X PEX outlet | **MVACX34LF** | **34ALF214CX** | **MVABCX34LF** | **34ALF214BCX** | | |
| | PRESS inlets X PRESS outlet | **MVAPR34LF** | **34ALF214PR** | **MVABPR34LF** | **34ALF214BPR** | | |
| 1" | Solder inlets X Solder outlet | **MVAS1LF** | **34ALF215S** | **MVABS1LF** | **34ALF215BS** | **MVAHS1LF** | **34ALF215HS** |
| | FNPT inlets X FNPT outlet | **MVA1LF** | **34ALF215T** | **MVAB1LF** | **34ALF215BT** | **MVAH1LF** | **34ALF215HT** |
| | CPVC inlets X CPVC outlet | **MVAC1LF** | **34ALF215C** | **MVABC1LF** | **34ALF215BC** | | |
| | PEX inlets X PEX outlet | **MVAX1LF** | **34ALF215X** | **MVABX1LF** | **34ALF215BX** | | |
| | Solder inlets X CPVC outlet | **MVASC1LF** | **34ALF215SC** | **MVABSC1LF** | **34ALF215BSC** | | |
| | FNPT inlets X CPVC outlet | **MVATC1LF** | **34ALF215TC** | **MVABTC1LF** | **34ALF215BTC** | | |
| | PEX inlets X CPVC outlet | **MVAXC1LF** | **34ALF215XC** | **MVABXC1LF** | **34ALF215BXC** | | |
| | CPVC inlets X PEX outlet | **MVACX1LF** | **34ALF215CX** | **MVABCX1LF** | **34ALF215BCX** | | |
| | PRESS inlets X PRESS outlet | **MVAPR1LF** | **34ALF215PR** | **MVABPR1LF** | **34ALF215BPR** | | |

*To order Repair Kits use part numbers 34A200HRK (high temp.), 34A200RK (std. temp.)*

** High temperature models are not ASSE certified.*

**Limited quantities of non-lead free models available. Contact Customer Service for availability.**

## MVB-LF (34BLF SERIES)

LEADFREE CERTIFIED
C SP US
ASSE 1017 1070


Apollo® Model MVB-LF (34B-LF Series) Thermostatic Mixing Valves are designed to control and limit the volumes of cold and hot water required to deliver mixed water at a predetermined temperature either from the "point of source" or "point of use" application for single or multiple fixtures.

### FEATURES

- Highest Capacity That Meets ASSE 1070
- Superior Thermostatic Element Technology for Optimum Reliability, Dependability and Accuracy
- Integral Strainers and Check Valves Provide Protection Against Cross-Flow and Foreign Particles
- Thermostat Over-Temperature Protection
- Tamper Resistant Locking Cap Feature
- Maximum Temperature Setting Adjustment
- Meets the Requirements of the EPA Safe Drinking Water Act
- Instantaneous Cold or Hot Water Supply Failure Shut-Off Protection
- Multiple Connection Options to Fit Your Specific Needs
- Lead Free Construction Certified: 0.25% Lead max
- **Made in USA - ARRA Compliant**

### APPROVALS

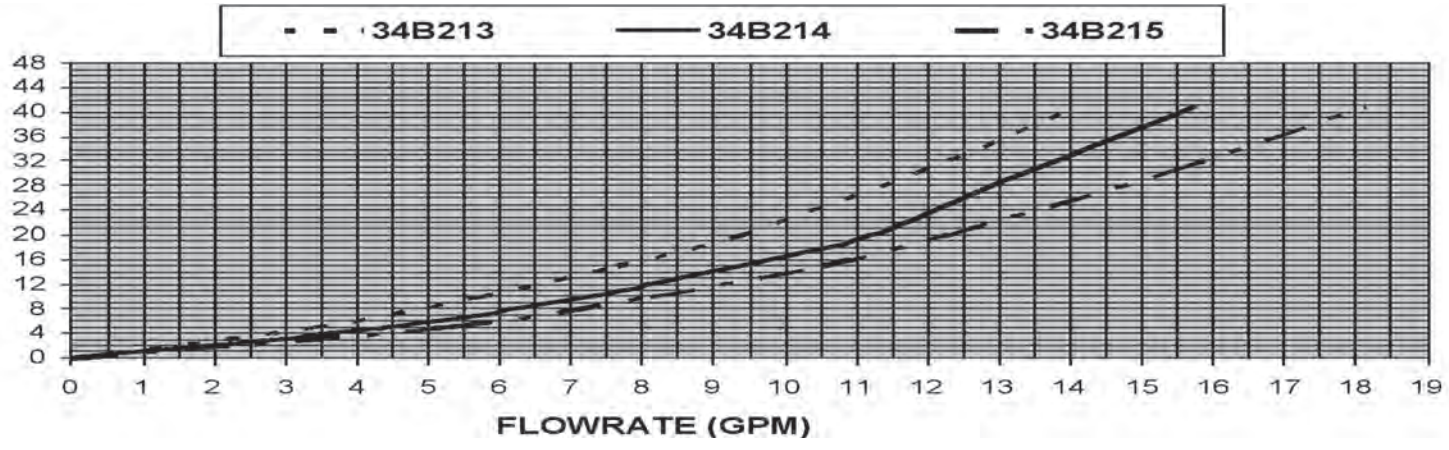
- ASSE 1017 - Temperature Actuated Mixing Valve for Hot Water Distribution Systems
- ASSE 1070 - Water Temperature Limiting Device
- CSA B125.3 - Plumbing Supply Fittings
- NSF/ANSI 372 - Lead Free
- NSF/ANSI 61 - Water Quality

### STANDARD MATERIAL LIST

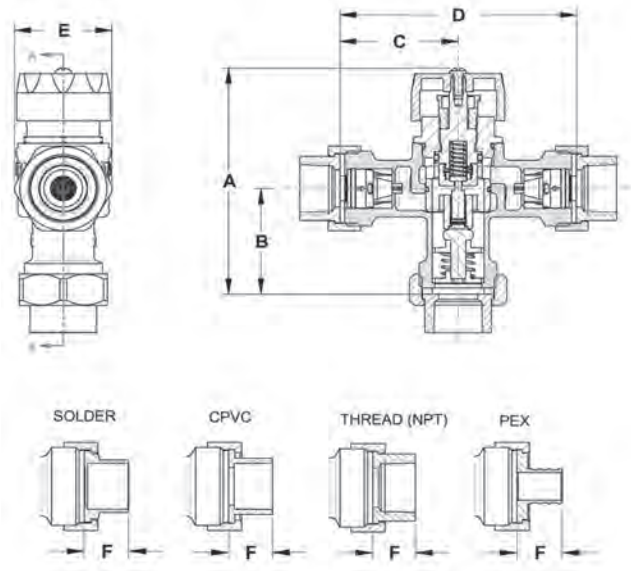
| | |
|---|---|
| **BODY** | C89836 Lead Free Bronze |
| **SHUTTLE** | Noryl® Modified PPO (Polyphenylene Oxide) |
| **SENSOR** | Copper/Wax Filled |
| **O-RING** | Chloramine Resistant EPDM |
| **SPRING** | ASTM A313 Stainless Steel |
| **CAP** | ABS (Acrylonitrile Butadiene Styrene) |

### PERFORMANCE RATING

- Maximum Supply Pressure: 150 psig (1034 kPA)
- Maximum Working Temperature: 200°F (83°C)
- Cold Water Inlet Temperature Range: 39° - 80°F
- Hot Water Inlet Temperature Range: 120° - 180°F (49° - 82°C)
- Mixed Water Temperature Range: 80° - 120°F (27° - 49°C)
- Mixed Water Temperature Tolerance: ± 7°F
- Minimum Flow Rate: 1.5 gpm (5.7 lpm)
- Maximum Pressure Differential Between H/C: 25%
- Minimum Inlet/Outlet Temperature Differential: 15°F



## MVB-LF (34BLF SERIES)




| Model No. | Order No. | Connection | Dimensions (in.) | | | | | | Unit Wt. (lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | |
| MVB12-LF | 34BLF213T | 1/2" FNPT | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.73 | 2.8 |
| MVB34-LF | 34BLF214T | 3/4" FNPT | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.77 | 2.8 |
| MVB1-LF | 34BLF215T | 1" FNPT | 4.52 | 2.11 | 2.28 | 4.56 | 2.12 | 0.94 | 2.9 |
| MVBS12-LF | 34BLF213S | 1/2" Solder | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.81 | 2.5 |
| MVBS34-LF | 34BLF214S | 3/4" Solder | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.81 | 2.6 |
| MVBS1-LF | 34BLF215S | 1" Solder | 4.52 | 2.11 | 2.28 | 4.56 | 2.12 | 0.94 | 2.7 |
| MVBC12-LF | 34BLF213C | 1/2" CPVC | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.58 | 2.4 |
| MVBC34-LF | 34BLF214C | 3/4" CPVC | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.80 | 2.4 |
| MVBC1-LF | 34BLF215C | 1" CPVC | 4.52 | 2.11 | 2.28 | 4.56 | 2.12 | 1.09 | 2.5 |
| MVBX12-LF | 34BLF213X | 1/2" PEX | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.83 | 2.5 |
| MVBX34-LF | 34BLF214X | 3/4" PEX | 4.52 | 2.11 | 2.28 | 4.56 | 1.87 | 0.83 | 2.6 |
| MVBX1-LF | 34BLF215X | 1" PEX | 4.52 | 2.11 | 2.28 | 4.56 | 2.12 | 1.04 | 2.7 |

| Size (in.) | Connection | Model No. | Order No. |
|---|---|---|---|
| 1/2" | Solder inlets X Solder outlet | **MVBS12-LF** | **34BLF213S** |
| | FNPT inlets X FNPT outlet | **MVB12-LF** | **34BLF213T** |
| | CPVC inlets X CPVC outlet | **MVBC12-LF** | **34BLF213C** |
| | PEX inlets X PEX outlet | **MVBX12-LF** | **34BLF213X** |
| | Solder inlets X CPVC outlet | **MVBSC12-LF** | **34BLF213SC** |
| | FNPT inlets X CPVC outlet | **MVBTC12-LF** | **34BLF213TC** |
| | PEX inlets X CPVC outlet | **MVBXC12-LF** | **34BLF213XC** |
| | CPVC inlets X PEX outlet | **MVBCX12-LF** | **34BLF213CX** |
| 3/4" | Solder inlets X Solder outlet | **MVBS34-LF** | **34BLF214S** |
| | FNPT inlets X FNPT outlet | **MVB34-LF** | **34BLF214T** |
| | CPVC inlets X CPVC outlet | **MVBC34-LF** | **34BLF214C** |
| | PEX inlets X PEX outlet | **MVBX34-LF** | **34BLF214X** |
| | Solder inlets X CPVC outlet | **MVBSC34-LF** | **34BLF214SC** |
| | FNPT inlets X CPVC outlet | **MVBTC34-LF** | **34BLF214TC** |
| | PEX inlets X CPVC outlet | **MVBXC34-LF** | **34BLF214XC** |
| | CPVC inlets X PEX outlet | **MVBCX34-LF** | **34BLF214CX** |
| 1" | Solder inlets X Solder outlet | **MVBS1-LF** | **34BLF215S** |
| | FNPT inlets X FNPT outlet | **MVB1-LF** | **34BLF215T** |
| | PEX inlets X PEX outlet | **MVBX1-LF** | **34BLF215X** |

*To order Repair Kits use part number 34B200RK.*

**Limited quantities of non-lead free models available. Contact Customer Service for availability.**

## MVC (34C/34CLF SERIES)

LEADFREE OPTIONS · C SP US · ASSE 1017 · TL

3/4" - 1"

Apollo® Model MVC-LF (34C-LF Series) ASSE 1017 listed, High-Capacity Mixing Valves are thermostatically controlled regulating valves designed for use in large commercial and institutional "point of source" and hydronic hot water systems or applications. Simple adjustment of water temperature from 90°-140°F or 130°-180°F.

### SPECIAL FEATURES

Selected Apollo® 34C mixing valves feature a two-piece shuttle with integral over-travel spring so they're smaller and easier to install than other high-capacity valves. Plus, their patented snap-fit element retainer and shuttle with special finger-grip pads assure easy removal and servicing without the need for special tools.

### FEATURES

- Standard Temperature Range 90°-140°F (-01 suffix)
- High Temperature Range 130°-180°F (use suffix "H1") for Hydronic/Radiant Heating Systems
- Highest Flow Rates in its Class, Up to 165 gpm
- Threaded Connections
- All-Bronze and Stainless Steel Construction
- Patented Design for Easy In-Line Maintenance
- Supply Pressures to 150 psig
- U.S. Patent #6,328,219
- Lead Free Construction Certified: 0.25% Lead max
- **Made in USA - ARRA Compliant**

### OPTIONS

- (-01) Standard Temp 90˚F - 140˚F
- (-H1) Hydronic High Temps/Non-ASSE 130˚F - 180˚F
- Bronze Wye Strainer - See 59LF Series
- 34C Standard Bronze Construction for Radiant Applications

### APPROVALS

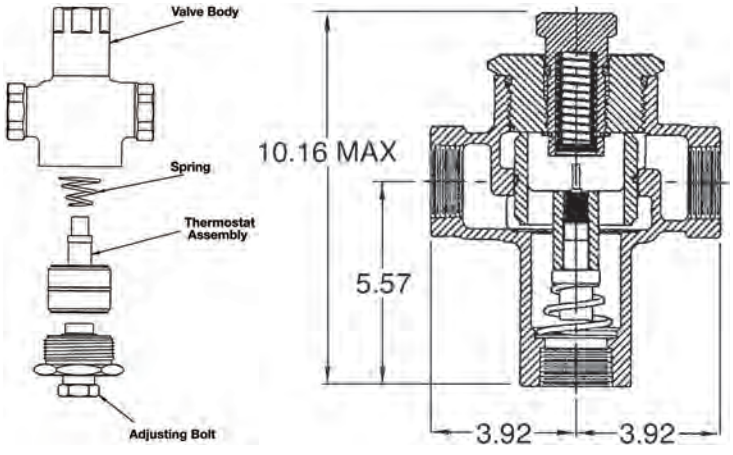
- ASSE 1017 - Temperature Actuated Mixing Valve for Hot Water Distribution Systems
- CSA B125.3 - Plumbing Supply Fittings
- NSF/ANSI 372 - Lead Free
- NSF/ANSI 61 - Water Quality

### STANDARD MATERIAL LIST

| | |
|---|---|
| **BODY** | C89836 Lead Free Bronze |
| **SHUTTLE** | Glass Filled Noryl® |
| **SENSOR** | Copper/Wax Filled |
| **STEM** | ASTM B16 C3600 Brass |
| **SPRING** | Stainless Steel |
| **RETAINER** | ASTM B16 C3600 Brass |

| Size (in.) | Connection | Standard Temp (90° - 140°F) | | High Temp (130° - 180°F)* | |
|---|---|---|---|---|---|
| | | Model No. | Order No. | Model No. | Order No. |
| 3/4" | FNPT inlets x FNPT outlet | MVC34 | 34C10401 | MVCH34 | 34C104H1 |
| | | MVC34LF | 34C10401LF | MVCH34LF | 34C104H1LF |
| 1" | | MVC1 | 34C10501 | MVCH1 | 34C105H1 |
| | | MVC1LF | 34C10501LF | MVCLFH1 | 34C105H1LF |

**High temperature models are not ASSE certified.*



## MVC (34C/34CLF SERIES)

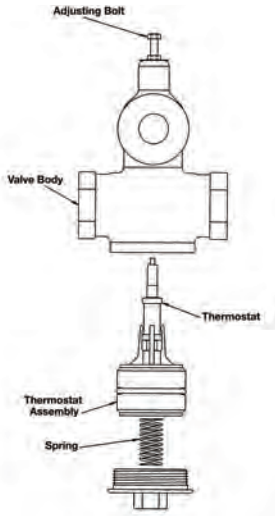
LEADFREE OPTIONS

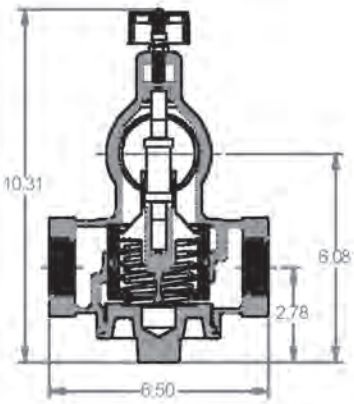
ASSE 1017

1-1/4" - 2"

| Size (in.) | Connection | Standard Temp (90° - 140°F) | | High Temp (130° - 180°F)* | |
|---|---|---|---|---|---|
| | | Model No. | Order No. | Model | Series |
| 1-1/4" | FNPT inlets x FNPT outlet | MVC114 | 34C10601 | MVCH114 | 34C106H1 |
| | | MVC114LF | 34CLF10601 | MVCH114LF | 34CLF106H1 |
| 1-1/2" | | MVC112 | 34C10701 | MVCH112 | 34C107H1 |
| | | MVC112LF | 34CLF10701 | MVCH112LF | 34CLF107H1 |
| 2" | | MVC2 | 34C10801 | MVCH2 | 34C108H1 |
| | | MVC2LF | 34CLF10801 | MVCH2LF | 34CLF108H1 |

*High temperature models are not ASSE certified.*

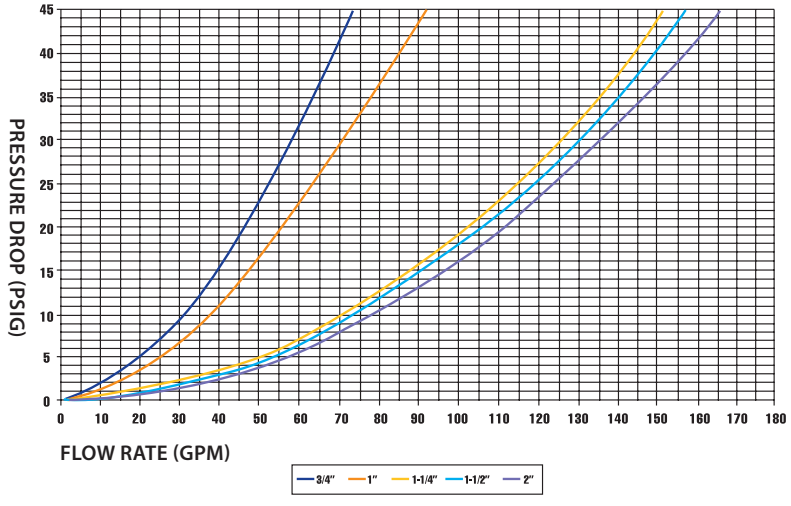



## PERFORMANCE RATING

- Minimum Flow Rate: 1.0 gpm*
- Maximum Pressure: 150 psig
- Minimum Temperature: 200°F
- Cold Water Inlet Temperature Range: 39° - 80°F
- Hot Water Inlet Temperature Range: 120° - 200°F
- Mixed Water Temperature Range: 85° - 120°F
- Maximum Pressure Differential Between Hot & Cold: 25%

*when installed at/near hot water source w/ recirculated tempered water with a continuously operating pump



## MVD (34DLF SERIES)

LEADFREE CERTIFIED · C SP US · ASSE 1070

Apollo® MVD (34D Series) Mini Thermostatic Mixing Valves are designed for ASSE 1070 "Point of Use" temperature control applications with a single fixture using proven ASTM grade materials. These valves will hold a desired temperature within ± 3°F and will shut off flow in the event of hot or cold water failure. They come equipped with a tamper-resistant high temperature limit stop to prevent adjustment above 120°F.

### FEATURES

- Tamper Resistant Locking Control Knob
- Adjustable Maximum Temperature Limit Stop
- Crush Proof Integral Check Valves
- Hot/Cold Water Failure Protection
- Single Outlet Model for Sensor Faucets
- Bypass Fitting Option for Dual Fixture Faucets
- Satin Chrome Plating Option
- 3/8" Compression or Hose Connections
- Mounting Bracket Included
- Lead Free Construction Certified: 0.25% Lead Max
- **Made in the USA - ARRA Compliant**

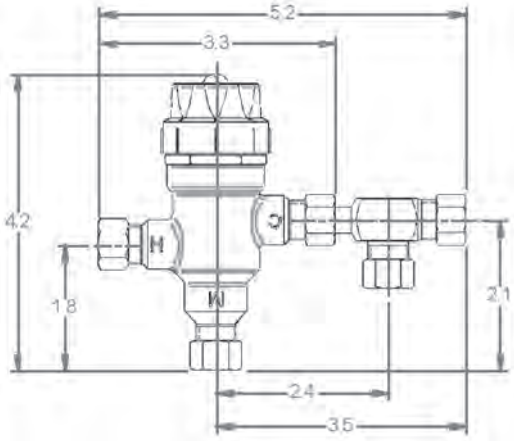
### APPROVALS

- ASSE 1070 - Performance Requirements for Water Temperature Limiting Devices
- CSA B125.3 - Plumbing Fittings
- NSF/ANSI 372 - Lead Free
- NSF/ANSI 61 - Water Quality

### STANDARD MATERIAL LIST

| | |
|---|---|
| **BODY** | C89836 Lead Free Bronze |
| **SHUTTLE** | Modified PPO Noryl® |
| **O-RING** | Chloramine Resistant EPDM |
| **SENSOR** | Copper/Wax Filled |
| **SPRING** | ASTM A313 Stainless Steel |
| **CAP** | ABS Thermoplastic |

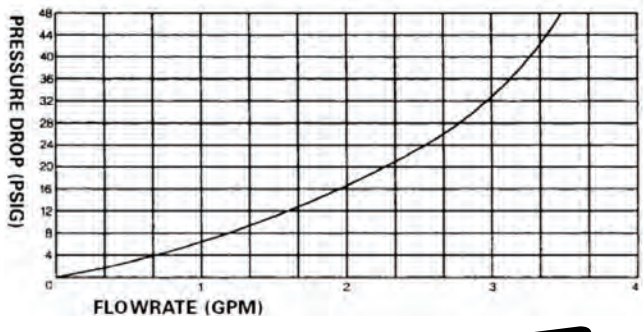
| Size (lin.) | Model No. | Order No. | Connection | Finish | Description | Wt. |
|---|---|---|---|---|---|---|
| 3/8 | MVD-LF | 34DLF30201 | Compression Inlet x Compression Outlet | Bronze | 3/8" Single Inlet | 0.82 |
| 3/8 | MVDR-LF | 34DLF30217 | | Chrome Plated | 3/8" Single Inlet | 0.82 |
| 3/8 | MVDB-LF | 34DLF302B1 | | Bronze | 3/8" Double Inlet (bypass) | 1.00 |
| 3/8 | MVDBR-LF | 34DLF302B117 | | Chrome Plated | 3/8" Double Inlet (bypass) | 1.00 |




### PERFORMANCE RATING

| | |
|---|---|
| Minimum Supply Pressure: | 30 psi (207 kpa) |
| Minimum Inlet/Outlet Temperature Differential: | 15°F |
| Maximum Hot/Cold Pressure Differential: | 25% |
| Hot Inlet Temperature Range: | 120°F - 200°F (49°C - 93°C) |
| Cold Inlet Temperature Range: | 38°F - 80°F (3.3°C - 27°C) |
| Outlet Temperature Control: | 80°F - 120°F (27°C - 49°C) |
| Mixed Water Temperature Range: | 80° - 120°F (27° - 49°C) |
| Mixed Water Temperature Tolerance: | ± 7°F |
| Maximum Pressure: | 150 psi (10.3 bar) |
| Flow Rate: | 0.5* - 3.2 gpm |

**must use recirculation pump loop for <1.0 gpm flow*




**Limited quantities of non-lead free models available. Contact Customer Service for availability.**

## 34-200 SERIES

The Apollo® Model TV (34-200 Series) Thermostatic Mixing Valve provides non-ASSE extension of water heater capacity and hot water temperature control in hydronic heating systems. Available in low or high temperature options for floor or baseboard applications.

### FEATURES

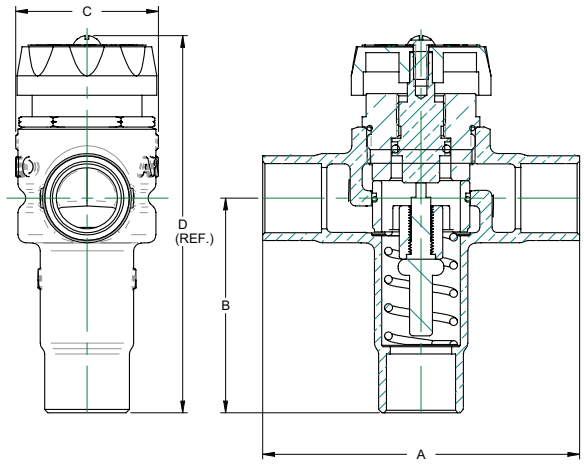
- Stainless Steel Spring
- Corrosion Resistant Bronze Body
- Thermoplastic Shuttle Assembly
- Solder Connections are Standard
- In-Line Repairable
- Fingertip Temperature Control
- **Made in USA - ARRA compliant**

***Not intended for potable water***

| Order No. Low Temp 85° - 120° F | Order No. High Temp 120° - 180° F | Connection | Size (lin.) | Dimensions (in.) | | Weight (lbs.) |
|---|---|---|---|---|---|---|
| | | | | Height | Width | |
| 34203L1 | 3420301 | Solder | 1/2 | 4.45 | 3.75 | 1.4 |
| 34204L1 | 3420401 | Solder | 3/4 | 4.47 | 4.00 | 1.46 |

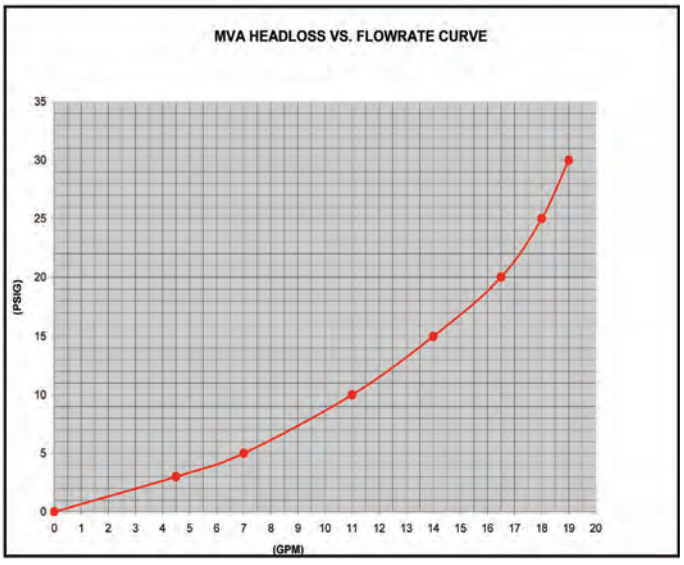
### STANDARD MATERIAL LIST

| | |
|---|---|
| **BODY** | C83600 Bronze |
| **SHUTTLE** | Scale Resistant Noryl® Polymer |
| **SENSOR** | Copper/Wax Filled |
| **O-RING** | Chloramine Resistant EPDM |
| **SPRING** | ASTM A313 Stainless Steel |
| **CAP** | ABS Thermoplastic |




### PERFORMANCE RATING

- Maximum Supply Pressure: 150 psi (1034 kpa)
- Minimum Inlet/Outlet Temperature Differential: 15°F
- Hot Inlet Temperature Range: 120°F - 210°F (49°C - 99°C)
- Cold inlet temperature Range: 39°F - 80°F (4°C - 27°C)
- Outlet Temperature Control: 80°F - 120°F (27°C - 49°C)
- Outlet Temperature Control (Hydronic): 120°F - 180°F
- Low Temperature (L1) Mix Range: 85°F - 120°F (30°C - 49°C)
- High Temperature (01) Mix Range: 120°F - 180°F (49°C - 82°C)
- Mixed Water Temperature Tolerance: +/- 7°F (1.7°C)



## 34HL SERIES US Patent #6,929,188 B2

ASSE 1017
1069

The 34HL Mixing Valve uses proven Apollo® thermostatic control to produce a consistent mix of water from low through high flow range. This single assembly controls mixed water temperatures to multiple-outlet shower and sink installations. It's the ideal choice in new construction or retrofits in nursing homes, prisons, hospitals, schools, gymnasiums, airports and other facilities where constant safe water temperature needs to be maintained at several outlets without the use of independent ASSE 1016 shower valves.

Standard bronze construction. Not intended for potable water applications.

### FEATURES

- Capable of maintaining safe, consistent temperature control of water at low and high flows to within ± 3.6° F.
- Provides consistent temperature control at flow rates as high as 60 GPM and as low as 1.5 GPM, including mid-range flow between high and low.
- Does not require recirculation pumps like other systems for low flow control.
- Integral strainers and checks are provided at the hot and cold supply inlets for greater reliability and performance.
- **Made in USA - ARRA compliant.**

### OPERATION

- Patented design with a variable fluid flow assembly and dual thermal actuated controls for either low or high flow conditions.
- The passages are calibrated to control water temperature during all flow conditions without a "dead zone" between low and high flow.
- Provides fluid shutoff as required by ASSE 1069 in the case that either the hot or cold supply lines fail (or are shut off for any reason to prevent scalding.
- The valve can be tamper-resistant to limit the water temperature from exceeding safe conditions as required by ASSE 1069.
- The valve also meets the requirements of ASSE 1017 for Point of Source Applications.

### SPECIFICATIONS

| | |
|---|---|
| **MAXIMUM STATIC PRESSURE** | 150 psig (1034 kpa) |
| **MAXIMUM WATER TEMPERATURE** | 200° F (93° C) |
| **MINIMUM FLOW ASSE 1069 & 1017** | 1.5 gpm (5.7 lpm) |
| **TEMPERATURE ADJUSTMENT RANGE** | 90° F - 140° F |
| **MAXIMUM INLET PRESSURE DIFFERENTIAL** | 30 psi (207kpa) |
| **INLET CONNECTION** | 1" NPT |
| **OUTLET CONNECTION** | 1-1/4" NPT |
| **TEMPERATURE GAUGE (1)** | 0-200°F |
| **PRESSURE GAUGE (3)** | 0-160 psi |
| **SHIPPING WEIGHT** | 36 lbs |

This device will service end use fixture fittings, including but not limited to, gang showers and sitz baths, by supplying tempered water at a preset temperature through a single supply pipe and will meet ASSE standard 1069-2005. ASSE 1069 devices are designed to reduce the risk of scalding and thermal shock during changes in hot or cold water supply pressure or temperature, or loss of cold water supply.

### STANDARD APPROVALS

**ASSE 1069 - Automatic Temperature Control Mixing Valves**
This device will control outlet water temperature to individual or multiple fixtures within 3.6°F to reduce the risk of scalding or thermal shock. This device is intended to be installed where the bather has no access to the temperature adjustment, and where no further mixing occurs downstream of the device. The Apollo® 34HL ATC will meet the performance requirements of ASSE 1069 at flow as low as 1.5 GPM up through maximum flow rate.

**ASSE 1017 - Temperature Actuated Mixing Valves for Hot Water Distribution Systems**
This device will control outlet set water temperature to hot water distribution systems near the hot water source within 3°F below 2 GPM and within 5°F above 5 GPM.

### OPTIONS

- 34HL10517 Nickel Plated Automatic Temperature Controller
- 34HLBOX01 Cabinet, Flush Mount, SS
- 34HLBOX02 Cabinet, Flush Mount, CS, Powder Coat
- 34HLBOX03 Cabinet, Wall Mount, SS
- 34HLBOX04 Cabinet, Wall Mount, CS, Powder Coat

## 34HL SERIES

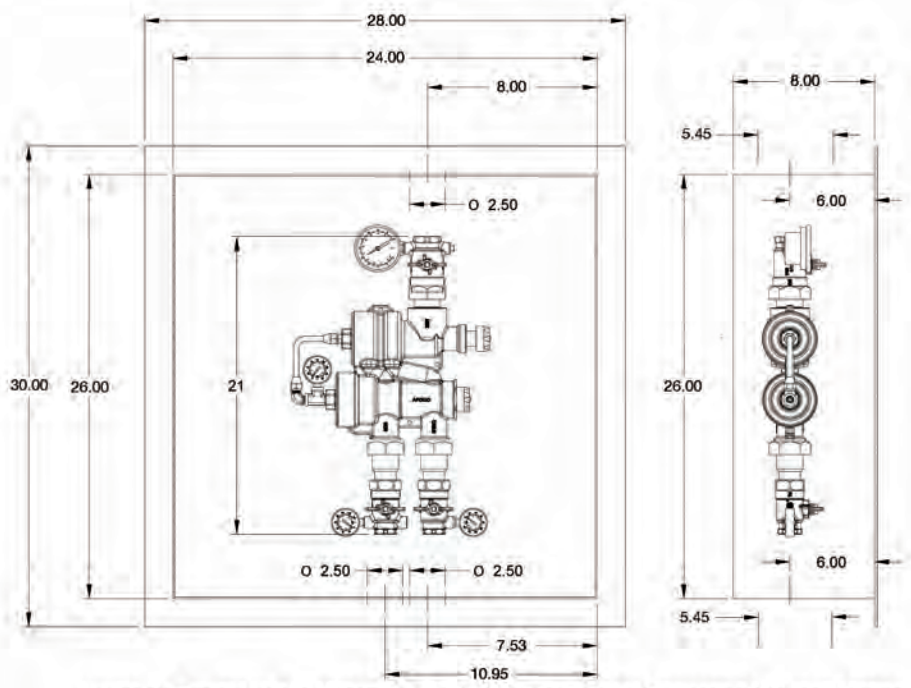



Figure 1: Typical Valve Dimensions with Stainless Steel Recessed Cabinet Option

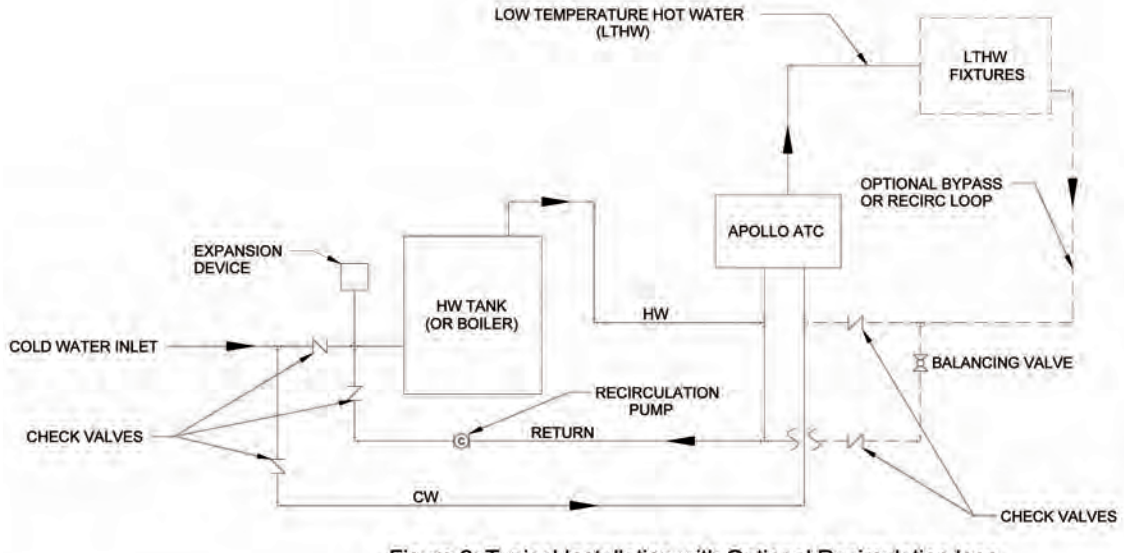



Figure 2: Typical Installation with Optional Recirculation loop

| Order No. | Min. Flow to ASSE 1069 | Pressure Drop Across Valve | | | |
|---|---|---|---|---|---|
| | | 10 psi (69 kpa) | 20 psi (138 kpa) | 30 psi (207 kpa) | 45 psi (310 kpa) |
| 34HL10501 | 1.5 gpm | 22 gpm | 42 gpm | 52 gpm | 60 gpm |
| | 6 lpm | 83 lpm | 159 lpm | 197 lpm | 227 lpm |

## MVE (34E/34ELF SERIES)

LEADFREE OPTIONS ASSE 1017


Apollo® Model "MVE" (34E Series) Emergency Mixing Valves are designed to control the cold and hot water temperature to deliver tepid water at a predetermined temperature to emergency eyewash/ facewash fixtures. The device provides a precise temperature and flow control in the event of cold water, hot water and thermostatic element failures.

### FEATURES

- Hot And Cold Water Supply Failure Protection Patented Design (US Patent 6,926,20 B2)
- Tepid Water Temperature Limit Control and Adjustment
- Tepid Water Temperature Adjustment Handle with Locking Mechanism for Tamper-Resistant Protection and Inadvertent Adjustment
- Integral Inlet Check Valves and Strainers to Provide Protection Against Cross-Flow and Foreign Particles
- Superior Thermostatic Element Technology for Optimum Reliability, Dependability and Accuracy
- Thermostatic Element Failure and Over-Travel Protection
- High Efficiency and Positive Shut-Off Check Valves
- In-Line Accessibility and Serviceability of Failure Protection Module and Mixing Valve Internal Components
- Meets the Requirements of the EPA Safe Drinking Water Act
- Corrosion Resistant Components
- Single Cartridge Design of Failure Protection Module for Easy Service and Maintenance
- Integral Hot Water Bypass
- Positive Shutoff of Hot Supply When Cold Supply is Lost
- Lead Free Construction Certified: 0.25% Lead Max - Specify Model 34ELF
- **Made in USA - ARRA compliant**

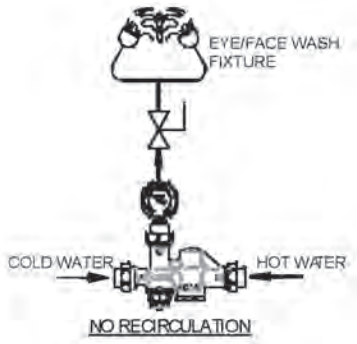
### APPROVALS

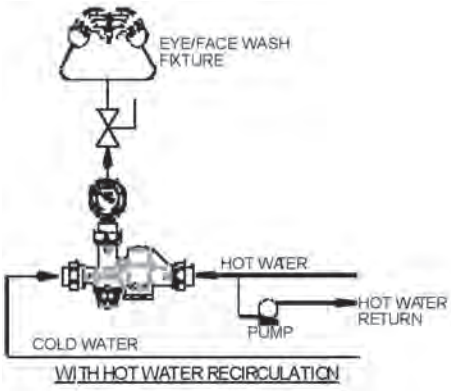
- ASSE 1071 - Temperature Actuated Mixing Valves for Plumbed Emergency Equipment
- ANSI/ISEA Z358.1 2009 Emergency Eyewash & Shower Equipment
- NSF/ANSI 372 - Lead Free
- NSF/ANSI 61 - Water Quality

### PERFORMANCE RATING

| | |
|---|---|
| Maximum Working Pressure: | 150 psig (1034 kPA) |
| Hot Water inlet Temperature Range: | 120 - 180°F (49 - 82°C) |
| Cold Water inlet Temperature Range: | 40 - 70°F (4.4 - 21°C) |
| Tepid Water Temperature Adjustment Range: | 65 - 95°F (18.3 - 35°C) |
| Mixed Water Temperature Tolerance: | ± 5°F (2.8°C) |
| Flow Rate @ 30 psig (206.9 kPa) Differential: | 15 gpm (56.8 lpm) |
| Cold Bypass @ 30 psi (207 kPa) Differential: | 13.5 gpm (51 lpm) |

Note: The cold water supply shall be at least 20°F (-6.7°C) lower than the outlet water temperature setting



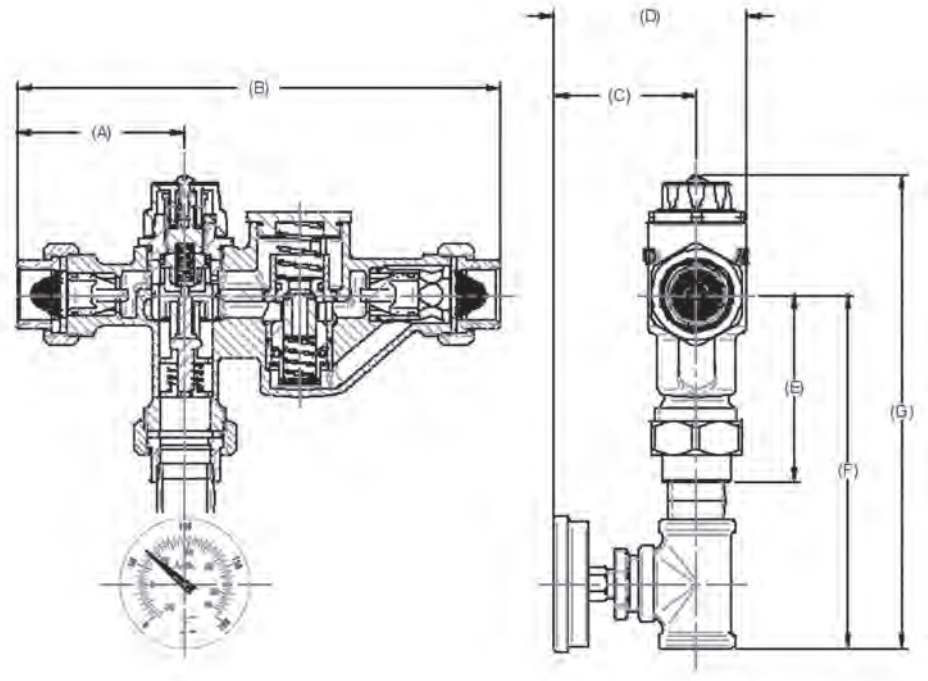

### TYPICAL INSTALLATIONS

- Piping and installation of the device must be in accordance to federal, state, and local plumbing codes.
- If the valve is some distance from the hot water source, recirculation is required to keep the hot water supply temperature within the required operational limits.

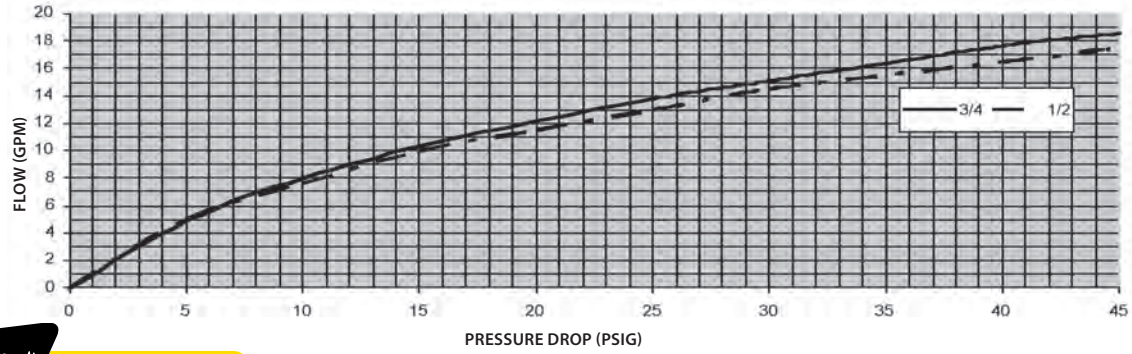
### OPTIONS

- 34ELF - Lead Free

## MVE (34E SERIES)



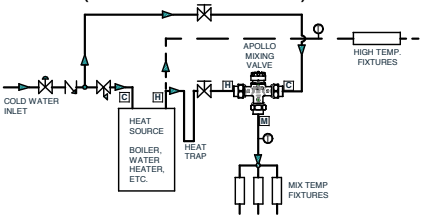

| Connection Size | | 1/2" Threaded | 1/2" Solder | 3/4"Threaded | 3/4"Solder |
|---|---|---|---|---|---|
| Basic Valve | Model No. | MVE12 | MVES12 | MVE34 | MVES34 |
| | Ordering No. | 34E103T | 34E103S | 34E104T | 34E104S |
| Includes Outlet Temperature Gauge | Model No. | MVE12G | MVES12G | MVE34G | MVES34G |
| | Ordering No. | 34E113T | 34E113S | 34E114T | 34E114S |
| Includes Outlet Temp. Gauge And Inlet Ball Valves | Model No. | MVE12GB | MVES12GB | MVE34GB | MVES34GB |
| | Ordering No. | 34E123T | 34E123S | 34E124T | 34E124S |
| Lead Free Basic Valve | Model No. | MVE12LF | MVES12LF | MVE34LF | MVES34LF |
| | Ordering No. | 34ELF103T | 34ELF103S | 34ELF104T | 34ELF104S |
| | **Dimensions (in.) & Weights (lbs.)** | | | | |
| | A | 3.09 | 3.22 | 3.09 | 3.10 |
| | B | 8.90 | 9.15 | 8.90 | 8.90 |
| | C | 2.66 | 2.66 | 2.67 | 2.67 |
| | D | 3.60 | 3.60 | 3.60 | 3.60 |
| | E | 3.45 | 3.45 | 3.45 | 3.45 |
| | F | 5.77 | 5.77 | 6.32 | 6.32 |
| | G | 7.83 | 7.83 | 8.39 | 8.39 |
| | Unit Wt. | 3.94 | 3.73 | 5.13 | 5.07 |



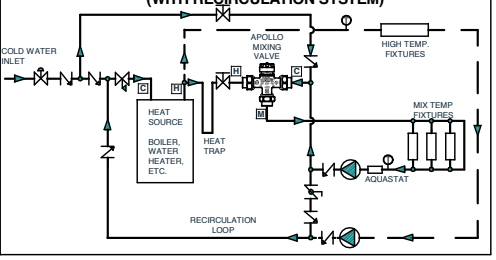
## TYPICAL MIXING VALVE PIPING SCHEMATIC

### MVA SERIES
### MVB SERIES
### MVC SERIES
### MVHL SERIES

**TYPICAL INSTALLATION**
**POINT OF SOURCE**
**(NO RECIRCULATION SYSTEM)**



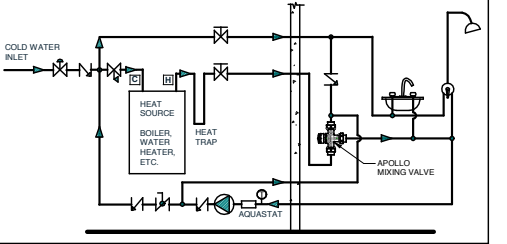

**TYPICAL INSTALLATION**
**POINT OF SOURCE**
**(WITH RECIRCULATION SYSTEM)**



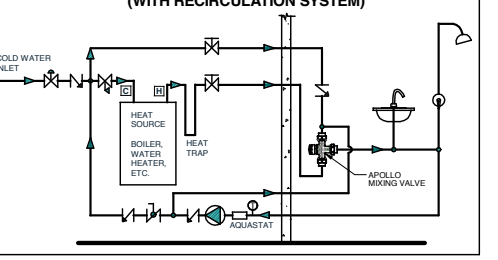

- DIRECTION OF FLOW
- THERMAL EXPANSION RELIEF VALVE OR TANK
- PRESS. REDUCING VLV.
- CHECK VALVE
- BALANCING VALVE
- PUMP
- TEMPERATURE GAUGE
- SHUT-OFF VALVE

### MVB SERIES
### MVD SERIES

**TYPICAL INSTALLATION**
**POINT OF USE - STANDARD FAUCET**
**(WITH RECIRCULATION SYSTEM)**



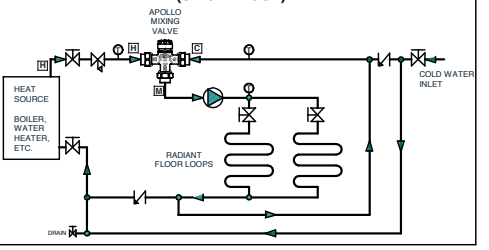

**TYPICAL INSTALLATION**
**POINT OF USE - SENSOR FAUCET**
**(WITH RECIRCULATION SYSTEM)**




- DIRECTION OF FLOW
- THERMAL EXPANSION RELIEF VALVE OR TANK
- PRESS. REDUCING VLV.
- CHECK VALVE
- BALANCING VALVE
- PUMP
- TEMPERATURE GAUGE
- SHUT-OFF VALVE

### TV SERIES
### MVAH SERIES

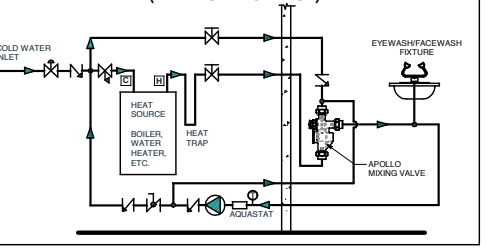
**TYPICAL INSTALLATION**
**HYDRONIC HEATING SYSTEM**
**(SINGLE LOOP)**




- DIRECTION OF FLOW
- THERMAL EXPANSION RELIEF VALVE OR TANK
- PRESS. REDUCING VLV.
- CHECK VALVE
- PUMP
- TEMPERATURE GAUGE
- SHUT-OFF VALVE

### MVE SERIES

**TYPICAL INSTALLATION**
**EMERGENCY SYSTEM**
**(EYEWASH/FACEWASH)**




- DIRECTION OF FLOW
- THERMAL EXPANSION RELIEF VALVE OR TANK
- PRESS. REDUCING VLV.
- CHECK VALVE
- BALANCING VALVE
- PUMP
- TEMPERATURE GAUGE
- SHUT-OFF VALVE

# WATER PRESSURE
# **REDUCING VALVES**

# WATER PRESSURE REDUCING VALVES

## WHY THE NEED FOR WATER PRESSURE REDUCING VALVES?

Municipal water is distributed at elevated pressures for efficiency, and supply pressures can exceed 150 psi. The greater the elevation changes in a region, the higher the supply pressures. Booster pump systems in high-rise buildings can even exceed 250 psi. Water pressure reducing valves are designed to automatically reduce such elevated supply pressures to a lower, safer and more manageable downstream pressure. In most plumbing code jurisdictions, pressure reducing valves are required to be installed whenever the water pressure supply exceeds 80 PSI. Excessive pressures can waste tens of thousands of gallons of water in an average home every year.

## THE VALUE OF ECONOMIZING

Installing a water pressure regulator offers many benefits:

1. Reduces water consumption.
2. Reduces associated energy and utility costs.
3. Protects piping systems and fixtures from excessive pressures that can reduce service life, cause water hammer, and other undesirable piping noises.
4. Used to ensure compliance with local plumbing codes.

The use of water pressure reducing valves also help to protect the environment and conserve our precious natural resources.

## OPERATION

Apollo® cast bronze water pressure reducing valves are "direct acting" devices, meaning no external pilots or sensing lines are required. Direct acting valves are "normally open", meaning the internal seat is held open by the force of a compression spring. As water flows through the valve and the downstream pressure begins to build, this pressure acts on the relatively larger surface area of the diaphragm. As the downstream pressure continues to increase, eventually the force acting on the diaphragm overcomes the force of the spring and the valve seat is hydraulically closed. This is the static (non-flowing) set pressure and is factory preset at 50 to 60 psi, depending upon the model.

When downstream demand begins (such as a faucet being opened), the line pressure will drop and the force of the spring begins opening the valve seat. This allows higher pressure water to flow into the system until the static set pressure is once again reached and the valve seat closes. Apollo's balanced piston design enables the valve to react smoothly and quickly to changing flow demands, while protecting against incoming supply pressure changes.

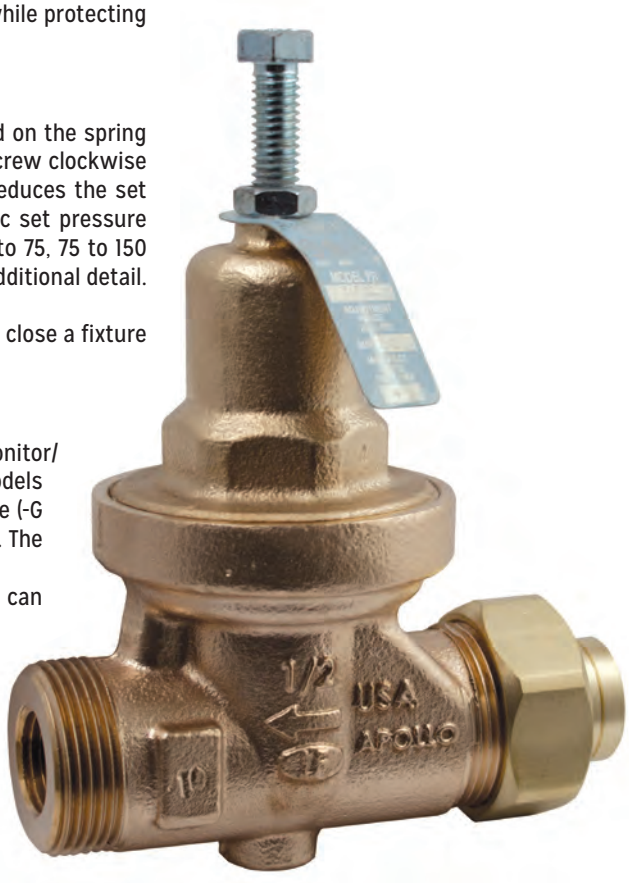
## ADJUSTMENT

The static set pressure of the valve can be adjusted by changing the preload on the spring by means of the adjusting screw. After loosening the lock nut, turning the screw clockwise (down) will increase the set point, while turning it counter-clockwise (up) reduces the set point. Tighten the locknut after adjustment to secure the setting. The static set pressure can be adjusted through the published range of the installed spring (eg. 25 to 75, 75 to 150 etc.). Refer to the Installation, Operation & Installation Instructions (IOM) for additional detail.

Note when reducing the set pressure it may be necessary to briefly open and close a fixture to let the downstream pressure adjust to the new setting.

## GAUGES

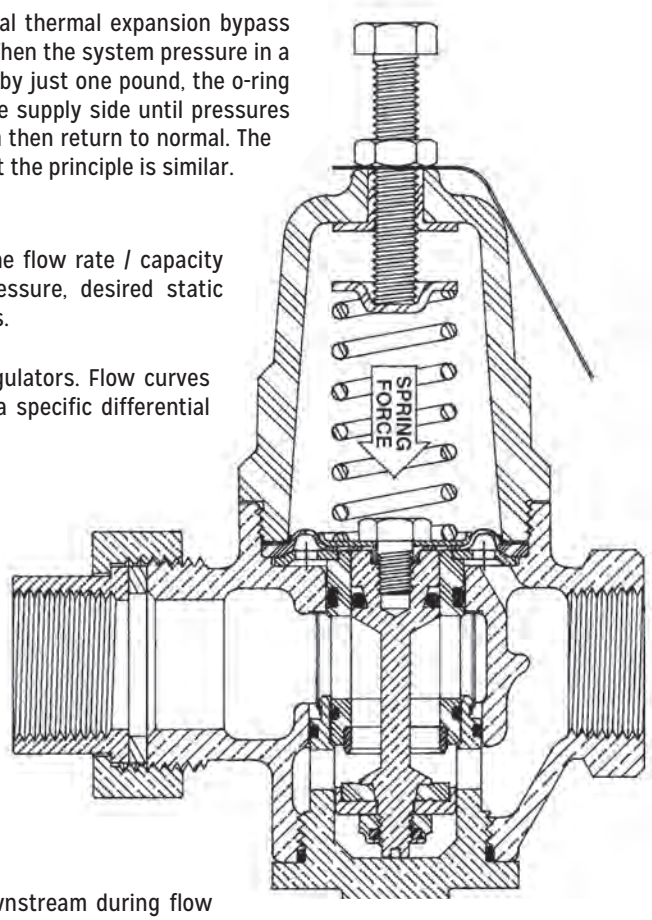
Dial pressure gauges may be used to measure the supply pressure and monitor/adjust the reduced pressure downstream of the valve. Some regulator models can be ordered with a 2" dial pressure gauge to display the reduced pressure (-G option); or select the "P" option which allows the installation of a gauge later. The "P" option adds a tapped and plugged, ¼" NPT connection to the valve.
Alternatively, a dial pressure gauge, with ¾" hose thread (part no. W807800) can be connected to a hose bib or utility sink, to monitor pressure. This model features a 2-1/4" dial and maximum pressure indicator. Both types of gauges are available from your Apollo® distributor.




## THERMAL EXPANSION CONSIDERATIONS

Installing a pressure reducing valve creates a closed water system, since the WPRV effectively acts as a check when the seat is closed. Thermal expansion occurs when water is heated in the water heater and pressure

builds up. Apollo® water pressure reducing valves incorporate an internal thermal expansion bypass feature that will bleed the increased pressure back to the service main. When the system pressure in a closed system increases to a pressure greater than the supply pressure by just one pound, the o-ring on the stem will flex and allow the excess pressure to be relieved to the supply side until pressures on both the system and supply sides are equal. The valve and the system then return to normal. The 36HLF features a ball and seat type of check valve as a thermal bypass but the principle is similar.




**SIZING & SELECTION**
The size and model of pressure reducing valve you need depends on the flow rate / capacity required. It is therefore important to know the maximum supply pressure, desired static downstream pressure and required flow under normal demand conditions.

**FLOW / PERFORMANCE CURVES**
Apollo® publishes performance curves for all models of direct acting regulators. Flow curves plot the rate of flow against the reduced pressure fall-off based upon a specific differential pressure (see definitions below).

**DIFFERENTIAL PRESSURE (DP)**
Differential pressure is the difference in PSI between the supply pressure and the adjusted static (non-flowing) set pressure of the valve. Example 100 psi supply pressure – 50 psi static set pressure = 50 psi differential pressure.

**REDUCED PRESSURE FALLOFF**
"Falloff" is simply the difference in PSI between the static (non-flowing) set pressure of the valve and the reduced downstream pressure at a given flow rate. Falloff is inversely proportional to the flow: as flow increases and the seat opens wider the downstream pressure reduces (falls off). Fall-off is a normal operating characteristic for all direct acting regulators.

It is important to allow for adequate fall-off from the set pressure downstream during flow conditions. 10 to 20 psi falloff is considered ideal for most applications. Less falloff means the valve is only partially open, and extreme throttling can cause noise, vibration and premature wear. Sizing at 10-20 psi falloff will allow the valve to operate nearer the middle of its operating range for optimal performance and durability.
In the chart, zero (0) falloff indicates a no-flow condition. Figures below zero show the flow curves for each size of valve as the fall-off pressures increase.

Example: A ¾" PRC with an inlet pressure of 100 psi is set to an outlet pressure of 50 psi in the static, no-flow condition (50 psi differential pressure). At 10 psi falloff the flow is 8 gpm, and at 20 psi falloff the flow is 21 gpm. This valve would be ideal for flows ranging from 8 to 21 gpm. Although this chart shows curves at a 50 psi Pressure Differential, curves for other DP's are similar. The curve shifts slightly to the left for a smaller differential and to the right for a greater differential.

**Do not select based solely on the maximum flow requirement!**

**Do not select a regulator based on pipe-size alone!**

The most common problem affecting water pressure reducing valves is installing a larger valve than is needed for the volume of flow required. This is particularly true for valves larger than 1". An over-sized valve will operate in a nearly closed position causing premature wear and undesirable noise.

**TURNDOWN RATIO**
Optimal performance is achieved at a 2:1 Differential Pressure ratio. Example: 100 psi supply pressure, 50 psi static downstream pressure = 2:1 reduction. 50 psi is the default factory setting. Turndown ratios of 3:1 are usually ok and even 4:1 can work but factors such pressure, size, flow, velocity and falloff can result in noise or premature wear as the ratio increases.

### TWO-STAGE REDUCTION

Two valves installed in series should be used for large pressure drop requirements. Example: valve #1 200 psi to 100 psi reduction, valve #2 100 psi to 50 psi reduction.

### LOW FLOW BYPASS

When a large valve is called upon to provide small amounts of flow during off-peak hours, the valve seat is operating in a nearly closed position and undesirable noise and vibration may result. In this case a parallel low flow bypass line should installed with a smaller regulator. The smaller regulator is set 5 – 7 psi higher than the main regulator and will help prevent premature wear and noise.

### SPECIALLY DESIGNED LOW AND HIGH PRESSURE MODELS

Apollo® LP and HP models feature specially designed springs optimized for superior performance and flow. Beware competitors' that publish extreme pressure ranges such as 10 – 125 psi, as these valves lack sensitivity and tend to perform poorly, especially at the low and high ends of the pressure range.

### REPAIR KITS AVAILABLE

Apollo® pressure reducing valves are engineered to provide years of reliable service. Over time, internals may be subject to wear or even damage caused by sand or debris. Convenient pre-packaged "major goods" repair kits are available for all Apollo® pressure reducing valves. A "soft-goods" only kit is also available for the 36CLF and 36HLF models.

## PR SERIES (36LF)

Apollo® PR Series pressure reducing valves provide automatic control of excessive water pressure and problem supply fluctuations. These models are designed to reduce pressures of up to 300 PSI to a more manageable range.

Factory set at 50 PSI, they adjust with a turn of a screw. They feature a built-in by-pass and strainer, and comply with ASSE 1003 and CSA B356 standards. They are listed with IAPMO and the City of Los Angeles.

PR Series valves are built for long, reliable service with an all-bronze body and cover and high-capacity stainless steel strainer. Available with or without optional pressure gauge on tapping.

### FEATURES

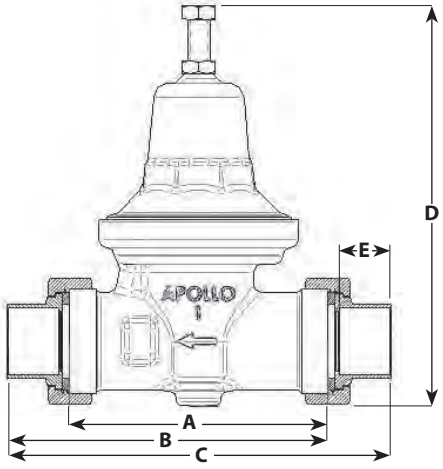
- All Bronze Body and Cover
- Suitable for Supply Pressures to 300 psi
- Every Valve is 100% Factory Set and Tested
- Standard Factory Setting: 50 psi
- High & Low Pressure Model Options
- Diaphragm Suitable for 33-180°F
- Solder, Threaded, PEX, CPVC, Press Connection Options
- Integral Thermal Expansion Bypass
- Integral Stainless Steel Strainer
- Single and Double Union Options
- In-Line Repairable
- USA Materials and Manufacture

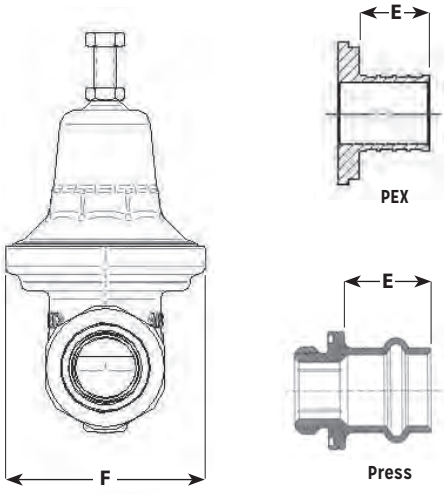
### OPTIONS

- (-P) Tapped & Plugged
- (-G) With Pressure Gauge
- (-S) Sealed Cage with SS Adjusting Screw for Vault Installation
- 36 Non-LF Materials for Non-Potable Service, Such as Irrigation

### APPROVALS

- ASSE 1003
- CSA B356
- NSF/ANSI 372 Lead Free
- IAPMO




### DIMENSIONS

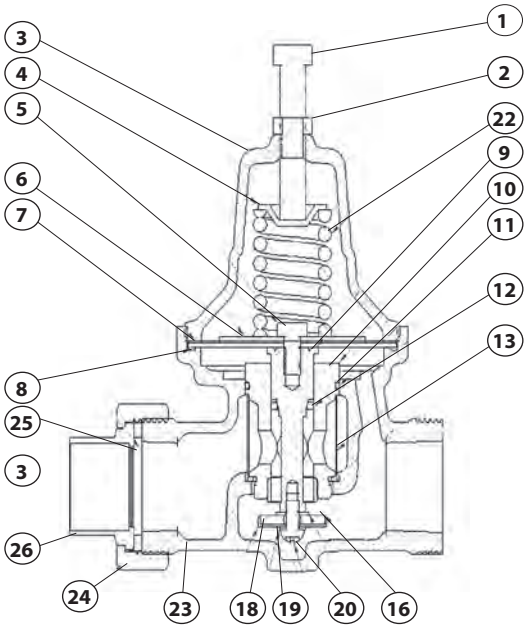
| Pipe Thread Union x FNPT | Solder Joint Union x FNPT | CPVC Union x FNPT | Size (in.) | Dimensions (in.) | | | Wt./100 (lbs.) |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| 36LF-103-01 | 36LF-303-01 | | 1/2 | 5.88 | 4.88 | 1.00 | 350 |
| 36LF-104-01 | 36LF-304-01 | 36LF-3C4-01 | 3/4 | 5.88 | 4.88 | 1.00 | 340 |
| 36LF-105-01 | 36LF-305-01 | 36LF-3C5-01 | 1 | 6.88 | 5.50 | 1.12 | 450 |
| 36LF-106-01 | 36LF-306-01 | | 1-1/4 | 8.88 | 6.50/6.63 | 1.37 | 1020 |
| 36LF-107-01 | 36LF-307-01 | | 1-1/2 | 8.88 | 6.63/6.75 | 1.37 | 1045 |
| 36LF-108-01 | 36LF-308-01 | | 2 | 11.50 | 8.50/8.88 | 1.81 | 2250 |
| FNPT x FNPT (no union) | | | | | | | |
| 36LF-203-01 | | | 1/2 | 5.88 | 4.00 | 1.00 | 311 |
| 36LF-204-01 | | | 3/4 | 5.88 | 3.88 | 1.00 | 305 |
| 36LF-205-01 | | | 1 | 6.88 | 4.38 | 1.12 | 415 |
| 36LF-206-01 | | | 1-1/4 | 8.88 | 5.38 | 1.37 | 910 |
| 36LF-207-01 | | | 1-1/2 | 8.88 | 5.38 | 1.37 | 909 |
| 36LF-208-01 | | | 2 | 11.50 | 7.12 | 1.81 | 1880 |

| Double Union FNPT xFNPT | Double Union Solder x Solder | Double Union CPVC x CPVC | Size (in.) | Dimensions (in.) | | | Wt./100 (lbs.) |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | |
| 36LF-403 -01 | 36LF-503-01 | | 1/2 | 5.88 | 5.63 | 1.00 | 389 |
| 36LF-404-01 | 36LF-504-01 | 36LF-5C4-01 | 3/4 | 5.88 | 5.63 | 1.00 | 372 |
| 36LF-405-01 | 36LF-505-01 | | 1 | 6.88 | 6.38 | 1.12 | 495 |
| 36LF-406-01 | 36LF-506-01 | | 1-1/4 | 8.88 | 7.50/7.75 | 1.37 | 1090 |
| 36LF-407-01 | 36LF-507-01 | | 1-1/2 | 8.88 | 7.88/8.00 | 1.37 | 1183 |
| 36LF-408-01 | 36LF-508-01 | | 2 | 11.50 | 9.88/10.50 | 1.81 | 2472 |
| 36LF-904-01 | Pex x Pex | | 3/4 | 6.12 | 5.81 | 1.00 | 372 |
| 36LF-9C4-01 | Union CPVC | Pex Union | 3/4 | 6.12 | 5.81 | 1.00 | 372 |

*36 Series for non-potable water available.

Example: 36-103-01

## PR SERIES (36LF)




### STANDARD MATERIALS LIST

| | |
|---|---|
| 1 | Adj. Screw (Zinc Plated Stl.) |
| 2 | Hex Nut (Zinc Plated Stl.) |
| 3 | Cap (Cast Bronze) |
| 4 | Spring Disc (Zinc Plated Steel) |
| 5 | Cartridge Bolt |
| 6 | Pressure Plate (Zinc Plated Steel) |
| 7 | Friction Ring (Zinc Plated Steel) |
| 8 | Diaphragm (FDA Nitrile) |
| 9 | Stem (Brass) |
| 10 | Cartridge Housing (LF Brass) |
| 11 | O-Ring (FDA Nitrile) |
| 12 | O-Ring (FDA Nitrile) |
| 13 | Screen (300 Series SS) |

| | |
|---|---|
| 14 | Seal, Cartridge (Polypropylene) |
| 15 | Seat Ring (300 Series SS) |
| 16 | Washer (LF Brass) |
| 17 | Seat Disc (FDA EPDM) |
| 18 | Seat Holder (LF Brass) |
| 19 | Washer (Polypropylene) |
| 20 | Seat Screw (300 Series SS) |
| 21 | Nameplate (Aluminum) |
| 22 | Spring (ASTM 228 Music Wire) |
| 23 | Body, Machined (Cast LF Bronze) |
| 24 | Union Nut (Cast Bronze) |
| 25 | Union Washer (FDA Nitrile) |
| 26 | Union Tail Piece (LF Brass) |

### PART NUMBER MATRIX

**36LF**

| 36 X | X | X | X | X | X | X |
|---|---|---|---|---|---|---|
| | **CONNECTION** | **OPTION** | **SIZE** | **GAUGE** | **PRESSURE (ADJUSTABLE)** | **OPTION** |
| 36 Lead Free<br>36 | 1 - Single Union NPT<br>2 - No Union NPT<br>3 - Single Union Solder x NPT<br>4 - Double Union NPT<br>5 - Double Union Solder<br>6 - Single Union Meter x NPT<br>8 - Double Union CPVC<br>9 - Double Union Pex | 0 - No Option<br>C - CPVC Tailpiece<br>S - Sealed Cage*<br>X - Pex Tailpiece | 03 - 1/2"<br>04 - 3/4"<br>05 - 1"<br>06 - 1-1/4"<br>07 - 1-1/2"<br>08 - 2" | 0 - No Gauge<br>P - With Gauge Port<br>G - With Gauge | 1 - 25-75 psig<br>2 - 10-35 psig<br>3 - 75-125 psig | PR - Press<br>(applies to models 36-20x and 36LF20x only) |

** S option = Sealed cage with stainless steel adjusting screw for vault installation.*

### MODEL NUMBER MATRIX

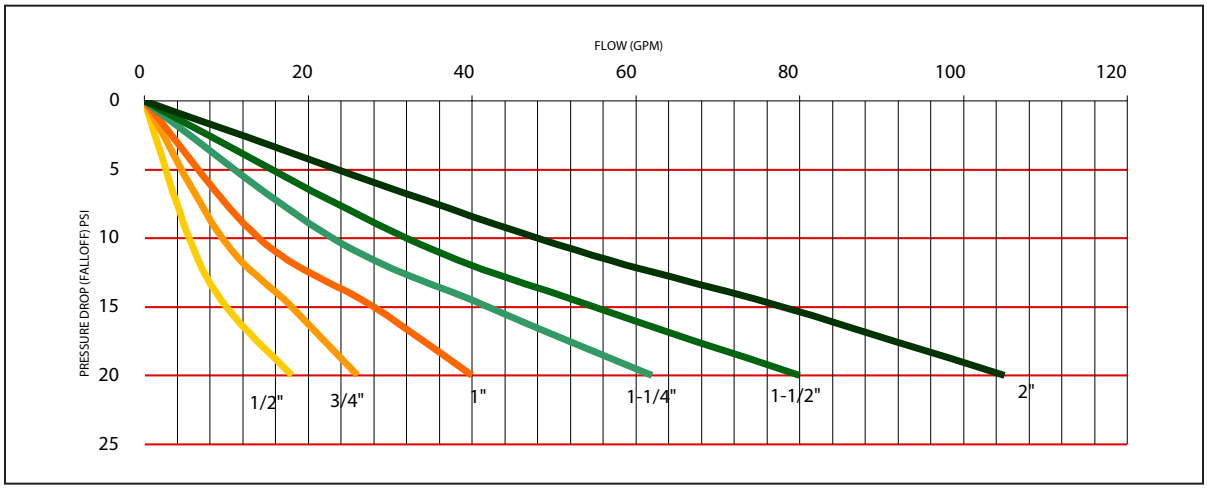
| PR X | X | X | X | X | X |
|---|---|---|---|---|---|
| **UNION** | **GAUGE** | **PRESSURE SETTING** | **MISCELLANEOUS** | **SIZE** | **CONNECTION** | **LEAD FREE** |
| Blank - Single Union<br>D - Double Union<br>T - No Union | Blank - No Gauge<br>P - With Gauge Port<br>G - With Gauge | Blank - 25-75 psig<br>L - 10-35 psig<br>H - 75-125 psig | Blank - No Option<br>A - Sealed Cage | 12 - 1/2"<br>34 - 3/4"<br>1 - 1"<br>114 - 1-1/4"<br>112 - 1-1/2"<br>2 - 2" | Blank - FNPT x FNPT<br>**SINGLE UNION ONLY**<br>Blank - FNPT x FNPT<br>S - Solder x FNPT<br>C - CPVC x FNPT<br>X - PEX x FNPT<br>PR - Press x FNPT<br>**DOUBLE UNION ONLY**<br>S - Solder x Solder<br>C - CPVC x CPVC<br>X - PEX x PEX<br>B - BSPT x BSPT<br>SC - Solder x CPVC<br>SX - Solder x PEX<br>CX - CPVC x PEX<br>PR - Press x Press | LF - Lead Free<br>Blank-<br>Non-Lead Free |

## PR SERIES (36LF)

| | | PRESSURE DIFFERENTIAL (PSI) | | |
|---|---|---|---|---|
| | | 25 | 50 | 75 |
| PIPE SIZE | *FALLOFF (PSI) | Water Capacity (GPM) | | |
| 1/2″ | 5 | 1.7 | 2.0 | 2.3 |
| | 10 | 4.3 | 5.0 | 5.8 |
| | 15 | 8.5 | 10.0 | 11.5 |
| | 20 | 15.3 | 18.0 | 20.7 |
| 3/4″ | 5 | 3.4 | 4.0 | 4.6 |
| | 10 | 7.7 | 9.0 | 10.4 |
| | 15 | 14.5 | 17.0 | 19.6 |
| | 20 | 22.1 | 26.0 | 29.9 |
| 1″ | 5 | 5.1 | 6.0 | 6.9 |
| | 10 | 11.9 | 14.0 | 16.1 |
| | 15 | 22.1 | 26.0 | 29.9 |
| | 20 | 34.0 | 40.0 | 46.0 |
| 1 1/4″ | 5 | 8.5 | 10.0 | 11.5 |
| | 10 | 19.6 | 23.0 | 26.5 |
| | 15 | 35.7 | 42.0 | 48.3 |
| | 20 | 52.7 | 62.0 | 71.3 |
| 1 1/2″ | 5 | 11.9 | 14.0 | 16.1 |
| | 10 | 27.2 | 32.0 | 36.8 |
| | 15 | 47.6 | 56.0 | 64.4 |
| | 20 | 68.0 | 80.0 | 92.0 |
| 2″ | 5 | 15.3 | 18.0 | 20.7 |
| | 10 | 39.1 | 46.0 | 52.9 |
| | 15 | 66.3 | 78.0 | 89.7 |
| | 20 | 93.5 | 110.0 | 126.5 |

**Falloff is the difference between the PRV's set pressure and the flowing pressure at any given demand*

### FLOW CURVE




***Pressure Differential*** *is the difference between the inlet supply pressure and the adjusted outlet pressure.*
***Pressure Falloff*** *is the reduction in downstream pressure from the static (set) pressure as the flow increases through the valve.*

## PRC SERIES (36CLF)

Versatile, all-purpose Apollo® PRC Series pressure reducing valves handle pressures up to 400 PSI. Compact and with a built-in thermal expansion by-pass, they're designed to protect residential and commercial water distribution systems from excessive pressures.

The valves' integral thermoplastic cage helps protect the inner adjusting spring from galvanic corrosion. Built for reliable, long-term service, PRC valves offer an all-bronze body, stainless steel strainer and seat. They comply with ASSE 1003 and CSA B356 standards. They are listed with IAPMO and City of Los Angeles.

Designed for easy in-line servicing, PRC models come standard with a clean-out plug on the housing's bottom. Both seat disc and strainer can be maintained via the clean-out plug using a 1 1/2" hex socket. Available with or without gauge tapping and gauge.

### FEATURES

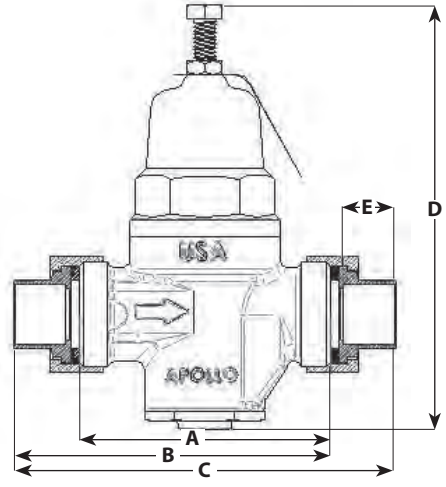
- Dependable Cast Bronze Body
- Suitable for Supply Pressures to 400 psi
- Every Valve is 100% Factory Set and Tested
- Standard factory setting is 50 psi
- High and Low Pressure Model options
- Diaphragm Suitable for 33 - 180°F Solder, Threaded, PEX, CPVC, and Press Connection Options
- Sealed Cage with SS Adjusting Screw for Vault Installation
- Integral Thermal Expansion Bypass
- Integral Stainless Steel Strainer
- Single and Double Union Options
- In-Line Repairable, Bottom Access
- USA Materials and Manufacture

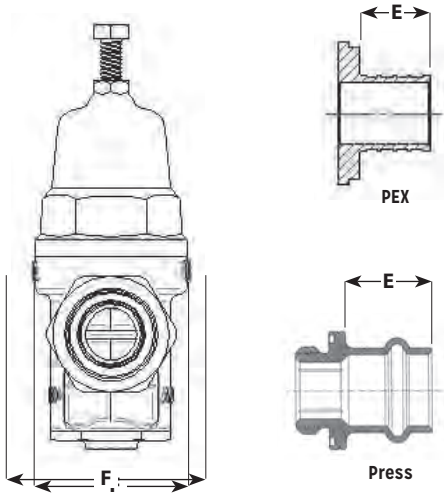
### OPTIONS

- (-P) Tapped 1/4" & Plugged
- (-G) With Pressure Gauge
- (-02) 10-35 psig
- (-03) 75-125 psig
- 36C Non-LF Materials for Non-Potable Service, Such as Irrigation

### APPROVALS

- ASSE 1003
- CSA B356
- NSF/ANSI 372 Lead Free
- City of Los Angeles
- IAPMO



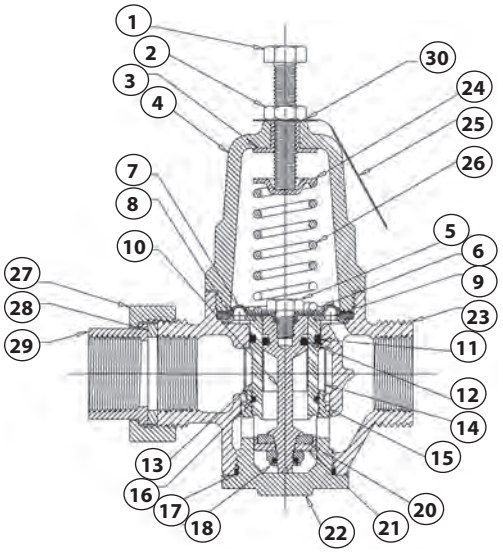




### DIMENSIONS

| LF Series Number | Series Number | Size (in.) | Dimensions (in.) | | Wt./100 (lbs.) |
|---|---|---|---|---|---|
| | | | Length | A | |
| **FNPT Inlet x Outlet (no union)** | | | | | |
| 36CLF-203-01 | 36C-203-01 | 1/2 | 3.63 | 1.62 | 200 |
| 36CLF-204-01 | 36C-204-01 | 3/4 | 3.63 | 1.62 | 200 |
| 36CLF-205-01 | 36C-205-01 | 1 | 3.75 | 1.50 | 225 |
| **FNPT Union Inlet x FNPT Outlet** | | | | | |
| 36CLF-103-01 | 36C-103-01 | 1/2 | 4.50 | 1.62 | 240 |
| 36CLF-104-01 | 36C-104-01 | 3/4 | 4.50 | 1.62 | 240 |
| 36CLF-105-01 | 36C-105-01 | 1 | 4.63 | 1.50 | 270 |
| **Sweat Union Inlet x FNPT Outlet** | | | | | |
| 36CLF-303-01 | 36C-303-01 | 1/2 | 4.50 | 1.62 | 240 |
| 36CLF-304-01 | 36C-304-01 | 3/4 | 4.50 | 1.62 | 240 |
| 36CLF-305-01 | 36C-305-01 | 1 | 4.63 | 1.50 | 270 |
| **CPVC Union Inlet x FNPT Outlet** | | | | | |
| 36CLF-304-01C | 36C-304-01C | 3/4 | 4.75 | 1.62 | 240 |
| 36CLF-305-01C | 36C-305-01C | 1 | 4.41 | 1.50 | 270 |
| **Double Union/Threaded Inlet x Threaded Outlet** | | | | | |
| 36CLF-403-01 | 36C-403-01 | 1/2 | 5.50 | 1.62 | 280 |
| 36CLF-404-01 | 36C-404-01 | 3/4 | 5.50 | 1.62 | 280 |
| 36CLF-405-01 | 36C-405-01 | 1 | 5.75 | 1.50 | 310 |
| **Double Union/Sweat Inlet x Sweat Outlet** | | | | | |
| 36CLF-503-01 | 36C-503-01 | 1/2 | 5.50 | 1.62 | 280 |
| 36CLF-504-01 | 36C-504-01 | 3/4 | 5.50 | 1.62 | 280 |
| 36CLF-505-01 | 36C-505-01 | 1 | 5.75 | 1.50 | 310 |
| **Double Union CPVC Inlet x CPVC Outlet** | | | | | |
| 36CLF-504-01C | 36C-504-01C | 3/4 | 5.37 | 1.62 | 280 |
| 36CLF-505-01C | 36C-505-01C | 1 | 5.87 | 1.50 | 310 |
| **Double Union/Pex Inlet x Pex Outlet** | | | | | |
| 36CLF-903-01 | 36C-903-01 | 1/2 | 5.625 | 1.62 | 280 |
| 36CLF-904-01 | 36C-904-01 | 3/4 | 5.625 | 1.62 | 280 |
| 36CLF-905-01 | 36C-905-01 | 1 | 6.125 | 1.62 | 285 |

*36C Series for non-potable water available.
Example: 36C-203-01

## PRC SERIES (36CLF)




### STANDARD MATERIALS LIST

| | |
|---|---|
| 1 | Adjusting Bolt (Stainless Steel) |
| 2 | Nut (Stainless Steel) |
| 3 | Tee Nut (Zinc Plated Steel) |
| )4 | Cap (Noryl™) |
| 5 | Hex Bolt (300 Series SS) |
| 6 | Pressure Plate (Brass) |
| 7 | Diaphragm (FDA EPDM w/Polyester) |
| 8 | Friction Ring (Brass) |
| 9 | Cartridge Ret. Washer (Brass) |
| 10 | Stem (LF Brass) |
| 11 | O-Ring (FDA Nitrile) |
| 12 | O-Ring (FDA Nitrile) |
| 13 | Cartridge Housing (G.F. Noryl) |
| 14 | Screen (300 Series SS) |
| 15 | O-Ring (FDA Nitrile) |

| | |
|---|---|
| 16 | O-Ring (FDA Nitrile) |
| 17 | O-Ring (FDA Nitrile) |
| 18 | Lock Nut (300 Series SS) |
| 19 | Seat Ring (300 Series SS) |
| 20 | Seat Disc (FDA EPDM) |
| 21 | Disc Holder (LF Brass) |
| 22 | Clean-Out Plug (LF Brass) |
| 23 | Body, Machined (LF Cast Bronze) |
| 24 | Spring Washer (Zinc Plated Steel) |
| 25 | Nameplate (Aluminum) |
| 26 | Spring (Zinc Plated Music Wire) |
| 27 | Union Nut (Brass) |
| 28 | Union Washer (FDA Nitrile) |
| 29 | Union Tail Piece (LF Brass) |
| 30 | Cage Seal (Stainless Steel) |

### Model Number Matrix

| PRC | X | X | X | X | X | LF |
|---|---|---|---|---|---|---|
| | **UNION** | **GAUGE** | **PRESSURE RANGE** | **SIZE** | **END CONNECTION*** | |
| | **blank** - Single Union<br>**E** - Extended Union<br>**D** - Double Union<br>**T** - No Union (Threaded Only) | **blank** - No Gauge Port<br>**P** - w/Gauge Port Plugged<br>**G** - w/Pressure Gauge | **blank** - 25 - 75 PSIG range<br>**L** - 10 - 35 PSIG range<br>**H** - 75 - 125 PSIG range | **12** - 1/2"<br>**34** - 3/4"<br>**1** - 1" | **blank** - FNPT x FNPT<br>**Single Union**<br>**S** - Solder x FNPT<br>**C** - CPVC x FNPT<br>**X** - PEX x FNPT<br>**Double Union**<br>**S** - Solder x Solder<br>**C** - CPVC x CPVC<br>**X** - PEX x PEX<br>**B** - BSPT x BSPT<br>**SC** - Solder x CPVC<br>**SX** - Solder x PEX<br>**CX** - CPVC x PEX<br>**PR** - Press x Press | |

*Note: Two letter union type offered in double union connection only.*
*Union connections are shipped loose.*

### Part Number Matrix

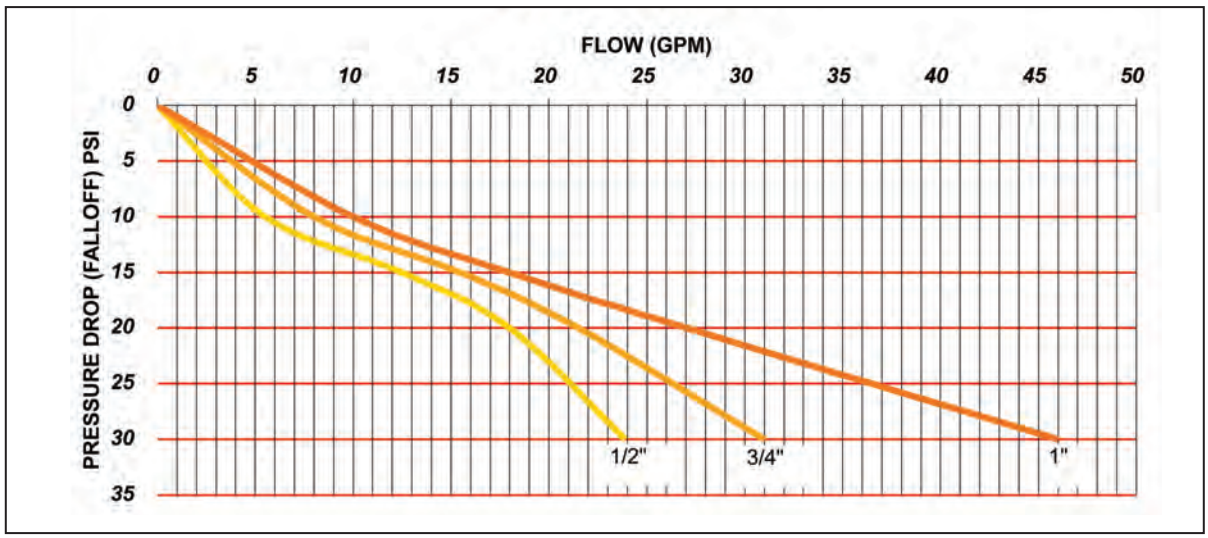
| 36CLF<br>36C | X | XX | X | X | X |
|---|---|---|---|---|---|
| **SERIES** | **CONNECTION** | **SIZE** | **GAUGE** | **PRESSURE** | **OPTION** |
| 36CLF<br>36C (non potable) | **1** - Single Union NPT<br>**2** - No Union NPT<br>**3** - Single Union Solder x NPT<br>**4** - Double Union NPT<br>**5** - Double Union Solder<br>**9** - Double Union PEX | **03** - 1/2"<br>**04** - 3/4"<br>**05** - 1" | **0** - Without Gauge<br>**P** - w/Gauge Port Plugged<br>**G** - w/Gauge | **1** - 25 - 75 PSIG range<br>**2** - 10 - 35 PSIG range<br>**3** - 75 - 125 PSIG range | **C** - CPVC Tailpiece<br>**PR** - Press |

## PRC SERIES (36CLF)

| | | PRESSURE DIFFERENTIAL (PSI) | | |
|---|---|---|---|---|
| | | 25 | 50 | 75 |
| PIPE SIZE | *FALLOFF (PSI) | Water Capacity (GPM) | | |
| 1/2" | 5 | 1.3 | 1.5 | 1.7 |
| | 10 | 4.7 | 5.5 | 6.3 |
| | 15 | 10.6 | 12.5 | 14.4 |
| | 20 | 15.3 | 18.0 | 20.7 |
| | 30 | 20 | 24 | 27 |
| 3/4" | 5 | 2.1 | 2.5 | 2.9 |
| | 10 | 6.8 | 8.0 | 9.2 |
| | 15 | 13.2 | 15.5 | 17.8 |
| | 20 | 18.3 | 21.5 | 24.7 |
| | 30 | 27 | 31 | 35 |
| 1" | 5 | 2.8 | 3.3 | 3.7 |
| | 10 | 8.5 | 10.0 | 11.5 |
| | 15 | 15.3 | 18.0 | 20.7 |
| | 20 | 21.3 | 25.0 | 28.8 |
| | 30 | 40 | 46 | 51 |

**Falloff is the difference between the PRV's set pressure and the flowing pressure at any given demand*

### FLOW CURVE




***Pressure Differential*** *is the difference between the inlet supply pressure and the adjusted outlet pressure.*
***Pressure Falloff*** *is the reduction in downstream pressure from the static (set) pressure as the flow increases through the valve.*

## PRE SERIES (36ELF)

Designed for residential and commercial applications to protect water supplies from excessive pressure. Excellent flow performance at low pressure drop. The dezincification resistant bronze body and dielectric polymer cage provide maximum corrosion resistance. Designed for easy in-line servicing with simple cartridge removal. They meet ASSE 1003 and CSA B356 standards. They are listed with IAPMO and the city of Los Angeles.

### FEATURES

- Balanced Piston Design
- Sealed Cage for Vault Installations
- Built-In Thermal Expansion Bypass
- Integral Stainless Steel Strainer
- Modular Seat Disc and Strainer Cartridge
- Control Pressure Ranges: 15-75 psi and 75-150 psi
- NPT, Solder, PEX, CPVC and Press and Push Connections
- Maximum Supply Pressure: 400 psig
- Working Temperature Range: 33°F-180°F
- **100% Manufactured in USA**

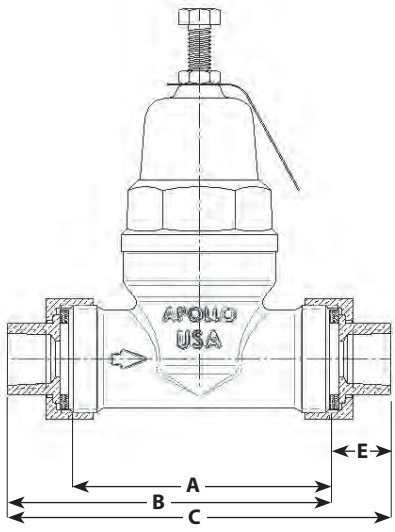
### OPTIONS

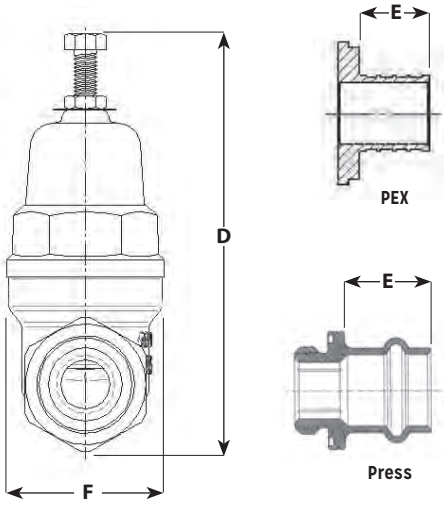
New!

- (-B) Bronze Cap
- 36E Non-LF Materials for Non-Potable Service, Such as Irrigation

### APPROVALS

- ASSE 1003
- CSA B356
- NSF/ANSI 372 Lead Free
- NSF/ANSI 61 Water Quality
- IAPMO

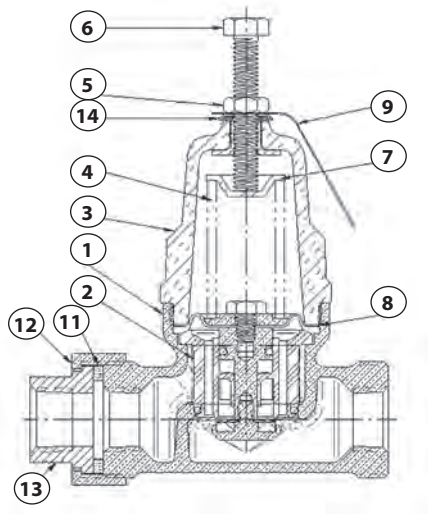



### DIMENSIONS

| Size | Connection | A (in.) | B (in.) | C (in.) | D (in.) | E (in.) | F (in.) | WT. (Union) (lbs) |
|---|---|---|---|---|---|---|---|---|
| 1/2 | Thread | 3.62 | 4.50 | 5.50 | 6.00 | 0.63 | 2.75 | 2.4 |
| | Solder | 3.62 | 4.50 | 5.50 | 6.00 | 0.50 | 2.75 | 2.4 |
| | PEX | 3.62 | 4.50 | 5.50 | 6.00 | 0.63 | 2.75 | 2.4 |
| | CPVC | 3.62 | 4.25 | 5.00 | 6.00 | 0.50 | 2.75 | 2.4 |
| | Press | N/A | N/A | 5.48 | 6.00 | 0.74 | 2.75 | 2.4 |
| 3/4 | Thread | 3.62 | 4.50 | 5.50 | 6.00 | 0.63 | 2.75 | 2.4 |
| | Solder | 3.62 | 4.50 | 5.50 | 6.00 | 0.75 | 2.75 | 2.4 |
| | PEX | 3.62 | 4.63 | 5.63 | 6.00 | 0.63 | 2.75 | 2.4 |
| | CPVC | 3.62 | 4.50 | 5.50 | 6.00 | 0.63 | 2.75 | 2.4 |
| | Press | N/A | N/A | 5.79 | 6.00 | 0.88 | 2.75 | 2.4 |
| 1 | Thread | 3.62 | 4.63 | 5.75 | 6.00 | 0.63 | 3.38 | 2.7 |
| | Solder | 3.62 | 4.63 | 5.75 | 6.00 | 0.88 | 3.38 | 2.7 |
| | PEX | 3.62 | 4.75 | 6.00 | 6.00 | 0.75 | 3.38 | 2.7 |
| | CPVC | 3.62 | 4.75 | 6.00 | 6.00 | 0.94 | 3.38 | 2.7 |
| | Press | N/A | N/A | 5.91 | 6.00 | 0.88 | 3.38 | 2.7 |

## PRE SERIES (36ELF)




### STANDARD MATERIALS LIST

| | |
|---|---|
| 1 | LF Body (Bronze, ASTM B584-C84400) |
| 2 | Assy, Cartridge (Noryl™/LF Brass/EPDM) |
| 3 | Assy, Cap (Noryl™) |
| 4 | Spring (Music Wire ASTM A228) |
| 5 | Nut 5/16-18 (Stainless Steel) |
| 6 | Bolt, 5/16-18 x 2 (Stainless Steel) |
| 7 | Washer, Spring (Steel Plated) |
| 8 | Friction Ring (LF Brass) |
| 9 | Nameplate (Aluminum) |
| 11 | Washer (BUNA-N) |
| 12 | LF Nut, Union (Brass) |
| 13 | LF Tailpiece (Brass) |
| 14 | Cage Seal (Nitrile) |

### TAILPIECE KITS (TPK)

| Size | Lead Free Tailpiece Kits | Standard Brass Tailpiece Kits | Connection |
|---|---|---|---|
| 1/2" | TPK12TLF | TPK12T | NPT |
| 1/2" | TPK12SLF | TPK12S | SOLDER |
| 1/2" | TPK12C | TPK12C | CPVC |
| 1/2" | TPK12XLF | TPK12X | PEX |
| 1/2" | TPK12PRLF | TPK12PR | PRESS |
| 3/4" | TPK34TLF | TPK34T | NPT |
| 3/4" | TPK34SLF | TPK34S | SOLDER |
| 3/4" | TPK34C | TPK34C | CPVC |
| 3/4" | TPK34XLF | TPK34X | PEX |
| 3/4" | TPK34PRLF | TPK34PR | PRESS |
| 1" | TPK1TLF | TPK1T | NPT |
| 1" | TPK1SLF | TPK1S | SOLDER |
| 1" | TPK1C | TPK1C | CPVC |
| 1" | TPK1XLF | TPK1X | PEX |
| 1" | TPK1PRLF | TPK1PR | PRESS |

36ELF bodies are threaded to accept unions. TPK Tailpiece Kits allow for customization of the end connection configurations in the field. Union connections can easily be added and tailpieces can be mixed to match the requirements at the jobsite. NPT x Solder? PEX x Press? - no problem!

Each TPK includes one each tailpiece, union nut and washer.

### MODEL NUMBER MATRIX

| PRE X | X | X | X | |
|---|---|---|---|---|
| UNION | PRESSURE SETTING (ADJ) | SIZE | CONNECTION | LEAD FREE |
| Blank - Single Union x NPT | Blank - 15-75 psig | 12 - 1/2" | Blank - FNPT | LF - Lead Free |
| D - Double Union | H - 75-125 psig | 34 - 3/4" | S - Solder | |
| T - No Union | | 1 - 1" | C - CPVC | |
| | | | P - PUSH | |
| | | | X - PEX | |
| | | | PR - Press | |

### PART NUMBER MATRIX

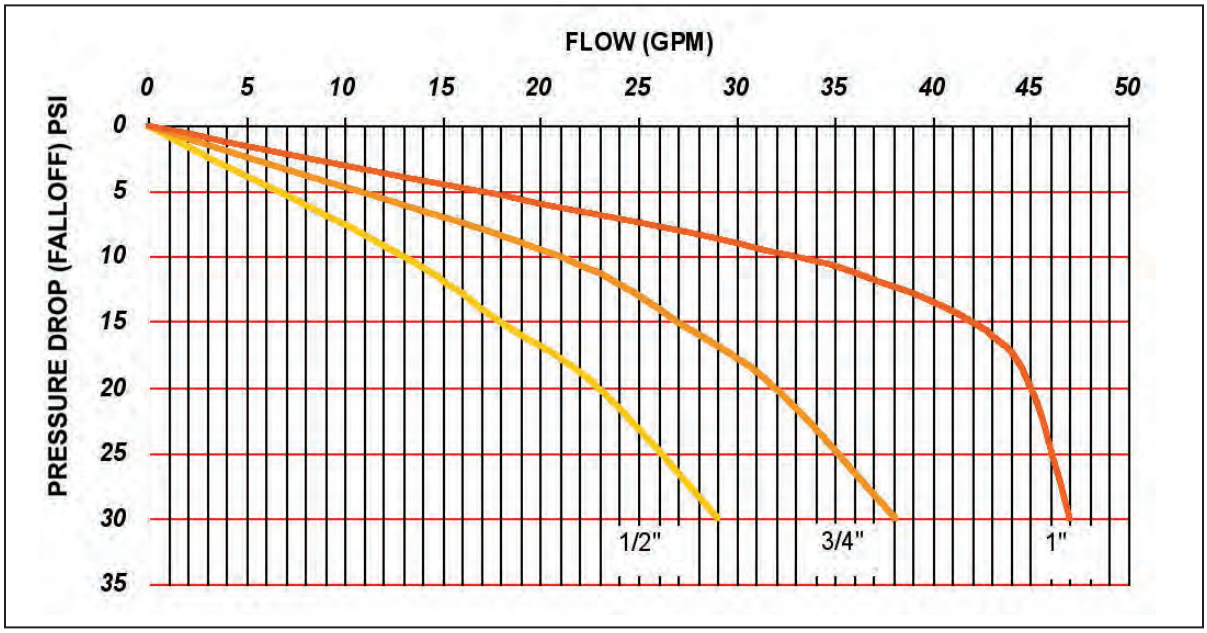
| 36ELF<br>36E - | 1 | X | X | X | X | X |
|---|---|---|---|---|---|---|
| | STYLE | UNION | SIZE | PRESSURE | CONNECTION | CAP |
| 36ELF - Lead Free | | 0 - No Union NPT | 3 - 1/2" | 01 - 15-75 psig | T - FNPT Thread | Blank - Standard Polymer |
| 36E - Non Lead Free | | 1 - Single Union | 4 - 3/4" | 03 - 75-150 psig | S - Solder | B - Bronze |
| | | 2 - Double Union | 5 - 1" | | C - CPVC | |
| | | | | | P - Push | |
| | | | | | X - PEX | |
| | | | | | PR - Press | |

## PRE SERIES (36ELF)

| | | PRESSURE DIFFERENTIAL (PSI) | | |
|---|---|---|---|---|
| | | 25 | 50 | 75 |
| PIPE SIZE | *FALLOFF (PSI) | Water Capacity (GPM) | | |
| 1/2" | 10 | 10 | 13 | 16 |
| | 15 | 13 | 18 | 22 |
| | 20 | 17 | 23 | 29 |
| | 30 | 22 | 29 | 36 |
| 3/4" | 10 | 16 | 21 | 26 |
| | 15 | 20 | 27 | 32 |
| | 20 | 24 | 32 | 40 |
| | 30 | 29 | 38 | 48 |
| 1" | 10 | 25 | 33 | 41 |
| | 15 | 30 | 42 | 52 |
| | 20 | 34 | 45 | 56 |
| | 30 | 35 | 47 | 59 |

**Falloff is the difference between the PRV's set pressure and the flowing pressure at any given demand*

### FLOW CURVE




***Pressure Differential*** *is the difference between the inlet supply pressure and the adjusted outlet pressure.*
***Pressure Falloff*** *is the reduction in downstream pressure from the static (set) pressure as the flow increases through the valve.*


# Spacers Designed to Allow System Flush Prior to Installing WPRV

36ESP1 - 1" Connections
36ESP114 - 1 1/4" Connections

## PRE SERIES (36ELF) LARGE DIAMETER

The new large diameter Apollo® Lead Free Pressure Reducing Valve Model PRE (36ELF Series) is designed to conserve water and protect water distribution systems by automatically reducing elevated supply pressures. The dezincification resistant bronze body, stainless steel adjusting screw and dielectric polymer cage provide maximum corrosion resistance. Designed for easy in-line servicing with simple cartridge removal.

### FEATURES

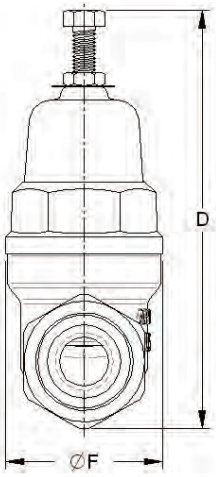
- Balanced Piston Design
- SS Adjusting Screw & Nut
- Sealed Cage for Vault Installations
- Built-In Thermal Expansion Bypass
- Large Area Integral Stainless Steel Strainer
- Modular Seat Disc and Strainer Cartridge
- Control Pressure Ranges: 15-75 psi and 75-150 psi
- High Flow / High Efficiency Design
- NPT and Solder Connections
- Factory Tested and Preset at 60 psi
- Single Union, Double Union and Less Union Configurations Available
- **100% Manufactured in USA - ARRA Compliant**

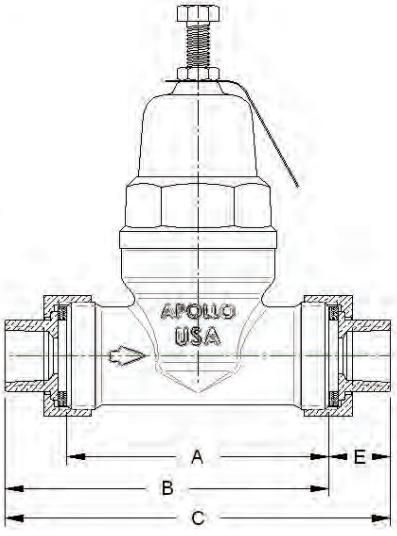
### OPTIONS

- (-B) Bronze Cap
- (-P) Tapped 1/4" & Plugged
- (-G) With Pressure Gauge

### APPROVALS

- ASSE 1003
- CSA B356
- IAPMO/UPC
- NSF/ANSI 372 Lead Free
- NSF/ANSI 61 Water Quality



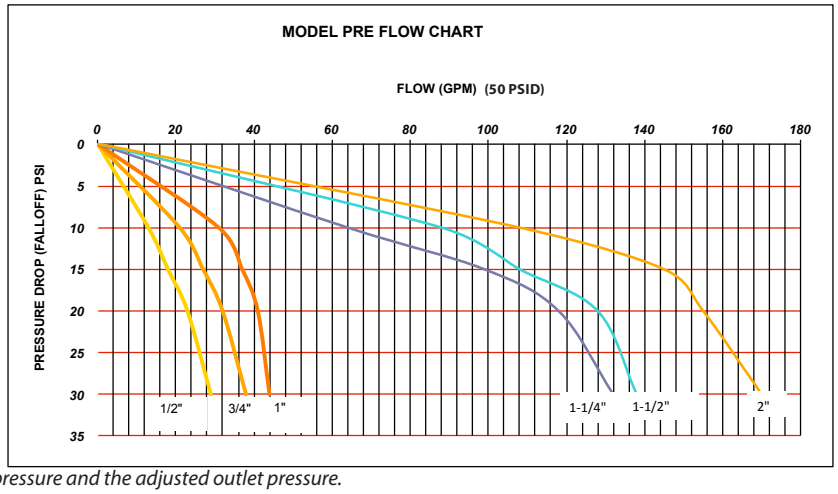

### DIMENSIONS

| Connect Type | Size (in.) | Dimensions (in.) | | | | | | Single Union Wt. | Double Union Wt. |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | | |
| **THREAD** | 1-1/4" | 5.5 | 6.62 | 7.74 | 10 | 1.12 | 3.375 | 7.22 | 8.34 |
| **SOLDER** | 1-1/4" | 5.5 | 6.62 | 7.74 | 10 | 1.12 | 3.375 | 7.22 | 8.34 |
| **THREAD** | 1-1/2" | 5.5 | 6.80 | 8.1 | 10 | 1.30 | 3.375 | 7.61 | 8.92 |
| **SOLDER** | 1-1/2" | 5.5 | 6.80 | 8.1 | 10 | 1.30 | 3.375 | 7.61 | 8.92 |
| **THREAD** | 2" | 5.5 | 6.93 | 8.36 | 10 | 1.43 | 3.375 | 9.2 | 11.6 |
| **SOLDER** | 2" | 5.5 | 6.93 | 8.36 | 10 | 1.43 | 3.375 | 9.2 | 11.6 |

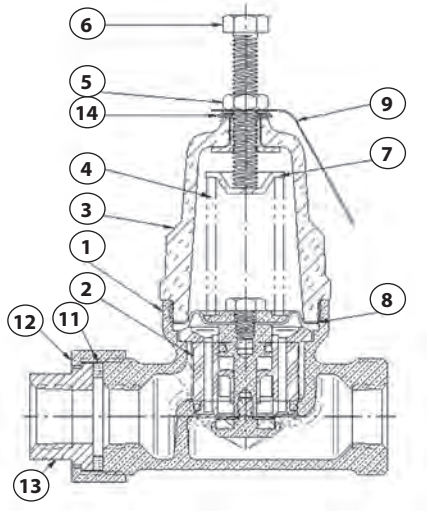
## PRE SERIES (36ELF) LARGE DIAMETER

### FLOW CURVE

| Pipe Size | Fall-Off (PSI) | Pressure Differential (PSI) | | |
|---|---|---|---|---|
| | | 25 | 50 | 75 |
| | | GPM | | |
| 1-1/4" | 10 | 35 | 47 | 59 |
| | 15 | 58 | 77 | 96 |
| | 20 | 85 | 113 | 141 |
| | 30 | 99 | 132 | 165 |
| 1-1/2" | 10 | 66 | 88 | 110 |
| | 15 | 81 | 108 | 135 |
| | 20 | 96 | 128 | 160 |
| | 30 | 104 | 138 | 172 |
| 2" | 10 | 81 | 108 | 135 |
| | 15 | 109 | 145 | 181 |
| | 20 | 116 | 155 | 194 |
| | 30 | 128 | 170 | 212 |




***Pressure Differential*** *is the difference between the inlet supply pressure and the adjusted outlet pressure.*
***Pressure Falloff*** *is the reduction in downstream pressure from the static (set) pressure as the flow increases through the valve.*




### STANDARD MATERIALS LIST

| | |
|---|---|
| 1 | LF Body (Bronze, ASTM B584-C89836) |
| 2 | Assy, Cartridge (Noryl™/LF Brass/EPDM) |
| 3 | Cap (Noryl™) |
| 4 | Spring (Music Wire ASTM A228) |
| 5 | Nut (Stainless Steel) |
| 6 | Bolt (Stainless Steel) |
| 7 | Washer, Spring (Steel Plated) |
| 8 | Friction Ring (Lead Free Brass) |
| 9 | Nameplate (Aluminum) |
| 11 | Washer (BUNA-N) |
| 12 | Nut, Union (Brass) |
| 13 | Tailpiece (Lead Free Brass) |
| 14 | Cage Seal (Nitrile) |

### PART NUMBER MATRIX

| 36ELF - | 1 | X | X | X | X | X | X |
|---|---|---|---|---|---|---|---|
| | STYLE | UNION | SIZE | OPTION | PRESSURE | CONNECTION | OPTION |
| 36ELF - Lead Free<br>36E - Non Lead Free | 1 | 0 - No Union (NPT)<br>1 - Single Union<br>2 - Double Union | 6 - 1-1/4"<br>7 - 1-1/2"<br>8 - 2" | 0 - No Gauge<br>P - Tapped & Plugged<br>G - With Gauge | 01 - 15-75 psig<br>03 - 75-150 psig | T - FNPT Thread<br>S - Solder | Blank - Standard Polymer<br>B - Bronze Cap<br>Y - Strainer |

## PRH SERIES (36HLF)

Apollo® PRH Series pressure reducing valves offer high performance in heavy-duty applications. They're designed with a larger diaphragm and orifice area to yield the highest water flow water capacities in the industry.

PRH pressure reducing valves' integral bypass protects against thermal expansion. Built for extended service, these models include bronze body construction and stainless steel replaceable seat. They meet ASSE 1003 and CSA B356 standards. They are listed with IAMPO and city of Los Angeles.

These heavy-duty valves are available with optional in-line strainer and 150 lb. ANSI B16.24 integral bronze flange connections. (2-1/2" and 3" only)

### FEATURES

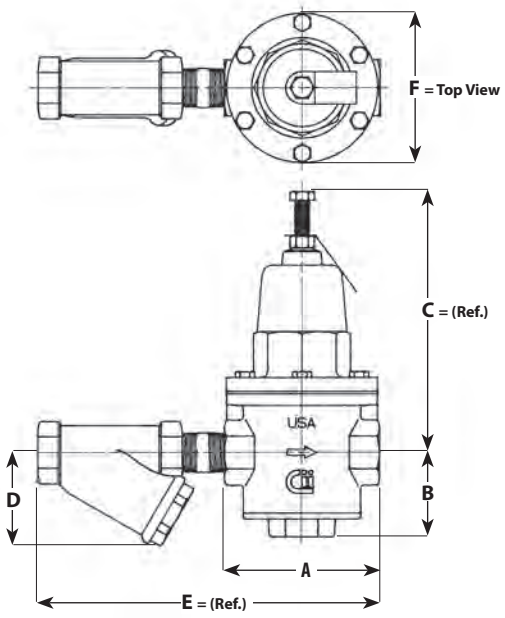
- Bronze Body and Spring Cage for Superior Corrosion Resistance and Dependability
- SS Fasteners, Spring, Seat, and Adjustment Screw
- Standard Factory Setting is 50 psi
- Operating Temperature: 33 - 180°F
- Suitable for Supply Pressures to 400 psi
- Every Valve is 100% Factory Set and Tested
- Integral Thermal Expansion Bypass
- In-line Repairable, Bottom Access
- USA Materials and Manufacture

### OPTIONS

- (-02) Low Pressure 10-35 psi
- (-03) High Pressure 75-125 psi
- Bronze Stainer
- 36HLF700 Series w/ 150# ANSI Flanges

### APPROVALS

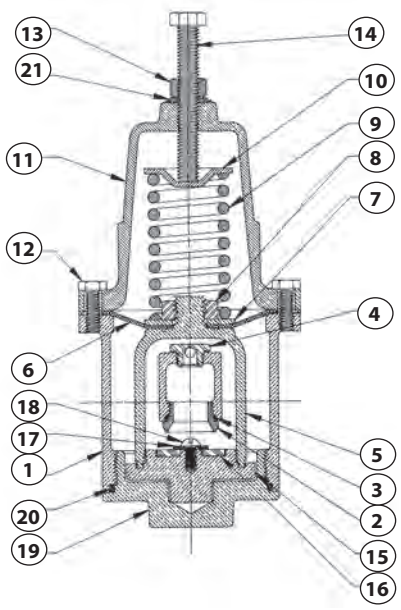
- ASSE 1003
- CSA B356
- NSF/ANSI 372 Lead Free
- IAPMO




### DIMENSIONS

| Size (in.) | A (in.) | B (in.) | C (in.) | D (in.) | E (in.) | F (in.) | Wt. w Strainer | Wt. w/o Strainer |
|---|---|---|---|---|---|---|---|---|
| **NPT** | | | | | | | | |
| 1/2" | 4.13 | 2.25 | 7.00 | 1.88 | 8.38 | 4.00 | 7.0 | 6.00 |
| 3/4" | 4.13 | 2.25 | 7.00 | 2.44 | 9.00 | 4.00 | 8.0 | 6.00 |
| 1" | 4.81 | 2.31 | 7.50 | 4.00 | 10.25 | 4.69 | 12.0 | 8.00 |
| 1-1/4" | 6.75 | 3.81 | 10.00 | 3.38 | 12.50 | 6.50 | 29.0 | 24.00 |
| 1-1/2" | 6.75 | 3.19 | 10.00 | 3.88 | 13.13 | 6.50 | 29.0 | 23.00 |
| 2" | 8.13 | 3.50 | 12.50 | 4.63 | 16.00 | 7.63 | 47.0 | 38.00 |
| 2-1/2" | 8.13 | 3.50 | 12.50 | 5.94 | 16.69 | 7.63 | 49.0 | 37.00 |
| 3" | 10.38 | 3.94 | 15.13 | 6.94 | 20.50 | 9.75 | 87.0 | 70.00 |
| **Flanged** | | | | | | | | |
| 2-1/2" | 10.38 | 3.50 | 12.50 | 7.13 | 21.69 | 7.63 | 105.0 | 55.00 |
| 3" | 12.50 | 3.94 | 15.13 | 8.13 | 24.50 | 9.75 | 136.0 | 92.00 |

## PRH SERIES (36HLF)




### STANDARD MATERIALS LIST

| | |
|---|---|
| 1 | Body (LF Bronze) |
| 2 | Seat (SS) |
| 3 | Seat O-Ring (Nitrile) |
| 4 | Bypass Assembly |
| 5 | Yoke (LF Bronze) |
| 6 | Diaphragm (Nitrile w/Nylon Reinforcement) |
| 7 | Diaphragm Washer (SS) |
| 8 | Diaphragm Nut (SS) |
| 9 | Spring (SS) |
| 10 | Spring Retainer (SS) |

| | |
|---|---|
| 11 | Cap (Bronze) |
| 12 | Cap Bolts (SS) |
| 13 | Lock Nut (SS) |
| 14 | Adjustment Screw (SS) |
| 15 | Seat Disc Holder (LF Bronze) |
| 16 | Seat Disc (EPDM) |
| 17 | Seat Disc Washer (SS) |
| 18 | Seat Screw (SS) |
| 19 | Bottom Cover (LF Bronze) |
| 20 | Bottom Cover O-Ring (Nitrile) |
| 21 | Cage-Sealing Washer (SS) |

### MODEL NUMBER MATRIX

| PRH - X | X | X | X | |
|---|---|---|---|---|
| CONNECTIONS | MISCELLANEOUS | PRESSURE SETTING | SIZE | LEAD FREE |
| T - FNPT x FNPT | Blank - No Strainer | Blank - 25-75 psig | 12 - 1/2" | LF - Lead Free |
| F - Flanged | Y - With Strainer | L - 10-35 psig | 34 - 3/4" | Blank - Non-Lead Free |
| | | H - 75-125 psig | 1 - 1" | |
| | | | 114 - 1-1/4" | |
| | | | 112 - 1-1/2" | |
| | | | 2 - 2" | |
| | | | 212 - 2-1/2" | |
| | | | 3 - 3" | |

*ANSI 150 lb. flange connection for 2-1/2" and 3"only.*
*Not all variations are available in each size.*
*Check with customer service.*

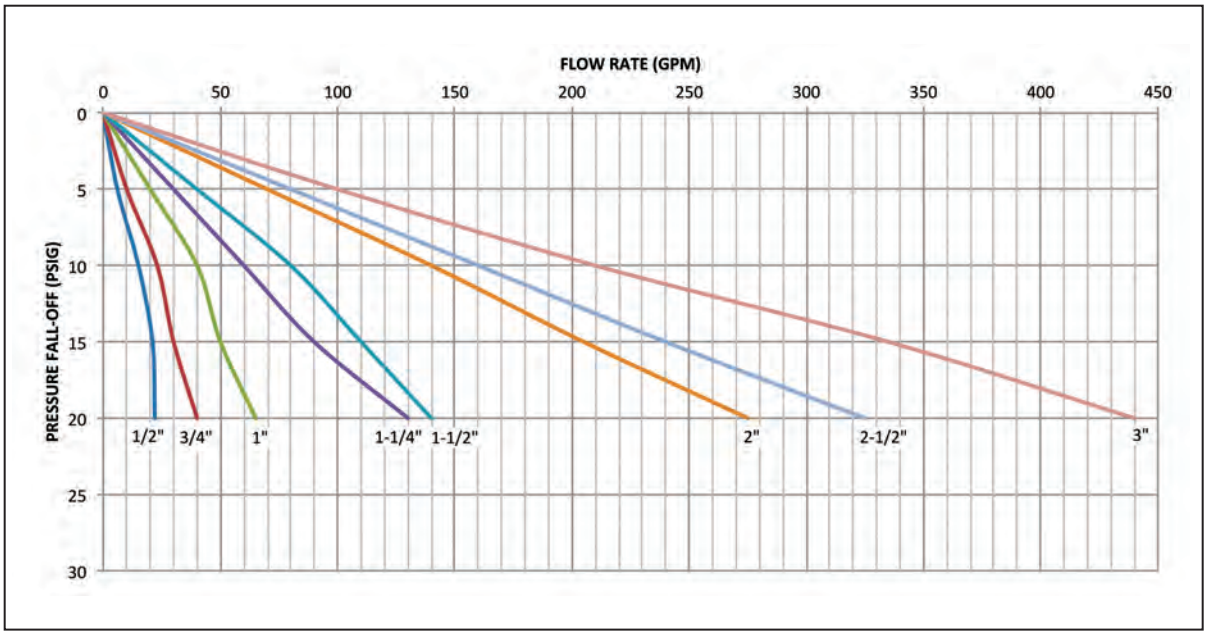
### PART NUMBER MATRIX

| 36HLF<br>36H - X | X | X | X - | 0X |
|---|---|---|---|---|
| | END CONNECTIONS | OPTIONS | SIZE | PRESSURE RANGE |
| 36HLF- | 2 - FNPT x FNPT (Standard) | 0 - Standard | 3 - 1/2" | 01 - 25-75 |
| 36H- | 7 - Flanged (2-1/2" - 3" only) | 1 - With Y-Strainer | 4 - 3/4" | 02 - 10-35 |
| | | | 5 - 1" | 03 - 75-125 |
| | | | 6 - 1-1/4" | |
| | | | 7 - 1-1/2" | |
| | | | 8 - 2" | |
| | | | 9 - 2-1/2" | |
| | | | 0 - 3" | |

## PRH SERIES (36HLF)

| | | PRESSURE DIFFERENTIAL (PSI) | | |
|---|---|---|---|---|
| | | 25 | 50 | 75 |
| PIPE SIZE | *FALLOFF (PSI) | Water Capacity (GPM) | | |
| 1/2" | 5 | 8.5 | 10.0 | 11.5 |
| | 10 | 13.6 | 16.0 | 18.4 |
| | 15 | 17.9 | 21.0 | 24.2 |
| | 20 | 21.3 | 25.0 | 28.8 |
| 3/4" | 5 | 10.6 | 12.5 | 14.4 |
| | 10 | 20.4 | 24.0 | 27.6 |
| | 15 | 28.1 | 33.0 | 38.0 |
| | 20 | 34.0 | 40.0 | 46.0 |
| 1" | 5 | 17.0 | 20.0 | 23.0 |
| | 10 | 29.8 | 35.0 | 40.3 |
| | 15 | 40.8 | 48.0 | 55.2 |
| | 20 | 51.0 | 60.0 | 69.0 |
| 1-1/4" | 5 | 21.3 | 25.0 | 28.8 |
| | 10 | 51.9 | 61.0 | 70.2 |
| | 15 | 80.8 | 95.0 | 109.3 |
| | 20 | 113.1 | 125.0 | 143.8 |
| 1-1/2" | 5 | 29.8 | 35.0 | 40.3 |
| | 10 | 61.5 | 72.3 | 83.1 |
| | 15 | 90.1 | 106.0 | 121.0 |
| | 20 | 113.1 | 133.0 | 153.0 |
| 2" | 5 | 55.3 | 65.0 | 74.8 |
| | 10 | 126.7 | 149.0 | 171.4 |
| | 15 | 174.3 | 205.0 | 235.8 |
| | 20 | 231.20 | 272.0 | 312.80 |
| 2-1/2" | 5 | 58.7 | 69.0 | 79.4 |
| | 10 | 132.6 | 156.0 | 179.4 |
| | 15 | 200.6 | 236.0 | 271.40 |
| | 20 | 271.20 | 319.0 | 366.9 |
| 3" | 5 | 80.8 | 95.0 | 109.3 |
| | 10 | 176 | 207 | 238.1 |
| | 15 | 282.5 | 332.4 | 382.3 |
| | 20 | 365.5 | 430.0 | 494.5 |

### FLOW CURVE




***Pressure Differential*** *is the difference between the inlet supply pressure and the adjusted outlet pressure.*
***Pressure Falloff*** *is the reduction in downstream pressure from the static (set) pressure as the flow increases through the valve.*

## A127 SERIES

Apollo® pilot control valves are ideal for a wide range of commercial and industrial applications, wherever the supply pressure needs to be reduced to a lower constant pressure.

Hydraulically operated diaphragm main valve automatically controls non-corrosive, non-abrasive fluids by means of a wide range of pilots.

### FEATURES

- Ductile Iron Body & Bonnet, ASTM A536 Grade 65-45-12
- NSF Epoxy Coated
- Bronze / Stainless Steel Internals
- EPDM Elastomers 40°F - 180°F
- Lead Free Components Used Throughout
- Lead Free Wye Strainer Protects Pilot System from Debris
- Isolation Ball Valves Simplify Maintenance and Troubleshooting
- Each Valve is 100% Factory Tested and Can be Set to Your Requirements
- Wide Range of Control Pilots and Functions
- Opening Speed Control is Standard
- Automatically Reduces a Higher Upstream Pressure to a Constant Lower Downstream Pressure
- Constant Outlet Pressure Regardless of Variations in Upstream Pressure or Flow
- Pilot Operated Main Valve is Not Subject to Pressure falloff
- Outlet Pressure is Adjustable with a Single Screw
- Optional Low-Flow Bypass, Model A127-LF When Wide Extremes in Flow Demand are Anticipated

| Valve Sizes | |
|---|---|
| Globe Flanged | 1 1/4" - 24" |
| Angle Flanged | 1 1/4" - 16" |
| Globe / Angle Threaded | 1 1/4" - 3" |
| Globe / Angle Grooved | 1 1/2" - 6"* |
| **Service Ratings - Ductile Iron** | |
| 150# Flanged | 250 psi MAWP |
| 300# Flanged | 640 psi MAWP |
| Threaded | 640 psi MAWP |
| Grooved | 300 psi MAWP |

**6" grooved globe style only*

### APPROVALS

- NSF/ANSI 372 Lead Free
- NSF/ANSI 61 Water Quality

### MATERIAL OPTIONS

- Body: Ductile Iron (NSF 61 Epoxy Coated), Cast Steel, Stainless Steel, Bronze
- Pilot/Fittings: Bronze/Brass, Stainless Steel
- Tubing: Copper, Stainless Steel
- Elastomers: EPDM, Buna N, Viton

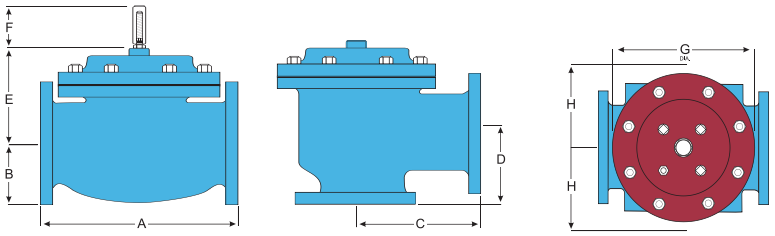
*For use with potable water, use ductile iron (NSF 61 epoxy coated) body, lead free bronze/brass pilot and fittings, copper tubing and EPDM elastomers.

### OTHER CONTROL FUNCTIONS

| | |
|---|---|
| A94 | Diaphragm Check Valve |
| A108-2 | Pressure Relief/Pressure Sustaining |
| A110 | Differential Control |
| A115-2 | Solenoid Control |
| A115-4 | Solenoid Control/high capacity pilot |
| A120 | Rate of Flow Control |
| A127LF/727LF | Low flow bypass |
| A800 | Float Controlled On/Off Service |
| A810 | Float Controlled, Modulating |
| A22 / A88 | Digital Electronic Control, regulates pressure, flow or level |

**Contact customer service for assistance with sizing, selection and model numbers*

## A127 SERIES




### DIMENSIONS

| | End Connections A | | | | End Connections C | | | | End Connections D | | | | E | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (in.) | Screwed | Grooved | 150# FLGD | 300# FLGD | Screwed | Grooved | 150# FLGD | 300# FLGD | Screwed | Grooved | 150# FLGD | 300# FLGD | All | All |
| 1-1/4 - 1-1/2 | 8-3/4 | 8-3/4 | 8-1/2 | 8-3/4 | 4-3/8 | 4-3/8* | 4-1/4 | 4-3/8 | 3-1/8 | 3-1/8* | 3 | 3-1/8 | 6 | 10 |
| 2 | 9-7/8 | 9-7/8 | 9-3/8 | 9-7/8 | 4-3/4 | 4-3/4 | 4-3/4 | 5 | 3-7/8 | 3-7/8 | 3-7/8 | 4-1/8 | 6 | 11 |
| 2 -1/2 | 10-1/2 | 10-1/2 | 10-1/2 | 11-1/8 | 6 | 6 | 6 | 6-3/8 | 4 | 4 | 4 | 4-3/8 | 7 | 11 |
| 3 | 13 | 13 | 12 | 12-3/4 | 6-1/2 | 6-1/2 | 6 | 6-3/8 | 4-1/2 | 4-1/2 | 4 | 4-3/8 | 6 1/2 | 11 |
| 4 | — | 15 1/4 | 15 | 15-5/8 | — | 7-5/8 | 7-1/2 | 7-13/16 | — | 5-5/8 | 5-1/2 | 5-13/16 | 8 | 12 |
| 6 | — | 20 | 17-3/4 | 18-5/8 | — | — | 10 | 10-1/2 | — | — | 6 | 6-1/2 | 10 | 13 |
| 8 | — | — | 25-3/8 | 26-3/8 | — | — | 12-11/16 | 13-3/16 | — | — | 8 | 8-1/2 | 11 7/8 | 14 |
| 10 | — | — | 29-3/4 | 31-1/8 | — | — | 14-7/8 | 15-9/16 | — | — | 11-3/8 | 12-1/16 | 15 3/8 | 17 |
| 12 | — | — | 34 | 35-1/2 | — | — | 17 | 17-3/4 | — | — | 11 | 11-3/4 | 17 | 18 |
| 14 | — | — | 39 | 40-1/2 | — | — | — | — | — | — | — | — | 18 | 20 |
| 16 | — | — | 40-3/8 | 42 | — | — | 20-13/16 | 21-5/8 | — | — | 15-11/16 | 16-1/2 | 19 | 20 |
| 24 | — | — | 62 | 63-3/4 | — | — | — | — | — | — | — | — | 27 | 28-1/2 |

**Grooved End Not Available in 1-1/4"*

## W-8078-00 SERIES

LEADFREE OPTIONS

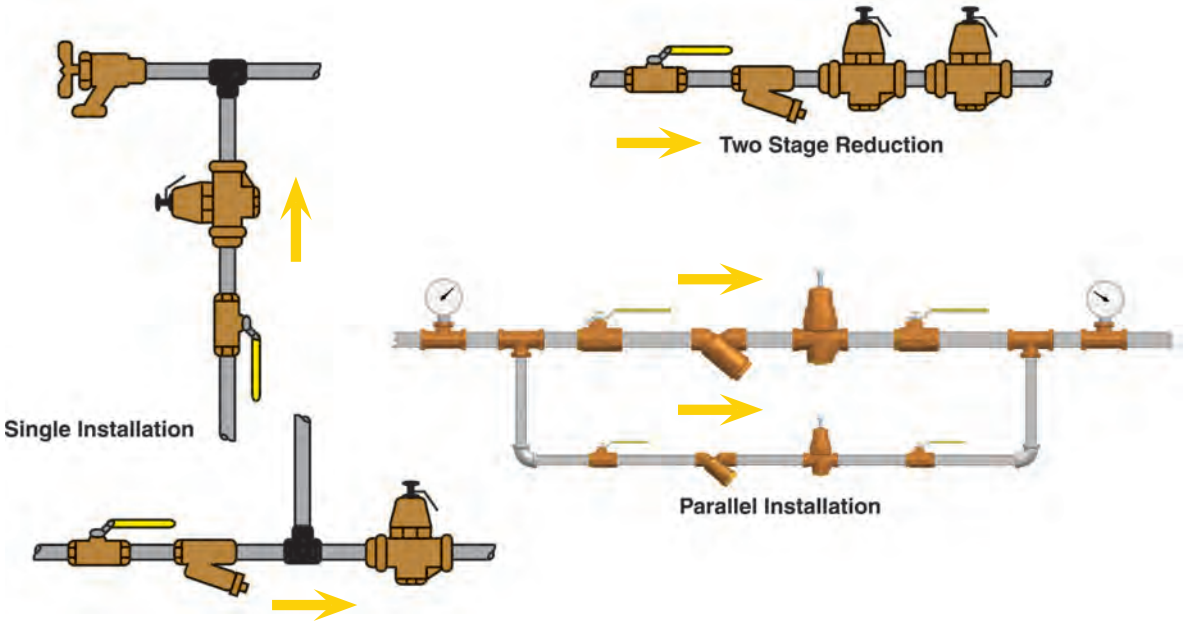
**W-8078-00**

**W-2799-00**

These pressure gauges are used for testing water pressure.
Temp. Range: 50°-130° F - P/N W807800. Includes a high-pressure indicator.

| Model Number | LF Model Number | Connection | Pressure Range | Net Wt. (lbs.) |
|---|---|---|---|---|
| **W-8078-00** | – | 3/4" hose thread | 0-300 psig | .46 |
| | **W-2799-00** | 1/4" NPT | 0-160 psig | .70 |

## INSTALLATION CONFIGURATIONS



BACKFLOW
**PREVENTION**

## SELECTION GUIDE

| | | **Apollo Recommended APPLICATION | | | | |
|---|---|---|---|---|---|---|
| **TYPE OF DEVICE** | **SERIES** | **BACK** SIPHONAGE | **BACK PRESSURE** | **CONTINUOUS PRESSURE** | **AESTHETIC HAZARD** | **HEALTH HAZARD** |
| DOUBLE CHECK VALVE | DCLF 4A<br>DCLF 4An<br>DCLF 4SG, DCLF 4S | ✓ | ✓ | ✓ | ✓ | |
| DOUBLE CHECK DETECTOR ASSEMBLY | DCDALF 4A<br>DCDALF 4An<br>DCDA 4SG, DCDA 4S | ✓ | ✓ | ✓ | ✓ | |
| REDUCED PRESSURE PRINCIPLE | RPLF 4A | ✓ | ✓ | ✓ | ✓ | ✓ |
| REDUCED PRESSURE PRINCIPLE (n & V Flow) | RPLF 4An | ✓ | ✓ | ✓ | ✓ | ✓ |
| REDUCED PRESSURE PRINCIPLE (Stainless Steel) | RP 40-S | ✓ | ✓ | ✓ | ✓ | ✓ |
| REDUCED PRESSURE DETECTOR ASSEMBLY | RPDALF 4A<br>RPDALF 4An | ✓ | ✓ | ✓ | ✓ | ✓ |
| ATMOSPHERIC VACUUM BREAKER | AVB1, AVB1LF<br>AVB2 | ✓ | | | ✓ | ✓ |
| PRESSURE VACUUM BREAKER | PVB 4A, PVBLF 4A | ✓ | | ✓ | ✓ | ✓ |
| SPILL RESISTANT PRESSURE VACUUM BREAKER | SVB 4A, SVBLF 4A | ✓ | | ✓ | ✓ | ✓ |
| DUAL CHECK | DUC 4ALF<br>DUC 4FP<br>DUC40, DUCLF40 | ✓ | ✓ | ✓ | ✓ | |
| DUAL CHECK W/ ATMOS. PORT | DCAP 4A, DCAP 4ALF | ✓ | ✓ | ✓ | ✓ | |
| CARBONATED BEVERAGE BACKFLOW PREVENTER | CBBP | ✓ | ✓ | ✓ | ✓ | |
| HOSE CONNECTION VACUUM BREAKER | HBV2, HBV2LF | ✓ | ✓ * | | ✓ | ✓ |
| ANTI FREEZE HOSE CONN. VACUUM BREAKER | HBVAF2, HBVAF2LF | ✓ | ✓ * | | ✓ | ✓ |
| HOSE CONNECTION BACKFLOW PREVENTER | HBDUC, HBDUCLF | ✓ | ✓ * | | ✓ | ✓ |
| LAB FAUCET VACUUM BREAKER | LFDUCLF | ✓ | ✓ | | ✓ | |

** Limited back pressure to 10' head*

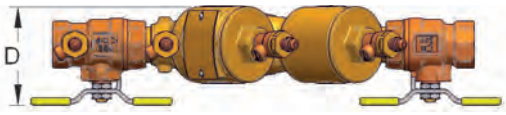
*** Check with local authorities having jurisdiction*

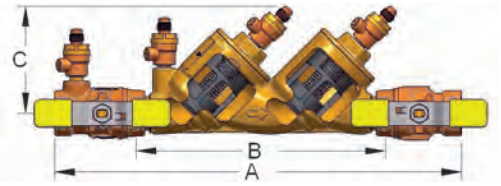
See **BFCA9000** for additional information including weights, dimensions and pressure loss curves.

Visit **conbra.co/backflowapprovals** for up-to-date agency approvals.

## DC 4A SERIES — DOUBLE CHECK VALVE BACKFLOW PREVENTER


**Sizes 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"**




**Slo Cloz with Monitor Switches**
**T2ST Option (1-1/2" and 2" only)**
**See SS1396 for dimensions**

The Apollo® MODEL DC 4A Double Check Valves are designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are objectionable, but non-health hazards. The modular check valve captured spring cartridges have replaceable seats and reversible silicone seat discs. Ball valve shut-offs with stainless steel handles and nuts are standard.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. Each check valve is designed to maintain a minimum of 1 psi across the valve during normal operation. Should the downstream pressure increase to within 1 psi of supply pressure, both check valves will close to prevent a backflow condition.

### FEATURES

- Low Pressure Loss
- Captured Spring Cartridge Check Valves
- Compact, Yet Easy to Maintain
- Ball Valve Shut-Offs w/ SS Handles & Nuts Standard
- Top Access for Fast Testing & Maintenance
- Threaded Testcock Protectors
- Corrosion Resistant
- No Special Tools Required
- 5 Year Warranty
- Lead-Free Option
- AWWA C510
- UL, ULC Classified (T2ST Option or Less Shutoffs)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- ASSE 1015
- IAPMO
- CSA
- Chloramine-Resistant Elastomers
- Horizontal and Vertical Up Approvals
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 180°F
- Designed, Manufactured, Assembled and Tested in South Carolina, USA

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY, CAPS** | Bronze C84400/LF C89836 |
| **BV SHUT-OFFS, TESTCOCKS** | Bronze C84400 or LF C87800 |
| **CHECK VALVES** | Glass-Filled PPO |
| **SPRINGS** | 300 Series Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |
| **O-RINGS** | Chloramine-Resistant EPDM |
| **BALL VALVE HANDLES** | Stainless Steel |

### PART NUMBER MATRIX

| 4A [X] | 1 X | X | X X | X |
|---|---|---|---|---|
| | Y-strainer | SIZE | SHUT-OFF VALVES | OPTIONS (CAN BE COMBINED) |
| 4A = Standard<br>4ALF = Lead Free | 0 = Standard<br>1 = w/ Y-strainer (shipped loose) | 3 = 1/2"<br>4 = 3/4"<br>5 = 1"<br>6 = 1-1/4"<br>7 = 1-1/2"<br>8 = 2" | A = Apollo bronze BV<br>A2 = w/ball valves (Standard)<br>A4 = w/union ball valves (3/4" - 2")<br>T= Apollo domestic bronze BV<br>T2 = w/ball valves (Standard)<br>T4 = w/union ball valves (3/4" - 2")<br>T2ST = w/gear operated ball valves w/tamper switch (1-1/2" - 2" | F = SAE threaded test cocks (standard 1/2" -2")<br>LL = SS locking lever handles<br>PR= Press connections (factory installed)<br>P = Push (3/4" -1") connections (factory installed) |

**EXAMPLE:**
**4A 104 A4LL** = 3/4" double check valve assembly with union ball valves with locking lever handles

### DIMENSIONS

| Model No.<br>Factory No.<br>Size | 4A 103 A2F<br>DC 4A 12<br>1/2" | 4A 103 A2F<br>DC 4A 12<br>15 mm. | 4A 104 A2F<br>DC 4A 34<br>3/4" | 4A 104 A2F<br>DC 4A 34<br>20 mm. | 4A 105 A2F<br>DC 4A 1<br>1" | 4A 105 A2F<br>DC 4A 1<br>25mm. | 4A 106 A2F<br>DC 4A 114<br>1-1/4" | 4A 106 A2F<br>DC 4A 114<br>32 mm. | 4A 107 A2F<br>DC 4A 112<br>1-1/2" | 4A 107 A2F<br>DC 4A 112<br>40 mm. | 4A 108 A2F<br>DC 4A 2<br>2" | 4A 108 A2F<br>DC 4A 2<br>50 mm. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A* | **10-7/8** | 276 | **12-5/8** | 321 | **14-5/8** | 371 | **17-1/2** | 445 | **18** | 457 | **20-1/8** | 511 |
| B | **7-3/8** | 187 | **8-1/2** | 215 | **9-1/2** | 241 | **11-3/4** | 298 | **11-5/8** | 295 | **12-3/4** | 324 |
| C | **3-1/4** | 83 | **3-1/2** | 89 | **4** | 100 | **4-1/2** | 114 | **4-1/2** | 114 | **5** | 127 |
| D | **2-1/2** | 64 | **3** | 76 | **3-1/4** | 83 | **4-3/4** | 121 | **4-3/4** | 121 | **5-3/8** | 136 |
| **WEIGHTS** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** |
| Net Wt. | **4.1** | 1.9 | **5.4** | 2.5 | **9.0** | 4.0 | **9.1** | 4.1 | **12.9** | 5.9 | **16.5** | 7.5 |

**For T2ST Option, Union Ball Valve, Press, and Push connection dimensions, see submittal sheets.*

## DCDA2/DCDA2LF 4A SERIES — BRONZE DOUBLE CHECK DETECTOR ASSEMBLY

LEADFREE OPTIONS

The Apollo® Model DCDA24A or DCDA2LF4A Lead Free* 1-1/2"– 2" Double Check Detector Assembly consists of a mainline double check valve with a Type 2 bypass consisting of a single check (SCV) and meter bypassing the mainline second check to prevent backflow while accurately measuring all flows up to 2 gpm while the mainline 2nd check remains closed. The pressure drop across the assembly shall be documented by independent approval agencies. The assembly shall prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are non-health hazards. This Made in America assembly features Apollo® UL® Listed, slow-close, full open port, gear operated ball valves with integral tamper switches and carries the five-year Apollo® factory warranty.

### FEATURES

- Low Pressure Loss Documented By Independent Approval Agencies
- Easily Removable Modular Check Valve Cartridges
- Captured Stainless Steel Springs
- Apollo® UL® Listed, Slow-Close, Full Open Port, Gear Operated Ball Valves with Integral Tamper Switches
- Top-Mounted Test Cocks for Easy Testing
- No Special Tools Required
- Chloramine-Resistant Elastomers
- **Designed, Cast, Machined, Assembled and Tested in the USA**
- Short Lay-Length for Small Spaces
- Pre-Wired Tamper (Supervisory) Switches

### PERFORMANCE RATING

- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F – 140°F
- Hydrostatic Test Pressure: 350 psi

### APPROVALS

- ASSE 1048 (Horizontal & Vertical Up)
- UL® Classified (Horizontal & Vertical Up)
- C-UL® Classified (Horizontal & Vertical Up)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Reasearch at the Univerity of Southern California. (Horizontal & Vertical Up)

### STANDARD MATERIALS LIST

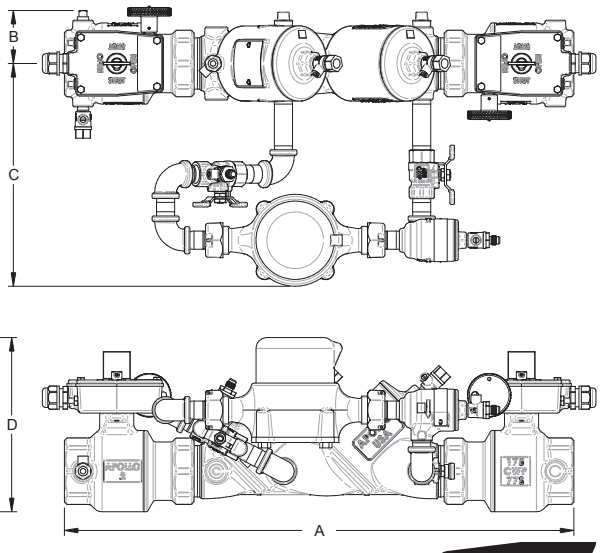
| | |
|---|---|
| **BODY, CAPS, BALL VALVE SHUTOFFS, TEST COCKS** | Bronze C84400 or C89836 or C87800 (Lead Free*) |
| **CHECK VALVE CARTRIDGES** | Glass-Filled PPO |
| **SPRINGS** | 300 Series Stainless Steel |
| **SEAT DISCS** | Chloramine-resistant Silicone |
| **O-RINGS** | Chloramine-resistant EPDM |

### DIMENSIONS

| Size (in.) | Dimensions (in.) | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| 1-1/2" | 22-1/4 | 2-5/8 | 9-3/4 | 7-5/8 | | 35.2 |
| 2" | 23-3/4 | 2-5/8 | 10 | 8 | | 45.8 |

### PART NUMBER MATRIX

| 4A [LF] | 6 X | X | X 2ST |
|---|---|---|---|
| | BYPASS SIDE | SIZE | METER OPTION |
| 4A - Standard | ☐ 2 - Bypass line on right side (standard - as shown) | ☐ 7 - 1-1/2" | ☐ C - ft³/min |
| 4ALF - Lead Free | ☐ 4 - Bypass line on left side | ☐ 8 - 2" | ☐ E - gpm<br>☐ G - no meter |



## DCLF 4A SERIES — DOUBLE CHECK VALVE BACKFLOW PREVENTER

LEADFREE OPTIONS

Sizes 2-1/2"-12"

TriForce™ Check

The Apollo® MODEL DCLF 4A Double Check Valves are designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are objectionable, but non-health hazards. The TriForce™ center stem guided check valves feature replaceable and reversible silicone seat discs. The body is domestic stainless steel from 2-1/2"-8" and FDA epoxy coated ductile iron in the 10" and 12". Available with a wide variety of shutoff valve options.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. Each check valve is designed to maintain a minimum of 1 psi across the valve during normal operation. Should the downstream pressure increase to within 1 psi of supply pressure, both check valves will close to prevent a backflow condition.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy coated Ductile iron body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Snap-in Check Retainers: 2-1/2"-6"
- Bolted-in Checks: 8"-12"
- Low Pressure Loss as Documented by an independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Approved for Horizontal and Vertical Up Flow
- Chloramine-Resistant Elastomers
- Lead Free Standard
- ASSE 1015
- CSA B64.5
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 8")
- AWWA C-510
- IAPMO
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- US Patent Nos. 6,443,184; 7,025,085; 7,533,699
- **Made in the USA** (D Option)
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

| 4ALF | 1 X | X | 0X [X] | XX |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS** |
| 4ALF = Lead Free Standard | 0 = Standard<br>1 = w/ Y-strainer (shipped loose) | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | 1 = Less Shut-off Valves<br>2 = NRS Flg x NRS Flg<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv†<br>6 = OS&Y Flg x Post indicator Flg**<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv†<br>10 = OS&Y Flg x Post Indicator Grv**<br>11 = NRS Grv x NRS Grv<br>12 = NRS Flg x NRS Grv<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv†<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg†<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg<br>21 = Post Indicator Grv x OS&Y Grv<br>22 = Post Indicator Grv x Mon. Butterfly Vlv Grv<br>23 = Mon. Butterfly Vlv Grv x OS&Y Flg | D = Domestic Assembly<br>R1 = Retrofit*<br>R2 = Retrofit*<br>R3 = Retrofit*<br><br>*Custom length retrofit orders must be accompanied with signed from #OFBFRETRO with exact length required. |

**EXAMPLE:**
**4ALF 10A 03** = 4" size Lead Free Double Check Valve Assembly with OS&Y flanged inlet x OS&Y flanged outlet shut-off valves (shown above)

## DCLF 4An SERIES — n STYLE DOUBLE CHECK VALVE BACKFLOW PREVENTER


n Flow
Sizes 2-1/2"-12"

Optional Valve Setter

TriForce™ Check

The Apollo® MODEL DCLF 4An Double Check Valves are designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are objectionable, but non-health hazards. The TriForce™ center stem guided check valves feature replaceable and reversible silicone seat discs. The normally vertical up/vertical down oriented body incorporates an internal swivel connection providing the ability to pivot the second check. The n style flow body is domestic stainless steel from 2-1/2"-8" and FDA epoxy coated ductile iron in the 10" and 12". Available in a wide variety of shut-off valves.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. Each check valve is designed to maintain a minimum of 1 psi across the valve during normal operation. Should the downstream pressure increase to within 1 psi of supply pressure, both check valves will close to prevent a backflow condition.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Drop-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Lead-Free Standard
- Small Installation Space Required - Small Footprint
- Chloramine-Resistant Elastomers
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 8")
- ASSE 1015
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F Intermittent
- Optional Valve Setters Eliminate Need for Thrust Blocks
- US Patent Nos. 6,443,184; 7,025,085; 7,533,699
- 5 year Warranty
- Made in the USA (D Option)

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

| 4AnLF | 1 X | X | 0X | X |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS** |
| 4AnLF = Lead Free Standard | 0 = Standard<br>1 = w/ Y-strainer (shipped loose) | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | 1 = Less Shut-off Valves<br>2 = NRS Flg x NRS Flg<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv<br>6 = OS&Y Flg x Post indicator Flg<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv<br>10 = OS&Y Flg x Post Indicator Grv<br>11 = NRS Grv x NRS Grv<br>12 = NRS Flg x NRS Grv<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg<br>21 = Post Indicator Grv x OS&Y Grv<br>22 = Post Indicator Grv x Mon. Butterfly Vlv Grv<br>23 = Mon. Butterfly Vlv Grv x OS&Y Flg | D = Domestic Assembly |

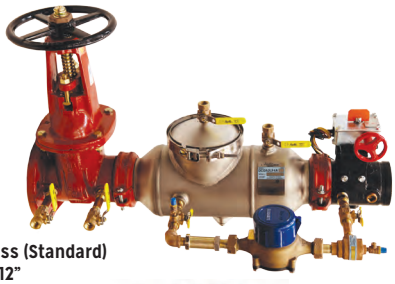
**EXAMPLE:**
**4AnLF 10A 03** = 4" size Lead Free Double Check Valve Assembly with OS&Y flanged inlet x OS&Y flanged outlet shut-off valves (shown above)

## DCDALF 4A SERIES — DOUBLE CHECK DETECTOR BACKFLOW PREVENTER

LEADFREE OPTIONS

Type 2 Bypass (Standard)

Type 1 Bypass



Type 2 Bypass (Standard)
Sizes 2-1/2"-12"

TriForce™ Check

The Apollo® MODEL DCDALF 4A Double Check Detector Assembly is designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are objectionable, but non-health hazards. The TriForce™ center stem guided check valves feature replaceable and reversible silicone seat discs. The bypass assembly serves to measure accurate water use of up to 2 GPM. Available in a wide variety of shut-off options.

The standard Type 2 bypass uses the first check of the mainline assembly as the first check of the bypass. The second check of the bypass is a single check valve with a model number and serial number for test recording. This arrangement complies with the National Backflow Standards. The arrangement provides the same level of protection as the Type 1 bypass and the testing procedure is the same.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Drop-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided Triforce™ Check Valves
- Approved for Horizontal and Vertical Up Flow
- Chloramine-Resistant Elastomers
- Lead-Free Standard
- ASSE 1048 (With Meter)
- UL, ULC Classified
- FM Approved
- CSA B64.5
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University Of Southern California (DCDA4ALF 4A 2-1/2" - 8" Type 1 Bypass)
- Maximum Working Pressure: 175 Psi
- Temperature Range: 33°F - 140°F, 180°F Intermittent
- US Patent Nos. 6,443,184; 7,025,085; 7,533,699
- Made in the USA (D Option)
- 5 Year Warranty
- Optional Mounting of Bypass on Either Side for Ease of Installation

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

| 4ALF | 6 X | X | X | [X] | X |
|---|---|---|---|---|---|
| | **BYPASS SUB-ASSEMBLY OPTIONS** | **SIZE** | **METER OPTION** | **SHUT-OFF VALVES (Inlet X Outlet)** | **SIZE** |
| 4ALF = Lead Free | 0 = Type 1 w/ 1/2" Double Check<br>2 = Type 2 w/1/2" Single Check (STD)<br>3 = Type 1 w/ bypass on left*<br>4 = Type 2 w/ bypass on left* | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | C = Cubic feet/min<br>E = Gallons/min<br>G = Less meter | 1 = Less Shut-off Valves<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv†<br>6 = OS&Y Flg x Post indicator Flg<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv†<br>10 = OS&Y Flg x Post Indicator Grv<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv†<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg†<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg<br>21 = Post Indicator Grv x OS&Y Grv<br>22 = Post Indicator Grv x Mon. Butterfly Vlv Grv†<br>23 = Mon. Butterfly Vlv Grv x OS&Y Flg | D = Domestic Assembly |

**EXAMPLE:**
**4ALF 60A E3** = 4" size Lead Free Double Check Detector Assembly with OS&Y flanged inlet x OS&Y flanged outlet shut-off valves w/ meter in gallons.

*Orientation of bypass looking downstream.
Standard is right hand side. Left hand is on opposite side
†Butterfly valves not available in 12" size.

## DCDALF 4An SERIES — n STYLE DOUBLE CHECK DETECTOR BACKFLOW PREVENTER

LEAD FREE OPTIONS

Type 2 Bypass (Standard)
Sizes 2-1/2"-12"

Optional Valve Setter

TriForce™ Check

The Apollo® MODEL DCLF 4An Double Check Valves are designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are objectionable, but non-health hazards. The TriForce™ center stem guided check valves feature replaceable and reversible silicone seat discs. The by-pass assembly serves to measure water use of up to 2 GPM. The normally vertical up/vertical down oriented body incorporates an internal swivel connection providing the ability to pivot the second check. The grooved connections on the bodies from 2-1/2" to 10" allow for easy connection to butterfly or gate shut-off valves. The 12" DCDA 4An has flanged connections for gate shut-off valves.

The standard Type 2 bypass uses the first check of the mainline assembly as the first check of the bypass. The second check of the bypass is a single check valve with a model number and serial number for test recording. This arrangement complies with the National Backflow Standards. The arrangement provides the same level of protection as the Type 1 bypass and the testing procedure is the same.

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Drop-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- 5 Year Warranty
- Small Installation Space Required - Small Footprint
- Chloramine-Resistant Elastomers
- Lead Free Standard
- ASSE 1048 (with Meter)
- UL, ULC Classified
- CSA B64.5
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 8" Type 1 Bypass)
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- Optional Valve Setters Eliminate Need for Thrust Blocks Below Grade
- US Patent Nos. 6,443,184; 7,025,085;7,533,699
- Made in the USA (D Option)
- Optional Mounting of Bypass on either Side for Ease of Installation

### PART NUMBER MATRIX

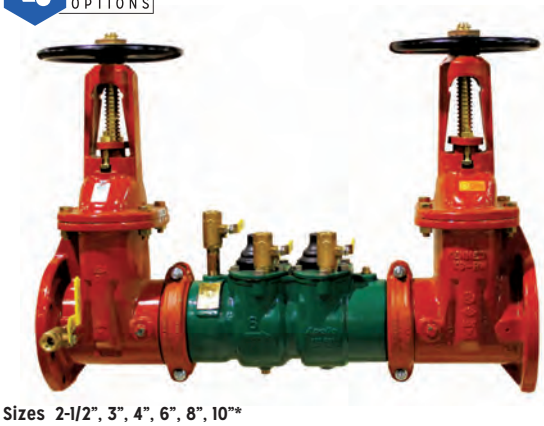
| 4AnLF | 6 X | X | X | X [X] | X |
|---|---|---|---|---|---|
| | **BYPASS SUB-ASSEMBLY OPTIONS** | **SIZE** | **METER OPTION** | **SHUT-OFF VALVES (Inlet X Outlet)** | **OPTIONS** |
| 4AnLF = Lead Free | 0= Type 1 w/ 1/2" Double Check | 9= 2-1/2" | C= Cubic feet/min | 1 = Less Shut-off Valves | D = Domestic Assembly |
| | 2= Type 2 w/1/2" Single Check (STD) | 0= 3" | E= Gallons/min | 3 = OS&Y Flg x OS&Y Flg | |
| | 3= Type 1 w/ bypass on left* | A= 4" | G= Less meter | 4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv† | |
| | 4= Type 2 w/ bypass on left* | C= 6" | | 6 = OS&Y Flg x Post indicator Flg | |
| | | E= 8" | | 7 = OS&Y Flg x OS&Y Grv | |
| | | G= 10" | | 8 = OS&Y Grv x OS&Y Grv | |
| | | H= 12" | | 9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv† | |
| | | | | 10 = OS&Y Flg x Post Indicator Grv | |
| | | | | 13 = Post Indicator Flg x Mon. Butterfly Vlv Grv† | |
| | | | | 14 = Post Indicator Flg x Post Indicator Flg | |
| | | | | 16 = Mon Butterfly Vlv Grv x Post Indicator Flg† | |
| | | | | 17 = Post Indicator Flg x OS&Y Grv | |
| | | | | 18 = OS&Y Grv x Post Indicator Grv | |
| | | | | 19 = Mon. Butterfly Vlv Grv x Post Indicator Grv | |
| | | | | 20 = Post Indicator Flg x OS&Y Flg | |
| | | | | 21 = Post Indicator Grv x OS&Y Grv | |
| | | | | 22 = Post Indicator Grv x Mon. Butterfly Vlv Grv† | |
| | | | | 23 = Mon. Butterfly Vlv Grv x OS&Y Flg | |

**EXAMPLE:**
**4AnLF 62A E7** = 4" size Lead Free Double Check Detector Assembly with OS&Y flanged inlet x OS&Y grooved outlet shut-off valves with Type 2 bypass w/ meter in GPM

*Orientation of bypass looking downstream.
Standard is right hand side. Left hand is on opposite side
†Butterfly valves not available in 12" size.

## DC 4SG SERIES — DOUBLE CHECK VALVE ASSEMBLY

LEADFREE OPTIONS



Sizes 2-1/2", 3", 4", 6", 8", 10"*

The Apollo® DC 4SG Series Double Check Valve is designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are non-health hazards. The modular check valves have replaceable seats and reversible EPDM seat discs. Grooved connections on an epoxy-coated ductile iron body allow for easy connection to butterfly valves or gate valves. (2-1/2" - 8")

### FEATURES

- Lightweight
- Short Lay Length
- Low Pressure Loss
- Modular Check Valves
- Individual Access to Check Valves
- Reversible/Replaceable Seat Discs
- Approved for Vertical (Up) and Horizontal Installations
- Gate Valves Epoxy Coated (FDA)
- Lead-Free (2-1/2" - 6" only)
- Corrosion Resistant Epoxy-Coated Ductile Iron Body
- ASSE 1015
- CSA
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2"-6" Lead Free. 8" & 10" Non-Lead Free Only)
- AWWA C-510
- UL Classified
- FM Approved
- US Patents #5,711,341 and #6,343,618
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | FDA Epoxy Coated Steel |
| **COVERS (8" & 10")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES (2-1/2" - 6")** | Glass-Filled PPO |
| **CHECK VALVES (8" & 10")** | Bronze (C84400/LF C89836) |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant EPDM |
| **TEST COCK HANDLES** | Stainless Steel |

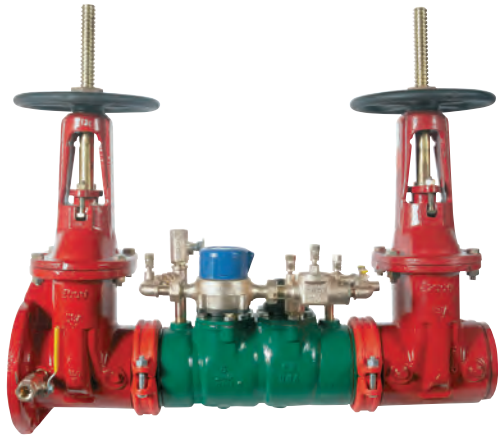
### PART NUMBER MATRIX

| 4SG [X] | 1 X X | | 0 X | X |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES (Inlet x Outlet)** | **OPTIONS** |
| 4SG LF = Lead Free (2-1/2"-6" only)<br>4S = 10" | 0= None (Standard)<br>1= With Y-Strainer (Flanged only, shipped loose) | 9= 2-1/2"<br>0= 3"<br>A= 4"<br>C= 6"<br>E= 8"<br>G= 10"* | 1 = Less Shut-off Valves (grooved-end body)<br>2 = NRS Flg x NRS Flg<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored Butterfly Valve Grv<br>6 = OS&Y Flg x Flg Post Indicator<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv<br>10 = OS&Y Flg x Grv Post Indicator | D= Domestic Assembly |

**EXAMPLE:**
**4SG 10A 07** = 4" size Double Check Valve Assembly with OS&Y flanged inlet x OS&Y grooved outlet shut-off valves

* 10" body is flanged internal connections only (Model 4S)

## DCDA 4SG SERIES — DOUBLE CHECK DETECTOR ASSEMBLY



Sizes 2-1/2", 3", 4", 6", 8", 10"*

The Apollo® DCDA 4SG Series Double Check Detector Assembly is designed to prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are non-health hazards. The device consists of a mainline double check valve with resilient seated shut-off valves. The by-pass serves to measure water use of up to 3 gpm. Grooved connections on an epoxy-coated ductile iron body allow for easy connection to butterfly valves or gate valves. (2-1/2" - 8")

### FEATURES

- Lightweight
- Short Lay Length
- Low Pressure Loss
- Modular Check Valves
- Individual Access to Check Calves
- Reversible/Replaceable Seat Discs
- Approved for Vertical and Horizontal Installations
- Gate Valves Epoxy Coated (FDA)
- Corrosion Resistant FDA Epoxy Coated Ductile Iron Body
- UL Classified
- FM Approved
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 10" Non Lead Free Only)
- ASSE 1048 (with Meter)
- CSA
- US Patents #5,711,341 and #6,343,618
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (MAINLINE)** | FDA Epoxy Coated Ductile Iron |
| **BYPASS DC** | Bronze (C84400/LF C89836) |
| **COVERS (2-1/2" - 6")** | FDA Epoxy Coated Steel |
| **COVERS (8")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES (2-1/2" - 6")** | Glass-Filled PPO |
| **CHECK VALVES (8" - 10")** | Bronze (C8440) |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant EPDM |
| **TEST COCK HANDLES** | Stainless Steel |

### PART NUMBER MATRIX

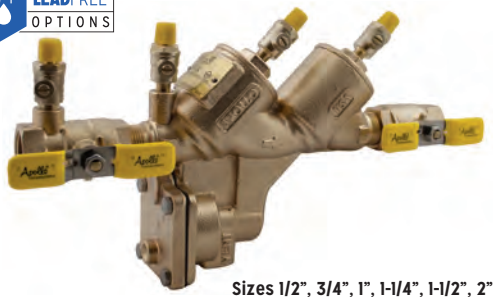
| 4SG [X] | 60 X | X | [X] | X |
|---|---|---|---|---|
| | **SIZE** | **METER OPTION** | **SHUT-OFF VALVES (Inlet x Outlet)** | **OPTION** |
| 4SG = Standard<br>4S = 10" | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"# | C = Cubic feet/min<br>E = Gallons/min<br>G = Less meter | 3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored Butterfly Valve Grv<br>6 = OS&Y Flg x Flg Post Indicator<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv<br>10 = OS&Y Flg x Grv Post Indicator | D = Domestic Assembly |

**4SG 60A E7** = 4" size Double Check Detector Assembly with meter in gpm and OS&Y flanged inlet x OS&Y grooved outlet shut-off valves

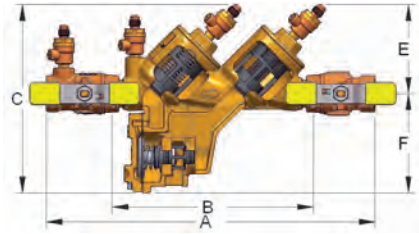
* 10" body is flanged internal connections only (Model 4S)

## RP 4A SERIES — REDUCED PRESSURE PRINCIPLE

LEADFREE OPTIONS



Sizes 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"





Slo Cloz with Monitor Switches
T2ST Option (1-1/2" and 2" only)
See SS1397 for dimensions

The Apollo® Series RP 4A Reduced Pressure Principle Backflow Preventer is designed to give maximum protection against backflow caused by either back-pressure or back-siphonage from substances that are hazardous. The durable but economical device is easily maintained in the line with modular check cartridge assemblies that require no special tools. It consists of two independently acting spring-loaded check valves with an automatic differential relief valve located between the check valves. All testcocks are mounted at the top of the unit to assure easy access during repair and maintenance when unit is installed in tight places.

### FEATURES

- Maximum Protection Against Back-Pressure/Back-Siphonage
- Modular Check Valve Cartridges w/ Easily Replaced Parts
- Reversible/Removable Chloramine-Resistant Silicone Seat Discs
- Low Head Pressure Loss
- Top Mounted Test Cocks
- Threaded Testcock Protectors
- Internal Sensing Passage
- Modular Captured Spring Relief Valve
- ASSE 1013
- CSA B64.4
- Lead Free Option
- NSF 61/8/G/372
- Federal Public Law 111-380
- AWWA C511
- UL, ULC Classified (T2ST Option or Less Shutoffs)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- Standard with Full Port Ball Valves with Stainless Steel Handles
- Corrosion Resistant
- Maximum Working Pressure: 175 psig
- Operating Temperature Range: 33°F-180°F
- Horizontal Installation Approvals on 1/2" through 2"
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY, CAPS** | Bronze (C84400/LF C89836) |
| **BV SHUT-OFFS, TESTCOCKS** | Bronze (C84400/LF C87800) |
| **SPRINGS** | 300 Series SS |
| **SEAT DISCS** | Chloramine-Resistant Silicone |
| **DIAPHRAGM** | Nitrile and Nylon |
| **CHECK MODULES** | Glass-Filled PPO |
| **O-RINGS** | Chloramine-Resistant EPDM |
| **BALL VALVE HANDLES** | Stainless Steel |

Contact local water authorities for installation/service requirements.

### PART NUMBER MATRIX

| 4A [X] | 2 X | X | X X | X |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS (CAN BE COMBINED)** |
| 4A = Non-Lead Free<br>4ALF = Lead Free | 0 = Standard<br>1 = With Y-Strainer (Shipped loose) | 3 = 1/2"<br>4 = 3/4"<br>5 = 1"<br>6 = 1-1/4"<br>7 = 1-1/2"<br>8 = 2" | A = Apollo Bronze BV<br>A2 = w/ball valves (Standard)<br>A4 = w/union ball valves (3/4" - 2")<br>T= Apollo Domestic Bronze BV<br>T2 = w/ball valves (Standard)<br>T4 = w/union ball valves (3/4" - 2")<br>T2ST* = w/Gear Operated ball valves w/tamper switch (1-1/2" - 2") | F = SAE threaded test cocks (standard 1/2")<br>L = Lever handle (3/4" & 1" only)<br>LL = Locking lever handles<br>PR = Press Connection (Factory Installed)<br>P = Push Connection (Factory Installed)<br>B = Theft Deterrent Coating |

**EXAMPLE:**
**4A 215 A4LL** = 1" Reduced Pressure Backflow Preventer with strainer, union ball valves and locking lever handles

### DIMENSIONS

| Model No.<br>Factory No.<br>Size | RP4A12<br>4A 203 A2F<br>1/2" | RP4A12<br>4A 203 A2F<br>15 mm. | RP4A34<br>4A 204 A2F<br>3/4" | RP4A34<br>4A 204 A2F<br>20 mm. | RP4A1<br>4A 205 A2F<br>1" | RP4A1<br>4A 205 A2F<br>25mm. | RP4A114<br>4A 206 A2F<br>1-1/4" | RP4A114<br>4A 206 A2F<br>32 mm. | RP4A112<br>4A 207 A2F<br>1-1/2" | RP4A112<br>4A 207 A2F<br>40 mm. | RP4A2<br>4A 208 A2F<br>2" | RP4A2<br>4A 208 A2F<br>50 mm. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A* | **10-7/8** | 276 | **12-5/8** | 321 | **14-5/8** | 371 | **17-1/2** | 445 | **18** | 457 | **20-1/8** | 511 |
| B | **7-3/8** | 187 | **8-1/2** | 216 | **9-1/2** | 241 | **11-3/4** | 298 | **11-5/8** | 295 | **12-3/4** | 324 |
| C | **7-1/8** | 181 | **7-3/8** | 187 | **8** | 203 | **9-7/8** | 251 | **9-7/8** | 251 | **11** | 279 |
| D | **2-7/8** | 73 | **3-1/8** | 79 | **3-1/4** | 83 | **5-1/8** | 130 | **5-1/8** | 130 | **5-7/8** | 149 |
| E | **3-1/4** | 83 | **3-1/2** | 89 | **4** | 100 | **4-1/2** | 114 | **4-1/2** | 114 | **5** | 127 |
| F | **3-7/8** | 98 | **3-7/8** | 98 | **4** | 100 | **5-3/8** | 137 | **5-3/8** | 137 | **6** | 150 |
| **WEIGHTS** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** |
| Net Wt. | **6.9** | 3.1 | **8.2** | 3.7 | **11.7** | 5.3 | **13.6** | 6.2 | **17.4** | 7.9 | **24.5** | 11.1 |

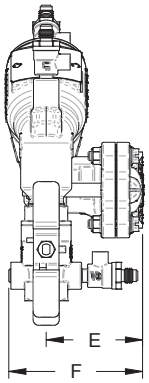
**For T2ST Option, Union Ball Valve, Press, and Push connection dimensions, see submittal sheets.*

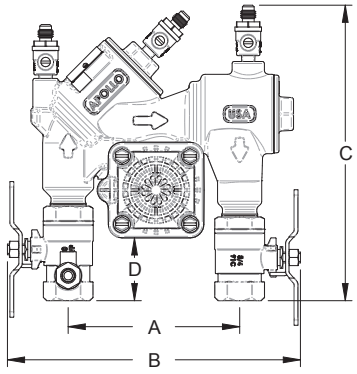
## RP 4AN SERIES — REDUCED PRESSURE PRINCIPLE

LEADFREE OPTIONS

*New!*

Sizes 3/4"& 1"






The Apollo® Model RP4AN and RPLF4AN Lead Free* Reduced Pressure Backflow Preventers provide maximum protection of the potable water supply due to back-siphonage or backpressure from substances that are hazardous to the potable water supply. The easily accessible modular check valve cartridges provide captured springs, replaceable seats and reversible silicone seat discs. This Made in America assembly features ball valves with stainless steel handles and nuts as standard and carries the five-year Apollo® factory warranty.

### FEATURES

- Smallest Footprint Eliminates Elbows for Compact and Economical Installation
- Top-Mounted Test Cocks with SAE Flare Fittings are Standard to Speed Up and Simplify Testing
- Low Pressure Loss Documented by Independent Approval Agencies
- Easily Removable Modular Check Valve Cartridge with Captured Spring
- Captured Stainless Steel Springs
- Ball Valves w/ SS Handles & Nuts Standard
- Modular Relief Valve with Captured Spring
- Chloramine-Resistant Elastomers
- No Special Tools Required
- Designed, Cast, Machined, Assembled and Tested in the USA
- Theft Deterrent Coating (optional)
- ASSE 1013
- CSA B64.4
- IAPMO Listed
- Maximum Working Pressure: 150 psi
- Temperature Range: 33° F - 140° F

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY, CAPS** | Bronze (C84400/LF C89836) |
| **BV SHUT-OFFS, TESTCOCKS** | Bronze (C84400/LF C87800) |
| **RELIEF VALVES** | Glass-Filled PPO |
| **SPRINGS** | 300 Series Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |
| **O-RINGS** | Chloramine-Resistant EPDM |

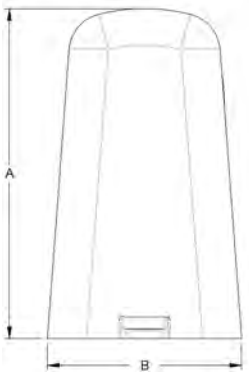
### DIMENSIONS

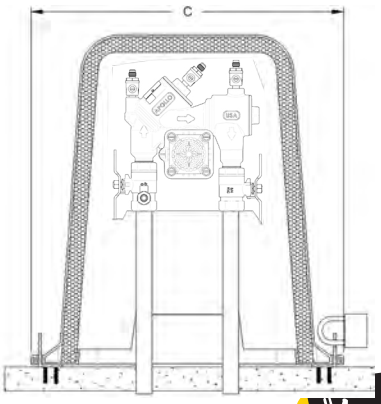
| Size | Dimensions (in.) | | | | | | Net Wt. (lbs) |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| ¾" | 5.00 | 8.50 | 8.625 | 2.00 | 2.875 | 4.00 | 8.00 |
| 1" | 5.50 | 9.50 | 9.375 | 2.375 | 2.875 | 4.00 | 10.50 |

### PART NUMBER MATRIX

| 4A [X] | 2 X | X | X X | X |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS (CAN BE COMBINED)** |
| 4AN = Non-Lead Free<br>4ANLF = Lead Free | 0 = Standard<br>1 = With Y-Strainer (Shipped loose) | 4 = 3/4"<br>5 = 1" | A = Apollo Bronze BV<br>A2 = w/ball valves (Standard)<br>A4 = w/union ball valves (3/4" - 1") | F = SAE threaded test cocks (standard)<br>B = Theft Deterrent Coating |

## ENC4AN1 — RP 4AN OPTIONAL ENCLOSURE




### DIMENSIONS

| Dimensions (in.) | | | Net Wt. (lbs) |
|---|---|---|---|
| A | B | C | |
| 21.00 | 12.40 | 20.00 | 7 |

See SS1408 For Additional Information

# RPDA2/RPDA2LF 4A SERIES BRONZE REDUCED PRESSURE DETECTOR ASSEMBLY

LEADFREE OPTIONS

The Apollo® Model RPDA24A or RPDA2LF4A Lead Free* 1-1/2"- 2" Reduced Pressure Detector Assembly consists of a mainline reduced pressure principle backflow preventer (RP) with a Type 2 bypass consisting of a single check (SCV) and meter bypassing the mainline second check to prevent backflow while accurately measuring all flows up to 2 gpm while the mainline 2nd check remains closed. The pressure drop across the assembly shall be documented by independent approval agencies. The assembly shall prevent contamination of the potable water supply due to back-siphonage or backpressure from substances that are health and non-health hazards. This Made in America assembly features Apollo® UL® Listed, slow-close, full open port, gear operated ball valves with integral tamper switches and carries the five-year Apollo® factory warranty.

## FEATURES

- Low Pressure Loss Documented By Independent Approval Agencies
- Easily Removable Modular Check Valve Cartridges
- Captured Stainless Steel Springs
- Apollo® UL® Listed, Slow-Close, Full Open Port, Gear Operated Ball Valves with Integral Tamper Switches
- Top-Mounted Test Cocks for Easy Testing
- No Special Tools Required
- Chloramine-Resistant Elastomers
- Designed, Cast, Machined, Assembled and tested in the USA
- Short Lay-Length for Small Spaces
- Pre-Wired Tamper (Supervisory) Switches
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F – 140°F
- Hydrostatic Test Pressure: 350 psi
- ASSE 1047 (Horizontal)
- UL® Classified (Horizontal)
- C-UL® Classified (Horizontal)
- Approved by the Foundation for Cross-Connection Control and Hydraulic Reasearch at the Univerity of Southern California. (Horizontal)

## STANDARD MATERIALS LIST

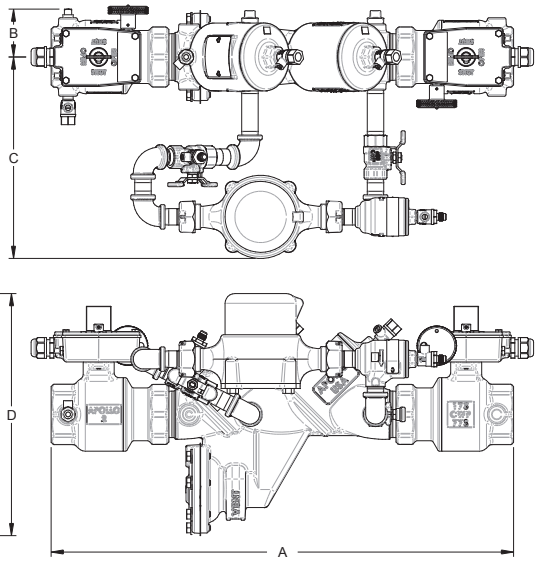
| | |
|---|---|
| **BODY, CAPS, BALL VALVE SHUTOFFS, TEST COCKS** | Bronze C84400 or C89836 or C87800 (Lead Free*) |
| **CHECK VALVE CARTRIDGES** | Glass-Filled PPO |
| **SPRINGS** | 300 Series Stainless Steel |
| **SEAT DISCS** | Chloramine-resistant Silicone |
| **O-RINGS** | Chloramine-resistant EPDM |

## DIMENSIONS

| Size (in.) | Dimensions (in.) | | | | | Wt. (lbs.) |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | |
| 1-1/2" | 22-1/4 | 2-5/8 | 9-3/4 | 10-1/2 | | 39.4 |
| 2" | 23-3/4 | 2-5/8 | 10 | 12-3/8 | | 51.4 |

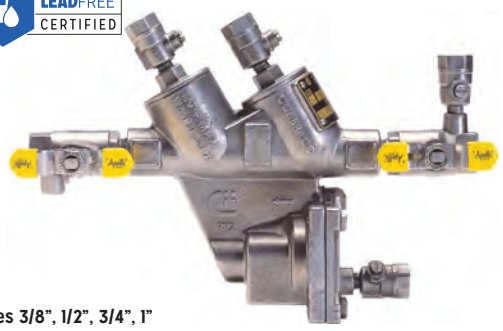
## PART NUMBER MATRIX

| 4A [LF] | 7 X | X | X 2ST |
|---|---|---|---|
| | **BYPASS SIDE** | **SIZE** | **METER OPTION** |
| 4A - Standard | ☐ 2 - Bypass line on right side (standard - as shown) | ☐ 7 - 1-1/2" | ☐ C - ft³/min |
| 4ALF - Lead Free | ☐ 4 - Bypass line on left side | ☐ 8 - 2" | ☐ E - gpm<br>☐ G - no meter |

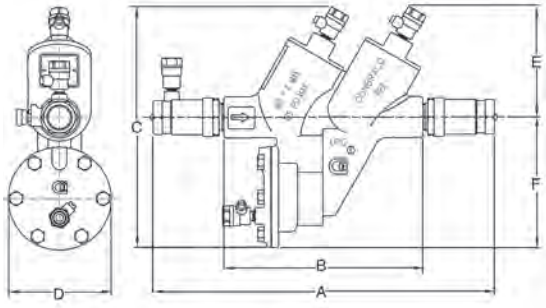


## RP 40S SERIES — STAINLESS STEEL REDUCED PRESSURE PRINCIPLE

LEADFREE CERTIFIED



Sizes 3/8", 1/2", 3/4", 1"




The Apollo® Series RP 40S Stainless Steel Reduced Pressure Principle Backflow Preventer is designed to give maximum protection against backflow caused by either backpressure or back-siphonage from a cross-connection wherein a contaminant hazard exists (i.e. a health hazard), or a pollutant hazard exists (i.e. a non-hazard). The assembly is composed of two spring-loaded poppet type check valves and a mechanically independent, hydraulically dependent pressure differential relief valve set in an integral stainless steel body. Three of the testcocks are mounted at the top to assure easy access during repair and maintenance when unit is installed in tight places.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. The relief valve is held shut by supply pressure acting through the internal sensing passage, on the relief valve diaphragm. In the area between the check valves, called the zone, the pressure is maintained at approximately 7 psi lower than supply pressure. Should a back-pressure or back-siphonage condition occur, the second check valve will seal, prohibiting the backflow of water. Should the second check valve become fouled, the pressure in the zone will increase causing the differential relief valve to open to atmosphere. This will maintain the pressure in the zone at least 2 psi lower than supply pressure.

### FEATURES

- Stainless Steel Body and Covers
- Easy to Install and Repair
- Internal Sensing Passage
- Low Head Loss
- Reversible/Removable Seat Discs
- Replaceable Seats
- Comes Standard with Apollo® Stainless Steel Full Port Ball Valves with Stainless Steel Handles
- Lead Free Standard
- Maximum Working Pressure: 175 psig
- Temperature Range: 33°F-180°F
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- ASSE 1013
- CSA
- Designed, Cast, Manufactured, Assembled and Tested in South Carolina, USA
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | | | |
|---|---|---|---|
| **BODY, COVERS** | 316 Stainless Steel (CF8M) | **SEAT DISCS** | Silicone Rubber |
| **SPRINGS** | Stainless Steel | **DIAPHRAGM, O-RINGS** | FDA Fluorocarbon |
| **FASTENERS** | Stainless Steel | **REPLACEABLE SEATS** | Glass-Filled PPO |
| **POPPETS** | Glass-Filled Celcon® | **TEST COCKS & HANDLES** | Stainless Steel |

### PART NUMBER MATRIX

| 40 2 X | X | T X | S X |
|---|---|---|---|
| **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS (CAN BE COMBINED)** |
| 0 = Standard<br>1 = w/ SS Y-strainer (shipped loose) | 2 = 3/8"<br>3 = 1/2"<br>4 = 3/4"<br>5 = 1" | 1 = Less ball valves (UL classified-3/4",1")<br>2 = w/SS ball valves, w/SS Tee Handles (Standard) | LL = Locking lever handles |

### DIMENSIONS

See Page 61 For Flow Curves

(X = SHUT-OFF VALVE CONFIGURATION)

| Model No.<br>Factory No.<br>Size | RP40S14<br>40 201 TxS<br>6 mm. | RP40S38<br>40 202 TxS<br>3/8" | RP40S38<br>40 202 TxS<br>10 mm. | RP40S12<br>40 203 TxS<br>1/2" | RP40S12<br>40 203 TxS<br>12 mm. | RP40S34<br>40 204 TxS<br>3/4" | RP40S34<br>40 204 TxS<br>20 mm. | RP40S1<br>40 205 TxS<br>1" | RP40S1<br>40 205 TxS<br>25 mm. |
|---|---|---|---|---|---|---|---|---|---|
| A | 267 | **10-1/2** | 267 | **10-1/2** | 267 | **13-1/2** | 343 | **15-1/4** | 387 |
| B | 146 | **5-3/4** | 146 | **5-3/4** | 146 | **7-15/16** | 202 | **7-15/16** | 202 |
| C | 175 | **6-7/8** | 175 | **6-7/8** | 175 | **9** | 229 | **9** | 229 |
| D | 68 | **2-5/8** | 68 | **2-5/8** | 68 | **4-1/16** | 103 | **4-1/16** | 103 |
| E | 81 | **3-3/16** | 81 | **3-3/16** | 81 | **4-3/8** | 111 | **4-3/8** | 111 |
| F | 95 | **3-3/4** | 95 | **3-3/4** | 95 | **5-1/8** | 130 | **5-1/8** | 130 |
| Test Cocks | 1/8 x 1/4 NPT | **1/8 x 1/4 NPT** | 1/8 x 1/4 NPT | **1/8 x 1/4 NPT** | 1/8 x 1/4 NPT | **1/8 x 1/4 NPT** | 1/8 x 1/4 NPT | **1/8 x 1/4 NPT** | 1/8 x 1/4 NPT |
| **WEIGHTS** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** | **lbs.** | **kg.** |
| Net Wt. (w/o Ball Valves) | 2.0 | **4.3** | 2.0 | **4.1** | 1.9 | **8.1** | 3.8 | **8.1** | 3.7 |
| Net Wt. (with Ball Valves) | 2.5 | **5.5** | 2.5 | **5.4** | 2.4 | **10.8** | 4.9 | **11** | 5.0 |
| Shpg. Wt. (w/o Ball Valves) | 2.4 | **5.1** | 2.3 | **5** | 2.3 | **9.8** | 4.4 | **9.6** | 4.3 |
| Shpg. Wt. (with Ball Valves) | 2.9 | **6.4** | 2.9 | **6.3** | 2.8 | **12.3** | 5.6 | **12.8** | 5.8 |

## RPLF 4A SERIES — REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

LEADFREE OPTIONS

Sizes 2-1/2"-12"

TriForce™ Check

The Apollo® MODEL RPLF 4A Reduced Pressure Principle Backflow Preventers consist of two independently acting, TriForce™ center stem guided check valves with a differential pressure relief valve located between the check valves. The unit is designed to give maximum protection against backflow of health or non-health hazard fluids by either back-pressure or back-siphonage. The durable domestic stainless steel units (2-1/2"-8") and the FDA epoxy coated ductile iron units (10" and 12") are easily maintained in the line without any special tools. The TriForce™ check valves operate with a spring assist in the flowing condition to provide excellent flow rates which are documented by an independent laboratory.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. The relief valve is held shut by supply pressure acting through the sensing tube on the relief valve diaphragm. In the area between the check valves, called the zone, the pressure is maintained approximately 7 psi lower than supply pressure. Should a back-pressure or back-siphonage condition occur, the second check valve will seal, prohibiting the backflow of water. Should the second check become fouled, the pressure in the zone will increase causing the differential relief valve to open to atmosphere. This will maintain the pressure in the zone at least 2 psi lower than supply pressure.

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **RELIEF VALVE** | LF C89836 |
| **CHECK VALVES** | Bronze/Glass-filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Snap-In Check Retainers: 2-1/2"-6"
- Bolted-in Checks: 8"-12"
- Modular Captured Spring Relief Valve
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Approved for Horizontal Flow
- Chloramine-Resistant Elastomers
- Made in the USA (D Option)
- Lead Free Standard
- ASSE 1013
- CSA B64.4
- AWWA C-511
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 8")
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- US Patent Nos. 6,443,184; 7,025,085; 7,533,699
- Optional Air Gap Drains (See Page 52 for Details and Discharge Rates)
- 5 Year Warranty

### PART NUMBER MATRIX

| 4ALF | 2 X | X | 0 X | XX |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS** |
| 4ALF = Lead Free Standard | 0 = Standard<br>1 = w/ Y-strainer (shipped loose) | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | 1 = Less Shut-off Valves<br>2 = NRS Flg x NRS Flg<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv†<br>6 = OS&Y Flg x Post indicator Flg<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv†<br>10 = OS&Y Flg x Post Indicator Grv<br>11 = NRS Grv x NRS Grv<br>12 = NRS Flg x NRS Grv<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv†<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg†<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg<br>21 = Post Indicator Grv x OS&Y Grv<br>22 = Post Indicator Grv x Mon. Butterfly Vlv Grv†<br>23 = Mon. Butterfly Vlv Grv x OS&Y Flg | D= Domestic Assembly<br>R1= Retrofit*<br>R2= Retrofit*<br>R3= Retrofit* |

**EXAMPLE:**
**4ALF 20A 07** = 4" size Lead Free Reduced Pressure Assembly with OS&Y flanged inlet x OS&Y grooved outlet shut-off valves.

† Butterfly valves not available in 12" size.

*Custom length retrofit orders must be accompanied with signed from #OFBFRETRO with exact length required.

## RPLF 4An SERIES — REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

LEADFREE OPTIONS

n Flow
Sizes 2-1/2"-12"

Vertical Up Flow

Optional Valve Setter

TriForce™ Check

The Apollo® MODEL RPLF 4An Reduced Pressure Principle Backflow Preventer consists of two independently acting, TriForce™ center stem guided check valves with a differential pressure relief valve located between the check valves. The unit is designed to give maximum protection against backflow of health or non-health hazard fluids by either back-pressure or back-siphonage. The normally vertical up/vertical down oriented body incorporates an internal swivel connection providing the ability to pivot the second check 180° to a vertical up/vertical up flow. The durable domestic stainless steel units (2-1/2" to 8") and the FDA epoxy coated ductile iron units (10" and 12") are easily maintained in the line without any special tools. The TriForce™ check valves operate with a spring assist in the flowing condition to provide excellent flow rates which are documented by an independent laboratory.

### OPERATION

During normal flow conditions, the two check valves are held off their seats, supplying water downstream. The relief valve is held shut by supply pressure acting through the sensing tube on the relief valve diaphragm. In the area between the check valves, called the zone, the pressure is maintained approximately 7 psi lower than supply pressure. Should a back-pressure or back-siphonage condition occur, the second check valve will seal, prohibiting the backflow of water. Should the second check become fouled, the pressure in the zone will increase causing the differential relief valve to open to atmosphere. This will maintain the pressure in the zone at least 2 psi lower than supply pressure.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools Required
- Drop-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Modular Captured Spring Relief Valve
- ptional Air Gap Drains (See Page 52 for Details and Discharge rates)
- Small Installation Space Required - Small Footprint
- Approved for n-Flow and Vertical Up Flow
- Chloramine-Resistant Elastomers
- Lead Free Standard
- ASSE 1013
- CSA B64.4
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 6")
- AWWA C-511
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- Optional Valve Setters Eliminate need for Thrust Blocks Between Elbows
- US Patent Nos. 6,443,184; 7,025,085; 7,533,699
- Made in the USA (D Option)
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2" - 8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2" - 6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **RELIEF VALVE** | Bronze (C84400/LF C89836) |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

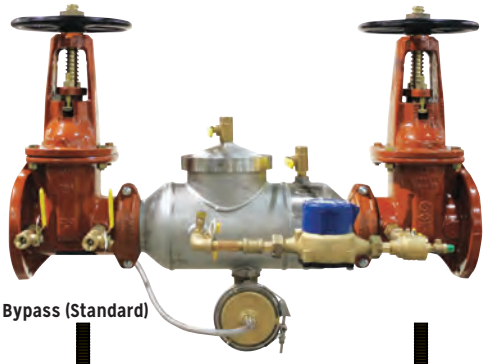
| 4AnLF | 2 X | X | 0 X | X |
|---|---|---|---|---|
| | **Y-STRAINER** | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS** |
| 4AnLF= Lead Free | 0 = Standard<br>1 = w/ Y-strainer (shipped loose) | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | 1 = Less Shut-off Valves<br>2 = NRS Flg x NRS Flg<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv†<br>6 = OS&Y Flg x Post indicator Flg<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv†<br>10 = OS&Y Flg x Post Indicator Grv<br>11 = NRS Grv x NRS Grv<br>12 = NRS Flg x NRS Grv<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv†<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg†<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg<br>21 = Post Indicator Grv x OS&Y Grv<br>22 = Post Indicator Grv x Mon. Butterfly Vlv Grv†<br>23 = Mon. Butterfly Vlv Grv x OS&Y Flg | D = Domestic Assembly |

**EXAMPLE:**
**4AN 20A 07** = 4" size Reduced Pressure Assembly with OS&Y flanged inlet x OS&Y grooved outlet shut-off valves

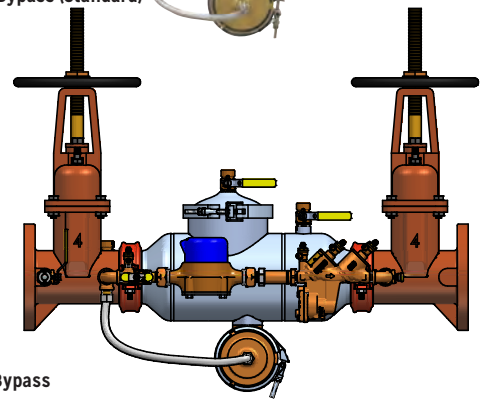
† Butterfly valves not available in 12" size.

## RPDALF 4A SERIES — REDUCED PRESSURE DETECTOR ASSEMBLY

LEADFREE OPTIONS



Type 2 Bypass (Standard)



Type 1 Bypass
Sizes 2-1/2"-12"

TriForce™ Check

The Apollo® MODEL RPDALF 4A Reduced Pressure Detector Assembly consists of two independently acting, TriForce™ center stem guided check valves with a differential pressure relief valve located between the check valves. The unit is designed to give maximum protection against backflow of health or non-health hazard fluids by either back-pressure or back-siphonage and at the same time detect leakage or unauthorized use of water from fire or automatic sprinkler systems. The durable domestic stainless steel units (2-1/2" to 8") and the FDA epoxy coated ductile iron units (10" and 12") are easily maintained in line without any special tools. The TriForce™ check valves operate with a spring assist in the flowing condition to provide low flow rates which are documented by an independent laboratory.

The standard Type 2 bypass uses the first check of the mainline assembly as the first check of the bypass. The second check of the bypass is a single check valve with a model number and serial number for test recording. This arrangement complies with the National Backflow Standards. The arrangement provides the same level of protection as the Type 1 bypass and the testing procedure is the same.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body:10" & 12"
- Easy Maintenance: No Special Tools Required
- Snap-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Modular Captured Spring Relief Valve
- Approved for Horizontal Flow
- ASSE 1047 (with Meter)
- Optional Air Gap Drains (see Page 52 for Details and Discharge Rates)
- Lead-Free Standard
- CSA B64.4
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2" - 6") (Type 1 Bypass)
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- US Patent Nos. 6,443,184; 7,025,085;7,533,699
- Made in the USA (D Option)
- 5 Year Warranty
- Optional Mounting of Bypass on either Side for Ease of Installation

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2"-8")** | 304 Stainless Steel |
| **BODY (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2"-6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

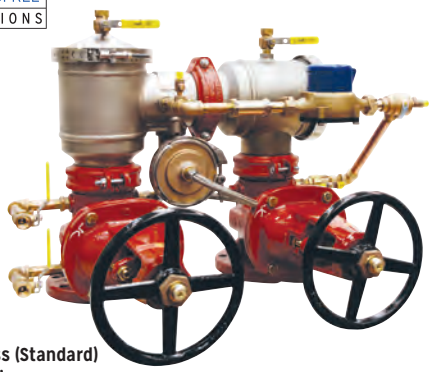
| 4ALF | 7 X | X | X | [X] | XX |
|---|---|---|---|---|---|
| | **BYPASS SUB-ASSEMBLY OPTIONS** | **SIZE** | **METER OPTION** | **SHUT-OFF VALVES (Inlet x Outlet)** | **OPTIONS** |
| 4ALF = Lead Free Standard | 0 = Type 1 w/ 1/2" Reduced Pressure | 9 = 2-1/2" | C = Cubic feet/min | 1 = Less Shut-off Valves | D= Domestic Assembly |
| | 2 = Type 2 w/1/2" Single Check | 0 = 3" | E = Gallons/min | 3 = OS&Y Flg x OS&Y Flg | R1= Retrofit* |
| | 3 = Type 1 w/ bypass on left* | A = 4" | G = Less meter | 4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv† | R2= Retrofit* |
| | 4 = Type 2 w/ bypass on left* | C = 6" | | 6 = OS&Y Flg x Post indicator Flg | R3= Retrofit* |
| | | E = 8" | | 7 = OS&Y Flg x OS&Y Grv | |
| | | G = 10" | | 8 = OS&Y Grv x OS&Y Grv | *Custom length retrofit orders must be accompanied with signed from #OFBFRETRO with exact length required. |
| | | H = 12" | | 9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv† | |
| | | | | 10 = OS&Y Flg x Post Indicator Grv | |
| | | | | 13 = Post Indicator Flg x Mon. Butterfly Vlv Grv† | |
| | | | | 14 = Post Indicator Flg x Post Indicator Flg | |
| | | | | 16 = Mon Butterfly Vlv Grv x Post Indicator Flg† | |
| | | | | 17 = Post Indicator Flg x OS&Y Grv | |
| | | | | 18 = OS&Y Grv x Post Indicator Grv | |
| | | | | 19 = Mon. Butterfly Vlv Grv x Post Indicator Grv | |
| | | | | 20 = Post Indicator Flg x OS&Y Flg | |
| | | | | 21 = Post Indicator Grv x OS&Y Grv | |
| | | | | 22 = Post Indicator Grv x Mon. Butterfly Vlv Grv† | |
| | | | | 23 = Mon. Butterfly Vlv Grv x OS&Y Flg | |

**EXAMPLE:**
**4ALF 72A E3** = 4" size Lead Free Reduced Pressure Detector Assembly with OS&Y flanged inlet x OS&Y flanged outlet shut-off valves Type 2 Bypass w/ meter in gallons

*Orientation of bypass looking downstream.
Standard is right hand side. Left hand is on opposite side
†Butterfly valves not available in 12" size.

## RPDALF 4An SERIES — n STYLE REDUCED PRESSURE DETECTOR ASSEMBLY

LEAD FREE OPTIONS



Type 2 Bypass (Standard)
izes 2-1/2"-12"

Type 2 Bypass (Standard)

Optional Valve Setter

TriForce™ Check

The Apollo® MODEL RPDALF 4An Reduced Pressure Detector Assembly consists of two independently acting, TriForce™ center stem guided check valves with a differential pressure relief valve located between the check valves. The unit is designed to give maximum protection against backflow of health or non-health hazard fluids by either back-pressure or back-siphonage and at the same time detect leakage or unauthorized use of water from fire or automatic sprinkler systems. The normally vertical up/vertical down oriented body incorporates an internal swivel connection providing the ability to pivot the second check 180° to a vertical up/vertical up flow. The durable domestic stainless steel units (2-1/2" to 8") and the FDA epoxy coated ductile iron units (10" and 12") are easily maintained in the line without any special tools. The TriForce™ check valves operate with a spring assist in the flowing condition to provide low flow rates which are documented by an independent laboratory.

The standard Type 2 bypass uses the first check of the mainline assembly as the first check of the bypass. The second check of the bypass is a single check valve with a model number and serial number for test recording. This arrangement complies with the National Backflow Standards. The arrangement provides the same level of protection as the Type 1 bypass and the testing procedure is the same.

### FEATURES

- Domestic Stainless Steel Body: 2-1/2"-8"
- FDA Epoxy Coated Ductile Iron Body: 10" & 12"
- Easy Maintenance: No Special Tools required
- Drop-In Check Retainers: 2-1/2"-6"
- Bolted-In Checks: 8"-12"
- Low Pressure Loss as Documented by an Independent Approval Laboratory
- Center Stem Guided TriForce™ Check Valves
- Modular Captured Spring Relief Valve
- Optional Air Gap Drains (See Page 52)
- Small Installation Space Required - Small Footprint
- Approved for n-Flow and Vertical Up Flow
- Chloramine-Resistant Elastomers
- Made in the USA (D Option)
- Lead Free Standard
- CSA B64.4 Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (2-1/2"-6") (Type 1 Bypass)
- ASSE 1047 (with Meter)
- UL, ULC Classified
- FM Approved
- Maximum Working Pressure: 175 psi
- Temperature Range: 33°F - 140°F, 180°F intermittent
- Optional Valve Setters Eliminate Need forThrust Blocks Below Grade
- US Patent Nos. 6,443,184; 7,025,085;7,533,699
- 5 Year Warranty
- Optional Mounting of Bypass on Either Side for Ease of Installation

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY (2-1/2"-8")** | 304 Stainless Steel |
| **BODY (10 & 12")** | FDA Epoxy Coated Ductile Iron |
| **COVERS (2-1/2"-6")** | Glass Filled PPO/SS |
| **COVERS (8")** | 304 Stainless Steel |
| **COVERS (10" & 12")** | FDA Epoxy Coated Ductile Iron |
| **RELIEF VALVE** | Bronze (LF C89836) |
| **CHECK VALVES** | Bronze/Glass-Filled PPO/SS |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |

### PART NUMBER MATRIX

| 4AnLF | 7 X | X | X | X [X] | X |
|---|---|---|---|---|---|
| | **BYPASS SUB-ASSEMBLY OPTIONS** | **SIZE** | **METER OPTION** | **SHUT-OFF VALVES (Inlet x Outlet)** | **OPTIONS** |
| 4AnLF = Lead Free Standard | 0 = Type 1 w/ 1/2" Reduced Pressure<br>2 = Type 2 w/1/2" Single Check<br>3 = Type 1 w/ bypass on left*<br>4 = Type 2 w/ bypass on left* | 9 = 2-1/2"<br>0 = 3"<br>A = 4"<br>C = 6"<br>E = 8"<br>G = 10"<br>H = 12" | C = Cubic feet/min<br>E = Gallons/min<br>G = Less meter | 1 = Less Shut-off Valves<br>3 = OS&Y Flg x OS&Y Flg<br>4 = OS&Y Flg x Monitored (Mon.) Butterfly Vlv Grv†<br>6 = OS&Y Flg x Post indicator Flg**<br>7 = OS&Y Flg x OS&Y Grv<br>8 = OS&Y Grv x OS&Y Grv<br>9 = Mon. Butterfly Vlv Grv x Mon. Butterfly Vlv Grv†<br>10 = OS&Y Flg x Post Indicator Grv**<br>13 = Post Indicator Flg x Mon. Butterfly Vlv Grv†<br>14 = Post Indicator Flg x Post Indicator Flg<br>16 = Mon Butterfly Vlv Grv x Post Indicator Flg†<br>17 = Post Indicator Flg x OS&Y Grv<br>18 = OS&Y Grv x Post Indicator Grv<br>19 = Mon. Butterfly Vlv Grv x Post Indicator Grv<br>20 = Post Indicator Flg x OS&Y Flg | D= Domestic Assembly |

**EXAMPLE:**
**4ANLF 70A E3** = 4" size Lead Free Reduced Pressure Detector Assembly with meter in GPM and OS&Y flanged inlet x OS&Y flanged outlet shut-off valves.

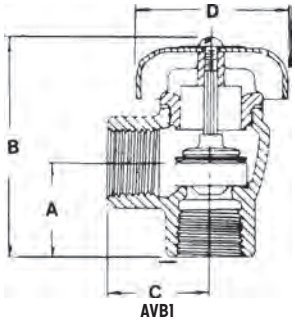
*Orientation of bypass looking downstream.
Standard is right hand side. Left hand is on opposite side
†Butterfly valves not available in 12" size.

## AVB1/AVB2 SERIES — ATMOSPHERIC TYPE VACUUM BREAKERS

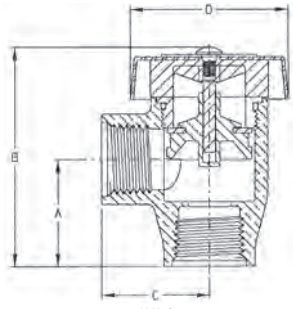
LEADFREE OPTIONS

**AVB1**
**Sizes 1/4",3/8", 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"**

**AVB2**
**Sizes 1/4", 3/8, 1/2", 3/4"**
**(Optional Polished Chrome Finish Shown)**




**AVB1**
**38/38LF-10x**




**AVB2**
**38-20x**

The Apollo® Series Atmospheric Type Vacuum Breakers are designed to prevent back-siphonage of polluted water into a potable water system. They should only be installed in areas where spillage of water could not cause damage and where it can be accessible for periodic maintenance. These devices are not designed for continuous pressure application (maximum 12 hours in any 24 hour period). Should be installed a minimum of 6" above all downstream piping with no downstream shutoffs.

### OPERATION

During flow conditions, the flow of water lifts the float disc and seals the atmospheric vent at all rates of flow, preventing leakage. When a negative pressure is created at the supply line or when the water supply valve upstream of the device is closed, the float disc will fall, thus opening the atmospheric vent. This prevents back-siphonage and creation of vacuum at the discharge line.

### FEATURES

- Corrosion Resistant
- Bronze Body (AVB1)
- Forged Body (AVB2)
- Suitable for Hot or Cold Water Service:
  (up to 212°F at 125 psig) for up to 1"
  (up to 180°F at 125 psig) for 1-1/4" thru 2"
- Lead Free Option (100 Series)
- Heat Resistant Silicone Seat Disc
- Rough Brass, Rough Chrome or Polished Chrome Finish
- Easy to Maintain
- Compact and Lightweight
- Durable
- ASSE1001

### STANDARD MATERIALS LIST

| | |
|---|---|
| **VALVE BODY (AVB1)** | Cast Bronze (LF C89836) |
| **VALVE BODY (AVB2)** | Forged Brass |
| **SEAT DISC** | Silicone |
| **FLOAT & GASKET** | Polypropylene |
| **CANOPY** | Powder Coated Steel |
| **SCREW** | Zinc-plated Steel |

Contact local water authorities for installation/service requirements.

### PART NUMBER MATRIX

| **38(LF) X** | **0X** | **0X** |
|---|---|---|
| | **SIZE** | **FINISH** |
| 1 = Bronze<br>2 = Forged Brass (not available in LF) | 1 = 1/4"<br>2 = 3/8"<br>3 = 1/2"<br>4 = 3/4"<br>5 = 1"<br>6 = 1-1/4"<br>7 = 1-1/2"<br>8 = 2" | 1 = Rough Brass<br>3 = Rough Chrome (1/4" - 1" only)<br>6 = Polished Chrome (AVB2 only) |

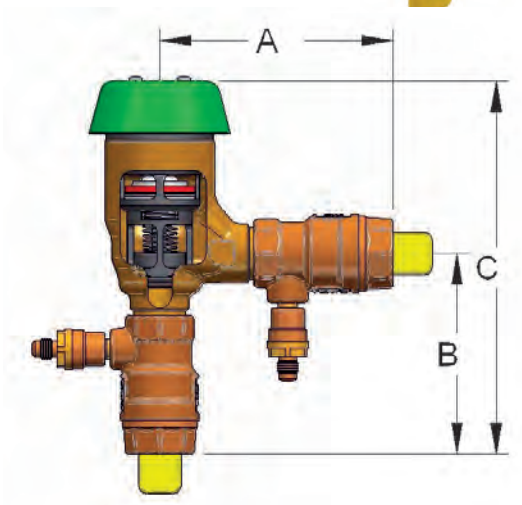
### DIMENSIONS

| Factory No. | Model No. | Size In. | Size mm. | A (In.) | A (mm.) | B (In.) | B (mm.) | C (In.) | C (mm.) | D (In.) | D (mm.) | Wt. Lbs. | Wt. Kgs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38(LF)-101 | AVB114 | **1/4** | 6 | **29/32** | 23 | **2-3/8** | 60 | **1-1/32** | 26 | **1-13/16** | 46 | **50.96** | 23 |
| 38(LF)-102 | AVB138 | **3/8** | 10 | **29/32** | 23 | **2-3/8** | 60 | **1-1/32** | 26 | **1-13/16** | 46 | **47.7** | 22 |
| 38-103 | AVB112 | **1/2** | 15 | **1-3/32** | 28 | **2-1/2** | 65 | **1-3/16** | 30 | **1-3/16** | 30 | **54.7** | 25 |
| 38-104 | AVB134 | **3/4** | 20 | **1-5/16** | 33 | **3-1/16** | 78 | **1-15/32** | 37 | **2-1/8** | 54 | **79.7** | 36 |
| 38-105 | AVB11 | **1** | 25 | **1-3/4** | 45 | **4-1/16** | 103 | **1-7/8** | 48 | **2-7/8** | 73 | **174** | 79 |
| 38-106 | AVB1114 | **1-1/4** | 32 | **2** | 50 | **4-3/8** | 111 | **2** | 50 | **3-3/4** | 95 | **316** | 143 |
| 38-107 | AVB1112 | **1-1/2** | 40 | **2** | 50 | **4-3/8** | 111 | **2** | 50 | **3-3/4** | 95 | **289** | 131 |
| 38-108 | AVB12 | **2** | 50 | **2-1/8** | 54 | **4-1/2** | 114 | **2-1/4** | 57 | **3-3/4** | 95 | **369** | 167 |

## PVB 4A SERIES — FREEZE RESISTANT PRESSURE VACUUM BREAKER

LEAD FREE OPTIONS


Sizes 1/2", 3/4", 1", 1-1/4",1-1/2", 2"




The Apollo® Model PVB 4A Pressure Vacuum Breakers are designed to prevent contamination of potable water due to back-siphonage. An integral relief valve serves to reduce the possibility of damage due to intermittent freezing conditions. The modular check valve cartridge has a replaceable seat and a reversible silicone seat disc. Ball valves with stainless steel handles and nuts are standard.

### FEATURES

- Modular Captured Spring Cartridge Check Valve
- Low Pressure Loss
- Built-In Freeze Resistant Relief Valve
- Compact Yet Easy to Maintain
- Ball Valves w/SS Handles & Nuts Standard
- Testcocks Located for Easy Draining
- Threaded Testcock Protectors
- Corrosion Resistant
- 5 Year Warranty
- No Special Tools Required
- Lead Free Option (3/4" - 1")
- Unique Canopy Detachment
- ASSE 1020
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California (1/2" - 2" Non Lead Free Only)
- CSA B64.1.2
- Easy Maintenance
- Maximum Operating Pressure: 150 psi
- Design Pressure: 300 psi
- Temperature Range: 33°F - 140°F

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze (C84400/LF C89836) |
| **BALL VALVES, TESTCOCKS** | Bronze (C84800/LF C87800) |
| **CANOPY** | UV Resistant ABS |
| **BONNET** | Glass-Filled PPO |
| **CHECK VALVE CARTRIDGE** | Glass-Filled PPO |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Chloramine-Resistant Silicone |
| **FLOAT** | Glass-Filled Polypropylene |
| **O-RINGS** | Chloramine-Resistant EPDM |
| **BALL VALVE HANDLES** | Stainless Steel |

Contact local water authorities for installation/service requirements.

### PART NUMBER MATRIX

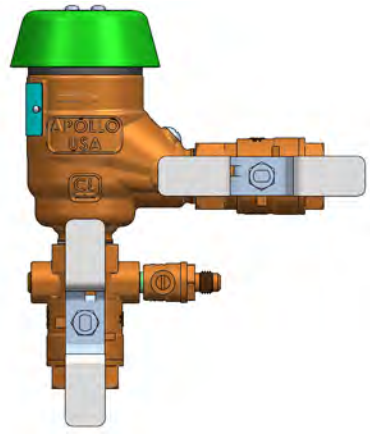
| 4A [X] | 50 X | A X | X |
|---|---|---|---|
| | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS (CAN BE COMBINED)** |
| 4A = Standard<br>4ALF = Lead Free (3/4" - 1") | 3 = 1/2"<br>4 = 3/4"<br>5 = 1"<br>6 = 1-1/4"<br>7 = 1-1/2"<br>8 = 2" | 2 = w/ ball valves (standard)<br>4 = w/union ball valves (3/4" and 1" only) | F = SAE threaded test cocks (standard 1/2", 3/4",1")<br>LL = locking lever handles (3/4" - 2") |

### DIMENSIONS

| Factory No. | Model No. | Size In. | Size mm. | A (In.) | A (mm.) | B (In.) | B (mm.) | C (In.) | C (mm.) | Wt. Lbs. | Wt. Kgs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4A-503-A2 | PVB4A12 | **1/2"** | 15 | **4-1/2** | 114 | **3-3/4** | 95 | **7-1/4** | 184 | **2.9** | 1.3 |
| 4A-504-A2 | PVB4A34 | **3/4"** | 20 | **4-3/4** | 121 | **4-1/8** | 105 | **7-5/8** | 194 | **3.0** | 1.4 |
| 4A-505-A2 | PVB4A1 | **1"** | 25 | **5-3/8** | 135 | **4-5/8** | 194 | **8-3/8** | 211 | **4.2** | 1.9 |
| 4A-506-A2 | PVB4A114 | **1-1/4"** | 32 | **7** | 178 | **5-1/4** | 133 | **9-7/8** | 250 | **4.4** | 2.0 |
| 4A-507-A2 | PVB4A112 | **1-1/2"** | 40 | **7-1/4** | 184 | **5-5/8** | 143 | **10-1/8** | 257 | **7.3** | 3.3 |
| 4A-508-A2 | PVB4A2 | **2"** | 50 | **8-1/2** | 216 | **6-3/8** | 161 | **11-1/2** | 292 | **8.9** | 4.0 |

## SVB 4A SERIES — SPILL RESISTANT VACUUM BREAKER BACKFLOW PREVENTER

LEADFREE OPTIONS



Sizes 1/2", 3/4", 1"

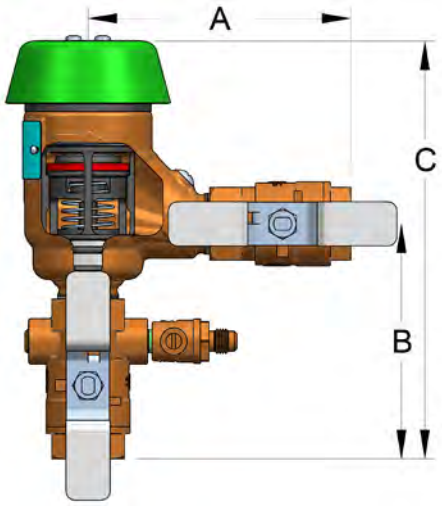
The Apollo® Series SVB 4A Spill Resistant Vacuum Breaker is designed to prevent contamination of the potable water supply due to back-siphonage. The SVB is ideally suited for continuous pressure, indoor applications where water spillage is undesirable. The device has a straight through flow path for minimal head loss. All components are easily accessible for easy repair and maintenance. All components are made of corrosion resistant materials for years of reliable service. Should be installed 12" above all downstream piping.

### OPERATION

During normal flow conditions, the check valve remains open and the atmospheric vent seals in the bonnet assembly. As the line pressure falls to 1 psi, the spring loaded atmospheric vent opens and the check valve closes, breaking the vacuum and thereby preventing back-siphonage. Water is not allowed to spill at any time during operation.

### FEATURES

- Modular Captured Spring Check Valve
- Shut-Off Valves w/Stainless Steel Handles and Nuts
- Threaded Testcock Protectors
- Designed For Easy Maintenance
- Lead Free Option
- Low Head Loss
- Maximum Working Pressure: 150 PSIG
- Operating Temperature Range: 33°F-140°F
- ASSE 1056
- CSA B64.1.2
- 5 Year Warranty




### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze (C84400/LF C89836) |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Silicone Rubber |
| **VALVE CANOPY** | ABS Plastic |
| **FASTENERS** | Stainless Steel |
| **BALL VALVE HANDLES** | Stainless Steel |

Contact local water authorities for installation/service requirements.

### PART NUMBER MATRIX

| 4A [X] | 90 X | A X | X |
|---|---|---|---|
| | **SIZE** | **SHUT-OFF VALVES** | **OPTIONS (CAN BE COMBINED)** |
| 4A = Standard<br>4ALF = Lead Free (3/4" - 1") | 3 = 1/2"<br>4 = 3/4"<br>5 = 1" | 2 = w/ ball valves (standard)<br>4 = w/union ball valves (3/4" and 1" only) | F = SAE threaded test cocks (standard 1/2", 3/4",1")<br>LL = locking lever handles (3/4" - 1") |

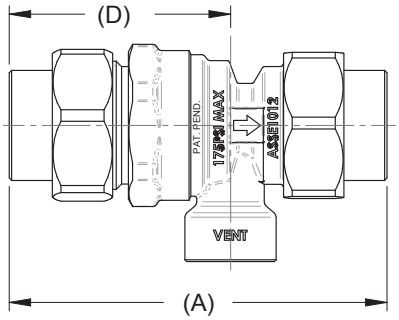
### DIMENSIONS

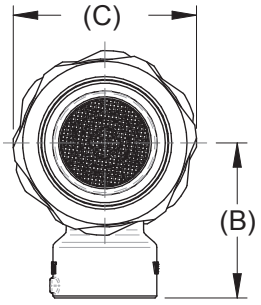
| Factory No. | Model No. | Size In. | Size mm. | A (In.) | A (mm.) | B (In.) | B (mm.) | C (In.) | C (mm.) | Wt. Lbs. | Wt. Kgs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4A-903-A2 | SVB4A12 | **1/2"** | 15 | **4-1/2** | 114 | **3-3/4** | 95 | **7-1/4** | 184 | **2.9** | 1.3 |
| 4A-904-A2 | SVB4A34 | **3/4"** | 20 | **4-1/2** | 121 | **4** | 105 | **7-1/4** | 194 | **3.0** | 1.4 |
| 4A-905-A2 | StVB4A1 | **1"** | 25 | **5-3/8** | 135 | **4-3/4** | 194 | **8-1/8** | 211 | **4.2** | 1.9 |

## DCAP SERIES — DUAL CHECK WITH ATMOSPHERIC PORT BACKFLOW PREVENTER

LEADFREE OPTIONS

Sizes 1/2", 3/4"




The Apollo® DCAP Series Backflow Preventer is designed to protect residential and commercial water supply lines from back-siphonage or back-pressure of non-potable (non-hazardous) substances. It has an intermediate atmospheric vent to insure protection from backflow conditions. It consists of two independently acting and spring-loaded check valves in a corrosion resistant material.

### OPERATION

During normal flow operation, the vent valve is closed, and the two check valves are open allowing flow of water through the unit. Each check valve is designed to hold at least 1 psi in the direction of flow. When a back-siphonage condition occurs, both check valves close and the atmospheric vent opens to permit air to enter the intermediate zone. In the event of back-pressure and if the second check valve is prevented from closing tightly, leakage will be vented to the atmosphere through the vent port.

### FEATURES

- Corrosion Resistant
- Low Head Loss
- Independently Acting Check Valves
- Ease of Repair and Installation
- Economical
- Suitable for Hot or Cold Water Service
- Durable
- Lead-Free Option
- Maximum Working Pressure: 175 psig
- ASSE 1012
- CSA B64.3
- Inlet Temperature Range: 33°F-210°F
- 5 Year Warranty
- Maximum backflow temperature: 250°F

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Forged Brass C87800 |
| **UNION NUT & TAILPIECES** | Forged Brass C87800 |
| **SEAT DISCS** | EPDM (FDA/NSF 61) |
| **SEAT STEM & RETAINER** | Forged Brass C46500 |
| **SPRINGS** | Stainless Steel |

### DIMENSIONS

| Part Number | Dimensions (in.) | | | | Wt. (lbs.) |
|---|---|---|---|---|---|
| | A | B | C | D | |
| 4ALF4A33A, 4ALF4A33AC | 4.1 | 1.6 | 1.9 | 2.4 | 1.31 |
| 4ALF4H33H, 4ALF4H33HC | 3.9 | 1.6 | 1.9 | 2.3 | 1.24 |
| 4ALF4A44A, 4ALF4A44AC | 4.3 | 1.6 | 1.9 | 2.5 | 1.32 |
| 4ALF4H44H, 4ALF4A44HC | 4.4 | 1.6 | 1.9 | 2.6 | 1.29 |

### PART NUMBER MATRIX

| 4A [X] | 4 X | X - X | X | X |
|---|---|---|---|---|
| | UNION INLET CONNECTION | INLET AND OUTLET SIZE | UNION OUTLET CONNECTION | OPTION |
| 4A = Standard<br>4ALF = Lead Free | A = FNPT<br>H = Solder joint | 3 = 1/2"<br>4 = 3/4" | A = FNPT<br>B = MNPT<br>H = Solder joint | C = Canadian (discharge port not threaded) |

## DUCLF 4ALF SERIES DUAL CHECK VALVE

LEADFREE CERTIFIED

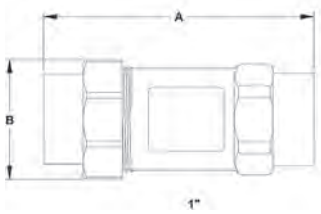

The Apollo® DUCLF-4ALF Series Dual Check Valve Backflow Preventer is designed to prevent cross-connections of non-potable water (non-hazardous) into safe drinking water systems. It is a compact and economical device that consists of two independently-acting, spring-loaded check valves in a corrosion-resistant material.

### OPERATION

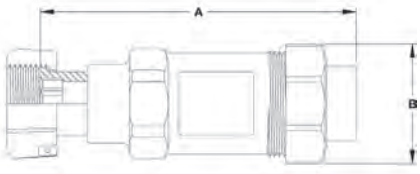
Each of the two spring-loaded check valves is designed to open at 1 psi differential in the direction of flow. The check valves will remain tightly closed until there is a demand for water downstream. If the downstream pressure of the device increases above the supply pressure or there is a reverse direction of flow, the check valves will close to prevent backflow. If the second check valve is prevented from closing tightly, the first check will close to provide protection from a backflow condition.

### FEATURES

- Low Head Loss
- Independently-Acting Captured Spring Check Valves
- Compact and Lightweight
- Corrosion Resistant
- Replaceable Check Modules
- Industry Lay Lengths
- Lead-Free (NSF 372)
- Available in Standard and Swivel Types
- Maximum Working Pressure: 175 psi
- Operating Temperature Range: 33°F-180°F
- ASSE 1024
- CSA B64.6
- 5 Year Warranty




Union x NPT




Meter Swivel x NPT

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Lead Free Bronze C87800 |
| **TAILPIECE** | Lead Free Brass C46500 |
| **UNION NUT** | Brass C36000 |
| **CHECK MODULES** | Acetal (3/4"-1") |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | Buna-N (3/4"-1") |

Contact local water authorities for installation/service requirements.

### METER THREAD SIZING

| | |
|---|---|
| **5/8" METER** | 3/4" |
| **3/4" METER** | 1" |
| **1" METER** | 1-1/4" |

### DIMENSIONS

| Size | Dimensions (in.) | | Wt. (Lbs.) |
|---|---|---|---|
| | A | B | |
| 3/4" | 4.375 | 2 | 1.40 |
| 3/4" Meter Swivel | 4.75 | 2 | 1.60 |
| 1" | 4.375 | 2 | 1.40 |
| 1" Meter Swivel | 4.75 | 2 | 1.75 |

### PART NUMBER MATRIX

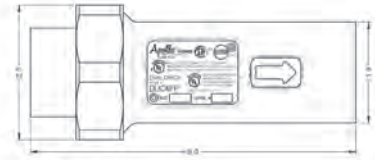
| 4ALF [X] | 3 X | X X | X | X |
|---|---|---|---|---|
| | UNION INLET CONNECTION [1,2] | INLET AND OUTLET SIZE | OUTLET CONNECTION [1,2] | FINISH |
| 4ALF = Lead Free | A = FNPT<br>B = MNPT<br>C = Female Meter Thread<br>S = Female Meter Swivel | 4 = 3/4"<br>5 = 1"<br>6 = 1-1/4" (Meter Thread sizing for 1" meter swivel) | A = FNPT<br>B = MNPT | Blank = Satin Brass |

*1. For meter threads, order one size larger than meter size. (i.e.- 4ALF3S54A = 1" Female Meter Swivel Inlet (for connection to 3/4" meter) x 3/4" FNPT outlet*
*2. Not all inlet and outlet combinations are available. Please contact Apollo Customer Service for availability.*

**EXAMPLE:**
**4ALF 3S54A** = Lead Free Dual Check with Female Swivel 1" Inlet (for 3/4" meter connection x 3/4" FNPT outlet)

## DUC 4FP SERIES — DUAL CHECK BACKFLOW PREVENTER

LEADFREE OPTIONS



The Apollo® DUC 4FP Series Dual Check Backflow Preventer for Residential Fire Sprinkler Systems prevents backflow by either backpressure or backsiphonage from a cross-connection between potable water lines and substances that are objectionable, but not health-hazards.

### FEATURES

- Low Pressure Loss
- Corrosion Resistant
- Replaceable Check Modules
- Pressure Drop at 30 gpm is Less than 6 psi
- Complies With NFPA Standard 13D
- 5 Year Warranty
- Maximum Supply Pressure: 175 psi
- Temperature Range: 33°F - 180°F
- ASSE 1024
- UL Classified
- CSA B64.6
- Made in the USA
- NSF 372 (LF Only)

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze (C84400) |
| **UNION NUT & TAILPIECES** | Brass |
| **CHECK MODULES** | Acetal/Nitrile/Stainless Steel |
| **SPACER** | Glass-Filled Noryl® |
| **O-RING** | Stainless Steel |

Contact local water authorities for installation/service requirements.

### PART NUMBER MATRIX

| 4FP3 X | X | X | X |
|---|---|---|---|
| **INLET CONNECTION**[1] | **INLET SIZE** | **OUTLET SIZE** | **OUTLET CONNECTION**[1] |
| A = FNPT<br>C = Female Meter Thread | 5 = 1"<br>6 = 1-1/4"<br>(Meter thread sizing for 1" meter) | 5 = 1"<br>6 = 1-1/4"<br>(Meter thread sizing for 1" meter) | A = FNPT<br>B = MNPT<br>E = Male Meter Thread |

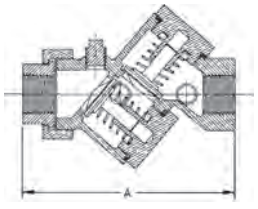
**EXAMPLE:**
**4FP3A55A** = 1" Dual Check FNPT Inlet x 1" FNPT outlet

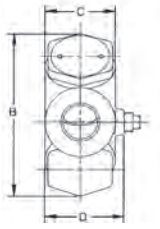
*Notes:*
[1] *Not all inlet and outlet combinations are available. Please contact Conbraco Customer Service for availability.*

## DUC 40 SERIES — DUAL CHECK VALVE

LEADFREE OPTIONS

Sizes 1/2", 3/4", 1"





The Apollo® Series DUC 40 Dual Check Valve prevents backflow by either backpressure or back-siphonage resulting from a cross-connection between potable water lines and substances that are objectionable, but not health-hazards.

### FEATURES

- In-Line Repairable
- Low Pressure Loss
- Corrosion Resistant
- Compact and Lightweight
- Independently-Acting Check Valves
- Lead-Free Ooption
- ASSE 1024
- CSA B64.6
- Available in Standard and Swivel Types
- Made in the USA
- 5 Year Warranty
- Maximum Operating Pressure: 175 psi
- Temperature Range: 33°F - 180°F
- ASSE 1024
- CSA B64.6

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze (C84400 - LF C89836) |
| **CAPS** | Brass |
| **SPRINGS** | Stainless Steel |
| **SEAT DISCS** | EPDM |

### DIMENSIONS

| Size | DUC4012 40-3x3-3x | DUC4034 40-3x4-4x | DUC401 40-3x5-5x |
|---|---|---|---|
| A | 4-3/8 | 4-3/8 | 4-3/8 |
| B | 3-1/2 | 3-1/2 | 3-1/2 |
| C | 1-1/2 | 1-1/2 | 1-1/2 |
| Wt. (Lbs.) | 2 | 2 | 2.1 |
| Wt. (w/test cocks & ball valves) | 4 | 4.6 | 6.4 |

### PART NUMBER MATRIX

| 40 [X] 3 | X | X | X | X |
|---|---|---|---|---|
| | **INLET CONNECTION**[1,2] | **INLET AND OUTLET SIZE** | **OUTLET CONNECTION**[1,2] | **OPTIONS (CAN BE COMBINED)** |
| 40 = Standard<br>40LF = Lead Free | A = FNPT<br>C = Female Meter Thread<br>S = Female Meter Swivel | 3 = 1/2"<br>4 = 3/4"<br>5 = 1" | A = FNPT<br>C = Female Meter Thread | TP = w/Test Ports Drilled, Tapped w/Plugs<br>TC = w/3 1/8"x1/4" Test Cocks |

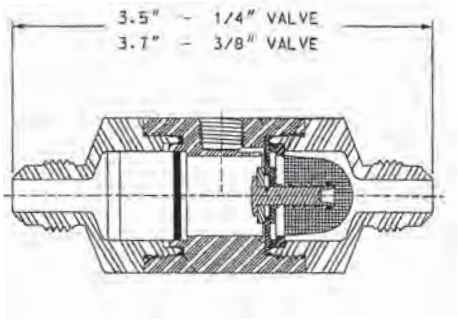
**EXAMPLE:**
**40 3S5 4A** = 1" Dual Check Female with Meter Swivel Inlet (for connection to 3/4" meter) x 3/4"

*Notes:*
[1] *For meter threads, order one size larger than meter size.*
[2] *Not all inlet and outlet combinations are available. Please contact Conbraco Customer Service for availability.*
** Standard body not drilled & tapped for testcocks.*

## CBBP SERIES CARBONATED BEVERAGE BACKFLOW PREVENTER

LEADFREE CERTIFIED


Sizes 1/4", 3/8"




The Apollo® CBBP Series Carbonated Beverage Backflow Preventer (CBBP) is designed to prevent the contamination of the potable water supply due to backflow when installed on water distribution lines serving beverage dispensing equipment. The device consists of two independently acting check valves biased to a normally closed position. A normally open atmospheric port is located between the check valves. During backflow conditions, the port vents gases and/or liquids. Additionally, the CBBP is equipped with a 100 mesh integral strainer screen at the inlet. All wetted areas of the device are non-toxic, corrosion resistant, and approved for use with potable water. The CBBP is suitable for supply pressures to 150 psig and water temperatures from 33° to 130° F.

### OPERATION

Under static (non-flowing) conditions, the check valves remain in the closed position. When a valve is opened downstream (i.e. a beverage is delivered from the beverage dispensing unit), the check valves open and permit the flow of water. Under backflow conditions, the diaphragm seat on the first check lifts and permits flow through the atmospheric port located between the two check valves. The strainer insures debris does not enter the backflow preventer.

### FEATURES

- Compact Design
- Lowest Head Loss
- Atmospheric Vent Provides Indication of Problems
- Integral Strainer for Equipment Protection
- Lead Free
- Available in SAE & NPT Connections
- Repairable Check Assemblies
- Non-Metallic Body for Corrosion Resistance
- CSA Certified to ANSI/NSF-61
- ASSE 1022
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **END CAP** | Acetal |
| **STRAINER** | PVC/Stainless Steel |
| **O-RING** | Nitrile |
| **UPSTREAM CHECK** | Nitrile/Stainless Steel/Acetal |
| **DOWNSTREAM CHECK** | EPDM/Stainless |
| **VALVE BODY** | Acetal |

Contact local water authorities for installation/service requirements.

### DIMENSIONS

| CBBP Size | Connection Sizing | | Wt./Ea |
|---|---|---|---|
| 1/4" | 7/16"-20 UNF | SAE Flare | .19 |
| 3/8" | 5/8"-18 UNF | SAE Flare | .19 |
| 3/8" | 3/8" NPT | Male NPT | .19 |

### PART NUMBER MATRIX

| 4C10 X | X |
|---|---|
| **SIZE** | **INLET AND OUTLET CONNECTION** |
| 1 = 1/4" | 01 = Flare |
| 2 = 3/8" | 02 = MNPT (3/8" only) |

## HBV SERIES — 3/4" HOSE CONNECTION VACUUM BREAKER

LEAD FREE CERTIFIED

3/4"
Apollo International®
(Optional Satin Chrome Finish Shown)

The Apollo® HBV Hose Connection Vacuum Breakers are designed to prevent cross-connection caused by back-siphonage. They consist of a single check valve with atmospheric vacuum breaker vent. They feature a break-away set-screw for tamper-proof protection. They are not suitable for continuous pressure applications.

### OPERATION

At no flow situations, the check disc seats against the diaphragm with the atmospheric vent open. This prevents back-siphonage or backflow of water. At flow conditions, the spring-loaded check disc opens, thus allowing flow of water through the device and at the same time the diaphragm seals the atmospheric vent.

### INSTALLATION

It should only be installed in areas where spillage of water could not cause damage. For permanent installation, screw device directly into faucet, firmly hand tighten and turn set-screw in until head breaks off.

### FEATURES

- Maximum Working Pressure: 125 psig
- Maximum Temperature: 180°F
- ASSE 1011
- CSA B64.2
- IAPMO

### DIMENSIONS

| Factory No. | Model No. | Finish | Wt./Ea |
|---|---|---|---|
| 38LF-314-AS | HBVLF234 | Satin Brass | .17 |
| 38LF-314-CS | HBVLFC234 | Satin Chrome | .17 |

*38LF-314 shipped in 12 pcs./box*

## HBVB SERIES — 3/4" FREEZE RESISTANT HOSE CONNECTION VACUUM BREAKER

LEAD FREE CERTIFIED


3/4"
Apollo International®

The Apollo® Series HBVB Freeze Resistant Hose Connection Vacuum Breaker is especially designed to prevent back-siphonage on wall and yard hydrants. It features a break-away set-screw for tamper-proof protection and automatic drain for protection against freezing conditions when hose is removed. It is not suitable for continuous pressure applications.

### OPERATION

The principle of operation is similar to the HCVB Series except it has an automatic draining feature. When the hose is removed, the internal mechanism opens to drain water from the unit and the hose bibb to help prevent water from freezing inside the unit.

### INSTALLATION

It should only be installed in areas where spillage of water could not cause damage. For permanent installation, screw device directly into faucet, firmly hand tighten and turn set-screw in until head breaks off.

### FEATURES

- Maximum Working Pressure: 125 psig
- Maximum Temperature: 180°F
- ASSE 1011

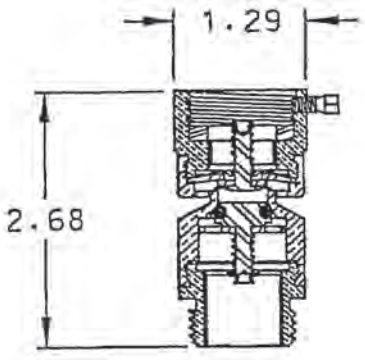
### DIMENSIONS

| Factory No. | Model No. | Finish | Wt./Ea |
|---|---|---|---|
| 38LF-414-AS | HBVBLF2 | Satin Brass | .37 |

## HBDUC SERIES — 3/4" HOSE CONNECTION/LAB FAUCET DUAL CHECK

LEADFREE OPTIONS

38-304-02
Size 3/4"




The Apollo® Series HBDUC is designed to provide an in-line testable hose connection that will prevent backflow due to back-siphonage or low head back-pressure. Each device consists of two independent checks, forced loaded in the closed position with an atmospheric vent between the checks. The device is threaded for hose connection at both the inlet and outlet with a break-away set screw on the inlet for tamper proof installations. These devices are not suitable for continuous pressure applications.

### OPERATION

During initial pressurization, the inlet check shuttles forward to close the atmospheric vent. As flow is established, both the inlet and outlet check open to allow flow through the device. If a backflow condition is present, then both checks will close and the atmospheric vent opens to introduce air and break the siphon.

### FEATURES

- Corrosion Resistant Body and Checks
- Low Head Loss
- Easy to Install With Break-Away Set Screw
- Protects Against Back Siphonage and Low Head Back Pressure
- ASSE 1052

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Brass |
| **SEATS** | EPDM |
| **CHECK COMPONENTS** | STAINLESS STEEL |
| **CHECK GUIDE** | Acetal |

Contact local water authorities for installation/service requirements.

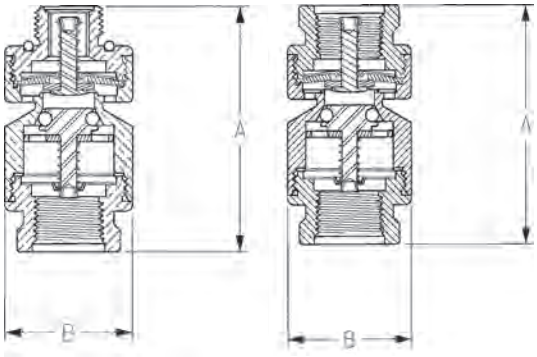
### DIMENSIONS

| Factory No. | Model No. | Wt./Ea |
|---|---|---|
| 38-304-02 | HBDUC34 | .46 |
| 38LF-304-02 | HBDUCLF34 | .46 |

## LFDUC SERIES — LAB FAUCET DUAL CHECK BACKFLOW PREVENTER

LEADFREE OPTIONS

Sizes 1/4", 3/8"




The Apollo® Series LFDUC is designed to provide protection against back-siphonage wherever a hose is connected to a faucet. The device consists of two independently acting checks with an intermediate relief port or vent. It is suitable for supply pressure up to 150 psig and a temperature range of 33°F-212°F. Not suitable for constant pressure conditions.

### OPERATION

During normal flow conditions, the two checks are held off their seats, supplying water downstream. The vent is held shut by supply pressure acting on the diaphragm. If the supply pressure should fall below atmospheric, the second check will close due to internal spring pressure and the vent will open to introduce air into the supply line and break the siphon.

*Note: This device should only be installed where spillage of water could not cause water damage.*

### FEATURES

- Corrosion Resistant
- Suitable for Hot or Cold Water Service up to 212°F and 125 psi
- Lead Free Option
- Polished (-CP2 and -CP3 are Rough Brass Only)
- Easy to Maintain
- Compact and Lightweight
- ASSE 1035

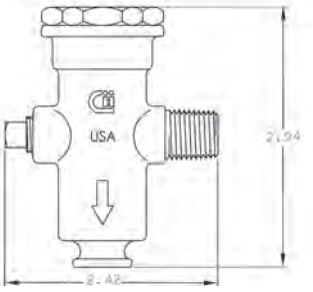
### DIMENSIONS

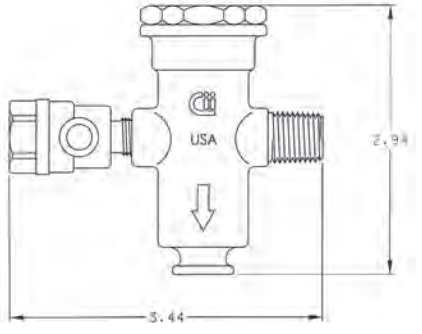
| Factory No. | Model No. | Inlet | Outlet | A (In.) | B (In.) | Wt./Ea |
|---|---|---|---|---|---|---|
| 38-502-01 | LFDUCMF38 | 3/8" MNPSM* | 3/8" FNPT | 2.33 | 1.24 | .50 |
| 38-502-02 | LFDUCFF38 | 3/8" FNPT | 3/8" FNPT | 2.34 | 1.24 | .50 |
| 38-502-03 | LFDUCFM38 | 3/8" FNPT | 3/8" MNPSM | 2.33 | 1.24 | .50 |
| 38-502-CP2** | LFDUCFF14 | 1/4" FNPT | 1/4" FNPT | 2.34 | 1.24 | .50 |
| 38-502-CP3** | LFDUCFF38 | 3/8" FNPT | 3/8" FNPT | 2.34 | 1.24 | .50 |

**American National Standard straight pipe thread for free-fitting mechanical joints (male)*
***-CP2 and -CP3 are non-approved devices with a rough brass finish for continuous pressure applications*

## FPV SERIES — FREEZE PROTECTION VALVE

LEAD FREE OPTIONS




The Apollo® Series FPV Freeze Protection Valve protects backflow preventers from freezing when installed in accordance with manufacturer's instructions. All internal parts of the Freeze Protection Valve are replaceable.

### OPERATION

During flow conditions, the Freeze Protection Valve shall be drip-tight during above-freezing normal operating conditions. The Freeze Protection Valve shall be suitable for normal operating pressures of 20 to 175 psig.

### FEATURES

- Installs Easily on All Backflow Preventers
- Ease of Repair with Available Repair Kit
- Corrosion Resistant
- 1/4" Male Pipe Thread Inlet Port
- Available With 1/8"M x 1/4"F testcock
- Discharge Port Accommodates 5/8" I.D. Hose
- Lead-Free Option
- Mechanical Operating Principle
- Nominal Start to Open Temperature of 35°F
- Maximum Operating Pressure: 175 psig
- Maximum temperature of 180°F
- Compact Design
- IAPMO listed
- US Patent #6,374,849
- 5 Year Warranty

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze (C84400/LF C89836) |
| **CAP** | Brass |
| **SPRING GUIDE** | Brass |
| **SPRING** | Stainless Steel |
| **CAP O-RING** | Buna-N |
| **GUIDE O-RING** | Buna-N |
| **THERMAL ELEMENT** | Copper/Stainless Steel/EPDM |

Contact local water authorities for installation/service requirements.

### DIMENSIONS

| Net Weight Each | Lbs. |
|---|---|
| Model 40-000-FPV1 | .70 |
| Model 40-000-FPV2 | .77 |

### MODEL NUMBERS

| |
|---|
| Model 40-000-FPV1 |
| Model 40-000-FPV2 – w/test cock |
| Model 40LF-000-FPV1 |
| Model 40LF-000-FPV2F – w/SAE testcock |

### PART NUMBER MATRIX

| 40 [X] 000 | FPV X |
|---|---|
| | **OPTIONS** |
| 40 = Standard<br>40LF = Lead Free | 1 = w/1/8" NPT plug<br>2 = w/1/8" male x 1/4" female test cock<br>2F = SAE test cock<br>R = Repair kit* for FPV1 and FPV2 |

** Repair kit includes: Thermal element, spring, spring guide, two O-rings (all internal parts)*

# GATE, GLOBE & CHECK **VALVES**

## MODEL 101S/101S-LF SOLDER END RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 30-083-01 | 30LF-083-01 | 1/2 | 1.88 | 4.85 | 1.00 |
| 30-084-01 | 30LF-084-01 | 3/4 | 2.43 | 5.71 | 1.30 |
| 30-085-01 | 30LF-085-01 | 1 | 2.96 | 6.71 | 2.20 |
| 30-086-01 | 30LF-086-01 | 1 1/4 | 3.14 | 8.10 | 3.20 |
| 30-087-01 | 30LF-087-01 | 1 1/2 | 3.44 | 9.08 | 4.40 |
| 30-088-01 | 30LF-088-01 | 2 | 4.11 | 11.28 | 7.00 |
| 30-089-01 | 30LF-089-01 | 2 1/2 | 4.79 | 14.58 | 13.80 |
| 30-080-01 | 30LF-080-01 | 3 | 5.43 | 19.07 | 17.70 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 101T/101T-LF NPT END RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)


| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 30-001-01 | 30LF-001-01 | 1/4 | 1.76 | 4.57 | 0.80 |
| 30-002-01 | 30LF-002-01 | 3/8 | 1.76 | 4.51 | 0.77 |
| 30-003-01 | 30LF-003-01 | 1/2 | 2.03 | 4.85 | 1.00 |
| 30-004-01 | 30LF-004-01 | 3/4 | 2.07 | 5.71 | 1.30 |
| 30-005-01 | 30LF-005-01 | 1 | 2.45 | 6.71 | 2.16 |
| 30-006-01 | 30LF-006-01 | 1 1/4 | 2.63 | 8.10 | 3.20 |
| 30-007-01 | 30LF-007-01 | 1 1/2 | 2.88 | 9.08 | 4.36 |
| 30-008-01 | 30LF-008-01 | 2 | 3.06 | 11.28 | 7.01 |
| 30-009-01 | 30LF-009-01 | 2 1/2 | 4.13 | 14.58 | 13.79 |
| 30-000-01 | 30LF-000-01 | 3 | 4.48 | 19.07 | 17.70 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 102S/102S-LF SOLDER END-NON RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 30-043-01 | 30LF-043-01 | 1/2 | 1.88 | 3.56 | 0.85 |
| 30-044-01 | 30LF-044-01 | 3/4 | 2.43 | 4.05 | 1.19 |
| 30-045-01 | 30LF-045-01 | 1 | 2.96 | 4.55 | 1.98 |
| 30-046-01 | 30LF-046-01 | 1 1/4 | 3.14 | 5.14 | 2.80 |
| 30-047-01 | 30LF-047-01 | 1 1/2 | 3.44 | 6.02 | 3.95 |
| 30-048-01 | 30LF-048-01 | 2 | 4.11 | 7.09 | 5.88 |
| 30-049-01 | 30LF-049-01 | 2 1/2 | 4.79 | 9.11 | 12.19 |
| 30-040-01 | 30LF-040-01 | 3 | 5.43 | 12.61 | 16.84 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 102T/102T-LF NPT END NON-RISING STEM GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **30-031-01** | **30LF-031-01** | 1/4 | 1.76 | 3.29 | 0.74 |
| **30-032-01** | **30LF-032-01** | 3/8 | 1.76 | 3.29 | 0.71 |
| **30-033-01** | **30LF-033-01** | 1/2 | 2.03 | 3.56 | 0.85 |
| **30-034-01** | **30LF-034-01** | 3/4 | 2.07 | 4.05 | 1.19 |
| **30-035-01** | **30LF-035-01** | 1 | 2.45 | 4.55 | 1.98 |
| **30-036-01** | **30LF-036-01** | 1 1/4 | 2.63 | 5.14 | 2.80 |
| **30-037-01** | **30LF-037-01** | 1 1/2 | 2.88 | 6.02 | 3.95 |
| **30-038-01** | **30LF-038-01** | 2 | 3.06 | 7.09 | 5.88 |
| **30-039-01** | **30LF-039-01** | 2 1/2 | 4.13 | 9.11 | 12.19 |
| **30-030-01** | **30LF-030-01** | 3 | 4.48 | 12.61 | 16.84 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 102T-K NPT END NON-RISING STEM IRRIGATION GATE VALVE

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- Bronze Cross-Handle (irrigation)
- 200 CWP
- 125 SWP
- SS Stem Nut

### STANDARDS
- MSS SP-80 Standard
- ASTM B62 Bronze

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **30-033-01K** | 1/2 | 2.03 | 3.56 | 0.85 |
| **30-034-01K** | 3/4 | 2.07 | 4.05 | 1.19 |
| **30-035-01K** | 1 | 2.45 | 4.55 | 1.98 |
| **30-036-01K** | 1 1/4 | 2.63 | 5.14 | 2.80 |
| **30-037-01K** | 1 1/2 | 2.88 | 6.02 | 3.95 |
| **30-038-01K** | 2 | 3.06 | 7.09 | 5.88 |
| **30-039-01K** | 2 1/2 | 4.13 | 9.11 | 12.19 |
| **30-030-01K** | 3 | 4.48 | 12.61 | 16.84 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.
30LF-03X-01K available upon request.

## MODEL 103S NPT END RISING STEM GATE VALVE

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- Max. Temp: 406°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- ASTM B62 Bronze

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **30-051-01** | 1/4 | 1.76 | 4.57 | 0.90 |
| **30-052-01** | 3/8 | 1.76 | 4.51 | 0.86 |
| **30-053-01** | 1/2 | 2.03 | 4.85 | 1.07 |
| **30-054-01** | 3/4 | 2.07 | 5.71 | 1.43 |
| **30-055-01** | 1 | 2.45 | 6.71 | 2.44 |
| **30-056-01** | 1 1/4 | 2.63 | 8.10 | 3.71 |
| **30-057-01** | 1 1/2 | 2.88 | 9.08 | 4.89 |
| **30-058-01** | 2 | 3.06 | 11.28 | 7.53 |
| **30-059-01** | 2 1/2 | 4.96 | 14.58 | 15.33 |
| **30-050-01** | 3 | 4.48 | 19.07 | 19.56 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.

## MODEL 106T — CLASS 150 NPT NON-RISING STEM GATE VALVE

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 300 CWP
- 150 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B62 Bronze Materials

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **30-281-01** | 1/4 | 1.76 | 3.29 | 0.74 |
| **30-282-01** | 3/8 | 1.76 | 3.29 | 0.71 |
| **30-283-01** | 1/2 | 2.03 | 3.56 | 0.98 |
| **30-284-01** | 3/4 | 2.07 | 4.05 | 1.21 |
| **30-285-01** | 1 | 2.45 | 4.55 | 1.98 |
| **30-286-01** | 1 1/4 | 2.63 | 5.14 | 2.80 |
| **30-287-01** | 1 1/2 | 2.88 | 6.02 | 4.06 |
| **30-288-01** | 2 | 3.06 | 7.09 | 5.88 |
| **30-289-01** | 2 1/2 | 4.13 | 9.11 | 12.19 |
| **30-280-01** | 3 | 4.48 | 12.61 | 16.90 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.

## MODEL 107T — CLASS 150 NPT RISING STEM GATE VALVE

### FEATURES
- Union Bonnet
- Solid Bronze Disc
- 300 CWP
- 150 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B62 Bronze Materials

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **30-201-01** | 1/4 | 1.76 | 4.57 | 0.90 |
| **30-202-01** | 3/8 | 1.76 | 4.51 | 0.86 |
| **30-203-01** | 1/2 | 2.03 | 4.85 | 1.07 |
| **30-204-01** | 3/4 | 2.07 | 5.71 | 1.43 |
| **30-205-01** | 1 | 2.45 | 6.71 | 2.50 |
| **30-206-01** | 1 1/4 | 2.63 | 8.10 | 3.69 |
| **30-207-01** | 1 1/2 | 2.88 | 9.13 | 5.01 |
| **30-208-01** | 2 | 3.06 | 11.28 | 7.53 |
| **30-209-01** | 2 1/2 | 4.13 | 14.58 | 15.33 |
| **30-200-01** | 3 | 4.48 | 16.90 | 19.56 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.

## MODEL 111T/116T — CLASS 300 NPT RISING STEM GATE VALVE

### FEATURES
- Union Bonnet
- Solid Bronze Disc
- Model 116T has Type 316 SS Seats
- 1000 CWP
- 300 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B61 Bronze Materials

| Series Number | SS Seat Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **30-443-01** | **30-453-01** | 1/2 | 2.31 | 4.97 | 1.40 |
| **30-444-01** | **30-454-01** | 3/4 | 2.56 | 6.22 | 2.30 |
| **30-445-01** | **30-455-01** | 1 | 2.89 | 6.94 | 3.50 |
| **30-446-01** | **30-456-01** | 1 1/4 | 3.01 | 8.29 | 5.10 |
| **30-447-01** | **30-457-01** | 1 1/2 | 3.05 | 9.28 | 6.80 |
| **30-448-01** | **30-458-01** | 2 | 3.08 | 11.37 | 9.60 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 610F — CLASS 125 FLANGED GATE VALVE

LEADFREE OPTIONS

New!

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Bronze Mounted Seat Rings/Trim
- Solid Wedge
- Adjustable Graphite Stem Packing
- Non-Rising Stem
- Flanged Connection
- Bolted Bonnet
- Rugged Iron Hand Wheel
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam:
  125 psi (8.6 Bar) at 353°F (2"-12")
  100 psi (6.9 Bar) at 338°F (14"-24")
- Cold Working Pressure:
  200 psi (13.8 Bar) at 100°F (2"-12")
  150 psi (10.3 Bar) at 100°F (14"-24")
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6GA-108-B1** | **6GA-108-B1-LF** | 2 | 7.00 | 14.57 | 36.0 |
| **6GA-109-B1** | **6GA-109-B1-LF** | 2 1/2 | 7.50 | 16.34 | 48.0 |
| **6GA-100-B1** | **6GA-100-B1-LF** | 3 | 8.00 | 18.90 | 59.0 |
| **6GA-10A-B1** | **6GA-10A-B1-LF** | 4 | 9.00 | 20.67 | 104 |
| **6GA-10B-B1** | **6GA-10B-B1-LF** | 5 | 10.00 | 24.61 | 150 |
| **6GA-10C-B1** | **6GA-10C-B1-LF** | 6 | 10.50 | 28.74 | 192 |
| **6GA-10E-B1** | **6GA-10E-B1-LF** | 8 | 11.50 | 32.48 | 260 |
| **6GA-10G-B1** | **6GA-10G-B1-LF** | 10 | 13.00 | 37.40 | 434 |
| **6GA-10H-B1** | **6GA-10H-B1-LF** | 12 | 14.00 | 43.31 | 606 |
| **6GA-10J-B1** | **6GA-10J-B1-LF** | 14 | 15.00 | 37.01 | 926 |
| **6GA-10K-B1** | **6GA-10K-B1-LF** | 16 | 16.00 | 42.52 | 1098 |
| **6GA-10M-B1** | **6GA-10M-B1-LF** | 18 | 17.00 | 46.46 | 1543 |
| **6GA-10N-B1** | **6GA-10N-B1-LF** | 20 | 18.00 | 54.33 | 1638 |
| **6GA-10P-B1** | **6GA-10P-B1-LF** | 24 | 20.00 | 57.48 | 2756 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Flat face mating flanges and full face gaskets must be installed to avoid damage to the cast iron body.*

***The lead free versions of these valves are a running change. Contact customer support for availability.****

## MODEL 620F — CLASS 250 FLANGED GATE VALVE

LEADFREE OPTIONS

New!

### FEATURES
- Compatible with ANSI 250# & 300# Flanges
- Full Port
- Bronze Mounted Seat Rings/Trim
- Solid Wedge
- Adjustable Graphite Stem Packing
- Non-Rising Stem
- Flanged Connection
- Bolted Bonnet
- Rugged Iron Hand Wheel
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam:
  250 psi (17.2 Bar) at 406°F (207°F)
  Cold Working Pressure:
  500 psi (34.5 Bar) at 100°F
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | *NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6GA-208-B1** | **6GA-208-B1-LF** | 2 | 8.50 | 11.28 | 42.0 |
| **6GA-209-B1** | **6GA-209-B1-LF** | 2 1/2 | 9.50 | 12.72 | 55.0 |
| ~~**6GA-200-B1**~~ | **6GA-200-B1-LF** | 3 | 11.00 | 13.31 | 66.0 |
| **6GA-20A-B1** | **6GA-20A-B1-LF** | 4 | 12.00 | 16.18 | 115 |
| **6GA-20C-B1** | **6GA-20C-B1-LF** | 6 | 16.00 | 22.00 | 205 |
| **6GA-20E-B1** | **6GA-20E-B1-LF** | 8 | 16.50 | 25.59 | 278 |
| **6GA-20G-B1** | **6GA-20G-B1-LF** | 10 | 18.00 | 30.31 | 456 |
| **6GA-20H-B1** | **6GA-20H-B1-LF** | 12 | 19.75 | 33.90 | 633 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Class 250 flanges and flanged fittings have a 0.06 inch raised face in accordance with MSS SP-6.*

Lead Free 611F & 621F Valves Supplied with Powder Coat Epoxy Finish.
**Max Temp. 180°F. Not for Steam Service.**

## MODEL 611F — CLASS 125 FLANGED OS&Y GATE VALVE

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Bronze Mounted Seat Rings/Trim
- Solid Wedge
- Adjustable Graphite Stem Packing
- Outside Screw & Yoke
- Flanged Connection
- Bolted Bonnet
- Rugged Iron Hand Wheel
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam:
  125 psi (8.6 Bar) at 353°F (2"-12")
  100 psi (6.9 Bar) at 338°F (14"-24")
- Cold Working Pressure:
  200 psi (13.8 Bar) at 100°F (2"-12")
  150 psi (10.3 Bar) at 100°F (14"-24")
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6GA-118-B1** | **6GA-118-B1-LF** | 2 | 7.00 | 14.96 | 38.0 |
| **6GA-119-B1** | **6GA-119-B1-LF** | 2 1/2 | 7.50 | 16.93 | 51.0 |
| **6GA-110-B1** | **6GA-110-B1-LF** | 3 | 8.00 | 19.09 | 62.0 |
| ~~**6GA-11A-B1**~~ | **6GA-11A-B1-LF** | 4 | 9.00 | 24.21 | 110 |
| **6GA-11B-B1** | **6GA-11B-B1-LF** | 5 | 10.00 | 27.56 | 154 |
| ~~**6GA-11C-B1**~~ | **6GA-11C-B1-LF** | 6 | 10.50 | 32.87 | 203 |
| ~~**6GA-11E-B1**~~ | **6GA-11E-B1-LF** | 8 | 11.50 | 37.76 | 284 |
| **6GA-11G-B1** | **6GA-11G-B1-LF** | 10 | 13.00 | 48.03 | 459 |
| **6GA-11H-B1** | **6GA-11H-B1-LF** | 12 | 14.00 | 56.50 | 637 |
| **6GA-11J-B1** | **6GA-11J-B1-LF** | 14 | 15.00 | 65.16 | 966 |
| **6GA-11K-B1** | **6GA-11K-B1-LF** | 16 | 16.00 | 71.85 | 1135 |
| **6GA-11M-B1** | **6GA-11M-B1-LF** | 18 | 17.00 | 79.53 | 1753 |
| **6GA-11N-B1** | **6GA-11N-B1-LF** | 20 | 18.00 | 90.16 | 2238 |
| **6GA-11P-B1** | **6GA-11P-B1-LF** | 24 | 20.00 | 132.28 | 3197 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Flat face mating flanges and full face gaskets must be installed to avoid damage to the cast iron body.*

*****The lead free versions of these valves are a running change. Contact customer support for availability.*****

## MODEL 621F — CLASS 250 FLANGED OS&Y GATE VALVE

LEADFREE OPTIONS

- Compatible with ANSI 250# & 300# Flanges
- Full Port
- Bronze Mounted Seat Rings/Trim
- Solid Wedge
- Adjustable Graphite Stem Packing
- Outside Screw & Yoke
- Flanged Connection
- Bolted Bonnet
- Rugged Iron Hand Wheel
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam:
  250 psi (17.2 Bar) at 406°F (207°F)
  Cold Working Pressure:
  500 psi (34.5 Bar) at 100°F
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| ~~**6GA-218-B1**~~ | **6GA-218-B1-LF** | 2 | 8.50 | 14.96 | 44.0 |
| **6GA-219-B1** | **6GA-219-B1-LF** | 2 1/2 | 9.50 | 16.93 | 57.0 |
| ~~**6GA-210-B1**~~ | **6GA-210-B1-LF** | 3 | 11.12 | 19.09 | 71.0 |
| **6GA-21A-B1** | **6GA-21A-B1-LF** | 4 | 12.00 | 24.21 | 121 |
| **6GA-21B-B1** | **6GA-21B-B1-LF** | 5 | 15.00 | 27.56 | 165 |
| **6GA-21C-B1** | **6GA-21C-B1-LF** | 6 | 15.88 | 32.87 | 216 |
| **6GA-21E-B1** | **6GA-21E-B1-LF** | 8 | 16.50 | 39.76 | 302 |
| ~~**6GA-21G-B1**~~ | **6GA-21G-B1-LF** | 10 | 18.00 | 48.03 | 481 |
| **6GA-21H-B1** | **6GA-21H-B1-LF** | 12 | 19.75 | 56.50 | 642 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Class 250 flanges and flanged fittings have a 0.06 inch raised face in accordance with MSS SP-6.*

## MODEL 120S/120S-LF — SOLDER END GLOBE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- PTFE Disc
- 200 CWP
- Max. Temp: 353°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Model Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 33-143-01 | 33LF-143-01 | 1/2 | 2.97 | 3.47 | 1.00 |
| 33-144-01 | 33LF-144-01 | 3/4 | 3.83 | 4.75 | 1.90 |
| 33-145-01 | 33LF-145-01 | 1 | 4.57 | 5.40 | 2.80 |
| 33-146-01 | 33LF-146-01 | 1 1/4 | 5.95 | 7.80 | 7.30 |
| 33-147-01 | 33LF-147-01 | 1 1/2 | 5.95 | 7.80 | 6.80 |
| 33-148-01 | 33LF-148-01 | 2 | 7.18 | 8.43 | 10.60 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 120T/120T-LF — CLASS 125 NPT GLOBE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- PTFE Disc
- 125 CWP
- Max. Temp: 353°F
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- SS SP-80 Standard
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Model Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 33-132-01 | 33LF-132-01 | 3/8 | 2.39 | 3.37 | 1.00 |
| 33-133-01 | 33LF-133-01 | 1/2 | 2.70 | 3.47 | 1.10 |
| 33-134-01 | 33LF-134-01 | 3/4 | 3.20 | 4.75 | 1.90 |
| 33-135-01 | 33LF-135-01 | 1 | 3.75 | 5.40 | 3.00 |
| 33-136-01 | 33LF-136-01 | 1 1/4 | 4.74 | 7.78 | 7.30 |
| 33-137-01 | 33LF-137-01 | 1 1/2 | 4.74 | 7.78 | 7.00 |
| 33-138-01 | 33LF-138-01 | 2 | 5.72 | 8.43 | 10.70 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 121T/121T-LF — CLASS 125 NPT GLOBE VALVE

LEADFREE OPTIONS

### FEATURES
- Threaded Bonnet
- Solid Bronze Disc
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 33-161-01 | 33LF-161-01 | 1/4 | 2.39 | 3.46 | 1.00 |
| 33-162-01 | 33LF-162-01 | 3/8 | 2.39 | 3.46 | 1.00 |
| 33-163-01 | 33LF-163-01 | 1/2 | 2.70 | 3.56 | 1.10 |
| 33-164-01 | 33LF-164-01 | 3/4 | 3.20 | 4.75 | 1.90 |
| 33-165-01 | 33LF-165-01 | 1 | 3.75 | 5.40 | 3.00 |
| 33-166-01 | 33LF-166-01 | 1 1/4 | 4.74 | 7.78 | 7.30 |
| 33-167-01 | 33LF-167-01 | 1 1/2 | 4.74 | 7.78 | 7.00 |
| 33-168-01 | 33LF-168-01 | 2 | 5.72 | 8.43 | 11.00 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 122T — CLASS 150 NPT GLOBE VALVE

### FEATURES
- Union Bonnet
- PTFE Disc
- 300 CWP
- 150 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B62 Bronze Materials

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **33-221-01** | 1/4 | 2.39 | 4.23 | 1.40 |
| **33-222-01** | 3/8 | 2.39 | 4.23 | 1.40 |
| **33-223-01** | 1/2 | 2.70 | 4.31 | 1.40 |
| **33-224-01** | 3/4 | 3.20 | 4.89 | 2.20 |
| **33-225-01** | 1 | 3.75 | 5.40 | 3.50 |
| **33-226-01** | 1 1/4 | 4.74 | 7.79 | 7.70 |
| **33-227-01** | 1 1/2 | 4.74 | 7.79 | 7.40 |
| **33-228-01** | 2 | 5.20 | 8.76 | 12.40 |
| **33-229-01** | 2 1/2 | 6.60 | 10.07 | 18.80 |
| **33-220-01** | 3 | 7.74 | 11.39 | 25.50 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.

## MODEL 127T — CLASS 300 NPT GLOBE VALVE

### FEATURES
- Union Bonnet
- Bronze Disc and Seat
- 1000 CWP
- 300 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B61 Bronze Materials

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **33-663-01** | 1/2 | 2.70 | 5.40 | 1.78 |
| **33-664-01** | 3/4 | 3.20 | 5.86 | 2.28 |
| **33-665-01** | 1 | 4.00 | 6.71 | 4.22 |
| **33-666-01** | 1 1/4 | 5.25 | 8.50 | 8.30 |
| **33-667-01** | 1 1/2 | 5.25 | 8.50 | 8.10 |
| **33-668-01** | 2 | 6.25 | 9.75 | 13.00 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

## MODEL 128T — CLASS 300 GLOBE VALVE

### FEATURES
- Union Bonnet
- Type 420 Stainless Steel Disc and Seat Ring
- 1000 CWP
- 300 SWP

### STANDARDS
- Meets MSS SP-80 Standard
- ASTM B61 Bronze Materials

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **33-743-01** | 1/2 | 2.70 | 5.40 | 1.78 |
| **33-744-01** | 3/4 | 3.20 | 5.86 | 2.28 |
| **33-745-01** | 1 | 4.00 | 6.71 | 4.22 |
| **33-746-01** | 1 1/4 | 5.25 | 8.50 | 8.30 |
| **33-747-01** | 1 1/2 | 5.25 | 8.50 | 8.10 |
| **33-748-01** | 2 | 6.25 | 9.75 | 13.00 |

Length is measured from end to end.
Height is measured from centerline to top of wheel in full open position.

## MODEL 711F — CLASS 125 FLANGED GLOBE VALVE

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Bronze Mounted Seat Rings
- Positive Shut-Off
- Throttling Capabilities
- Adjustable Graphite Stem Packing
- Outside Screw and Yoke
- Bolted Bonnet
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam: 125 psi (8.6 Bar) at 353°F
- Cold Working Pressure: 200 psi (13.8 Bar) at 100°F
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6GB-118-B1** | **6GB-118-B1-LF** | 2 | 8.00 | 11.61 | 36.0 |
| **6GB-119-B1** | **6GB-119-B1-LF** | 2 1/2 | 8.50 | 12.99 | 49.0 |
| **6GB-110-B1** | **6GB-110-B1-LF** | 3 | 9.50 | 14.37 | 64.0 |
| **6GB-11A-B1** | **6GB-11A-B1-LF** | 4 | 11.50 | 15.75 | 94.0 |
| **6GB-11B-B1** | **6GB-11B-B1-LF** | 5 | 13.00 | 17.72 | 137 |
| **6GB-11C-B1** | **6GB-11C-B1-LF** | 6 | 14.00 | 20.67 | 195 |
| **6GB-11E-B1** | **6GB-11E-B1-LF** | 8 | 19.50 | 23.43 | 315 |
| **6GB-11G-B1** | **6GB-11G-B1-LF** | 10 | 24.50 | 26.97 | 485 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Flat face mating flanges and full face gaskets must be installed to avoid damage to the cast iron body.*

***The lead free versions of these valves are a running change. Contact customer support for availability.****

## MODEL 721F — CLASS 250 FLANGED GLOBE VALVE

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 250# & 300# Flanges
- Full Port
- Bronze Mounted Seat Rings
- Positive Shut-Off
- Throttling Capabilities
- Adjustable Graphite Stem Packing
- Outside Screw and Yoke
- Flanged Connection
- Bolted Bonnet
- Rugged Iron Hand Wheel
- Back Seat Protection

### PERFORMANCE RATING
- Saturated Steam: 250 psi (17.2 Bar) at 406°F (207°F) Cold Working Pressure: 500 psi (34.5 Bar) at 100°F
- Temperature Range: -20°F to 406°F Max

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY/BONNET/WEDGE** | Cast Iron (ASTM A126 CL-B, CL) |
| **STEM** | Brass (ASTM B16) |
| **PACKING/GASKET** | Graphite (Asbestos Free) |

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6GB-218-B1** | **6GB-218-B1-LF** | 2 | 10.50 | 14.17 | 40.8 |
| **6GB-219-B1** | **6GB-219-B1-LF** | 2 1/2 | 11.50 | 15.75 | 52.9 |
| **6GB-210-B1** | **6GB-210-B1-LF** | 3 | 12.50 | 16.93 | 70.5 |
| **6GB-21A-B1** | **6GB-21A-B1-LF** | 4 | 14.00 | 18.90 | 99.2 |
| **6GB-21C-B1** | **6GB-21C-B1-LF** | 6 | 17.50 | 23.62 | 203 |
| **6GB-21E-B1** | **6GB-21E-B1-LF** | 8 | 21.00 | 27.56 | 333 |

Length is measured from end to end. Height is measured from centerline to top of wheel in full open position.

*NOTE: Class 250 flanges and flanged fittings have a 0.06 inch raised face in accordance with MSS SP-6.*

## MODEL 161S/161S-LF — BRONZE DISC SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Y-Pattern
- Solder Ends
- Bronze Seat
- 200 CWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Model Number | LF Model Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 61Y-093-01 | 61YLF-093-01 | 1/2 | 2.53 | 1.65 | 0.62 |
| 61Y-094-01 | 61YLF-094-01 | 3/4 | 3.36 | 1.90 | 0.91 |
| 61Y-095-01 | 61YLF-095-01 | 1 | 4.07 | 2.26 | 1.70 |
| 61Y-096-01 | 61YLF-096-01 | 1 1/4 | 4.68 | 2.65 | 2.00 |
| 61Y-097-01 | 61YLF-097-01 | 1 1/2 | 5.28 | 2.99 | 2.70 |
| 61Y-098-01 | 61YLF-098-01 | 2 | 6.50 | 3.74 | 4.90 |
| 61Y-099-01 | – | 2 1/2 | 8.30 | 5.11 | 9.70 |
| 61Y-090-01 | – | 3 | 9.58 | 6.05 | 15.00 |

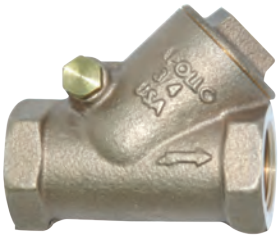
Height is measured from centerline to top of unit.

## MODEL 161T/161T-LF — CLASS 125 BRONZE DISC SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Y-Pattern
- NPT
- Bronze Seat
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)



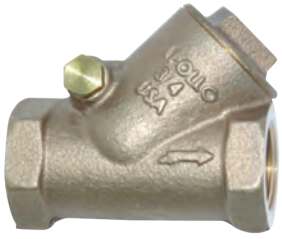
| Model Number | LF Model Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 61Y-191-01 | 61YLF-191-01 | 1/4 | 2.14 | 1.51 | 0.64 |
| 61Y-192-01 | 61YLF-192-01 | 3/8 | 2.14 | 1.51 | 0.62 |
| 61Y-193-01 | 61YLF-193-01 | 1/2 | 2.48 | 1.65 | 0.73 |
| 61Y-194-01 | 61YLF-194-01 | 3/4 | 2.94 | 1.90 | 1.06 |
| 61Y-195-01 | 61YLF-195-01 | 1 | 3.57 | 2.26 | 1.70 |
| 61Y-196-01 | 61YLF-196-01 | 1 1/4 | 4.50 | 2.99 | 3.30 |
| 61Y-197-01 | 61YLF-197-01 | 1 1/2 | 4.50 | 2.99 | 3.10 |
| 61Y-198-01 | 61YLF-198-01 | 2 | 5.25 | 3.74 | 5.50 |
| 61Y-199-01 | – | 2 1/2 | 8.00 | 5.11 | 11.70 |
| 61Y-190-01 | – | 3 | 9.24 | 6.05 | 17.80 |

Height is measured from centerline to top of unit.

## MODEL 162T — VITON® DISC SWING CHECK

### FEATURES
- Y-Pattern
- NPT
- Viton Elastomer Seat
- 200 CWP
- 125 SWP

### STANDARDS
- MSS SP-80 Standard
- ASTM B62 Bronze



| Model Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| 61Y-201-V1 | 1/4 | 2.14 | 1.51 | 0.64 |
| 61Y-202-V1 | 3/8 | 2.14 | 1.51 | 0.62 |
| 61Y-203-V1 | 1/2 | 2.48 | 1.65 | 0.73 |
| 61Y-204-V1 | 3/4 | 2.94 | 1.90 | 1.06 |
| 61Y-205-V1 | 1 | 3.57 | 2.26 | 1.70 |
| 61Y-206-V1 | 1 1/4 | 4.50 | 2.99 | 3.30 |
| 61Y-207-V1 | 1 1/2 | 4.50 | 2.99 | 3.10 |
| 61Y-208-V1 | 2 | 5.25 | 3.74 | 5.40 |

Height is measured from centerline to top of unit.

## MODEL 163S/163S-LF — 200 CWP PTFE DISC SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Y-Pattern
- Solder
- PTFE Soft Seat
- 200 CWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)

| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 61Y-103-T1 | 61YLF-103-T1 | 1/2 | 2.53 | 1.65 | 0.62 |
| 61Y-104-T1 | 61YLF-104-T1 | 3/4 | 3.36 | 1.90 | 0.91 |
| 61Y-105-T1 | 61YLF-105-T1 | 1 | 4.07 | 2.26 | 1.70 |
| 61Y-106-T1 | 61YLF-106-T1 | 1 1/4 | 5.28 | 2.99 | 3.20 |
| 61Y-107-T1 | 61YLF-107-T1 | 1 1/2 | 5.28 | 2.99 | 2.70 |
| 61Y-108-T1 | 61YLF-108-T1 | 2 | 6.50 | 3.74 | 4.90 |

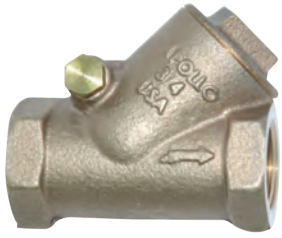
Height is measured from centerline to top of unit.

## MODEL 163T/163T-LF — CLASS 125 PFTE DISC SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Y-Pattern
- NPT
- PTFE Soft Seat
- 200 CWP
- 125 SWP
- Lead Free Option (NSF 61/NSF 372)

### STANDARDS
- MSS SP-80 Standard
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze (ASTM B584-C89836 Lead Free)



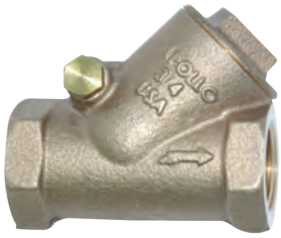
| Series Number | LF Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **61Y-201-T1** | – | 1/4 | 2.14 | 1.51 | 0.64 |
| **61Y-202-T1** | – | 3/8 | 2.15 | 1.51 | 0.62 |
| **61Y-203-T1** | **61YLF-203-T1** | 1/2 | 2.48 | 1.65 | 0.73 |
| **61Y-204-T1** | **61YLF-204-T1** | 3/4 | 2.94 | 1.90 | 1.06 |
| **61Y-205-T1** | **61YLF-205-T1** | 1 | 3.57 | 2.26 | 1.70 |
| **61Y-206-T1** | **61YLF-206-T1** | 1 1/4 | 4.50 | 2.99 | 3.30 |
| **61Y-207-T1** | **61YLF-207-T1** | 1 1/2 | 4.50 | 2.99 | 3.10 |
| **61Y-208-T1** | **61YLF-208-T1** | 2 | 5.25 | 3.74 | 5.40 |

Height is measured from centerline to top of unit.

## MODEL 164T — CLASS 150 BRONZE DISC SWING CHECK

### FEATURES
- Y-Pattern
- NPT
- Bronze Seat
- 300 CWP
- 150 SWP

### STANDARDS
- MSS SP-80 Standard
- ASTM B62 Bronze



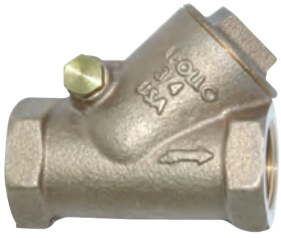
| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **61Y-211-01** | 1/4 | 2.14 | 1.51 | 0.64 |
| **61Y-212-01** | 3/8 | 2.14 | 1.51 | 0.62 |
| **61Y-213-01** | 1/2 | 2.48 | 1.65 | 0.73 |
| **61Y-214-01** | 3/4 | 2.94 | 1.90 | 1.06 |
| **61Y-215-01** | 1 | 3.57 | 2.26 | 1.70 |
| **61Y-216-01** | 1 1/4 | 4.50 | 2.99 | 3.30 |
| **61Y-217-01** | 1 1/2 | 4.50 | 2.99 | 3.10 |
| **61Y-218-01** | 2 | 5.25 | 3.74 | 5.50 |
| **61Y-219-01** | 2 1/2 | 8.00 | 5.11 | 11.70 |
| **61Y-210-01** | 3 | 9.24 | 6.05 | 17.80 |

Height is measured from centerline to top of unit.

## MODEL 168T — CLASS 300 BRONZE DISC SWING CHECK

### FEATURES
- Y-Pattern
- NPT
- Bronze Seat
- 600 CWP
- 300 SWP

### STANDARDS
- MSS SP-80 Standard
- ASTM B61 Bronze



| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **61Y-753-01** | 1/2 | 2.50 | 1.65 | .75 |
| **61Y-754-01** | 3/4 | 2.95 | 1.90 | 1.20 |
| **61Y-755-01** | 1 | 3.57 | 2.27 | 1.80 |
| **61Y-756-01** | 1 1/4 | 4.50 | 3.00 | 3.50 |
| **61Y-757-01** | 1 1/2 | 4.50 | 3.00 | 3.20 |
| **61Y-758-01** | 2 | 5.25 | 3.75 | 5.60 |

Height is measured from centerline to top of unit.

## MODEL 169T — CLASS 300 PTFE DISC SWING CHECK

### FEATURES
- Y-Pattern
- NPT
- PFTE Soft Seat
- 600 CWP

### STANDARDS
- MSS SP-80 Standard
- ASTM B61 Bronze

| Series Number | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|
| **61Y-753-T1** | 1/2 | 2.5 | 1.65 | .75 |
| **61Y-754-T1** | 3/4 | 2.95 | 1.90 | 1.20 |
| **61Y-755-T1** | 1 | 3.57 | 2.27 | 1.80 |
| **61Y-756-T1** | 1 1/4 | 4.50 | 3.00 | 3.50 |
| **61Y-757-T1** | 1 1/2 | 4.50 | 3.00 | 3.20 |
| **61Y-758-T1** | 2 | 5.25 | 3.75 | 5.60 |

Height is measured from centerline to top of unit.

Lead Free 910F & 910FLW Valves Supplied with Powder Coat Epoxy Finish.
**Max Temp. 180°F. Not for Steam Service.**

## MODEL 910F — CLASS 125 FLANGED SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Minimal Pressure Drop
- Flanged Connection
- Bolted Bonnet
- Integral Bronze Seat

### PERFORMANCE RATING
- Saturated Steam:
  125 psi (8.6 Bar) at 353°F (2"-12")
  100 psi (6.9 Bar) at 338°F (14"-24")
- Cold Working Pressure:
  200 psi (13.8 Bar) at 100°F (2"-12")
  150 psi (10.3 Bar) at 100°F (14"-24")
- Temperature Range: -20°F to 406°F Max

### STANDARDS
- MSS SP-71 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 6SC-108-B1 | 6SC-108-B1-LF | 2 | 8.00 | 4.41 | 26.0 |
| 6SC-109-B1 | 6SC-109-B1-LF | 2 1/2 | 8.50 | 5.24 | 39.0 |
| ~~6SC-100-B1~~ | 6SC-100-B1-LF | 3 | 9.50 | 5.67 | 47.0 |
| ~~6SC-10A-B1~~ | 6SC-10A-B1-LF | 4 | 11.50 | 6.61 | 82.0 |
| 6SC-10B-B1 | 6SC-10B-B1-LF | 5 | 13.00 | 7.80 | 124 |
| 6SC-10C-B1 | 6SC-10C-B1-LF | 6 | 14.00 | 8.54 | 160 |
| 6SC-10E-01 | 6SC-10E-01-LF | 8 | 19.50 | 10.28 | 271 |
| 6SC-10G-01 | 6SC-10G-01-LF | 10 | 24.50 | 11.30 | 437 |
| 6SC-10H-01 | 6SC-10H-01-LF | 12 | 27.50 | 12.56 | 644 |
| 6SC-10J-01 | 6SC-10J-01-LF | 14 | 31.00 | 17.50 | 950 |
| 6SC-10K-01 | 6SC-10K-01-LF | 16 | 36.00 | 23.45 | 1160 |
| 6SC-10M-01 | 6SC-10M-01-LF | 18 | 36.00 | 27.50 | 1720 |
| 6SC-10N-01 | 6SC-10N-01-LF | 20 | 40.00 | 29.25 | 2094 |

Height is measured from centerline to top of unit.

***The lead free versions of these valves are a running change. Contact customer support for availability.****

## MODEL 910FLW — CLASS 125 FLANGED SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Minimal Pressure Drop
- Flanged Connection
- Bolted Bonnet
- Integral Seat
- Lever & Weight Design

### PERFORMANCE RATING
- Saturated Steam:
  125 psi (8.6 Bar) at 353°F (2"-12")
  100 psi (6.9 Bar) at 338°F (14"-24")
- Cold Working Pressure:
  200 psi (13.8 Bar) at 100°F (2"-12")
  150 psi (10.3 Bar) at 100°F (14"-24")
- Temperature Range: -20°F to 406°F Max

### STANDARDS
- MSS SP-71 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 6SC-108-B1L | 6SC-108-B1L-LF | 2 | 8.00 | 4.41 | 38.8 |
| ~~6SC-109-B1L~~ | 6SC-109-B1L-LF | 2 1/2 | 8.50 | 5.24 | 45.2 |
| ~~6SC-100-B1L~~ | 6SC-100-B1L-LF | 3 | 9.50 | 5.67 | 61.7 |
| 6SC-10A-B1L | 6SC-10A-B1L-LF | 4 | 11.50 | 6.61 | 99.2 |
| 6SC-10B-B1L | 6SC-10B-B1L-LF | 5 | 13.00 | 7.80 | 132 |
| ~~6SC-10C-B1L~~ | 6SC-10C-B1L-LF | 6 | 14.00 | 8.54 | 170 |
| 6SC-10E-01L | 6SC-10E-01L-LF | 8 | 19.50 | 10.28 | 282 |
| 6SC-10G-01L | 6SC-10G-01L-LF | 10 | 24.50 | 11.30 | 439 |
| 6SC-10H-01L | 6SC-10H-01L-LF | 12 | 27.50 | 12.56 | 672 |

Height is measured from centerline to top of unit.

*NOTE: Flat face mating flanges and full face gaskets must be installed to avoid damage to the cast iron body.*

## MODEL 920F CLASS 250 FLANGED SWING CHECK

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 250# & 300# Flanges
- Full Port
- Minimal Pressure Drop
- Flanged Connection
- Bolted Bonnet
- Integral Seat

### PERFORMANCE RATING
- Saturated Steam: 250 psi (17.2 Bar) at 406°F (207°F) Cold Working Pressure: 500 psi (34.5 Bar) at 100°F
- Temperature Range: -20°F to 406°F Max

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| **6SC-208-B1** | **6SC-208-B1-LF** | 2 | 10.51 | 4.41 | 30.0 |
| **6SC-209-B1** | **6SC-209-B1-LF** | 2 1/2 | 11.50 | 5.24 | 44.0 |
| **6SC-200-B1** | **6SC-200-B1-LF** | 3 | 12.50 | 5.67 | 55.0 |
| **6SC-20A-B1** | **6SC-20A-B1-LF** | 4 | 14.00 | 6.61 | 90.0 |
| **6SC-20C-B1** | **6SC-20C-B1-LF** | 6 | 17.50 | 8.54 | 172 |
| **6SC-20E-01** | **6SC-20E-01-LF** | 8 | 21.00 | 10.28 | 289 |

Height is measured from centerline to top of unit.

*NOTE: Class 250 flanges and flanged fittings have a 0.06 inch raised face in accordance with MSS SP-6.*

### APPROVALS (Lead Free Only)
- NSF/ANSI 372 Lead Free
- NSF/AND 61 Water Quality

### STANDARDS
- MSS SP-71 - Gray Iron Gate Valves Flanged and Threaded - Type 1
- ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves
- ASME B1.1 - Unified Inch Screw Threads

***The lead free versions of these valves are a running change. Contact customer support for availability.****

Lead Free 910WB & 910WE Valves Supplied with Powder Coat Epoxy Finish.
**Max Temp. 180°F. Not for Steam Service.**

## MODEL 910WB — CLASS 125 WAFER CHECK - NITRILE (BUNA-N)

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Minimal Pressure Drop
- Light Weight
- Spring Assisted Closing for Quicker Response

### PERFORMANCE RATING
- **2"-12":**
  250 psi (17.2 Bar) Non-Shock Cold Working Pressure
  Maximum Temperature to 180°F (82°C)
- **14"-24":**
  150 psi (10.3 Bar) Non-Shock Cold Working Pressure
  Maximum Temperature to 180°F (82°C)
- ***Not for Steam Service***

| Series Number | LF Series Number** | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 6WC-108-N1 | 6WC-108-N1-LF | 2 | 2.12 | 4.00 | 5.0 |
| ~~6WC-109-N1~~ | 6WC-109-N1-LF | 2 1/2 | 2.38 | 4.75 | 7.0 |
| ~~6WC-100-N1~~ | 6WC-100-N1-LF | 3 | 2.62 | 5.25 | 10.0 |
| 6WC-10A-N1 | 6WC-10A-N1-LF | 4 | 2.62 | 6.75 | 12.0 |
| ~~6WC-10B-N1~~ | 6WC-10B-N1-LF | 5 | 3.25 | 7.50 | 15.0 |
| 6WC-10C-N1 | 6WC-10C-N1-LF | 6 | 3.75 | 8.50 | 22.0 |
| 6WC-10E-N1 | 6WC-10E-N1-LF | 8 | 5.00 | 11.00 | 35.0 |
| 6WC-10G-N1 | 6WC-10G-N1-LF | 10 | 5.50 | 13.25 | 66.0 |
| 6WC-10H-N1 | 6WC-10H-N1-LF | 12 | 7.12 | 16.00 | 108 |
| 6WC-10J-N1 | 6WC-10J-N1-LF | 14 | 7.25 | 17.75 | 172 |
| ~~6WC-10K-N1~~ | 6WC-10K-N1-LF | 16 | 7.50 | 20.00 | 132 |
| ~~6WC-10M-N1~~ | 6WC-10M-N1-LF | 18 | 8.00 | 21.50 | 223 |
| 6WC-10N-N1 | 6WC-10N-N1-LF | 20 | 8.38 | 23.75 | 333 |
| 6WC-10P-N1 | 6WC-10P-N1-LF | 24 | 8.75 | 28.00 | 474 |

***The lead free versions of these valves are a running change. Contact customer support for availability.****

## MODEL 910WE — CLASS 125 WAFER CHECK - EPDM

LEADFREE OPTIONS

### FEATURES
- Compatible with ANSI 125# & 150# Flanges
- Full Port
- Minimal Pressure Drop
- Light Weight
- Spring Assisted Closing for Quicker Response

### PERFORMANCE RATING
- Cold Working Pressure:
  200 psi (13.8 Bar) at 100°F
- Temperature Range: -20°F to 180°F
- ***Not for Steam Service***

### APPROVALS
- CSA B51-CRN Certified

| Series Number | LF Series Number* | NPS | Length (in.) | Height (in.) | Weight (lb.) |
|---|---|---|---|---|---|
| 6WC-108-E1 | 6WC-108-E1-LF | 2 | 2.12 | 4.00 | 5.0 |
| ~~6WC-109-E1~~ | 6WC-109-E1-LF | 2 1/2 | 2.38 | 4.75 | 7.0 |
| 6WC-100-E1 | 6WC-100-E1-LF | 3 | 2.62 | 5.25 | 10.0 |
| 6WC-10A-E1 | 6WC-10A-E1-LF | 4 | 2.62 | 6.75 | 12.0 |
| 6WC-10B-E1 | 6WC-10B-E1-LF | 5 | 3.25 | 7.50 | 15.0 |
| 6WC-10C-E1 | 6WC-10C-E1-LF | 6 | 3.75 | 8.50 | 22.0 |
| ~~6WC-10E-E1~~ | 6WC-10E-E1-LF | 8 | 5.00 | 11.00 | 35.0 |
| 6WC-10G-E1 | 6WC-10G-E1-LF | 10 | 5.50 | 13.25 | 66.0 |
| ~~6WC-10H-E1~~ | 6WC-10H-E1-LF | 12 | 7.12 | 16.00 | 108 |

## $C_v$ COEFFICIENTS FOR FLOW ESTIMATION ONLY

| Size | Bronze Gate | Bronze Globe | Bronze Swing Check | CI Gate | CI Globe | CI Swing Check | CI Wafer Check |
|---|---|---|---|---|---|---|---|
| 1/4 | 3.0 | 1.4 | 2.6 | - | - | - | |
| 3/8 | 6.0 | 2.6 | 4.5 | - | - | - | - |
| 1/2 | 12.5 | 4.4 | 7.0 | - | - | - | - |
| 3/4 | 24.0 | 7.4 | 12.0 | - | - | - | - |
| 1 | 72.3 | 12.1 | 28.6 | - | - | - | - |
| 1-1/4 | 80 | 29 | 39 | - | - | - | - |
| 1-1/2 | 119 | 30 | 56 | - | - | | - |
| 2 | 338 | 49 | 152 | 328 | 52 | 132 | 75 |
| 2-1/2 | 395 | 74 | 198 | 482 | 76 | 192 | 95 |
| 3 | 435 | 112 | 242 | 744 | 116 | 298 | 191 |
| 4 | - | - | - | 1316 | 204 | 526 | 377 |
| 5 | - | - | - | 2130 | 328 | 852 | 483 |
| 6 | - | - | - | 3176 | 488 | 1272 | 821 |
| 8 | - | - | - | 5692 | 874 | 2278 | 1590 |
| 10 | - | - | - | 8972 | 1376 | 3588 | 2920 |
| 12 | - | - | - | 13352 | - | 5342 | 4470 |
| 14 | - | - | - | 16278 | - | 6512 | 5870 |
| 16 | - | - | - | 21564 | - | 8626 | 8690 |
| 18 | - | - | | 28716 | - | 11488 | 10940 |
| 20 | - | - | - | 35762 | - | 14304 | 14290 |
| 24 | - | - | - | 52166 | - | - | 23000 |

## BRONZE GATE VALVE CROSS REFERENCE CHART

| Apollo Model | 101S | 101S-LF | 101T | 101T-LF | 102S | 102S-LF |
|---|---|---|---|---|---|---|
| Apollo P/N | 30-08X-01 | 30LF-08X-01 | 30-00X-01 | 30LF-00X-01 | 30-04X-01 | 30LF-04X-01 |
| Size Range | 1/2" to 3" | 1/2" to 3" | 1/4" to 3" | 1/4" to 3" | 1/2" to 3" | 1/2" to 3" |
| Description | 200 CWP Gate Valve Bronze Threaded Bonnet Solid Disc Rising Stem Solder Ends | 200 CWP Gate Valve LF-Bronze Threaded Bonnet Solid Disc Rising Stem Solder Ends | Class 125 (200 CWP, 125 SWP) Gate Valve Bronze Threaded Bonnet Solid Disc Rising Stem NPT | Class 125 (200 CWP, 125 SWP) Gate Valve LF-Bronze Threaded Bonnet Solid Disc Rising Stem NPT | 200 CWP Gate Valve Bronze Threaded Bonnet Solid Disc NRS Solder Ends | 200 CWP Gate Valve LF-Bronze Threaded Bonnet Solid Disc NRS Solder Ends |
| Design Standard | MSS SP-80 | MSS SP-139 MSS SP-80 | MSS SP-80 | MSS SP-139 MSS SP-80 | MSS SP-80 | MSS SP-139 MSS SP-80 |
| Crane Model | 1334 | | 428 | | 1320 | |
| Hammond Model | IB635 | | IB640 | UP640 | IB647 | |
| Kitz Model | 444 | | 24 | | 41 | |
| Milwaukee Model | 149 | UP149 | 148 | UP148 | 115 | UP115 |
| Nibco Model | S111 | | T111 | | S113 | S113-LF |
| Stockham Model | B108K | | B100K | | B104K | |
| Walworth Model | 55SJ | | 55 | | 4SJ | |

## BRONZE CHECK VALVE CROSS REFERENCE CHART

| Apollo Model | 161S | 161S-LF | 161T | 161T-LF | 162T |
|---|---|---|---|---|---|
| Apollo P/N | 61Y-09X-01 | 61YLF-09X-01 | 61Y-19X-01 | 61YLF-19X-01 | 61Y-20X-VI |
| Size Range | 1/2" to 3" | 1/2" to 2" | 1/4" to 3" | 1/4" to 2" | 1/4" to 2" |
| Description | 200 CWP Swing Check Bronze Y-Pattern Bronze Disc Solder Ends | 200 CWP Swing Check LF-Bronze Y-Pattern Bronze Disc Solder Ends | Class 125 (200 CWP, 125 SWP) Swing Check Bronze Y-Pattern Bronze Disc NPT | Class 125 (200 CWP, 125 SWP) Swing Check LF-Bronze Y-Pattern Bronze Disc NPT | Class 125 (200 CWP, 125 SWP) Swing Check Bronze Y-Pattern Viton® Disc NPT |
| Design Standard | MSS SP-80 | MSS SP-139 | MSS SP-80 | MSS SP-139 | MSS SP-80 |
| Crane Model | 1340 | | 37 | | |
| Hammond Model | IB912 | | IB904 | | |
| Kitz Model | | | 22 | | |
| Milwaukee Model | 1509 | UP1509 | 509 | UP509 | |
| Nibco Model | S413B | | T413B | | T413V |
| Stockham Model | B309YK | | B319YK | | B320BYK |
| Walworth Model | 3406SJ | | 3406 | | |

| 102T | 102T-LF | 102T-K | 103T | 106T | 107T | 111T | 116T |
|---|---|---|---|---|---|---|---|
| 30-03X-01 | 30LF-03X-01 | 30-03X-01K | 30-05X-01 | 30-28X-01 | 30-20X-01 | 30-44X-01 | 30-45X-01 |
| 1/4" to 3" | 1/4" to 3" | 1/4" to 3" | 1/4" to 3" | 1/4" to 3" | 1/4" to 3" | 1/2" to 2" | 1/2" to 2" |
| Class 125 (200 CWP, 125 SWP) Gate Valve Bronze Threaded Bonnet Solid Disc NRS NPT | Class 125 (200 CWP, 125 SWP) Gate Valve LF-Bronze Threaded Bonnet Solid Disc NRS NPT | Class 125 (200 CWP, 125 SWP) Gate Valve Bronze Threaded Bonnet Solid Disc NRS NPT | Class 125 (200 CWP, 125 SWP) Gate Valve Bronze Union Bonnet Solid Disc Rising Stem NPT | Class 150 (300 CWP, 150 SWP) Gate Valve Bronze Threaded Bonnet Solid Disc NRS NPT | Class 150 (300 CWP, 150 SWP) Gate Valve Bronze Union Bonnet Solid Disc Rising Stem NPT | Class 300 (1000 CWP, 300 SWP) Gate Valve Bronze Union Bonnet Solid Disc Rising Stem NPT | Class 300 (1000 CWP, 300 SWP) Gate Valve Bronze Union Bonnet Solid Disc, SS Seats Rising Stem NPT |
| MSS SP-80 | MSS SP-139 MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-80 |
| 438 | | | 428UB | 437 | 431UB | 622E | 634E |
| IB645 | | | IB617 | IB646 | IB629 | IB652 | IB654 |
| 40 | | | | 46 | 42 | 37 | |
| 105 | UP105 | | 1152 | 1140 | 1151 | 1182 | 1184 |
| T113 | T113-LF | T113-K | T124 | T133 | T134 | T174A | T174SS |
| B103K | | | B105K | B128K | B120K | B144K | B145K |
| 4 | | | 2 | 14 | 11 | 3048 | |

| 163S | 163S-LF | 163T | 163T-LF | 164T | 168T | 169T |
|---|---|---|---|---|---|---|
| 61Y-10X-T1 | 61YLF-10X-T1 | 61Y-20X-T1 | 61YLF-20X-T1 | 61Y-21X-01 | 61Y-75X-01 | 61Y-75X-T1 |
| 1/2" to 2" | 1/2" to 2" | 1/4" to 2" | 1/2" to 2" | 1/4" to 3" | 1/2" to 2" | 1/2" to 2" |
| 200 CWP Swing Check Bronze Y-Pattern PTFE Disc Solder Ends | 200 CWP Swing Check LF-Bronze Y-Pattern PTFE Disc Solder Ends | Class 125 (200 CWP, 125 SWP) Swing Check Bronze Y-Pattern PTFE Disc NPT | Class 125 (200 CWP, 125 SWP) Swing Check LF-Bronze Y-Pattern PTFE Disc NPT | Class 150 (300 CWP, 150 SWP) Swing Check Bronze Y-Pattern Bronze Disc NPT | Class 300 (600 CWP, 300 SWP) Swing Check Bronze Y-Pattern Bronze Disc NPT | Class 300 (600 CWP, 300 SWP) Swing Check Bronze Y-Pattern PTFE Disc NPT |
| MSS SP-80 | MSS SP-139 | MSS SP-80 | MSS SP-139 | MSS SP-80 | MSS SP-80 | MSS SP-80 |
| | | 41TF | | 137 | 76E | |
| IB423 | | IB940 | | | IB949 | |
| 23T | 823T | 22T | 822T | 29 | 19 | |
| 1509T | | 509T | | 510 | 507 | |
| S413Y | S413Y-LF | T413Y | T413Y-LF | T433b | T473B | T473Y |
| B310TY | | B320TYK | | B321K | B375K | |
| 3095SJ | | | | | 3428 | |

## BRONZE GLOBE VALVE CROSS REFERENCE CHART

| Apollo Model | 120S | 120S-LF | 120T | 120T-LF | 121T | 121T-LF | 122T | 127T | 128T |
|---|---|---|---|---|---|---|---|---|---|
| Apollo P/N | 33-14X-01 | 33LF-14X-01 | 33-13X-01 | 33LF-13X-01 | 33-16X-01 | 33LF-16X-01 | 33-22X-01 | 33-66X-01 | 33-74X-01 |
| Size Range | 1/2" to 2" | 1/2" to 2" | 3/8" to 2" | 3/8" to 2" | 1/4" to 2" | 1/4" to 2" | 1/4" to 3" | 1/2" to 2" | 1/2" to 2" |
| Description | 200 CWP Globe Valve Bronze Threaded Bonnet PTFE Disc Solder Ends | 200 CWP Globe Valve LF-Bronze Threaded Bonnet PTFE Disc Solder Ends | Class 125 (200 CWP, 125 SWP) Globe Valve Bronze Threaded Bonnet PTFE Disc NPT | Class 125 (200 CWP, 125 SWP) Globe Valve LF-Bronze Threaded Bonnet PTFE Disc NPT | Class 125 (200 CWP, 125 SWP) Globe Valve Bronze Threaded Bonnet Bronze Disc NPT | Class 125 (200 CWP, 125 SWP) Globe Valve LF-Bronze Threaded Bonnet Bronze Disc NPT | Class 150 (300 CWP, 150 SWP) Globe Valve Bronze Union Bonnet PTFE Disc NPT | Class 300 (1000 CWP, 300 SWP) Globe Valve Bronze Union Bonnet Bronze Disc NPT | Class 300 (1000 CWP, 300 SWP) Globe Valve Bronze Union Bonnet SS Disc NPT |
| Design Standard | MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-139 | MSS SP-80 | MSS SP-139 MSS SP-80 | MSS SP-80 | MSS SP-80 | MSS SP-80 |
| Crane Model | | | 5TF | | 1 | | 7TF | | 382P |
| Hammond Model | | | | | IB440 | | IB413T | IB412 | IB444 |
| Kitz Model | | | | | 11 | | 9 | 17 | 17S |
| Milwaukee Model | | UP1502 | | | 502 | UP502 | 590T | 572 | 593A |
| Nibco Model | S211Y | | T211Y | | T211b | | T235Y | T275B | T276-AP |
| Stockham Model | B14TK | | B13TK | | B16K | | B22TK | B66K | B74K |
| Walworth Model | 3095SJ | | | | 3058 | | 3095 | 3205 | |

## IRON GLOBE VALVE CROSS REFERENCE CHART

| Apollo Model | 711F | 721F |
|---|---|---|
| Apollo P/N | 6GB-11X-B1 | 6GB-21X-B1 |
| Size Range | 2" to 10" | 2" to 8" |
| Description | Class 125 Flanged Globe Valve Cast Iron OS&Y IBBM | Class 250 Flanged Globe Valve Cast Iron OS&Y IBBM |
| Design Standard | MSS SP-85 | MSS SP-85 |
| Crane Model | 351 | 21E |
| Hammond Model | IR116 | IR313 |
| Kitz Model | | |
| Milwaukee Model | 2981M | 2983M |
| Nibco Model | F718B | F768B |
| Stockham Model | G512 | F532 |
| Walworth Model | W906F | W955F |

## IRON GATE VALVE CROSS REFERENCE CHART

| Apollo Model | 610F | 620F | 611F | 621F |
|---|---|---|---|---|
| Apollo P/N | 6GA-10X-B1 | 6GA-20X-B1 | 6GA-11X-B1 | 6GA-21X-B1 |
| Size Range | 2" to 24" | 2" to 12" | 2" to 24" | 2" to 12" |
| Description | Class 125<br>Flanged<br>Gate Valve<br>Cast Iron<br>NRS<br>IBBM | Class 250<br>Flanged<br>Gate Valve<br>Cast Iron<br>NRS<br>IBBM | Class 125<br>Flanged<br>Gate Valve<br>Cast Iron<br>OS&Y<br>IBBM | Class 250<br>Flanged<br>Gate Valve<br>Cast Iron<br>OS&Y<br>IBBM |
| Design Standard | MSS SP-70 | MSS SP-70 | MSS SP-70 | MSS SP-70 |
| Crane Model | 461 | | 465 1/2 | 7 1/2E |
| Hammond Model | IR1138 | | IR1140 | IR330 |
| Kitz Model | | | | |
| Milwaukee Model | 2882M | | 2885M | 2894M |
| Nibco Model | F619 | F669 | F617-0 | F667-0 |
| Stockham Model | G612 | F661 | G623 | F667 |
| Walworth Model | W719F | | W726F | W786F |

## IRON CHECK VALVE CROSS REFERENCE CHART

| Apollo Model | 910F | 910FLW | 920F | 910WB | 910WE |
|---|---|---|---|---|---|
| Apollo P/N | 6SC-10X-B1 | 6SC-10X-B1L | 6SC-20X-B1 | 6WC-10X-N1 | 6WC-10X-E1 |
| Size Range | 2" to 24" | 2" to 12" | 2" to 8" | 2" to 24" | 2" to 12" |
| Description | Class 125<br>Flanged<br>Swing Check<br>Cast Iron<br>IBBM | Class 125<br>Flanged<br>Swing Check<br>Cast Iron<br>IBBM w/ lever<br>& weight | Class 250<br>Flanged<br>Swing Check<br>Cast Iron<br>IBBM | Class 125<br>Wafer Check<br>Buna<br>Cast Iron<br>IBBM | Class 125<br>Wafer Check<br>EPDMI<br>Cast Iron<br>IBBM |
| Design Standard | MSS SP-71 | MSS SP-71 | MSS SP-71 | | |
| Crane Model | 373 | 383 | 39E | | |
| Hammond Model | IR1124 | | IR322 | IR9253 | |
| Kitz Model | | | | | |
| Milwaukee Model | 2974M | C2974MLW | 2970M | 1400 | |
| Nibco Model | F918B | F918BLW | F968B | W910B | |
| Stockham Model | G931 | G931W | F947 | WG970 | WG961 |
| Walworth Model | W928F | | W8970F | | |

## STANDARDS (GATE, GLOBE, SWING & WAFER CHECKS ONLY)

**BRONZE STANDARDS COMPLIANCE:**
ASME B1.20.1 - Pipe Threads, General Purpose (Inch)
ASME B16.18 - Cast Copper Solder Joint Pressure Fittings
ASTM B61 - Standard Specification for Steam or Valve Bronze Castings
ASTM B62 - Composition Bronze or Ounce Metal Castings
ASTM B371 - Standard Specification for Copper-Zinc-Silicon Alloy Rod
ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications*
MSS SP-25 - Standard Marking System for Valves, Fittings and Flanges
MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves
MSS SP-139 - Copper Alloy Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications*
CRN-0C14467.5C (gates and globes) and CRN-0C11218.5C (swing checks) (see www.apollovalves.com for specific provinces)
Canadian Registration Number in accordance with CSA B51 Boiler, Pressure Vessel and Pressure Piping Code
NSF/ANSI 372 Lead Free, 3rd party certified (Lead Free versions only)

**CAST IRON STANDARDS COMPLIANCE:**
ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings (Class 125 - flat faced flanged, Class 250 - 0.06 inch raised faced in accordance with MSS SP-6)
ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves
ASME A126 - Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
ASTM A307 - Specification for Carbon Steel Bolts and Studs, 60000 psi Tensile Strength
MSS SP-25 - Standard Marking System for Valves, Fittings and Flanges and Unions
MSS SP-70 - Gray Iron Gate Valves Flanged and Threaded Ends
MSS SP-71 - Gray Iron Swing Check Valves Flanged and Threaded Ends
MSS SP-85 - Gray Iron Globe and Angle Valves Flanged and Threaded Ends
CRN-0C14467.xx (see www.apollovalves.com for specific provinces)
Canadian Registration Number in accordance with CSA B51 Boiler, Pressure Vessel and Pressure Piping Code.
NSF/ANSI 372 Lead Free, 3rd party certified (Lead Free versions only)

**CAUTIONS:**
Bubble tight shut-off should not be expected on metal seated check valves. MSS Standards for Bronze (MSS SP-80) and for Cast Iron (MSS SP-71) define acceptable leakage rates as 40 ml of water per hour per inch of Nominal Pipe Size (NPS) for valves 1" and larger or 0.4 Standard Cubic Foot (SCF) air per hour per inch of NPS. For valves smaller than 1" the allowable leak rate is 40 ml of water per hour or 0.4 SCF of air per hour.

Bubble tight shut-off should not be expected on metal to metal seated gate or globe valves. MSS Standards for Bronze (MSS SP-80) and for Cast Iron (MSS SP-70 and MSS SP-85) define acceptable leakage rates as 10 ml of water per hour per inch of Nominal Pipe Size (NPS) for valves 1" and larger or 0.1 SCF of air per hour per inch of NPS. For valves smaller than 1" the allowable leak rate is 10 ml of water per hour or 0.1 SCF of air per hour.

Gate valves are not recommended for throttling service and should only be used in the fully open or fully closed positions to minimize vibration and chatter which may damage the seat or wedge. For throttling applications refer to Apollo's globe valve offering.

Safe working pressures and temperatures for solder end valve depends not only on the valve and tubing strength, but also on the composition of the solder used to produce the joints. It is the responsibility of the user to choose a solder that is compatible with the service conditions.

Properly sized swing check valves frequently are smaller than the pipe in which they are used. This practice keeps velocities up so the valve operates near full open, minimizing noise and vibration while maximizing valve life.

## IN-LINE CHECK VALVES

Series 61 and lead free (61LF) check valves feature bronze body construction and are available in sizes 1/4" to 3" for use with water, steam, oil, air and inert gases. Series 62 model in stainless steel with investment cast body are sized from 1/4" to 2" for use in more severe applications and corrosive environments.

61 and 62 Series check valves are available with either RPTFE ball cone or elastomer soft seats. They come equipped with 316 stainless steel springs. All wetted parts are bronze/brass (61 Series) or stainless steel (62 Series).

### SPRING ASSISTED CLOSING

Apollo's 61 and 62 Series feature short check travel and spring assisted closing. This ensures the valve closes quickly, before reversal of flow, helping to eliminate water hammer, its associated noise, and damage to piping and machinery.

### LOW CRACKING PRESSURE

Apollo's standard 61 and 62 Series checks operate at a low 1/2 psi cracking pressure. An extra-light-spring version of the valve is available as an option. A 5-pound or 10-pound cracking pressure spring is also available on models through 1".

### TIGHT...OR BUBBLE TIGHT

Patented Apollo® Ball Cone® check valves (61-100, 61-200 and 62-100) feature a tight-sealing RPTFE ball-shaped check which seats against the conical interior face of the valve's metal retainer. This simple design provides exceptional resistance to wear and corrosion. But, where even tighter sealing is required, choose the 61-500 or 61-600, featuring EPDM (elastomer) seat or 62-500, featuring a Fluorocarbon (Viton®) seat, for a bubble-tight seal. A Nitrile seat is optional.

### CHECK VALVES EXTEND SYSTEM LIFE

In any liquid or gas system where reverse flow cannot be tolerated, a quick-responding check valve is a necessity. Check valves that close slowly permit flow reversal to occur in the line which can cause severe mechanical shock. As the valve finally seats, high peak pressure pulses and shock waves are generated on the downstream side due to the media being forced to a sudden stop. Upstream, the momentum is not restricted which can create voids in the flow, filling with air or vapor to cause additional, lower frequency shock waves. These shock waves added together are known as water hammer. It can cause extensive damage or failure to pipelines, gaskets, supports, hardware and equipment. The result can be expensive, troublesome; even dangerous.

With Apollo® check valves, the potential for water hammer is greatly reduced since the check returns to its seat before flow velocity reaches zero. Apollo's check valves set the standard for compact, economical protection against reverse flow. They provide reliable service in liquids or gases at various temperature and pressure combinations. Because of their simple design, they're versatile and easy to maintain.

### USE IN ANY POSITION

Horizontal, vertical or upside down; liquid, air and gases; Apollo's in-line checks operate in any orientation. Where frequent opening and closing cycles occur, vertical orientation with upward flow is best. This saves time and money, eliminating the need to stock separate vertical and horizontal-operating valves. It also makes new or replacement installation less of a headache.

*Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

### BROAD RANGE OF APPLICATIONS

Apollo® check valves are at home in applications from residential boilers to tough process systems, including:

- Evaporators
- Cookers
- Rubber/Plastic Presses
- Metering Pumps
- Boiler Feed
- Chiller Systems
- Autoclaves
- Casing Vents
- Water Lines
- Steam Tracer Lines
- Sterilizers
- Condensate Return Lines
- Steam Lines
- Salt Water Injection
- Air and Gas Lines
- Chemical Lines

Industries where Apollo's check valves are used include Pulp & Paper, Chemical Processing, Agrichemical, Rubber, Petroleum, Primary Metals, Mining, Power Generation, Textiles, Food and Beverage, Building Construction and Maintenance.

## CVB (61-100 & 61-200) SERIES — IN-LINE BALL CONE® CHECK VALVE

LEAD FREE OPTIONS

**61-100**
**Female x Female Threaded**
**1/4" through 3"**

**61-200**
**Male x Female Threaded**
**1/4" through 2"**

The Apollo® Model CVB check valve with rugged bronze body and patented design (U.S. Pat. No. 4,172,465) RPTFE ball-cone check provides reliable protection against reverse flow. It is spring-loaded for fast seating and center guided for optimum alignment.

### FEATURES

- Standard 1/2 psi Cracking Pressure
- Tight Shut-Off with Liquid Media
- Male and Female NPT Inlet Options
- 400 psig CWP @ 100°F
- 125 psig Steam Rating @ 350°F max
- Straight-Through Design Minimizes Pressure Loss
- ASTM B584 Bronze
- Lead Free Option 61LF (NSF 61/NSF 372)
- **MADE IN USA**

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze, ASTM B584, UNS C84400 or Lead Free Bronze, C89836 |
| **RETAINER** | (1/4" - 1") Brass, ASTM B16 or C27451 (1-1/4" - 3") Bronze, ASTM B584 or C89836 |
| **BALL CHECK** | RPTFE |
| **GUIDE** | Brass, ASTM B16 or LF Brass, C27451 |
| **SPRING** | Stainless Steel |

### FLOW RATE ($C_v$)

| SIZE | GPM |
|---|---|
| 1/4" | 0.85 |
| 3/8" | 1.21 |
| 1/2" | 1.4 |
| 3/4" | 3.53 |
| 1" | 6 |
| 1-1/4" | 44 |
| 1-1/2" | 65 |
| 2" | 81 |
| 2-1/2" | 175 |
| 3" | 265 |

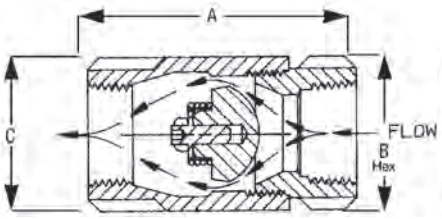
GPM=gallons per minute at 1 psi pressure differential

### PRESSURE TEMPERATURE RATING

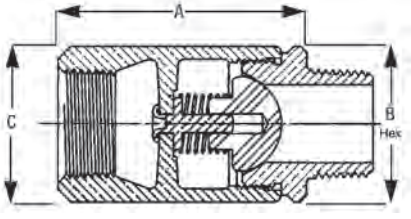
| DEGREE (F) | PSIG |
|---|---|
| -20 TO 100 | 400 |
| 200 | 200 |
| 250 | 160 |
| 275 | 150 |
| 300 | 140 |
| 325 | 130 |
| 353 | 125 |

### DIMENSIONS

| Bronze FNPT x FNPT | LF Bronze FNPT x FNPT | Bronze MNPT x FNPT | Size | Dimensions (in.) A | B | C | 61-100 Series Wt./100 | 61-200 Series Wt./100 |
|---|---|---|---|---|---|---|---|---|
| 61-101-01 | 61LF-101-01 | 61-201-01 | 1/4" | 2.06 | 1.12 | 1.12 | 38 | 38 |
| 61-102-01 | 61LF-102-01 | 61-202-01 | 3/8" | 2.12 | 1.12 | 1.12 | 37 | 37 |
| 61-103-01 | 61LF-103-01 | 61-203-01 | 1/2" | 2.31 | 1.12 | 1.12 | 36 | 36 |
| 61-104-01 | 61LF-104-01 | 61-204-01 | 3/4" | 2.87 | 1.37 | 1.50 | 75 | 76 |
| 61-105-01 | 61LF-105-01 | 61-205-01 | 1" | 3.50 | 1.75 | 1.93 | 145 | 145 |
| 61-106-01 | 61LF-106-01 | 61-206-01 | 1-1/4" | 4.18 | 2.12 | 2.37 | 275 | 237 |
| 61-107-01 | 61LF-107-01 | 61-207-01 | 1-1/2" | 4.93 | 2.50 | 2.81 | 394 | 381 |
| 61-108-01 | 61LF-108-01 | 61-208-01 | 2" | 6.00 | 3.00 | 3.68 | 630 | 636 |
| 61-109-01 | 61LF-109-01 | - | 2-1/2" | 7.00 | 3.50 | 4.50 | 1400 | - |
| 61-100-01 | 61LF-100-01 | - | 3" | 8.12 | 4.12 | 5.31 | 1665 | - |




61-100




61-200

**NOTE:**
Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

### PART NUMBER MATRIX

| 6 X | - X | X | X | - XX |
|---|---|---|---|---|
| **TYPE** | **CHECK** | **SPRING TYPE** | **SIZE (IN.)** | **OPTIONS** |
| 1 = Bronze | 1 = Ball Cone (NPT-F x F) | 0 = .5 psig Cracking Pressure | 1 = 1/4" | 01 = Standard |
| 1LF = Lead Free Bronze | 2 = Ball Cone (NPT-M x F) | 2 = .2 psig Cracking Pressure | 2 = 3/8" | P01 = BSPP Thread |
| 2 = Stainless Steel | 0 = Ball Cone Repair Kit | | 3 = 1/2" | T01 = BSPT Thread |
| | | | 4 = 3/4" | 17 = Satin Chrome Plated |
| | | | 5 = 1" | 57 = Oxygen Cleaned |
| | | | 6 = 1-1/4" | A1 = Less Spring |
| | | | 7 = 1-1/2" | E05 = 5 psig Opening Pressure* |
| | | | 8 = 2" | E10 = 10 psig Opening Pressure* |
| | | | 9 = 2-1/2" | |
| | | | 0 = 3" | |

**Available in 1/4" through 1" Only.*
*(Note: Not all combinations are available. Contact Customer Service for verification.)*

## CVS (62-100) SERIES — STAINLESS STEEL BALL CONE® CHECK VALVE

62-100
Female x Female Threaded
1/4" through 2"

The Apollo® Model CVS is uniquely suited for applications in corrosive environments, including chemical processing, pulp and paper and other process industries. The rugged stainless steel body and RPTFE ball cone check provide reliable, patented protection against reverse flow.

### FEATURES

- Standard 1/2 psi Cracking Pressure
- Unique Design (U.S. Patent # 4,172,465)
- Spring-Loaded For Fast Seating Action
- Center Guided; Radial Alignment Never Needed
- Straight-Through Flow Minimizes Pressure Loss
- 400 psig CWP Non-Shock @ 100°F
- 125 psig SWP @ 350°F
- RoHS Compliant
- ASTM A351, CF8M

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | SS, ASTM A351, CF8M |
| **RETAINER** | SS, ASTM A276, 316 (1/4" - 1")<br>SS, ASTM A351, CF8M (1-1/4" - 2") |
| **BALL CHECK** | RPTFE |
| **GUIDE** | SS, ASTM A276, 316 |
| **SPRING** | Stainless Steel |

### DIMENSIONS

| Item Number FNPT x FNPT | Size | Dimensions (in.) | | | Wt./100 |
|---|---|---|---|---|---|
| | | A | B | C | |
| 62-101-01 | 1/4" | 2.06 | 1.12 | 1.12 | 38 |
| 62-102-01 | 3/8" | 2.12 | 1.12 | 1.12 | 37 |
| 62-103-01 | 1/2" | 2.31 | 1.12 | 1.12 | 36 |
| 62-104-01 | 3/4" | 2.87 | 1.37 | 1.50 | 75 |
| 62-105-01 | 1" | 3.50 | 1.75 | 1.93 | 145 |
| 62-106-01 | 1-1/4" | 4.18 | 2.12 | 2.37 | 237 |
| 62-107-01 | 1-1/2" | 4.93 | 2.50 | 2.81 | 381 |
| 62-108-01 | 2" | 6.00 | 3.00 | 3.68 | 636 |

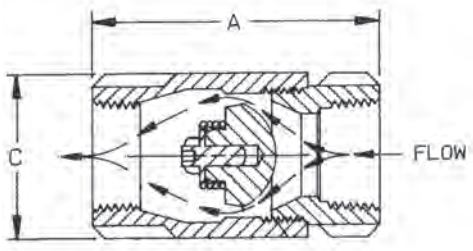
### FLOW RATE ($C_v$)

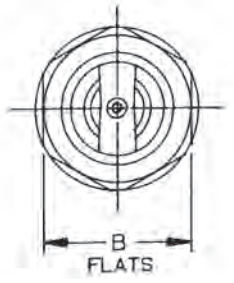
| SIZE | GPM |
|---|---|
| 1/4" | 0.85 |
| 3/8" | 1.21 |
| 1/2" | 1.4 |
| 3/4" | 3.53 |
| 1" | 6 |
| 1-1/4" | 44 |
| 1-1/2" | 65 |
| 2" | 81 |

GPM=gallons per minute at 1 psi pressure differential

### PRESSURE TEMPERATURE RATING

| DEGREE (F) | PSIG |
|---|---|
| -20 TO 100 | 400 |
| 200 | 200 |
| 250 | 160 |
| 275 | 150 |
| 300 | 140 |
| 325 | 130 |
| 353 | 125 |




**NOTE:**
Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

### PART NUMBER MATRIX

| 6 X | - X | X | X | - XX |
|---|---|---|---|---|
| **TYPE** | **CHECK** | **SPRING TYPE** | **SIZE (IN.)** | **OPTIONS** |
| 1 = Bronze | 1 = Ball Cone (NPT-F x F) | 0 = .5 psig Cracking Pressure | 1 = 1/4" | 01 = Standard |
| 1LF = Lead Free Bronze | 2 = Ball Cone (NPT-M x F) | 2 = .2 psig Cracking Pressure | 2 = 3/8" | P01 = BSPP Thread |
| 2 = Stainless Steel | 0 = Ball Cone Repair Kit | | 3 = 1/2" | T01 = BSPT Thread |
| | | | 4 = 3/4" | 17 = Satin Chrome Plated |
| | | | 5 = 1" | 57 = Oxygen Cleaned |
| | | | 6 = 1-1/4" | A1 = Less Spring |
| | | | 7 = 1-1/2" | E05 = 5 psig Opening Pressure* |
| | | | 8 = 2" | E10 = 10 psig Opening Pressure* |
| | | | 9 = 2-1/2" | |
| | | | 0 = 3" | |

**Available in 1/4" through 1" Only.*
*(Note: Not all combinations are available. Contact Customer Service for verification.)*

## CVBE (61-500 & 61-600) SERIES — IN-LINE SOFT SEAT CHECK VALVE

LEADFREE OPTIONS

**61-500**
**Female x Female Threaded**
**1/4" through 2"**

**61-600**
**Female x Female Sweat**
**1/2" through 2"**

The Apollo® Model CVBE check valve is ideally suited for hydronic heating and other low flow applications. The rugged bronze body and check provide reliable protection against reverse flow.

### FEATURES

- Female NPT Sizes: 1/4" to 2"
- Stainless Steel Sizes: 1/4" to 1" (62-500)
- Bubble-Tight Shut-Off, Ideally Suited for Gaseous Service
- NPT Threaded; 400 psig CWP Non-Shock @ 100°F
- EPDM Check Disc (61-500)
- Viton® Check Disc (62-500)
- Straight-Through Design Minimizes Pressure Loss
- 1/2 psi Cracking Pressure
- RoHS Compliant (61LF and 62 Series)

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Bronze, ASTM B584, UNS C84400 or Lead Free Bronze, C89836 |
| **RETAINER** | (1/4" - 1") Brass, ASTM B16 or C27451 (1-1/4" - 3") Bronze, ASTM B584 or C89836 |
| **SEAT** | EPDM |
| **GUIDE PIN** | Stainless Steel |
| **SPRING** | Stainless Steel |
| **CHECK** | Brass, ASTM B16 |
| **GUIDE** | Brass, ASTM B16 |

### FLOW RATE ($C_v$)

| SIZE | GPM | |
|---|---|---|
| | 61-500 | 61-600 |
| **1/4"** | 0.85 | - |
| **3/8"** | 1.21 | - |
| **1/2"** | 1.4 | 2.20 |
| **3/4"** | 3.53 | 4.78 |
| **1"** | 6 | 6 |
| **1-1/4"** | 44 | 44 |
| **1-1/2"** | 65 | 65 |
| **2"** | 81 | 81 |

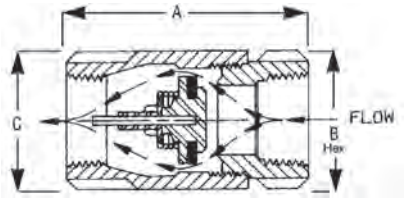
GPM=gallons per minute at 1 psi pressure differential

### DIMENSIONS - 61-500 (FNPT)

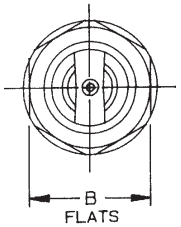
| Item Number | LF Item Number | Size | Dimensions (in.) | | | Wt./100 |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| 61-501-01 | 61LF-501-01 | 1/4" | 2.31 | 1.12 | 1.12 | 38 |
| 61-502-01 | 61LF-502-01 | 3/8" | 2.31 | 1.12 | 1.12 | 37 |
| 61-503-01 | 61LF-503-01 | 1/2" | 2.31 | 1.12 | 1.12 | 36 |
| 61-504-01 | 61LF-504-01 | 3/4" | 2.87 | 1.37 | 1.50 | 75 |
| 61-505-01 | 61LF-505-01 | 1" | 3.50 | 1.75 | 1.93 | 145 |
| 61-506-01 | 61LF-506-01 | 1-1/4" | 4.18 | 2.12 | 2.37 | 275 |
| 61-507-01 | 61LF-507-01 | 1-1/2" | 4.93 | 2.50 | 2.81 | 394 |
| 61-508-01 | 61LF-508-01 | 2" | 6.00 | 3.00 | 3.68 | 630 |

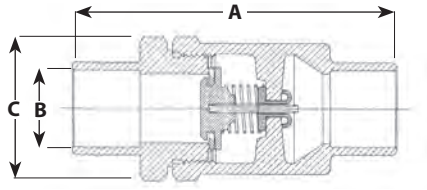
### DIMENSIONS - 61-600 (SOLDER)

| Item Number | LF Item Number | Size | Dimensions (in.) | | | Wt./100 |
|---|---|---|---|---|---|---|
| | | | A | B | C | |
| 61-603-01 | 61LF-603-01 | 1/2" | 2.75 | 1.12 | 1.25 | 38 |
| 61-604-01 | 61LF-604-01 | 3/4" | 3.68 | 1.50 | 1.62 | 75 |
| 61-605-01 | 61LF-605-01 | 1" | 4.50 | 1.93 | 2.12 | 145 |
| 61-606-01 | 61LF-606-01 | 1-1/4" | 6.11 | 2.13 | 2.38 | 330 |
| 61-607-01 | 61LF-607-01 | 1-1/2" | 6.87 | 2.50 | 2.81 | 610 |
| 61-608-01 | 61LF-608-01 | 2" | 7.46 | 3.38 | 3.75 | 1010 |




**61-500**




**61-600**

## CVBE (61-500 & 61-600) SERIES IN-LINE SOFT SEAT CHECK VALVE

**NOTE:**
Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

### PART NUMBER MATRIX

| 6 X | - X | X | X | - XX |
|---|---|---|---|---|
| **TYPE** | **CHECK** | **SPRING TYPE** | **SIZE (IN.)** | **OPTIONS** |
| 1 = Bronze | 5 = Soft Seat (NPT-F x F) | 0 = .5 psig Cracking Pressure | 1 = 1/4" | 01 = Standard (EPDM Seat) |
| 1LF = Lead Free Bronze | 6 = Soft Seat (Solder) | 2 = .2 psig Cracking Pressure | 2 = 3/8" | P01 = BSPP Thread (ISO 228) |
| | 9 = Soft Seat Repair Kit (EPR only) | | 3 = 1/2" | T01 = BSPT Thread (EN 10226) |
| | | | 4 = 3/4" | 17 = Satin Chrome Plated |
| | | | 5 = 1" | 57 = Oxygen Cleaned |
| | | | | A1 = Less Spring |
| | | | | B1 = Nitrile Seat |
| | | | | V1 = Viton Seat |
| | | | | E05 = 5 psig Opening Pressure* |
| | | | | E10 = 10 psig Opening Pressure* |

**Available in 1/4" through 1" Only.*
*(Note: Not all combinations are available. Contact Customer Service for verification.)*

## CVSE (62-500) SERIES — IN-LINE SOFT SEAT CHECK VALVE

LEADFREE OPTIONS

**62-500**
**Female x Female Threaded**
**1/4" through 1"**

The Apollo® Model CVSE is ideal for fluid flow applications in tough industrial environments. The stainless steel body and check provide lasting protection against reverse flow.

### FEATURES

- Bubble-Tight Shut-Off, Ideally Suited for Gaseous Service
- 400 psig CWP non-shock
- Viton® Check Disc
- Approximate Opening Pressure 1/2 psi
- RoHS Compliant
- CRN OC 11218.5C

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Stainless Steel, ASTM A351,CF8M |
| **RETAINER** | Stainless Steel, ASTM A276, 316 |
| **SEAT** | Viton® |
| **SPRING** | Stainless Steel, 316 |
| **CHECK** | Stainless Steel, ASTM A276, 316 |

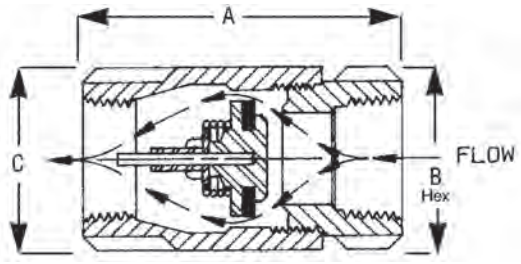
### FLOW RATE ($C_v$)

| SIZE | GPM |
|---|---|
| **1/4"** | 0.47 |
| **3/8"** | 1.57 |
| **1/2"** | 2.20 |
| **3/4"** | 4.78 |
| **1"** | 6 |

GPM=gallons per minute at 1 psi pressure differential

### DIMENSIONS

| Item Number FNPT x FNPT | Size | Dimensions (in.) | | | Wt./100 |
|---|---|---|---|---|---|
| | | A | B | C | |
| 62-501-01 | 1/4" | 2.312 | 1.125 | 1.125 | 38 |
| 62-502-01 | 3/8" | 2.312 | 1.125 | 1.125 | 37 |
| 62-503-01 | 1/2" | 2.312 | 1.125 | 1.125 | 36 |
| 62-504-01 | 3/4" | 2.875 | 1.375 | 1.500 | 75 |
| 62-505-01 | 1" | 3.500 | 1.750 | 1.937 | 150 |




**NOTE:**
Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

### PART NUMBER MATRIX

| 62 | - X | X | X | - XX |
|---|---|---|---|---|
| **TYPE** | **CHECK** | **SPRING TYPE** | **SIZE (IN.)** | **OPTIONS** |
| 62 = Stainless Steel | 5 = Soft Seat (NPT-F x F)<br>6 = Soft Seat (Solder)<br>9 = Soft Seat Repair Kit (Viton only) | 0 = .5 psig Cracking Pressure<br>2 = .2 psig Cracking Pressure | 1 = 1/4"<br>2 = 3/8"<br>3 = 1/2"<br>4 = 3/4"<br>5 = 1" | 01 = Standard (Viton seat)<br>P01 = BSPP Thread (ISO 228)<br>T01 = BSPT Thread (EN 10226)<br>17 = Satin Chrome Plated<br>57 = Oxygen Cleaned<br>A1 = Less Spring<br>B1 = Nitrile Seat<br>F1 = EPDM Seat<br>E05 = 5 psig Opening Pressure*<br>E10 = 10 psig Opening Pressure* |

**Available in 1/4" through 1" Only.*
*(Note: Not all combinations are available. Contact Customer Service for verification.)*

## CV (61-700) SERIES — MINI CHECK VALVE

**61-700**
**Female x Female Pipe Thread**
**1/4" through 1"**

The Apollo® Model CV check valve is ideally suited for cold water, and air applications for prevention of reverse flow. The modular check cartridge provides superior leak-tight performance with low pressure loss. It is rated at 230 PSIG with a maximum temperature of 200°F.

### FEATURES

- Sizes: 1/4" to 1"
- FNPT x FNPT
- Acetyl Check Valve Body
- Nitrile (Buna-N) Check Seals
- ASTM B16 Brass Housing
- Check Opening Pressure: .5 psi

### STANDARD MATERIALS LIST

| | |
|---|---|
| **BODY** | Brass, ASTM B16" |
| **CHECK** | Acetal/Brass/Silicone/Buna-N |
| **SPRING** | Stainless Steel 302 |

*Not intended for use in potable water applications.

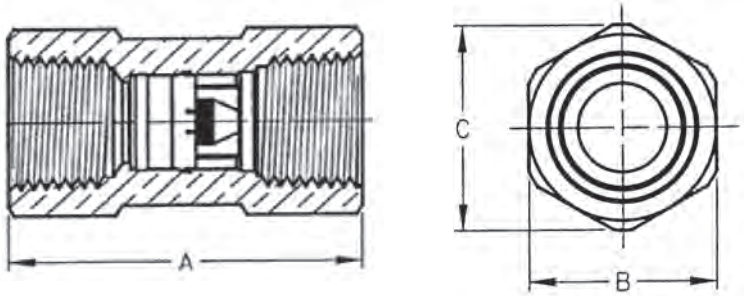
### FLOW RATE ($C_v$)

| SIZE | GPM |
|---|---|
| **1/4"** | 0.78 |
| **3/8"** | 1.81 |
| **1/2"** | 6.00 |
| **3/4"** | 11.50 |
| **1"** | 17.50 |

GPM=gallons per minute at
1 psi pressure differential

### DIMENSIONS

| Item Number | Size | Dimensions (in.) | | | Wt./100 |
|---|---|---|---|---|---|
| | | A | B | C | |
| 61-701-01 | 1/4" | 1.72 | 0.81 | 0.92 | 22 |
| 61-702-01 | 3/8" | 1.79 | 0.93 | 1.05 | 29 |
| 61-703-01 | 1/2" | 2.02 | 1.06 | 1.17 | 38 |
| 61-704-01 | 3/4" | 2.50 | 1.25 | 1.40 | 54 |
| 61-705-01 | 1" | 2.95 | 1.62 | 1.76 | 110 |




**NOTE:**
Not recommended for use with reciprocating pumps and similar applications. Low flows may result in undesirable noise and premature valve failure.

## 70-100-BC SERIES — BALL VALVE WITH INTEGRAL CHECK

**70-100-BC**
**Female x Female Threaded**
**1/2" through 2"**

The 70-100-BC Series ball valve combines two functions in a single design: positive shut-off and bubble-tight check capabilities. The BC Series is a unidirectional version of the industry-standard Apollo® 70 Series ball valve. An easy flow design and superior check valve make these valves a smart choice for water or air in mechanical systems or OEM applications. Rated at 250 psi CWP and maximum temperature of 200°F.

### FEATURES

- Blowout-Proof Stem
- RPTFE Seats and Stuffing Box Ring
- Adjustable Packing Gland
- Chromium-Plated Ball
- Positive Shut-Off and Bubble-Tight Check Capability

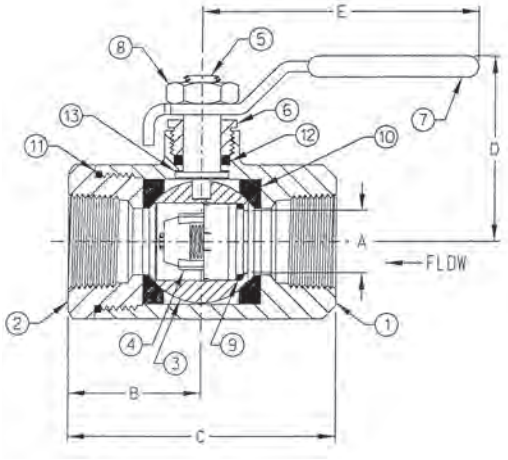
### STANDARD MATERIALS LIST

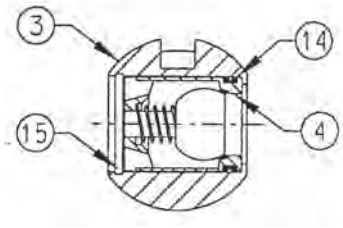
| | | |
|---|---|---|
| 1 | **BODY** | B584-C84400 |
| 2 | **RETAINER** | B16 (1/2" - 1")<br>B584-C84400 (1-1/4" - 2") |
| 3 | **BALL** | Brass, B16 (Chrome Plated) |
| 4 | **CHECK INSERT** | Acetal |
| 5 | **STEM** | Brass, B16 |
| 6 | **GLAND NUT** | Brass, B16 |
| 7 | **LEVER/GRIP** | Steel, Zinc-Plated w/ Vinyl |
| 8 | **LEVER NUT** | Steel, Zinc-Plated |
| 9 | **O-RING** | Buna-N |
| 10 | **SEATS** | RPTFE |
| 11 | **BODY SEAL** | TFE (1-1/4" - 2") |
| 12 | **STEM PACKING** | RPTFE |
| 13 | **STEM BEARING** | RPTFE |
| 14 | **SEAL** | EPDM (1/2") |
| 15 | **RETAINING RING** | Spring Steel (1/2") |

*Not intended for use in potable water applications.

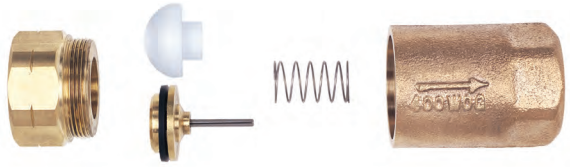
### DIMENSIONS

| Item Number | Size | Dimensions (in.) | | | | | Wt./100 |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | |
| 70-103-BC | 1/2" | 0.50 | 1.12 | 2.25 | 1.80 | 3.87 | 0.63 |
| 70-104-BC | 3/4" | 0.68 | 4.50 | 3.00 | 2.12 | 4.87 | 1.33 |
| 70-105-BC | 1" | 0.87 | 1.68 | 3.37 | 2.25 | 4.87 | 1.77 |
| 70-106-BC | 1-1/4" | 1.00 | 2.00 | 4.00 | 2.73 | 5.50 | 3.29 |
| 70-107-BC | 1-1/2" | 1.25 | 2.18 | 4.37 | 3.09 | 8.00 | 4.63 |
| 70-108-BC | 2" | 1.50 | 2.34 | 4.68 | 3.28 | 8.00 | 6.01 |



## REPAIR KITS IN-LINE CHECK VALVES



### 61-100/61LF-100 REPAIR KITS INCLUDE: SPRING, BALL CONE CHECK & INSTRUCTIONS

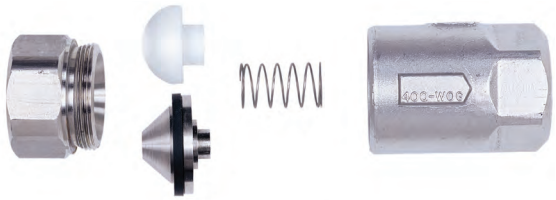
| Size (in.) | Check Valve Part Number | LF Check Valve Part Number | Repair Kit Part Number |
|---|---|---|---|
| 1/4″ | 61-101-01 | 61LF-101-01 | 61-001-01 |
| 3/8″ | 61-102-01 | 61LF-102-01 | 61-002-01 |
| 1/2″ | 61-103-01 | 61LF-103-01 | 61-003-01 |
| 3/4″ | 61-104-01 | 61LF-104-01 | 61-004-01 |
| 1″ | 61-105-01 | 61LF-105-01 | 61-005-01 |
| 1-1/4″ | 61-106-01 | 61LF-106-01 | 61-006-01 |
| 1-1/2″ | 61-107-01 | 61LF-107-01 | 61-007-01 |
| 2″ | 61-108-01 | 61LF-108-01 | 61-008-01 |
| 2-1/2″ | 61-109-01 | 61LF-109-01 | 61-009-01 |
| 3″ | 61-100-01 | 61LF-100-01 | 61-010-01 |

### 61-200 REPAIR KITS INCLUDE: SPRING, BALL CONE CHECK & INSTRUCTIONS

| Size (in.) | Check Valve Part Number | Repair Kit Part Number |
|---|---|---|
| 1/4″ | 61-201-01 | 61-001-01 |
| 3/8″ | 61-202-01 | 61-002-01 |
| 1/2″ | 61-203-01 | 61-003-01 |
| 3/4″ | 61-204-01 | 61-004-01 |
| 1″ | 61-205-01 | 61-005-01 |
| 1-1/4″ | 61-206-01 | 61-006-01 |
| 1-1/2″ | 61-207-01 | 61-007-01 |
| 2″ | 61-208-01 | 61-008-01 |

### 61-500/61LF-500 REPAIR KITS INCLUDE: SPRING, CHECK ASSEMBLY & INSTRUCTIONS

| Size (in.) | Check Valve Part Number | LF Check Valve Part Number | Repair Kit Part Number |
|---|---|---|---|
| 1/4″ | 61-501-01 | 61LF-501-01 | 61-901-01 |
| 3/8″ | 61-502-01 | 61LF-502-01 | 61-902-01 |
| 1/2″ | 61-503-01 | 61LF-503-01 | 61-903-01 |
| 3/4″ | 61-504-01 | 61LF-504-01 | 61-904-01 |
| 1″ | 61-505-01 | 61LF-505-01 | 61-905-01 |
| 1-1/4″ | 61-506-01 | – | 61-906-01 |
| 1-1/2″ | 61-507-01 | – | 61-907-01 |
| 2″ | 61-508-01 | – | 61-908-01 |



### 61-600 REPAIR KITS INCLUDE: SPRING, CHECK ASSEMBLY & INSTRUCTIONS

| Size (in.) | Check Valve Part Number | Repair Kit Part Number |
|---|---|---|
| 1/2″ | 61-603-01 | 61-903-01 |
| 3/4″ | 61-604-01 | 61-904-01 |
| 1″ | 61-605-01 | 61-905-01 |
| 1-1/4″ | 61-606-01 | 61-906-01 |
| 1-1/2″ | 61-607-01 | 61-907-01 |
| 2″ | 61-608-01 | 61-908-01 |

### 62-100 REPAIR KITS INCLUDE: SPRING, BALL CONE CHECK & INSTRUCTIONS

| Size (in.) | Check Valve Part Number | Repair Kit Part Number |
|---|---|---|
| 1/4″ | 62-101-01 | 62-001-01 |
| 3/8″ | 62-102-01 | 62-002-01 |
| 1/2″ | 62-103-01 | 62-003-01 |
| 3/4″ | 62-104-01 | 62-004-01 |
| 1″ | 62-105-01 | 62-005-01 |
| 1-1/4″ | 62-106-01 | 62-006-01 |
| 1-1/2″ | 62-107-01 | 62-007-01 |
| 2″ | 62-108-01 | 62-008-01 |

### 62-500 REPAIR KITS INCLUDE: SPRING, CHECK ASSEMBLY & INSTRUCTIONS

| Size (in.) | Check Valve Part Number | Repair Kit Part Number |
|---|---|---|
| 1/4″ | 62-501-01 | 62-901-01 |
| 3/8″ | 62-502-01 | 62-902-01 |
| 1/2″ | 62-503-01 | 62-903-01 |
| 3/4″ | 62-504-01 | 62-904-01 |
| 1″ | 62-505-01 | 62-905-01 |

## $C_v$ COEFFICIENTS FOR FLOW ESTIMATION ONLY

### FLOW OF LIQUID

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

or $$\Delta P = \frac{(Q)^2\,(SpGr)}{(Cv)^2}$$

**WHERE:**
- Q = flow in US gpm
- ΔP = pressure drop (PSI)
- SpGr = specific gravity at flowing temperature
- Cv = valve constant

### FLOW OF GAS

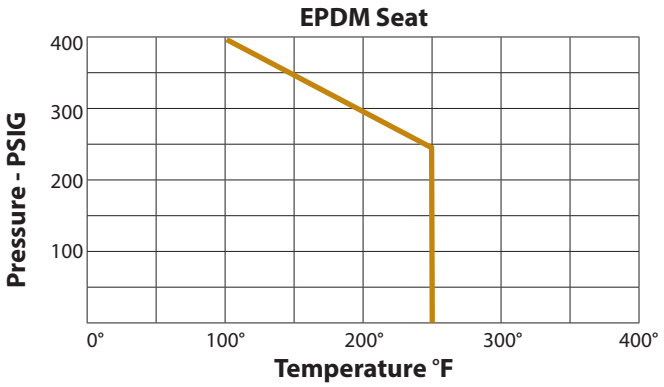
$$Q = 1360\ Cv\sqrt{\frac{\Delta P\,(P_2)}{(SpGr)\,(T)}}$$

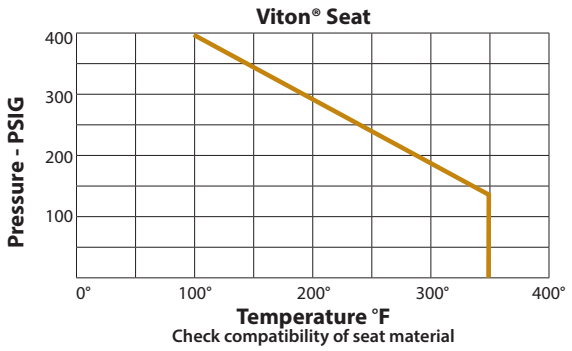
or $$\Delta P = \frac{5.4 \times 10^{-7}\,(SpGr)\,(T)\,(Q)^2}{(Cv)^2\,(P_2)}$$

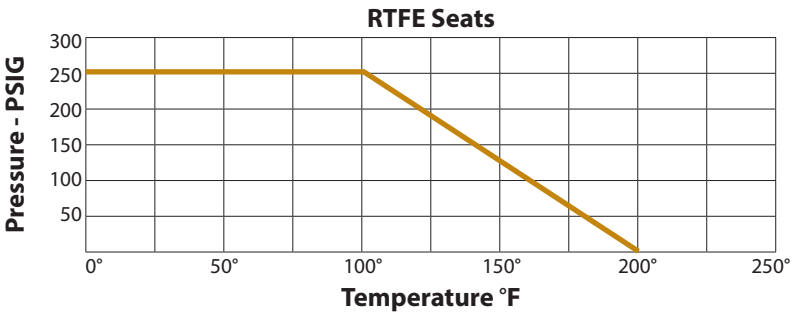
**WHERE:**
- Q = flow in SCFH
- ΔP = pressure drop (PSI)
- SpGr = specific gravity (based on air - 1.0)
- $P_2$ = outlet pressure - psia (psig + 14.7)
- T = (temp. °F + 460)
- Cv = valve constant

***NOTE:*** *The Cv (Valve Constant) is the gallons of water per minute that the valve will pass with a 1 PSIG pressure drop across the valve.*

**NOTE:**
Not recommended for use with reciprocating pumps and similar applications which may induce repetitious vibrations. Low flow rates which do not fully open the valve, may result in undesirable noise and premature valve failure. Upstream flow disturbances, which create turbulence, may also result in rapid wear. Therefore, it is recommended that a minimum of 10 diameters of straight pipe be provided between the check valve and any upstream flow disturbances such as pumps, control valves, elbows, etc.



## GLOSSARY

### BRONZE VALVE TYPES:

Apollo® offers cast bronze alloy gate, globe, swing check and in-line check valves in a variety of configurations and sizes:

**GATE VALVES**: Apollo® gate valves are all fully guided solid wedge style available in Type 1A, "Non-Rising Stem and External Stuffing Box" and Type 2, "Rising Stem, Inside Screw, External Stuffing Box" designs.

**GLOBE VALVES**: Apollo® globe valves are available in Type 1, "Metallic Disc, Integral Seat" and Type 2, "Non-Metallic Disc, Integral Seat", and Type 3, "Metallic Disc, Replaceable/Renewable Seat" designs.

**CHECK VALVES**: Apollo® swing check valves are available in Type 3, "Metal to Metal Seated", and Type 4, "Non-Metallic Disc, Metal Seat" designs.

**IN-LINE CHECK VALVES**: Apollo® in-line check valves are available 1/4" - 2".

### CAST IRON VALVE TYPES:

Apollo® offers ANSI Class 125 and 250 flanged cast iron gate, globe and swing check valves; ASME B16.10 ANSI Face-to-Face and End-to-End Dimensions of Valves; ASME B16.1

**GATE VALVES:** Flanged cast iron gate valves are solid wedge design (Type I) with bronze mounted seat rings and are available in both non-rising stem and OS&Y configurations.

**GLOBE VALVES:** Flanged cast iron globe valves are offered in Type I (in line metal to metal seated) with bronze mounted seat rings. All feature OS&Y stem designs.

**SWING CHECK VALVES:** Flanged cast iron swing check valves are all Type I (full waterway, metal to metal seated) with bronze mounted seat rings.

**WAFER CHECK VALVES:** Resilient seated, dual disc, spring-return design intended for installation between Class 125 or Class 150 flanges.

**PRESSURE RATINGS:**
**SWP:** "Steam Working Pressure" is defined as the maximum allowable working pressure for saturated steam service.

**CWP:** The initials for "Cold Working Pressure" and is the allowable working pressure for the device in the temperature range of -20°F to 100°F (-29°C to 38°C)

The CWP for Apollo® ANSI Class valves is as follows:
**Class 125**: 200 psig
**Class 150**: 300 psig
**Class 250**: 300 psig
**Class 300**: 1000 psig (600 psig for swing checks)

**200 CWP**: Commonly applied to bronze solder-end valves and equates to 200 psig.

The SWP for Apollo® ANSI Class Metal-to-Metal seated valves is as follows:
**125 SWP**: Class 125 is 125 psig.* (353° F)
**150 SWP:** Class 150 is 150 psig.* (366° F)
**300 SWP**: Class 300 is 300 psig.* (421° F)
*The maximum saturated steam working pressure (SWP) for soft seated valves is determined by the limits of the non-metallic materials.

**TEMPERATURE RATINGS:**
Maximum temperature ratings for valves with non-metallic seating (such as is offered in some globe and check valves) are dependant upon the composition of the sealing element. It is the responsibility of the user to specify the service conditions and verify that the valves selected are suitable for their intended use.

**END CONNECTIONS:**
**FLANGED ENDS:** All iron valves (with the exception of wafer checks) are supplied with flanged ends which comply with ASME B.16.1 and B16.10. End to end dimensions conform to ANSI B16.10. Class 125, flat faced flanges & Class 250, 0.06 inch raised faced and MSS SP-6 finishes.

**THREADED ENDS:** Bronze valves supplied with threaded ends comply with ASME B1.20.1.

**SOLDER ENDS:** Bronze valves supplied with solder joint ends comply with ASME B16.18.

**STEM TYPES:**
**RISING STEM:** Rising stem, inside screw is the most common stem design used in bronze gate and globe valves, while the larger cast iron valves use an OS&Y (outside screw and yoke) design. In the fully open, back seated position the stem threads are isolated from the media. The rising stem also give a clearly visible indication as to whether the valve is open or closed. Because the stem and handle rise above the valve during operation, adequate clearance must be provided.

**NON-RISING STEM:** Applicable only to gate valves. Valves with non-rising stems have a lower profile but the stem threads are exposed to the media leaving them subject to damage from erosion, corrosions or deposits. There is no visual open-closed indication.

**BONNET OPTIONS:**
**THREADED BONNET:** This is the most cost effective method for assembling the bonnet of gate and globe valves.

**UNION BONNET:** Union bonnets are intended to simplify inspection of the interior of the valve.
All Apollo® cast iron gate, globe and swing check valves utilize bolted bonnet construction.

**BOLTED BONNET:** All Apollo® cast iron gate, globe and swing check valves utilize bolted bonnet construction.

**MATERIALS OF CONSTRUCTION - BRONZE VALVES:**
**STANDARD VALVES:** All materials of construction comply with the requirements of MSS SP-80. Class 125, Class 150 and 200 CWP bodies and bonnets or covers are produced from ASTM B62 cast bronze containing a nominal 85% copper. Class 300 bodies and bonnets or covers are produced from ASTM B61 cast bronze containing a nominal 88% copper. Stems are produced from ASTM B371 silicon bronze.

**LEAD FREE VALVES**: Bodies and bonnets or covers are produced from ASTM B584-C89836 cast bronze containing a nominal 89% copper and no more than 0.1% lead. Stems are produced from ASTM B371 silicon bronze.

**MATERIALS OF CONSTRUCTION - CAST IRON VALVES:**
All materials of construction comply with the requirements of the governing MSS specification. Cast iron body and bonnet material is ASTM A126 Class B. All bolting is equal to or better than ASTM A307 B.

**BRONZE & CAST IRON STEM PACKING:**
All Apollo® gate and globe valves are factory equipped with die-formed graphite stem packing which ensures an effective seal under a wide range of service conditions.

**BRONZE MARKING:**
All Apollo® bronze gate, globe and swing check valves are marked in compliance with MSS SP-80, MSS SP-139 and MSS SP-25. Swing check valves include a cast flow direction arrow. lead free valves feature a cast “LF” symbol where space permits.

**CAST IRON MARKING:**
All Apollo® gate, globe and check valves are marked in compliance with MSS SP-25 and the governing MSS product standard.

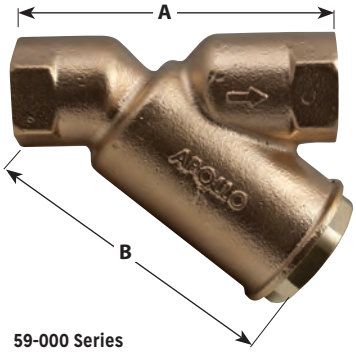
**BRONZE TESTING:**
All Apollo® bronze gate, globe and swing check valves are tested in compliance with MSS SP-80 and MSS SP-139. 61 and 62 Series in-line check valves are tested in accordance with Apollo® specifications

**CAST IRON TESTING:**
Each Apollo® iron gate, globe and check valve is tested in compliance with MSS SP-70, SP-71 or SP-85 as appropriate.

# STRAINERS

## YB (59) SERIES — BRONZE WYE STRAINER

LEADFREE OPTIONS




59-000 Series

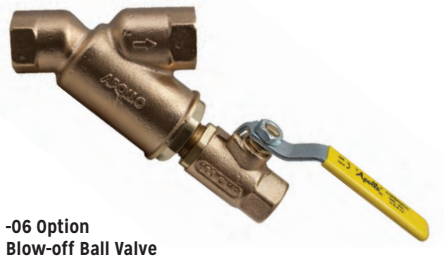
Large volume design for excellent protection against foreign particles in your fluid system. Corrosion-resistant bronze body and stainless steel screens provide years of service.

### FEATURES

- Blow-off Ball Valve Option (1/2" - 2")
- Operating Pressure to 400 CWP at 150°F (up to 3")
- 125 psig SWP @ 350° F
- Removable Self-Aligning Screen
- Large Net Flow Area for Longer Maintenance Intervals
- 59-400 Series is Female x Male NPT (3/4" & 1" Only)
- CRN-0E 8959.5
- NSF/ANSI 372 Lead Free (59LF)
- Several Screen and Cap Options
- **Made in USA, ARRA Compliant**

New!

59-400 Series
Female x Male NPT



-06 Option
Blow-off Ball Valve

### STANDARD SCREEN

| Size (in.) | Screen |
|---|---|
| 1/8" - 1/2" | 50 Mesh |
| 3/4" - 3" | 20 Mesh |
| 4" | .125 Perforation |

### OPTIONS

| Suffix | Option |
|---|---|
| -01 | Plain Cap |
| -02 | Blowout Tap |
| -P2 | Blowout with Plug |
| -06 | Ball Valve |
| -E1 | 20 Mesh |
| -A1 | 40 Mesh |
| -B1 | 60 Mesh |
| -C1 | 80 Mesh |
| -H1 | 100 Mesh |

### DIMENSIONS

| Part Number | LF Part Number | Model Number | Size | Dimensions | | Cap Tapping Suffix -02 | Wt./Ea. Lbs. | Net Screen Area $(in.)^2$ |
|---|---|---|---|---|---|---|---|---|
| | | | | A (in.) | B (in.) | | | |
| 59-000-01 | 59LF-000-01 | YB14 | 1/8 NPT | 2.00 | 1.25 | 1/8 NPT | .4 | 2.3 |
| 59-001-01 | 59LF-001-01 | YB14 | 1/4 NPT | 2.00 | 1.25 | 1/8 NPT | .4 | 2.3 |
| 59-002-01 | 59LF-002-01 | YB38 | 3/8 NPT | 2.69 | 2.00 | 1/4 NPT | .8 | 3.2 |
| 59-003-01 | 59LF-003-01 | YB12 | 1/2 NPT | 2.69 | 2.00 | 1/4 NPT | .8 | 3.2 |
| 59-004-01 | 59LF-004-01 | YB34 | 3/4 NPT | 4.25 | 3.25 | 1/2 NPT | 1.9 | 6.7 |
| 59-005-01 | 59LF-005-01 | YB1 | 1 NPT | 4.75 | 4.00 | 3/4 NPT | 2.8 | 10.8 |
| 59-006-01 | 59LF-006-01 | YB114 | 1-1/4 NPT | 5.13 | 4.25 | 3/4 NPT | 3.6 | 13.5 |
| 59-007-01 | 59LF-007-01 | YB112 | 1-1/2 NPT | 5.75 | 5.00 | 1 NPT | 5.4 | 19.0 |
| 59-008-01 | 59LF-008-01 | YB2 | 2 NPT | 6.66 | 6.00 | 1-1/4 NPT | 7.5 | 27.6 |
| 59-009-01 | 59LF-009-01 | YB212 | 2-1/2 NPT | 8.24 | 6.87 | 1-1/4 NPT | 11.3 | 41.0 |
| 59-010-01 | 59LF-010-01 | YB3 | 3 NPT | 9 | 6.87 | 1-1/2 NPT | 15.8 | 56.0 |
| 59-011-01 | 59LF-011-01 | YB4 | 4 NPT | 11.92 | 10.12 | 1-1/2 NPT | 30.7 | 98 |
| 59-404-01 | 59LF-404-01 | YBM34 | **3/4 F x MNPT** | NA | 3.25 | 1/2 NPT | 2.0 | 6.7 |
| 59-405-01 | 59LF-405-01 | YBM1 | **1 F x MNPT** | NA | 4.00 | 3/4 NPT | 3.0 | 10.8 |

## YB (59) SERIES — BRONZE WYE STRAINER

LEAD FREE OPTIONS

The lead free ApolloPush (59LF Series) Strainers with quick push connections are designed to protect potable water systems from unwanted foreign particles with minimum pressure loss. The valves are built for long reliable service with proven ASTM grade materials including a lead free bronze body and a large area stainless steel screen.

### FEATURES

- Quick ApolloPush Incorporates Proven TECTITE™ Technology
- Direct Connectors are Permanently Installed
- Self-Aligning Screen Design
- Pushed Connections are Removable Using Optional Demounting Tool
- Standard Valve:
  (01) Plain Cap 50 Mesh (1/2")
  (01) Plain Cap 20 Mesh (3/4", 1")
- Blowout Ball Valve Option
- **Made in USA, ARRA Compliant**

### APPROVALS

- ASSE 1061-2006 - Push Fitting Performance Requirements
- IAPMO IGC 188 (UPC) Compliant for CU/CPVC/PEX
- CRN 0E8959.5
- NSF/ANSI 372 Lead Free (59LF)

### PERFORMANCE RATING

Working Pressure (non-shock):

- Maximum Pressure: 200 psi (17.2 bar)
- Maximum Temperature: 250° F (121°C)

### DEMOUNT TOOLS

| Size | Apollo Part Number | EPC Part Number |
|---|---|---|
| 1/2" | D514500 | 10165630 |
| 3/4" | D514800 | 10165625 |
| 1" | D515100 | 10165627 |

### DIMENSIONS

| Apollo LF Part Number | Non LF Part Number | EPC LF Part Number | EPC Model Number | Size | Length | Cv | Wt. (lbs.) |
|---|---|---|---|---|---|---|---|
| **59LF-003-01P** | **59-003-01P** | **10177538** | 230 | 1/2" | 4.9" | 5 | .75 |
| **59LF-004-01P** | **59-004-01P** | **10177541** | 230 | 3/4" | 6.2" | 15 | 1.7 |
| **59LF-005-01P** | **59-005-01P** | **10177543** | 230 | 1" | 7.5" | 28 | 2.7 |

*For liquids the flow coefficient - Cv - expresses the flow capacity in gallons per minute (GPM) of 60°F water with a pressure drop of 1 psi (lb/in²).*

## YB (59) SERIES — BRONZE WYE STRAINER

LEAD FREE OPTIONS

The lead free ApolloPress YB-PRLF (59LF Series) Strainers with quick press connections are designed to protect potable piping systems from unwanted foreign particles with minimum pressure loss. The valves are built for long reliable service with proven ASTM grade materials including a lead free bronze body and stainless steel strainer.

### FEATURES

- Lead Free Bronze and Brass Construction
- Fast, Reliable, Economical Press Installation
- Ridgid® XL Press Tool Compatible
- Leak Before Press® Technology
- Self-Aligning SS Screen Design
- Blowout Ball Valve Option
- CRN 0E8959.5C
- **Made in USA, ARRA Compliant**

### APPROVALS

- NSF/ANSI 372 Lead Free (59LF)

### PERFORMANCE RATING

- Maximum Pressure:
  250 psi (17.2 bar) non-shock
- Temperature Range: 0°F - 250°F (-18°C - 121°C)

### OPTIONS

| Suffix | Option |
|---|---|
| -01 | 50 Mesh (Std 1/2") |
| -01 | 20 Mesh (Std 3/4" - 2") |
| -02 | Tapped Cap |
| -P2 | Tapped Cap with Plug |
| -06 | Tapped Cap with Ball Valve |
| -E1 | 20 Mesh (for 1/2") |
| -A1 | 40 Mesh |
| -B1 | 60 Mesh |
| -C1 | 80 Mesh |
| -H1 | 100 Mesh |
| -59PR | ApolloPress |

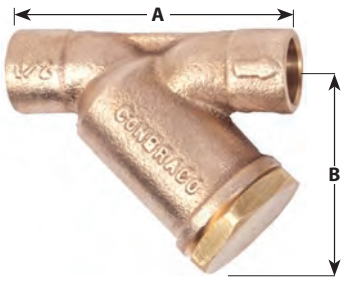
### DIMENSIONS

| LF Part Number | Part Number | Size (in.) | Length | Cv | Wt. (lbs.) |
|---|---|---|---|---|---|
| **59LF-003-01PR** | **59-003-01PR** | 1/2" | 4.75" | 5 | 1.0 |
| **59LF-004-01PR** | **59-004-01PR** | 3/4" | 6.1" | 15 | 2.0 |
| **59LF-005-01PR** | **59-005-01PR** | 1" | 7.25" | 28 | 3.0 |
| **59LF-006-01PR** | **59-006-01PR** | 1-1/4" | 7.62" | 55 | 3.8 |
| **59LF-007-01PR** | **59-007-01PR** | 1-1/2" | 8.25 | 70 | 5.7 |
| **59LF-008-01PR** | **59-008-01PR** | 2" | 10.39 | 99 | 7.7 |

*For liquids the flow coefficient - Cv - expresses the flow capacity in gallons per minute (GPM) of 60°F water with a pressure drop of 1 psi (lb/in2).*

## YBS (59-300) SERIES — BRONZE WYE STRAINER

LEAD FREE OPTIONS




Designed with minimal wall thickness at solder ends to allow ease of installation. Corrosion-resistant bronze bodies, stainless steel screens with large screen area.

### FEATURES

- Operating Pressures to 400 CWP at 150°F
- Sizes: 1/2" to 3" Copper Tube Size
- Optional Tapped Caps Available
- NSF/ANSI 372 Lead Free (59LF)
- 59LF features EZ-Solder™ Bronze

### STANDARD

| Size (in.) | Standard Screen |
|---|---|
| 1/2 | 50 Mesh |
| 3/4 to 3 | 20 Mesh |

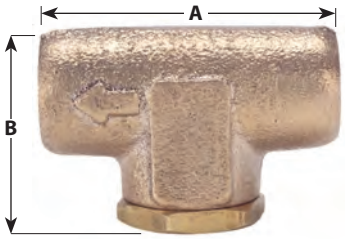
### OPTIONS

| Suffix | Option |
|---|---|
| -01 | Solid cap (standard) |
| -02 | Blowout Tap |
| -P2 | Blowout with pipe plug |

### DIMENSIONS

| Series Number | LF Series Number | Size (in.) | Dimensions (in.) | | Tapped Cap Suffix -02 | Wt. | Net Screen Area (in.²) |
|---|---|---|---|---|---|---|---|
| | | | A | B | | | |
| **59-303-01** | **59LF-303-01** | 1/2 | 2.75 | 2.0 | 1/4 NPT | .50 | 3.19 |
| **59-304-01** | **59LF-304-01** | 3/4 | 4.00 | 3.0 | 1/2 NPT | 1.21 | 6.7 |
| **59-305-01** | **59LF-305-01** | 1 | 4.75 | 3.5 | 3/4 NPT | 1.89 | 10.8 |
| **59-306-01** | **59LF-306-01** | 1-1/4 | 5.25 | 4.0 | 3/4 NPT | 2.80 | 13.5 |
| **59-307-01** | **59LF-307-01** | 1-1/2 | 6.00 | 4.4 | 1 NPT | 4.26 | 19.0 |
| **59-308-01** | **59LF-308-01** | 2 | 7.25 | 5.1 | 1-1/4 NPT | 6.27 | 27.6 |
| **59-309-01** | **59LF-309-01** | 2-1/2 | 9.50 | 5.6 | 1-1/2 NPT | 11.00 | 41.0 |
| **59-310-01** | **59LF-310-01** | 3 | 10.50 | 6.7 | 1-1/2 NPT | 15.0 | 56.0 |

## YBV (59V) SERIES — "MINI" STRAINER



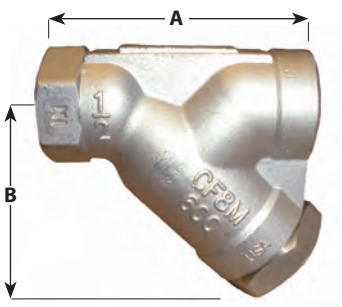

The body of the 59-V is corrosion-resistant solid cast bronze, ASTM B-584. The removable clean-out cap is solid brass, ASTM B-16. Standard screens are made of 304 stainless steel. **NOT INTENDED FOR POTABLE WATER**

### FEATURES

- $C_v$ Factor 1.42 GPM
- Working Pressure (non-shock): 400 CWP

| Series Number | Size (in.) | Dimensions (in.) | | Wt./100 | Screen Mesh |
|---|---|---|---|---|---|
| | | A | B | | |
| **59V-001-01** | 1/4 NPT | 2.00 | 1.31 | 29.7 | 50 |
| **59V-001-H1** | 1/4 NPT | 2.00 | 1.31 | 29.7 | 100 |

## YSS (612) SERIES — STAINLESS STEEL WYE STRAINER




Sturdy and compact with corrosion-resistant stainless steel bodies and stainless steel screens.

### FEATURES

- Body is ASTM A351 Stainless Steel Grade CF8M
- 20 Mesh Screen Standard, Others Available
- Gasket 304 SS/Graphite on 1/2" to 1" (Not Available in 1-1/4")
- Working Pressure: 600 psig @ 1124°F Steam 1440 psig @ 100°F Water, Oil, & Gas
- Screen cover is NPT tapped for Customer Supplied Plug or Blow-Off Valve

| Series Number | Size (in.) | Dimensions (in.) | | Blow-off NPT | Wt. (lbs.) | Net Screen Area (in.²) |
|---|---|---|---|---|---|---|
| | | A | B | | | |
| **612-033-A1** | 1/2 | 3.38 | 2.75 | 3/8 | 2 | 5.4 |
| **612-034-A1** | 3/4 | 4.44 | 3.63 | 3/8 | 3.75 | 8.7 |
| **612-035-A1** | 1 | 4.88 | 3.75 | 1/2 | 4 | 12.7 |

## YCT SERIES — CAST IRON WYE STRAINER

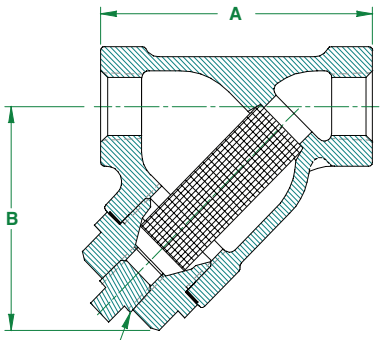
Install these durable strainers upstream in almost any application to protect valves, regulators, solenoids and meters from rust, dirt and pipe scale.

### FEATURES

- 20 Mesh Screens Standard to 2"; .045 perf. 2-1/2" to 3", Others Available
- Graphite Gasketed Cover for Easy Screen Cleaning
- Standard Tapped Cap with Plug
- Sizes: 1/4" to 3"
- Connections are NPT to ASME/ANSI B1.20.1
- Working Pressure (non-shock):
  CWP 400 PSI @ -20°F - 150°F | SWP 250 PSI

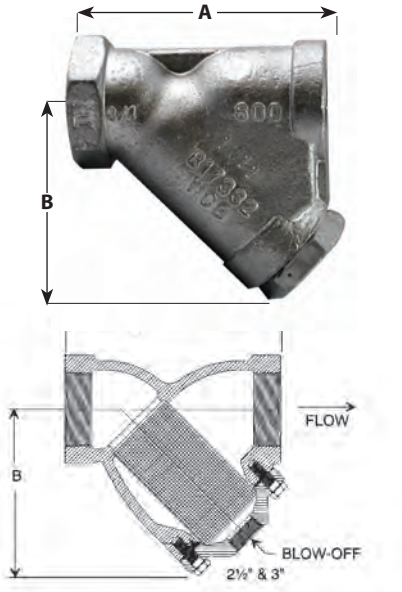
### APPROVALS

- NSF/ANSI 372




| Series Number | Size (in.) | Dimensions (in.) | | Blow-off NPT | Wt. (lbs.) | Net Screen Area (in.²) |
|---|---|---|---|---|---|---|
| | | A | B | | | |
| YCT01M20 | 1/4 | 3.19 ± .04 | 2.17 | 1/4" | .44 | 2.8 |
| YCT02M20 | 3/8 | 3.19 ± .04 | 2.24 | 1/4" | .57 | 2.8 |
| YCT03M20 | 1/2 | 3.19 ± .04 | 2.76 | 3/8" | .75 | 2.8 |
| YCT04M20 | 3/4 | 3.74 ± .06 | 2.83 | 3/8" | 1.10 | 4.7 |
| YCT05M20 | 1 | 4.-2 ± .07 | 3.07 | 1/2" | 1.90 | 7.0 |
| YCT06M20 | 1-1/4 | 5.00 ± .07 | 3.62 | 1/2" | 3.20 | 12.1 |
| YCT07M20 | 1-1/2 | 5.75 ± .08 | 4.61 | 1/2" | 4.59 | 16.4 |
| YCT08M20 | 2 | 6.97 ± .08 | 4.69 | 1/2" | 7.39 | 23.1 |
| YCT09P045 | 2-1/2 | 9.21 ± .10 | 5.35 | 3/4" | 10.56 | 55.0 |
| YCT00P045 | 3 | 10.00 ± .10 | 5.91 | 3/4" | 13.29 | 78.4 |

## YCS & YCSW (612) SERIES — CARBON STEEL WYE STRAINER




Large volume area screen, reliable construction.

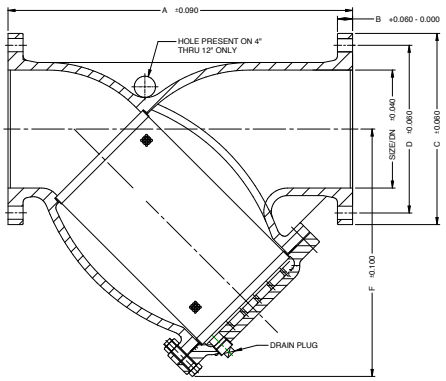
### FEATURES

- Body is ASTM A216 Carbon Steel Grade WCB
- 20 Mesh Screen Standard, Others Available
- Copper Gasket 1/2" to 1-1/2", 304 SS/Graphite on 2"
- Working pressure:
  600 psig @ 839°F Steam
  1480 psig @ 100°F Water, Oil, & Gas
- Screen Cover is NPT Tapped for Customer Supplied Plug or Blowoff Valve

| Series Number | | Size (in.) | Dimensions (in.) | | Blow-off NPT | Wt. (lbs.) | Net Screen Area (in.²) |
|---|---|---|---|---|---|---|---|
| Threaded NPT | Socket Weld | | A | B | | | |
| 612023A1 | 612123A1 | 1/2 | 3.38 | 2.75 | 3/8 | 2 | 5.4 |
| 612024A1 | 612124A1 | 3/4 | 4.44 | 3.63 | 3/8 | 3.75 | 8.7 |
| 612025A1 | 612125A1 | 1 | 4.88 | 3.75 | 1/2 | 4 | 12.7 |
| 612027A1 | 612127A1 | 1-1/2 | 6.38 | 5.13 | 3/4 | 8.75 | 25.3 |
| 612028A1 | 612128A1 | 2 | 7.50 | 6.00 | 1 | 12 | 39.2 |

## YCF SERIES — CLASS 125 CAST IRON WYE STRAINER

LEADFREE CERTIFIED




The **Apollo International™** YCF Strainers are designed to protect piping systems and process equipment from unwanted foreign particles with minimum pressure loss.

### FEATURES

- Iron Strainer with Flat Face Flanges Conforms to ASME/ANSI 16.1 Class 125
- One Piece Cast Body Meets ASME Standard
- Lead Free (NSF-372 ANSI)
- All Models Epoxy Coating (FDA CFR21, Section 175.300)
- Equipped with Bolted Cover Employing Flat Gasket Seal
- Upper and Lower Machined Seats for Screen for Self-Aligning Screen Design
- 304 SS Perforated Screens are Standard (P045 STD 2"-3", P125 STD 4"-12")
- Tapped Blow Off Connection with Plug
- 100% Factory Pressure Tested

### FEATURES

- Working Pressure (Non-Shock):
  CWP 200 PSIG @ 150°F

***not for steam service***

### UPPER PRESSURE LIMITS (NON-SHOCK)

| Size | Body Material | M.A.W.P. PSIG (Bars) | Ends |
|---|---|---|---|
| up to 12" size | A126-B - Cast Iron | 200 (13.79) | FF |

| Body Material | Lower Limit °F (°C) |
|---|---|
| A126-B, A395 | -20 (-28.9) |

### DIMENSIONS

| Part Number | Size/DN | | A | | B | | C | | D | | E | | F | | Drain Plug | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | IN | MM | LBS. | KG. |
| YCF02P045E | 2" | 50 | 8.86 | 255 | 0.63 | 16 | 5.98 | 152 | 4.75 | 121 | 0.75 | 19 | 6.30 | 160 | 1/2" | 4 | 23 | 11 |
| YCF25P045E | 2-1/2" | 65 | 10.75 | 273 | 0.69 | 18 | 7.01 | 178 | 5.50 | 140 | 0.75 | 19 | 7.64 | 194 | 1" | 4 | 34 | 15 |
| YCF03P045E | 3" | 80 | 11.50 | 292 | 0.75 | 19 | 7.48 | 190 | 6.00 | 153 | 0.75 | 19 | 8.86 | 225 | 1" | 4 | 47 | 21 |
| YCF04P125E | 4" | 100 | 13.86 | 352 | 0.94 | 24 | 8.98 | 228 | 7.50 | 191 | 0.75 | 19 | 10.63 | 270 | 1-1/4" | 8 | 72 | 33 |
| YCF05P125E | 5" | 125 | 16.38 | 416 | 0.94 | 24 | 10.00 | 254 | 8.50 | 216 | 0.88 | 22 | 12.60 | 320 | 1-1/4" | 8 | 111 | 50 |
| YCF06P125E | 6" | 150 | 18.50 | 470 | 1.00 | 25 | 10.98 | 279 | 9.50 | 242 | 0.88 | 22 | 14.69 | 373 | 1-1/2" | 8 | 150 | 68 |
| YCF08P125E | 8" | 200 | 21.38 | 543 | 1.12 | 29 | 13.46 | 342 | 11.75 | 299 | 0.88 | 22 | 17.72 | 450 | 1-1/2" | 8 | 235 | 107 |
| YCF10P125E | 10" | 250 | 25.98 | 660 | 1.18 | 30 | 15.98 | 406 | 14.25 | 362 | 1.00 | 25 | 20.67 | 525 | 2" | 12 | 369 | 168 |
| YCF12P125E | 12" | 300 | 30.00 | 762 | 1.25 | 32 | 19.02 | 483 | 17.00 | 432 | 1.00 | 25 | 23.94 | 608 | 2" | 12 | 552 | 250 |

### PART NUMBER MATRIX

| YCF | XXX | XXX[X] | X |
|---|---|---|---|
| | CONNECTION SIZE | SCREEN TYPE | COATING |
| YCF (Flat Face) | F02 = Flanged 2" | M20 = 20 Mesh | E = Standard Epoxy Coating, FDA Approved |
| | F25 = Flanged 2.5" | M40 = 40 Mesh | |
| | F03 = Flanged 3" | M80 = 80 Mesh | |
| | F04 = Flanged 4" | M100 = 100 Mesh | |
| | F05 = Flanged 5" | P045 = P045 | |
| | F06 = Flanged 6" | P125 = P125 | |
| | F08 = Flanged 8" | | |
| | F10 = Flanged 10" | | |
| | F12 = Flanged 12" | | |

*All mesh screens include liner:
.045 Perf 3" and smaller
.125 Perf 4" and larger

### STANDARD MATERIALS LIST

| | |
|---|---|
| BODY | Cast Iron, ASTM A126-B |
| CAP/COVER | Cast Iron, ASTM A126-B |
| PLUG | Carbon Steel, ASTM A307 |
| BOLT/STUD/NUT | Carbon Steel, ASTM A307 |
| SCREEN | 304 Stainless Steel |
| GASKET | Graphite |
| COATING | Epoxy, FDA Approved |

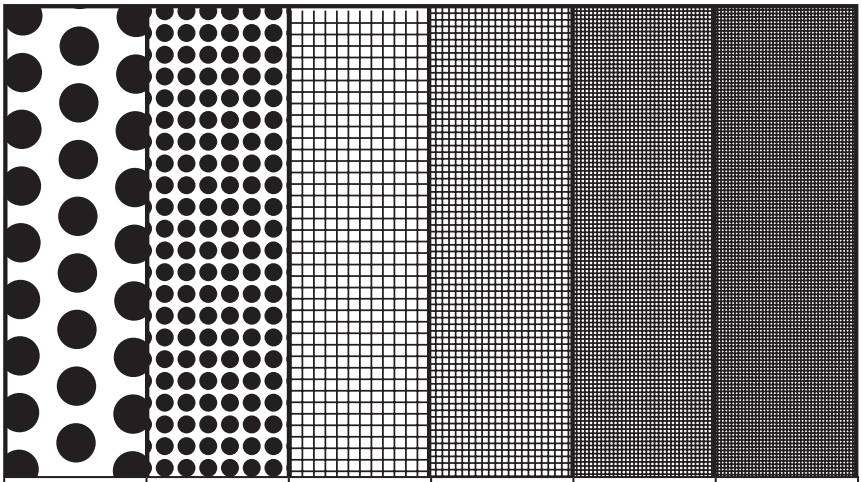
## ENGINEERING DATA SCREEN OPENINGS

### PURPOSE
If the basket strainer is being used for protection rather than direct filtration, Apollo's standard screens will suffice in most applications.

### SERVICE
With services that require extremely sturdy screens, such as high pressure/ temperature applications or services with high viscosities, Apollo® recommends that perforated screens without mesh liners be used. If mesh is required to obtain a certain level of filtration, then Apollo® recommends a trapped perf./mesh/perf. combination.

### FILTRATION LEVEL
When choosing a perf. or a mesh/perf. combination attention should be given to ensure overstraining does not occur. As a general rule the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified the pressure drop through the strainer will increase very rapidly, possibly causing damage to the basket.

### SCREEN TYPES & DIMENSIONS



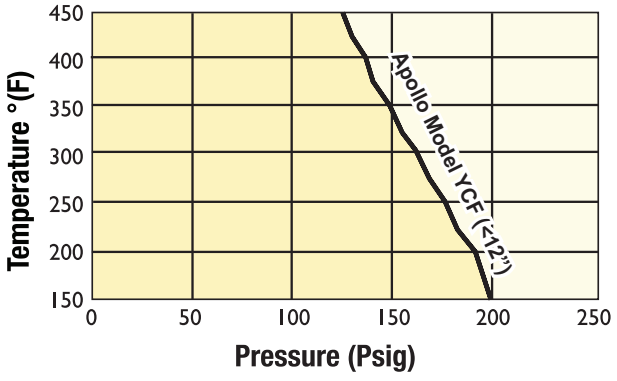

### STANDARD SCREENS

| Size Range | Opening |
|---|---|
| 2" - 3" | 0.045 in. |
| 50mm - 80mm | 1.2mm |
| 4" and larger | 0.125 in. |
| 100mm and larger | 3.2mm |

1. All screens not availale for all sizes
2. All mesh screens include liner:
   .045 Perf 3" and smaller
   .125 Perf 4" and larger

## ENGINEERING DATA EFFECTIVE SCREEN AREA

| SERIES YCF | | | | | |
|---|---|---|---|---|---|
| Pipe Size (In.) | Std. Opening (In.) | Nominal Area of Pipe Fitting (Sq. In.) | Gross Screen Area (Sq. In.) | Free Area (Sq. In.) | Ratio Free Area to Pipe Area |
| 2 | 0.045 | 3.14 | 30.07 | 10.82 | 3.45 |
| 2-1/2 | 0.045 | 4.91 | 44.33 | 15.96 | 3.25 |
| 3 | 0.045 | 7.07 | 56.45 | 20.32 | 2.88 |
| 4 | 0.125 | 12.57 | 98.91 | 39.56 | 3.15 |
| 5 | 0.125 | 19.63 | 147.11 | 58.85 | 3.00 |
| 6 | 0.125 | 28.27 | 179.19 | 71.68 | 2.54 |
| 8 | 0.125 | 50.27 | 334.38 | 133.75 | 2.66 |
| 10 | 0.125 | 78.54 | 505.21 | 202.08 | 2.57 |
| 12 | 0.125 | 113.10 | 665.77 | 266.31 | 2.35 |



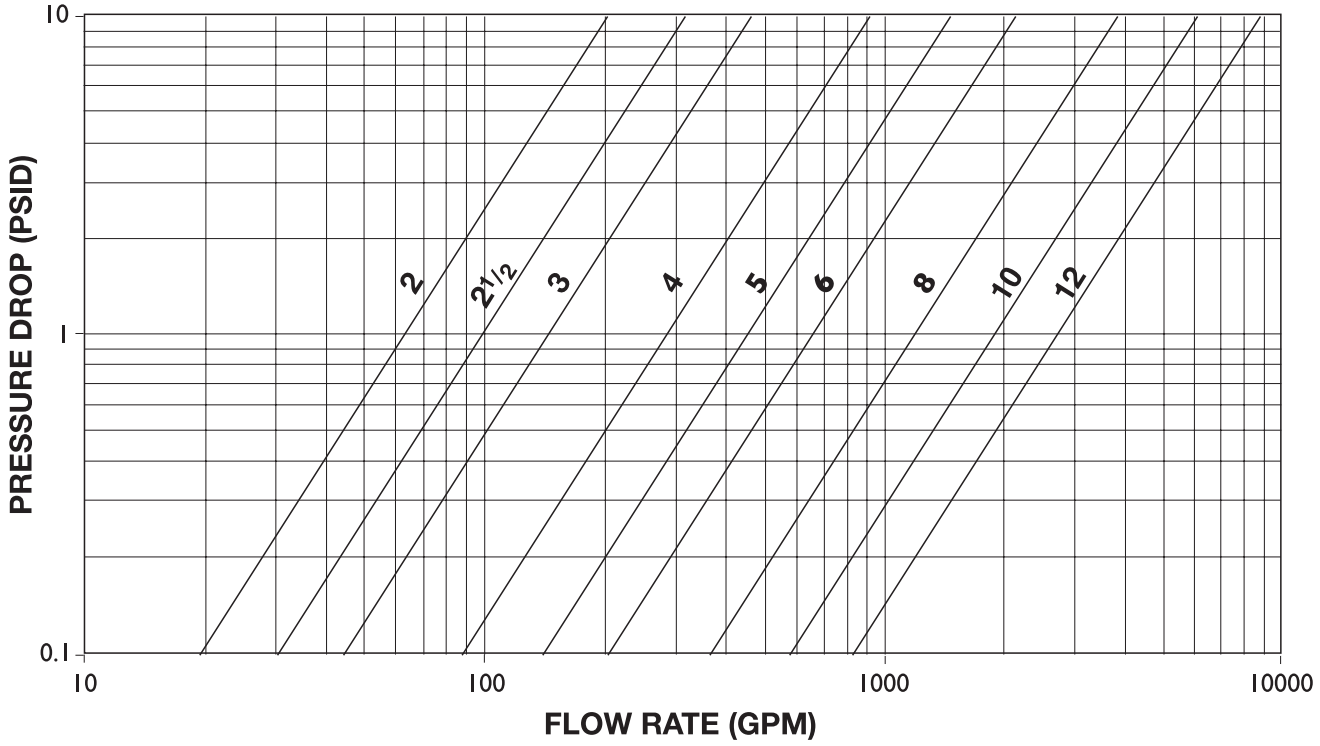
## ENGINEERING DATA PRESSURE DROP (LIQUIDS)

The following optional features are available for most Apollo® Y-Strainers. Please consult factory if required feature not shown.

| FEATURE | DESCRIPTION OF AVAILABILITY |
|---|---|
| Screen Openings | Range 150 micron to 1/4" perf. |
| Screen Materials | Stainless Steel (304) |
| Screen Construction | Perforated Plate/Mesh Wir. |
| Gaskets | Graphite |
| Standard coating | FDA Epoxy Coating |

*Strainer size may effect the ability to apply certain coatings and linings.

**Y-STRAINER PRESSURE DROP - (SIZES 2" - 12")** **FIGURE 1**




1. Pressure drop curves are based on water flow with standard screens.
2. See next page for correction factors to be used with other fluids and/or screen openings.

## ENGINEERING DATA — SCREEN CORRECTION FACTOR CHART

### CHART 1

| Screen Openings | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size Range | Perforated Plate % Screen Material Open Area | | | | | Mesh Lined Standard Screens % Screen Material Open Area | | |
| | 60% | 50% | 40% | 30% | 20% | 50% | 40% | 30% |
| 2" - 12" | 0.65 | 0.8 | 1 | 1.4 | 2.15 | 1.05 | 1.05 | 1.2 |

** Multiply values obtained from figure 1 thru 4 by the appropriate values shown below*

1. See perforated plate open areas chart
2. Standard screens for sizes 2" and larger is approximately a 40% open area screen media.
3. All mesh screens include liner:
   .045 Perf 3" and smaller
   .125 Perf 4" and larger

**EXAMPLE:**

| | |
|---|---|
| **Strainer Size:** | 2" |
| **Filtration:** | 100 mesh lined |
| **Flow Rate:** | 65 GPM |
| **Service:** | Water |

1. Using Figure 1 the pressure drop is determined to be 1.0 psid with Apollo's standard screen.
2. See perforated plate open areas chart to find that the % open area of 100 mesh is 30%.
3. Using Chart 1 we read the correction factor to be 1.2 for 100 mesh lined .045" perf
4. Total pressure drop equals 1.0 x 1.2 = 1.2 psid clean.

### VISCOSITY AND DENSITY CORRECTION FACTOR CHART

### CHART 2

| Size Range | Component Factor (CF) |
|---|---|
| 2" - 12" | 0.35 |

### CHART 3

| Viscosity CP | Body Loss Factor (BF) | Screen Loss Factor | | | |
|---|---|---|---|---|---|
| | | Perf Alone (PF) | 20 Mesh Lined (MF) | 40 Mesh Lined (MF) | 60 to 100 Mesh Lined (MF) |
| 10 | 1 | 1.15 | 1.3 | 1.4 | 1.5 |
| 25 | 1.2 | 1.25 | 2 | 2.2 | 2.5 |
| 100 | 1.6 | 1.4 | 3 | 4 | 6.5 |
| 200 | 2.2 | 1.5 | 4.5 | 7 | 11.5 |
| 500 | 4.4 | 1.6 | 10 | 15 | 25 |
| 1000 | 8 | 1.7 | 15 | 30 | 50 |
| 2000 | 15.2 | 1.9 | 30 | 60 | 100 |

### HOW TO USE

1. Using Figure 1, determine the pressure drop (P1) through the strainer with water flow and standard screens.
2. If non-standard screens (i.e. 40 mesh, etc.) are being used apply factors in
3. Use Chart 1 to determine corrected pressure drop (P2).
4. Multiply P1 or P2 (is used) by the specific gravity of the fluid actually flowing through the strainer to get P3.
5. Using Chart 2 multiply P3 by the appropriate Component Factor (CF) to get P4.
6. Let P5 = P3 - P4.
7. Multiply P4 by the appropriate Body Loss Factor (BF) in Chart 3 to get P6.
8. Multiply P5 by the appropriate Screen Loss factor (PF or MF) in Chart 3 to get P7.
9. Total pressure drop P8 = P6 + P7.

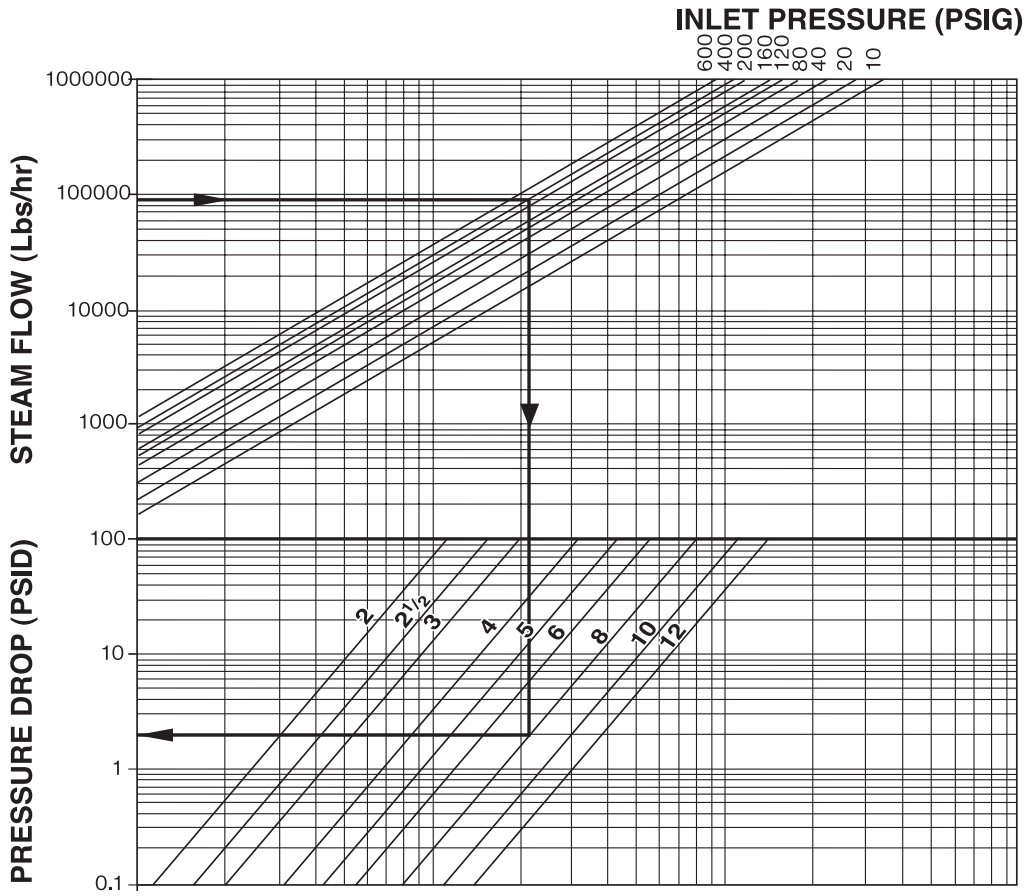
**EXAMPLE:**

| | |
|---|---|
| **Strainer Size:** | 2" |
| **Filtration:** | 100 mesh lined |
| **Specific Gravity:** | 1 |
| **Viscosity:** | 25 cP |

1. As shown in the above example, the corrected pressure drop (P2) = 1.2 psid
2. Since S.G. = 1, P3 = P2 = 1.2 psid
3. Using Chart 2, P4 = 0.35 x P3 = 0.42 psid
4. P5 = 1.2 - 0.4 = 0.8 psid
5. Using Chart 3, P6 = 0.4 x 1.2 = 0.48 psid
6. Again using Chart 3 P7 = 0.8 x 2.5 = 2.0 psid
7. Total pressure drop P8 = 0.48 + 2.0 = 2.48 psid

## ENGINEERING DATA — PRESSURE DROP (SATURATED STEAM)

**SIZES 2" - 12"**




1. Pressure drop curve is based on saturated steam flow with standard screens. See page 5 for correction factors to be used with other screen openings.
2. Chart can be used for air and gas by using the following formula:

$$Qs = 0.138\ Qg\ \sqrt{(460+t)\ s.g.}\ \left\{ \frac{DP}{P_2} < 1.0 \right\}$$

FOR NON-CRITICAL FLOW

**WHERE**

| | | |
|---|---|---|
| Qs | = | Equivalent Steam Flow, Lbs./Hr. |
| Qg | = | Air or gas flow, SCFM. |
| t | = | Temperature, °F. |
| s.g. | = | Specific gravity (s.g. = 1 for air.) |
| DP | = | Pressure Drop, psid |
| P2 | = | Outlet Pressure |

**EXAMPLE:**

| | |
|---|---|
| **Service:** | Saturated Steam |
| **Pressure:** | 400 psig |
| **Steam Flow:** | 90,000 Lbs./Hr. |
| **Size:** | 8" |

1. Locate steam flow.
2. Follow horizontal line to required pressure.
3. Follow vertical line downwards to required strainer size.
4. Follow horizontal line to read pressure drop
5. Pressure drop equals 2.0 psid.

## CHECKLIST AND SUGGESTED SPECIFICATIONS

### STRAINER CHECKLIST

When selecting a strainer, please take the factors listed below into account. This will assist us when recommending a strainer to suit your specific requirements.

1. Fluid to be Strained: _____
2. Flow Rate: _____
3. Density of Fluid: _____
4. Viscosity of Fluid: _____
5. Fluid Working Pressure: _____
6. Maximum Pressure: _____
7. Fluid Working Temp.: _____
8. Maximum Temp.: _____
9. Preferred Strainer Material: _____
10. Present Pipeline Size & Material: _____
11. Nature of Solids to be Strained Out: _____
12. Size of Solids to be Strained Out: _____
13. Size of Mesh or Perf. Req.: _____
14. Clearance Limitation: Above:_____Below:_____
15. Left Side Facing Inlet: _____
16. Right Side Facing Inlet: _____
17. Max Pressure Drop with Clean Screen:_____
18. Expected Cleaning Frequency: _____
19. Any Other Relevant Information:

_____

### SUGGESTED SPECIFICATIONS

The strainer shall be a Y-Type and have _____ (size) inlet/outlet connections. The end connections shall be flanged and the body shall be complete with a bolted cover assembly. The strainer shall be suitable for _____ PSIG operating pressure at _____°F operating temperature. The body shall be constructed of _____(body material) while the screen shall be constructed of _____ (screen material). A mesh lining of _____ (size of mesh) is required, allowing a maximum pressure drop of _____ psig. The strainer shall be equipped with a _____ (gasket material) gasket and the strainer screen shall be able to withstand _____ psig differential pressure without any deformation.

Strainers shall be Apollo® Model #_____ or approved equivalent.

Name _____
Company _____
Address _____
City _____
State _____ Zip Code_____
Telephone ( ____ ) _____
Fax ( ____ ) _____

## INSTALLATION & MAINTENANCE INSTRUCTIONS

### STRAINER INSTALLATION INSTRUCTIONS

1. Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.
2. For horizontal pipelines, the strainer should be installed so that the drain connection is pointed downwards.
3. For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise motion.
4. Once installed, increase line pressure gradually and check for leakage around joints.
5. If the strainer is supplied with a start-up screen, monitor pressure drop carefully.

NOTE: Flat face mating flanges and full face gaskets must be used with YCF series strainers to avoid damage to the cast iron body.

**IMPORTANT**

**Ultimate responsibility for strainer and material selection rests with the customer, as only the customer knows the particular use to which the strainer will be put and the exact operating parameters to which it will be subjected.**

### STRAINER REMOVAL INSTRUCTIONS

1. Drain piping.
2. Vent line to relieve pressure.
3. Secure necessary lifting equipment to strainer assembly.
4. Loosen flange bolts (Pipe flanges only).
5. Remove inlet/outlet flange bolts and carefully remove strainer.

**CAUTION SHOULD BE TAKEN DUE TO POSSIBLE EMISSION OF PROCESS MATERIAL FROM PIPING. ALWAYS ENSURE NO LINE PRESSURE EXISTS WHEN OPENING COVER.**

### MAINTENANCE INSTRUCTIONS

For maximum efficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down line and follow the "Screen Replacement Instructions". A pressure gauge installed before and after the strainer in-line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

### SCREEN REPLACEMENT

It is recommend that the system and strainer be depressurized before attempting any repair work. After removing all pressure, the system should be drained, any connections to the blow-off plug should be removed, and the following procedure should be used to replace the screen.

1. Attach cable or chain to strainer cover (1) and apply sufficient tension to prevent cover from dropping.
2. Remove bolts from cover.
3. Remove cover, clean and inspect gasket surface of cover.
4. Remove and discard old gasket.
5. Remove and clean or discard old screen.
6. Clean and inspect gasket surface of body. If gasket surface of cover or body is damaged, the damaged component must be replaced.
7. Push clean screen into position in body.
8. Position new gasket in place on body.
9. Line up screen and put cover in place on body.
10. Be sure gasket, bolt holes, and screen are properly aligned.
11. Put in bolts and nuts as required
12. Tighten bolts, using "star" pattern to prevent damaging parts. Alternate tightening 180° apart. Tighten bolts sufficiently to stop leakage under test and service conditions.

# LIQUID LEVEL **GAUGES**

## GLOSSARY

**AUTOMATIC / ASME AUTOMATIC / NON-AUTOMATIC WATER GAUGES:**
An automatic water gauge is one that is equipped with ball checks in the valve body. In the event of glass breakage, these ball checks move horizontally, automatically seat to close the valves, shut off the flow of fluid, and help reduce the risk of property damage and/or personal injury from released fluid. An ASME automatic water gauge has a ball check in the bottom valve body that rises vertically to seat, and has a ball check in the top valve body that moves horizontally to seat.

**BALL VALVE:**
A bronze or stainless steel on-off valve utilizing a cored chrome-plated brass or stainless steel ball and Teflon seals. Easier to use than plug drains, pet cocks, or needle drains.

**CENTER TO CENTER:**
The distance between the centers of the two N.P.T. tapped holes in the vessel where the water gauge is to be attached.

**CHAIN LEVER:**
A lever handle activated by pulling a chain. Use for high, hard to reach installations.

**EPDM:**
Ethylene propylene rubber gauge glass packing, for temperatures -20°F to 350°F. Recommended for water, steam, silicone oils, ketones (MEK, acetone, etc...), alcohol, and brake fluid. Unsuitable for petroleum oils.

**FRICTION WASHER:**
The thin metal washer used to separate a packing from a metal surface to reduce friction. This in turn reduces the risk of inducing damaging torsional stress in the packing or gauge glass (torsional stress may reduce the useful life of the packing and gauge glass.)

**GAUGE GLASS:**
The transparent part of a water gauge assembly connected directly to a boiler, below and above the waterline, to indicate the level of water in the boiler.

**GLASS PACKING:**
The larger soft rubber-like or plastic ring, when compressed, provides a seal between the gauge glass and the valve body.

**GLASS PACKING NUT:**
The metal nut that the tubular gauge glass passes through. Tighten this nut to effect a seal between the glass packing and the gauge glass.

**GRAPHITE:**
Gaskets formed using graphite yarn. Suitable for temperatures up to 1200°F. Use when necessary for extended service at elevated temperatures.

**GUARD RODS:**
Guard rods are metal rods, mounted to the valve bodies or guard rod flange, that rise vertically to help protect the gauge glass from accidental breakage.

**HANDWHEEL:**
The aluminum or plastic (composition) handle. Also see chain lever.

**HYPALON®:**
TFE (an endless Tetrofluorethylene Aramid) gauge glass packing ring w/Hypalon as a binder, suitable for temperatures from -20°F to 450°F. More difficult to seal than softer EPDM or VitonTM Rubbers. Use only when needed for superior acid resistance.

**NEEDLE DRAIN:**
A two piece drain (requires a wrench) that allows fluid to flow through an axial outlet.

**PACKING GLAND:**
The shouldered metal ring used in some models to supply extra compression to the gauge glass packing.

**PET COCK:**
A brass or bronze tapered plug, metal seated on-off valve.

**PLUG DRAIN:**
A tapped opening (together with a threaded plug and drain seal) in the bottom of the lower valve body, to allow fluid to drain from the water gauge. This type drain requires a wrench for installation/removal. This type drain is not recommended for hazardous fluids (the fluid may come into contact with the operator).

**SEAT WASHER:**
The small white TeflonTM plastic ring sometimes used to seal the metal valve seat.

**STEM PACKING:**
The smaller soft rubber-like or plastic ring, when compressed, provides a seal between the valve stem and the valve body.

**STEM PACKING NUT:**
The metal nut that the valve stem passes through. Tighten this nut to effect a seal between the stem packing and the stem.

**STEM PACKING WASHER:**
The thin metal washer on the stem that serves as a friction washer and protects against extrusion of the packing.

**TEFLON®:**
Virgin PTFE fluoropolymer gauge glass packing or seat washer, for temperatures up to 450°F. More difficult to seal than HypalonTM. Use only when needed for more chemical resistance than VitonTM at elevated temperatures. Not recommended for hot fluorine, oxygen difluoride, or chlorine triflouride.

**TUBULAR GAUGE GLASS PROTECTOR:**
A metal or impact-resistant plastic tube that fits over the gauge glass, to protect the glass from accidental breakage, and to help minimize the risk of personal injury and/or property damage. The use of a glass protector, where available, is recommended for all water gauge applications.

**VITON®:**
Fluorocarbon rubber (FKM) gauge glass packing, for temperatures -15°F to 400°F (up to 600°F for short periods.) Use for superior resistance at elevated temperatures. Recommended for petroleum oils, silicone oils, halogenated hydrocarbons (carbon tetrachloride, trichloroethylene), acids. Unsuitable for ketones (MEK, acetone), amines, anhydrous ammonia, hot hydrofluoric or chlorosulfonic acid.
* Not recommended for use with steam.

**WATER GAUGE:**
The gauge glass and its fittings for attachment.

## WHAT IS A WATER GAUGE?

A water gauge is a device that allows the liquid level in a vessel to be visually inspected. Water gauges are required by the ASME Boiler and Pressure Code on steam boilers, and are also useful in many other applications, such as monitoring the amount of oil in an oil tank.

### THINGS TO REMEMBER

Care must be given to ensure the proper selection of a water gauge. Special attention must be given to temperature/pressure requirements and to the service media (i.e. water, steam, oils, chemical agents, etc.). Some items to keep in mind:

- PRESSURE RATINGS may be influenced by limitations of the valve body, gauge glass, and gauge glass gasket. As temperatures increase, pressure ratings decrease. The larger the glass diameter and the longer the glass length, the lower the pressure rating. Refer to the GAUGE GLASS PRESSURE AND TEMPERATURE TABLE for detailed information.

- TEMPERATURE RATINGS may also be influenced by limitations of the valve body, gauge glass, & gauge glass gasket.

- Use GUARD RODS and TUBULAR GAUGE GLASS PROTECTORS to help protect glass from accidental breakage. Some applications require glass protectors

- Use REDLINE gauge glass where pressures permit to allow for easy reading of the gauge. Use large diameter (3/4") glass for increased visibility.

- Use AUTOMATIC BALL CHECKS to help minimize the risk of property damage or personal injury in the event of gauge glass breakage. Vertically rising automatic ball checks conforming to ASME requirements are available.

- Boilers operating above 400 psig require two water gauges.

- All water gauges on all steam boilers must be 1/2" NPT or larger.

### A SPECIAL NOTE ABOUT CORROSION

Most problems with water gauge performance are associated with corrosion. Excessive corrosion may result in leakage, glass breakage, and premature valve failure. There are several things to watch for:

- Be sure all components (valve body, seals and packings, etc.) of the water gauge are constructed with materials compatible with the service medium. Non-standard packings for special applications may be ordered in our WATER GAUGE REPAIR KITS. See the "Compass Corrosion Guide" or equivalent for additional information.

- Elevated temperatures and pressures accelerate corrosion. You may need a stainless steel water gauge instead of bronze, or high pressure glass instead of standard, to achieve an acceptable service life.

- Operation and maintenance - check gauges daily for leaks, corrosion, and gauge glass clarity. Water gauges should be well illuminated and kept clean. Leaks may result in false waterline readings, may damage the gauge, and accelerate corrosion. The appearance of rust in the gauge glass is an indication of improper water treatment. See the CONBRACO WATER GAUGE INSTALLATION INSTRUCTIONS (I-5387-00) or the appropriate sections of the ASME Boiler and Pressure Vessel Code for additional information.

- Gauge Glass Corrosion - Gauge glass is attacked and dissolved in service by the fluid media, resulting in thinning of the wall and premature failure or replacement. Two factors determine the rate of attack: alkalinity and temperature. High alkalinity (high pH values) increases the rate of attack (a pH of 11.5 attacks glass at a rate of 30 times greater than a pH of 8.5). High temperatures increase the rate of attack (500°F water attacks glass 100 times faster than 265°F water). There is nothing that may be done to reduce the effects of temperature, but the effects of pH may be reduced by maintaining proper pH balance in the boiler water with chemical agents. Glass corrosion may also be decreased by avoiding exposure to water spray and drafts.

## HOW TO SELECT A WATER GAUGE

### 1. SELECT A VALVE SERIES BASED UPON THE APPLICATION:

- Use 20-410 series for 90° handles or when working in close quarters.
- Use 20-600, 24-600, or 25-600 series (chain levers) where the water gauge is located beyond reach from the floor.
- Use 20-604/605 (bronze) or 23-650 (stainless steel) series expansion tank gauges when a shut-off is not required in the top valve (NEVER USE AN EXPANSION TANK GAUGE ON A BOILER!).
- Use 20-800 (bronze) or 23-450 (stainless steel) series expansion tank gauges to mount a pressure gauge or other instrument directly to the water gauge.
- Use 20-700 series expansion tank gauge for easier gauge glass replacement.
- Use 23-450 series stainless steel for superior corrosion resistance.
- Use polished gauges for a more elegant appearance.
- Use heavy pattern water gauges (such as 20-200/250, 24-300/350) for higher pressures. Be sure to verify gauge glass will withstand pressure by consulting the "Gauge Glass Service Rating Table".
- Use longer shank on NPT end when extra shank length is needed to penetrate an outer jacket or insulation (available on 21 series). Otherwise use a standard water gauge.

### 2. SELECT NON-AUTOMATIC, AUTOMATIC, OR ASME AUTOMATIC:

- Use automatic (horizontally seating) or ASME automatic (vertically rising to seat in lower valve body) ball checks where available to minimize the risk of personal injury and/or property damage in the event of gauge glass breakage. The sudden rush of steam and water seats the balls, thereby shutting off the escape of steam and water. There will however be slight leakage as required by certain codes.

### 3. SELECT A HANDWHEEL STYLE:

- Use aluminum handwheels for durability.
- Use plastic (composition) handwheels for reduced heat transfer.
- Use chain levers (not available on all models) when the water gauge is located beyond reach from the floor.

### 4. SELECT A GAUGE GLASS SIZE (DIAMETER):

- Use larger (3/4") diameter gauge glass where available for increased visibility.

### 5. SELECT A GAUGE GLASS TYPE (BASED ON PRESSURE REQUIREMENTS):

- Use redline glass for increased fluid level visibility.
- Use high pressure glass for high pressure applications.
- For economy use standard glass for low pressure applications.
- Replace the two digit suffix in the part number of the water gauge with -10 when selecting Redline or high pressure gauge glass (23 and 24 series have high pressure glass as standard).

*Please call Customer Service when non-standard (-10) devices are required.

### 6. SELECT GAUGE GLASS LENGTH:

- Select a default gauge glass length when possible (pages 8-9).
- Select a non-standard gauge glass length as needed, and replace the two digit suffix in the part number of the water gauge with -10. The longer the gauge glass, the lower the allowable pressure and temperature. Be sure to consult the "Gauge Glass Service Rating Table" for pressure and temperature limits. When selecting non-standard gauge glass lengths, the gauge glass length is determined by subtracting the GL code from the desired "L" length for the valve series number according to the tables on pages 8 and 9.
- For gauge glass longer than 72" it is necessary to use two or more water gauges of shorter length in an overlapped staggered tandem (i.e. for 100" of needed coverage, use two gauges of about 55" and install them parallel and staggered so as to overlap their individual coverage of 55" to get 100" total coverage).

* Please call Customer Service when non-standard (-10) devices are required.

### 7. SELECT TUBULAR GAUGE GLASS PROTECTOR:

- For 5/8" diameter gauge glass, use I-2733-05
- For 3/4" diameter gauge glass, use I-2734-05
- Maximum protector length is 50"
- Protector not available on 23-300, 23-650, and 24-600 series.
- Available in brass only

### 8. SELECT DRAIN TYPE:

- Plug drain is standard on 23-600 series. Ball valve drain is standard on 23-400/450 and 24-300/350 series. Needle drain is standard on all others. Ball valve drain or pet cock drain available on most models upon request.

### 9. SELECT A GAUGE GLASS PACKING MATERIAL:

- Use EPDM for most general applications, including steam service, for temperatures -20°F to 350°F. Recommended for water, steam, silicone oils, ketones (MEK, acetone, etc...), alcohol, and brake fluid. Unsuitable for petroleum oils. Comes standard on most models. EPDM is most economical.
- Use Viton® for superior resistance at elevated temperatures -15°F to 400°F (up to 600°F for short periods.) Recommended for petroleum oils, silicone oils, halogenated hydrocarbons (carbon tetrachloride, trichloroethylene), acids. Unsuitable for ketones (MEK, acetone), amines, anhydrous ammonia, hot hydrofluoric or chlorosulfonic acid. Viton® is about ten times more expensive than EPDM. * Not recommended for use with steam.
- Use Hypalon® for superior acid resistance at temperatures -20°F to 450°F. Has a shorter service life than EPDM and Viton® in standard, non-acid applications. More difficult to seal than softer EPDM or Viton®. Comes standard on 23 and 24 series. Hypalon® is equivalent to EPDM in cost.
- Use Teflon® for best chemical resistance, for temperatures up to 450°F. More difficult to seal than Hypalon®, Viton®, or EPDM. Use only when needed for more chemical resistance than Viton® at elevated temperatures. Not recommended for hot fluorine, oxygen difluride, or chlorine triflouride. Teflon® is about three times as expensive as EPDM.
- Use Graphite for superior service at elevated temperatures. More difficult to seal than EPDM or Viton® but has more universal application. Graphite is about ten times more expensive than EPDM.Remember, chemical resistance decreases as temperature increases. Consult "Compass Corrosion Guide" or equivalent.
- To order non-standard gauge glass packing, order the water gauge normally, then also order a "Water Gauge Repair Kit" ("Standard All" for EPDM, Hypalon® and Teflon®; "Viton® Gaskets Only" for Viton®, and "Graphite Gaskets Only" for graphite). Remove the pre-installed packing, and install the desired packing material

## WATER GAUGE DO'S AND DON'TS

### DO NOTS

- DO NOT use glass if it contains any scratches, chips, or any other visible signs of damage.
- DO NOT reuse any tubular glass or glass packings.
- DO NOT subject gauge glass to bending or torsional stresses.
- DO NOT over tighten glass packing nuts.
- DO NOT allow glass to touch any metal parts.
- DO NOT exceed the recommended pressure of the gauge or gauge glass.
- DO NOT clean the gauge or gauge glass while pressurized or in operation.

### DO'S

- DO verify proper gauge has been supplied.
- DO examine gauge glass and packings carefully for damage before installation.
- DO install protective guards and utilize automatic ball checks where necessary to help prevent injury in case of glass breakage.
- DO inspect the gauge glass daily, keep maintenance records, and conduct routine replacements.
- DO protect glass from sudden changes in temperatures such as drafts, water spray, etc.

### MAINTENANCE

- Examine the gauge glass regularly for any signs of clouding, scratching, erosion, or corrosion. The glass should be inspected daily until the need for replacement becomes apparent. This will help establish the routine inspection and routine replacement schedules.

### CLEANING

- Use commercial non-abrasive glass cleaners to keep glass clean. Use diluted acids such as Hydrochloric (muriatic) acid when regular cleaners do not seem to work. Do not use wire brushes or any other abrasive materials which could scratch the glass.

### INSPECTION

- Examine the surface of the glass for scratches, corrosion, chips, cracks, surface flaws, or nicks. To do this, aim a very bright concentrated light at an angle of about 45 degrees. A
  defective glass will glisten as the light strikes imperfections. Glass which appears cloudy or roughened, and will not respond to cleaning, should be replaced.

### STORING

- Keep gauge glass in original packaging until ready to install.

## INSTALLATION

Only properly trained personnel should install and maintain water gauge glass and connections. Remember to wear safety gloves and glasses during installation. Before installing, make sure all parts are free of chips and debris.

1. Apply Teflon® tape or pipe dope to pipe threads. Install top gauge fitting (fitting without a drain valve) into the upper most tapping. Wrench tighten the fitting until it is snug and the glass outlet is pointing at five o'clock (about 1/8 turn from its final, downward vertical, position).

2. Install the bottom gauge fitting (the fitting with a drain valve) until it is snug and the glass outlet is pointing directly upward. Verify top and bottom fittings are threaded into the tappings the same number of turns (distance A= distance B).

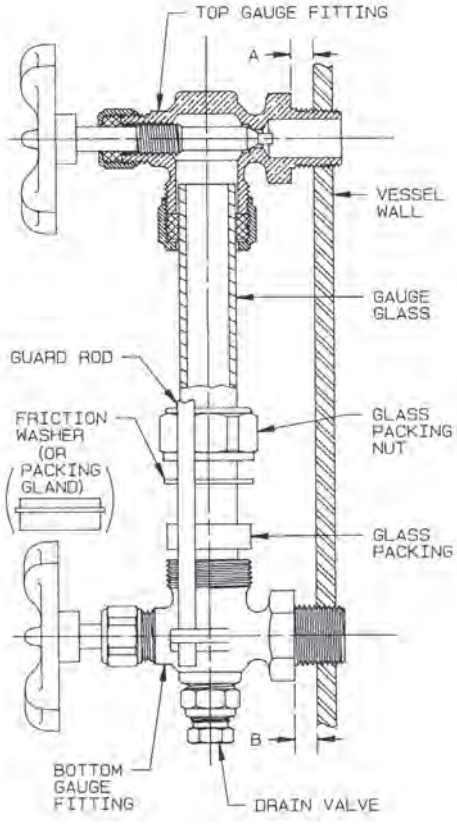
3. Remove glass packing nut, friction washer (or packing gland and retaining ring, depending upon the model), and glass packing from the fittings, and place them, in the same order, on to both ends of the gauge glass. Push both packings about an inch up the gauge glass.

4. Gently insert one end of the glass into the top gauge fitting. Keeping the glass inside the top fitting, gently rotate the top gauge fitting clockwise, using wrench on valve wrench flats, until vertically aligned with the bottom gauge fitting, then insert glass into bottom fitting until glass bottoms out on the shoulder inside the bottom fitting.

5. Carefully raise glass about 1/16" and slide lower glass packing down until the glass packing contacts the lower gauge fitting. DO NOT allow the glass to remain in contact with any metal!

6. Carefully slide upper glass packing up as far as possible.

7. Hand tighten both glass packing nuts, then tighten 1/2 turn more by wrench. Tighten only enough to prevent leakage. DO NOT OVER TIGHTEN! If any leakage should occur, tighten slightly, a quarter turn at a time, checking for leakage after each turn.



# LIQUID LEVEL **GAUGES**

## 20-100 SERIES
## STANDARD PATTERN

LEADFREE OPTIONS

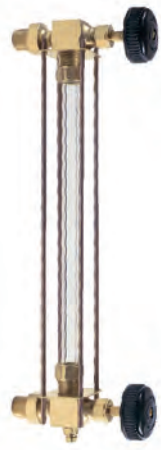
## 20-140 SERIES
## PATTERN AUTOMATIC

## 20-200 SERIES
## HEAVY PATTERN

## 20-250 SERIES
## PATTERN AUTOMATIC

## 20-300 SERIES

## 20-350 SERIES
## AUTOMATIC



## 20-410 SERIES
## LEFT HAND ONLY

## 20-601 & 602 SERIES

## 20-604 & 605 SERIES

## 20-700 SERIES

## 20-800 SERIES

## 23-450 SERIES ASME AUTOMATIC

## 23-600 SERIES

## 24-300 SERIES

## 24-600 SERIES

## 25-200 SERIES HEAVY PATTERN

## 25-400 SERIES

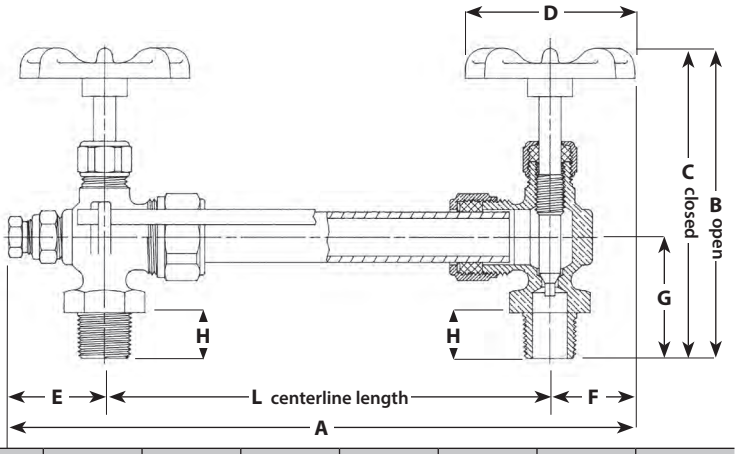
## 25-500 SERIES AUTOMATIC

## 25-600 SERIES

## DIMENSIONS

A = Overall length is found by adding this to dimension "L"
B = Valve open total depth
C = Valve closed total depth
D = Handle diameter
E = Maximum extension below lower arm centerline
F = Maximum extension above upper arm centerline
G = End of arm NPT to centerline of glass
H = End of arm NPT to hex shoulder
L = Centerline Length

Glass Length is "L" minus GL code
Rod Length is glass length plus RL code




| Valve | Pipe Size | A | B | C | D | E | F | G | H | Default L | Default Glass Length | GL Code | RL Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20-101 | 3/8 | 2.3 | 4.1 | 3.8 | 2.1 | 1.25 | 1.07 | 1.50 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-102 | 3/8 | 2.3 | 4.3 | 4.1 | 2.0 | 1.25 | 1.00 | 1.50 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-104 | 1/2 | 2.3 | 4.2 | 3.9 | 2.1 | 1.25 | 1.07 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20LF-104 | 1/2 | 2.3 | 4.2 | 3.9 | 2.1 | 1.25 | 1.07 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-105 | 1/2 | 2.3 | 4.4 | 4.2 | 2.0 | 1.25 | 1.00 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20LF-105 | 1/2 | 2.3 | 4.4 | 4.2 | 2.0 | 1.25 | 1.00 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-150* | 1/2 | 2.3 | 4.2 | 3.9 | 2.1 | 1.25 | 1.07 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-151* | 1/2 | 2.3 | 4.4 | 4.2 | 2.0 | 1.25 | 1.00 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-201 | 3/8 | 2.4 | 4.4 | 4.2 | 2.1 | 1.38 | 1.07 | 1.69 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-202 | 3/8 | 2.4 | 4.4 | 4.1 | 2.0 | 1.38 | 1.00 | 1.69 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-204 | 1/2 | 2.4 | 4.6 | 4.3 | 2.1 | 1.38 | 1.07 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-205 | 1/2 | 2.4 | 4.5 | 4.3 | 2.0 | 1.38 | 1.00 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-207 | 3/4 | 2.4 | 4.9 | 4.6 | 2.1 | 1.38 | 1.07 | 2.05 | 0.75 | 17.50 | 16 | 1.50 | 2.25 |
| 20-208 | 3/4 | 2.4 | 5.1 | 4.8 | 2.0 | 1.38 | 1.00 | 2.05 | 0.75 | 17.5 | 16 | 1.50 | 2.25 |
| 20-250 | 1/2 | 2.4 | 4.6 | 4.3 | 2.1 | 1.38 | 1.07 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-251* | 1/2 | 2.4 | 4.5 | 4.3 | 2.0 | 1.38 | 1.00 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-253* | 3/4 | 2.4 | 4.9 | 4.6 | 2.1 | 1.38 | 1.07 | 2.05 | 0.75 | 17.50 | 16 | 1.50 | 2.25 |
| 20-254* | 3/4 | 2.4 | 5.1 | 4.8 | 2.0 | 1.38 | 1.00 | 2.05 | 0.75 | 17.50 | 16 | 1.50 | 2.25 |
| 20-304 | 1/2 | 2.3 | 5.3 | 5.1 | 2.1 | 1.25 | 1.07 | 2.20 | 0.69 | 14 | 12 | 2.00 | 1.25 |
| 20-305 | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.20 | 0.69 | 14 | 12 | 2.00 | 1.25 |
| 20-307 | 3/4 | 2.3 | 5.0 | 5.4 | 2.1 | 1.25 | 1.07 | 2.06 | 0.69 | 18 | 16 | 2.00 | 1.25 |
| 20-308 | 3/4 | 2.3 | 5.4 | 5.0 | 2.0 | 1.25 | 1.00 | 2.06 | 0.69 | 18 | 16 | 2.00 | 1.25 |
| 20-350* | 1/2 | 2.3 | 5.3 | 5.1 | 2.1 | 1.25 | 1.07 | 2.20 | 0.69 | 14 | 12 | 2.00 | 1.25 |
| 20-351* | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.20 | 0.69 | 14 | 12 | 2.00 | 1.25 |
| 20-353* | 3/4 | 2.3 | 5.0 | 5.4 | 2.1 | 1.25 | 1.07 | 2.06 | 0.69 | 18 | 16 | 2.00 | 1.25 |
| 20-354* | 3/4 | 2.3 | 5.4 | 5.0 | 2.0 | 1.25 | 1.00 | 2.06 | 0.69 | 18 | 16 | 2.00 | 1.25 |
| 20-410 | 1/2 | 2.3 | 2.1 | 1.9 | 1.8 | 1.42 | 0.86 | 2.09 | 1.25 | 13.25 | 12 | 1.25 | NA |
| 20-601 | 1/2 | 4.2 | 5.3 | 4.8 | 5.9 | 1.25 | 2.94 | 2.09 | 0.69 | 14 | 12 | 2.00 | 1.25 |
| 20-602 | 3/4 | 4.2 | 5.3 | 4.8 | 5.9 | 1.25 | 2.94 | 2.09 | 0.69 | 18 | 16 | 2.00 | 1.25 |
| 20-604* | 1/2 | 2.1 | 4.6 | 4.3 | 2.1 | 1.38 | 0.69 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-605* | 1/2 | 2.1 | 4.5 | 4.3 | 2.0 | 1.38 | 0.69 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-703 | 3/8 | 1.8 | NA | NA | NA | 1.25 | 0.53 | 1.50 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-704 | 1/2 | 1.8 | NA | NA | NA | 1.25 | 0.53 | 1.63 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-713 | 3/8 | 2.6 | NA | NA | NA | 1.25 | 1.36 | 1.5 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 20-714 | 1/2 | 2.6 | NA | NA | NA | 1.25 | 1.36 | 1.63 | 0.69 | 0.69 | 12 | 1.25 | 2 |
| 20-804* | 1/2 | 2.1 | 4.6 | 4.3 | 2.1 | 1.38 | 0.75 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 20-805* | 1/2 | 2.1 | 4.5 | 4.3 | 2.0 | 1.38 | 0.75 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |

NSF/ANSI 372 Lead Free

| Valve | Pipe Size | A | B | C | D | E | F | G | H | Default L | Default Glass Length | GL Code | RL Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21-104 | 1/2 | 2.3 | 5.3 | 5.1 | 2.1 | 1.25 | 1.07 | 2.69 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-105 | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.69 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-150* | 1/2 | 2.3 | 5.0 | 4.8 | 2.1 | 1.25 | 1.07 | 2.69 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-151* | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.69 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-204 | 1/2 | 2.4 | 5.6 | 5.4 | 2.1 | 1.38 | 1.07 | 2.88 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-205 | 1/2 | 2.4 | 5.6 | 5.3 | 2.0 | 1.38 | 1.00 | 2.88 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-250* | 1/2 | 2.4 | 5.6 | 5.4 | 2.1 | 1.38 | 1.07 | 2.88 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 21-251* | 1/2 | 2.4 | 5.6 | 5.4 | 2.0 | 1.38 | 1.00 | 2.88 | 1.75 | 13.25 | 12 | 1.25 | 2 |
| 23-401 | 1/2 | 4.1 | 5.6 | 5.6 | 2.1 | 3 | 1.07 | 2.13 | 0.69 | 14 | 12 | 2 | 3.25 |
| 23-402 | 1/2 | 4.0 | 5.6 | 5.6 | 2.0 | 3 | 1.00 | 2.13 | 0.69 | 14 | 12 | 2 | 3.25 |
| 23-404 | 3/4 | 4.1 | 5.6 | 5.1 | 2.1 | 3 | 1.07 | 2.09 | 0.75 | 18 | 16 | 2 | 3.25 |
| 23-405 | 3/4 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.09 | 0.75 | 18 | 16 | 2 | 3.25 |
| 23-450** | 1/2 | 4.1 | 5.6 | 5.1 | 2.1 | 3 | 1.07 | 2.13 | 0.69 | 14 | 12 | 2 | 3.25 |
| 23-451** | 1/2 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.13 | 0.69 | 14 | 12 | 2 | 3.25 |
| 23-453** | 3/4 | 4.1 | 5.6 | 5.1 | 2.1 | 3 | 1.07 | 2.09 | 0.75 | 18 | 16 | 2 | 3.25 |
| 23-454** | 3/4 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.09 | 0.75 | 18 | 16 | 2 | 3.25 |
| 23-651 | 1/2 | 1.8 | 4.6 | 4.4 | 2.1 | 1.065 | 0.69 | 2.50 | 0.69 | 14 | 12 | 2 | 1.25 |
| 23-654 | 3/4 | 1.8 | 4.6 | 4.4 | 2.1 | 1.065 | 0.69 | 2.50 | 0.75 | 14 | 12 | 2 | 1.25 |
| 24-301 | 1/2 | 4.1 | 5.8 | 5.3 | 2.1 | 3 | 1.07 | 2.09 | 0.69 | 14 | 12 | 2 | 1.25 |
| 24-302 | 1/2 | 4.0 | 5.8 | 5.3 | 2.0 | 3 | 1.00 | 2.09 | 0.69 | 14 | 12 | 2 | 1.25 |
| 24-304 | 3/4 | 4.1 | 5.8 | 5.3 | 2.1 | 3 | 1.07 | 2.09 | 0.69 | 18 | 16 | 2 | 1.25 |
| 24-305 | 3/4 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.09 | 0.69 | 18 | 16 | 2 | 1.25 |
| 24-350** | 1/2 | 4.1 | 5.8 | 5.3 | 2.1 | 3 | 1.07 | 2.09 | 0.69 | 14 | 12 | 2 | 1.25 |
| 24-351** | 1/2 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.09 | 0.69 | 14 | 12 | 2 | 1.25 |
| 24-353** | 3/4 | 4.1 | 5.8 | 5.3 | 2.1 | 3 | 1.07 | 2.09 | 0.69 | 18 | 16 | 2 | 1.25 |
| 24-354** | 3/4 | 4.0 | 5.6 | 5.1 | 2.0 | 3 | 1.00 | 2.09 | 0.69 | 18 | 16 | 2 | 1.25 |
| 24-601 | 1/2 | 5.9 | 5.3 | 4.8 | 5.8 | 3 | 2.88 | 2.09 | 0.69 | 14 | 12 | 2 | 0.875 |
| 24-602 | 3/4 | 5.9 | 5.3 | 4.8 | 5.8 | 3 | 2.88 | 2.09 | 0.69 | 18 | 16 | 2 | 0.875 |
| 24-651** | 1/2 | 5.9 | 5.3 | 4.8 | 5.8 | 3 | 2.88 | 2.09 | 0.69 | 14 | 12 | 2 | 0.875 |
| 24-652** | 3/4 | 5.9 | 5.3 | 4.8 | 5.8 | 3 | 2.88 | 2.09 | 0.69 | 18 | 16 | 2 | 0.875 |
| 25-201 | 3/8 | 2.4 | 4.4 | 4.2 | 2.1 | 1.38 | 1.07 | 1.69 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 25-202 | 3/8 | 2.4 | 4.4 | 4.1 | 2.0 | 1.38 | 1.00 | 1.69 | 0.56 | 11.25 | 10 | 1.25 | 2 |
| 25-204 | 1/2 | 2.4 | 4.6 | 4.3 | 2.1 | 1.38 | 1.07 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 25-205 | 1/2 | 2.4 | 4.5 | 4.3 | 2.0 | 1.38 | 1.00 | 1.81 | 0.69 | 13.25 | 12 | 1.25 | 2 |
| 25-207 | 3/4 | 2.4 | 4.9 | 4.6 | 2.1 | 1.38 | 1.07 | 2.05 | 0.75 | 17.25 | 16 | 1.25 | 2 |
| 25-208 | 3/4 | 2.4 | 5.1 | 4.8 | 2.0 | 1.38 | 1.00 | 2.05 | 0.75 | 17.25 | 16 | 1.25 | 2 |
| 25-404 | 1/2 | 2.3 | 5.3 | 5.1 | 2.1 | 1.25 | 1.07 | 2.20 | 0.69 | 14 | 12 | 2 | 1.25 |
| 25-405 | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.20 | 0.69 | 14 | 12 | 2 | 1.25 |
| 25-407 | 3/4 | 2.3 | 5.4 | 5.0 | 2.1 | 1.25 | 1.07 | 2.06 | 0.69 | 18 | 16 | 2 | 1.25 |
| 25-408 | 3/4 | 2.3 | 5.4 | 5.0 | 2.0 | 1.25 | 1.00 | 2.06 | 0.69 | 18 | 16 | 2 | 1.25 |
| 25-501* | 1/2 | 2.3 | 5.3 | 5.1 | 2.1 | 1.25 | 1.07 | 2.20 | 0.69 | 14 | 12 | 2 | 1.25 |
| 25-502* | 1/2 | 2.3 | 5.5 | 5.3 | 2.0 | 1.25 | 1.00 | 2.20 | 0.69 | 14 | 12 | 2 | 1.25 |
| 25-504* | 3/4 | 2.3 | 5.4 | 5.0 | 2.1 | 1.25 | 1.07 | 2.06 | 0.69 | 18 | 16 | 2 | 1.25 |
| 25-505* | 3/4 | 2.3 | 5.4 | 5.0 | 2.0 | 1.25 | 1.00 | 2.06 | 0.69 | 18 | 16 | 2 | 1.25 |
| 25-601 | 1/2 | 5.9 | 5.3 | 4.8 | 5.9 | 2.94 | 2.94 | 2.09 | 0.69 | 14 | 12 | 2 | 1.25 |
| 25-602 | 3/4 | 5.9 | 5.3 | 4.8 | 5.9 | 2.94 | 2.94 | 2.09 | 0.69 | 18 | 16 | 2 | 1.25 |

** Automatic*

*** Conforms to ASME Check Requirements*

**SUFFIX KEY**

–00 Standard set includes top & bottom valves, glass and rods
–01 Top valve only
–02 Bottom valve only
–03 Top & Bottom valves only (no glass or rods)
–10 For special gauges with non-standard glass, rods, and/or gaskets.

## ROUGH BRONZE WATER GAUGE

LEADFREE OPTIONS

| Series No. | Rating (subject to limitation of gauge glass) |
|---|---|
| 20-100/20LF-100 | 125 psig @ 350°F, 300 psig @ 100°F |
| 20-150 | 125 psig @ 350°F, 300 psig @ 100°F |
| 20-200 | 200 psig @ 400°F, 400 psig @ 100°F |
| 20-250 | 200 psig @ 400°F, 400 psig @ 100°F |
| 20-300 | 200 psig @ 400°F, 400 psig @ 100°F |
| 20-350 | 200 psig @ 400°F, 400 psig @ 100°F |
| 20-410 | 125 psig @ 350°F, 300 psig @ 100°F |
| 20-601, 602 | 250 psig @ 400°F, 500 psig @ 100°F |
| 20-604, 605 | 200 psig @ 400°F, 400 psig @ 100°F |
| 20-700 | 125 psig @ 350°F, 300 psig @ 100°F |
| 20-100 | 200 psig @ 400°F, 400 psig @ 100°F |

| Series No. | Pipe Size | Standard Glass O.D. & Length | Glass Seal | Stem Packing | Standard Glass Type | Handle | Wt./100 |
|---|---|---|---|---|---|---|---|
| 20-101-00 | 3/8 | 5/8 x 10 | EPDM Rubber | Teflon® | Regular | Aluminum | 145 |
| 20-102-00 | 3/8 | 5/8 x 10 | EPDM Rubber | Teflon® | Regular | Composite | 145 |
| 20-104-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 160 |
| 20LF-104-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 160 |
| 20-105-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 160 |
| 20LF-105-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 160 |
| 20-150-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 160 |
| 20-151-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 160 |
| 20-201-00 | 3/8 | 5/8 x 10 | EPDM Rubber | Teflon® | Regular | Aluminum | 185 |
| 20-202-00 | 3/8 | 5/8 x 10 | EPDM Rubber | Teflon® | Regular | Composite | 189 |
| 20-204-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 205 |
| 20-205-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 205 |
| 20-207-00 | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Aluminum | 270 |
| 20-208-00 | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Composite | 270 |
| 20-250-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 195 |
| 20-251-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 200 |
| 20-253-00* | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Aluminum | 355 |
| 20-254-00* | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Composite | 360 |
| 20-304-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 260 |
| 20-305-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 270 |
| 20-307-00 | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Aluminum | 345 |
| 20-308-00 | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Composite | 365 |
| 20-350-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 265 |
| 20-351-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 265 |
| 20-353-00* | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Aluminum | 360 |
| 20-354-00* | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Composite | 365 |
| 20-410-00 (LH) | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 180 |
| 20-601-00 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Chain | 370 |
| 20-602-00 | 3/4 | 3/4 x 16 | EPDM Rubber | Teflon® | Regular | Chain | 435 |
| 20-604-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 155 |
| 20-605-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 175 |
| 20-703-00 | 3/8 | 5/8 x 10 | EPDM Rubber | N/A | Regular | N/A | 120 |
| 20-704-00 | 1/2 | 5/8 x 12 | EPDM Rubber | N/A | Regular | N/A | 135 |
| 20-713-00 | 3.8 | 5/8 x 12 | EPDM Rubber | N/A | Regular | N/A | 135 |
| 20-714-00 | 1/2 | 5/8 x 10 | EPDM Rubber | N/A | Regular | N/A | 135 |
| 20-804-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Aluminum | 160 |
| 20-805-00* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Regular | Composite | 160 |

** Automatic*

NSF/ANSI 372 Lead Free

## ROUGH BRONZE WATER GAUGE WITH EXTENDED SHANK

| Series No. | Rating (subject to limitation of gauge glass) |
|---|---|
| 21-100 | 125 psig @ 350°F, 300 psig @ 100°F |
| 21-150 | 125 psig @ 350°F, 300 psig @ 100°F |
| 21-200 | 200 psig @ 400°F, 400 psig @ 100°F |
| 21-250 | 200 psig @ 400°F, 400 psig @ 100°F |

| Series No. | Pipe Size | Standard Glass O.D. & Length | Glass Seal | Stem Packing | Handle | Standard Glass Type | Wt./100 | Shank Length |
|---|---|---|---|---|---|---|---|---|
| 21-104 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Aluminum | Regular | 185 | 1-3/4 |
| 21-105 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Composite | Regular | 197 | 1-3/4 |
| 21-150* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Aluminum | Regular | 195 | 1-3/4 |
| 21-151* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Composite | Regular | 207 | 1-3/4 |
| 21-204 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Aluminum | Regular | 215 | 1-3/4 |
| 21-205 | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Composite | Regular | 219 | 1-3/4 |
| 21-250* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Aluminum | Regular | 215 | 1-3/4 |
| 21-251* | 1/2 | 5/8 x 12 | EPDM Rubber | Teflon® | Composite | Regular | 215 | 1-3/4 |

** Automatic*

## STAINLESS STEEL LIQUID LEVEL GAUGE

| Series No. | Rating (subject to limitation of gauge glass) |
|---|---|
| 23-401 | 500 psig @ 450°F |
| 23-450 | 500 psig @ 450°F |
| 23-650 | 250 psig @ 406°F |

| Series No. | Pipe Size | Standard Glass O.D. & Length | Glass Seal | Stem Packing | Handle | Standard Glass Type | Wt./100 |
|---|---|---|---|---|---|---|---|
| 23-401 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 385 |
| 23-402 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 385 |
| 23-404 | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 450 |
| 23-405 | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 450 |
| 23-450** | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 390 |
| 23-451** | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 390 |
| 23-453** | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 455 |
| 23-454** | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 455 |
| 23-651 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Teflon® | Aluminum | High Pressure | 225 |
| 23-654 | 3/4 | 5/8 x 12 | PTFE w/Hypalon® | Teflon® | Aluminum | High Pressure | 225 |

*** Conforms to ASME Check Requirements*

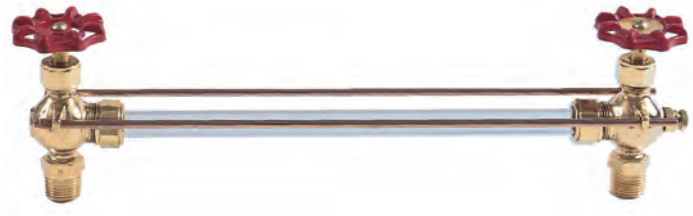
## ROUGH BRONZE LIQUID LEVEL GAUGE

| Series No. | Rating (subject to limitation of gauge glass) |
|---|---|
| 24-300 | 250 psig @ 400°F, 500 psig @ 100°F |
| 24-350 | 250 psig @ 400°F, 500 psig @ 100°F |
| 24-600 | 250 psig @ 400°F, 500 psig @ 100°F |
| 24-650 | 250 psig @ 400°F, 500 psig @ 100°F |
| 24-750 | 250 psig @ 400°F, 500 psig @ 100°F |
| 24-850 | 250 psig @ 400°F, 500 psig @ 100°F |

| Series No. | Pipe Size | Standard Glass O.D. & Length | Glass Seal | Stem Packing | Handle | Standard Glass Type | Wt./100 |
|---|---|---|---|---|---|---|---|
| 24-301 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 425 |
| 24-302 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 425 |
| 24-304 | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 490 |
| 24-305 | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 490 |
| 24-350** | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 425 |
| 24-351** | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 425 |
| 24-353** | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Aluminum | High Pressure | 490 |
| 24-354** | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Composition | High Pressure | 490 |
| 24-601 | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Chain | High Pressure | 515 |
| 24-602 | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Chain | High Pressure | 580 |
| 24-651** | 1/2 | 5/8 x 12 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Chain | High Pressure | 515 |
| 24-652** | 3/4 | 3/4 x 16 | PTFE w/Hypalon® | Braided PTFE w/Aramid | Chain | High Pressure | 580 |

*** Conforms to ASME Check Requirements*

## POLISHED BRONZE WATER GAUGE



| Series No. | Rating (subject to limitation of gauge glass) |
|---|---|
| 25-200 | 200 psig @ 400°F, 400 psig @ 100°F |
| 25-400 | 125 psig @ 350°F, 300 psig @ 100°F |
| 25-500 | 200 psig @ 400°F, 400 psig @ 100°F |
| 25-600 | 250 psig @ 400°F, 500 psig @ 100°F |

| Series No. | Pipe Size | Standard Glass O.D. & Length | Glass Seal | Stem Packing | Handle | Standard Glass Type | Wt./100 |
|---|---|---|---|---|---|---|---|
| 25-201 | 3/8 | 5/8 x 10 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 180 |
| 25-202 | 3/8 | 5/8 x 10 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 185 |
| 25-204 | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 190 |
| 25-205 | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 190 |
| 25-207 | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 290 |
| 25-208 | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 295 |
| 25-404# | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 285 |
| 25-405# | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 285 |
| 25-407 | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 350 |
| 25-408 | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 350 |
| 25-501* | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 290 |
| 25-502* | 1/2 | 5/8 x 12 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 290 |
| 25-504* | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Aluminum | Regular | 355 |
| 25-505* | 3/4 | 3/4 x 16 | EPDM rubber | PTFE w/Hypalon® | Composition | Regular | 355 |
| 25-601 | 1/2 | 5/8 x 12 | EPDM rubber | Graphite w/Aramid | Chain | Regular | 335 |
| 25-602 | 3/4 | 3/4 x 16 | EPDM rubber | Graphite w/Aramid | Chain | Regular | 350 |

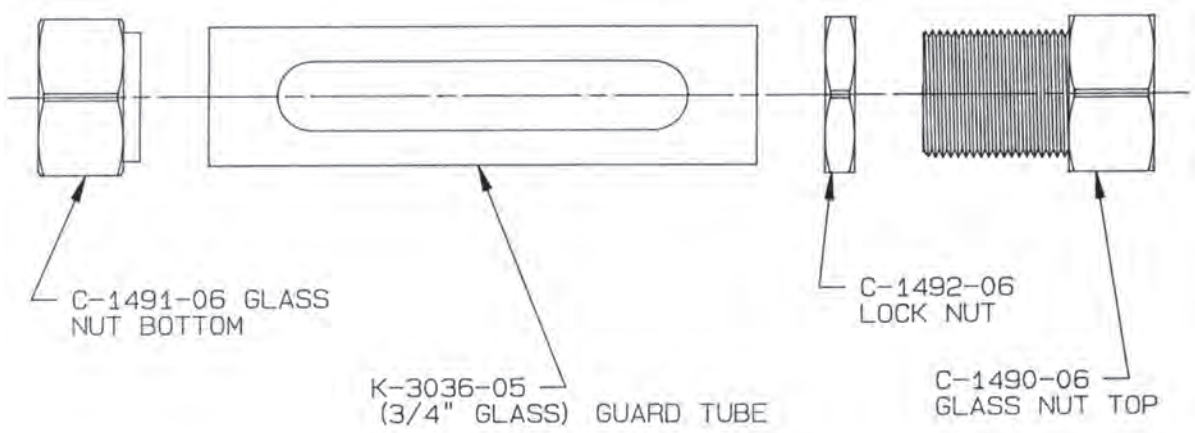
** Automatic*

*# Valve bodies made from brass bar stock.*

## TUBULAR GAUGE GLASS PROTECTOR

- Reduces the risk of injury and damage from broken exploding glass.
- Made to fit most water gauges.
- Priced according to length and application.
- Maximum protector length of 50".
- Tubular gauge glass protector not available on the 23-400, 23-450, 23-600, 23-650, 24-300, 24-600 and 24-650 series.
- Maximum of 50" length.

*Give series number and centerline distance "L" when ordering.*




### STANDARD GLASS PROTECTOR LENGTHS

| Part Number | Size | Length |
|---|---|---|
| I273305L12 | PROTECTOR,ASSY,5/8"GAUGE GLS, | L=12",CU |
| I273305L24 | PROTECTOR,ASSY,5/8"GAUGE GLS, | L=24",CU |
| I273305L36 | PROTECTOR,ASSY,5/8"GAUGE GLS, | L=36",CU |
| I273305L48 | PROTECTOR,ASSY,5/8"GAUGE GLS, | L=48",CU |
| I273305L50 | PROTECTOR,ASSY,5/8"GAUGE GLS, | L=50",CU |
| I273405L12 | PROTECTOR,ASSY,3/4"GAUGE GLS, | L=12",CU |
| I273405L24 | PROTECTOR,ASSY,3/4"GAUGE GLS, | L=24",CU |
| I273405L36 | PROTECTOR,ASSY,3/4"GAUGE GLS, | L=36",CU |
| I273405L48 | PROTECTOR,ASSY,3/4"GAUGE GLS, | L=48",CU |
| I273405L50 | PROTECTOR,ASSY,3/4"GAUGE GLS, | L=50",CU |

## GAUGE PRESSURE-TEMPERATURE RATINGS

**REGULAR/STANDARD GLASS**
Example: 9858R12 = 5/8" OD x 12" L Regular Glass


**HIGH PRESSURE GLASS**
Example: 9834I16 = 3/4" OD x 16" L High Pressure Glass

**REDLINE GLASS**
Example: 9834P14 = 3/4" OD x 14" L Redline Glass

## MAXIMUM RECOMMENDED WORKING PRESSURE (PSI)

| Type | OD Size | tol. | Wall | tol. | Length | Temp. to 150°F, no corrosion | Steam boiler service to 450°F |
|---|---|---|---|---|---|---|---|
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 8 | 210 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 10 | 210 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 12 | 205 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 14 | 200 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 16 | 195 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 18 | 190 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 24 | 180 | 100 |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 30 | 175 | ** |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 36 | 165 | ** |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 48 | 140 | ** |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 60 | 120 | ** |
| Standard | 5/8 | +0, -3/64 | 5/64 | +1/64 | 72 | 100 | ** |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 8 | 210 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 10 | 210 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 12 | 205 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 14 | 200 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 16 | 195 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 18 | 190 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 24 | 180 | 100 |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 30 | 175 | ** |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 36 | 165 | ** |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 48 | 140 | ** |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 60 | 120 | ** |
| Standard | 3/4 | +0, -3/64 | 3/32 | +1/64 | 72 | 100 | ** |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 8 | 435 | 320 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 10 | 420 | 315 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 12 | 410 | 305 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 14 | 390 | 295 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 16 | 375 | 285 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 18 | 360 | 280 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 20 | 350 | 270 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 24 | 320 | 255 |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 30 | 280 | ** |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 36 | 245 | ** |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 48 | 195 | ** |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 60 | 150 | ** |
| High Pressure | 5/8 | +0, -1/32 | 3/32 | +1/64 | 72 | 100 | ** |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 8 | 425 | 315 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 10 | 410 | 310 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 12 | 400 | 300 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 14 | 385 | 290 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 16 | 370 | 280 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 18 | 355 | 275 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 20 | 345 | 265 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 24 | 315 | 250 |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 30 | 275 | ** |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 36 | 240 | ** |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 48 | 190 | ** |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 60 | 145 | ** |
| High Pressure | 3/4 | +0, -1/32 | 3/32 | +1/64 | 72 | 100 | ** |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 8 | 370 | 285 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 10 | 345 | 280 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 12 | 335 | 280 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 14 | 325 | 275 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 16 | 315 | 270 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 18 | 305 | 265 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 20 | 290 | 265 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 24 | 265 | 255 |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 30 | 235 | ** |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 36 | 205 | ** |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 48 | 165 | ** |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 60 | 125 | ** |
| Redline | 5/8 | +0, -1/32 | 3/32 | +1/64 | 72 | 90 | ** |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 8 | 360 | 280 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 10 | 340 | 275 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 12 | 330 | 275 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 14 | 320 | 270 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 16 | 310 | 265 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 18 | 300 | 260 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 20 | 285 | 260 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 24 | 260 | 250 |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 30 | 230 | ** |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 36 | 200 | ** |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 48 | 160 | ** |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 60 | 125 | ** |
| Redline | 3/4 | +0, -1/32 | 3/32 | +1/64 | 72 | 90 | ** |

*** Maximum recommended length in this service is 24."*

## REPAIR KITS

The standard* repair kits contain glass packing, stem packing, friction washers, seat washers, and drain washer applicable to the particular valve. Three types of glass packing, EPDM rubber, Hypalon®, and Virgin Teflon®, are included in the standard repair kit. For oil related service, Fluorelastomer (Viton®) glass gasket sets are available. For severe applications, graphite glass gaskets and stem packing sets are available for each model.

### REPAIR KIT ORDERING INFORMATION

| 20 - | 00X - | 0X |
|---|---|---|
| **DESIGNATION** | **KIT TYPE** | **KIT NUMBER** |
| 20-00 = Water Gauge Repair Kit | 1 = Standard All<br>2 = Viton Gaskets Only<br>3 = Graphite Gaskets Only | |

**EXAMPLE:**
***20-001-01** = Standard Kit described above
**20-002-01** = Viton Glass Gaskets Only
**20-003-01** = Graphite Glass Gaskets Only

### REPAIR KIT APPLICATIONS

| Kit | Applications - Water Gauge Series |
|---|---|
| 20-001-01<br>20-003-01 | 20-101, 20-102, 20-104, 20-105, 20-150, 20-151, 20-405, 20-406, 20-407, 20-408, 20-410, 21-101, 21-102, 21-104, 21-105, 21-150, 21-151, |
| 20-001-02<br>20-003-02 | 20-201, 20-202, 20-204, 20-205, 20-250, 20-251, 20-304, 20-305, 20-350, 20-351, 20-604, 20-605, 20-804, 20-805, 21-204, 21-205, 21-250, 21-251, 25-201, 25-202, 25-204, 25-205, 25-404, 25-405, 25-501, 25-502 |
| 20-001-03<br>20-003-03 | 20-207, 20-208, 20-253, 20-254, 20-307, 20-308, 20-353, 20-354, 25-207, 25-208, 25-407, 25-408, 25-504, 25-505 |
| 20-001-04<br>20-003-04 | 20-601, 25-601 |
| 20-001-05<br>20-003-05 | 20-602, 25-602 |
| 20-001-06<br>20-003-06 | 20-703, 20-704, 20-713, 20-714 |
| 20-001-07<br>20-003-07 | 23-401, 23-402, 23-450, 23-451 |
| 20-001-08<br>20-003-08 | 20-405, 20-406, 20-407, 20-408 |
| 20-001-09<br>20-003-09 | 23-404, 23-405, 23-453, 23-454 |
| 20-001-10<br>20-003-10 | 23-651, 23-654 |
| 20-001-11<br>20-003-11 | 24-301, 24-302, 24-350, 24-351, 24-450, 24-451 |
| 20-001-12<br>20-003-12 | 24-304, 24-305, 24-353, 24-354, 24-453, 24-454 |
| 20-001-13<br>20-003-13 | 24-601, 24-651, 24-751, 24-851 |
| 20-001-14<br>20-003-14 | 24-602, 24-652, 24-752, 24-852 |
| 20-002-01 | 20-101, 20-102, 20-104, 20-105, 20-150, 20-151, 20-201, 20-202, 20-204, 20-205, 20-250, 20-251, 20-304, 20-305, 20-350, 20-351, 20-405, 20-406, 20-407, 20-408, 20-410, 20-601, 20-604, 20-605, 20-703, 20-704, 20-713, 20-714, 20-804, 20-805, 21-101, 21-102, 21-104, 21-105, 21-150, 21-151, 21-204, 21-205, 21-250, 21-251, 23-651, 23-654, 25-201, 25-202, 25-204, 25-205, 25-404, 25-405, 25-501, 25-502, 25-601 |
| 20-002-02 | 20-207, 20-208, 20-253, 20-254, 20-307, 20-308, 20-353, 20-354, 25-207, 25-208, 25-407, 25-408, 25-504, 25-505, 20-602, 25-602 |
| 20-002-03 | 23-401, 23-402, 23-450, 23-451, 24-301, 24-302, 24-350, 24-351, 24-450, 24-451, 24-601, 24-651, 24-751, 24-851 |
| 20-002-04 | 23-404, 23-405, 23-453, 23-454, 24-304, 24-305, 24-353, 24-354, 24-453, 24-454, 24-602, 24-652, 24-752, 24-852 |

## REPAIR KITS

### SELECTION INSTRUCTIONS

It is helpful to determine the following information when ordering a repair kit.

- Model number (if not available describe gauge, i.e. material, # guard rods, NPT size, etc.)
- Glass O.D. and type
- Handle type
- Service media, temperature, and pressure

If you know the model number just examine the "Repair Kit Applications" chart to select kit number for your valve. To order the standard kit, or Viton®, or graphite gaskets, assemble the ordering matrix for the desired kit number.

If you are unable to determine model number please determine the above information and call customer service for assistance.

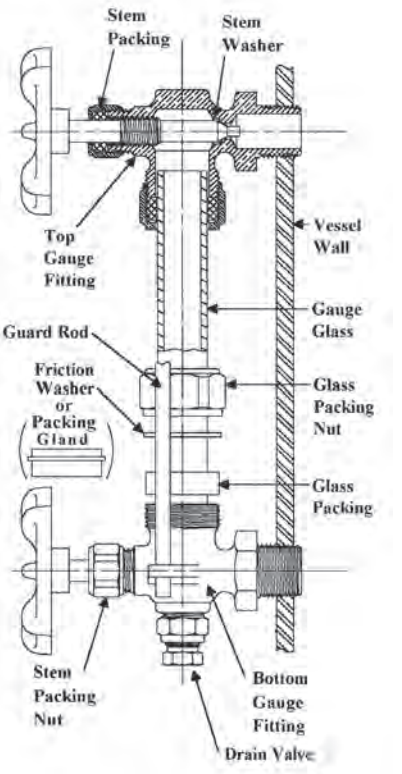
For replacement glass please determine the above information in addition to the "L" dimension and call customer service. "L" dimension (center to center height of water gauge inlets).

### WATER GAUGE & GAUGE GLASS REPAIR KIT INSTRUCTIONS

Only properly trained personnel should install, maintain and repair water gauge glass and connections. Remember to wear safety gloves and glasses during installation/repair. Before installing, make sure all parts are free of chips and debris.

### DISASSEMBLY/ASSEMBLY

1. Close water gauge valves. If necessary drain vessel to eliminate leakage during repair. Drain gauge glass using drain valve or plug.
2. Completely loosen both glass packing nuts.
3. Gently raise gauge glass until bottom of gauge glass clears lower fitting.
4. Using a wrench attached to the hex flats on the upper fitting, lift glass and packing nut then rotate the fitting and glass 1/8 turn counterclockwise.
5. Carefully remove the gauge glass from the upper fitting. Remove all glass packing, packing nuts, washers and packing glands, noting their positions on the glass.
6. Clean and inspect gauge glass and fittings for any wear, erosion, cracks or debris. Any damaged components must be replaced.
7. If it is desired, the stem packing can be replaced by removing the handle(s) then the stem packing nut. Remove old packing and stem packing washer if applicable. Install new packing in stem packing nut and reuse stem packing washer as applicable.
8. To replace seat washers (where applicable) the system must be drained. After removing the stem packing nut reinstall handle and remove stem by opening valve. Cut off old seat washer and install new seat washer using appropriate size tube driver.
9. Install stem until it seats. Remove handle and install stem packing nut with packing inside. Tighten stem packing nut until snug using wrench.
10. Place glass packing nut, friction washer (or packing gland and retaining ring, depending upon the model), and new glass packing, in the same order as found, on to both ends of the gauge glass. Push both packings about an inch up the gauge glass.
11. Gently insert one end of the glass into the top gauge fitting. Keeping the glass inside the top fitting, gently rotate the top gauge fitting clockwise, using wrench on valve hex flats, until vertically aligned with the bottom gauge fitting. Insert glass into bottom fitting until glass bottoms out on the shoulder inside the bottom fitting.
12. Carefully raise glass about 1/16" and slide lower glass packing down until the glass packing bottoms out. DO NOT allow the glass to remain in contact with any metal!
13. Carefully slide upper glass packing up as far as possible.
14. Hand tighten both glass packing nuts, then tighten 1/2 turn more by wrench. Tighten only enough to prevent leakage. DO NOT OVER TIGHTEN! If any leakage should occur, tighten slightly, a quarter turn at a time, checking for leakage after each turn.



PLUMBING
**SPECIALTIES**

## 26-100/26-300 SERIES — COMPRESSION GAUGE COCKS

26-300

For draining expansion tanks, other liquid storage vessels. For condensate only. Standard finish is satin brass.

### FEATURES

- 26-100: Rated up to 125 psig
- 26-300: Soft Metal Seat/Stuffing Box Rated up to 250 psig at 400°F
- 26-310: Stainless Steel Ball Seat/Stuffing Box Rated up to 250 psig at 400°F
- 26-700: TFE Seat, Rated up to 250 psig at 400°F

| Series Number | Pipe Size (in.) | Wt./100 (lbs.) | Wheel Type |
|---|---|---|---|
| **26-104-01** | 1/2 | 28.3 | ALUMINUM |
| **26-105-01** | 1/2 | 30.0 | COMPOSITION |
| **26-304-01** | 1/2 | 40.0 | ALUMINUM |
| **26-305-01** | 1/2 | 44.0 | COMPOSITION |
| **26-307-01** | 3/4 | 49.0 | ALUMINUM |
| **26-308-01** | 3/4 | 51.7 | COMPOSITION |
| **26-314-01** | 1/2 | 40.0 | ALUMINUM |
| **26-315-01** | 1/2 | 44.0 | COMPOSITION |
| **26-704-01** | 1/2 | 78.0 | ALUMINUM |
| **26-705-01** | 1/2 | 82.0 | COMPOSITION |

**26-100 series is not available with packing nut*
*Specify the following suffix for finish: Polished Brass -28 (example: 26-304-28)*

## 26-500 SERIES — LEVER OPERATED COMPRESSION COCK

For draining expansion tanks or other liquid storage vessels where the drain port is beyond reach. Spring loaded lever provides positive closure to 250 psig at 300

### FEATURES

- Bronze Body B584 UNS C84400
- Stainless Steel Closure Spring
- PTFE Soft Seat
- Graphite Stem Packing
- Zinc Plated "S" Hook on Lever
- Optional 6 Foot Chain
- Rated up to 250 psig

| Series Number | Pipe Size (in.) | Wt./100 (lbs.) | |
|---|---|---|---|
| **26-504-01** | 1/2 | 110 | |
| **26-504-02** | 1/2 | 112 | 6' chain |

## 27-400 SERIES — STEAM GAUGE SIPHON

27-401

27-402

For pressure gauge protection. Condensate trap protects dial pressure gauges from direct steam contact.

### FEATURES

- Heavy Gauge Seamless Brass Tubing
- 27-401 is 180° loop, 27-402 is 90° loop
- Service Rating: 250 psig Saturated Steam, 400 psig at 100°F

| Series Number | Pipe Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **27-401-01** | 1/4 | 44.0 |
| **27-402-01** | 1/4 | 40.0 |

## 41 SERIES AIR COCKS

An economical way to shut-off air lines. Standard spring bottom (-01) with 5/32" port are tested at 80 psig. Optional nut bottom (-04) with 1/8" port are suitable for pressures to 200 psig. Various handle configurations available.

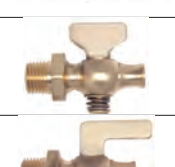
### FEATURES

- Standard Apring Bottom (5/32" Port)
- Air Cocks Tested at 80 psi
- Optional Nut Bottom (1/8" port) Suitable to 200 psig
- Standard Satin Brass Finish
- Maximum temperature is 500° F

### OPTIONS

- (-01) Standard Spring Bottom
- (-04) Nut Bottom

| | Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
|  | **TEE HANDLE ROUND SHOULDER** | | |
| | 41-060 | 1/8 | 12.8 |
| | 41-070 | 1/4 | 13.0 |
|  | **TEE HANDLE HEXAGON SHOULDER** | | |
| | 41-080 | 3/8 | 17.0 |
| | 41-090 | 1/2 | 20.0 |
|  | **LEVER HANDLE ROUND SHOULDER** | | |
| | 41-120 | 1/8 | 13.1 |
| | 41-130 | 1/4 | 14.2 |
|  | **LEVER HANDLE HEXAGON SHOULDER** | | |
| | 41-140 | 3/8 | 17.0 |
| | 41-150 | 1/2 | 22.9 |
|  | **TEE HANDLE DOUBLE MALE THREAD** | | |
| | 41-180 | 1/8 | 14.0 |
| | 41-190 | 1/4 | 17.9 |
| | 41-203 | 3/8 | 20.0 |
| | 41-210 | 1/2 | 33.1 |
|  | **LEVER HANDLE DOUBLE MALE THREAD** | | |
| | 41-220 | 1/8 | 14.0 |
| | 41-230 | 1/4 | 18.5 |
| | 41-240 | 3/8 | 19.1 |
| | 41-251 | 1/2 | 31.3 |
|  | **TEE HANDLE BIBB NOSE** | | |
| | 41-260 | 1/8 | 14.5 |
| | 41-270 | 1/4 | 16.3 |
| | 41-280 | 3/8 | 33.3 |
| | 41-330 | 1/2 | 36.0 |
|  | **LEVER HANDLE BIBB NOSE** | | |
| | 41-290 | 1/8 | 16.5 |
| | 41-300 | 1/4 | 15.0 |
| | 41-310 | 3/8 | 32.1 |
| | 41-320 | 1/2 | 36.0 |
|  | **TEE HANDLE DOUBLE FEMALE** | | |
| | 41-370 | 1/8 | 13.0 |
| | 41-380 | 1/4 | 14.0 |
| | 41-390 | 3/8 | 26.0 |
| | 41-391 | 1/2 | 27.0 |
|  | **TEE HANDLE MALE & FEMALE** | | |
| | 41-400 | 1/8 | 13.0 |
| | 41-410 | 1/4 | 14.0 |
| | 41-420 | 3/8 | 21.0 |
| | 41-421 | 1/2 | 26.0 |

| | Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
|  | **LEVER HANDLE DOUBLE FEMALE** | | |
| | 41-430 | 1/8 | 14.8 |
| | 41-440 | 1/4 | 13.0 |
| | 41-450 | 3/8 | 23.0 |
| | 41-451 | 1/2 | 27.0 |
|  | **LEVER HANDLE MALE & FEMALE** | | |
| | 41-460 | 1/8 | 15.2 |
| | 41-470 | 1/4 | 15.0 |
| | 41-480 | 3/8 | 23.0 |
| | 41-481 | 1/2 | 27.0 |
|  | **TEE HANDLE MALE & FEMALE HEX SHOULDER** | | |
| | 41-490 | 1/8 | 17.0 |
| | 41-500 | 1/4 | 15.0 |
| | 41-510 | 3/8 | 23.0 |
| | 41-511 | 1/2 | 25.0 |
|  | **LEVER HANDLE MALE & FEMALE HEX SHOULDER** | | |
| | 41-520 | 1/8 | 14.0 |
| | 41-530 | 1/4 | 15.0 |
| | 41-540 | 3/8 | 22.1 |
| | 41-541 | 1/2 | 27.0 |
|  | **TEE HANDLE DOUBLE FEMALE HEX SHOULDER** | | |
| | 41-550 | 1/8 | 17.0 |
| | 41-560 | 1/4 | 17.0 |
| | 41-570 | 3/8 | 25.0 |
| | 41-571 | 1/2 | 28.3 |
|  | **LEVER HANDLE DOUBLE FEMALE HEX SHOULDER** | | |
| | 41-580 | 1/8 | 15.0 |
| | 41-590 | 1/4 | 18.2 |
| | 41-600 | 3/8 | 24.0 |
| | 41-601 | 1/2 | 28.8 |
|  | **TEE HANDLE STRAIGHT NOSE HEX SHOULDER** | | |
| | 41-630 | 1/8 | 15.7 |
| | 41-640 | 1/4 | 15.0 |
|  | **LEVER HANDLE STRAIGHT NOSE HEX SHOULDER** | | |
| | 41-650 | 1/8 | 14.0 |
| | 41-660 | 1/4 | 15.0 |

## 41 SERIES — HEAVY AND EXTRA HEAVY PATTERN AIR AND STEAM COCKS

For pressure gauge protection. Condensate trap protects dial pressure gauges from direct steam contact.

### FEATURES

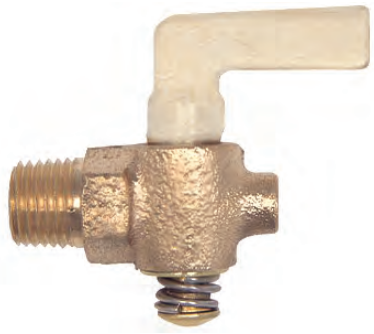
- Satin Brass Finish
- Spring Bottom (-01) is Tested at 100psi
- Rated for Air Pressure up to 250 psig with Nut Version
- Extra Heavy Pattern Rated for 150 SWP - Nut Bottom Only

### OPTIONS

- (-01) Standard Spring Bottom
- (-04) Nut Bottom

| Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **HEAVY PATTERN TEE HANDLE DOUBLE FEMALE** | | |
| 41-102-01 | 1/4 | 28.00 |
| **LEVER HANDLE DOUBLE FEMALE** | | |
| 41-103-01 | 1/4 | 27.00 |
| **EXTRA HEAVY PATTERN TEE HANDLE DOUBLE FEMALE** | | |
| 41-200-01 | 1/8 | 32.00 |
| 41-202-01 | 1/4 | 32.00 |
| **TEE HANDLE DOUBLE FEMALE HEXAGON SHOULDER** | | |
| 41-222-01 | 1/4 | 38.00 |
| **TEE HANDLE MALE AND FEMALE** | | |
| 41-250-01 | 1/4 | 20.00 |

## 42-100 SERIES DRAIN COCKS



Cast brass construction; rated for 25 psig.

**FEATURES**
- Sizes: 1/8", 1/4", 3/8" and 1/2"
- Cast Brass Finish
- (-01) Standard Spring Bottom

| Series Number | Size (in.) | Orifice (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| **42-101-01** | 1/8 | 3/16 | 20.4 |
| **42-102-01** | 1/4 | 1/4 | 15.0 |
| **42-103-01** | 3/8 | 3/8 | 35.0 |
| **42-104-01** | 1/2 | 3/8 | 38.0 |

## 43-100 SERIES STEAM GAUGE COCKS

Female fitting with male union for easy installation.

**FEATURES**
- Satin Brass Finish
- Standard Bottom Rated 100 SWP
- Nut Version Rated 150 SWP

**OPTIONS**
- (-01) Standard Spring Bottom
- (-04) Nut Bottom

| Series Number | Description | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| **43-101-01** | 100 SWP | 1/4 FNPT | 45 |
| **43-101-04** | 150 SWP | 1/4 FNPT | 45 |

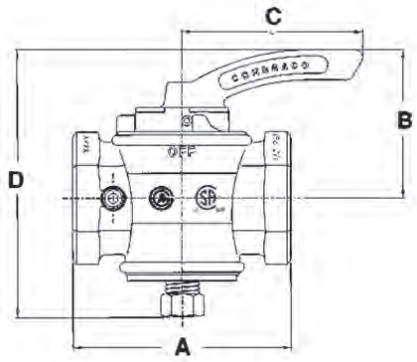
## 44-100 SERIES HOSE END AIR COCKS

Interior diameter hose sizes: 3/8" to 7/16"

**FEATURES**
- 3/16" Port; Rated 25 psig
- Satin Brass Finish

| Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **44-101-01** | 1/8 | 19 |
| **44-102-01** | 1/4 | 22 |
| **44-103-01** | 3/8 | 23 |
| **44-104-01** | 1/2 | 25 |

## GCB (50) SERIES — MANUAL MAIN CONTROL VALVES




CSA design certified for 1/2 psig and temperatures from 32° to 125°F. Complies to ANSI Z 21.15, CSA 9.1

### FEATURES

- 100% Factory Tested at 10 psig
- Bronze Construction, Stainless Steel Springs
- Capacities to 7.8 Million BTU/Hour
- Equal Female Inlet/Outlet
- Bosses on Both Sides are Drilled and Tapped. Only One Side is Plugged

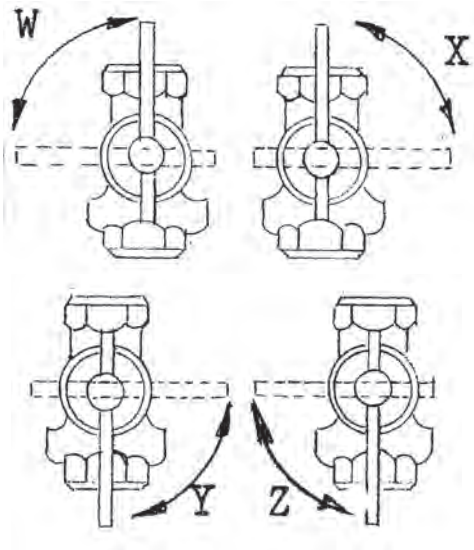
| Series Number | Size (in.) | BTU/hr. | Wt./100 (lbs.) | Dimensions | | | |
|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D |
| **50-203*** | 1/2 | 800,000 | 88 | 2.50 | 1.44 | 1.72 | 2.75 |
| **50-303** | 3/4 | 1,310,000 | 156 | 2.94 | 1.69 | 2.06 | 3.50 |
| **50-403** | 1 | 2,100,000 | 197 | 3.94 | 2.19 | 2.87 | 3.87 |
| **50-503** | 1-1/4 | 3,250,000 | 300 | 3.66 | 2.75 | 3.16 | 4.69 |
| **50-603** | 1-1/2 | 3,700,000 | 478 | 4.37 | 3.31 | 3.50 | 5.75 |
| **50-703** | 2 | 7,300,000 | 845 | 5.44 | 3.72 | 4.50 | 6.75 |
| **50-803** | 2-1/2 | 7,800,000 | 1000 | 5.87 | 3.72 | 4.50 | 6.75 |

** 1/2" size is not CSA certified*

### HANDLE SUFFIX POSITION

| Size Pilot (in.) | W | X | Y | Z |
|---|---|---|---|---|
| 1/8 NPT | 01 | 02 | 03 | 04 |
| 1/4 NPT | 05 | 06 | 07 | 08 |

*All main burner valves furnished with 1/8" NPT pilot tapping. Valves 1" and larger can be furnished with 1/4" NPT pilot tapping.*



## GC (51) SERIES — GAS SERVICE COCKS

Tee or lever handle cocks; CSA design certified. In sizes 1/4" to 3/4".

### FEATURES

- Capacities: 117,000 to 749,000 BTU/Hour
- Cerified to ANSI Z21.15 and CSA 9.1 (1/2 psig at Temperatures from 32°F to 125°F)
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M

| Series Number | Pipe Size (in.) | Wt./100 (lbs.) | Capacity (BTU/hr.) |
|---|---|---|---|
| **T-HANDLE W/STOP** | | | |
| **51-103-01** | 1/4 | 35 | 117,000 |
| **51-104-01** | 3/8 | 47 | 274,600 |
| **51-105-01** | 1/2 | 54 | 274,000 |
| | | | |
| **LEVER HANDLE W/STOP** | | | |
| **51-107-01** | 3/8 | 50 | 274,600 |

## GC2 (52) SERIES — GAS SERVICE COCKS

Available with tee head, flat head, square head or lever head in sizes from 1/4" to 1". Wrench operated and tested at 125 psig.

### FEATURES

- High Pressure Rating
- Capacities: 117,000 to 749,000 BTU/Hour
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M
- Maximum Temperature: 500°F

| Series Number | Size (in.) | Wt./100 (lbs.) | Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|---|---|
| **T-HEAD** | | | **SQUARE HEAD** | | |
| **52-101-01** | 1/4 | 32.0 | **52-301-01** | 1/4 | 31.0 |
| **52-102-01** | 3/8 | 29.0 | **52-302-01** | 3/8 | 28.0 |
| **52-103-01** | 1/2 | 45.0 | **52-303-01** | 1/2 | 43.0 |
| **52-104-01** | 3/4 | 65.8 | **52-304-01** | 3/4 | 62.7 |
| **52-105-01** | 1 | 92.9 | **52-305-01** | 1 | 90.0 |
| | | | | | |
| **FLAT HEAD** | | | **LEVER HEAD** | | |
| **52-201-01** | 1/4 | 30.0 | **52-401-01** | 1/4 | 34.3 |
| **52-202-01** | 3/8 | 28.0 | **52-402-01** | 3/8 | 31.0 |
| **52-203-01** | 1/2 | 43.0 | **52-403-01** | 1/2 | 46.0 |
| **52-204-01** | 3/4 | 57.0 | **52-404-01** | 3/4 | 66.7 |
| **52-205-01** | 1 | 90.6 | **52-405-01** | 1 | 97.0 |

## GC3 (53) SERIES — GAS SERVICE COCKS

Available in male and female sizes: 1/8", 1/4" and 3/8".

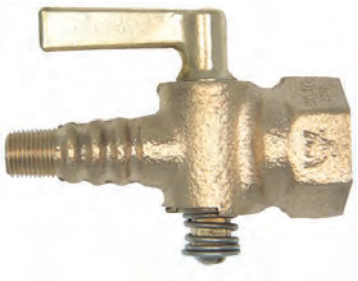
### FEATURES

- Capacities: 117,000 to 749,000 BTU/Hour
- 200 CWP
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at Temperatures from 32°F to 125°F)
- Accepted for Use by City of New York Department of Buildings MEA 45-90-M

| Series Number | Male Size (in.) | Female Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| **53-299-01*** | 1/8 | 1/8 | 14.0 |
| **53-300-01*** | 1/4 | 1/4 | 18.5 |
| **53-301-01** | 3/8 | 3/8 | 45.0 |

**Design certified by CSA to meet ANSI Z21.15.CSA 9.1 pressure requirements of 1/2 psig*

## GCA (54) SERIES — GAS HOSE COCKS & APPLIANCE CONNECTOR



### FEATURES

- CSA Design Certified Bronze Gas Valves with 56,500 BTU/Hour Capacity
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psi at 32°F to 125°F)

| Series Number | Pipe Size (in.) | Outlet (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| **54-101-01** | 3/8 | 1/8 MNPT | 41.0 |
| **54-102-01** | 1/2 | 1/8 MNPT | 34.8 |
| **54-103-01** | 3/4 | 1/8 MNPT | 40.0 |

## GCR (55) SERIES — GAS COCK WITH THROTTLE ADJUSTMENT

**FEATURES**
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at 32°F to 125°F)
- Thread Size: 1/4" Male x 1/4" Female

| Series Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **55-302-01** | 1/4 M x 1/4 F | 33 |

## GCP (56) SERIES — GAS PILOT COCKS

**FEATURES**
- Certified to ANSI Z21.15 and CSA 9.1 (1/2 psig at 32°F to 125°F)

| | Model Number | Size (in.) | Wt./100 (lbs.) |
|---|---|---|---|
|  | **56-111-01** | 1/8 NPT x 1/4 Tube Plain | 15.0 |
|  | **56-112-01** | 1/8 NPT x 1/4 Tube Throttle Adjust. | 14.0 |
|  | **56-221-01** | 1/8 NPT x 1/8 FNPT Plain | 16.1 |
| | **56-222-01** | 1/8 NPT x 1/8 FNPT Throttle Adjust. | 16.1 |
| | **56-601-01** | 1/8 NPT x 1/4 Tube Right Hand | 17.0 |
|  | **56-602-01** | 1/8 NPT x 1/4 Tube RH Throttle Adjust | 17.0 |
| | **56-603-01** | 1/8 NPT x 1/4 Tube Left Hand. | 17.0 |
| | **56-604-01** | 1/8 NPT x 1/4 Tube LH Throttle Adjust. | 17.0 |

## HB (35-200) SERIES — COMPRESSION BIBB FAUCET

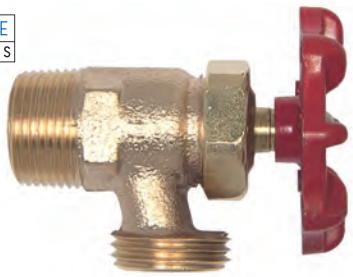
Features heavy pattern with large flow path.

### FEATURES
- Solid Bronze Construction
- Both Models have 3/4" Hose Connection
- Aluminum Handwheel
- Made in USA

| Series Number | Pipe Size (in.) | Wt./100 (lbs.) |
|---|---|---|
| **35-201-01** | 1/2 | 58.3 |
| **35-202-01** | 3/4 | 57.0 |

## BD90 (31-200/31-500) SERIES — 90° DRAIN VALVE

LEAD FREE OPTIONS



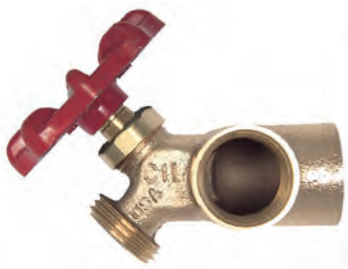
For deluxe water heaters and low pressure boilers.

### FEATURES
- Maximum Rated Pressure: 200 psig
- Maximum Rated Temperature: 250°F
- Red Aluminum Wheel Handle
- 31-200 Series Heavy Pattern, 3/4" MNPT Inlet
- 31-500 Series Standard Pattern, 1/2" MNPT Inlet with I.D. of NPT Thread Machined for 1/2" Copper Pipe
- (-04P) Optional Plain Finish Handle
- Made in USA

| Series Number | LF Series Number | Wt./100 (lbs.) | Shank Length (in.) | Inlet (in.) |
|---|---|---|---|---|
| **31-202-04** | **31LF-202-04** | 43.00 | 5/8 | 3/4 MNPT |
| **31-212-04** | **31LF-212-04** | 46.50 | 15/16 | 3/4 MNPT |
| **31-501-04** | **31LF-501-04** | 31.00 | 5/8 | 1/2 MNPT/1/2 Sweat |

## BDT (31-400) SERIES — COMBINATION TEE & DRAIN VALVE

LEAD FREE OPTIONS



Permits supplying and draining of water through a single tank tapping and meets CSA requirements.

### FEATURES
- All Cast Bronze Body
- Aluminum Handwheel
- No handle: Screwdriver Slot Stem Option
- Maxium Rated Pressure: 200 psig
- Maximum Rated Temperature: 250° F
- 3/4" FNPT inlet x 3/4" Male Hose End x 3/4" FNPT Side Outlet
- Made in USA

| Series Number | LF Series Number | Wt./100 (lbs.) | Handle |
|---|---|---|---|
| **31-401-04** | **31LF-401-04** | 62.00 | Aluminum Wheel - Red |
| **31-401-04P** | **31LF-401-04P** | 62.00 | Aluminum Wheel - Plain |
| **31-401-13** | **31LF-401-13** | 62.00 | Slotted Stem |

## BD (31-600/31-700) SERIES — ANGLED BODY WATER HEATER DRAIN

31-600
MALE NPT

31-700
FEMALE NPT

All drains are equipped with Conbraco packing seal assuring easy turning stem and leak proof drain. Various shank lengths available. Meets CSA requirements.

### FEATURES

- All Cast Bronze Body
- Maximum Rated Pressure: 200 psig
- Maximum Rated Temperature: 250° F
- 31-600: 3/4" MNPT Inlet
- 31-700: 1/2" or 3/4" FNPT Inlet
- Made in USA

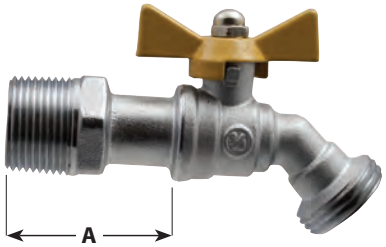
### HANDLE SUFFIX

| | |
|---|---|
| -04 | Aluminum Wheel - Red |
| -04P | Aluminum Wheel - Plain |
| -13 | Slotted Stem |

**Not all variations available in all sizes. Contact customer service.*

| Series Number | Shank Length (in.) | Inlet (in.) | Wt./100 (lbs.) |
|---|---|---|---|
| **31-600** | 5/8" | 3/4" MNPT | 27.3 |
| **31-601** | 3/4" | 3/4" MNPT | 36.0 |
| **31-602** | 1" | 3/4" MNPT | 35.0 |
| **31-604** | 1-1/4" | 3/4" MNPT | 43.0 |
| **31-606** | 1-1/2" | 3/4" MNPT | 49.5 |
| **31-607** | 1-3/4" | 3/4" MNPT | 48.0 |
| **31-608** | 2 | 3/4" MNPT | 52.0 |
| **31-609** | 2-1/4" | 3/4" MNPT | 52.0 |
| **31-610** | 2-1/2" | 3/4" MNPT | 57.2 |
| **31-611** | 2-3/4" | 3/4" MNPT | 60.0 |
| **31-612** | 3" | 3/4" MNPT | 66.3 |
| **31-700** | | 1/2" FNPT | 39.0 |
| **31-701** | | 3/4" FNPT | 37.0 |

## BD (35-300) SERIES — BIBB FAUCET BALL VALVE




Features heavy pattern with large opening. Ideal for boiler and water heater drains, general liquid dispensing and drainage. The new 45° spout design allows for easier hose connection access.

### FEATURES

- Chrome Plated Finish
- Pressure Rating: 200 psig liquid
- Maximum Temperature: 250°F
- Apollo International™

### DIMENSIONS

| Series Number | Size (in.) | A (in.) | Inlet (in.) | Outlet (in.) | Wt./100 (lbs.) |
|---|---|---|---|---|---|
| **35-301-03** | 1/2 | 1-1/2 | 1/2 sweat/thrd connector | 0.75-11.5 NHR hose | 38.4 |
| **35-302-03** | 3/4 | 1-3/4 | 3/4 thrd connector | 0.75-11.5 NHR hose | 44.5 |


Conbraco Industries, Inc. warrants, to its initial purchaser only, that its products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of FIVE years from the date of delivery to you, our initial purchaser. This warranty applies to Apollo brand product with "Made in the USA" markings only.

Should any failure to conform to this warranty appear within **FIVE** years after the date of the initial delivery to our initial purchaser, Conbraco will, upon written notification thereof and substantiation that the goods have been stored, installed, maintained and operated in accordance with Conbraco's recommendations and standard industry practice, correct such defects by suitable repair or replacement at Conbraco's own expense.

APOLLO INTERNATIONAL PRODUCTS: Conbraco Industries, Inc. warrants its International products, to its initial purchaser only, that its international products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of TWO years from the date of delivery to you, our initial purchaser.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESSED OR IMPLIED, EXCEPT THE WARRANTY OF TITLE AND AGAINST PATENT INFRINGEMENT. Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Conbraco to our initial purchaser, with respect to the goods, whether based on contract, negligence, strict tort or otherwise. It is the intention of Conbraco Industries, Inc. that no warranty of any kind, whether expressed or implied shall pass through our initial purchaser to any other person or corporation.

LIMITATION OF LIABILITY: Conbraco Industries, inc. SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, DAMAGES OR TO LOSS OF OTHER PROPERTY OR EQUIPMENT, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, COST OF PURCHASED OR REPLACEMENT GOODS, OR CLAIMS OF CUSTOMERS OF OUR INITIAL PURCHASER. THE REMEDIES OF OUR INITIAL PURCHASER, AND ALL OTHERS, SET FORTH HEREIN, ARE EXCLUSIVE, AND THE LIABILITY OF CONBRACO WITH RESPECT TO SAME SHALL NOT, EXCEPT AS EXPRESSLY PROVIDED HEREIN, EXCEED THE PRICE OF THE GOODS UPON WHICH SUCH LIABILITY IS BASED.

* It is the end user's responsibility to confirm that items intended for use satisfy local codes and standards.

## TERMS AND CONDITIONS OF SALE

- Payment: 2% 10th prox. Net 30 days.
- All prices F.O.B. shipping point with freight allowed on shipments of 750 pounds and/or $5,000 net minimum to all shipping points within the United States excluding Alaska and Hawaii. No freight allowed on Air Freight or Parcel Post shipments. Claims for shortages must be made within 10 days of receipt of material. Our responsibility ends when a receipt is furnished us by the carrier.
- No Invoice Rendered For Less Than $50.00.
- No freight will be allowed on Air Freight, Air Express, Parcel Post or U.P.S. shipments.
- All Conbraco products may be combined to make sufficient weight for full freight allowance.
- Phone order quoted prices are subject to correction. Prices and designs are subject to change without notice.
- Orders for material or special design or specification are made to customer's order and are not subject to cancellation or return.
- All goods returned to us will not be accepted unless a full explanation has been made and our written authorized permission obtained in advance. All goods returned – if accepted – will be credited at invoice price, less 30% for service and rehandling charges, plus shipping expenses.
- We reserve the right to adjust orders to box quantities.

Phone: (704) 841-6000
Fax: (704) 841-6020

**Regional Management List**
now available online at:
**http://conbra.co/rmlist**

# "Apollo" Flow Controls

"Apollo" Valves / Elkhart Products Corporation EPC / LASCO FITTINGS, INC / SHURJOINT®

CPCA9000 1/17 7,500



AALBERTS INDUSTRIES