

"Apollo"®

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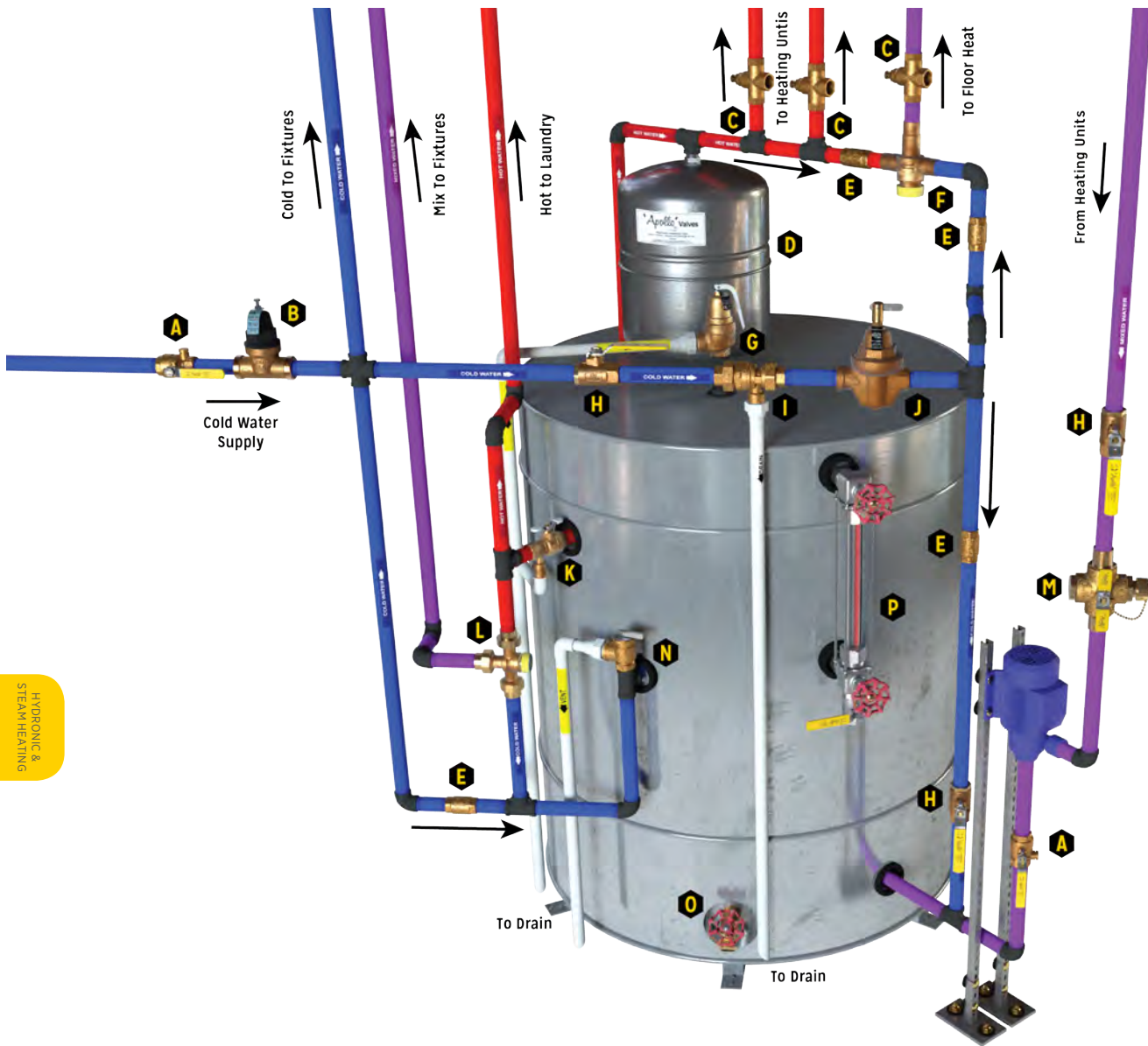
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HYDRONIC & STEAM HEATING





HYDRONIC & STEAM HEATING

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12-200 (RVS12) SERIES

LOW PRESSURE STEAM HEATING BOILER SAFETY VALVE



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 #OG8547.5C
- National Board Certified at 15 psig

SEE PAGE E-10 FOR DETAILED INFORMATION

13 (RVS13) SERIES

LOW PRESSURE STEAM HEATING BOILER SAFETY VALVE



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.

SEE PAGE E-11 FOR DETAILED INFORMATION

14-200 (RSV14) SERIES

LOW PRESSURE STEAM HEATING SAFETY VALVE



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 Seal
- 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 #OG8547.5C

SEE PAGE E-12 FOR DETAILED INFORMATION

17-400 (RVW17) SERIES

PRESSURE-ONLY HOT WATER RELIEF VALVE



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 Verified 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 OG8547.5C

SEE PAGE E-22 FOR DETAILED INFORMATION



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

SEE PAGE E-3 FOR DETAILED INFORMATION

10-600 (RVW60) SERIES
HIGH CAPACITY HOT WATER BOILER SAFETY RELIEF



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

SEE PAGE E-7 FOR DETAILED INFORMATION

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



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 Certified to 500,000 BTU/hr.

SEE PAGE E-23 FOR DETAILED INFORMATION

37-200 (VR) SERIES
VACUUM RELIEF VALVE



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. Lead free version certified to NSF/ANSI 372.

FEATURES

- Maximum Temperature: 250°F
- Rated for Water Pressures to 200 psig
- Auto-Vacuum Relief at Less than 1" Hg

OPTIONS

- Satin Brass Finish (-01)
- Heavy Spring (-B1)

SERIES NUMBER*	LEAD FREE SERIES NUMBER	SIZE (IN.)	VENTING CAPACITY @ 2" HG	WT./100 (LB.)
37-201-01	37LF-201-01	1/2	15 CFM	30.4
37-202-01	37LF-202-01	3/4	16 CFM	32.4

*Standard materials available until stock is depleted



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
- **PEX A F1960 Cold Expansion Connections NEW!**
- Modular Seat Disc and Strainer Cartridge
- Control Pressure Ranges:
15-75 psi and 75-150 psi
- Integral Stainless Steel Strainer
- NPT, Solder, PEX, CPVC and Press and Push Connections
- Maximum Supply Pressure: 400 psig
- Working Temperature Range:
33°F to 180°F
- **100% Manufactured in USA**

OPTIONS

- **(-B) Bronze Cap NEW!**
- 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

SEE PAGE H-11 FOR DETAILED INFORMATION

35 (FF) SERIES
BRONZE FEED WATER PRESSURE REGULATOR



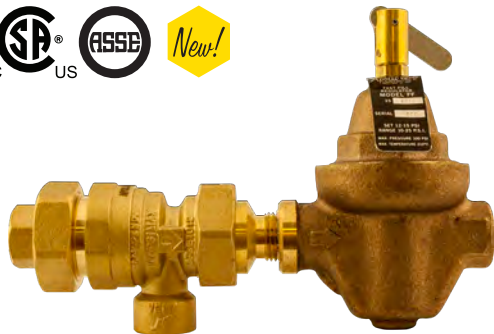
Available in 1/2" union threaded, threaded and solder union configurations. Purge lever/fast fill feature. Cartridge replaceable in-line.

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 (LB.)
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) SERIE
COMBINATION BACKFLOW PREVENTER AND FEED REGULATOR



Positive protection against backflow when supply pressure falls below system pressure.

FEATURES

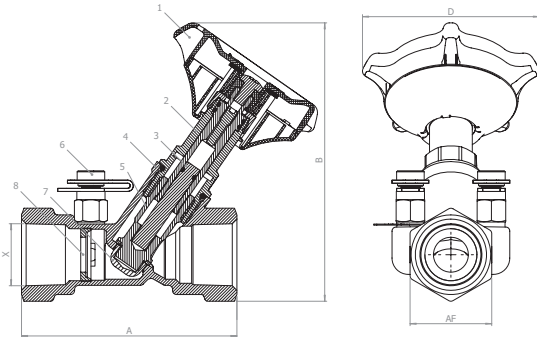
- New Design Dual Check with Atmospheric Port (DCAP) Backflow Device
- Designed for Continuous Pressure, Hot or Cold Water Service
- Fast-Fill Lever on Regulator
- Built in Stainless Steel Strainer
- Maximum Supply Pressure: 100 Psig
- Maximum Temperature: 210°F
- Backflow Device is ASSE and CSA Listed

SERIES NUMBER	SIZE (IN.)	HEIGHT (IN.)	LENGTH (IN.)	NET WT. (LB.)
35603BFST	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
35603BFSTC*	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.

HYDRONIC & STEAM HEATING

**58A SERIES
BALANCING VALVE**



Apollo® Model 58A Balance Valves are precision engineered and manufactured valves which provide two position hydronic circuit isolation capability and multi-turn throttling adjustment as required for proportional balancing of hydronic systems. The unique integrated digital readout in the handle allows qualified technicians to easily adjust the valve to achieve a highly accurate flow. Valve pressure drop can be read through the valves integrated 1/4" measurement ports, and flow calculated from the flow coefficient associated with the numerical setting. The integrated fixed orifice offers greater accuracy than that of a variable orifice.

FEATURES

- P/T Plugs
- Compatible with All Flow Meters
- Easy Adjustment and Setpoint Indicator
- Isolated Flow Shut-off
- Non-Rising Stem
- Y Pattern Body
- Positive Shut Off

APPROVALS

- WRAS
- BS7350
- BS EN 1982
- BS EN 12164

OPTIONS

- NPT Connection
- Solder Connection
- Press Connection
- PEX A Connection
- PEX B/C Connection

PERFORMANCE RATING

- CWP: 300 PSI (200 CWP for Push Fittings)
- Temperature Range: -60°F to 300°F (-10°C to 150°C)

DIMENSIONS

PART NUMBER	SIZE	CONNECTION	DIMENSIONS (IN)				WEIGHT (LB)
			A	B	D	AF	
58A203T	1/2"	FNPT	3.11	4.22	3.54	1.08	1.17
58A204T	3/4"		3.39	4.15		1.26	1.3
58A205T	1"		4.17	4.45		1.57	1.98
58A206T	1-1/4"		4.88	4.72		1.97	2.84
58A207T	1-1/2"		5.12	4.85		2.17	3.7
58A208T	2"	6.26	5.43	2.76	6.53		
58A203S	1/2"	SOLDER	4.35	4.22	3.54	1.08	1.3
58A204S	3/4"		5.03	4.15		1.26	1.54
58A205S	1"		6.85	4.45		1.57	2.32
58A206S	1-1/4"		7.47	4.72		1.97	3.47
58A207S	1-1/2"		8.31	4.85		2.17	4.62
58A208S	2"	10	5.43	2.76	7.88		
58A203X	1/2"	PEX A	5.06	4.22	3.54	1.08	1.3
58A204X	3/4"		5.76	4.15		1.26	1.54
58A205X	1"	7.01	4.45	1.57	2.32		
58A203X2	1/2"	PEX B/C	5.11	4.22	3.54	1.08	1.3
58A204X2	3/4"		5.81	4.15		1.26	1.54
58A205X2	1"	7.06	4.45	1.57	2.32		
58A203P	1/2"	PUSH	5.3	4.22	3.54	1.08	1.39
58A204P	3/4"		5.75	4.15		1.26	1.6
58A205P	1"	6.89	4.45	1.57	2.48		
58A203PR	1/2"	PRESS	4.98	4.22	3.54	1.08	1.35
58A204PR	3/4"		5.56	4.15		1.26	1.62
58A205PR	1"		6.43	4.45		1.57	2.36
58A206PR	1-1/4"		7.42	4.72		1.97	3.42
58A207PR	1-1/2"		8.38	4.85		2.17	4.6
58A208PR	2"	9.88	5.43	2.76	7.75		

STANDARD MATERIALS LIST

Item #	Part Name	Material
1	Handle	Glass Filled PA66 (Red)
2	Bonnet	HPb59-3 Brass
3	Seals	EPDM
4	Body	CC752S Brass (BS EN 1982) - DZR
5	Stem	HPb59-3 Brass
6	Test Points	Brass Body & EPDM Plug
7	Nose	CW602N Brass (BS EN 12164) - DZR
8	Orifice Plate	HPb59-3 Brass

HYDRONIC & STEAM HEATING

**58B SERIES
BALANCING VALVE**



Apollo® Model 58B Commercial Double Regulating Valve are intended for the isolation and regulation of sections of pipe work and equipment in HVAC applications and general commercial applications. Valve pressure drop can be read through the valves integrated 1/4" measurement ports, and flow calculated from the flow coefficient associated with the numerical setting on the side of the handle. The valves have non-rising stems that help reduce the amount of space needed. The integrated fixed orifice offers greater accuracy than that of a variable orifice.

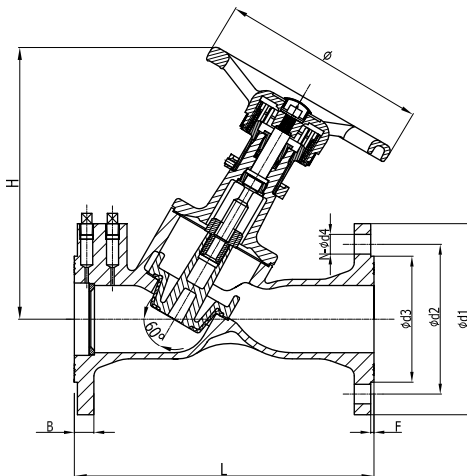
FEATURES

- Regulating and Isolating Functions
- Flanged End Connection Compatible with ANSI 125# & 150# Flanges
- Rugged Handwheel
- Grooved End Adapters Available

PERFORMANCE RATING

- Max Working Pressure: 300 PSI
- Temperature Range: 15°F - 250°F (non shock)

DIMENSIONS



PART NUMBER	SIZE	DIMENSIONS (IN)									WEIGHT (LB)	FLOW RATES	
		L	H	B	Ø	ØD1	ØD2	ØD3	F	N- ØD4		CV	CVS
58B209F	2-1/2"	11.42	10.43	0.69	7.87	7.01	5.5	4.12	0.08	4-Ø 3/4"	38.94	120.23	120.23
58B200F	3"	12.2	10.63	0.75	7.87	7.52	6	5	0.08	4-Ø 3/4"	51.92	129.48	134.11
58B20AF	4"	13.78	12.2	0.94	9.45	9.02	7.5	6.19	0.08	8-Ø 3/4"	66	187.29	246.25
58B20BF	5"	15.75	13.39	0.94	11.42	10	8.5	7.31	0.08	8-Ø 7/8"	99	293.65	384.98
58B20CF	6"	18.9	13.39	1	11.42	10.98	9.5	8.5	0.08	8-Ø 7/8"	114.4	387.29	550.3
58B20EF	8"	23.62	21.14	1.13	13.78	13.5	11.75	10.62	0.08	8-Ø 7/8"	231	618.51	887.88
58B20GF	10"	28.74	22.44	1.19	16.54	15.98	14.25	12.75	0.08	12-Ø 1"	407	1270.55	1332.98
58B20HF	12"	33.46	27.17	1.25	16.54	19.02	17	15	0.08	12-Ø 1"	545.6	1835.89	2015.08

STANDARD MATERIALS LIST

BODY	Ductile Iron	STEM	Stainless Steel
BONNET	Ductile Iron	GASKET	Graphite
DISC	Ductile Iron, EPDM Coated	HANDWHEEL	Carbon Steel (2-1/2" - 4") Ductile Iron (5" - 12")
DISC NAIL	Brass		
"O" RING	EPDM		

**58 (BAV) SERIES
BALANCING VALVE**



Provides 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.)	CV	WT. (LB.)
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*

SEE PAGE G-11 FOR DETAILED INFORMATION

MVA-LF (34ALF) SERIES/MVAH
MIXING VALVE



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**

SEE PAGE G-4 FOR DETAILED INFORMATION

MVC/MVC-LF (34C/34CLF SERIES) MIXING VALVE



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

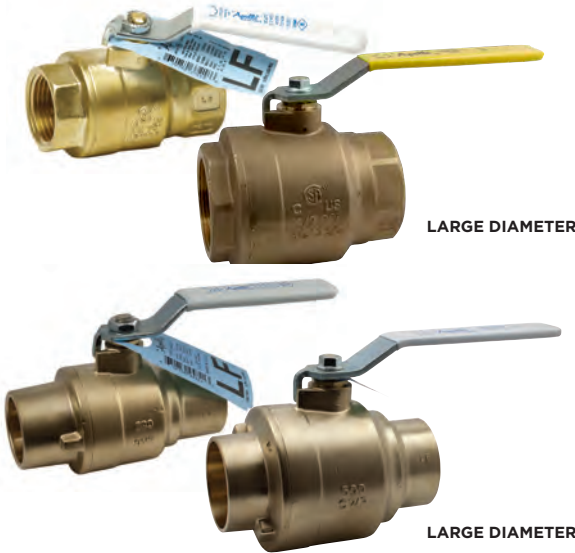
- Sizes: 3/4", 1", 1-1/4", 1-1/2", 2"
- Low Temperature Range: 90°-140°F
- High Temperature Range: 130°-180°F
- Threaded Connections
- Installs Easily on Heating Source
- Patented Design for Easy In-Line Maintenance
- Supply Pressures to 150 psig
- U.S. Patent No. 6,328,219
- CSA B125.01

SEE PAGE G-8 FOR DETAILED INFORMATION



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 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 VGGU (1/4" - 2")

OPTIONS

- (-01) Standard Lever and Trim
- (-04) 2-1/4" Stem Extension
- (-07) CS Tee Handle
- (-11) Therma-Seal™ Insulating Tee
- (-27) Stainless Steel Locking Handle
- (-50) 2-1/4" Locking Stem Extension

SEE PAGE B-30 FOR DETAILED INFORMATION

HYDRONIC & STEAM HEATING



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**

SEE PAGE B-5 FOR DETAILED INFORMATION

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 NEW!**

SEE PAGE B-7 FOR DETAILED INFORMATION

70-10X-92 SERIES
BALL VALVE WITH STANDARD BALANCING STOP PLATE



Ideal for hydronic applications, this valve comes with a simple memory stop plate that fits over its standard lever handle. Also available with tee or round handles.

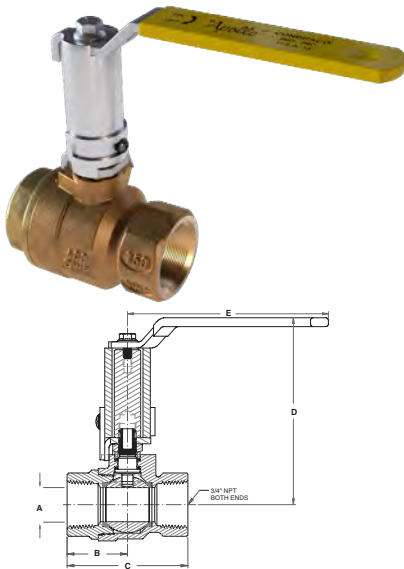
FEATURES

- 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: OC10908.5C
- 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. (LB.)
			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™



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)

SEE PAGE B-31 FOR DETAILED INFORMATION

95ALF SERIES

STOP & WASTE VALVE - APOLLO INTERNATIONAL™



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 to 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
NPT						
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

SEE PAGE B-33 FOR DETAILED INFORMATION

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
- **300 CWP, Non-Shock to 250°F max. NEW!**
- 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**

SEE PAGE B-34 FOR DETAILED INFORMATION

77W-HC SERIES

APOLLOPRESS® HOSE CAP & CHAIN BALL VALVE



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.

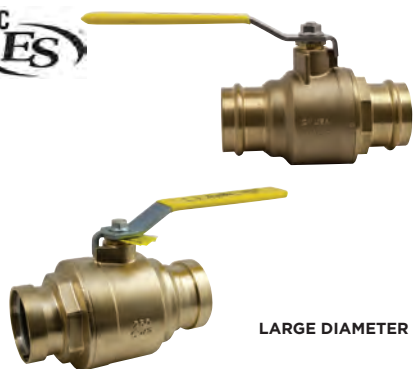
FEATURES

- Full Port
- Ridgid® XL Press Tool Compatible
- Leak Before Press® Technology
- MSS SP-110 Ball Valves
- NSF/ANSI 61 Compliant (77WLF-HC)
- **Heavy Duty Stainless Steel Ball Chain NEW!**
- Adjustable Stem Packing
- **300 CWP, Non-Shock to 250°F max. NEW!**
- 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**

SEE PAGE B-35 FOR DETAILED INFORMATION

77V SERIES

APOLLOPRESS® BRASS BALL VALVE



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 300 psi NEW!**
- 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**

SEE PAGE B-35 FOR DETAILED INFORMATION



78-RV (EXV) SERIES

SHUT-OFF VALVE W/ 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. **Made in the USA**, featuring lead free dezincification resistant brass materials.

FEATURES

- 3/4" Solder, NPT, and PEX Ball Valve Connections
- Corrosion Resistant, Heavy Pattern, Forged Brass, 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 Solder/Thread Fitting

- Multiple Relief Pressure Kit Options
- Easily Identifiable White Handle Grip and Blue "Lead Free" Hang Tag
- EZ-Solder™ Lead Free Brass

PERFORMANCE RATING

- Maximum Temperature: 210°F

APPROVALS

- IAPMO IGC 128-2008
- City of Los Angeles Registered
- CSA B125.1 & B125.3
- NSF/ANSI 372 Lead Free

78RV	X	X	X	X	- XX
	END CONNECTION	END CONNECTION	FITTING CONNECTION	RELIEF PRESSURE (PSI)	OPTIONS**
	1 - NPT	1 - NPT	P - 1/4" PUSH	80	X2 - PEX A F1960
	2 - SOLDER	2 - SOLDER	4 - 3/8" HOSE BARB	100	BODY CONNECTION
	8 - PUSH	8 - PUSH	5 - 1/2" PEX F1807	125	
	9 - PEX F1807	9 - PEX F1807	6 - 3/8" COMPRESSION		
			7 - 1/2" NPT/SOLDER		

**If PEX F1960 is required, add -X2.

78-RV-P (EXV) SERIES

PUSH SHUT-OFF VALVE W/ 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.

PERFORMANCE RATING

- 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

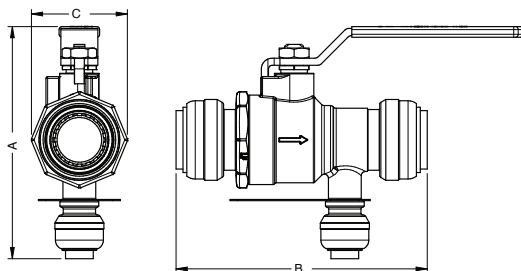
- IAPMO IGC 128-2008
- NSF/ANSI 372 Lead Free
- CSA B125.3

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	RELIEF PRESSURE
	8 - PUSH	8 - PUSH	P - 1/4" PUSH	80 PSI
				100 PSI
				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

- (-01) Standard Die-Cast Zinc "Wing" Handle Epoxy Coated
- (-L1) Lever Handle or (-T1) Tee Handle Options
- Use with Natural, Manufactured, Mixed and Liquefied Petroleum Gases, LP Gas-Air Mixtures
- **Made in USA**

PERFORMANCE RATING

- Temperature Range: 32°F to 125°F at Pressures of 1/2 and 5 psig

APPROVALS

- Complies with ANSI Z21.15, CR91-002, and ASME 16.44

SEE PAGE B-27 FOR DETAILED INFORMATION

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.

APPROVALS

- 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)

SEE PAGE B-27 FOR DETAILED INFORMATION

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

SEE PAGE B-28 FOR DETAILED INFORMATION



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.

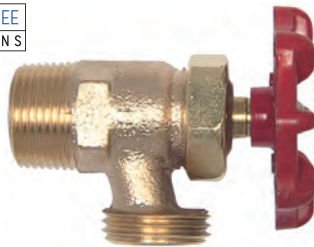
FEATURES

- Blowout-Proof Stem
- RPTFE Seats and Stuffing Box Ring
- Adjustable Packing Gland
- Chrome-Plated Ball
- Positive Shut-Off and Bubble-Tight Check Capability

SEE PAGE J-27 FOR DETAILED INFORMATION

BD90 (31-200/31-500) SERIES

90° DRAIN VALVE



For deluxe water heaters and low pressure boilers.

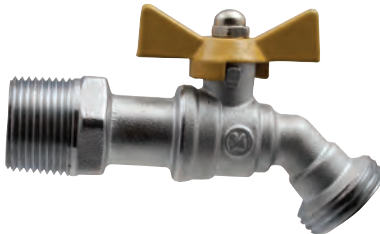
FEATURES

- 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**

SEE PAGE M-7 FOR DETAILED INFORMATION

BDQ (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™

SEE PAGE M-8 FOR DETAILED INFORMATION



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

SEE PAGE M-5 FOR DETAILED INFORMATION

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
- 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

SEE PAGE M-6 FOR DETAILED INFORMATION

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

SEE PAGE M-6 FOR DETAILED INFORMATION



**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

MODEL NUMBER	SIZE (IN.)	WT./100 (LB.)
55-302-01	1/4 M x 1/4 F	33

SEE PAGE M-6 FOR DETAILED INFORMATION

**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.

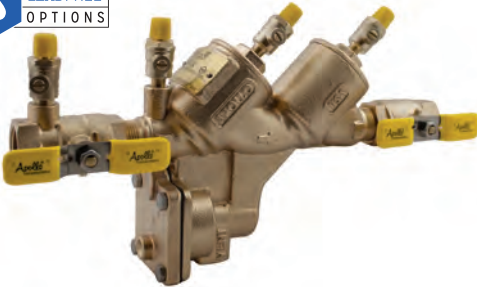
FEATURES

- 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

SEE PAGE M-2 FOR DETAILED INFORMATION



RP 4A SERIES
REDUCED PRESSURE PRINCIPLE



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

SEE PAGE I-11 FOR DETAILED INFORMATION

AIR GAP DRAIN



For installation with RP 4A, RPDA 4A, RP 4An, RPDA 4An, and RPS 40 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.

SEE PAGE I-19 FOR DETAILED INFORMATION

DCAP SERIES
DUAL CHECK WITH ATMOSPHERIC PORT BACKFLOW PREVENTER



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

SEE PAGE I-23 FOR DETAILED INFORMATION



CVBE (61-500 & 61-600) SERIES
IN-LINE SOFT SEAT CHECK VALVE



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)

SEE PAGE J-24 FOR DETAILED INFORMATION

CVSE (62-500) SERIES
IN-LINE SOFT SEAT CHECK VALVE



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

SEE PAGE J-25 FOR DETAILED INFORMATION



MODEL 101S/101S-LF
SOLDER 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
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze
(ASTM B584-C89836 Lead Free)

SEE PAGE J-2 FOR DETAILED INFORMATION

MODEL 101T/101T-LF
NPT END RISING STEM GATE VALVE



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)

SEE PAGE J-2 FOR DETAILED INFORMATION

MODEL 102S/102S-LF
SOLDER 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
- MSS SP-139 Lead Free Option (CWP only)
- ASTM B62 Bronze
(ASTM B584-C89836 Lead Free)

SEE PAGE J-2 FOR DETAILED INFORMATION

MODEL 102T/102T-LF
NPT END NON-RISING STEM GATE VALVE



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)

SEE PAGE J-3 FOR DETAILED INFORMATION



MODEL 161S/161S-LF BRONZE DISC SWING CHECK



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)

SEE PAGE J-10 FOR DETAILED INFORMATION

MODEL 161T/161T-LF CLASS 125 BRONZE DISC SWING CHECK



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)

SEE PAGE J-10 FOR DETAILED INFORMATION

59 (YB) SERIES
BRONZE WYE STRAINER



Heavy pattern design with large area screens ensures excellent protection against foreign particles in your fluid system. Corrosion-resistant bronze body and stainless steel screens provide years of service.

FEATURES

- Sizes 1/8" to 4" NPT
- Replaceable Self-Aligning Screen
- Large Net Flow Area for Longer Maintenance Intervals
- 59-400 Series is Female x Male NPT (3/4" & 1" Only)
- Blow-Off Ball Valve Option (3/4" - 2")
- Several Screen and Cap Options
- **Made in USA, ARRA Compliant**

PERFORMANCE RATING

- Working Pressure:
CWP: 400 psi (up to 3")
SWP: 125 psi
- Maximum Temperature: 350° F

APPROVALS

- NSF/ANSI 372 Lead Free (59LF)
- CRN-0E 8959.5

SEE PAGE K-2 FOR DETAILED INFORMATION

59-300 (YBS) SERIES
BRONZE WYE STRAINER - SOLDER



Heavy pattern design with large area screens ensures excellent protection against foreign particles in your fluid system. Corrosion-resistant bronze body and stainless steel screens provide years of service.

FEATURES

- Sizes 1/2" to 3" Copper Tube Size
- Optional Tapped Caps Available
- 59LF features EZ-Solder™ Bronze
- **Made in USA**

PERFORMANCE RATING

- Working Pressure:
CWP: 200 psi (up to 3")
SWP: 125 psi
- Maximum Temperature: 350° F

APPROVALS

- NSF/ANSI 372 Lead Free (59LF)

SEE PAGE K-4 FOR DETAILED INFORMATION

YCT SERIES
CAST IRON WYE STRAINER - APOLLO INTERNATIONAL™



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
- NSF Approved Epoxy Coating

PERFORMANCE RATING

- Working Pressure:
CWP: 500 psi
SWP: 250 psi
- Maximum Temperature: 406° F

APPROVALS

- NSF/ANSI 372 Lead Free

SEE PAGE K-5 FOR DETAILED INFORMATION



EXT (16XT) SERIES

EXPANSION TANKS FOR HYDRONIC (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 (LB.)
EXT2	16XT1-04	2.10	0.9	1/2	8.0	12.5	4.25
EXT5	16XT3-04	4.5	2.5	1/2	11.0	15.0	7.5
EXT7	16XT5-04	6.0	3.0	1/2	11.5	16.63	8.75
EXT14	16XT7-04	14.0	11.3	1/2	15.5	23.5	19

EXTP (40XT) SERIES

EXPANSION TANKS FOR POTABLE SYSTEMS



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
- Maximum Pressure: 150 psi
- Maximum Temperature: 200° F
- Pre-Charge Pressure: 35 psig

APPROVALS

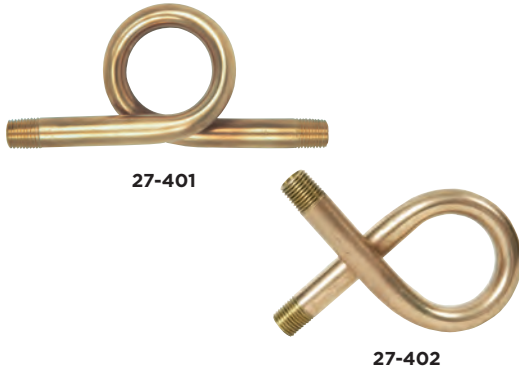
- NSF/ANSI 61 Water Quality
- IAPMO

MODEL NUMBER	PART NUMBER	CAPACITY (GAL.)	EXP. VOL- UME (GAL.)	CONNECTION SIZE (NPT)	DIAMETER (IN.)	HEIGHT (IN.)	WEIGHT (LB.)
EXTP2	40XT1-04	2.10	0.9	3/4	8.0	12.5	4.7
EXTP5	40XT3-04	4.5	2.5	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



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

SEE PAGE M-3 FOR DETAILED INFORMATION

20-100 SERIES
STANDARD PATTERN BRONZE WATER GAUGES



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.

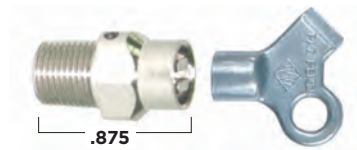
FEATURES

- 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

SEE PAGE L-10 FOR DETAILED INFORMATION

HYDRONIC &
STEAM HEATING

27-200 (RAV) SERIES
RADIATOR AIR VALVE - APOLLO INTERNATIONAL™



Manual air purge valves for hot water radiators/heating systems.

SERIES NUMBER	SIZE	NET WT. (LB.)
27-202-02	1/8 NPT	2.0
H-2404-00	Key only	0.9



BASIC HEAT TRANSFER CALCULATION

$$q \left(\frac{\text{Btu}}{\text{hr}} \right) = \dot{m} c_p \Delta t$$

$$\frac{\text{Btu}}{\text{hr}} = \left| \frac{\text{lb}}{\text{hr}} \right| \left| \frac{\text{Btu}}{\text{lb.} \cdot ^\circ\text{F}} \right| \left| \right|$$

$$q \left(\frac{\text{Btu}}{\text{hr}} \right) = Q \ 500 \ c_p \ \Delta t$$

$$q \frac{\text{Btu}}{\text{hr}} = \left| \frac{Q \text{ Gal}}{\text{min}} \right| \left| \frac{60 \text{ min}}{\text{hr}} \right| \left| \frac{8.34 \text{ lb}}{\text{Gal}} \right| \left| \frac{\text{Btu}}{\text{lb.} \cdot ^\circ\text{F}} \right| \left| \right|$$

q = heat transfer (Btu/hr.)
Q = flow rate (gpm)
cP = 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)
CV = device flow coefficient
ΔP = change in fluid pressure across the device (psi)
SG = Specific Gravity of fluid

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

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

$$\frac{\text{Area}}{\rho} = 2.31 \frac{\text{ft}}{\text{psi}}$$

$$\left| \frac{\text{Ft}^3}{62.4 \text{ lb.}} \right| \left| \frac{144 \text{ in}^2}{1 \text{ Ft}^2} \right| = 2.31 \frac{\text{ft}}{\text{psi}}$$

Relationship of Water Pressure in Feet to PSI
ρ = fluid density (lb/ft³)
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)
η_p = pump efficiency at operating point

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
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