

"Apollo" Valves

hydronic & steam heating



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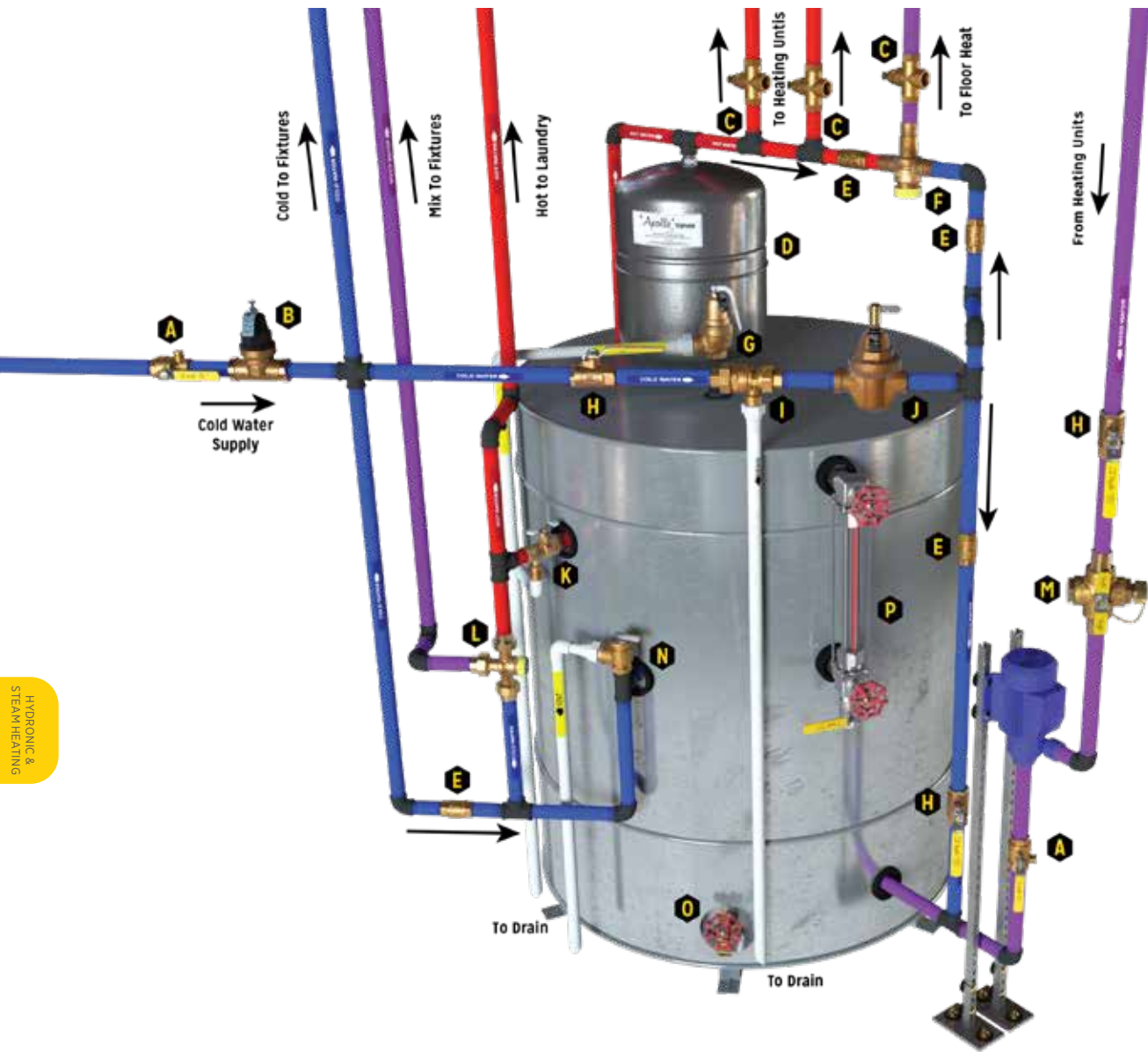
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HYDRONIC & STEAM HEATING

- | | |
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12-200 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 #0G8547.5C
- National Board Certified at 15 psig
- **Proudly Made in USA**

SEE PAGE E-10 FOR DETAILED INFORMATION

13 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 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 #0G8547.5C
- **Proudly Made in USA**

SEE PAGE E-12 FOR DETAILED INFORMATION

17-400 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" (17-401) and 3/4" (17-402)
- CSA Verified to ANSI Z21.22
- Pressure Settings 75 thru 150 psi @ 250°F max.
- ASME Section IV Hot Water, 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
- **Proudly Made in USA**

SEE PAGE E-22 FOR DETAILED INFORMATION

10 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
- **Proudly Made in USA**

SEE PAGE E-3 FOR DETAILED INFORMATION

10-600 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
- **Proudly Made in USA**

SEE PAGE E-7 FOR DETAILED INFORMATION

18C-400 & 18C-402X 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.
- **Proudly Made in USA**

SEE PAGE E-23 FOR DETAILED INFORMATION

37LF SERIES VACUUM RELIEF VALVE



Designed to protect water storage tanks 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
- Rated for Water Pressures to 200 psig
- Auto-Vacuum Relief at Less than 1" Hg
- NSF/ANSI/CAN 372 - Lead Free
- **Proudly Made in USA**

OPTIONS

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

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

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

- Sizes 1/2" to 2"
- 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
- **Proudly Made 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/CAN 372 - Lead Free
- NSF/ANSI/CAN 61 - Water Quality

SEE PAGE H-10/11 FOR DETAILED INFORMATION

35 SERIES BRONZE FEED WATER PRESSURE REGULATOR



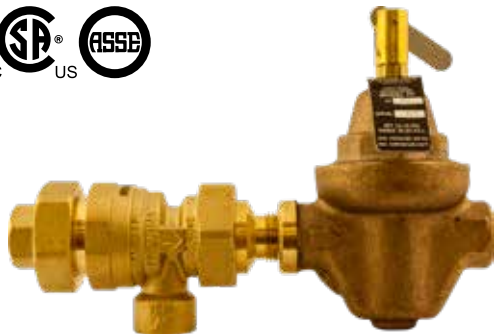
Available in 1/2" union threaded, threaded and solder union configurations. Purge lever/fast fill feature. Cartridge replaceable in-line.

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
- **Proudly Made in USA**

PART NUMBER	SIZE (IN.)	HEIGHT (IN.)	LENGTH (IN.)	WT./100 (LB.)
35-503-01	1/2 Union Threaded	5.25	4.31	255
35-603-01	1/2 Threaded	5.25	3.50	225
35-703-01	1/2 Solder Union	5.25	3.18	232
35-803-01	1/2 Press Union x NPT	5.25	4.53	232

35-603-BF SERIES COMBINATION BACKFLOW PREVENTER AND FEED REGULATOR



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

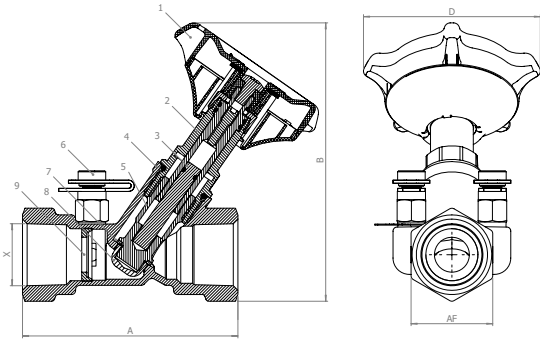
FEATURES

- 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

PART 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.

58A SERIES BALANCING VALVE



Apollo 58A Series 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

- Forged DZR Brass
- 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

OPTIONS

- NPT Connection
- Solder Connection
- Press Connection*
- Push Connection
- PEX A Connection F1960
- PEX B/C Connection F1807

PERFORMANCE RATING

- CWP: 300 PSI
(200 CWP for Push Fittings)
- Temperature Range:
15°F to 300°F (-10°C to 150°C)

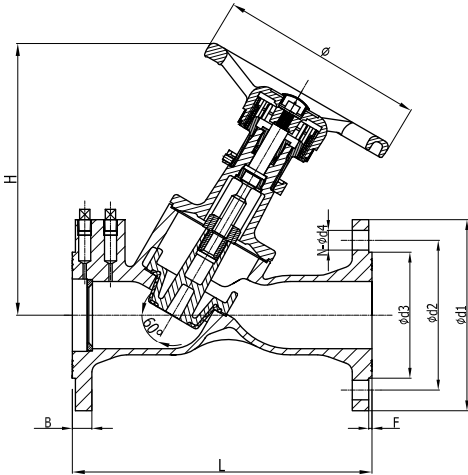
DIMENSIONS

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 B/C	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 A	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

NO.	DESCRIPTION	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

58B SERIES BALANCING VALVE



Apollo 58B Series 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: 230 PSI
- Temperature Range: 15°F - 250°F
- Fusion Bonded Epoxy powder coating

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 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
- Proudly Made in USA

PART 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 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
- **Proudly Made in USA**

*Not intended for potable water

SEE PAGE G-11 FOR DETAILED INFORMATION

34ALF SERIES MIXING VALVE



Apollo 34A-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
- **Proudly Made in USA**

SEE PAGE G-4 FOR DETAILED INFORMATION

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
- **Proudly Made in USA**

SEE PAGE G-8 FOR DETAILED INFORMATION

77F/77FLF SERIES

FULL PORT 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.**

77F 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
- Rating: 600 CWP (1/4" - 2")
- Rating: 400 CWP (2-1/2" - 4")
- Steam Rating: 150 psi SWP
- Vacuum Service to 29 in. Hg
- **Proudly Made in USA**

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/CAN 61 - Water Quality
- NSF/ANSI/CAN 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/ANSI Z1157

FM LISTED

- FM 1140 (<175 PSI) (1/4" - 2")

UL LISTED

- UL 125 - Flow Control Valves for LP-Gas, Guide YSDT to 250 psi max
- UL 258 - Fire Protection Trim & Drain, Guide VQGU to 175psi max (1/4" - 2")
- UL 842 - Valves for Flammable Fluids, Guides YRBX, YRPV, and MHKZ to 250 psi max. (1/4" - 4" NPT only)
- UL 1477 - Compressed Gas Shutoff Valves, Guide YQNZ to 250 psi max (1/4" - 4" NPT only)

*Gas approvals apply to NPT models only

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
- Stainless Steel Ball & Stem

SEE PAGE B-30 FOR DETAILED INFORMATION



70-100/200 SERIES BRONZE BALL VALVE



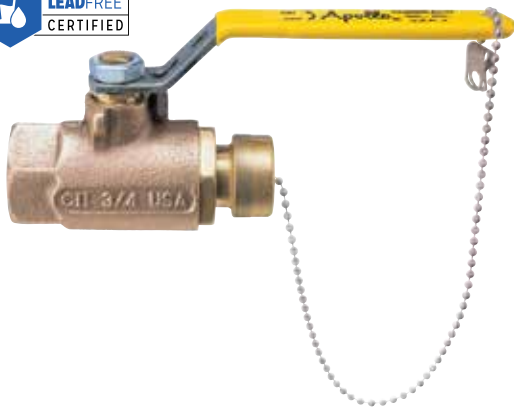
The Apollo 70 Series is the most widely used and trusted bronze ball valve in the industry. It features blowout-proof stem, RPTFE seats and stuffing box ring and plated brass ball.

FEATURES

- Sizes 1/4" - 4"
- Heavy Pattern Construction
- Rated 600 psig CWP, Non-Shock
- 150 psig SWP for Saturated Steam
- Vacuum Service to 29 in. Hg
- Adjustable Packing Gland
- Multiple Options and Configurations Available
- Lead Free Option (70LF)
- 100% Tested
- NPT + Solder Connections
- **Proudly 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

- Sizes 1/2" - 1"
- 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!**
- **Proudly Made in USA**
- Lead free option - 70LF-HC

SEE PAGE B-7 FOR DETAILED INFORMATION

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



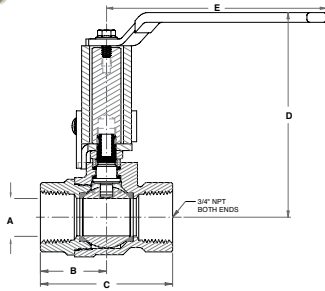
Ideal for hydronic applications, this valve comes with a simple memory stop plate that fits over its standard lever handle. Also available with tee or round handles.

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
- **Proudly Made in USA**

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.
- **Proudly Made in USA**

PART NUMBER	LF PART 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 listed. Ideal for general purpose non-potable applications including air, gas, HVAC, irrigation, fire protection, etc.

FEATURES

- Sizes 1/4" - 4"
- 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)
- NPT + Solder Connections

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/ANSI Z1157
- ANSI/NSF/CAN 61 - Water Quality
- ANSI/NSF 372 - Lead Free

DIMENSIONS

PART 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	-

PART 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-A SERIES

APOLLOPRESS® BRONZE FULL PORT BALL VALVE



Apollo 77W-A 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

- Sizes 1/2" - 2"
- New Enhanced Design
- **New Lever Options Available Including (-27) Locking Lever NEW!**
- Full Port
- Ridgid® XL Press Tool Compatible
- **300 CWP, Non-Shock to 250°F max. NEW!**
- Leak Before Press® Technology
- MSS SP-110 Ball Valves
- Adjustable Stem Packing
- Excellent for Hydronic Heating (90% Glycol max)
- Popular Lever Options and Stainless Steel Trim Available
- Corrosion Resistant Materials
- IAPMO/ANSI Z1157
- **Made in the USA**

SEE PAGE B-34 FOR DETAILED INFORMATION

77W-HCA 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.

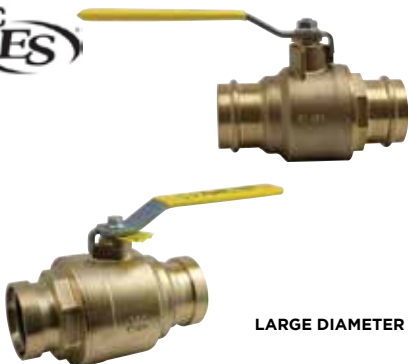
FEATURES

- Full Port
- Ridgid® "XL" Press Tool Compatible
- Leak Before Press® Technology
- MSS SP-110 Ball Valves
- NSF/ANSI/CAN 61 - (77WLF-HC)
- 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
- **Now with Stronger Stainless Steel Ball Chain NEW!**
- **Proudly 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

- Sizes 1/2" - 4"
- 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
- 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
- **Proudly Made in USA**

SEE PAGE B-35 FOR DETAILED INFORMATION

78-RV 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/CAN 372 - Lead Free

PART NUMBER MATRIX

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

**If PEX A (F1960) is required, add -X2. Example: 78RV99580X2 - PEX A (F1960) Inlet, PEX A (F1960) Outlet, PEX A (F1960) Relief Connection, 80 PSI.

78-RV-P 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/CAN 372 - Lead Free
- CSA B125.3

DIMENSIONS

SIZE	APOLLO PART NUMBER	DIMENSIONS (IN.)			PORT DIA. (IN.)	RELIEF PRESSURE
		A	B	C		
3/4"	78RV88480	3.9	4.2	1.6	.750	80
3/4"	78RV884100	3.9	4.2	1.6	.750	100
3/4"	78RV884125	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	4 - HOSE BARB 3/8"	80 PSI
				100 PSI
				125 PSI

PUSH DEMOUNT TOOL

SIZE	APOLLO PART NUMBER	EPC PART NUMBER
3/4"	D514800	10165625



51GB SERIES

CSA GAS SHUT-OFF VALVE



Note: GB-10 (51GB Series) is no longer offered. Refer to the 77F Series and GB-15 (51GF Series) for replacement options.

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.

CSA LISTED

- ANSI Z21.15 (Appliance & Hose)/CGA9.1(1/2 psi)
- ASME B16.44 (5 psi)

UL LISTED

- UL 125 - Flow Control Valves for LP-Gas, Guide YSDT to 250 psi max
- UL 842 - Valves for Flammable Fluids, Guides YRBX, YRPV, and MHKZ to 250 psi max.

SEE PAGE B-27 FOR DETAILED INFORMATION

50GB/50GB-A SERIES

CSA GAS SHUT-OFF VALVE



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
- MSS SP-110
- **Proudly Made in USA**

CSA LISTED

- ANSI Z21.15, CGA9.1
- ASME B16.44 (2 and 5 psig)

UL LISTED

- UL 125 - Flow Control Valves for LP-Gas, Guide YSDT to 250 psi max
- UL 842 - Valves for Flammable Fluids, Guides YRBX, YRPV, and MHKZ to 250 psi max.

SEE PAGE B-28 FOR DETAILED INFORMATION

50-GB

50GB-A

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.

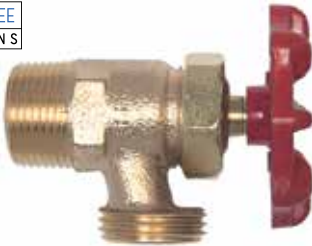
FEATURES

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

SEE PAGE J-27 FOR DETAILED INFORMATION

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
- **Proudly Made in USA**

SEE PAGE M-6 FOR DETAILED INFORMATION

35-300 SERIES

BIBB FAUCET BALL VALVE - APOLLO INTERNATIONAL™



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-7 FOR DETAILED INFORMATION

94XLF SERIES

PEX 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 Brass Materials
- ASTM F1807 Crimp PEX Design
- Easily Identifiable "Lead Free" White Handle Grip
- Double O-Ring Stem Seal
- Blowout-Proof Stem Design
- Silicone Free Assembly

SEE PAGE B-38 FOR DETAILED INFORMATION

50 SERIES MANUAL MAIN CONTROL VALVES



Note: 50 Series is no longer offered.
Refer to the 50GB Series for replacement options.

51 SERIES GAS SERVICE COCKS



Note: 51 Series is no longer offered.
Refer to the 77F Series for replacement options.

52 SERIES GAS SERVICE COCKS



Note: 52 Series is no longer offered.
Refer to the 77F Series for replacement options.

55 SERIES

GAS COCK WITH THROTTLE ADJUSTMENT



Note: 55 Series is no longer offered.

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
- **Proudly Made in USA**

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
- **Proudly Made in USA**

SEE PAGE I-6 FOR DETAILED INFORMATION

AIR GAP DRAIN



For installation with all 4A, 4An, 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-29 FOR DETAILED INFORMATION

DCAP SERIES DUAL CHECK WITH ATMOSPHERIC PORT BACKFLOW PREVENTER



The Apollo International 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-22 FOR DETAILED INFORMATION

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 61 Series 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"
- 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)
- **Proudly Made in USA**

SEE PAGE J-24 FOR DETAILED INFORMATION

62-500 SERIES IN-LINE SOFT SEAT CHECK VALVE



The Apollo 62-500 Series 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
- 1/2 psi Cracking Pressure
- RoHS Compliant
- CRN OC 11218.5C
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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)
- **Proudly Made in USA**

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 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
- 59LF-400 Series is Female x Male NPT (3/4" & 1" Only)
- Blow-Off Ball Valve Option (3/4" - 2")
- Several Screen and Cap Options
- **Proudly Made in USA**

PERFORMANCE RATING

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

APPROVALS

- NSF/ANSI/CAN 372 - Lead Free (59LF)
- CRN-OE 8959.5

SEE PAGE K-2 FOR DETAILED INFORMATION

59-300 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
- **Proudly Made in USA**

PERFORMANCE RATING

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

APPROVALS

- NSF/ANSI/CAN 372 - Lead Free (59LF)

SEE PAGE K-3 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/CAN 372 - Lead Free

SEE PAGE K-5 FOR DETAILED INFORMATION

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
- **Proudly Made in USA**

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
- 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
- **Proudly Made in USA**

SEE PAGE L-10 FOR DETAILED INFORMATION

27-200 SERIES RADIATOR AIR VALVE - APOLLO INTERNATIONAL™



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

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

BASIC HEAT TRANSFER CALCULATION

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

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

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

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

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

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

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
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