

CHAMFlex®

**“CLASS A” FIRE RATED
HOSE ASSEMBLIES & KITS**



BEST QUALITY. BEST DELIVERY. BEST SERVICE.



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Advantages of ChamFlex® Hose Assemblies

- ◆ **ChamFlex® Hose Assemblies** are recognized by Underwriter Laboratories (UL) under UL 207.
- ◆ **ChamFlex® Hose Assemblies** have also been tested to ASTM E84/ UL 723 and received a “**Class A**” Fire Rating. This is the **highest fire rating** that can be obtained under this testing methodology. In addition, the **Chamflex® tube compound** is certified by Underwriters Laboratories to flammability specification UL 94 V-0.
- ◆ **ChamFlex®** now offers a **Push-To-Connect** fitting that provides the quickest installation in the industry. Designed primarily for the **Chilled Beam** market, other applications also apply. See page 7.
- ◆ **ChamFlex® Flare Fittings** are designed to eliminate washers. The metal to metal seal reduces the chance of leakage. Coupled with our **Flare Ball Valves** and **Flare Adapters**, the **ChamFlex® Quick Connection System** is second to none. See page 8.
- ◆ The **ChamFlex®** patented process of bonding our tube compound to the stainless steel braiding fuses the materials together creating a “one piece” hose. This “**one piece design**” greatly reduces the possibility of kinking and allows for a significantly smaller bend radius.
- ◆ **ChamFlex® Hose Assemblies** are **Custom Made** at our facility to meet our customers’ specifications. Our turnaround time for custom orders is extremely fast.
- ◆ **NPT** fittings come with thread sealant already applied, saving installation time.
- ◆ All **ChamFlex® Hose Assemblies** comply with the “**Buy America Act**”.



ChamFlex®

Single Hose Assembly



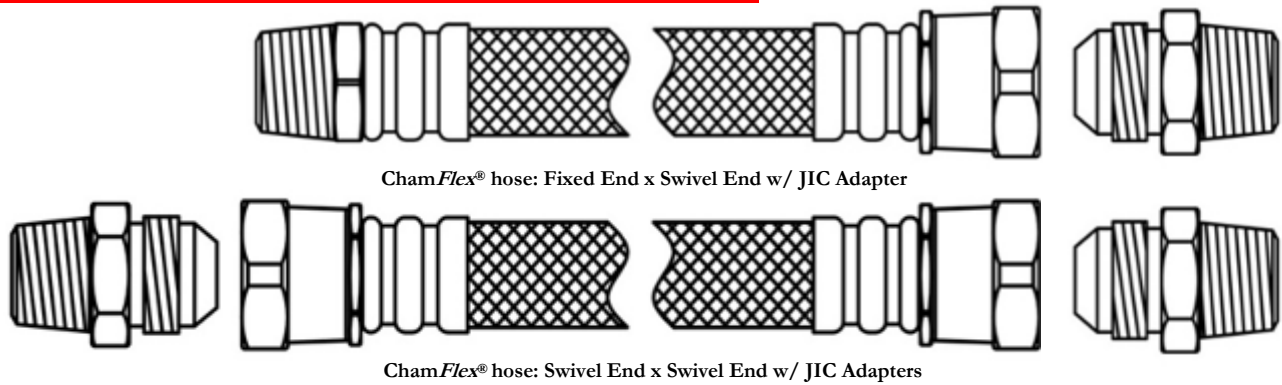
Chamberlin Rubber Company, Inc. provides you with superior fire retardant hose assemblies of unparalleled quality and integrity, designed specifically for hydronic heating and cooling systems. ChamFlex® is a “Class A” fire rated hose assembly with fixed male pipe thread on one end and swivel with male pipe adapter on the other end. Our tube compound has been *tested to, and awarded, a UL 94 V-0 fire rating*, the highest standard in the industry. The patented process, which bonds the inner tube to a stainless steel wire outer braid minimizes the possibility of the hose assembly kinking during installation. Assemblies for 1/2” and 3/4” hoses are available in a minimum length of six inches with increases of one inch. Minimum length for 1” and 1 1/4” hose is nine inches with one inch increments. In short—ChamFlex® provides you a hose with a long life of trouble-free service.

ChamFlex® Hose Specifications:

Braid:	302/304 Stainless Steel
Tube Component:	EPTF—Santoprene
Fittings & Adapters:	Plated Steel
Temperature Range:	-40° F to 212° F
Ratings:	“Class A” Fire Rating

	ChamFlex®	ChamFlex®	ChamFlex®	ChamFlex®
	1/2” Hose	3/4” Hose	1” Hose	1 1/4” Hose
Working Pressure	400 PSI	400 PSI	500 PSI	400 PSI
Burst Pressure	1600 PSI	1600 PSI	2000 PSI	1600 PSI
Minimum Bend Radius	2.5”	4”	5.5”	10”
Hose O.D. (approx.)	.700”	.975”	1.245”	1.58”

ChamFlex® Single Hose Assembly

**Hose Assembly:**

Recognized by Underwriters Laboratories(UL) under UL 207.

Tested to ASTM E84/UL 723 and received a “Class A” Fire Rating. This is the highest fire rating that can be obtained under this testing Methodology.

Hose Sizes:

1/2” to 1-1/4”

Hose Lengths:Standard:

12”, 18”, 24”, 36” and 48”

Custom:

1/2” & 3/4” - Minimum length: 6” with 1” increments.

1” & 1-1/4” - Minimum length: 9” with 1” increments.

Inner Tube:

EPTF - Santoprene with [UL 94 V-0 Fire Rating](#)

Outer Braid:

302/304 Stainless Steel

Fittings:

Plated Steel

Hose/Adapter Connection:

All Metal JIC Flare Connection

Fixed End Fitting:

MNPT

Swivel End Adapter Options:

MNPT, FNPT(plated Steel), FSWT(brass)

Suitable Media:

Water and Glycol. Not rated for potable water

ChamFlex® Chemical Compatibility:

For general compatibility inquiries, Chamberlin utilizes a chemical resistance guide for elastomers. This guide contains over 1000 listings and their general compatibility with our specific and unique tube component. Of course, compatibility varies with temperature and concentration, therefore the listings within this guide may be more general than the request. Actual compatibility can only be determined by the end user through testing under all extreme conditions and factors. The information below is offered only as a guide.

Ethylene Glycol: ‘A’ Rating to 70° F

Propylene Glycol: ‘A’ Rating to 70°F

Methanol: ‘A’ Rating to 70°F; +1% vol., 7 days, 70°F

Ethanol: ‘A’ Rating to 70°F

WARNING: “Flux and solder drips have been found to weaken the stainless steel braiding on Chamflex® Hose Assemblies which could lead to deterioration of the inner tube component causing ‘ballooning’ and eventual failure. Chamflex® Hose Assemblies must be shielded with appropriate fire resistance materials or if possible, removed from service if soldering, welding, or brazing is to occur in areas above or adjacent to said assemblies. Chamberlin Rubber Company, Inc. will not be responsible for failed hose assemblies and/or subsequent damage that occurred by failing to follow the provided Installation Instructions (and warnings) as well as the Safety Guide.”

NOTE: Be sure that the exterior of the hose does not come into contact with substances not compatible with 304 L stainless steel, including (but not limited to) any substances that contain chlorides. Chlorides have been found to cause stress corrosion cracking of the stainless steel braid and eventual failure.

WARNING: To insure proper installation, this hose assembly must be installed according to instructions included with shipment. Instructions are also available online at www.chamberlinrubber.com.

Chamberlin Rubber Company, Inc.

www.chamflex.com

Revision Date: 11/20/2017

CHAMflex
“CLASS A” FIRE RATED
HOSE ASSEMBLIES & KITS

ChamFlex® Push To Connect (PTC) Hose Assemblies



Spec. Data for Push to Connect (PTC) Fitting:

Size: 1/2" (5/8" OD) & 3/4" (7/8" OD) CTS Tube Connection **Fitting:** Brass

Fitting Finish: Nickel plated

Gripping Ring: Stainless Steel

Specifications:

Tube conforms to ASSE 1061

IAPMO Listed

Working Pressure: up to 200 psi

Temperature Range: 0°F to 200°F



Approved Tubing:

ASTM B88 Tube Types K, L, M Drawn copper tube and annealed copper tube

CPVC Water Tube per ASTM D2846-2846M-99

Hose Size: 1/2" and 3/4"

Hose Lengths:

Standard:

12", 18", 24", 36"

Custom:

Minimum 6" with 1" increments

Minimum Bend Radius: 2.5"

Inner Tube: EPTF—White Santoprene certified by Underwriters Laboratories (UL) under UL 94 V-0

Outer Braid: 302/304 Stainless Steel

Hose Assembly: Recognized by Underwriters Laboratories (UL) under UL 207. Have also been tested to ASTM E84 /UL 723 and received a "Class A" Fire Rating. This is the highest fire rating that can be obtained under this testing methodology.

Advantages of ChamFlex® Push To Connect Hose Assemblies

- ◆ Minimal plumbing knowledge needed.
- ◆ 3 second connection.
- ◆ No tools needed for installation. (Just sandpaper to deburr pipe stub).
- ◆ Eliminates threaded adapter costs.
- ◆ No soldering on threaded adapters.
- ◆ No tightening of pipe thread unions.
- ◆ Easier installation in confined spaces.
- ◆ Installs easily on wet pipes, where soldering can be difficult
- ◆ PTC Fitting rotates on pipe to allow for easy installation of the other hose end and orientation of ball valves and other components.
- ◆ Replaces hard to match fittings—just cut off the old fitting/deburr the cut pipe edge and push on the hose.

Push To Connect Ball Valve

Available in 1/2", 3/4" & 1"

Working Pressue: 200 psi

Temperature Range: 14°F—180°F



Chamberlin Rubber Company, Inc.

www.chamflex.com

Revision Date: 11/20/2017

CHAMFlex
"CLASS A" FIRE RATED
HOSE ASSEMBLIES & KITS

ChamFlex® Quick Connect System

Advantages:

- Fewer Components.
- Washer-less Design – seating metal against metal
- Reduces the number of brazed/soldered joints.
- Fewer leak paths.
- Less labor required for installation.
- Great for applications with space constraints.
- 37° JIC flare connections seal with only finger tightening and about ¼ turn with wrenches.
- 37° JIC flare connections eliminate pipe thread connections which require 3 full revolutions of hard wrenching.



37° JIC Flare Ball Valve—Available in 1/2” and 3/4” sizes.



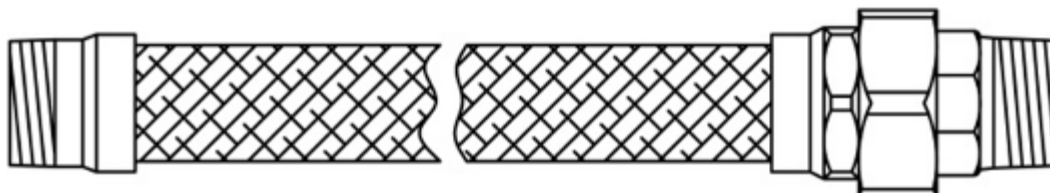
37° JIC Brass Sweat Adapter—Available in 1/2”, 3/4”, 1”, & 1-1/4” sizes.



Hose assemblies can be supplied with any combination of flare ball valve or brass sweat adapters.

Stainless Steel Braided All Metal

Single Hose Assembly

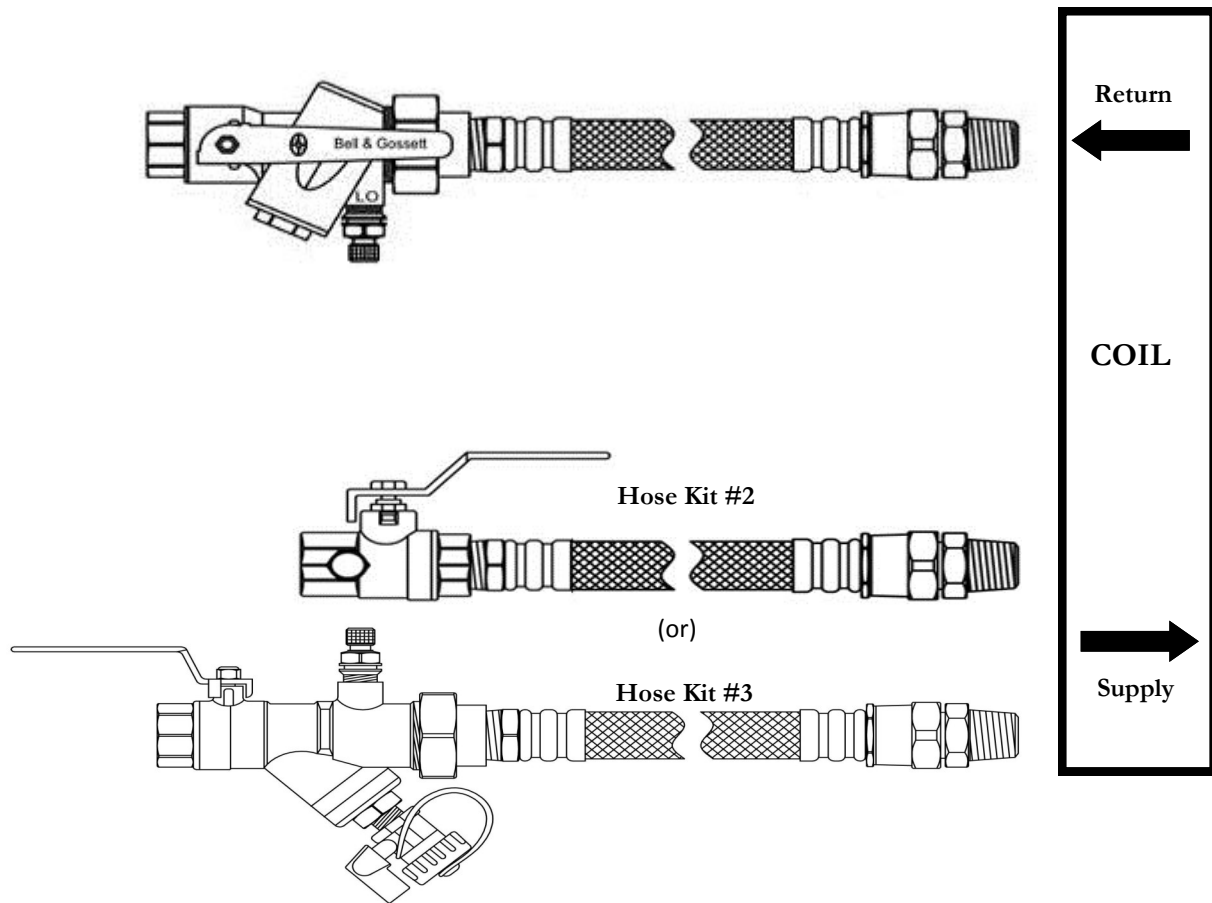


Hose Sizes:	1-1/2" to 2"
Hose Lengths:	<u>Standard:</u> 12", 18", 24", 36" <u>Custom:</u> Minimum length: 12" with 1" increments.
Inner Tube:	321L/316L Stainless Steel
Outer Braid:	304L Stainless Steel
Fittings:	Iron/Carbon Steel
Fixed End Fittings:	MNPT
Union End Fittings:	MNPT
Working Pressure:	300 psi
Burst Pressure:	1200 psi
Minimum Bend Radius:	1-1/2" - 11.75" 2" - 12.55"
Temperature Rating:	-20°F to 800°F
Suitable Media:	Water and Glycol. Not rated for potable water

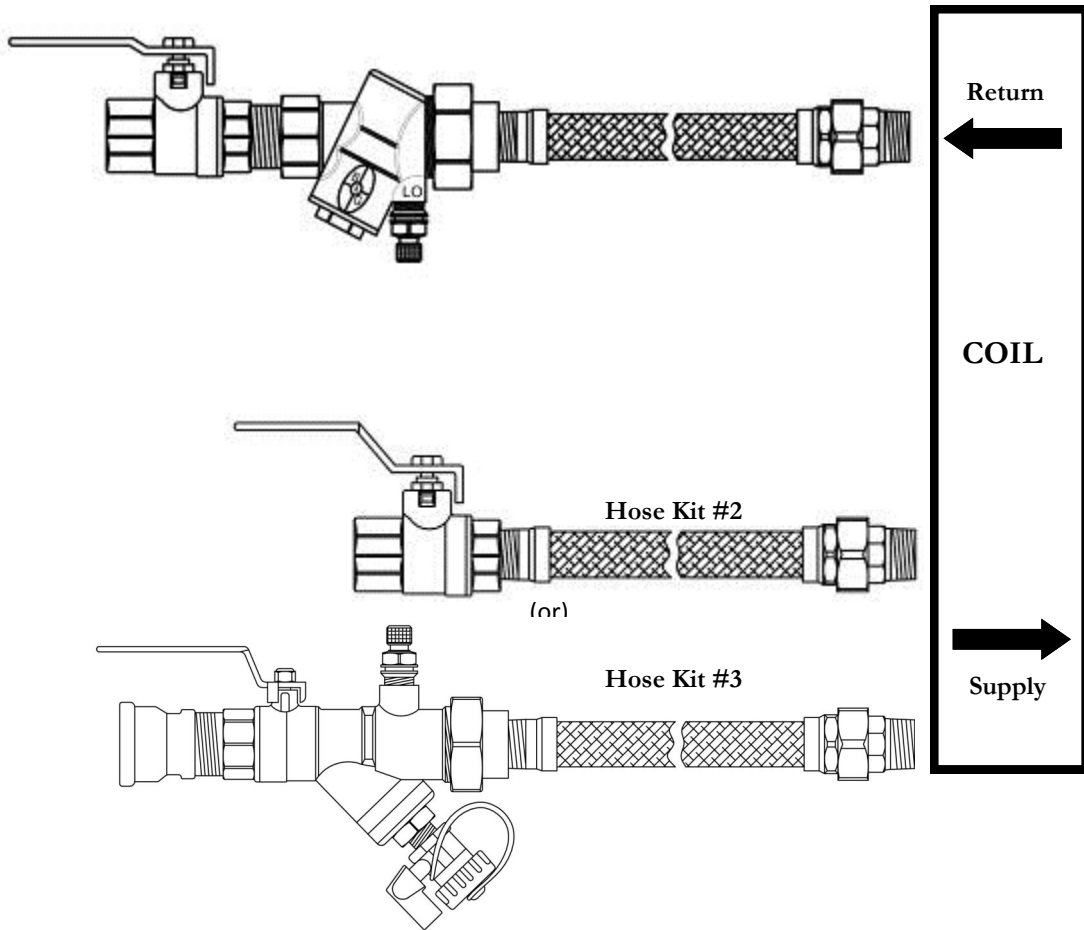
WARNING: "Flux and solder drips have been found to weaken the stainless steel braiding on Chamflex® Hose Assemblies which could lead to deterioration of the inner tube component causing 'ballooning' and eventual failure. Chamflex® Hose Assemblies must be shielded with appropriate fire resistance materials or if possible, removed from service if soldering, welding, or brazing is to occur in areas above or adjacent to said assemblies. Chamberlin Rubber Company, Inc. will not be responsible for failed hose assemblies and/or subsequent damage that occurred by failing to follow the provided Installation Instructions (and warnings) as well as the Safety Guide."

NOTE: Be sure that the exterior of the hose does not come into contact with substances not compatible with 304 L stainless steel, including (but not limited to) any substances that contain chlorides. Chlorides have been found to cause stress corrosion cracking of the stainless steel braid and eventual failure.

WARNING: To insure proper installation, this hose assembly must be installed according to instructions included with shipment. Instructions are also available online at www.chamberlinrubber.com.



Balance Type:	Automatic Flow Limiting Valve with internal fixed flow cartridge
Body Design:	Brass Valve w/integrated isolation/shut-off, PT's, Union End on inlet side
Body:	Brass
Ball:	Chrome Plated Brass
O-Rings:	EPDM
Max. Working Pressure:	400 psig
Balance Cartridge	
A & B Body:	Brass 36000
C Body:	Stainless Steel
Spring:	Stainless Steel
Diaphragm:	EPDM
Min. psid:	Varies with size/cartridge
Max. psid:	60



Balance Type:	Automatic Flow Limiting Valve with internal fixed flow cartridge
Body Design:	Brass Ball Valve + Model AC with PTs, union end on inlet side
Body:	Brass
Ball:	Chrome Plated Brass
O-Rings:	EPDM
Max. Working Pressure:	400 psig
Balance Cartridge:	304 Stainless Steel
Spring:	Stainless Steel
Diaphragm:	Reinforced EPDM
Min. psid:	Varies with size/cartridge
Max. psid:	60
Cartridge Accuracy:	+/- 5%

Flow Rates/Minimum PSID

"A" Body (1/2", 3/4", 1")	
Flow Rate	Min. ΔP
0.33	1.2
0.5	1.5
1	1.7
1.5	1.9
1.75	1.9
2	2
2.5	2
3	2
3.5	2.3
4	3
4.5	3.2
5	3.2
5.5	3.3
6	3.3
6.5	3.3
7	3.3
7.5	3.5
8	3.5
9	3.6
10	3.8
11	4
12	7.3
13	7.3
14	7.3

"B" Body (1", 1-1/4", 1-1/2", 2")	
Flow Rate	Min. ΔP
5	1.7
6	1.9
7	2
8	2
9	2.3
10	2.5
11	2.6
12	2.8
13	2.9
14	3
15	3.2
16	2.9
17	3
18	3
19	3
20	3.2
21	3.2
22	3.3
24	3.5
26	3.6
28	3.8
30	3.9
32	4.1
34	4.4
36	4.5
38	4.8
40	4.9
42	5.2
44	5.5
46	5.8
48	6.1
50	6.4

"C" Body (1-1/2", 2")	
Flow Rate	Min. ΔP
15	1.9
20	2
25	2
30	2
35	2.2
40	2.5
45	2.8
50	3.2
55	3.3
60	3.5
65	3.9
70	4.2
75	4.9
80	4.9
85	5.1
90	5.2
95	5.2
100	5.2
105	5.2
110	5.4
120	5.5
130	5.7
140	5.8
150	5.8

FLOW RATES

Fixed End Size In. (mm)	FLOW RATES* (GPM)																					
	0.33	0.5	1	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	9	10	11	12
½" (12.7)	0.33	0.5	1	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	9	10	11	12
¾" (19)	0.33	0.5	1	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	9	10	11	12
1" (25.4)	0.33	0.5	1	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	9	10	11	12
1"L (25.4)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32
1¼" (31.75)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32
1½" (38.1)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32
2"R (50.8)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32

(cont.)

½" (12.7)	13	14																				
¾" (19)	13	14																				
1" (25.4)	13	14																				
1"L (25.4)	34	36	38	40	42	44	46	48	50													
1¼" (31.75)	34	36	38	40	42	44	46	48	50													
1½" (38.1)	34	36	38	40	42	44	46	48	50													
2"R (50.8)	34	36	38	40	42	44	46	48	50													

*B&G recommends following ASHRAE's design criteria for hydronic system piping, flow rates, and friction loss.

Note: GPMs are rounded up to the next available GPM unless otherwise specified.

Fixed End Size In. (mm)	FLOW RATES* (LPS)																					
	0.02	0.03	0.06	0.09	0.11	0.13	0.16	0.19	0.22	0.25	0.28	0.32	0.35	0.38	0.41	0.44	0.47	0.50	0.57	0.63	0.69	0.78
½" (12.7)	0.02	0.03	0.06	0.09	0.11	0.13	0.16	0.19	0.22	0.25	0.28	0.32	0.35	0.38	0.41	0.44	0.47	0.50	0.57	0.63	0.69	0.78
¾" (19)	0.02	0.03	0.06	0.09	0.11	0.13	0.16	0.19	0.22	0.25	0.28	0.32	0.35	0.38	0.41	0.44	0.47	0.50	0.57	0.63	0.69	0.78
1" (25.4)	0.02	0.03	0.06	0.09	0.11	0.13	0.16	0.19	0.22	0.25	0.28	0.32	0.35	0.38	0.41	0.44	0.47	0.50	0.57	0.63	0.69	0.78
1"L (25.4)	0.32	0.38	0.44	0.50	0.57	0.63	0.69	0.76	0.82	0.88	0.95	1.01	1.07	1.14	1.20	1.26	1.39	1.51	1.64	1.77	1.89	2.02
1¼" (31.75)	0.32	0.38	0.44	0.50	0.57	0.63	0.69	0.76	0.82	0.88	0.95	1.01	1.07	1.14	1.20	1.26	1.39	1.51	1.64	1.77	1.89	2.02
1½" (38.1)	0.32	0.38	0.44	0.50	0.57	0.63	0.69	0.76	0.82	0.88	0.95	1.01	1.07	1.14	1.20	1.26	1.39	1.51	1.64	1.77	1.89	2.02
2"R (50.8)	0.32	0.38	0.44	0.50	0.57	0.63	0.69	0.76	0.82	0.88	0.95	1.01	1.07	1.14	1.20	1.26	1.39	1.51	1.64	1.77	1.89	2.02

(cont.)

½" (12.7)	0.82	0.88																				
¾" (19)	0.82	0.88																				
1" (25.4)	0.82	0.88																				
1"L (25.4)	2.14	2.27	2.40	2.52	2.65	2.78	2.90	3.03	3.15													
1¼" (31.75)	2.14	2.27	2.40	2.52	2.65	2.78	2.90	3.03	3.15													
1½" (38.1)	2.14	2.27	2.40	2.52	2.65	2.78	2.90	3.03	3.15													
2"R (50.8)	2.14	2.27	2.40	2.52	2.65	2.78	2.90	3.03	3.15													

*B&G recommends following ASHRAE's design criteria for hydronic system piping, flow rates, and friction loss.

Note: GPMs are rounded up to the next available GPM unless otherwise specified.

FLOW RATES - LARGE BODY

Fixed End Size In. (mm)	FLOW RATES* (GPM)																						
	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150
1½"L (38.1)	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150
2" (50.8)	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150
2½" (63.5)	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150

*B&G recommends following ASHRAE's design criteria for hydronic system piping, flow rates, and friction loss.

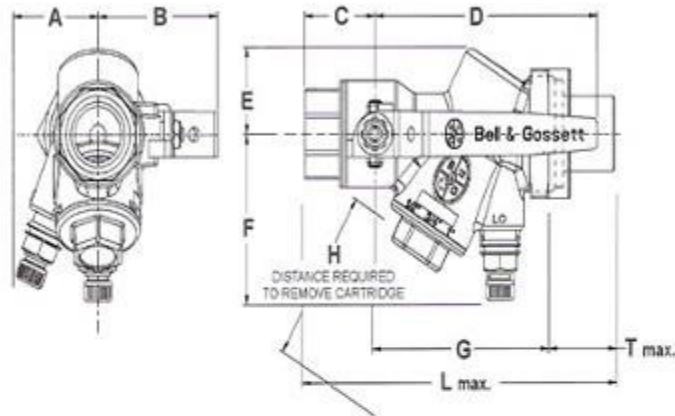
Note: GPMs are rounded up to the next available GPM unless otherwise specified.

Fixed End Size In. (mm)	FLOW RATES* (LPS)																						
	0.95	1.26	1.58	1.89	2.21	2.52	2.84	3.15	3.47	3.79	4.10	4.42	4.73	5.05	5.36	5.68	5.99	6.31	6.94	7.57	8.20	8.83	9.46
1½"L (38.1)	0.95	1.26	1.58	1.89	2.21	2.52	2.84	3.15	3.47	3.79	4.10	4.42	4.73	5.05	5.36	5.68	5.99	6.31	6.94	7.57	8.20	8.83	9.46
2" (50.8)	0.95	1.26	1.58	1.89	2.21	2.52	2.84	3.15	3.47	3.79	4.10	4.42	4.73	5.05	5.36	5.68	5.99	6.31	6.94	7.57	8.20	8.83	9.46
2½" (63.5)	0.95	1.26	1.58	1.89	2.21	2.52	2.84	3.15	3.47	3.79	4.10	4.42	4.73	5.05	5.36	5.68	5.99	6.31	6.94	7.57	8.20	8.83	9.46

*B&G recommends following ASHRAE's design criteria for hydronic system piping, flow rates, and friction loss.

Note: GPMs are rounded up to the next available GPM unless otherwise specified.

Circuit Sentry™

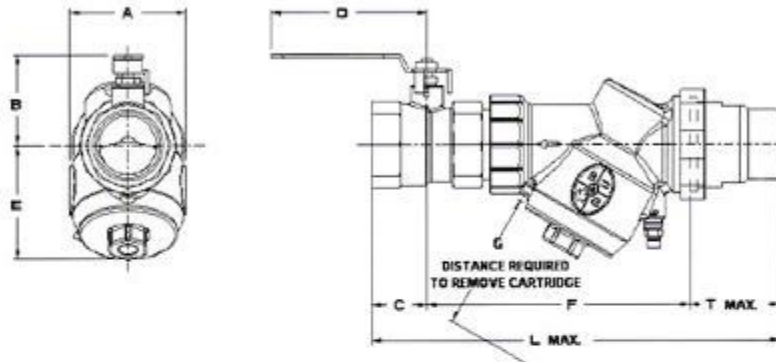


Valve Size Fixed End	Connection Fixed End	DIMENSIONS* INCH (mm)										Approx. Weight Lbs.(kg)
		A	B	C	D	E	F	G	H	T (Max)	L (Max)	
3/8"	Sweat Female	1.42 (36)	1.93 (49)	1.26 (32)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	0.98 (25)	5.27 (134)	2.4 (1.1)
3/8"	NPT Female	1.42 (36)	1.93 (49)	1.18 (30)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	0.98 (25)	5.19 (132)	2.4 (1.1)
1/2"	Sweat Female	1.42 (36)	1.93 (49)	1.38 (35)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	0.98 (25)	5.39 (137)	2.4 (1.1)
1/2"	NPT Female	1.42 (36)	1.93 (49)	1.18 (30)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	0.98 (25)	5.19 (132)	2.5 (1.1)
1"	Sweat Female	1.42 (36)	1.93 (49)	1.46 (37)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	1.69 (43)	6.18 (157)	2.6 (1.2)
1"	NPT Female	1.42 (36)	1.93 (49)	1.38 (35)	3.74 (95)	1.18 (30)	2.36 (60)	3.03 (77)	1.77 (45)	1.69 (43)	6.10 (155)	2.6 (1.2)
1 1/2"	Sweat Female	1.65 (42)	2.87 (73)	1.85 (47)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	1.93 (49)	8.45 (214.5)	7.1 (3.2)
1 1/2"	NPT Female	1.65 (42)	2.87 (73)	1.67 (42.5)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	1.93 (49)	8.27 (210)	7.1 (3.2)
1 3/4"	Sweat Female	1.65 (42)	2.87 (73)	1.89 (48)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	8.65 (219.5)	7.1 (3.2)
1 3/4"	NPT Female	1.65 (42)	2.87 (73)	1.65 (42)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	8.41 (213.5)	7.2 (3.3)
1 3/4"	Sweat Female	1.65 (42)	2.87 (73)	2.01 (51)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	8.77 (222.5)	7.1 (3.2)
1 3/4"	NPT Female	1.65 (42)	2.87 (73)	1.73 (44)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	8.49 (215.5)	7.1 (3.2)
2" R **	Sweat Female	1.65 (42)	2.87 (73)	5.04 (128)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	11.8 (299.5)	9.8 (4.4)
2" R **	NPT Female	1.65 (42)	2.87 (73)	3.36 (85)	5.2 (132)	1.89 (48)	2.95 (75)	4.67 (118.5)	2.46 (62.5)	2.09 (53)	10.12 (256.5)	9.0 (4.1)

*All dimensions +/- 0.125" (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

** 2" Reduced Port

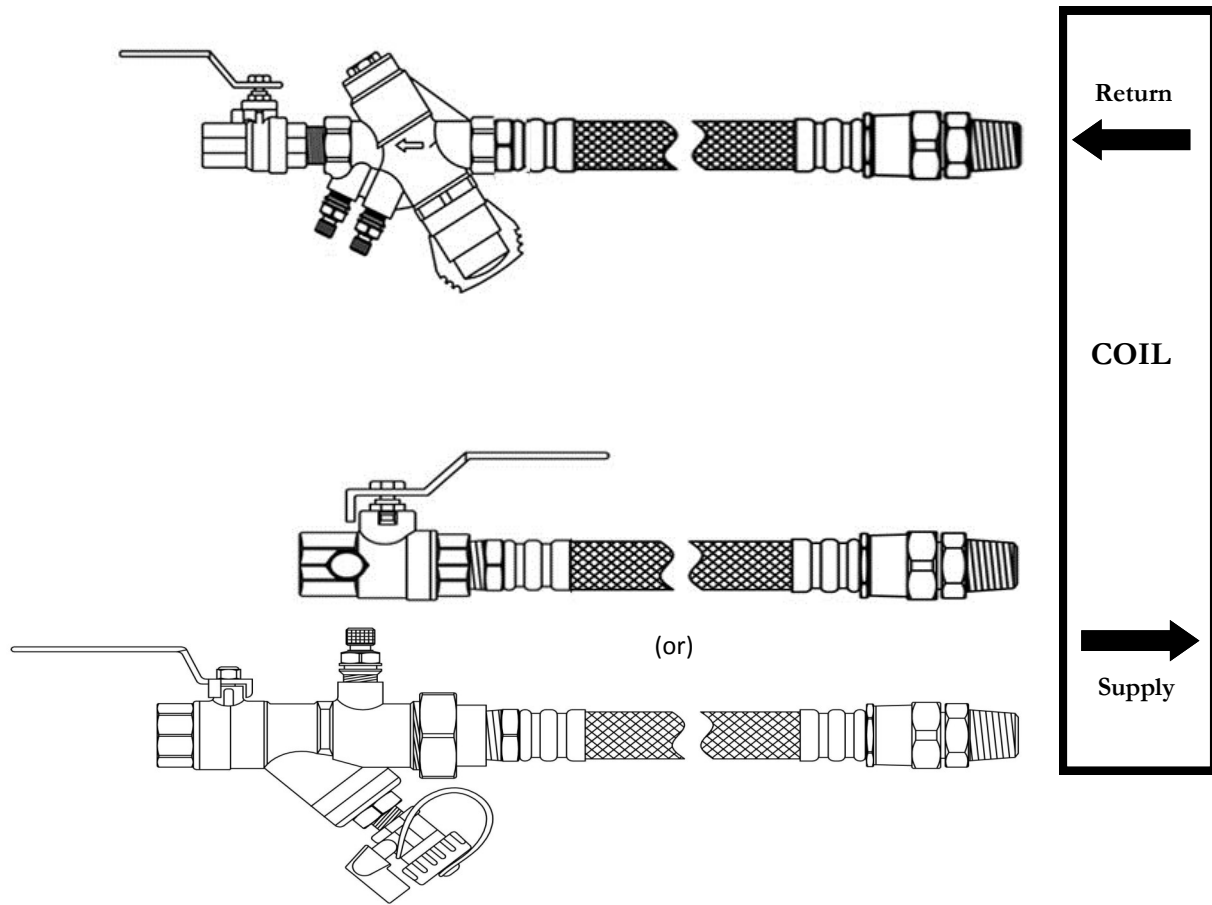
Circuit Sentry™



LARGE BODY

Valve Size Fixed End	Connection Fixed End	DIMENSIONS* INCH (mm)									Approx. Weight Lbs.(kg)
		A	B	C	D	E	F	G	T (Max)	L (Max)	
1½" L	Sweat Female	4.0 (102)	3.07 (78)	3.15 (80)	5.35 (136)	3.85 (98)	9.0 (228)	4.33 (110)	3.12 (79)	15.27 (387)	16.62 (7.5)
1½" L	NPT Female	4.0 (102)	3.07 (78)	4.92 (125)	5.35 (136)	3.85 (98)	9.0 (228)	4.33 (110)	3.12 (79)	17.04 (432)	16.65 (7.6)
2"	Sweat Female	4.0 (102)	3.07 (78)	3.35 (86)	5.35 (136)	3.85 (98)	9.0 (228)	4.33 (110)	3.12 (79)	15.47 (392)	16.87 (7.7)
2"	NPT Female	4.0 (102)	3.07 (78)	1.96 (50)	5.35 (136)	3.85 (98)	9.0 (228)	4.33 (110)	3.12 (79)	14.08 (357)	17.39 (7.9)
2½"	Sweat Female	4.0 (102)	3.07 (78)	2.55 (65)	5.35 (136)	3.85 (98)	10.78 (274)	4.33 (110)	3.12 (79)	16.45 (418)	18.83 (8.5)
2½"	NPT Female	4.0 (102)	3.07 (78)	4.33 (110)	5.35 (136)	3.85 (98)	10.78 (274)	4.33 (110)	3.12 (79)	18.23 (463)	19.36 (8.8)

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.



Balance Type:	Automatic Flow Limiting Valve externally adjustable flow setting capability.
Body Design:	Brass Valve + Model AM w/PT's, External GPM dial
Body:	Brass
Spring:	Stainless Steel
Diaphragm:	HNBR
O-Rings:	EPDM
Max. Working Pressure:	290 psig
Min. psid:	Varies with GPM setting
Max. psid:	60

Model AM Flo-Setter Automatic Balance Hose Kits

Flow Rates/Minimum PSID

1/2"		
Flow Rate	Min.ΔP	Setting
0.18	2.32	Min.
0.5	2.4	0.5
1	2.47	1
1.5	2.56	1.5
2	2.62	2
2.5	2.7	2.5
3	2.77	3
3.5	2.85	3.5
4	2.9	4
4.5	2.97	4.5
4.54	3.2	Max.

1-1/4"		
Flow Rate	Min.ΔP	Setting
0.88	2.03	Min.
2	2.2	2
4	2.38	4
6	2.6	6
8	2.75	8
10	3	10
12	3.2	12
14	3.38	14
16	3.6	16
18	3.75	18
20	4	20
21.13	4.32	Max.

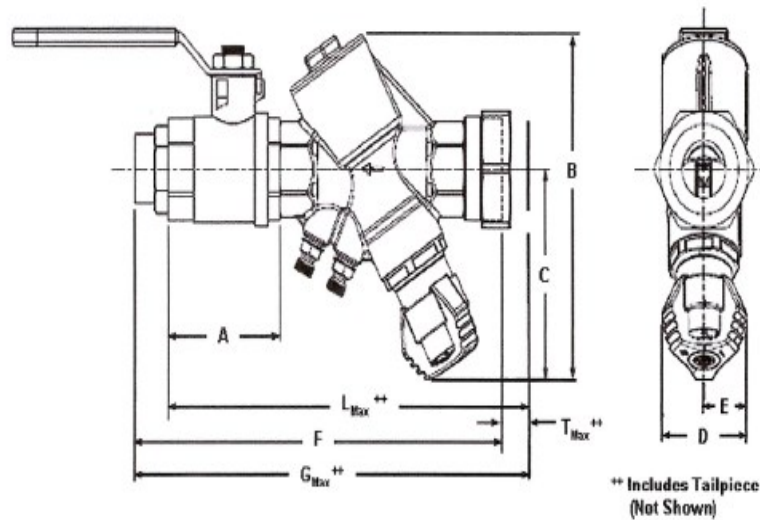
3/4"		
Flow Rate	Min.ΔP	Setting
0.31	1.74	Min.
1	2	1
2	2.25	2
3	2.5	3
4	2.75	4
5	2.95	5
6	3.2	6
7	3.35	7
8.15	3.77	Max.

1-1/2"		
Flow Rate	Min.ΔP	Setting
1.76	2.18	Min.
5	2.5	5
10	2.8	10
15	3.2	15
20	3.55	20
25	3.88	25
30	4.25	30
32.76	4.64	Max.

1"		
Flow Rate	Min.ΔP	Setting
0.44	1.74	Min.
1	1.9	1
2	2.1	2
3	2.35	3
4	2.5	4
5	2.75	5
6	3	6
7	3.2	7
8	3.4	8
9	3.65	9
10	4	10
10.35	4.35	Max.

2"		
Flow Rate	Min.ΔP	Setting
2.2	2.47	Min.
5	2.6	5
10	3.95	10
15	3.25	15
20	3.55	20
25	3.95	25
30	4.25	30
35	4.6	35
40	5	40
45.46	5.5	Max.

Model AM



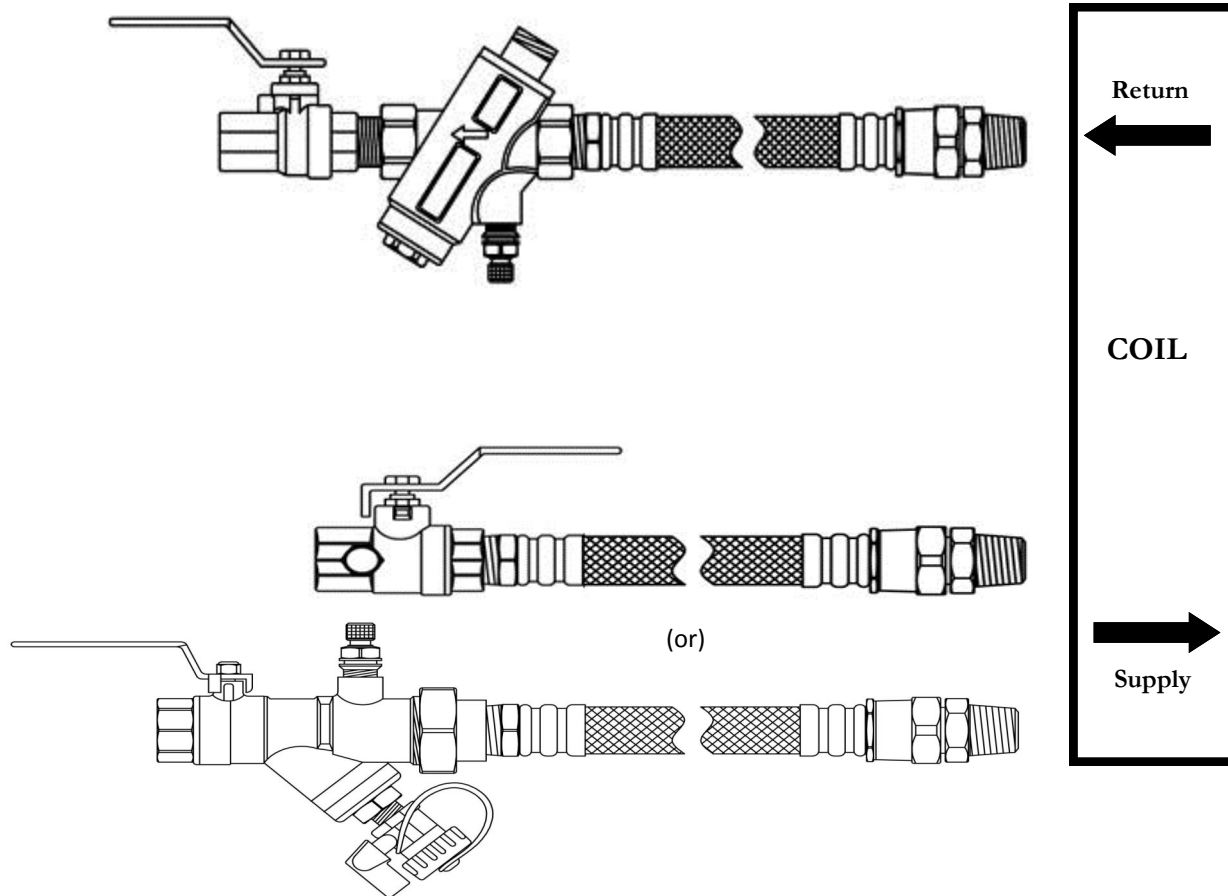
DIMENSIONS AND WEIGHTS

Valve Size Fixed End	Connection Fixed End	DIMENSIONS* IN INCHES (mm)									Cv [†]	Flow Capacity in GPM (L/hr)**		Approx. Weight Lbs. (kg)	
		A	B	C	D	E	F	L _{Max}	G _{Max}	T _{Max}		Min.	Max.		
1/2"	Sweat	1.7	5.8	3.8	2.4	1.2	6.7	7.6	8.2	1.55	2.78	0.18	4.84	2.5	
	Female	(42)	(147)	(97)	(61)	(30)	(169)	(193)	(208)	(39)		(40)	(1,100)		
	NPT	1.7	5.8	3.8	2.4	1.2	-	7.6	-	1.55		0.18	4.84		2.5
3/4"	Female	(42)	(147)	(97)	(61)	(30)	(-)	(193)	(-)	(39)	2.78	(40)	(1,100)	(1.1)	
	Sweat	2.1	5.9	3.8	2.4	1.2	7.5	8.1	9.1	1.55		4.41	0.31	8.15	2.7
	Female	(53)	(150)	(97)	(61)	(30)	(191)	(205)	(231)	(39)			(70)	(1,850)	
NPT	2.1	5.9	3.8	2.4	1.2	-	8.1	-	1.55	0.31	8.15		2.7		
1"	Female	(53)	(150)	(97)	(61)	(30)	(-)	(205)	(-)	(39)	4.41	(70)	(1,850)	(1.2)	
	Sweat	2.5	6.1	4.1	2.4	1.2	8.3	9.1	10.3	2.00		5.11	0.44	10.35	3.3
	Female	(63)	(155)	(104)	(61)	(30)	(211)	(232)	(262)	(51)			(100)	(2,350)	
NPT	2.5	6.1	4.1	2.4	1.2	-	9.1	-	2.00	0.44	10.35		3.3		
1-1/4"	Female	(63)	(155)	(104)	(61)	(30)	(-)	(232)	(-)	(51)	5.11	(100)	(2,350)	(1.5)	
	Sweat	3.1	7.4	4.5	2.4	1.2	10.2	11.0	12.2	2.00		10.21	0.88	21.13	5.7
	Female	(79)	(188)	(114)	(61)	(30)	(259)	(279)	(262)	(51)			(200)	(4,800)	
NPT	3.1	7.4	4.5	2.4	1.2	-	11.0	-	2.00	0.88	21.13		5.7		
1-1/2"	Female	(79)	(188)	(114)	(61)	(30)	(-)	(279)	(-)	(51)	10.21	(200)	(4,800)	(2.6)	
	Sweat	3.4	8.1	4.7	2.4	1.2	11.7	12.9	14.3	2.52		16.24	1.76	32.76	7.9
	Female	(87)	(206)	(119)	(61)	(30)	(298)	(328)	(362)	(64)			(400)	(7,500)	
NPT	3.4	8.1	4.7	2.4	1.2	-	12.9	-	2.52	1.76	32.76		7.9		
2"	Female	(87)	(206)	(119)	(61)	(30)	(-)	(328)	(-)	(64)	16.24	(400)	(7,500)	(3.6)	
	Sweat	4.4	8.6	5.0	2.4	1.2	13.7	15.1	16.8	3.14		20.18	2.20	45.46	11.9
	Female	(112)	(218)	(127)	(61)	(30)	(347)	(384)	(427)	(80)			(500)	(10,300)	
NPT	4.4	8.6	5.0	2.4	1.2	-	15.1	-	3.14	2.20	45.46		11.9		
2"	Female	(112)	(218)	(127)	(61)	(30)	(-)	(384)	(-)	(80)	20.18	(500)	(10,300)	(5.4)	

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

**Flow Capacity is with supplied ball valve 100% open. Ball valve is not intended to be used to limit flow, but rather as an isolation valve only.

†Cv Values are calculated using minimum ΔP and maximum flow capacity.



Balance Type:	PICV with adjustable max. flow setting & optional 3 Pt. floating or 0-10Vdc Actuator
Body Design:	Brass valve + PICV w/PT's, GPM dial.
Body:	Brass - ANSI 250 rating
Spring:	Stainless Steel
Close Off:	1/2" & 3/4" Normally Open - 200 psi/ANSI Class IV, 1/2" to 1-1/4" Normally Closed - 45 psi/ANSI Class IV, 1-1/2" & Normally Closed - 50 psi/ANSI Class III
Flow Characteristic:	2-way, Linear
Min. psid:	varies with gpm setting
Max. psid:	58
Actuators:	Spring Return (Fail Safe): 24 volt 3 point floating or 24 volt 0-10Vdc Non-Spring Return (Fail-in-Place): 24 volt 3 point floating or 24 volt 0-10Vdc

Flow Rates/Minimum PSID

1/2" L				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04300	Norm. Closed	.3 - 2.7	2.3	58
-04310	Norm. Open	.2 - .9	2.5	58

1/2" H				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04301	Norm. Closed	1.0 - 7.5	2.6	58
-04311	Norm. Open	.5 - 2.5	3	58

3/4" L				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04302	Norm. Closed	.5 - 4.5	2.3	58
-04312	Norm. Open	1.0 - 5.8	3.5	58

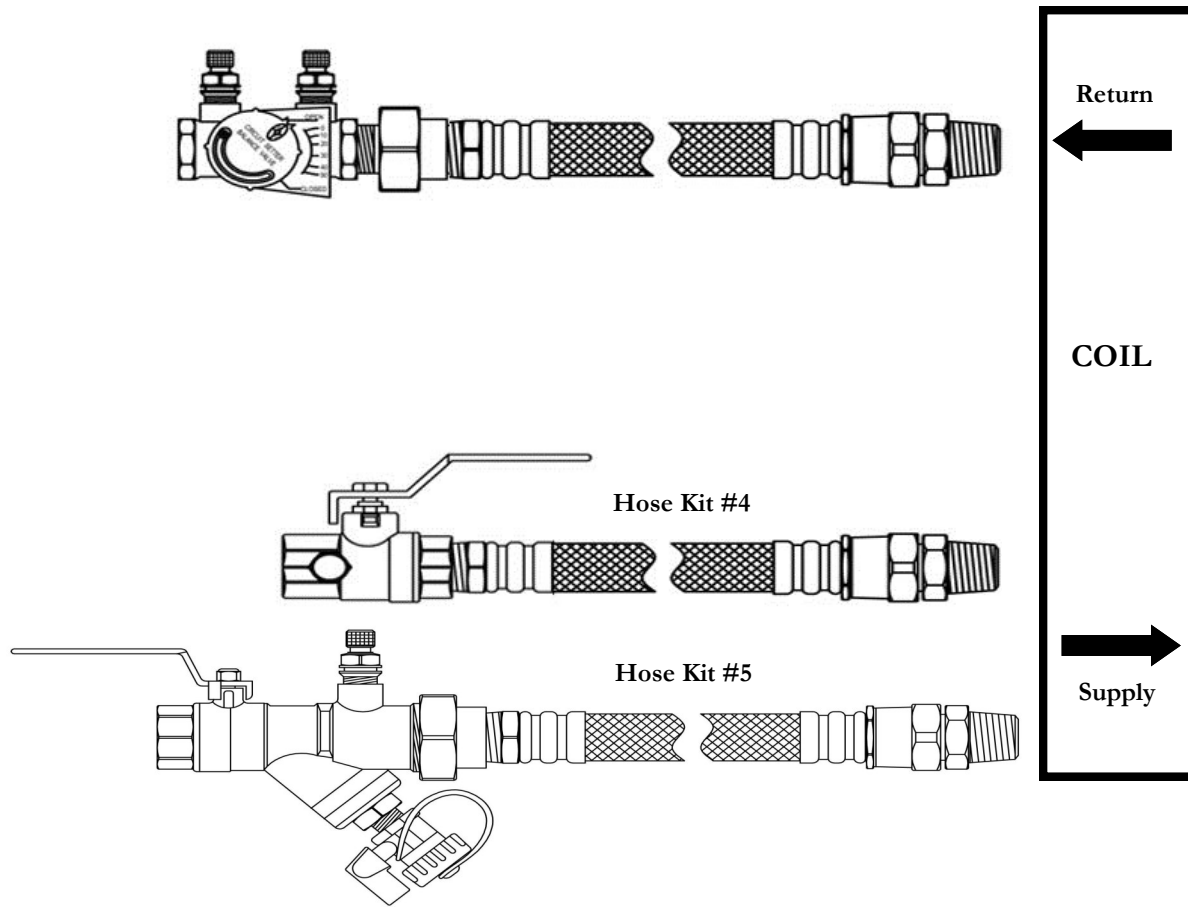
3/4" H				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04303	Norm. Closed	1.0 - 8.9	3.2	58

1"				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04304	Norm. Closed	1.0 - 8.9	3.2	58

1-1/4"				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04305	Norm. Closed	2.5 - 13.2	2.6	58

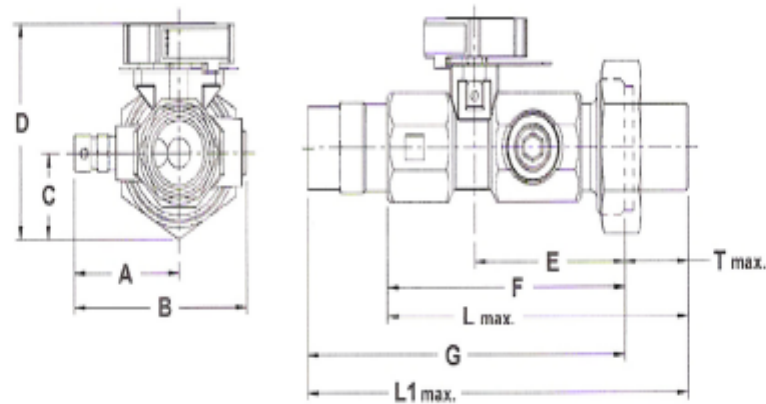
1-1/2"				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04306	Norm. Closed	10.0 - 31.0	3.8	58

2"				
Valve	Action	GPM Range	Min ΔP	Max. ΔP
-04307	Norm. Closed	11.0 - 37.0	4.6	58



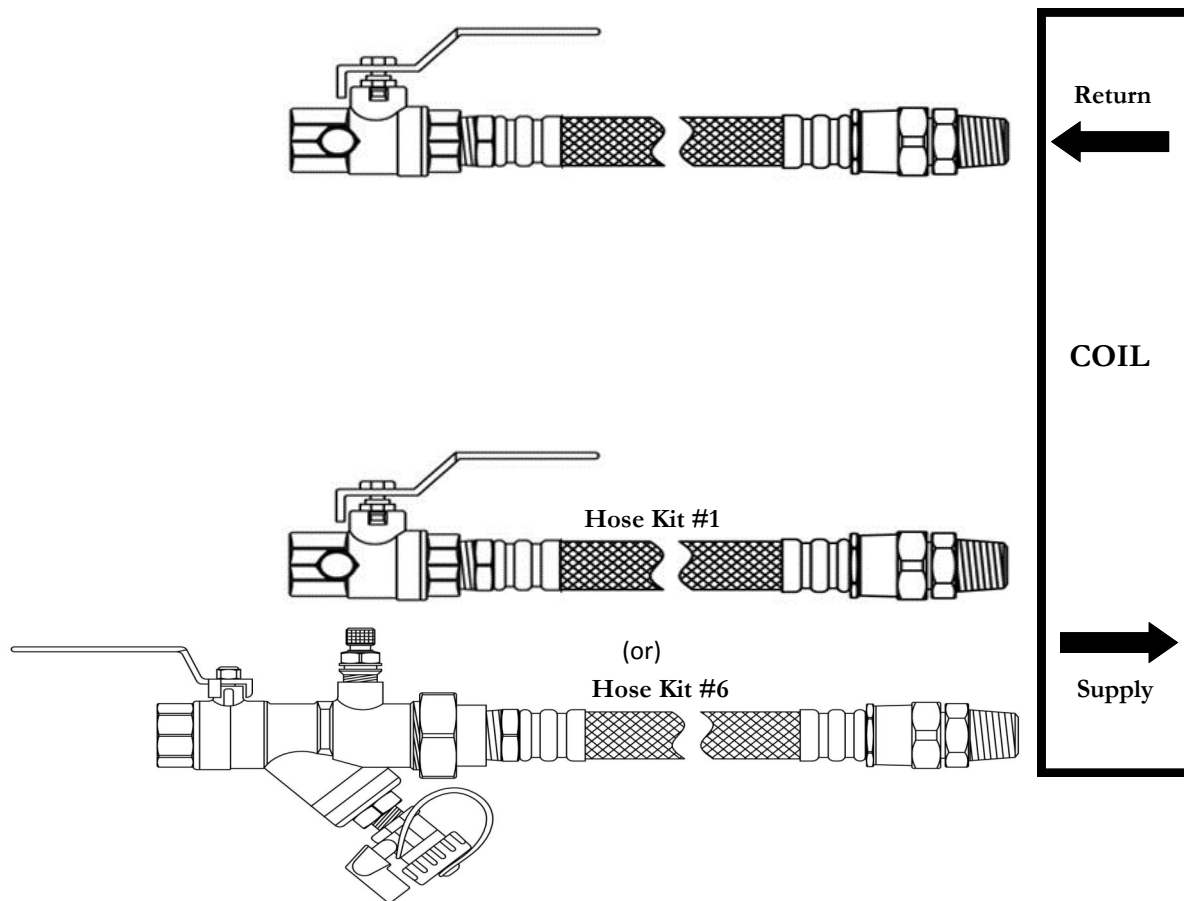
- Balance Type:** Variable Cv Manual Balance with dial setting.
- Body Design:** Brass w/ dial control, PT's, Union End on inlet side.
- Body:** Brass
- Ball:** Brass
- O-Rings:** EPDM
- Max. Working Pressure:** 300 psig
- Required Pipe Diameters:** (3) Upstream, (1) Downstream

Model MC



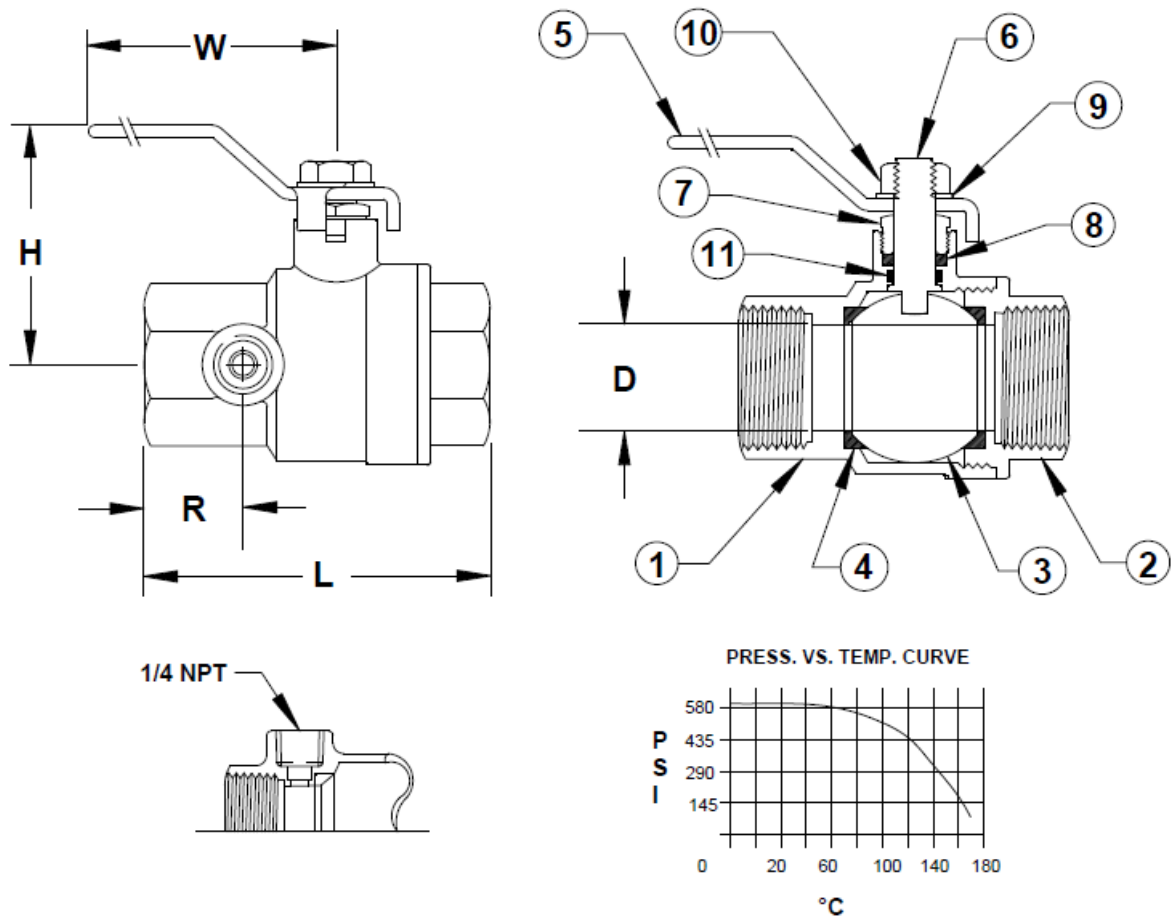
Valve Size Fixed End	Connection Fixed End	DIMENSIONS* INCH (mm)										Approx. Weight Lbs.
		A	B	C	D	E	F	L (Max)	G	L1 (Max)	T (Max)	
½"	Sweat Female	1.17 (29.7)	2.75 (69.9)	0.81 (20.6)	2.26 (57.4)	2.19 (55.6)	3.50 (88.9)	- (-)	4.10 (104.1)	5.65 (143.5)	1.55 (39.4)	1.9 (0.9)
	NPT Female	1.17 (29.7)	2.75 (69.9)	0.81 (20.6)	2.26 (57.4)	2.19 (55.6)	3.50 (88.9)	5.05 (128.3)	- (-)	- (-)	1.55 (39.4)	1.9 (0.9)
¾"	Sweat Female	1.23 (31.2)	2.94 (74.7)	0.95 (24.1)	2.50 (63.5)	2.16 (54.9)	3.66 (93.0)	- (-)	4.68 (118.9)	6.23 (158.2)	1.55 (39.4)	2.4 (1.1)
	NPT Female	1.23 (31.2)	2.94 (74.7)	0.95 (24.1)	2.50 (63.5)	2.16 (54.9)	3.66 (93.0)	5.21 (132.3)	- (-)	- (-)	1.55 (39.4)	2.4 (1.1)
1"	Sweat Female	1.39 (35.3)	3.19 (81.0)	1.05 (26.7)	2.75 (69.9)	2.62 (66.5)	4.36 (110.7)	- (-)	5.55 (141.0)	7.55 (191.8)	2.00 (50.8)	3.4 (1.5)
	NPT Female	1.39 (35.3)	3.19 (81.0)	1.05 (26.7)	2.75 (69.9)	2.62 (66.5)	4.36 (110.7)	6.36 (161.5)	- (-)	- (-)	2.00 (50.8)	3.4 (1.5)
1½"	Sweat Female	1.38 (35.1)	3.33 (84.6)	1.41 (35.8)	3.70 (94.0)	3.08 (78.2)	5.05 (128.3)	- (-)	6.25 (158.8)	8.25 (209.6)	2.00 (50.8)	5.2 (2.4)
	NPT Female	1.38 (35.1)	3.33 (84.6)	1.41 (35.8)	3.70 (94.0)	3.08 (78.2)	5.05 (128.3)	7.05 (179.1)	- (-)	- (-)	2.00 (50.8)	5.2 (2.4)
1½"	Sweat Female	1.51 (38.4)	3.62 (91.9)	1.68 (42.7)	4.03 (102.4)	3.79 (96.3)	5.70 (144.8)	- (-)	7.03 (178.6)	9.55 (242.6)	2.52 (64.0)	6.6 (3.0)
	NPT Female	1.51 (38.4)	3.62 (91.9)	1.68 (42.7)	4.03 (102.4)	3.79 (96.9)	5.70 (144.8)	8.22 (208.8)	- (-)	- (-)	2.52 (64.0)	6.6 (3.0)
2"	Sweat Female	1.76 (44.7)	4.09 (103.9)	1.95 (49.9)	4.60 (116.8)	4.20 (106.7)	6.47 (164.3)	- (-)	8.15 (207.0)	11.29 (286.8)	3.14 (79.8)	10.3 (4.7)
	NPT Female	1.76 (44.7)	4.09 (103.9)	1.95 (49.9)	4.60 (116.8)	4.20 (106.7)	6.47 (164.3)	9.61 (244.1)	- (-)	- (-)	3.14 (79.8)	10.3 (4.7)

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.



Balance Type:	Manual
Body Design:	Full Port Ball Valve w/PT & Memory Stop
Body:	Brass
Ball:	Chrome Plated Brass
Stem	Brass
O-Rings:	BUNA-N
Stem Packing:	PTFE
Seat:	PTFE
Handle:	Zinc Plated Steel w/ Plastic Coating
Working Pressure:	600 psig

CR 1000 Series PT Port Brass Ball Valve

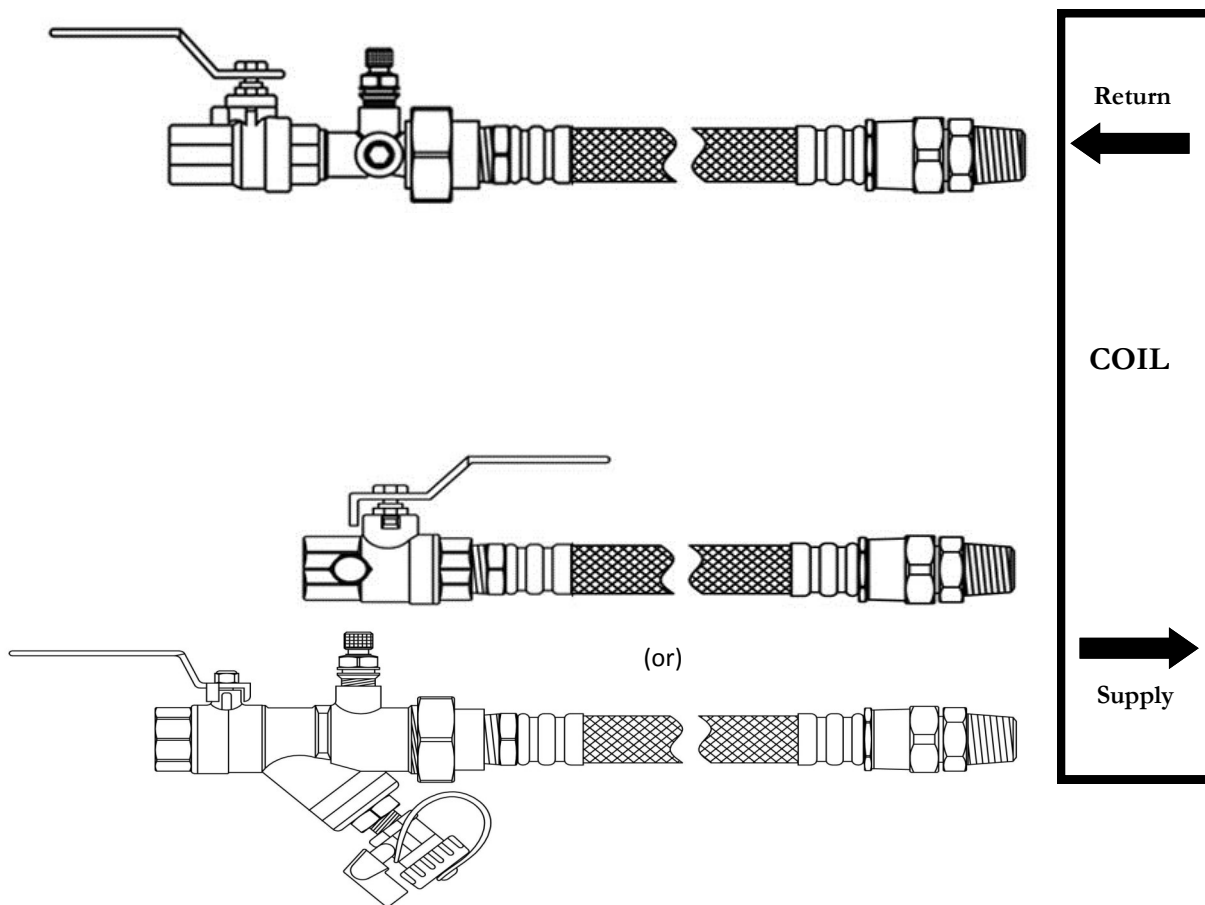


DIMENSIONS

CAT. NO.	SIZE	L	D	H	R	W
CR0501000	1/2	2.48	.59	1.89	.76	3.65
CR0751000	3/4	2.69	.75	2.11	.77	4.65
CR1001000	1	3.15	1.00	2.45	.84	4.65
CR1251000	1 1/4	3.65	1.25	2.53	.92	5.62
CR1501000	1 1/2	4.09	1.57	2.80	.94	5.62
CR2001000	2	4.47	1.97	3.13	.95	5.62

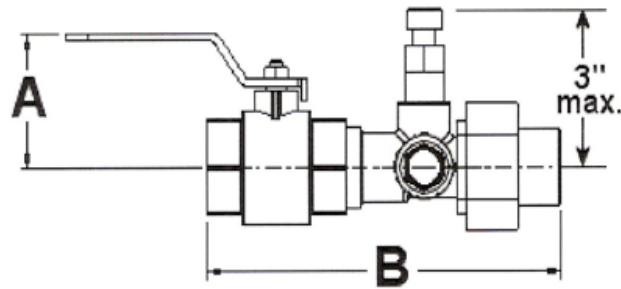
MATERIAL LIST

NO.	PART NAME	MATERIAL
11	O-RING	BUNA-N
10	NUT	STEEL, ZINC PLATED
9	LOCK WASHER	STEEL, ZINC PLATED
8	STEM PACKING	PTFE
7	GLAND NUT	BRASS
6	STEM	BRASS
5	HANDLE	ZINC PLATED STEEL, PLASTICOATED
4	SEAT	PTFE
3	BALL	BRASS, HARD CHROME PLTD.
2	END CAP	BRASS
1	BODY	BRASS



Balance Type:	Manual Venturi (fixed Cv)
Body Design:	Venturi/Ball Valve combination with PT's, union end on inlet.
Body:	Brass
Ball:	Chrome Plated Brass
Stem:	Explosion Proof
O-Rings:	EPDM
Seal:	Teflon
Handle:	Chrome Plated Steel
Working Pressure:	400 psig

Model MV

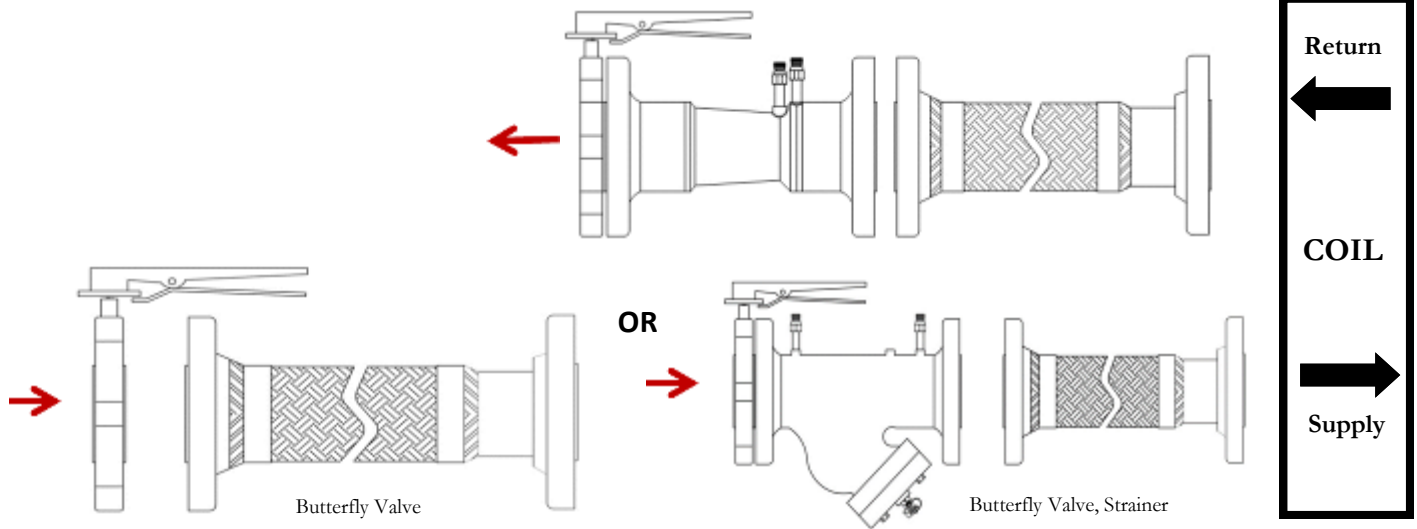


VALVE SIZE/FIXED END	Recommended Flow Rate GPM (l/m)	DIMENSIONS* INCH (mm)		APPROX. WT. LBS. (kg)
		A	B	
½" L Sweat Female	0.3 - 0.9 (1.14 - 3.41)	1.30" (33)	4.98" (127)	1.23 (0.6)
½" L NPT Female	0.3 - 0.9 (1.14 - 3.41)	1.30" (33)	4.98" (127)	1.23 (0.6)
½" H Sweat Female	1.0 - 4.8 (3.8 - 18.18)	1.30" (33)	4.98" (127)	1.23 (0.6)
½" H NPT Female	1.0 - 4.8 (3.8 - 18.18)	1.30" (33)	4.98" (127)	1.23 (0.6)
¾" UL Sweat Female	0.3 - 0.9 (1.14 - 3.41)	1.50" (38)	5.40" (137)	1.50 (0.7)
¾" UL NPT Female	0.3 - 0.9 (1.14 - 3.41)	1.50" (38)	5.40" (137)	1.50 (0.7)
¾" L Sweat Female	1.0 - 2.8 (3.8 - 10.6)	1.50" (38)	5.40" (137)	1.50 (0.7)
¾" L NPT Female	1.0 - 2.8 (3.8 - 10.6)	1.50" (38)	5.40" (137)	1.50 (0.7)
¾" H Sweat Female	3.0 - 9.0 (11.4 - 34.09)	1.50" (38)	5.40" (137)	1.50 (0.7)
¾" H NPT Female	3.0 - 9.0 (11.4 - 34.09)	1.50" (38)	5.40" (137)	1.50 (0.7)
1" Sweat Female	2.8 - 15.0 (10.61 - 56.82)	1.80" (46)	5.80" (147)	2.45 (1.11)
1" NPT Female	2.8 - 15.0 (10.61 - 56.82)	1.80" (46)	5.80" (147)	2.45 (1.11)
1¼" Sweat Female	5.4 - 26.0 (20.46 - 98.49)	2.05" (52)	6.60" (168)	3.50 (1.59)
1¼" NPT Female	5.4 - 26.0 (20.46 - 98.49)	2.05" (52)	6.60" (168)	3.50 (1.59)
1½" Sweat Female	12.0 - 40 (45.46 - 151.52)	2.48" (63)	7.60" (193)	4.81 (2.18)
1½" NPT Female	12.0 - 40 (45.46 - 151.52)	2.48" (63)	7.60" (193)	4.81 (2.18)
2" Sweat Female	22.0 - 75 (83.33 - 284.09)	2.64" (67)	9.90" (251)	7.25 (3.29)
2" NPT Female	22.0 - 75 (83.33 - 284.09)	2.64" (67)	9.90" (251)	7.25 (3.29)

*All dimensions +/- 0.125" tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

Please see Data Chart #EP-600

Model MVF (Circuit Setter) Manual Balance Hose Kit (Flanged)



Balance Type: Venturi Type Manual Balance Circuit Setter

Body Design: Flanged x Flanged

Body: Carbon Steel—150# ANSI Flange

Temp. Range: -4°F (-20°C) to 230°F (111°C) w/o Butterfly Valve,
-4°F (-20°C) to 212°F (100°C) w/Butterfly Valve

Butterfly Valve:

Body: Nodular Cast Steel –150# Flange

Stem: Stainless Steel

Disc: Aluminum/Bronze

Liner: EPDM

Spool Piece:

Body: Cast Iron

Gasket: Non-Asbestos



Hose Specs.

Design: Fixed Flange x Floating Flange

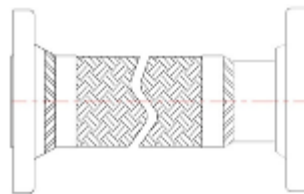
Hose: 321 Stainless Steel

Braid: 321 Stainless Steel

Fixed Flange: Carbon Steel—ANSI 150#

Stub End: 304 Stainless Steel

Working Pressure: 285 psig (2.5", 3"), 260 psig (4"), 210 psig (6")



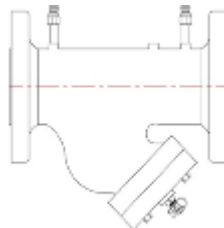
Strainer Specs.

Design: Fixed flanged ends—150# with PT's and BDV

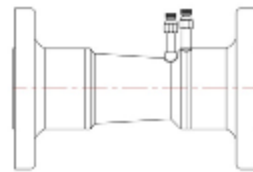
Body: Cast Iron

Screen: Stainless Steel 2-1/2-3" (10 Mesh), 4" and larger (5 Mesh)

Working Pressure: 150 psig



OR



Butterfly ATC Specs. (Style 222)

Body: Cast Iron, ASTM-A 126 Class B, 125#/150# ANSI Flanges

Disc: 304 Stainless steel, ASTM-A 148 UNS C952000 Grade A

Stem: 416 Stainless steel, ASTM-A 582 UNS S41600

Molded-in Liner: EPDM (-40°F to 250°F)

Inboard Bearings: Bronze

Upper Bushings: Polyester

Upper Stem Seal: NBR

Actuators (G Series):

Control:

2-1/2" - 4": 2way and 3way Fail Safe (2Pos., Floating, 0-10Vdc, 0-420mA)

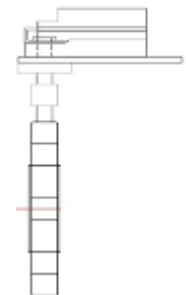
6": 2way and 3way Non-Fail Safe (Floating, 0-10Vdc, 0-420mA)

8" - 10": 2way and 3way Non-Fail Safe (2 Pos., Floating, 0-10Vdc, 0-420mA)

Voltage:

2-1/2" - 6": 24v

8" - 10": 24—240 Vac/Vdc



NOTE: Flanged Hose Kits NOT Assembled. No Bolt or Gasket kits supplied.

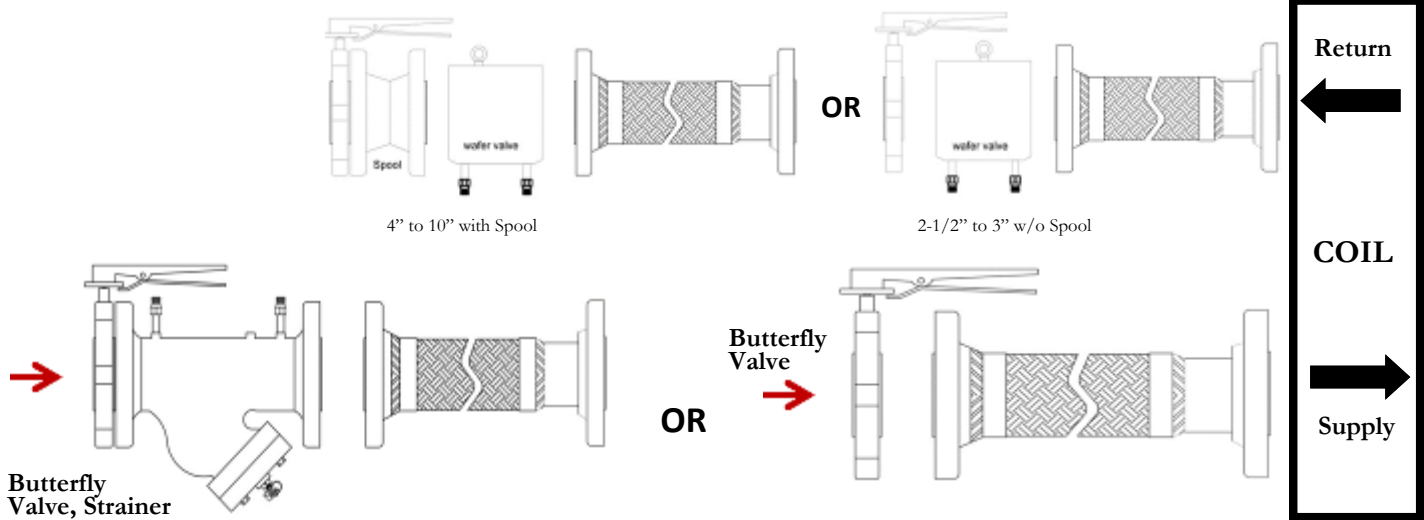
Chamberlin Rubber Company, Inc.

www.chamflex.com

Revision Date: 11/20/2017

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HOSE ASSEMBLIES & KITS

Model MVB (Wafer Valve) Automatic Balance Hose Kit (Flanged)



*No Strainer
for 10"

Balance Type: Wafer Valve with multiple fixed flow automatic balancing cartridges

Body Design: Wafer Valve, mates to std. 150# ANSI Flanges

Body: Ductile Iron

Diaphragm: Reinforced EPDM

Spring: Stainless Steel

O-Rings: EPDM

Max. Working Pressure: 150 psig

Temp. Range: -4°F to 212°F

Accuracy: +/- 5%

Butterfly Valve:

Body: Nodular Cast Steel -150# Flange

Stem: Stainless Steel

Disc: Aluminum/Bronze

Liner: EPDM

Spool Piece:

Body: Cast Iron

Gasket: Non-Asbestos

Hose Specs.

Design: Fixed Flange x Floating Flange

Hose: 321 Stainless Steel

Braid: 321 Stainless Steel

Fixed Flange: Carbon Steel—ANSI 150#

Stub End: 304 Stainless Steel

Working Pressure: 285 psig (2.5", 3"), 260 psig (4"), 210 psig (6")

Strainer Specs.

Design: Fixed flanged ends—150# with PT's and BDV

Body: Cast Iron

Screen: Stainless Steel 2-1/2-3" (10 Mesh), 4" and larger (5 Mesh)

Working Pressure: 150 psig

NOTE: Flanged Hose Kits NOT Assembled. No Bolt or Gasket kits supplied.

Butterfly ATC Specs.

Body: Cast Iron, ASTM-A 126 Class B, 125#/150# ANSI Flanges

Disc: 304 Stainless steel, ASTM-A 148 UNS C952000 Grade A

Stem: 416 Stainless steel, ASTM-A 582 UNS S41600

Molded-in Liner: EPDM (-40°F to 250°F)

Inboard Bearings: Bronze

Upper Bushings: Polyester

Upper Stem Seal: NBR

Actuators (G Series):

Control:

2-1/2" - 4": 2way and 3way Fail Safe (2Pos., Floating, 0-10Vdc, 0-420mA)

6": 2way and 3way Non-Fail Safe (Floating, 0-10Vdc, 0-420mA)

8" - 10": 2way and 3way Non-Fail Safe (2 Pos., Floating, 0-10Vdc, 0-420mA)

Voltage:

2-1/2" - 6": 24v

8" - 10": 24—240 Vac/Vdc

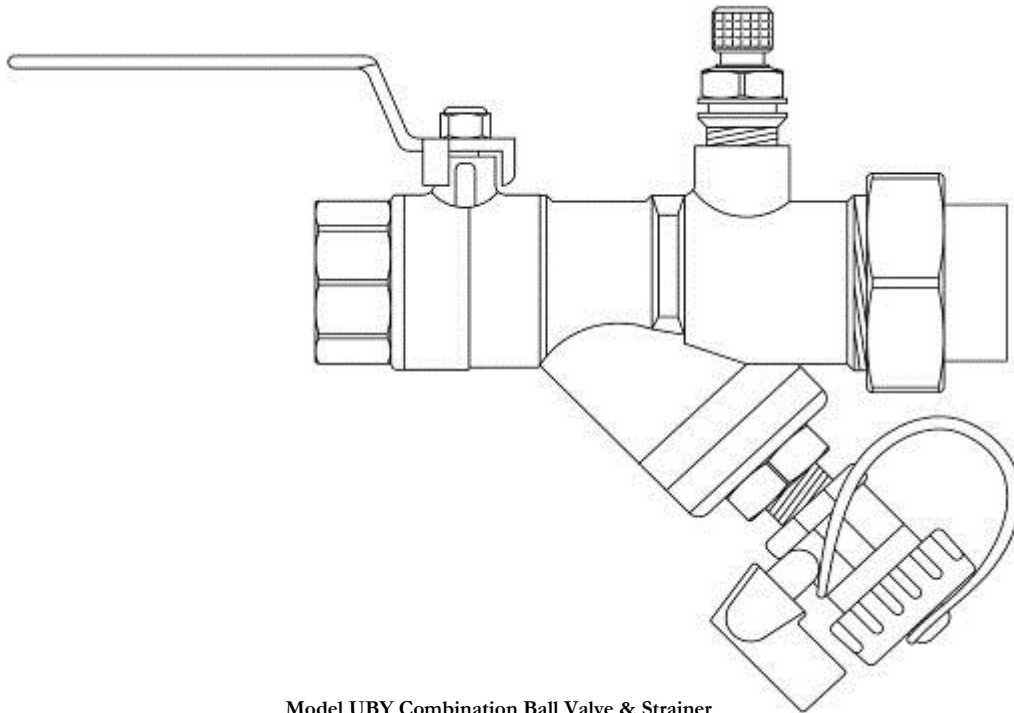
Components Index

Chamberlin Rubber Company, Inc. also supplies additional valves and accessories that can be used as either substitutions or additions to the established hose kits.



- * **Strainers**
- * **Ball Valves**
- * **Unions**
- * **ATC Zone Valves and Actuators**
- * **ATC Ball Valves and Actuators**
- * **6-Way Control Valve (Ball Type Valve) - NEW**

Model UBY Combination Ball Valve & Strainer (1/2" - 2")

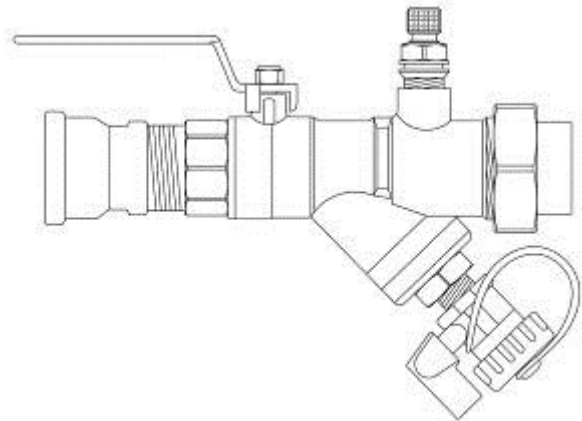


Model UBY Combination Ball Valve & Strainer

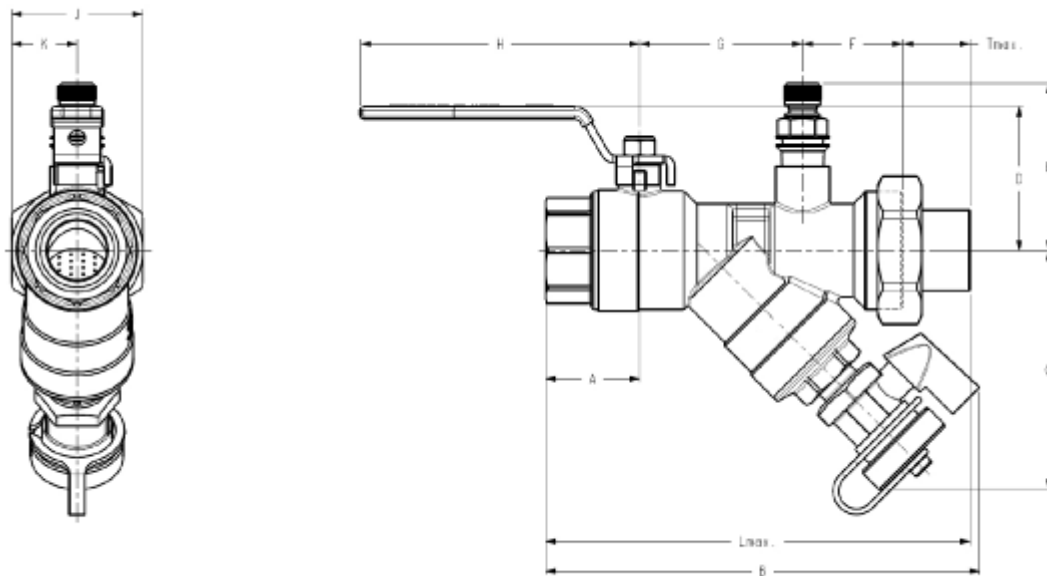
Body:	Brass
Ball:	Full Port Chrome Plated
Ball Seal:	PTFE
Stem:	Stainless Steel Explosion Proof
O-Rings:	EPDM
Strainer:	20 Mesh Stainless Steel

Maximum Working Pressure:	400 psig
Maximum Operating Temp:	-4°F to 250°F

Note: For a 2-1/2" kit a 2" UBY is supplied with a 2-1/2" NPT expanding coupler.



WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

UBY

NOTE: THIS IS THE DEFAULT MODEL IF NO ADDITIONAL PT PORTS OR BYPASS IS REQUIRED.

Valve Size Fixed End	Connection Fixed End	Cv	DIMENSIONS* INCH (mm)												Approx. Weight Lbs. (kg)
			A	B	C	D	E	F	G	H	J	K	T (Max)	L (Max)	
½"	Sweat Female	7.4	1.303 (33.1)	5.417 (137.59)	2.918 (74.12)	1.672 (42.46)	1.92 (48.77)	1.135 (28.82)	1.872 (47.56)	3.533 (89.74)	1.375 (34.93)	0.688 (17.46)	.6 (15.24)	7.140 (181.24)	1.5 (.68)
½"	NPT Female	7.4	1.055 (26.8)	5.169 (131.29)	2.918 (74.12)	1.672 (42.46)	1.92 (48.77)	1.135 (28.82)	1.872 (47.56)	3.533 (89.74)	1.375 (34.93)	0.688 (17.46)	.650 (16.51)	7.19 (182.63)	1.5 (.68)
¾"	Sweat Female	8	1.559 (39.6)	5.865 (148.96)	3.024 (76.82)	1.819 (46.2)	2.114 (53.7)	1.27 (32.25)	2.064 (52.43)	3.533 (89.74)	1.66 (42.16)	0.83 (21.08)	.85 (21.59)	7.717 (196)	1.81 (.82)
¾"	NPT Female	8	1.189 (30.2)	5.494 (139.56)	3.024 (76.82)	1.819 (46.2)	2.114 (53.7)	1.27 (32.25)	2.064 (52.43)	3.533 (89.74)	1.66 (42.16)	0.83 (21.08)	.8 (20.32)	7.667 (194.74)	1.81 (.82)
1"	Sweat Female	16	1.846 (46.9)	7.13 (181.1)	4.029 (102.33)	2.126 (54)	2.323 (59)	1.332 (33.83)	2.603 (66.11)	4.288 (108.93)	1.910 (48.51)	.955 (24.26)	1.010 (25.65)	9.233 (234.52)	3.06 (1.63)
1"	NPT Female	16	1.421 (36.1)	6.704 (170.29)	4.029 (102.33)	2.126 (54)	2.323 (59)	1.332 (33.83)	2.603 (66.11)	4.288 (108.93)	1.910 (48.51)	.955 (24.26)	.900 (22.86)	9.123 (231.72)	3.06 (1.63)
1¼"	Sweat Female	18	2.17 (55)	7.89 (200.4)	4.374 (111.1)	2.882 (73.2)	2.475 (62.87)	1.561 (39.65)	3.105 (78.87)	5.158 (131.02)	2.43 (61.72)	1.215 (30.86)	1.070 (27.18)	10.894 (276.71)	4.44 (2.01)
1¼"	NPT Female	18	1.634 (41.5)	7.357 (186.87)	4.374 (111.1)	2.882 (73.2)	2.475 (62.87)	1.561 (39.65)	3.105 (78.87)	5.158 (131.02)	2.43 (61.72)	1.215 (30.86)	1.00 (25.4)	10.824 (274.93)	4.44 (2.01)
1½"	Sweat Female	46	2.41 (61.2)	9.16 (232.6)	4.923 (125.04)	3.12 (79.12)	2.72 (69)	1.815 (46.11)	4.227 (107.37)	5.16 (131)	2.82 (71.63)	1.41 (35.81)	1.23 (31.24)	12.432 (315.77)	7.25 (3.29)
1½"	NPT Female	46	1.83 (46.5)	8.58 (217.9)	4.923 (125.04)	3.12 (79.12)	2.72 (69.)	1.815 (46.11)	4.227 (107.37)	5.16 (131)	2.82 (71.63)	1.41 (35.81)	1.250 (31.75)	12.452 (316.28)	7.25 (3.29)
2"	Sweat Female	54	2.943 (74.74)	10.16 (258.1)	5.368 (136.35)	3.72 (94.5)	2.961 (75.21)	1.897 (48.19)	4.441 (112.81)	6.58 (167.13)	3.5 (88.9)	1.75 (44.45)	1.48 (37.59)	14.398 (365.71)	10 (4.54)
2"	NPT Female	54	2.185 (55.5)	9.4 (238.8)	5.368 (136.35)	3.72 (94.5)	2.961 (75.21)	1.897 (48.19)	4.441 (112.81)	6.58 (167.13)	3.50 (88.9)	1.75 (44.45)	1.170 (29.72)	14.088 (357.84)	10 (4.54)

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

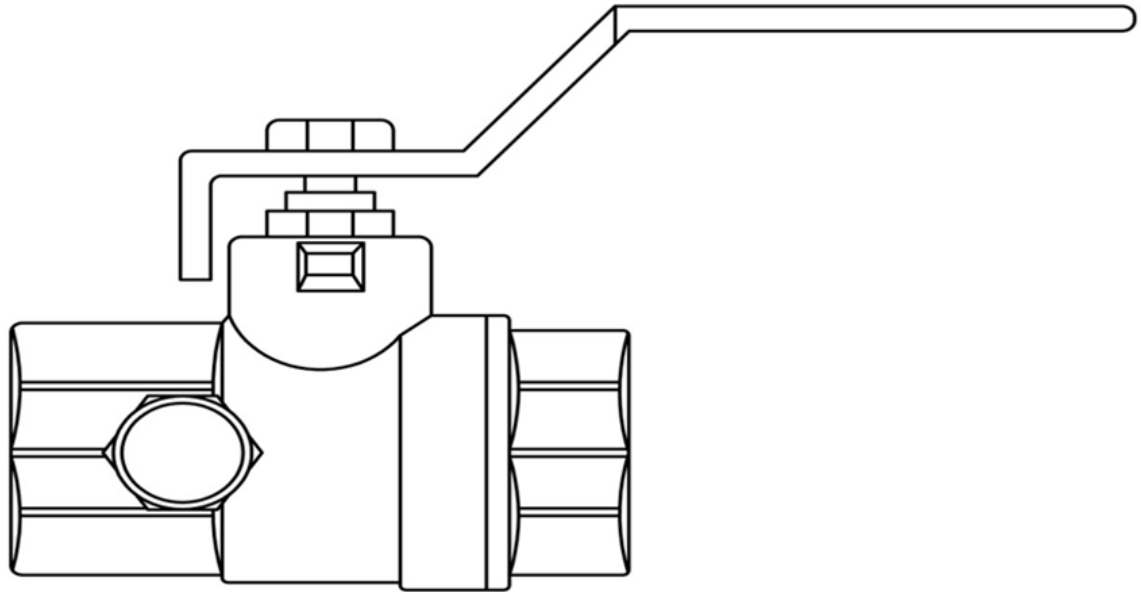
WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Revision Date: 11/20/2017

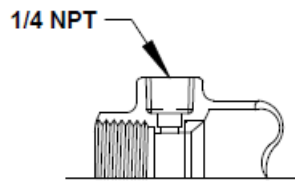
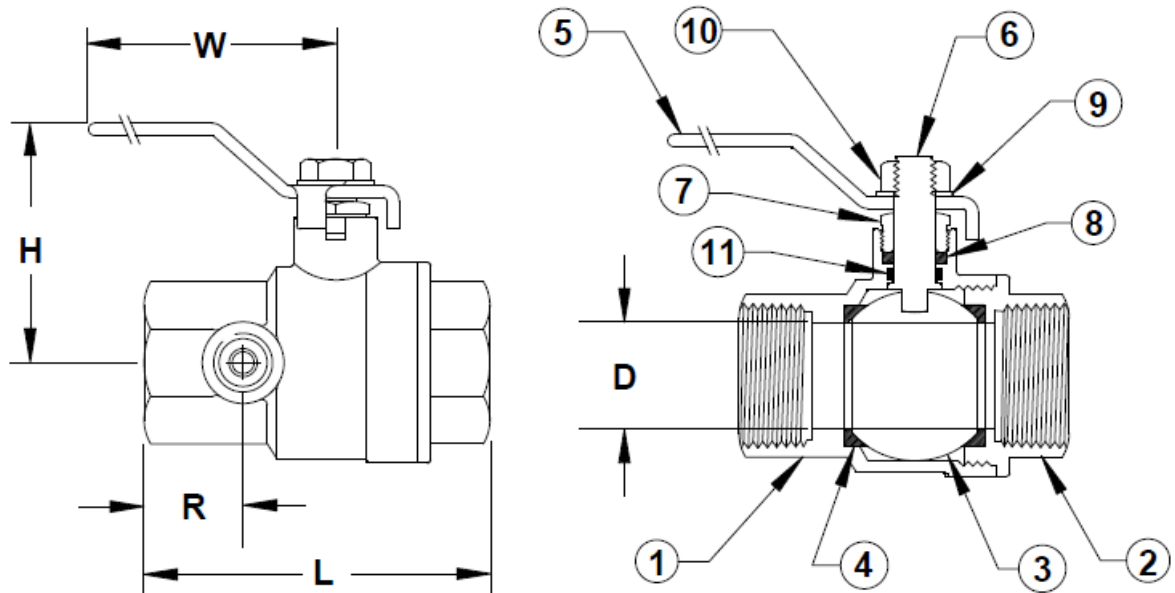
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HOSE ASSEMBLIES & KITS



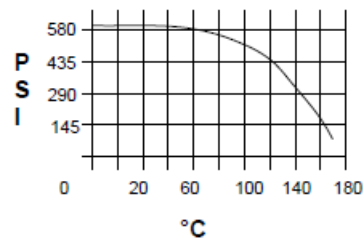
Ball Valve Manual Balance Valve

Balance Type:	Manual
Body Design:	Full Port Ball Valve w/PT <i>Memory Stop Optional</i>
Body:	Brass
Ball:	Chrome Plated Brass
Stem	Brass
O-Rings:	BUNA-N
Stem Packing:	PTFE
Seat:	PTFE
Handle:	Zinc Plated Steel w/ Plastic Coating
Working Pressure:	600 psig

WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.



PRESS. VS. TEMP. CURVE



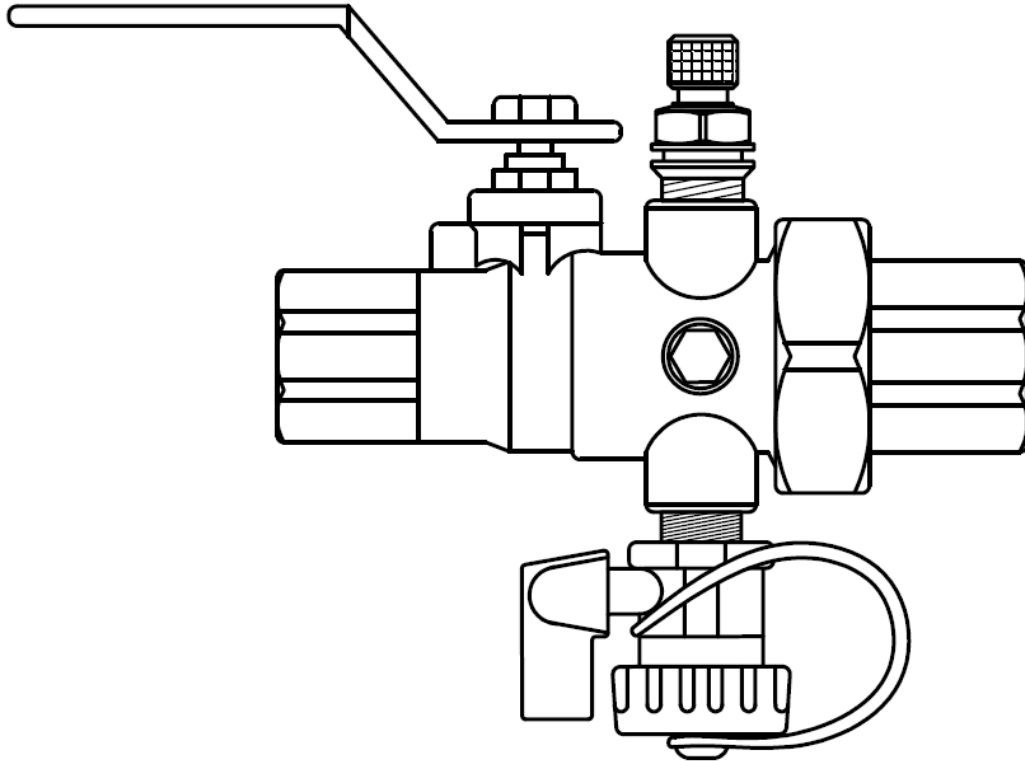
DIMENSIONS

CAT. NO.	SIZE	L	D	H	R	W
CR0501000	1/2	2.48	.59	1.89	.76	3.65
CR0751000	3/4	2.69	.75	2.11	.77	4.65
CR1001000	1	3.15	1.00	2.45	.84	4.65
CR1251000	1 1/4	3.65	1.25	2.53	.92	5.62
CR1501000	1 1/2	4.09	1.57	2.80	.94	5.62
CR2001000	2	4.47	1.97	3.13	.95	5.62

MATERIAL LIST

NO.	PART NAME	MATERIAL
11	O-RING	BUNA-N
10	NUT	STEEL, ZINC PLATED
9	LOCK WASHER	STEEL, ZINC PLATED
8	STEM PACKING	PTFE
7	GLAND NUT	BRASS
6	STEM	BRASS
5	HANDLE	ZINC PLATED STEEL, PLASTICOATED
4	SEAT	PTFE
3	BALL	BRASS, HARD CHROME PLTD.
2	END CAP	BRASS
1	BODY	BRASS

Model UBV Shut-Off Valve (1/2" - 2")



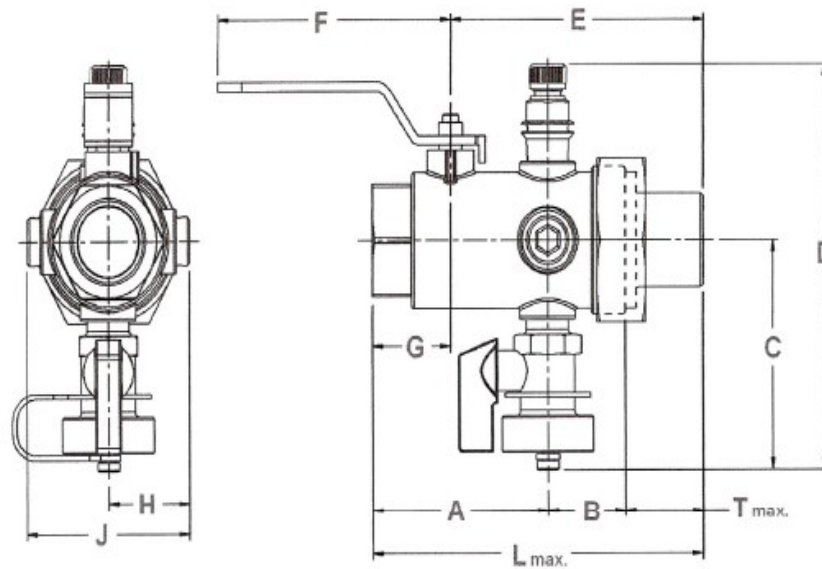
Model UBV Shut-Off Valve

Body:	C37000 Brass
Ball:	Chrome Plated
Ball Seal:	Teflon®
Stem:	Explosion Proof
O-Rings:	EPDM
Handle:	Chrome Plated Steel w/ Plastic Cover
Taps:	Three Total 1/4" NPT - 1 Plugged - 1 Drain Valve - 1 Pressure/Temperature Port

Maximum Working Temperature:	400 psig
Temperature Range:	-4° F to 250° F

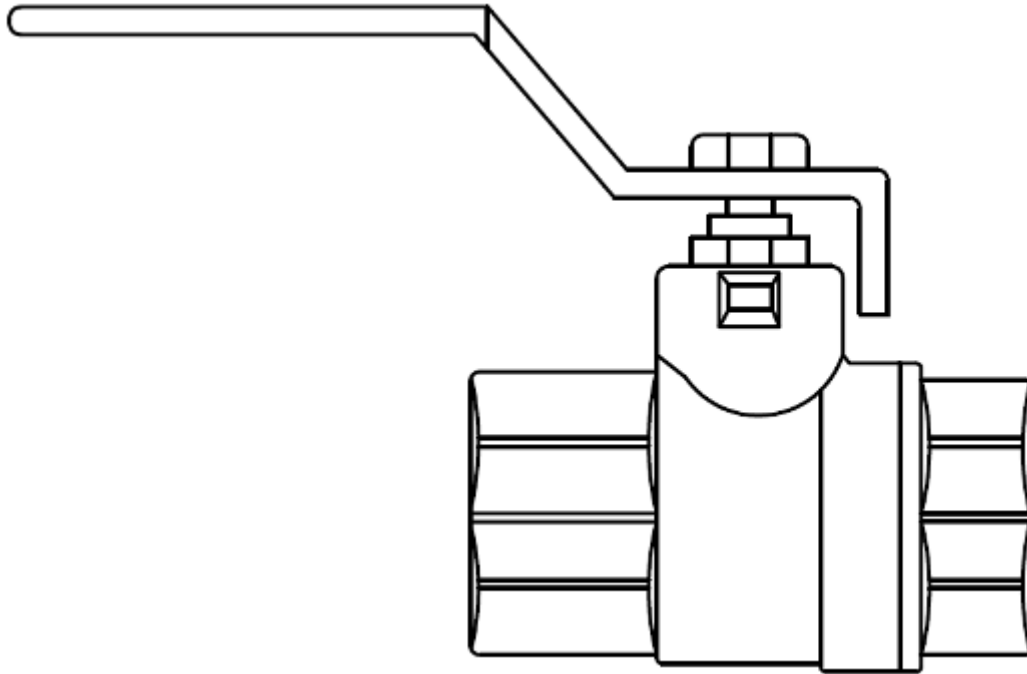
WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

UBV



Valve Size Fixed End	Connection Fixed End	DIMENSIONS* INCH (mm)											Approx. Weight Lbs.
		A	B	C	D	E	F	G	H	J	T (Max)	L (Max)	
½"	Sweat Female	2.02 (51.3)	0.40 (10.2)	2.525 (64.1)	4.58 (116.2)	3.54 (89.9)	3.38 (85.7)	1.03 (26.3)	0.90 (22.9)	1.81 (45.8)	1.55 (39.4)	3.97 (100.9)	1.6 (0.7)
½"	NPT Female	2.00 (50.9)	0.40 (10.2)	2.525 (64.1)	4.58 (116.2)	3.54 (89.9)	3.38 (85.7)	1.02 (25.8)	0.90 (22.9)	1.81 (45.8)	1.55 (39.4)	3.95 (100.5)	1.6 (0.7)
¾"	Sweat Female	2.67 (67.7)	0.66 (21.8)	2.76 (70.1)	5.05 (128.1)	3.79 (96.3)	3.50 (88.9)	1.45 (36.9)	1.14 (28.9)	2.28 (57.8)	1.55 (39.4)	5.08 (128.9)	1.9 (0.9)
¾"	NPT Female	2.43 (61.8)	0.86 (21.8)	2.76 (70.1)	5.05 (128.1)	3.79 (96.3)	3.50 (88.9)	1.22 (30.9)	1.14 (28.9)	2.28 (57.8)	1.55 (39.4)	4.84 (123)	1.9 (0.9)
1"	Sweat Female	2.69 (68.4)	0.88 (22.4)	2.763 (70.2)	5.05 (128.2)	4.14 (105.2)	4.00 (101.6)	1.43 (36.2)	1.14 (29)	2.28 (57.9)	2.00 (50.8)	5.57 (141.6)	2.9 (1.3)
1"	NPT Female	2.35 (59.7)	0.88 (22.4)	2.763 (70.2)	5.05 (128.2)	4.14 (105.2)	4.00 (101.6)	1.08 (27.5)	1.14 (29)	2.28 (57.9)	2.00 (50.8)	5.23 (132.9)	2.9 (1.3)
1¼"	Sweat Female	3.56 (90.5)	1.09 (27.7)	3.141 (79.8)	5.81 (147.5)	4.94 (125.5)	5.38 (136.5)	1.71 (43.5)	1.52 (38.6)	3.04 (77.1)	2.00 (50.8)	5.23 (169)	3.9 (1.8)
1¼"	NPT Female	3.30 (83.7)	1.09 (27.7)	3.141 (79.8)	5.81 (147.5)	4.94 (125.5)	5.38 (136.5)	1.45 (36.7)	1.52 (38.6)	3.04 (77.1)	2.00 (50.8)	6.39 (162.2)	3.9 (1.8)
1½"	Sweat Female	4.36 (110.7)	1.12 (28.4)	3.42 (86.9)	6.37 (161.7)	5.76 (146.3)	5.50 (139.7)	2.25 (57)	1.80 (45.7)	3.60 (91.3)	2.52 (64)	8.00 (203.1)	5.2 (2.4)
1½"	NPT Female	4.01 (102)	1.12 (28.4)	3.42 (86.9)	6.37 (161.7)	5.76 (146.3)	5.50 (139.7)	1.90 (48.3)	1.80 (45.7)	3.60 (91.3)	2.52 (64)	7.65 (194.4)	5.2 (2.4)
2"	Sweat Female	4.72 (119.9)	1.21 (30.7)	3.685 (93.6)	6.90 (175.1)	6.97 (177.0)	6.00 (152.4)	2.10 (53.4)	2.06 (52.4)	4.13 (104.8)	3.14 (79.8)	9.07 (230.4)	7.7 (3.5)
2"	NPT Female	4.20 (106.7)	1.21 (30.7)	3.685 (93.6)	6.90 (175.1)	6.97 (177.0)	6.00 (152.4)	1.59 (40.3)	2.06 (52.4)	4.13 (104.8)	3.14 (79.8)	8.55 (217.2)	7.7 (3.5)

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

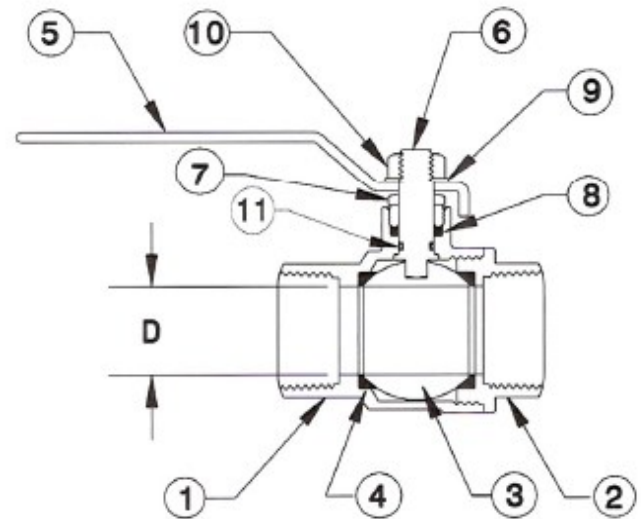
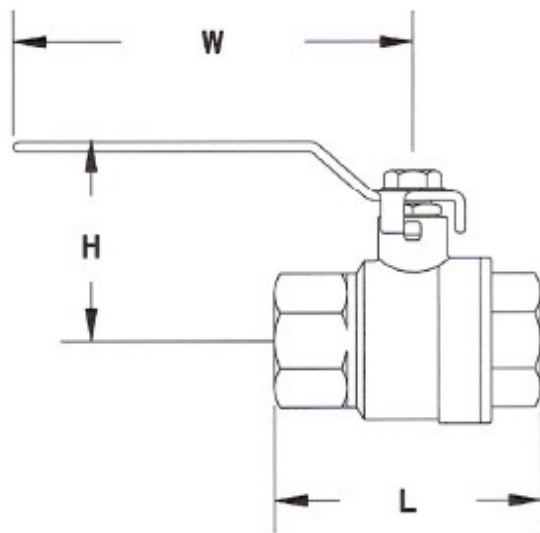


USA 9101 Series Forged Brass Ball Valve

Body:	Brass
End Cap:	Brass
Ball:	Brass, Chrome Plated
Seat:	PTFE
Handle:	Zinc Plated Steel, Plasticoated
Stem:	Brass
Gland Nut:	Brass
Stem Packing:	PTFE
Lock Washer:	Zinc Plated Steel
Nut:	Zinc Plated Steel
O-Ring:	Buna-N

WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

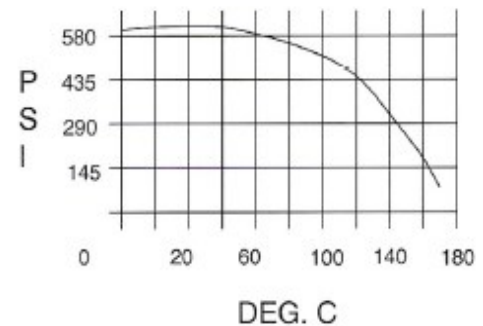
USA 9101 Series Forged Brass Ball Valve



DIMENSIONS

CAT. NO.	SIZE	L	D	H	W
USA0259101	1/4	1.70	.39	1.71	3.65
USA0389101	3/8	1.70	.39	1.71	3.65
USA0509101	1/2	2.25	.59	1.80	3.65
USA0759101	3/4	2.52	.75	2.05	4.65
USA1009101	1	3.00	1.00	2.14	4.65
USA1259101	1 1/4	3.44	1.25	2.84	5.62
USA1509101	1 1/2	3.85	1.57	2.87	5.62
USA2009101	2	4.30	1.97	3.23	5.62

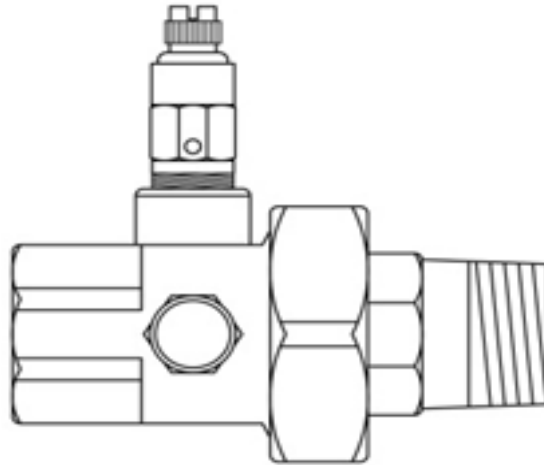
PRESS. VS. TEMP. CURVE



MATERIALS

NO.	PART NAME	MATERIALS USA SERIES	* MATERIALS SST
11	O-RING	BUNA-N	
10	NUT	ZINC PLATED STEEL	STANLESS STEEL
9	LOCK WASHER	ZINC PLATED STEEL	STANLESS STEEL
8	STEM PACKING	PTFE	
7	GLAND NUT	BRASS	
6	STEM	BRASS	TYPE 304 SST
5	HANDLE	ZINC PLTD STEEL, PLASTICOATED	STANLESS STEEL
4	SEAT	PTFE	
3	BALL	BRASS, CHROME PLTD.	TYPE 304 SST
2	END CAP	BRASS	
1	BODY	BRASS	

WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.



Model UA - Union Accessory

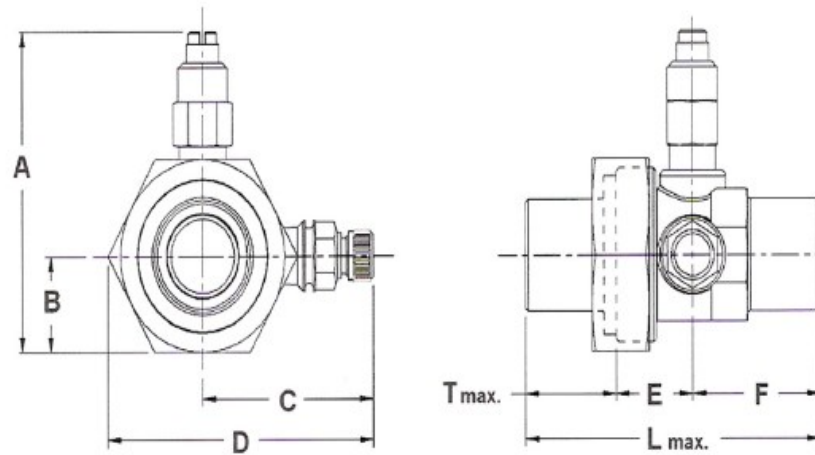
Body: C37000 Brass
Taps: Two 1/4" NPT spaced 90° apart
O-Rings: EPDM

Maximum Working Temperature: 400 psig
Temperature Range: -4° F to 250° F

Comes complete with Manual Air Vent and PT Port (as pictured)

WARNING: To insure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

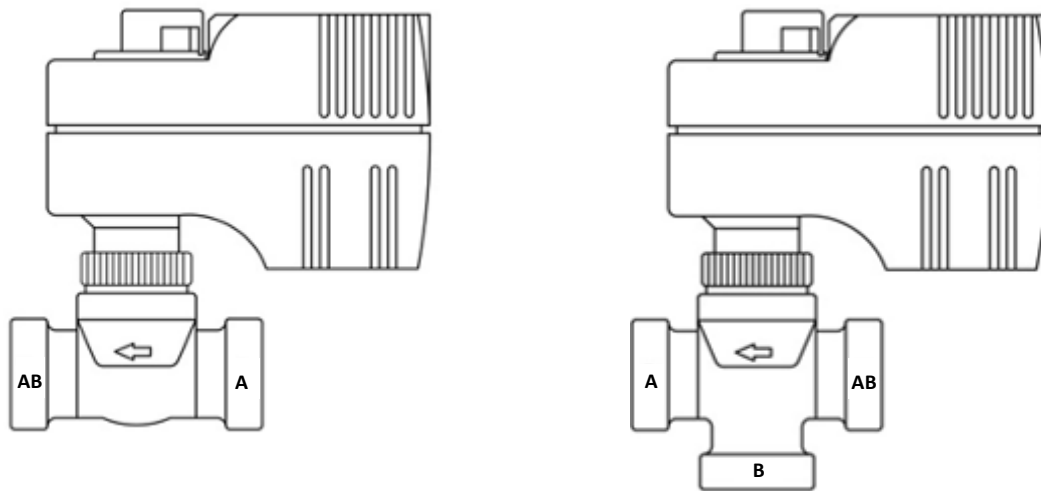
UA



Valve Size Fixed End	Connection Fixed End	DIMENSIONS* INCH (mm)								Approx. Weight Lbs.
		A	B	C	D	E	F	T (Max)	L (Max)	
½"	Sweat Female	2.76 (70.1)	0.73 (18.4)	1.95 (49.4)	2.76 (70.0)	0.89 (22.6)	1.22 (30.9)	1.55 (39.4)	3.66 (92.9)	1.1 (0.5)
½"	NPT Female	2.76 (70.1)	0.73 (18.4)	1.95 (49.4)	2.76 (70.0)	0.89 (22.6)	1.08 (27.4)	1.55 (39.4)	3.52 (89.4)	1.2 (0.5)
½"	NPT Male	2.76 (70.1)	0.73 (18.4)	1.95 (49.4)	2.76 (70.0)	1.08 (27.4)	1.78 (45.2)	1.55 (39.4)	4.41 (112.0)	1.5 (0.7)
¾"	Sweat Female	2.98 (75.6)	0.88 (22.2)	2.01 (51.1)	2.96 (75.2)	0.86 (21.8)	1.28 (32.5)	1.55 (39.4)	3.59 (93.7)	1.3 (0.6)
¾"	NPT Female	2.98 (75.6)	0.88 (22.2)	2.01 (51.1)	2.96 (75.2)	0.86 (21.8)	1.18 (29.8)	1.55 (39.4)	3.59 (91.0)	1.4 (0.6)
¾"	NPT Male	2.98 (75.6)	0.88 (22.2)	2.01 (51.1)	2.96 (75.2)	1.12 (28.4)	1.69 (42.9)	1.55 (39.4)	4.36 (110.7)	1.8 (0.8)
1"	Sweat Female	3.19 (81.1)	0.97 (24.6)	2.14 (54.2)	3.19 (80.9)	0.89 (22.7)	1.51 (38.4)	2.00 (50.8)	4.41 (111.9)	1.6 (0.7)
1"	NPT Female	3.19 (81.1)	0.97 (24.6)	2.14 (54.2)	3.19 (80.9)	0.89 (22.7)	1.23 (31.2)	2.00 (50.8)	4.96 (104.7)	1.8 (0.8)
1½"	Sweat Female	3.73 (94.7)	1.24 (31.6)	2.40 (60.8)	3.80 (96.5)	1.08 (27.3)	1.89 (47.9)	2.00 (50.8)	4.12 (104.7)	2.4 (1.1)
1½"	NPT Female	3.73 (94.7)	1.24 (31.6)	2.40 (60.8)	3.80 (96.5)	1.08 (27.3)	1.25 (31.6)	2.00 (50.8)	4.3 (109.7)	2.5 (1.1)
1½"	Sweat Female	4.06 (103.1)	1.50 (38.1)	2.47 (62.7)	4.15 (105.5)	1.13 (28.6)	1.88 (47.6)	2.52 (64.0)	5.52 (140.2)	3.4 (1.5)
1½"	NPT Female	4.06 (103.1)	1.50 (38.1)	2.47 (62.7)	4.15 (105.5)	1.13 (28.6)	1.50 (38.1)	2.52 (64.0)	5.15 (130.7)	3.6 (1.6)
2"	Sweat Female	4.79 (120.9)	1.88 (47.8)	2.79 (70.9)	4.74 (120.4)	1.10 (27.9)	1.94 (49.2)	3.14 (79.8)	6.2 (156.9)	5.0 (2.3)
2"	NPT Female	4.79 (120.9)	1.88 (47.8)	2.79 (70.9)	4.74 (120.4)	1.10 (27.9)	1.65 (41.9)	3.14 (79.8)	5.89 (149.6)	5.6 (2.5)

*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

2-Way and 3-Way Zone Valves



Standard Features

Line Sizes: 1/2" - 1"

Body Style: Globe

- ◆ UL Listed for Plenum installations.
- ◆ All metal plug and seat.
- ◆ Direct coupled bonnet—install actuator without tools.
- ◆ Standard 2.5 mm strike.
- ◆ Change from normally open to normally closed by simply changing actuators.
- ◆ Visual position indicator.
- ◆ Manual Override: 2 Position with auto lock, 3 Pt. Flt. & 0-10Vdc using hex wrench.

Valve Body

Flow Characteristic:	Linear
Body:	Brass
Trim:	Brass
Stem:	SS ASTM A582 type 303
O-Rings:	EPDM
Packing:	EPDM O-rings
Medium:	Water, Glycol Solns. to 50%
Medium Temp Range:	34°F to 230°F (1°C to 110°C)
Max. Inlet Pressure:	125 psig
Leakage Rate:	ANSI Class III
Close Off Ratings:	ANSI/FCI 70-2, 2-way & 3-way valves 1/2" - 3/4" (44 psi), 1" (22 psi)

Available CV's

2-Way:	1/2" - 1.0, 2.5, 4.0 3/4" - 4.1 1" - 7.0
3-Way:	1/2" - 1.0, 2.5, 4.0 3/4" - 4.1 1" - 7.0

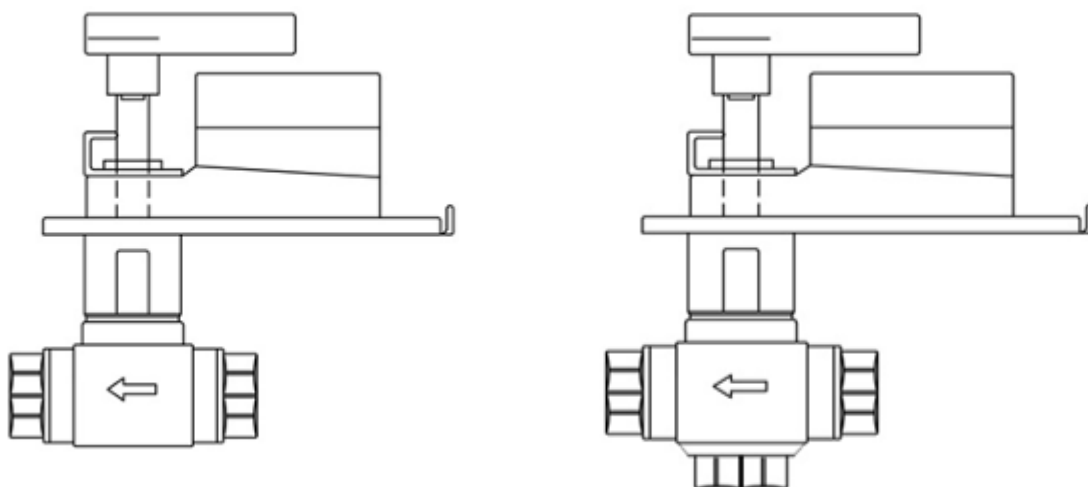
2 Position Actuators

Voltage:	24 Vac +/- 20%
Frequency:	24 Vac - 50/60 Hz
Power Consumption:	9.8 VA
Run Time:	10 seconds
Nominal Stroke:	1/10-in. (2.5 mm)
Nominal Force	24 lb. (105 N)
Operating Temp:	41°F to 122°F (5°F to 50°C)
Noise:	<35 db

3 Pt. Floating/ 0-10Vdc ACTUATORS (Non-Fail Safe)

Voltage:	24 Vac +/- 20%
Frequency:	24 Vac - 50/60 Hz
Power Consumption:	3 Pt. Flt. - 0.8 VA 0-10Vdc - 2.5 VA
Run Time:	3 Pt. Flt. - 150 sec., 0-10Vdc - 34 sec.
Nominal Stroke:	1/10-in. (2.5 mm)
Nominal Force:	24 lb. (105 N)
Operating Temp:	41°F to 122°F (5°F to 50°C)

2-Way and 3-Way Ball Valves



Standard Features

Line Sizes: 1-1/4" - 2"

Body Style: Ball

- ◆ 1/4 turn rotary control valves designed to be coupled with an OpenAir actuator.
- ◆ Universal mounting plate accommodates different actuator sizes.
- ◆ Variety of ball sizes and flow coefficients.
- ◆ Actuator and plate can be rotated to facilitate installation and wiring.
- ◆ Standoffs and mounting plate provide thermal barrier between the actuator and valve.
- ◆ Plastic mounting plate, extension and handle do not condensate.
- ◆ Operating handle can be manually operate valve in event of power failure.

Valve Body

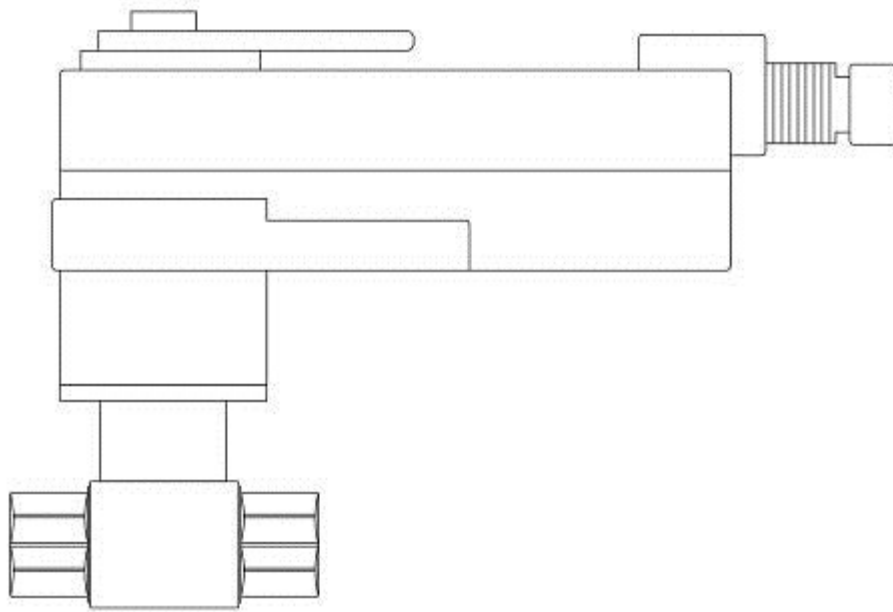
Flow Characteristic:	Equal %
Body:	Brass
Ball:	Chrome Plated Brass
Ball Seals:	Glass-filled PTFE with EPDM O-rings
Flow Optimizer:	Glass-filled PTFE
Stem:	Brass, Double O-ring, Blow-out proof
Stem Seals:	Brass, Double O-ring, Blow-out proof
Angle of Rotation:	0 to 90 degrees
Medium:	Water, Glycol Solns. to 50%
Medium Temp Range:	35°F to 250°F (2°C to 121°C)
Static Pressure/Temp:	360 psig/250°F (600 WOG)
Close Off Ratings:	200 psi for all 2-way, 200 psi for all 3-way

Fail Safe Actuators

Voltage:	24 Vac +/- 20%
	24 Vdc +/- 15%
Frequency:	50/60 Hz
Power Consumption:	5 VA running, 4 VA holding
Run Time:	90 seconds
Spring Return:	15 sec. (typical)
Running Torque:	62 lb.
Enclosure:	NEMA 1

3 Pt. Floating/ 0-10Vdc ACTUATORS (Non-Fail Safe)

Voltage:	24 Vac +/- 20%, 15%
Frequency:	50/60 Hz
Power Consumption:	3.3 VA
Run Time:	1-1/4" 2-way & 3-way: 90 sec. 1-1/2" - 2" 2-way & 3-way: 125 sec.
Running Torque:	1-1/4" 2-way & 3-way: 44 lb. 1-1/2" - 2" 2-way & 3-way: 88 lb.
Enclosure:	NEMA 1

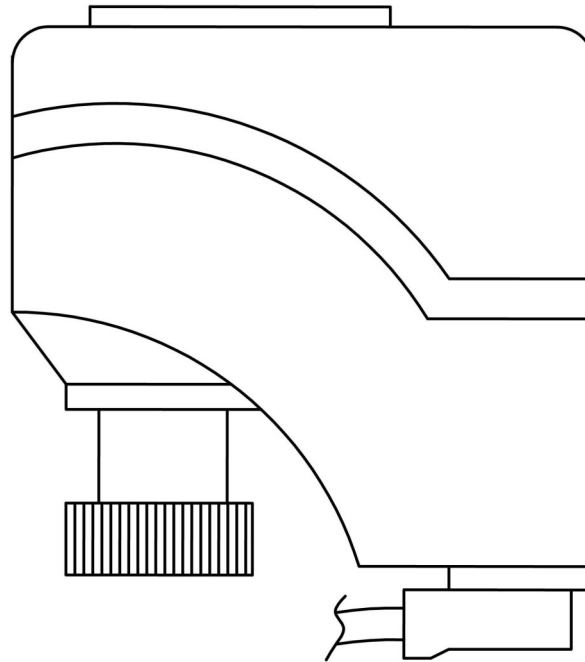


ATC Specs. - Body:

Size?	2-1/2"
Body:	Forged brass, nickel plated
Ball:	Stainless Steel
Stem:	Stainless Steel
Seats:	PTFE
Characterized Disc:	Tefzel®
Packing:	2 EPDM O-rings, lubricated
Body Pressure Rating:	400 psi
Media Temp. Range:	0° F to 250° F
△ Close Off Pressure:	100 psi
Max. P:	50 psi for typical applications

ATC Specs. - Actuator

Power Supply	24 VAC +/- 20% 50/60 Hz
Power Consumption:	5 W (running), 2.5 W (holding)
Control Type:	2 Position (on/off)
Fail Safe:	Spring Return (reversible CW/CCW mounting)
Run Time:	< 75 seconds (motor), 20 seconds @ -4° F to 122° F, <60 seconds @ -22° F
Position Indicator:	Visual indicator 0° F to 95° F (0° F is full spring return position)
Manual Override:	5mm hex crank (3/16" Allen) supplied
Housing:	Nema2, IP54, Enclosure Type 2



Actuators for:

1/2" to 1-1/4" Valve Bodies:

Spring Return (Fail Safe): 24 volt 3 point floating or 24 volt 0-10Vdc

Non-Spring Return (Fail-In-Place): 24 volt 3 point floating or 24 volt 0-10Vdc

Features: Visual position indicator, manual override, direct mounting.
Application: Heating or cooling applications, water/glycol solutions up to 50% in closed loops.
Power: 24 Vac
Operating Temperature: 41°F to 122°F

1-1/2" to 2" Valve Bodies:

Non-Spring Return (Fail-In-Place): 24 volt 3 point floating or 24 volt 0-10Vdc

Features: Visual position indicator, manual override, direct mounting.
Application: Heating or cooling applications, water/glycol solutions up to 50% in closed loops.
Power: 24 Vac
Operating Temperature: 23°F to 122°F

6-Way Control Valve (Ball Valve Type)



NEW

The 6-Way Ball Valve in conjunction with modulating Actuator provides single valve and actuator changeover and control of hot and chilled water for heated/chilled beam applications or any 4-pipe system utilizing the same coil to heat and cool. Using the 6-Way Ball Valve in heated and chilled applications minimizes data points and decreases costs for the customer since only a single actuator is required.

Valve Sizes: 1/2", 3/4", 1"

Porting Connections: NPT Union, female connections

Cv(s): .3 to 4.7 in various combinations for heated and chilled applications

Cv Inserts: Stainless Steel

Close Off Pressure: 58 psi

Leakage: 0%. Prevents hot and chilled water from mixing

Valve Body: Hot-Pressed Brass CW 617N

Ball Seals: low friction PTFE

Medium: Water, water-glycol solns. Up to 50%

Angle of Rotation: 0° to 90°

Operating Pressure: 232 psi

Differential Pressure: 29 psi Max.

Temp. Range: 41°F to 194°F

Ball: Chrome Plated Brass

Stem: Blowout proof. Stainless Steel

Flow Characteristic: Linear

Actuator

Operating Voltage: 24 Vac

Signal: 0 to 10 Vdc

Failure Mode: Non-Spring return (Fail-in-place)

Manual Override: Yes

Power Consumption: 2 to 30 VA (Normal operation)

Run Time: 90 seconds

Agency Certification: UL meeting UL 873—cUL: Certified to

Canadian Standard C22.2 No. 24.93

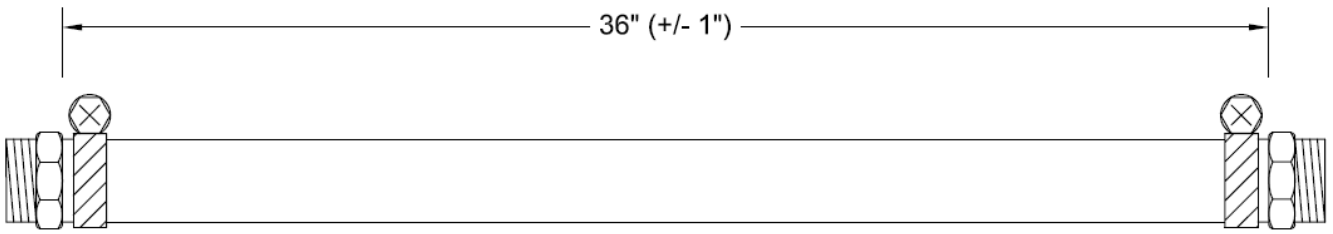
Mounting Location: NEMA 1 (interior only)

Chamberlin Rubber Company, Inc.

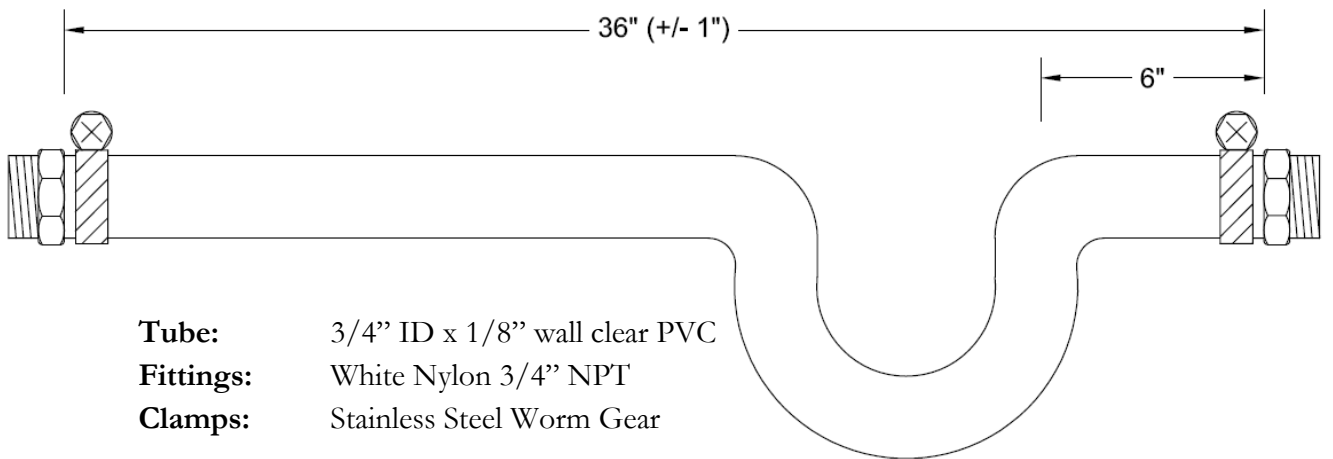
www.chamflex.com

Revision Date: 11/20/2017

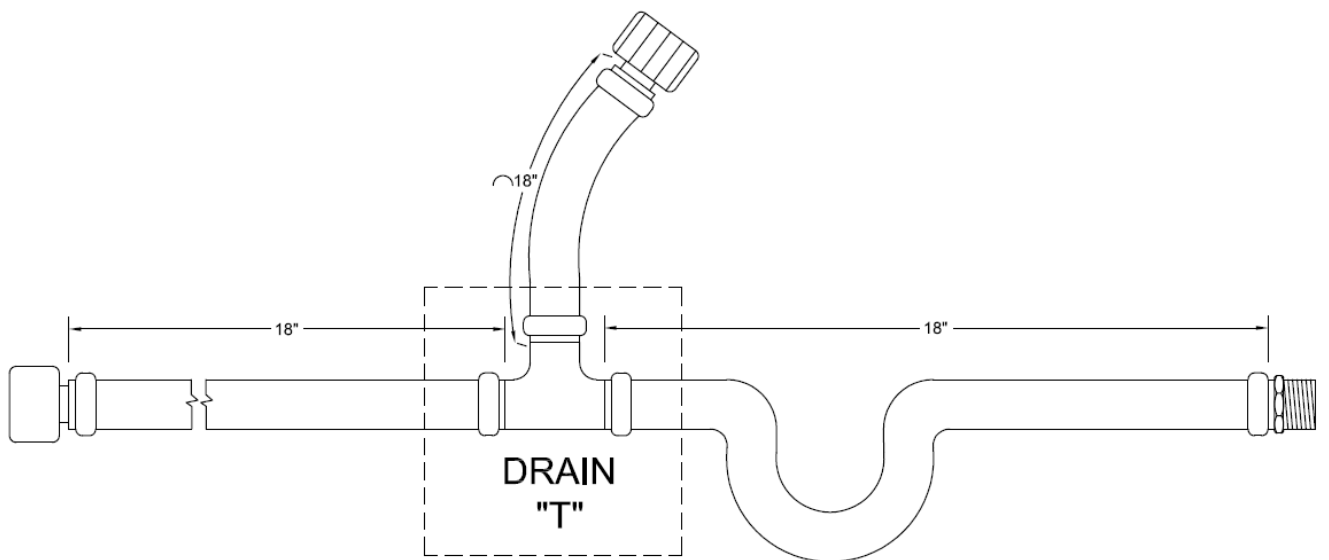
CHAMflex
"CLASS A" FIRE RATED
HOSE ASSEMBLIES & KITS



Tube: 3/4" ID x 1/8" wall clear PVC
Fittings: White Nylon 3/4" NPT
Clamps: Stainless Steel Worm Gear



Tube: 3/4" ID x 1/8" wall clear PVC
Fittings: White Nylon 3/4" NPT
Clamps: Stainless Steel Worm Gear



Tube: 3/4" ID x 1/8" wall clear PVC
Fittings: White Nylon 3/4" NPT
Clamps: Stainless Steel Worm Gear
Pan: 3/4" PVC Socket
Drain "T": 3/4" Hose
Outlet: 3/4" MNPT

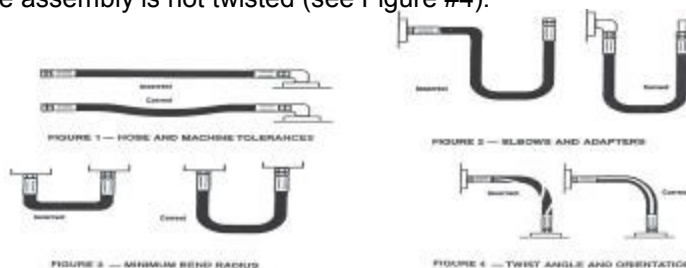
- A) All applications should be checked to ensure that the proper hose assembly lengths are being installed:
- Hose assemblies should not be installed in a “stretched” (taut) fashion. Some expansion and contraction of the hose assembly can occur due to temperature variation, system pressures, and system cycling (see Figure #1).
 - All hose assemblies should be routed properly to avoid contact with other surfaces that could possibly cause “chafing” (abrasion of the wire braided reinforcement).
 - The use of elbows and adapters should be considered to relieve hose “strain” (see Figure #2). **Do not use any plastic fittings or adapters.**
 - Hose assemblies should not be “bent” past the minimum bend radius requirements listed in the chart below. Hose assemblies showing evidence of “kinking” (being bent beyond the recommended bend radius) should not be installed (see Figure #3).

Assembly Specs.	Chamflex® Hose 1/2"	Chamflex® Hose 3/4"	Chamflex® Hose 1"	Chamflex® Hose 1 1/4"
Working Pressure	400 PSI	400 PSI	500 PSI	400 PSI
Minimum Burst at Ambient Temp. (70°)	1600 PSI	1600 PSI	2000 PSI	1600 PSI
Minimum Bend Radius	2.5"	4"	5.5"	10"
Hose OD (approximate)	.700	.975	1.245	1.56
Temperature Range	-40° F to 212° F	-40° F to 212° F	-40° F to 212° F	-40° F to 212° F

- B) All hose assemblies should be installed in the following fashion so that no “twisting” occurs:
- Solid male pipe thread (NPT) ends should be installed first unless they are being connected to a “swivel” female (NPT). *The entire hose assembly must rotate during the tightening of this connection in order to avoid hose tube damage.*
 - The flared adapter on the “union” (female swivel) end should be removed with the male pipe (NPT) end of the adapter connected to the appropriate port first.

CAUTION: Thread sealant or thread tape should not be used on “flared” connections. Additional thread sealant or thread tape should not be applied to male pipe thread (NPT) ends where factory installed thread sealant is already present.

- The last step is to reconnect the flared swivel female coupling to the flared end of the adapter in a manner that ensures that the hose assembly is not twisted (see Figure #4).



Visit www.chamflex.com to view safety guidelines for selecting hose.

WARNING: Hoses are not rated for potable water

WARNING: “Flux and solder drips have been found to weaken the stainless steel braiding on Chamflex® Hose Assemblies which could lead to deterioration of the inner tube component causing ‘ballooning’ and eventual failure. Chamflex® Hose Assemblies must be shielded with appropriate fire resistance materials or if possible, removed from service if soldering, welding, or brazing is to occur in areas above or adjacent to said assemblies. Chamberlin Rubber Company, Inc. will not be responsible for failed hose assemblies and/or subsequent damage that occurred by failing to follow the provided Installation Instructions (and warnings) as well as the Safety Guide.”

NOTE: Be sure that the exterior of the hose does not come into contact with substances not compatible with 302/304 stainless steel, including (but not limited to) any substances that contain chlorides. Chlorides have been found to cause stress corrosion cracking of the stainless steel braid and eventual failure.

CAUTION: When brass sweat adapters/valves are being used, make sure that the hose assembly is disconnected from the adapter prior to “sweating” it on. Excessive direct heat can damage the tube of the hose. The hose assembly should be reattached to the adapter after the “sweating” operation has been performed and adapter properly cooled.

WARNING: To insure proper installation this hose assembly must be installed according to instructions.

To ensure the highest performance from your ChamFlex® hose assemblies be sure they are installed properly.



NO PIPE DOPE — NO THREAD TAPE

DO NOT PUT ANYTHING ON THE

JIC FITTINGS



DO NOT EXCEED BEND RADIUS

ChamFlex® hose assemblies have superior flexibility due to their unique construction but everything has its limits. Please refer to the installation instructions for the minimum bend radius of your hose assembly.



PROTECT YOUR HOSE FROM
FLUX & SOLDER

ChamFlex® hose assemblies will be damaged if flux & solder is allowed to drip onto them during installation. Be sure to protect your hose assemblies to prevent future problems.

CHAMFlex[®]
HOSE ASSEMBLIES & KITS

For more information visit our website:

www.chamflex.com



Stainless Steel Braided All Metal Single Hose Assembly Installation Instructions

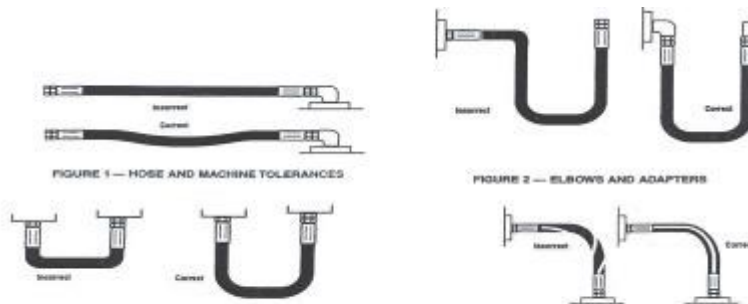
- A) All applications should be checked to ensure that the proper hose assembly lengths are being installed:
- Hose assemblies should not be installed in a “stretched” (taut) fashion. Some expansion and contraction of the hose assembly can occur due to temperature variation, system pressures, and system cycling (see Figure #1).
 - All hose assemblies should be routed properly to avoid contact with other surfaces that could possibly cause “chafing” (abrasion of the wire braided reinforcement).
 - The use of elbows and adapters should be considered to relieve hose “strain” (see Figure #2). **Do not use any plastic fittings or adapters.**
 - Hose assemblies should not be “bent” past the minimum bend radius requirements listed in the chart below. Hose assemblies showing evidence of “kinking” (being bent beyond the recommended bend radius) should not be installed (see Figure #3).

Hose Size	Working Pressure	Minimum Burst (@ 72° F)	Temperature Range	Minimum Bend Radius
1 1/2”	300 PSI	1200 PSI	-20° F– 800° F	11.75”
2”	300 PSI	1200 PSI	-20° F– 800° F	12.55”
2.5”	300 PSI	1200 PSI	-20° F– 800° F	16”

- B) All hose assemblies should be installed in the following fashion so that no “twisting” occurs:
- Solid male pipe thread (NPT) ends should be installed first unless they are being connected to a “swivel” female (NPT). *The entire hose assembly must rotate during the tightening of this connection in order to avoid hose tube damage.*
 - The male union end should be removed with the male pipe (NPT) end of the union connected to the appropriate port first.

CAUTION: Thread sealant or thread tape should not be used on union connections. Additional thread sealant or thread tape should not be applied to male pipe thread (NPT) ends where factory installed thread sealant is already present.

- The last step is to reconnect the male union coupling to the female swivel hose end in a manner that ensures that the hose assembly is not twisted (see Figure #4).



Visit www.chamflex.com to view safety guidelines for selecting hose.

WARNING: Hoses are not rated for potable water

WARNING: “Flux and solder drips have been found to weaken the stainless steel braiding on Chamflex® Hose Assemblies which could lead to deterioration of the inner tube component causing ‘ballooning’ and eventual failure. Chamflex® Hose Assemblies must be shielded with appropriate fire resistance materials or if possible, removed from service if soldering, welding, or brazing is to occur in areas above or adjacent to said assemblies. Chamberlin Rubber Company, Inc. will not be responsible for failed hose assemblies and/or subsequent damage that occurred by failing to follow the provided Installation Instructions (and warnings) as well as the Safety Guide.”

NOTE: Be sure that the exterior of the hose does not come into contact with substances not compatible with 302/304 stainless steel, including (but not limited to) any substances that contain chlorides. Chlorides have been found to cause stress corrosion cracking of the stainless steel braid and eventual failure.

CAUTION: When brass sweat adapters/valves are being used, make sure that the hose assembly is disconnected from the adapter prior to “sweating” it on. Excessive direct heat can damage the tube of the hose. The hose assembly should be reattached to the adapter after the “sweating” operation has been performed and adapter properly cooled.

WARNING: To insure proper installation this hose assembly must be installed according to instructions.

VALVE INSTALLATION, OPERATION AND SERVICE INSTRUCTIONS

INSTALLER: PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE

GENERAL SAFETY NOTES:

WARNING: It is possible, depending on the age or condition of the product, for some liquid to escape when operating blow-down ball valves. Safety goggles should be worn while servicing the product. In this case, arrangements should be made to replace leaking valves. Failure to follow these instructions could result in serious personal injury.

WARNING: Check for proper sealing when using as an isolation valve. If the seat is not sealing properly, liquid will continue to flow from the drain valves. In this case, arrangements should be made to replace leaking valves. Failure to follow these instructions could result in serious personal injury or death and property damage.

OPERATIONAL LIMITS

Coil Hookup Accessory	Temp °F (°C)	Pressure psi (kPa)
Y-Strainer Valve (NPT)	250 (121)	400 (2758)
Y-Strainer Valve (sweat)	Based on solder type	ASTM Std. B16.18
Union Ended Ball Valve (NPT)	250 (121)	400 (2758)
Union Ended Ball Valve (sweat)	Based on solder type	ASTM Std. B16.18
Accessory (NPT)	250 (121)	400 (2758)
Accessory (sweat)	Based on solder type	ASTM Std. B16.18
Hose 1/2"	212 (100)	375 (2585)
Hose 1" to 2"	212 (100)	350 (2413)
Venturi/Ball Valve (NPT)	250 (121)	400 (2758)
Venturi/Ball Valve (sweat)	Based on solder type	ASTM Std. B16.18

Type Solder	Maximum Limitations 1/2" - 1"		Maximum Limitations 1 1/4" - 2"	
	Pressure psi (kPa)	Temp °F (°C)	Pressure psi (kPa)	Temp °F (°C)
95-5	300 (2069)	200 (93)	300 (2069)	175 (79)
TIN-	250 (1724)	225 (107)	250 (1724)	200 (93)
ANTIMONY	200 (1379)	250 (121)	175 (1207)	250 (121)

HOW TO USE PRESSURE TAPS TO MEASURE SYSTEM OPERATING CONDITIONS

1. Using Bell & Gossett's Model RP-250B readout probes, attach a Bell & Gossett differential pressure readout kit to the readout valves on the Accessory valve.

WARNING: Hot water leakage can occur from readout valve during probe insertion and during hookup of readout kit. Follow the instruction manuals supplied with the readout probes and readout kit for safe use. Failure to follow this instruction could result in serious personal injury and/or property damage.

2. Read the differential pressure across the coil. This can be compared to system pump head to determine system flow blockage.
3. Differential pressure can also be taken at Circuit Setter, AFLV and Y-strainer.

GENERAL INFORMATION:

For Installing Sweat Connections:

1. Clean tube ends and valve connections thoroughly per good piping practices with a fine grade emery cloth or fine grit sandpaper.
2. For soldering, use 95-5 (Tin-Antimony) solder and a good grade of flux.
3. Use a torch with a sharp point flame.
4. When sweating the joints, first adjusting the valve in the full open position, then wrap the valve with a cool wet rag and then direct the flame with care to avoid subjecting the valve to excessive heat. Allow the valve to cool before torching or operating.
5. Check the soldering connection for leaks.

WARNING: Use of improper procedures to sweat valve model with union connection into system can damage valve. Before installing sweat union connection to valve, remove the union nut and O-ring from the valve body, then union tailpiece with nut must be sweated (soldered) into place. Make sure the O-ring is reinstalled. Failure to follow this instruction could result in property damage and/or moderate personal injury.

CAUTION: Heat associated with the use of silver solder may damage valve components and void the product warranty. Do Not use silver solder. Failure to follow these instructions could result in property damage and/or moderate personal injury.

CAUTION: Excessive use of solder or flux may result in damage to the shutoff valve seat and ball. Do not use excessive solder or flux. Failure to follow these instructions can result in moderate personal injury and/or property damage.

For Installing NPT Connections:

Apply pipe compound conservatively to male connecting fittings only. After installation check all joints for leakage and retighten where necessary.

CAUTION: The use of "Teflon[®]" impregnated pipe compound and "Teflon[®]" tape on pipe threads provides lubricity. Care should be taken to prevent over-tightening which may damage the valve body. Failure to follow these instructions can result in moderate personal injury and/or property damage.

CAUTION: Do not use pipe dope where thread sealant is pre-applied when connecting valves to ChamFlex/All Metal SS Braided Hose Assemblies.



Model AC Circuit Sentry Automatic Flow Limiting Valve

Description: The Automatic Flow-Limiting Valves (AFLV) are designed to automatically control the flow in piping systems to selected Preset limit. As pressure differential increases, a cartridge inside the valve body reduces the flow area to accurately maintain the Preselected flow rate.

Installation Instructions:

1. The valves must be installed on the return side of the coil with union ended on the upstream side and other end on the downstream side.
2. Install the unit so that the flow arrow on the body housing points in the direction of flow.

Operating Instructions: Operation of the Automatic Flow-Limiting Valves is fully automatic and does not require any adjustment. It automatically maintains the selected flow over the designed differential pressure range.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

Before the system start up, remove cartridge from the valve. Flush the hydronic system and then reassemble cartridge into the valve and make sure cap is tightened properly. Start the system and check for the AFLV leak.

How to use Automatic Flow-Limiting Valve Pressure Taps to Determine Proper Function of Valve:

1. Using Bell & Gosset Model RP-250B readout probes, attach a Bell & Gosset differential pressure readout kit to the readout valves on the Automatic Flow-Limiting Valve.
2. Read the differential pressure across the Automatic Flow-Limiting Valve. This can be compared to system pump head to determine valve function and system flow blockage.

CAUTION: Hot water leakage can occur from read-out valve during probe insertion and during hookup of readout kit. Follow the instruction manual supplied with readout probe and kit for safe use. Failure to follow this instruction could result in serious personal injury and/or property damage.

Service Instructions: Should the Automatic Flow-Limiting Valve require cleaning or changing the orifice, follow the following instructions.

WARNING: System fluid under pressure and/or at high temperature can be very hazardous. Before servicing reduce system pressure to zero or isolate the pressure reducing from the system. Leave drain valve open. Allow system to cool below 100°F (38°C). Failure to follow these instructions could result in serious personal injury or death and property damage.

1. Loosen and remove the cap from the valve body.
2. Pull the cartridge assembly from the valve body for cleaning or replacing with the new flow cartridge. Check the cartridge by pushing the orifice washer into the cartridge housing for several times to make sure spring is functional.
3. To change orifice washer (for a different flow valve). Remove the clip ring from inside the cartridge housing with a screwdriver. Pull the orifice washer out and replace with the new orifice size as required.
4. Reinstall retaining clip (or replace clip ring, if damaged) in the cartridge-housing groove. Slide cartridge into the body. Reassemble the cap with the O-ring to body with appropriate torque.

WARNING: Corrosion or leakage is indication that the Automatic Flow-Limiting Valve must be replaced. Failure to follow these instructions could result in serious personal injury or death and property damage.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Model AM Flo-Setter Balance and Commissioning Valve

Description: Bell & Gossett Model AM Flo-Setter Balance & Commissioning Valves are precision engineered valves used in heating and cooling systems for the distribution of flow in various sections of the system. The dynamic balancing and commissioning valve ensures easy and reliable balancing of the system, regardless of any fluctuations in the differential pressure of the system. The Bell & Gossett Circuit Sentry Flo-Setter limits the maximum flow in the system and can be used in both variable and constant flow systems. The clear scale on the lockable handle ensures that flow setting is simple and user friendly while the integral P/T ports allow verification of pressure.

Installation Instructions:

Circuit Sentry Flo-Setter Balance & Commissioning valves are uni-directional valves and can be installed in most altitudes; however, they should be installed in a position to facilitate the ease of balancing the system. Be sure to install the Circuit Sentry Flo-Setter with the arrow pointing in the direction of flow.

Circuit Balance valves with NPT Connections:

Apply pipe compound conservatively to male connecting fittings only. Check connection for leaks.

CAUTION: The use of Teflon® impregnated pipe compound and Teflon® tape on threads provides lubricity. Care should be taken to prevent over tightening of the valves which may damage the Circuit Sentry Flo-Setter.

CAUTION: Do not use pipe dope where thread sealant is pre-applied when connecting valves to ChamFlex/All Metal SS Braided Hose Assemblies.

Operation Instructions:

How to use Bell & Gossett Circuit Sentry Flo-Setter Balance & Commissioning Valves for Pre-Set Flow Balancing:

The Circuit Sentry Flo-Setter Balance & Commissioning Valve is easily set, and the pre-setting is read on the scale. The flow rate of the valve can be determined from the flow rate graphs for the valve dimension in question. See the flow rate graphs of the valve in the FLOW CURVE BOOK (G10092) or Submittal (A-609.22 or A-611) for further information about the adjustment setting. Select the appropriate size Circuit Sentry Flo-Setter Balance & Commissioning Valve (normally line size) for the required GPM.

Please note: The scale is for the adjustment of flow. If you want to close the branch line, use an isolation ball valve in conjunction with the Circuit Sentry Flo-Setter.

The handle can be locked after adjustment. Remove the B&G logo cap and tighten with 5mm hexagonal key.

How to use Bell & Gossett Circuit Sentry Flo-Setter to Proportional Balance System:

The system is easily balanced by adjusting the pump according to the required differential pressure across the critical valve. When the differential pressure is available the system will automatically be balanced.

How to use Bell & Gossett Circuit Sentry Flo-Setter Balance & Commissioning valves as Flow Meters:

The flow through the valve can be identified by measuring the differential pressure Δp across the valve. If the measured differential pressure is above the minimum Δp_{min} , the flow is the one stated on the graph for the valve. If the measured differential pressure is below the minimum Δp_{min} , the flow can be found by using the formula below.

$$Q = C_v \times \Delta P$$

Q	Flow Rate	GPM
C_v	Flow Coefficient	GPM/PSI
ΔP	Differential Pressure	PSI

Service Instruction:

Periodically inspect the Circuit Sentry Flo-Setter for signs of leakage or corrosion.

Insulation:

Bell & Gossett recommends that insulation be attached to the Circuit Sentry Flo-Setter after the system has been balanced.

Note: Tape or other acceptable means should be used to secure the insulation to the Circuit Sentry Flo-Setter Balance & Commissioning Valve.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Siemens PICV Automated Balance Valve

Description: Siemens Pressure Independent Control Valves integrate three functions into a single device: control valve, adjustable flow limiter, and automatic pressure regulator. The 1/2" Normally Open valves have a 2.5 mm stroke, and a threaded valve bonnet for use with SSD Electronic Valve Actuators. The 3/4" Normally Open and 1/2" to 1-1/4" Normally Closed valves have a 5mm stroke, and a threaded valve bonnet for use with SSD Electronic Valve Actuators. The 1-1/2" and 2" Normally Closed valves have a 6.5 mm stroke, and a threaded valve bonnet for use with SQD Electronic Valve Actuators.

- Feature:**
- * Control valve with integrated pressure regulator and adjustable flow limiter
 - * ANSI Class 250 valve body
 - * 200 psi close-off with ANSI Class IV leakage (1/2" and 3/4" Normally Open)
 - * 45 psi close-off with ANSI Class IV leakage (1/2" to 1-1/4" Normally Closed)
 - * 50 psi close-off with ANSI Class III leakage (1-1/2" to 2" Normally Closed)
 - * Linear Flow Characteristic
 - * Stainless Steel Stem

P/T Ports Installation:

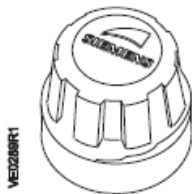
For 1/2" and 3/4" Normally Open Valves: The low-pressure P/T port (blue indicator ring) should be located on the downstream side of the valve. The high pressure P/T port (red indicator ring) will be located on the upstream or inlet side of the valve.

For 1-1/2" and 2" Normally Closed Valves: The low-pressure P/T port (blue indicator ring) should be located closest to the end connection. The high-pressure P/T port (red indicator ring) will be located closest to the valve system.

Presetting Adjustment: Prior to mounting the actuator, remove the black control knob cover from the valve to verify the valve is set to ordered flow setting.

To change the valve flow setting see steps 2, 3 and 4 below. (Flow setting scales are in gallons per minute (gpm) on all valves);

NOTE: When tightening the knurled nut, some force is required to reach the required physical stop; approximately an additional 1/2 to 3/4 extra turn after initial "finger tight" resistance is felt.



1. Remove the black control knob cover from the valve.



2. Loosen the brass knurled nut.



3. Adjust the desired dial setting with the white knob.
4. Retighten the brass knurled nut by hand.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Siemens PICV (cont.)

Mounting and Installation: Install the valve so the flow follows the direction of the arrow indicated on the valve body. For best performance, install the valve assembly with the actuator above the valve body. The valve and actuator can be installed in any position between vertical and horizontal. See Figure 1. Do not install the valve assembly with the actuator below horizontal or upside down.

NOTE: Allow sufficient space for servicing the valve and actuator.

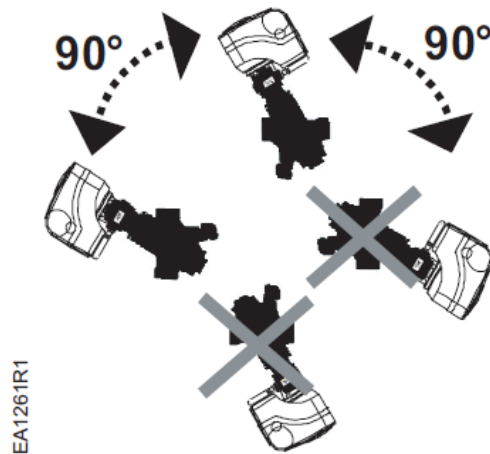


Figure 1. Recommended Installation Orientations.

Commissioning Notes:

CAUTION: The Pressure Independent Control Valves must be open when flushing or pressure testing the system. Strong pressure impacts can damage closed Pressure Independent Control Valves.

CAUTION: Differential pressure across the valve greater than 58 psi will result in damage to the pressure regulator.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Model MC Circuit Setter

Description: Circuit Setter Balance Valves are precision engineered valves which function as precise system balancing valves and highly accurate variable orifice flow meter.

Installation Instructions:

1. The valve should be installed on the return side of the coil with the union end on the upstream side and other end on the downstream side (except on the bypass line).

How to use Bell & Gossett Circuit Setter Balance Valves for Pre-Set Flow Balancing: All Circuit Setter Balance Valves within a common zone, circuit or system, with a common pump, are brought into balance with each other by establishing a common BALANCE GOVERNING HEAD LOSS as noted.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

1. Identify a zone within a given circuit or circuit within a given system with the highest head loss.
2. Establish the value of the head loss in feet of water.
3. Establish the corresponding required GPM.
4. Select the appropriate size Circuit Setter Balance Valve (normally line size) for the required GPM.
5. Using Side #1 of the V91483 Circuit Setter Balance Valve Calculator, set the degree of closure hairline in the red section of the Calculator of the 0° setting for the appropriate size Circuit Setter and read the head loss opposite the required CPM. The setting for this Circuit Setter will remain 0°.
6. Add the head loss in Step "5" to the head loss in Step "2" to establish the Balancing Governing Head Loss for the zone or circuit.
7. Subtract the required head loss for each zone circuit from the Balance Governing Head Loss in Step "6" to establish the head loss difference for each zone or circuit which is to be brought into balance with Step "6".
8. The head loss difference in Step "7" and the required GPM in Step "3" are lined up in the white section of Side #1 of the Calculator and the degree of closure for the specific Circuit Setter Balance Valve is shown under the degree of closure hairline in the red section of the Calculator for the appropriate size Circuit Setter.
9. Adjust the Circuit Setter by turning the red knob by hand on sizes 1/2" through 1", or by placing a wrench on the wrench flats provided on sizes 1 1/4" through 2 1/2" to the set position determined by the preceding procedure.

WARNING: It is possible, depending on the age or condition of the stem seal, for some liquid to escape during Circuit Setter adjustment. Do not have eyes or face on a level with the sides of the Circuit Setter. Failure to follow this warning could result in serious personal injury.

NOTES:

- Head loss in Steps "6" and "2" are a fixed head requirement the zone, circuit or system pump, as required, must overcome.
- Refer to the G95872 prewired tag packaged with the Circuit Setter Balance Valve and fill in the appropriate information. Attach the tag to the Circuit Setter for future reference.

How to use Bell & Gossett Circuit Setters to Proportional Balance a System:

1. Open fully all Circuit Setters on a single pump system.
2. If more than one branch circuit is used, start the balance procedure by reading all of the flows to the units in a branch. Each unit (coil) should have its own Circuit Setter for flow balancing. Using Bell & Gossett RP-250B readout probes, sequentially attach a Bell & Gossett differential pressure readout kit to the readout valves on each Circuit Setter Balance Valve.

WARNING: Hot water leakage can occur from readout valve during probe insertion and during hookup of readout kit. Follow the instruction manual supplied with the readout probes and readout kit for safe use. Failure to follow this instruction could result in serious personal injury and/or property damage.

3. Using Side-2 of the Bell & Gossett Circuit Setter Balance Valve Calculator, with the top hairline set on zero for the size Circuit Setter being read, read the flow corresponding to the pressure drop read with the read out kit.
4. Calculate the ratio of the actual flow to the design flow for each unit in the branch. This is the proportional flow rate. (Actual flow divide by design flow.)
5. Select the Circuit Setter with the lowest proportional flow rate. This Circuit Setter is left in the full open position. Every other Circuit Setter in the branch is then reset to the same proportional flow rate.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Manual Circuit Setter Cont.

6. If there are additional branches, repeat the steps in 3, 4 and 5 above for each branch.
7. After all branches have been proportionally balanced, measure the full open flows on the Circuit Setters installed on the risers. Calculate the proportional ration of each riser Circuit Setter and select the one with the lowest proportional ratio. This Circuit Setter is left fully open and the other riser Circuit Setters are adjusted to this same ratio as described in (5).
8. Adjust pump flow so that circuits are receiving their design flow. This can be accomplished by adjusting a Circuit Setter Balance Valve installed on the pump discharge or by changing the pump impeller size.

IMPORTANT: Of a high degree of throttling of flow at pump discharge is required Bell & Gossett recommends that the pump impeller be sized to produce design flow. This will reduce electrical energy consumption.

How to use Bell & Gossett Circuit Setter Balance Valves as Flow Meters:

1. Energize the zone, circuit and/or system pump(s) as applicable.
2. Using Bell & Gossett Model PR-250B Readout Probes, sequentially attach a Bell & Gossett differential pressure readout kit to the read out valves on each Circuit Setter Balance Valves.

WARNING: Hot water leakage can occur from readout valve during probe insertion and during hookup of readout kit. Follow the instruction manual a supplied with readout probes and readout kit for safe use. Failure to follow this instruction could result in serious personal injury and/or property damage.

3. Read the differential pressure across the orifice of the Circuit Setter Balance Valve.
4. Using Side #2 of the Circuit Setter Balance Valve Calculator, set the hairline over the degree of closure as indicated by the part of the red plastic knob or indicator plate parallel to the degree of closure noted on the calibration plate, and read actual GPM flowing through the Circuit Setter opposite the gauge reading head loss noted in the white section of Side #2.

NOTE: If the system contains a liquid with a specific gravity and/or viscosity higher or lower than that of water, apply the appropriate correction factor noted in these instructions to obtain the actual GPM for the system liquid.

How to Bell & Gossett Circuit Setter Balance Valves as an Isolation Valve:

1. Move the adjustment knob or stem until the position indicator aligns with the closed position on the calibration plate.
2. Close the isolation valve on the other side of the equipment to be serviced.
3. Open the drain valve to drain the system between the Circuit Setter and the second isolation valve.

WARNING: Check for proper sealing when using as an isolation valve. If the sea is not sealing properly, liquid will continue to flow from the drain valves. In this case, Circuit Setter must be isolated from the system and replaced. Failure to follow these instructions could result in serious personal injury or death and proper damage.

How to use the Memory Stop feature:

1. Make the final degree of closure setting.
2. Loosen the memory stop locking screw in the slot on the top of the red knob.
3. Slide the memory stop screw in the slot (counter-clockwise for 1/2" - 1" sizes and clockwise for 1 1/4" - 2 1/2" sizes) until the screw stops.
4. Tighten the memory stop screw.

Servicing Instructions:

Periodically inspect the Circuit Setter for signs of leakage or corrosion.

WARNING: Corrosion of leakage is indication that the Circuit Setter must be replaced. Failure to follow these instructions could result in serious personal injury or death and property damage.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Ball Valve

Installation Instructions:

1. Ensure the pipeline is free of dirt or debris. Flush system if necessary. Foreign matter can damage valve or degrade performance.
2. Thoroughly clean pipe threads and apply thread dope to the male thread only. PTFE thread sealant is recommended for most applications. (Installer is responsible for selecting a sealant compatible with fluid).
CAUTION: The use of "Teflon" impregnated pipe compound and "Teflon" tape on pipe threads provides lubricity. Care should be taken to prevent over-tightening which may damage the valve body. Failure to follow these instructions can result in moderate personal injury and/or property damage.
 Do not use pipe dope where thread sealant is pre-applied when connecting valves to ChamFlex/All Metal SS Braided Hose Assemblies.
3. Apply torque to the valve at wrenching flats nearest the end being assembled. Do not apply torque through the full length of the valve body as this may compromise the integrity of the body to end piece seal. Care should be taken not to over-tighten as this can cause distortion of the valve body and affect valve performance. Pipe wrenches should not be used on the valve as they can crush the body distorting the NPT thread.
4. A tight leak free joint can be obtained on valves 2" and under by rotating the valve 2 to 3 turns relative to the pipe, larger valves should be turned 1 1/2 to 2 turns. (Basic Dimensions, American National Standards Taper Pipe Threads, NPT ANSI B1.20.1-1983.)
5. After installation operate the valve through several full open to close cycles. Check tightness of stem packing.
6. For valves with NPT side taps assembly is the same as end connections. Tighten the mating part 2 to 3 turns past hand tight while holding the valve securely. The valve should be secured at the wrenching flats only. Applying a radial load on the main part of the body can distort it.

Operation Instructions:

The valve is opened by turning counterclockwise one quarter turn and close by turning clockwise. Valve state is indicated by the lever. A closed valve's lever is at 90° to the valve axis. When the valve is open the lever lies along axis.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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HOSE ASSEMBLIES & KITS

Model MV Venturi/Ball Valve Combination

Description: The Bell & Gossett Model MV is a combination calibrated balance, commissioning and positive shutoff valve for use in HVAC systems. An efficient brass venturi design provides accurate flow balancing with minimal system pressure loss. Valves are furnished with two readout valves (pressure and temperature ports), standard port ball valve with memory stop, and hanging ID tag for commissioning. A variety of end connections are available on both the fixed and union ends. Venturi/Ball valve provides highly accurate flow measurement capabilities.

WARNING: Damage to the Venturi/Ball valve or failure of solder sealing joints may occur if these operational limits are exceeded. This can result in water leakage. Failure to follow this instruction can cause serious personal injury and/or property damage.

Installation Instructions:

For Installing Sweat Connections:

1. Clean tube ends and valve connections thoroughly per good piping practices with a fine grade emery cloth or fine grit sandpaper.
2. For soldering, use 95-5 (Tin-Antimony) solder and a good grade of flux.
3. Use a torch with a sharp pointed flame.
4. When sweating the joints, first adjusting the valve in the full open position, then wrap the valve with a cool wet rag and then direct the flame with care to avoid subjecting the valve to excessive heat. Allow the valve to cool before touching or operating.
5. Check the soldered connection for leaks.

WARNING: Use of improper procedures to sweat valve model with union connection into system can damage valve. Before installing sweat union connection to valve, remove the union nut and O-ring from the valve body, then union tailpiece with union nut must be sweated (soldered) into place. Failure to follow this instruction could result in property damage and/or moderate personal injury.

CAUTION: Heat Associated with the use of silver solder may damage a Venturi/Ball valve and void the product warranty. Do not use silver solder. Failure to follow these instructions could result in property damage and/or moderate personal injury.

For installing NPT Connections:

Apply pipe compound conservatively to male connecting fittings only.

CAUTION: The use of Teflon[®] impregnated pipe compound and Teflon[®] tape on pipe threads provides lubricity. Care should be taken to prevent overtightening which may cause damage to the valve body. Failure to follow these instructions can result in moderate personal injury and/or property damage.

CAUTION: Do not use pipe dope where thread sealant is pre-applied when connecting valves to ChamFlex/All Metal SS Braided Hose Assemblies.

After installation check all joints for leakage and retighten where necessary.

Operation Instructions

1. Energize the zone, circuit and/or system pump(s) as applicable.
2. Using Bell & Gossett Model RP-250B Readout Probes, sequentially attach a Bell & Gossett differential pressure readout kit to the readout valves on each Venturi/Ball valve.
3. Read the differential pressure across the orifice of the Venturi/Ball valve
4. Using the differential pressure data sheet #EP-600 of the Venturi/Ball to read the actual GPM.

Example: The Venturi/Ball valve model 3/4" L. If the differential pressure across the orifice read at 46" W.C. the flow rate is 4 GPM.

WARNING: Hot water leakage can occur from readout valves during probe insertion and during hookup of readout kit. Follow the instruction manual supplied with readout probes and read out kits for safe use. Failure to follow these instructions could result in serious personal injury or death and property damage.

How To Use The Memory Stop Feature:

1. Make the final degree of closure setting.
2. Loosen the handle nut and rotate memory stop until against the body locking.
3. Tighten the handle nut.

Service Instructions:

Periodically inspect the Venturi/Ball valve for signs of leakage or corrosion.

WARNING: Corrosion or leakage is indication, that the Venturi/Ball must be replaced. Failure to follow these instructions could result in serious personal injury or death and property damage.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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Y-Strainer Combination Valve

Description: Y-strainer valves are of brass construction with an integrated ball valve, strainer, blow-down valve and union with tailpiece.

Installation Instructions:

1. The valves must be installed on the supply side of the coil with filed end on the upstream side and other end on the downstream side.
2. When installing the Y-strainer valves space around the units must be provided to move the valve handle to the shutoff position and to move the strainer from the strainer body for cleaning.
3. The Y-strainer must be installed with the strainer chamber down to prevent air binding and also to allow accumulated dirt to be blown down from the strainer.

Operation Instructions:

Y-strainer can be used to isolate hydronic equipment for repairs and/or drain the system. To close the Y-strainer ball valve move the handle a quarter of a turn until the handle is perpendicular to the valve and piping.

If Y-strainer pressure drop becomes excessive, accumulated dirt should be blown down through the blow-down line (if installed) to a drain. If a blow-down line is not installed see the service instructions for removing and cleaning the strainer. The Y-strainer have construction with an integrated ball valve will function as a service valve.

Service Instructions:

If excessive pressure drop is measured across the Y-strainer the internal strainer has collected dirt/debris and needs to be cleaned. Install blow-down line (hose), then open blow-down valve. If blowing down the strainer has not solved the pressure drop problem, the Y-strainer must be disassembled and strainer cleaned.

WARNING: Failure to use proper hose connection to the blow-down valve may result in serious personal injury and property damage.

To clean the strainer, isolated the Y-strainer by shutting off the ball valve on upstream and downstream of the Y-strainer. Allow the system to cool down to 100°F (38°C) or less.

WARNING: Hot fluid and/or fluids under pressure are a safety hazard. Do not service the strainer while it is hot or under pressure. Failure to follow these instructions could result in serious personal injury or death and property damage.

Using the appropriate size wrench remove the brass cap on the Y portion of the strainer. Grab and remove the strainer. Clean the strainer in water to remove collected debris. Reinstall the strainer and the strainer cap. Pressurize the system and check for strainer cap leaks. If noted, slightly tighten nut until leakage stops.

Periodically inspect the Y-strainer for signs of corrosion or leakage. If corrosion or leakage is noted the Y-strainer must be replaced.

WARNING: Corrosion or leakage is indication that the Y-strainer Combination Valve must be replaced. Failure to follow these instructions could result in serious personal injury or death and property damage.

CAUTION: Hot uninsulated surfaces can cause burns to the skin. Do not touch hot surfaces. Failure to follow these instructions could result in moderate personal injury.

WARNING: To ensure proper installation this product must be installed in conformance with applicable building codes. Use of proper torque wrench is required.

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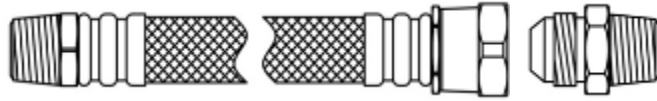
Abbreviations Index

Acronym	Definition
ΔP	Differential Pressure
AFLV	Automatic Flow Limiting Valve
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
ATC	Automatic Temperature Control
BDV	Blow Down Valve
Cv	Flow Co-efficient
EPTF	Ethylene Propylene Thermoplastic Rubber
FNPT	Female National Pipe Thread
FSWT	Female Sweat
GPM	Gallons Per Minute
HNBR	Hydrogenated Nitrile
JIC	Joint Industrial Committee
KPA	Kilo Pascal
MAV	Manual Air Vent
MFR	Maximum Flow Recommendation
MNPT	Male National Pipe Thread
NC	Normally Closed
NO	Normally Open
PICV	Pressure Independent Control Valve
PSI	Pounds per Square Inch
PSID	Pounds per Square Inch Gauge
PT	Pressure Taps
PTFE	Polytetraflouroethylene
UBY	Union Ball Valve with "Y" Strainer
PTC	Push To Connect

ChamFlex® Hose Assemblies & Kits

"Class A" Fire Rated stainless steel braided hose assemblies and kits. Our tube component is tested to and awarded a UL 94 V-0 fire rating.

ChamFlex® Single Hose Assemblies:



ChamFlex® hose: Fixed End x Swivel End w/ JIC Adapter



ChamFlex® hose: Swivel End x Swivel End w/ JIC Adapters

ChamFlex® Hose Kits:

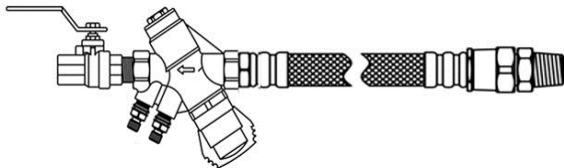
Return Valve Options:



Model AC Circuit Sentry Automatic Balance Hose Kits



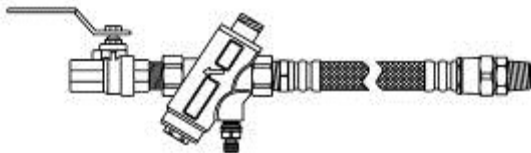
Model MC Circuit Setter Manual Balance Hose Kits



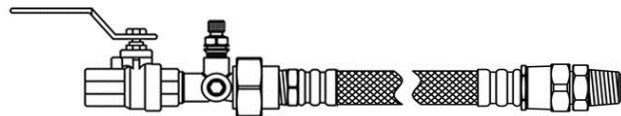
Model AM Flo-Setter Automatic Balance Hose Kits



Ball Valve Manual Balance Hose Kits

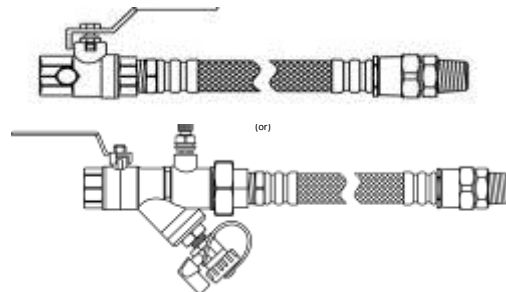


Siemens PICV Automatic Balance Hose Kits



Model MV (Venturi) Manual Balance Hose Kits

Supply Valve Options:



ChamFlex® assemblies are custom-made in our warehouse to meet customer specifications. *Minimum length for 1/2" and 3/4" hose is 6" with 1" increments. Minimum length for 1" and 1-1/4" hose is 9" with 1" increments.*

Call Scott Harding at (585) 758-1018 or

Tim La Bar at (585) 758-1021 for more information

