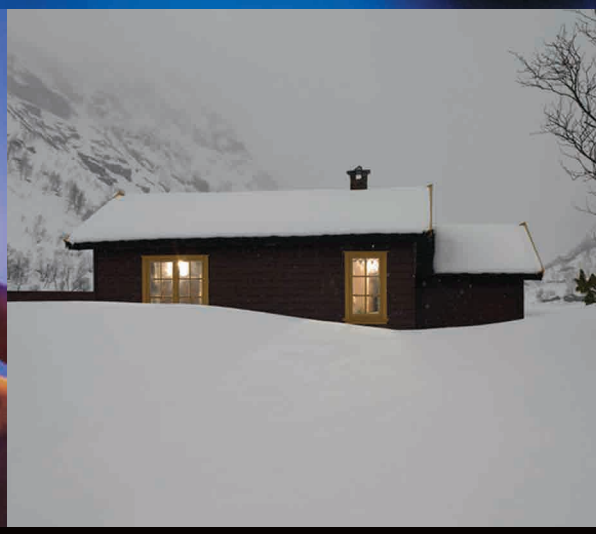

Hydronic Heating Specialties

watts.com

WATTS®

Footnotes:

Teflon® is a registered trademark of the E. I. DuPont de Nemours and Company, Incorporated.
Viton® is a registered trademark of DuPont Dow Elastomers.

Watts Quality Sets the Standard in Hydronics

With Watts hydronic products, you get longer valve life, economical control of heating and cooling zones, energy savings for your customers and fewer callbacks. Watts products control and protect hydronic systems and your reputation. No one else offers Watts quality and design.

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Featured Products

PIPFM1

Designed to isolate circulator pumps to facilitate circulator pump replacement or repairs while integral purge port facilitates system purging.

See Page 29.

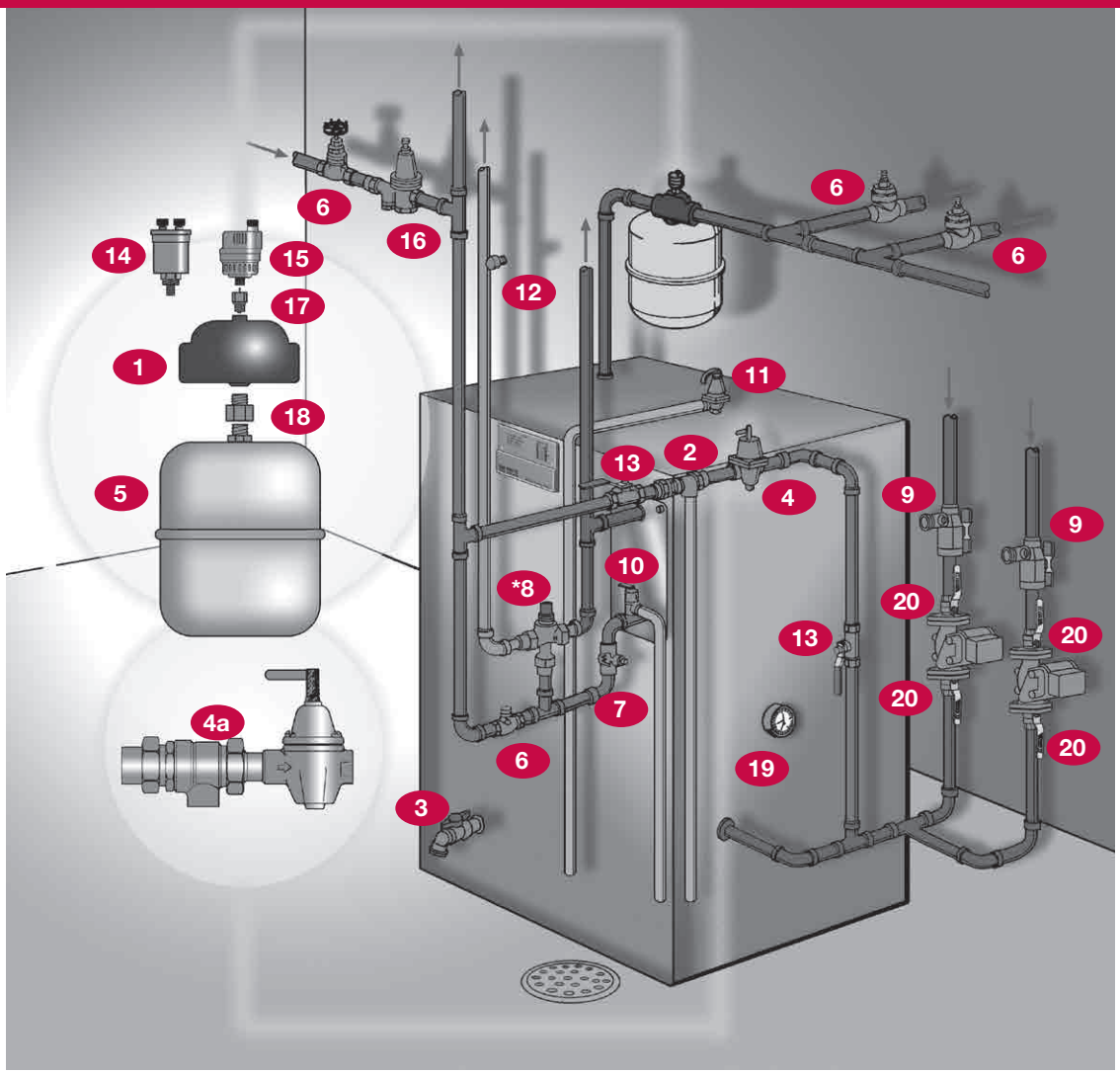
ETX, ETSX

New pressurized expansion tanks.
For use with heating and cooling systems.

See Page 24.

A Member of: Hydronics Industry Alliance

Watts Hydronic Heating Specialties



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2 9D Backflow Preventer- - - - - - - - - - - - - - - - - - 10

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4 1156F-A, 1156F, SB1156F, B1156F, N256, 1450F, T145B Boiler Fill Valve - - - - - - - - - - - - 4-5

4a 911S: Combines S1156F Fill Valve (4) and 9D Backflow Preventer (2) - - - - - - - - - - - - - - 4-5

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* Valves such as the LF70A, the LFN170-M2-M3 and the ASSE 1017-listed LF1170-M2 are for point-of-source applications as shown. ASSE 1070-listed valves such as Watts LFL111, LFMMV-M1, or LFUSG should be used at point-of-delivery.
Product information is subject to change without notice and supersedes all previous publications.

Feed Water Regulators & Dual Controls

Used to fill the boiler and system piping with water and to maintain water pressure in the system at all times. Feed water pressure regulators are also used to provide make up water to the system in the event of system leaks. The fast fill feature is used for speed filling and purging of air from the piping on the initial fill. Dual control units combine the fill valve with a safety pressure relief valve.

High Capacity Feed Water Regulators and Dual Control Units

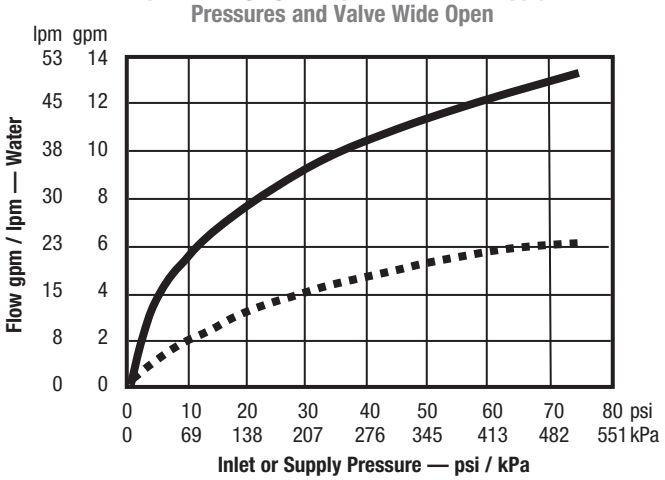
Speed filling, flushes system and accelerates air purging

Watts feed water pressure regulators and dual controls are offered in a choice of bronze and iron bodies with threaded, union solder or union threaded connections and are standardly equipped with a fast fill purge feature. All are provided with a tight seating check member and stainless steel mesh strainer. They are also supplied in combination with a diaphragm operated pressure relief valve where dual control service is desired.

High Capacity

Standardly furnished with a “purge lever” which is only needed for “purging” because of the high capacity feeding ability of Watts feed water pressure regulators. Watts has higher feeding capacity than most competitive models.

System Purging Ability with Various Supply Pressures and Valve Wide Open



Once the system is pressurized, the purge lever is then utilized for purging the system.

Exceptional Design

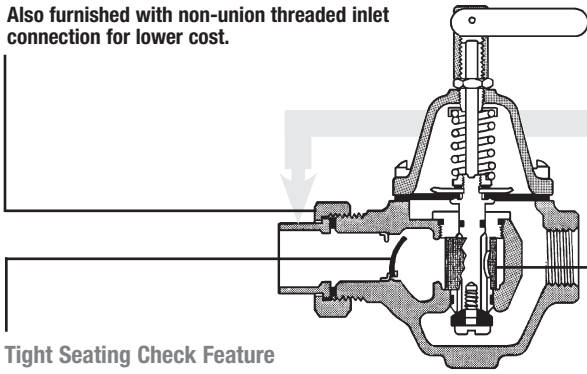
Choice of Inlet Connections

Furnished with either threaded, union solder or union threaded connections.

Also furnished with non-union threaded inlet connection for lower cost.

Purge Lever

All ½" (15 mm) models furnished with a “purge” lever to manually force the valve open for efficient system purging.



S1156F

Capacity

Exceptionally high capacity; far greater than any other feed valve on the market.

Tight Seating Check Feature

All regulators furnished with tight seating check valve feature.

Strainer

All models provided with stainless steel strainer to protect valve disc from fouling.

S1156F furnished with union solder connection for easy installation.
Other models available with union threaded, union fittings or threaded inlet connection.

Lead Free Transition

With the changeover to lead free in the United States that became effective January 4, 2014, lead free versions of hydronic heating products are required in certain applications and/or settings. Our products designed for hydronic heating applications include top-quality, fully-tested Lead Free* versions of our standard products.

Standard Material Products (not Lead Free*) CONTAIN MORE THAN 0.25% LEAD.

Effective January 4, 2014, it is illegal to use this product in any plumbing system providing water for human consumption, such as drinking or dishwashing, in the United States.

Before installing standard material product, consult your local water authority, building and plumbing codes.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Series 1156F

Feed Water Pressure Regulators Iron or Bronze Body

Size: ½" (15mm)

Model S1156F features highest purging capacity furnished with union solder inlet connection performance as well as simplified servicing.

Pressure - Temperature

Maximum working pressure: 100psi (6.9 bar)
Maximum temperature: 212°F (100°C)
Adjustment range: 10 – 25psi
(68.7 – 172.4 kPa) Set at 15psi (103.4 kPa)

Models

1156F - Identical to the above except it is furnished with threaded inlet connection.

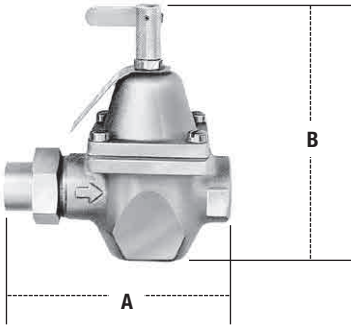
SB1156F - Identical to S1156F except it has a bronze body.

T1156F, TB1156F - Identical to the above except it is furnished with union threaded inlet connection.

1156F-A - Identical to the above except it is furnished with ½" female bottom connection for installation of expansion tank.

B1156F - Bronze valve body with threaded inlet connection.

For additional information, reference literature ES-1156F.



S1156F

Dimensions — Weights

MODEL	SIZE(DN)		DIMENSIONS				WEIGHT	
			A		B			
	in.	mm	in.	mm	in.	mm	lbs.	kgs.
1156F	½	15	3½	89	5⅜	137	2.1	.95
1156F-A	½	15	3½	89	5¾	146	2.1	.95
T1156F	½	15	4¼	108	5⅜	137	2.2	1
S1156F	½	15	4⅛	105	5⅜	137	2.3	1
B1156F*	½	15	3½	89	5⅜	137	2.1	1
SB1156F*	½	15	4⅜	111	5⅜	137	2.2	1
TB1156F*	½	15	4⅛	105	5⅜	137	2.3	1

*Bronze Body

Models N256, T156B

Feed Water Pressure Regulator Bronze Body

Sizes: ½" and ¾" (15 and 20mm)

Model N256 has tight seating check valve with integral strainer and unitized design for simplified servicing. Set at 15psi (103.4 kPa).

T156B has separate strainer.

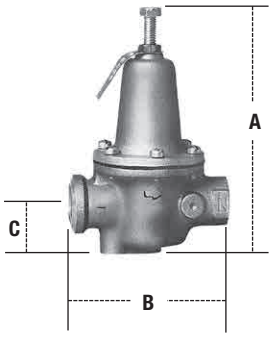
Pressure - Temperature

Maximum Temperature: 212°F (100°C)
Maximum pressure: 100psi (6.9 bar)

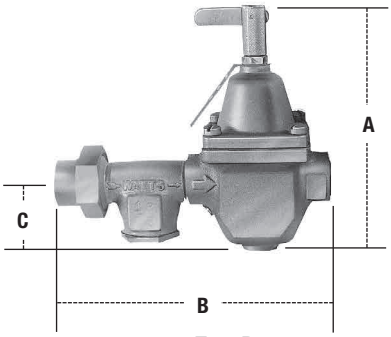
Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS						WEIGHT	
			A		B		C			
	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
Regulator and strainer										
T156B*	½	15	5 5/16	135	6 3/16	157	1⅝	41	2.5	1.1
N256*	¾	20	6⅜	162	4	102	1⅜	35	3.5	1.6

*Bronze Body



N256



T156B

Series 1450F

Iron Body Dual Control

Size: ½" (15 mm)

Combines construction features of Model 1156F and rugged iron body diaphragm relief valve, set at 30psi (206.9 kPa).

Pressure - Temperature

Maximum Working Pressure: 100psi (6.9 bar)

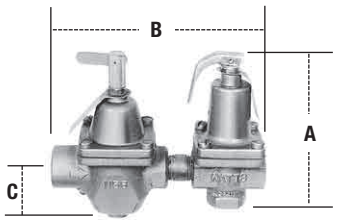
Maximum Temperature: 212°F (100°C)

Models

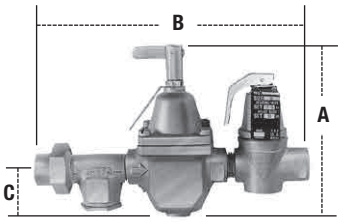
T1450F – Identical to above except furnished with union threaded inlet connection.

S1450F – Identical to above except furnished with union solder inlet connection.

For additional information, reference literature ES-1450F.



1450F



T145B

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS						WEIGHT	
			A		B		C			
	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
Dual Controls - regulator and relief valve										
1450F	½	15	5 5/16	135	6½	165	1⅝	41	3.3	1.5
T1450F	½	15	5 5/16	135	7¼	184	1⅝	41	3.3	1.5
S1450F	½	15	5 5/16	135	7	178	1⅝	41	3.3	1.5
Strainer, regulator and relief valve										
T145B	½	15	5 5/16	135	8½	216	1⅝	41	3.5	1.6

Model T145B

Bronze Body Dual Control

Size: ½" (15 mm)

All bronze dual control consisting of feed water regulator, 30psi (206.9 kPa) diaphragm relief valve and bronze strainer designed to fill the boiler and system piping with water and to maintain water pressure in the system at all times. These valves also provide make up water to the system in the event of system leaks.

Pressure - Temperature

Maximum Temperature: 212°F (100°C)
Maximum Pressure: 100psi (6.9 bar)

For additional information, reference literature ES-T145B.

Series 911, 911S

Combination Fill Valve and Backflow Preventer for Hot Water Boilers

Size: ½" (15mm)

Model 9D Backflow Preventer and Model 1156F Feed Water Pressure Regulator in one pre-assembled unit. Used on boiler feed lines to provide make-up water to the boiler and prevent backflow when supply pressure falls below system pressure.

Features

- Pre-assembled for ease of installation
- Easy service accessibility
- High capacity fill valve for quick system filling and purging

Options:

Suffix:

S – ½" (15mm) union solder inlet x ½" (15mm) threaded outlet

Prefix:

B – bronze body regulator

For additional information, reference literature ES-911.

Pressure - Temperature

Maximum Pressure: 100psi (6.9 bar)
Maximum Temperature: 212°F (100°C)

Boiler fill valve set at 15psi (103.4 kPa)
Adjustable range 10 – 25psi (68.9 – 172.4 kPa

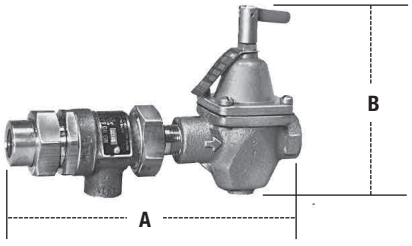
Models

911 – NPT x NPT connections

911S – solder x NPT connections

B911 – all bronze construction

B911S – all bronze construction union solder x NPT connections



911

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS				WEIGHT	
			A		B			
	in.	mm	in.	mm	in.	mm	lbs.	kgs.
911	½	15	8½	216	5¼	133	4.2	1.9
911S	½	15	8½	216	5¼	133	4.2	1.9
B911	½	15	8½	216	5¼	133	4.2	1.9
B911S	½	15	8½	216	5¼	133	4.2	1.9

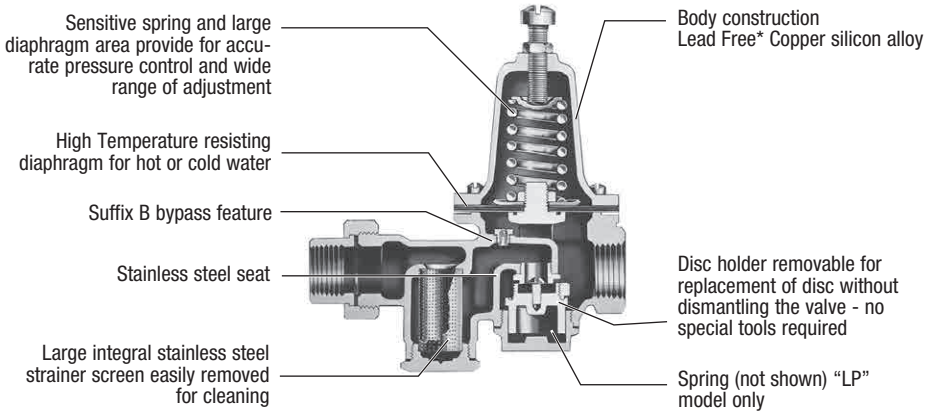
Series LFU5B

Water Pressure Reducing Valves**

Sizes: ½" – 2" (15 – 50mm)

LEAD FREE* Series LFU5B Water Pressure Reducing Valves are designed to reduce incoming water pressure to a sensible level to protect plumbing system components and reduce water consumption. The LFU5B features Lead Free* construction to comply with Lead Free* installation requirements. This series is suitable for water supply pressures up to 300psi (20.7 bar) and may be adjusted from 25 – 75psi (172 – 517 kPa). The standard setting is 50psi (345 kPa). All parts are quickly and easily serviceable without removing the valve from the line. The LFU5B's standard bypass feature*** permits the flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply.

LFU5B



Features

- Standard construction includes Z3 sealed spring cage and stainless steel corrosion resistant adjusting cage screws for accessible outdoor or pit installations
- Integral stainless steel strainer
- Replaceable seat module
- Lead Free* cast copper silicon alloy body construction
- Serviceable in line
- Bypass feature controls thermal expansion pressure (LFU5B-Z3)***
- High temperature resistant reinforced diaphragm for hot water

Models

LFU5B-Z3	NPT threaded female union inlet x NPT female outlet w/ built in thermal expansion bypass
LFU5B-S-Z3	Solder union inlet x NPT female outlet w/built in thermal expansion bypass
LF5M3-Z6	Water meter threaded connections and 7½" (190mm) lay length for new or existing meter box installations. For ⅝" (16mm), ⅝" x ¾" (16 x 20mm) or ¾" (20mm) meter setters or resetters
LFU5B-QC-Z3	Quick-Connect Single-Union – Inlet end

Options

add Suffix:

G - Gauge tapping

GG - Gauge tapping and 160psi (11.0 bar) gauge

HP - High pressure range 75 – 100psi (5.2 – 6.9 bar)

LP - Low pressure range 10 – 35psi (69 – 241 kPa)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**
****A water saving test program concluded that reducing the supply pressure from 80-50psi (551-345 kPa) resulted in a water savings of 30%.**
*****The bypass feature will not prevent the pressure relief valve from opening on the hot water supply system with pressure above 150psi (10.3 bar).***

Water Pressure Reducing Valves

Pressure – Temperature

Temperature Range: 33°F – 160°F (0.5°C – 71°C)

Maximum Working Pressure: 300psi (20.7 bar)

Adjustable Reduced Pressure Range:
25 – 75psi (172 – 517 kPa)

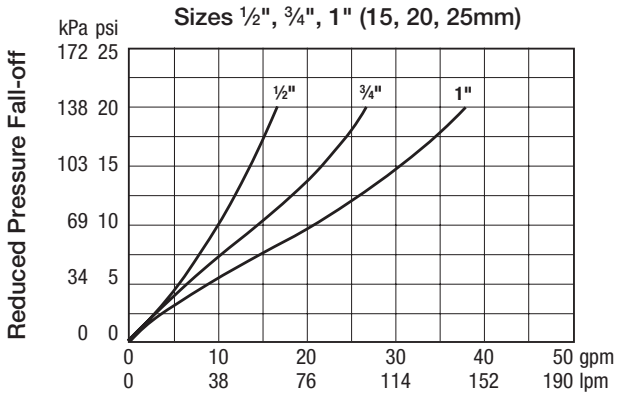
Standard Reduced Pressure Setting: 50psi (345 kPa)

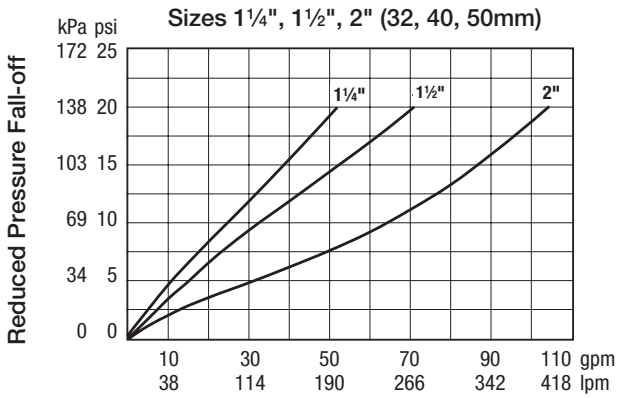
For additional information, reference literature ES-LFU5B.

Standards

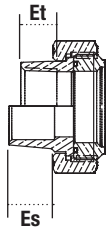
Meets requirements of ASSE Standard 1003; (ANSI A112.26.2); CSA Standard B356; Southern Standard Plumbing Code and listed by IAPMO.

Capacity

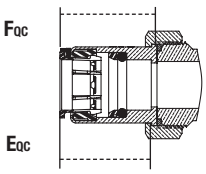


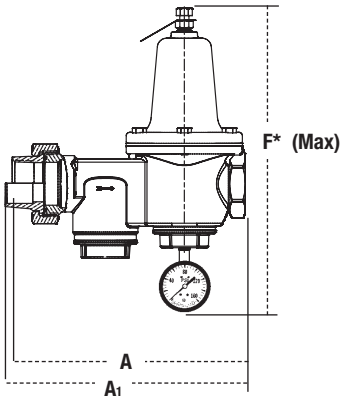


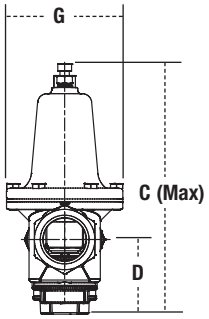
Dimensions — Weights



A - LFU5B-Z3
A_1 - LFU5B-S-Z3
E_T - NPT Engagement for tight joint
E_S - Female sweat socket depth
E_{QC} - Quick-Connect







MODEL	SIZE (DN)		DIMENSIONS																				WEIGHT	
			A		A_1		C		D		G		Et		Es		E_{QC}		F_{QC}		F†			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
LFU5B-Z3	½	15	5⅝	142.8	5½	139.7	5⅞	149.2	1⅝	41.2	3 1/16	77.7	7/16	11.1	½	12.7	1 7/16	36	1½	38	10¼	260.3	4	1.8
	¾	20	6 3/16	157.1	6¼	158.7	6⅞	174.6	1⅞	47.6	3½	88.9	½	12.7	¾	19	1 9/16	40	1 11/16	42	11½	292.1	5	2.3
	1	25	6⅝	168.2	6¾	171.4	7⅜	187.3	2	50.8	4	101.6	9/16	14.2	⅞	22.2	1 11/16	43	1¾	45	12⅛	307.9	6	2.7
	1¼	32	7 15/16	190.5	7 11/16	195.2	8⅜	212.7	2¼	57.1	4½	113.3	⅝	15.8	1	25.4	–	–	–	–	13⅜	339.7	9.4	4.3
	1½	40	9 7/16	239.7	9¾	247.6	9⅜	238.1	2⅞	73	4¾	120.6	⅝	15.8	1⅛	28.5	–	–	–	–	15	381.0	14.4	6.5
	2	50	10⅞	276.2	11½	292.1	12¼	311.1	3¼	82.5	6	152.4	⅝	15.8	1⅜	34.9	–	–	–	–	18¼	463.5	23	10.4

† Dimension includes optional gauge

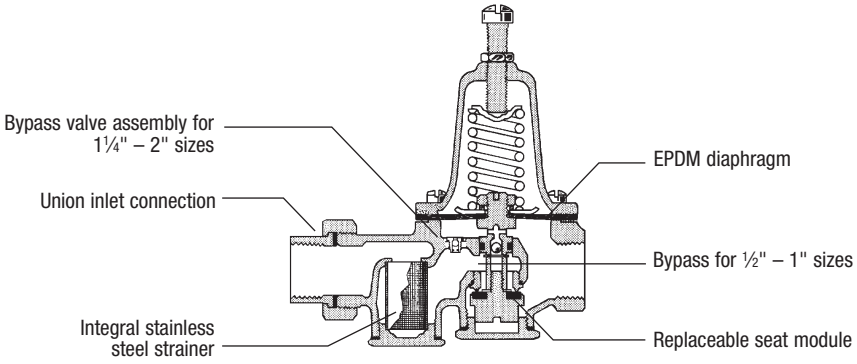
Series LF25AUB-Z3

Water Pressure Reducing Valves**

Sizes: ½"– 2" (15 – 50mm)

LF25AUBZ3

LEAD FREE* Series LF25AUB-Z3 Water Pressure Reducing Valves are designed to reduce incoming water pressure to a sensible level to protect plumbing system components and reduce water consumption. This series is suitable for water supply pressures up to 300psi (20.7 bar) and may be adjusted from 25 – 75psi (172 – 517 kPa). The LF25AUB-Z3 features Lead Free* construction to comply with Lead Free* installation requirements. The standard setting is 50psi (345 kPa). All parts are quickly and easily serviceable without removing the valve from the line. The standard bypass feature*** permits the flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply.



Features

- Standard construction includes Z3 sealed spring cage and stainless steel corrosion resistant adjusting & cage screws for accessible outdoor or pit installations
- Union inlet connection
- Integral stainless steel strainer
- Replaceable seat module
- Lead Free* cast copper silicon alloy construction
- Serviceable in line
- Bypass feature controls thermal expansion pressure***
- High temperature resistant reinforced diaphragm for hot water

Models

LF25AUB-Z3 NPT threaded female union inlet x NPT female outlet

LF25AUB-S-Z3 Solder union inlet x NPT female outlet

LF25AUB-DU-Z3 Double Union – NPT threaded union female inlet and outlet

LF25AUB-S-DU-Z3 Double Union – Solder union inlet and outlet

LF25AUB-DU-THDxPEX-Z3 Double Union – NPT threaded female inlet and PEX union outlet

LF25AUB-DU-LF-Z3 Double union body less fittings (¾", 1", 1¼")

LF25AUB-QC-Z3 Single Union – Quick-Connect union inlet (½", ¾", 1")

LF25AUB-DU-QC-Z3 Double Union – Quick-Connect inlet and outlet (½", ¾", 1")

Options

add Suffix:

GG - Gauge tapping, ⅛" (3mm)

GG - Gauge tapping and 160psi (11 bar) gauge

HP† - High pressure range 75–125psi (5.2 – 8.6 bar)

LP† - Low pressure range 10–35psi (69 – 241 kPa)

Z7 - 400psi (27.6 bar) initial pressure, ½" (20mm) models only

Pressure – Temperature

Temperature Range: 33°F – 160°F (0.5°C – 71°C)

Maximum Working Pressure: 300psi (20.7 bar)

Adjustable Reduced Pressure Range: 25–75psi (172 – 517 kPa)

Standard Reduced Pressure Setting: 50psi (345 kPa)

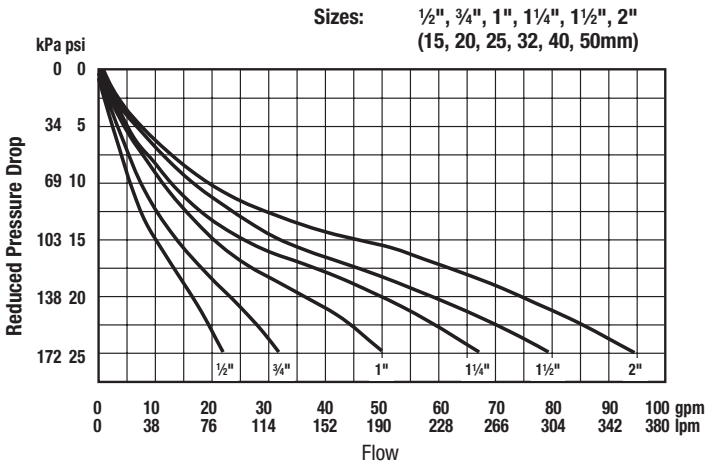
Standards

Meets requirements of ASSE Standard 1003: ANSI A112.26.2: CSA Standard B356; Southern Standard Plumbing Code and listed by IAPMO.
Military Standard MIL-V-18146B Type I.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**
****A water saving test program concluded that reducing the supply pressure from 80-50psi (551-345 kPa) resulted in a water savings of 30%.**
*****The bypass feature will not prevent the pressure relief valve from opening on the hot water supply system with pressure above 150psi (10.3 bar).**
†Currently not available with G or GG options.

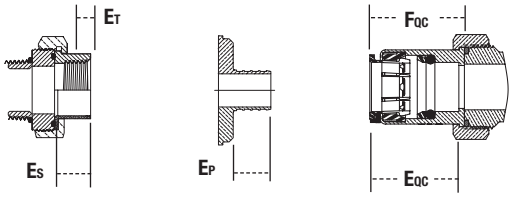
Water Pressure Reducing Valves

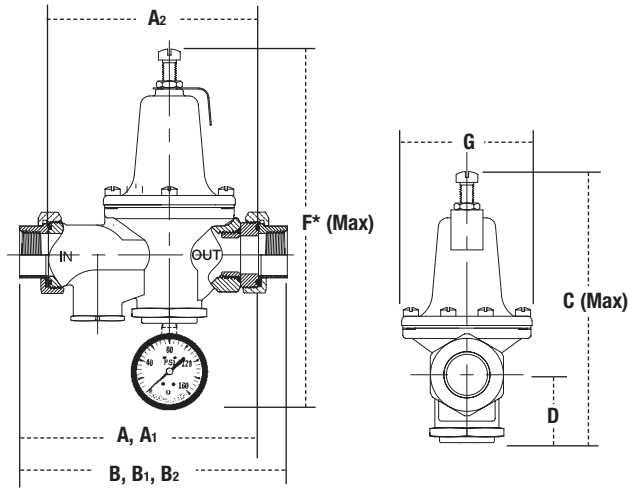
Capacity



Dimensions — Weights

A - LF25AUB-Z3
A1 - LF25AUB-S-Z3
A2 - LF25AUB-DU-LF-Z3
B - LF25AUB-DU-Z3
B1 - LF25AUB-S-DU-Z3
B2 - LF25AUB-DU-THDxPEX-Z3
ET - NPT Engagement for tight joint
ES - Female sweat socket depth
EP - PEX end connection
FQC - Quick-Connect union





SIZE (DN)		DIMENSIONS													
		A		A1		A2		B		B1		B2		C	
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*
½	15	5 3/8	137	5 5/16	135	5 3/16	132	6 7/16	164	6 3/8	162	–	–	7	178
¾	20	5 5/16	135	5 ½	140	5 ¼	133	6 ½	165	6 7/8	175	6 ¾	171	7	178
1	25	6	152	6 ¼	159	5 7/8	149	7 3/8	187	7 13/16	198	7 11/16	195	8	203
1¼	32	8 ¾	222	8 15/16	227	8 ¼	210	10 ¾	273	11	279	–	–	9	229
1½	40	8 ¾	222	9	229	8 ¼	210	10 ¾	273	11 3/16	284	–	–	9 ½	241
2	50	9 ¼	235	10	254	8 ¾	222	11 5/16	287	12 11/16	322	–	–	11 ¼	286

SIZE (DN)		DIMENSIONS												WEIGHT	
D		F *		G		ET		ES		EP		FQC			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
1½	38	9 7/16	240	3 1/8	79	½	13	½	13	–	–	1 ½	38	3.5	1.6
1½	38	9 7/16	240	3 1/8	79	½	13	¾	19	5/8	16	1 11/16	42	3.5	1.6
1¾	44	10 7/16	266	3 5/8	92	5/8	16	15/16	23	13/16	21	1 ¾	45	6.5	3.0
2 1/8	54	11 7/16	291	3 5/8	92	5/8	16	1	25	–	–	–	–	10	4.5
2 3/8	60	11 15/16	304	4 1/16	103	5/8	16	1 1/16	28	–	–	–	–	10	4.5
3¼	83	13 11/16	348	4 ¾	121	5/8	16	1 5/16	34	–	–	–	–	15	6.8

* Dimension includes optional gauge

For additional information, reference literature ES-LF25AUB.

Backflow Preventers

Used on boiler feed lines to prevent boiler water from returning to the potable water system. Boiler water may contain chemicals and bacteria that could contaminate the potable water system.

Series 9D

Dual Check Valve with Intermediate Atmospheric Vent

Sizes: ½" M3 (15mm), ¾" M2 (20mm)

Series 9D is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications for smaller supply lines such as laboratory equipment, processing tanks, sterilizers, and dairy equipment. It is ideally suited for boiler feed lines to prevent backflow when supply pressure falls below system pressure.

Series 9D is suitable for use on hot or cold water and can be used under continuous pressure. It features a primary check valve utilizing a rubber disc seating against a mating rubber part to ensure tight closing. A secondary check valve utilizes a rubber disc-to-metal seating. In the event of fouling of the downstream check valve, leakage would be vented to atmosphere through the vent port thereby safeguarding the potable water system. Construction is brass body with stainless steel working parts, integral strainer and durable rubber discs. Female union inlet and outlet connections. Sizes ½" (15mm) and ¾" (20mm). Drain is ½" (15mm) thread connection.

9DM2

9DM3

Features

- True line-sized construction allows the check modules to open further allowing dirt and debris to pass more freely reducing check fouling
- Stainless steel internal parts
- Maximum flow at low pressure drop
- Furnished with union connections to facilitate removal and replacement for maintenance
- Compact for economy combined with performance
- Design simplicity for easy maintenance
- Can be installed vertically or horizontally

Approvals

39769

N.Y.C. BSA 104-75-SM
Tested and approved Conformance with Standard 1012 of the American Society of Sanitary Engineers and by all principal cities, states and areas having these requirements.

IMPORTANT

This valve should only be used and properly installed so that spillage of water could not cause damage. To avoid water damage due to valve operation, a drain pipe must be installed. It should terminate approximate 12" (305mm) above a floor drain or through an air gap piped to a floor drain, or other suitable place of disposal. Under no circumstances, should the vent opening or drain line be plugged.

For additional information, reference literature ES-9DM3/M2.

Options

Suffix:

S – for ½" (15mm) union end solder connections

SC – for satin chrome finish

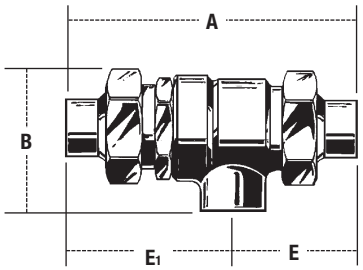
LU – less union

Pressure - Temperature

Maximum Working Pressure: 175psi (12.1 bar)

Maximum Required Pressure: 25psi (172 kPa)

Temperature Range: 33°F – 250°F (0.5°C – 121°C)



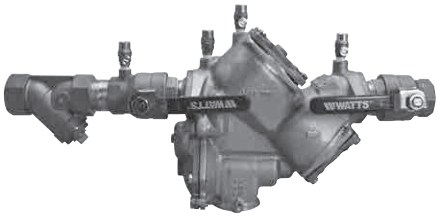
Dimensions — Weights

MODEL	SIZE	DIMENSIONS								WEIGHT	
		A		B		E		E1			
	in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kg.*
9DM3	½	4 15/16	125	2 9/16	65	1 15/16	49	2 9/16	65	1½	.68
9DM3-S	½	4⅜	111	2 9/16	65	1 15/16	49	2 9/16	65	1½	.68
9DM2	¾	4½	114	2 9/16	65	1 15/16	49	2 9/16	65	1¾	.79
9DM2	¾	4 13/16	122	2 9/16	65	2 1/16	52	2¾	70	1¾	.79

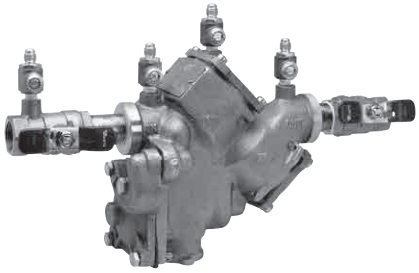
Series LF909

Reduced Pressure Zone Assemblies

LF909 Sizes: ¾", 1" (20, 22mm) / LF909M1 Sizes: 1¼", 1½", 2" (32, 40, 50mm)



LF909



LF909QT

LEAD FREE* Series LF909 Reduced Pressure Zone Assemblies are designed to provide superior cross-connection control protection of the potable water supply in accordance with national plumbing codes and containment control for water authority requirements. This series can be utilized in a variety of installations, including health hazard cross-connections in plumbing systems or for containment at the service line entrance. The LF909 features Lead Free* construction to comply with Lead Free* installation requirements. Model LF909QT, standardly furnished with full port, resilient seated and Lead Free* cast copper silicon alloy ball valve shutoffs. Sizes ¾" and 1" shutoffs have tee handles.

Features

- Modular design
- Replaceable seats
- Compact for installation ease
- Horizontal or vertical (up or down) installation
- No special tools required for servicing

Pressure — Temperature

Temperature Range: 33°F – 140°F
(0.5°C – 60°C) continuous
180°F (82°C) intermittent
Maximum Working Pressure: 175psi
(12.1 bar)

Series LF909HW

Temperature Range: 33°F – 210°F
(0.5°C – 99°C)
Maximum Working Pressure: 175psi
(12.1 bar)

Approvals

Listed by IAPMO
Listed by SBCCI

1013 B64.4

‡Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Horizontal and vertical "flow-up" approval on ¾" and 1" sizes (model LF909QT)

For additional information, reference literature ES-LF909S.

Models

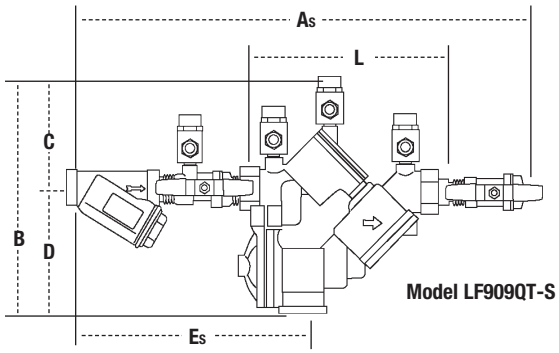
Suffix:

QT — Quarter-turn ball valves

S – Bronze strainer

HW –Stainless steel check modules for hot and harsh water conditions

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**



Model LF909QT-S

Dimensions — Weights

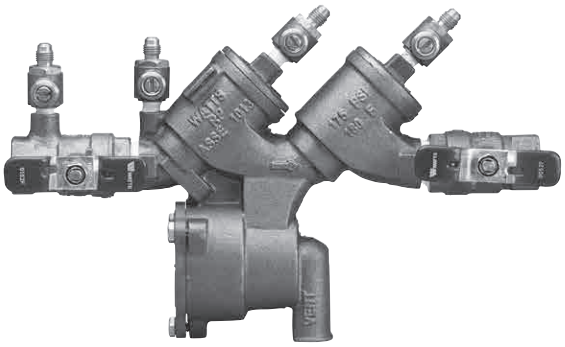
SIZE	DIMENSIONS																		WEIGHT			
	A		As		B		C		D		E		Es		L		P		QT		QT-S	
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
¾"	14⅜	365	18 1/16	459	8¾	222	4	102	4¾	121	6¾	171	10 3/16	259	7 5/16	186	3⅜	98	14	6.4	15.6	7.1
1"	15⅜	391	19⅝	498	8¾	222	4	102	4¾	121	7	178	11	279	7 5/16	186	3⅜	98	15	6.8	17.5	7.9
1¼"M1	18½	470	23 7/16	595	11⅝	295	5½	140	6½	165	7½	191	12 3/16	310	10⅜	264	5¼	133	40	18.1	42.8	19.4
1½"M1	19	483	24⅜	619	11⅝	295	5½	140	6½	165	7½	191	12⅝	321	10⅜	264	5¼	133	40	18.1	44.0	20.0
2"M1	19½	495	25 15/16	659	11⅝	295	5½	140	6½	165	7¾	197	13 15/16	354	10⅜	264	5¼	133	40	18.1	47.4	21.5

Subscript 'S' = strainer model

Series LF919 / 919

Reduced Pressure Zone Assemblies

LF919 Sizes: ¾" – 2" (20 – 50mm) /
919 Sizes: ¼" – 2" (8 – 50mm)



LF919QT

Features

- Separate access covers for the check valves and relief valve for ease of maintenance
- Top entry-all check internals easily accessible
- Chloramine resistant rubber elastomers
- Check valve poppet assemblies are fully guided by innovative plastic seat guide
- Replaceable push-in check valve and relief valve seats eliminates threads from the water way
- EZ twist relief valve cover quarter-turn locking joint captures the spring load during repair to facilitate disassembly
- Innovative check valve plastic cover bushing provides trouble free guiding of the check valve poppet
- Bottom mounted relief valve provides reduced installation clearances
- Compact, space saving design
- No special tools required for servicing
- Top mounted test cocks for ease in testing and reduced installation clearances
- Standardly furnished with NPT body connections

Pressure-Temperature

Temperature Range: 33°F – 180°F
(0.5°C – 82°C)
Maximum Working Pressure: 175psi
(12.1 bar)

LF919

LEAD FREE

Series LF919 Reduced Pressure Zone Backflow Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections or for containment at the service line entrance.

This series features two poppet style check valves, replaceable check seats, with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¾" – 1" (5 – 25mm) shutoffs have tee handles. The LF919 features Lead Free* construction to comply with Lead Free* installation requirements.

Models

Suffix:

QT – quarter-turn ball valves

S – bronze strainer

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Approvals

1013

Approved by the Foundation for Cross-Connection Control and Research at The University of Southern California.

919

For Use in Non-Potable Applications

Series 919 Reduced Pressure Zone Backflow Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. Sizes ¼" – 1" shutoffs have tee handles.

Materials

- Body: Bronze
- Discs: Silicone rubber
- Check Seats: Replaceable polymer
- Cover Bolts: Stainless steel

Models

Suffix:

QT – quarter-turn ball valves
S – bronze strainer
LF – without shutoff valves
AQT – elbow fitting for 360° rotation
ZQT – inlet & outlet flow up

Prefix:

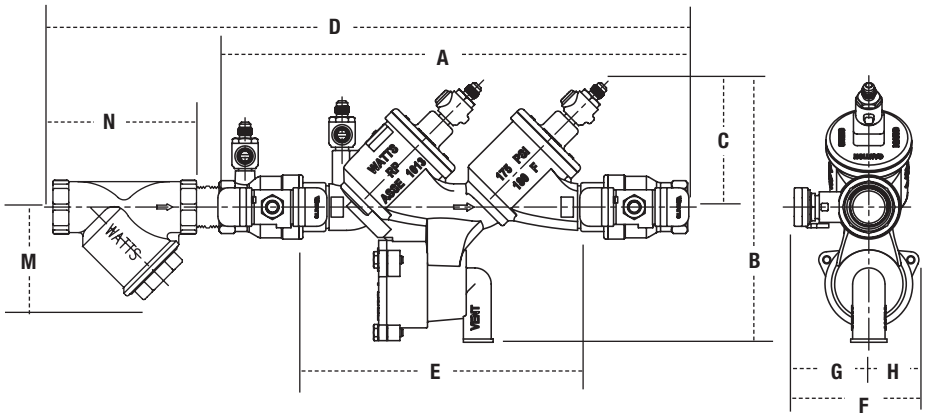
U – union connections

Approvals

1013 ¾"-2" LF

Approved by the Foundation for Cross-Connection Control and Research at The University of Southern California (for sizes ¾" -2")

Dimensions — Weights



LF919QT, LF919QT-S / 919QT, 919QT-S

SIZE	DIMENSIONS																STRAINER DIMENSIONS				WEIGHT			
	A		B		C		D		E (LF)		F		G		H		M		N		919QT		919QT-S	
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
¼	9½	241	6⅞	175	2⅞	73	12⅜	314	5¾	146	3	75	1⅜	35	1⁹⁄₁₆	40	2⅜	60	2½	64	5.8	2.6	6.3	2.9
⅜	9½	241	6⅞	175	2⅞	73	12⅜	314	5¾	146	3⅓	84	1¾	44	1⁹⁄₁₆	40	2⅜	60	2½	64	5.8	2.6	6.3	2.9
½	9½	241	6⅞	175	2⅞	73	12¾	324	5¾	146	3⅜	86	1⅞	48	1⁹⁄₁₆	40	2¾	70	2¼	57	5.8	2.6	6.3	2.9
¾	12⅛	307	7⁷⁄₁₆	188	3½	88	15½	393	7¹¹⁄₁₆	195	3⅝	92	2¹⁄₁₆	52	1⁹⁄₁₆	40	1⅝	41	3³⁄₁₆	81	8.3	3.7	10.0	4.5
1	14½	368	8	202	3⅞	98	19³⁄₁₆	487	9³⁄₁₆	233	4	102	2⁷⁄₁₆	62	1⁹⁄₁₆	40	2⅛	54	3¾	95	11.8	5.4	13.8	6.3
1¼	18⅛	461	11⁷⁄₁₆	290	5⅛	129	23¼	591	11¹¹⁄₁₆	297	5⅛	130	2⅝	67	2½	64	2½	64	4⁷⁄₁₆	113	22.3	10.1	26.3	11.9
1½	18¾	476	11⁷⁄₁₆	290	5⅛	129	25¹⁄₁₆	637	11¹¹⁄₁₆	297	5⅝	143	3⅛	79	2½	64	3	76	4⅞	124	28.3	12.8	32.0	14.5
2	21¹⁄₁₆	535	12¹⁄₁₆	307	5⅝	142	28¹³⁄₁₆	732	13⅜	340	5¹⁵⁄₁₆	151	3⁷⁄₁₆	87	2½	64	3⁹⁄₁₆	90	5¹⁵⁄₁₆	151	37.3	16.9	45.0	20.4

For additional information, reference literature ES-919 or ES-LF919.

Safety Relief Valves

The safety relief valve is mounted directly to the boiler to prevent excess pressure buildup in the boiler. The capacity of the relief valve must be greater than the BTU input of the boiler.

Series LF174A / 174A / 374A / 740

ASME Water Pressure Relief Valves

Sizes: ¾" – 2" (20 – 50mm)

Boiler safety relief valves for pressure protection only of all types of hot water heating boiler equipment. Female inlet and outlet connections. Meets Military spec. MIL-V-136-12D, Type III.

Features

- Seat located above drain; water can't be trapped and sediment can't foul seat
- Non-mechanical seat-to-disc alignment
- Water seal of high-temperature resisting material isolates spring working parts from water during relief

LEAD FREE

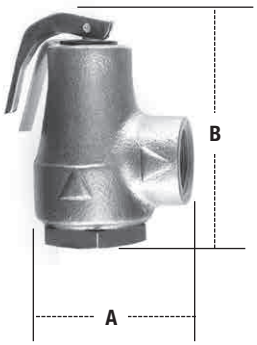
Series LF174A features Lead Free* cast copper silicon alloy body construction and complies with Lead Free* installation requirements. Pressure range 60 to 150 psi (4-10 bar) with corresponding high ratings from 1,100,000 to 14,370,000 BTU/hr.

Series 174A features a bronze body for use in non-potable applications. Pressure range 30 to 150 psi (2-10 bar) with corresponding high ratings from 650,000 to 14,370,000 BTU/hr.

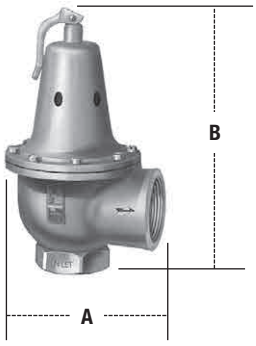
Series 374A features an iron body with forged bronze inlet for use in non-potable applications. Pressure range 30 to 150 psi (2-10 bar) with corresponding high ratings from 550,000 BTU/hr.

Series 740 safety relief valves with expanded outlets for hot water space heating boilers. Features iron body construction. Pressure range 30-75psi (207 – 517 kPa) with corresponding high ratings from 925,000 – 10,700,000 BTU/Hr., a wide range of relief capacities. Has a lower BUT per thousand cost because the Series 740 provides a high BTU rating, size-or-size than other valves on the market. Female inlet and outlet connections.

174A



374A



740

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS				WEIGHT	
			A		B			
	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LF174A/174A	¾ x ¾	20 x 20	2½	64	5⅛	130	2	.9
LF174A/174A	1 x 1	25 x 25	3	76	5¾	146	3	1.4
LF174A/174A	1¼ x 1¼	32 x 32	4¾	121	8⅜	213	6	2.7
LF174A/174A	1½ x 1½	40 x40	4⅞	124	9	229	7	3.2
LF174A/174A	2 x 2	50 x 50	6¼	159	11⅝	295	14	6.4
374A	¾ x ¾	20 x 20	2½	64	3⅝	92	1	.5
740	¾ x 1	20 x 25	3	76	5⅝	143	2	.9
740	1 x 1¼	25 x 32	3½	89	7¼	184	3	1.4
740	1¼ x 1½	32 x 40	4⅝	117	8¾	222	6	2.7
740	1½ x 2	40 x 50	5¼	133	9¼	235	8	3.6
740	2 x 2½	50 x 65	6¾	171	11⅝	295	17	7.7

Settings and Relieving Capacities

BTU Steam Discharge Capacities

MODEL	SIZE (DN)		30PSI	100PSI	125PSI	150PSI
	in.	mm				
374A	¾	20	550,000	–	–	–
LF174A / 174A	¾	20	650,000	1,695,000	2,070,000	2,445,000
LF174A / 174A	1	25	1,005,000	2,635,000	3,215,000	3,795,000
LF174A / 174A	1¼	32	1,682,000	4,399,000	5,370,000	6,340,000
LF174A / 174A	1½	40	2,020,000	5,290,000	6,460,000	7,630,000
LF174A / 174A	2	50	3,815,000	9,970,000	12,170,000	14,370,000
MODEL	**SIZE (DN)**		**30PSI**	**45PSI**	**50PSI**	**75PSI**
740	¾ x 1	20 x 25	925,000	1,245,000	1,352,000	1,886,000
740	1 x 1¼	25 x 32	1,300,000	1,750,000	1,899,000	2,649,000
740	1¼ x 1½	32 x 40	2,105,000	2,830,000	3,075,000	4,285,000
740	1½ x 2	40 x 50	2,900,000	3,903,000	4,237,000	5,909,000
740	2 x 2½	50 x 65	5,250,000	7,067,000	7,672,000	10,700,000

Note: Valve settings, other than shown above, are available in 5psi (34.5 kPa) increments within the pressure ranges shown.

Approvals

Rated in accordance with ASME Section IV and the requirements of the national board.

For additional information, reference literature ES-LF174A or ES-174A-740.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Model LF3L / 3L / LF53L / 53L

Poppet Type Pressure Relief Valves for Protection Against Excessive Pressure

Sizes: 1/2", 3/4" (15, 20mm)

Series LF3L/3L are used for protection against excessive pressure on domestic storage tanks or tankless water heaters. Similar in construction to Watts Model 10L, the Models LF3L/3L has no temperature relieving element. Models LF3L/3L are ASME approved. These Pressure Relief Valves are popularly used in conjunction with the Models LF210/210 gas shut off valve on gas water heaters to shut off gas to heater if water heater temperature exceeds 210°F (99°C).

LF3L

LF53L

LEAD FREE **Series LF3L** 3/4" features Lead Free* cast copper silicon alloy construction and complies with Lead Free* installation requirements.

Series 3L 3/4" features bronze body construction and are for use in non-potable applications.

LEAD FREE **Series LF53L** 1/2" features Lead Free* cast copper silicon alloy construction and complies with Lead Free* installation requirements.

Series 53L 1/2" features bronze body construction and are for use in non-potable applications.

Pressure - Temperature

Pressure range: 75—150psi (5.2—10.3 bar)

Standard settings of 75psi, 100psi, 125psi, 150psi

NOTICE

On all the above pressure relief valves, pressure setting should be not less than 25-30 lbs. above the maximum service main pressure.

Models

Solar 3L Use in solar applications. Specify Z9 for stainless steel lever and pin or outside solar applications.

LF3L / 3L ASME construction/Tested, listed and certified by the National Board of Boiler and Pressure Vessel Inspectors

LF53L / 53L Does not comply with ASME requirements/Listed and certified by CSA

Dimensions — Weights

MODEL	SIZE		HEIGHT		WIDTH		WEIGHT		VERSION
	in	mm	in	mm	in	mm	lbs.	gms.	
LF3L/3L	3/4	20	3 1/2	89	1 3/4	44	5/8	284	M7
LF53L/53L	1/2	15	3 1/2	89	1 7/8	48	1/2	227	M7

Model LF3L / 3L CSA and ASME approved.

For additional information, reference literature ES-LF3L-53 or ES-3L-53L.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Water Safety Relief Valves

Fig. 31 - ASME Section I

Provides over pressure protection of steam boilers operating up to 250psi (17.2 bar) and 406°F (208°C) saturated steam.

Fig. 41 - ASME Section VIII

For steam service on unfired pressure vessels and pressure reducing valve stations. Figure 41 is rated up to 250psi (17-2 bar) and 406°F (208°C) saturated steam

Fig. 41A - ASME Section VIII

For air, gas and vapors, used on compressors, receivers, burners and other piping systems. Figure 41A is rated up to 250psi (17.2 bar) and 406°F (208°C).

Fig. 31, 41, 41A
Bronze safety valves

Fig. 31, 41, 41A
Flanged cast iron safety valves

Standard Steam Capacities
(lbs./hr. @ 90% rating and 33⅓% Overpressure)

SET PRESSURE	VALVE SIZE INLET X OUTLET - INCHES						
psi	*3/4 x 1*	*1 x 1 1/4*	*1 1/4 x 1 1/2*	*1 1/2 x 2*	*2 x 2 1/2*	*2 1/2 x 2 1/2*	*3 x 3*
*5	230	409	639	924	1637	2557	3698
*10	318	565	882	1276	2260	3530	5106
15	394	700	1093	1581	2801	4375	6328

* Capacities for 5 and 10psi (.3 and .7 bar) are not certified by ASME/National Board.

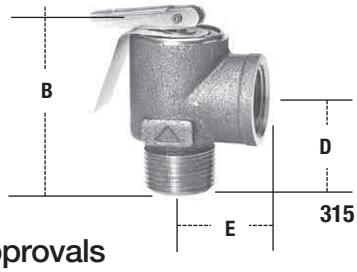
For additional information, reference literature ES-FIG31, ES-FIG41 or ES-FIG41A.

Safety Relief Valves

Series 315-M1, 415-M1

Steam Safety Valves

ASME rated steam safety relief valves up to 643 lbs./hr. (292 kg./hr). Also available with lower settings, such as 8 lbs. (3.6 kg.) for pressure cooker and steam cleaning requirements, which are not ASME rated. Consult factory for rating and quotation.



Dimensions — Weights

MODEL	SIZE (DN)		ASME STEAM DISCHARGE CAPACITY		DIMENSIONS						WEIGHT	
			lbs./hr.	kg./hr.	B		D		E			
	in.	mm	@ 15psi	@ 1 bar	in.	mm	in.	mm	in.	mm	lbs.	kgs.
315-M1	¾ x ¾	20 x 20	375	170	2 11/16	68	1⅜	35	1¼	32	.55	.24
415-M1	¾ x ¾	20 x 20	450	204	2 13/16	71	1 5/16	33	1¼	32	.70	.31
415-M1	1 x 1	25 x 25	643	292	3⅛	78	1 11/16	43	1⅝	41	.91	.41
415	1¼ x 1½	32 x 40	1230	574	4¾	121	2⅜	60	2⅛	54	2.00	.91
415	1½ x 2	40 x 50	1860	844	5 7/16	138	2⅝	67	2 5/16	59	3.00	1.36

Approvals

Rated in accordance with ASME Section IV and the requirements of the national board. ANSI Z21.22 “Relief Valves and Automatic Gas Shutoff Devices”, CSA Listed. Meets Military Spec. MIL-V-136-12D, Type I.

For additional information, reference literature ES-315 and ES-415.

Automatic Air Vent Valves

Used on boiler piping to automatically and continuously vent air from the system water and prevent air collecting in system piping.

Series FV-4M1

Automatic Air Vent-Valve

Sizes: ⅛"– 1" (3 – 25mm) NPTF

Provides automatic air venting for hot or cold water distribution systems. Purges air that may be in the water system and utilizes a float to actuate the valve plug which is located at the top of the valve. Once the air is displaced and the system pressure is sustained, the valve plug seals and prevents any water from escaping the system.

The float vent also operates as an anti-vacuum device since it will permit air to enter the system when it must be drained.

⅛" – ¼"

FV-4M1

½" – 1"

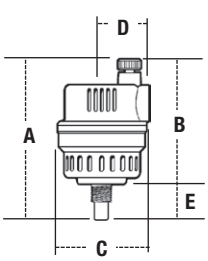
Pressure – Temperature

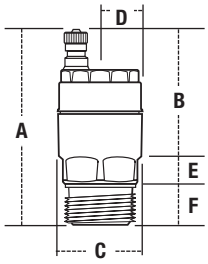
Minimum Working Pressure: 1.45psi (10 kPa)

Maximum Working Pressure: 150psi (10.3 bar)

Maximum Working Temperature: 240°F (116°C)

For additional information, reference literature ES-FV4-M1.





Dimensions — Weights

SIZE (DN)		DIMENSIONS												WEIGHT	
		A		B		C		D		E		F			
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
⅛	3	2 15/16	75	2⅝	67	1⅝	41	13/16	21	5/16	7.9	5/16	7.9	.40	.18
¼	8	3⅛	79	2⅝	67	1⅝	41	13/16	21	⅛	3.1	½	12.7	.43	.20
½	15	3 5/16	85	2 11/16	69	1¼	32	11/16	18	⅝	16	–	–	.44	.20
¾	20	3⅜	85	2 11/16	69	1¼	32	11/16	18	⅝	16	–	–	.45	.20
1	25	3½	89	2 11/16	69	1⅜	35	11/16	18	13/16	20	–	–	.47	.21

DuoVent

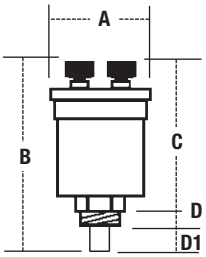
High Capacity Air Vents with Manual Vent Feature

Sizes ⅛" (3 mm) NPTF

Provides automatic air venting for hot or cold water distribution systems. The manual vent feature provides tremendous air elimination capability for lightning fast venting of residential and commercial systems. It utilizes a float to actuate the valve plug, which is located at the top of the valve. Once the air is displaced and the system pressure is sustained, the valve plug seals and prevents any water from escaping the system.

The float vent also operates as an anti-vacuum device since it will permit air to enter the system when it must be drained.

DuoVent



Features

- Body and cover are brass construction
- Air vent with silicone rubber seal
- Impurities do not usually affect functioning as maximum float line of water is always lower than the valve seal
- Float is high temperature resistant polyethylene
- Suitable for use with glycol systems

For additional information, reference literature ES-DuoVent

Pressure – Temperature

Minimum Working Pressure: 1.45psi (10 kPa)

Maximum Working Pressure: 150psi (10.3 bar)

Maximum Working Temperature: 240°F (116°C)

Dimensions — Weights

SIZE (DN)		DIMENSIONS										WEIGHT	
		A		B		C		D		D1			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
⅛	3	1 5⁄16	33	3	76	2 11⁄16	68	5⁄16	8	5⁄16	8	4.2	119

Series HAV

Automatic Air Vent Valves with Manual Override

Sizes ⅛" and ¼" (3 and 8mm)

The HAV hot water vent is designed for automatic or manual air release on baseboards, convectors, radiators, and high points in piping systems.

HAV

Features

- Attractive chromed brass body
- Durable stainless steel check valve
- Automatic or manual operation
- Quick venting design and positive shutoff ball check
- Heat resistant handwheel
- Suitable for use with hot water systems
- Easily maintained - replacement cartridge can be installed without system shutdown
- Simple two-piece construction
- HAV-RC replacement cartridge is available

Pressure – Temperature

Working Pressure Range: 1.45 – 125psi (10 kPa – 8.6 bar)

Suitable for water and steam to 10psi (69 kPa)

Working Temperature Range: 140°F – 240°F (60 °C – 116 °C)

Only inhibited glycol based additives should be used with this product.

For additional information, reference literature ES-HAV.

Air Separators

Used on hydronic system piping to separate air from water.

Series AS, AS-T

Heavy Duty Cast Iron Air Separators

Sizes: 1" – 3" (25 – 80mm)

Series AS air separators are designed for efficient separation of air from water in hydronic heating systems. All the Series AS air separators have tappings for the installation of an expansion tank and air vent. Entrapped air in the hot water heating system piping is dispersed by the internal agitator of the air separator as the water is recirculated within the heating system piping. This provides quiet efficient operation of the hot water heating system radiation.

AS

AS-T

Pressure - Temperature

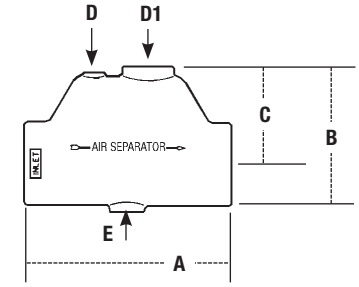
Maximum Working Pressure: 80psi (551 kPa)
Maximum Operating Temperature: 275°F (135°C)

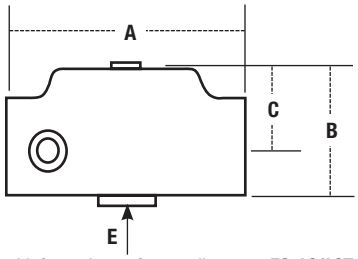
Features

- AS-T Model includes ½" (15mm) tappings on each side for fill valve piping
- Heavy cast iron construction
- Sizes 1", 1¼", 1½", 2", 2½", 3" (25, 32, 40, 50, 65, 80mm) NPT
- Standardly furnished with tappings for expansion tank and air vent
- Provides complete, continuous purging and venting of air in the system when installed in conjunction with the Watts FV-4M1 or DuoVent float vent

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS												WEIGHT	
			A		B		C		D		D1		E			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
AS-M1	1	25	6¼	159	4	102	2¾	70	⅛	3	–	–	½	13	4.5	2.0
AS-T-M1	1	25	6¼	159	4	102	2¾	70	⅛	3	½	13	½	13	4.5	2.0
AS-M1	1¼	32	6¼	159	4	102	2¾	70	⅛	3	–	–	½	13	4.5	2.0
AS-T-M1	1¼	32	6¼	159	4	102	2¾	70	⅛	3	½	13	½	13	4.5	2.0
AS-M1	1½	40	8	203	5 5/16	135	3⅝	92	⅛	3	1	25	½	13	7.4	3.4
AS-M1	2	50	8	203	5 5/16	135	3⅝	92	⅛	3	1	25	½	13	7.4	3.4
AS-M1	2½	65	10 5/16	262	7¼	184	5	127	⅛	3	1	25	½	13	15.0	6.8
AS-M1	3	80	10 5/16	262	7¼	184	5	127	⅛	3	1	25	½	13	15.0	6.8





For additional information, reference literature ES-AS/AST.

Series AS-B

Bronze Air Separators

Sizes: 1" and 1¼" (25 and 32mm)

Series AS-B is all bronze and perfect for radiant heating applications. It's unique design separates and collects even the smallest micro-bubbles for fast efficient and continuous air removal from all hydronic systems. Series AS-B has tappings for the installation of an expansion tank, air vent and for boiler fill piping. It also includes ½" FV-4M1 air vent.

AS-B-T

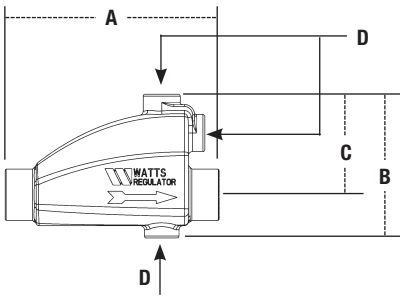
Features

- Bronze construction
- Sizes 1", 1¼" (25, 32mm) NPT threaded
- Comes standard with tappings for boiler fill, expansion tank and air vent
- Provides complete, continuous purging and venting of air in the system when installed with the Watts FV4-M1 float vent which is provided with the air separator
- Ideal for radiant heat systems

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS								WEIGHT	
			A		B		C		D			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
*AS-B-T	1	25	6½	165	4 5/16	110	3	76	½	13	3.4	1.6
*AS-B-T	1¼	32	6½	165	4 5/16	110	3	76	½	13	3.4	1.6

*Includes ½" FV-4M1 Air Vent and ½" brass pipe plug



For additional information, reference literature ES-AS-B.

Air Separator

Used on hydronic system piping to separate air from water.

Series AS-MB

Microbubble Air Separator

Sizes: ¾" – 2" (20 –50mm) Solder
¾" – 2" (20 –50mm) Threaded
1¼" (32mm) Flanged

Series AS-MB Microbubble Air Separator is designed for efficient separation and elimination of entrained air in hydronic heating systems. No minimum inlet/outlet piping length is required for proper operation.

AS-MB-SWEAT

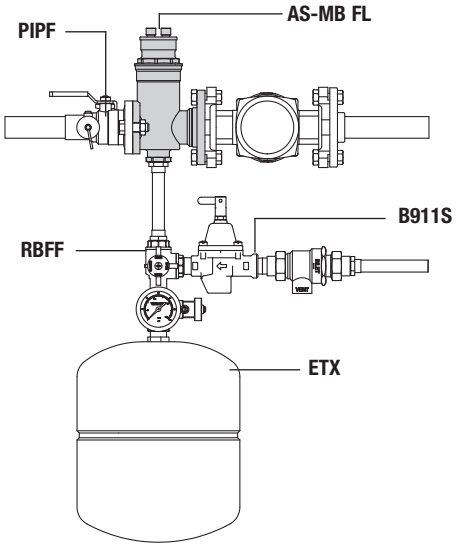
AS-MB-THREADED

AS-MB-FLANGED

Features

- Durable forged brass body construction in flanged, ¾, 1, 1¼, 1½ and 2 FPT sizes requires no minimum inlet/outlet piping length for proper operation
- Rugged, corrosion-resistant polyphenylsulfone (PPSU) coalescing media withstands petroleum based cleaners, glycol antifreeze and temperatures up to 240 degrees F.
- DuoVent air vent assembly consists of a brass cover, air vent with silicone rubber seal, shutter, polyethylene float with valve plug, automatic vent with black cap and manual vent with red cap. Air vent assembly has a high capacity and high temperature rating and is ideal for use with glycol systems or for use as an anti-vacuum device.
- Fully serviceable - can be disassembled for inspection and cleaning.
- ½" FPT bottom tapping for use with Series RBFF Residential Boiler Fill Fitting
- AS-MB FL flanged model can be used with Series PIPF Isolation Pump Flanges with Purge Port & Swivel Flange to create a compact system purge/air elimination module

Typical Installation



Model AS-MB FL shown with Series PIPF Isolation Flange with Purge Port and Swivel Flange, Series RBFF Residential Boiler Fill Fitting, Series ETX Expansion Tank and Series B911S Bronze Combination Fill Valve and Backflow Preventer.

Pressure – Temperature

Maximum Working Pressure: 150psi (10.3 bar)
Maximum Operating Temperature: 240°F (116°C)

For additional information, reference literature ES-AS-MB or PF-AS-MB.

C_V Ratings
¾" C_V = 10.2 GPM
1" C_V = 15.0 GPM
1¼" (thread, solder and flange) C_V = 23.1 GPM
1½" (thread) C_V = 25.0 GPM
2" (thread) C_V = 37.5 GPM

Service Check Valve

Used between boiler piping and system components to facilitate the servicing of components such as thermal expansion tanks and float vents without draining the piping.

Series SCV

Sizes: ⅛" and ½" (3 – 15mm)

Service Check Valves facilitate the servicing of components in systems under pressure. They install between the system and the component.

As the component is threaded into the Service Check Valve, the spring loaded valve opens to system pressure.

As the component is removed, the valve closes, maintaining system integrity while the component is being inspected.

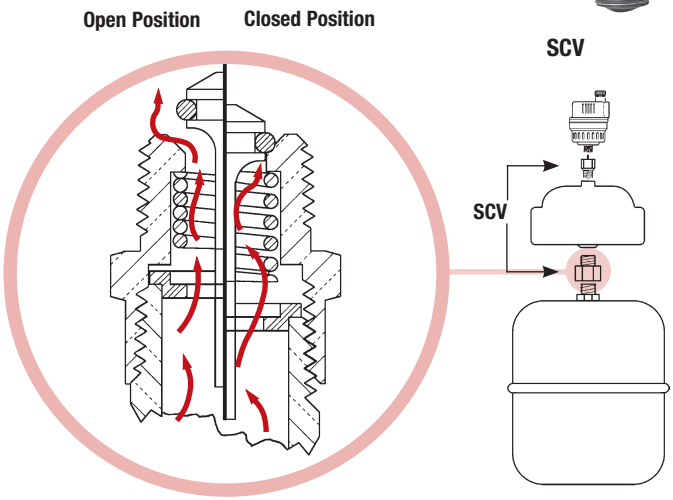
NOTICE

This device is not to be used on safety relief valves or other safety or flow sensitive components.

⚠ WARNING

System pressure must be reduced prior to removing system components

SCV



Flow Checks

Used in hydronic heating systems to provide positive shutoff, preventing flow of water to radiation units by gravity circulation.

Series 2000, 2000S

Two-Way Flow Checks

Sizes: ¾" – 3" (20 – 80mm)

Designed to provide positive gravity shutoff when circulator is not running. Easily opened for gravity circulation.

Temperature

Maximum Temperature: 250°F (121°C).

Models

2000S-M5 is furnished with a bronze body and solder connections. Maximum pressure 50psi (344.8 kPa).

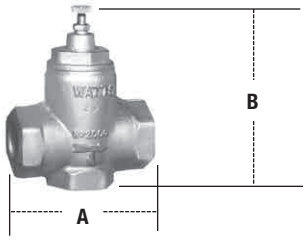
2000-M5 combines angle and horizontal checks. Extra expansion tank connection when installed as an angle check. Maximum pressure 50psi (344.8 kPa) for sizes ¾" – 1¼" (20 – 32 mm), 125psi (8.6 bar) for sizes 1½" – 3" (40 – 80 mm).

Repair kit available.

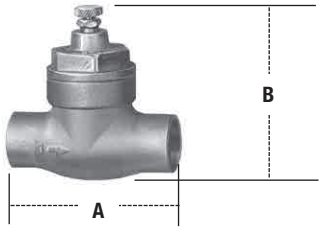
Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS				WEIGHT	
			A		B			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
2000-M5	¾	20	4⅛	108	5	127	3	1.4
2000-M5	1	25	4⅛	108	5	127	3	1.4
2000-M5	1¼	32	4¾	121	5⅝	137	4.5	2.0
2000-M5	1½	40	5	127	7¼	184	8	3.6
2000-M5	2	50	6⅞	174	7½	191	12	5.4
2000-M5	2½	65	8⅜	213	9⅝	244	22	10.0
2000-M5	3	80	9	229	10	254	24	10.9
2000S-M5	¾	20	3	76	3⅝	92	1	.5
2000S-M5	1	25	3¾	95	3⅞	98	2	.9

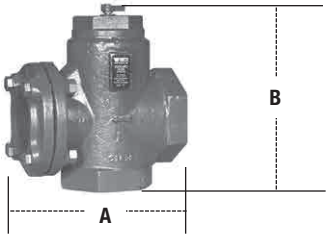
For additional information, reference literature ES-2000.



2000-M5
¾" – 1½" (20 – 40mm)



2000S-M5
¾" – 1" (20 – 25mm)



2000-M5
2", 2½", 3" (50, 65, 80mm)

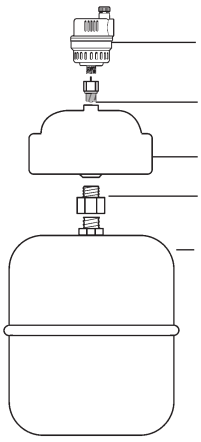
Series HPX

Boiler Trim Packages

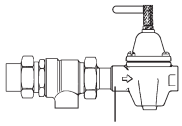
Model HPX boiler trim packages contain all the essential trim components of a quality boiler installation in a single easy to carry package.

Package Selection Chart

MODEL	FLOAT VENT-FV4	DUO VENT	SERVICE CHECK SCV		AIR SEPARATOR-AS		FILL VALVE/ BACKFLOW PREVENTER	RESIDENTIAL BOILER FILL VALVE	EXPANSION TANK		
	1/8" 3mm	1/8" 3mm	1/8" 3mm	1/2" 23mm	1" 25mm	1 1/4" 23mm	B911S	RBFF	ET-15	ET-15	ET-30
HPX-C	X		X	X	X		X			X	
HPX-D	X		X	X		X	X			X	
HPX-15C	X		X	X	X		X		X		
HPX-15D	X		X	X		X	X		X		
HPX-15BC		X	X	X	X		X		X		
HPX-15BD		X	X	X		X	X		X		
HPX-60D-B		X	X	X		X	X				X
HPX-30BC-PRO		X	X		X		X	X		X	
HPX-30BD-PRO		X	X			X	X	X		X	



HP



911S Combination Backflow Preventer and Boiler Fill Valve

Boiler Header Module and Pro Hydronic Packages

Our Boiler Header Module and Pro Hydronic Packages are the newest additions to our combination of key boiler piping products packaged in a single master carton. The Pro Hydronic Packages include our newly introduced AS-MB Air Separator and RBFF Service Fitting. Service technicians will appreciate the ease of "wet side" service these packages provide.

Boiler Header Modules

MODEL	Micro-Bubble Air Separator AS-MB-FL	Residential Boiler Fill Fitting RBFF	Isolation Pump Flange with Purge Port - PIPFM1-T 3/4"	1"	1 1/4"
HP-BHM-75	X	X	X		
HP-BHM-100	X	X		X	
HP-BHM-125	X	X			X

Boiler Header Module Pro Hydronic Packages

MODEL	Includes
HP-30PRO-P100	HP-BHM-100, ETX-30 (0066606), B911S-M3 (0386462)
HP-30PRO-P125	HP-BHM-125, ETX-30 (0066606), B911S-M3 (0386462)

Pro Hydronic Packages with NPT AS-MB & RBFF

MODEL	Micro-Bubble Air Separator - AS-MB			Residential Boiler Fill Fitting	Isolation Pump Flange with Purge Port - PIPFMA-T		Fill Valve Backflow Preventer	Expansion Tank
	1"	1 1/4"	FLANGED	RBFF	1"	1 1/4"	B911S	ETX-30
HP-30PRO-100	X			X			X	X
HP-30PRO-125		X		X			X	X
HP-30PRO-100S			X	X	X		X	X
HP-30PRO-125S			X	X		X	X	X

For additional information, see F-BHM.

Series ETA 15 — ETA 240

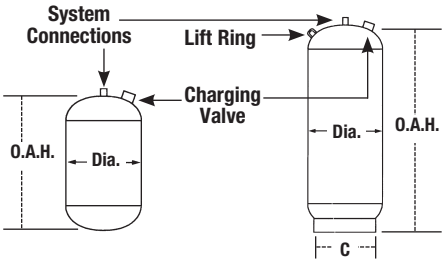
ASME Pressurized Expansion Tanks for Heating and Cooling Systems

Model ETA Tanks are ASME fixed bladder type pre-charged expansion tanks. They are designed to absorb the expansion forces and control the pressure in heating and cooling systems. The water is contained in the heavy duty bladder preventing tank corrosion and waterlogging problems.

ETA

Features

- ASME Section VIII Construction
- Heavy Duty Butyl Bladder
- Precharged to 12psi (82.7 kPa) (Field Adjustable)
- Shell: Carbon steel
- Primer coated exterior



ETA 15 and ETA 20 — ETA 40 – ETA 240

Pressure - Temperature

Maximum Design Pressure:
ETA 15 through ETA 60: 150psi (10.3 bar)
ETA 80 through ETA 240: 125psi (8.5 bar)
Precharged to 12psi (83 kPa)
Maximum Design Temperature: 240°F (115°C)

For additional information, reference literature ES-ETA.

Dimensions — Weights

MODEL	SYSTEM CONNECTION (DN)		TANK VOLUME	ACCEPTANCE VOLUME	MAX. OPERATING Pressure	DIMENSIONS Dia.		Height		C		WEIGHT	
	in.	*mm*	*Gallons*	*Gallons*	*(psig)*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
ETA 15	¾	20	7.8	2.5	150	12	305	19	483	–	–	42	19
ETA 20	¾	20	10.9	2.5	150	12	305	26	660	–	–	52	24
ETA 40	1	25	25	10	150	16	356	33	1069	12	305	84	38
ETA 60	1	25	35	10	150	16	356	45	1448	12	305	97	44
ETA 80	1	25	45	21	125	20	508	38	968	18	457	148	67
ETA 100	1	25	60	21	125	20	508	49	1245	18	457	175	79
ETA 120	1½	40	70	48	125	24	610	46	1168	22	559	259	117
ETA 144	1½	40	80	48	125	24	610	49	1245	22	559	268	122
ETA 180	1½	40	90	48	125	24	610	52	1321	22	559	283	128
ETA 200	1½	40	115	48	125	24	610	66	1676	22	559	325	147
ETA 240	1½	40	140	52	125	24	610	78	1981	22	559	362	164

Series ET-RA 35 — ET-RA 2000

ASME Pressurized Expansion Tanks for Heating and Cooling Systems

Model ET-RA Tanks are ASME removable bladder type pre-charged expansion tanks. They are designed to absorb the expansion forces and control the pressure in heating and cooling systems. The water is contained in the heavy duty bladder preventing tank corrosion and waterlogging problems. ET-RA expansion tanks reduce tank sizes up to 80%.

ET-RA

Features

- ASME Section VIII Code Construction
- Removable Heavy Duty Butyl Bladder
- Precharged to 12psi (8.7 kPa) (Field Adjustable)
- Shell: Carbon steel
- Primer coated exterior

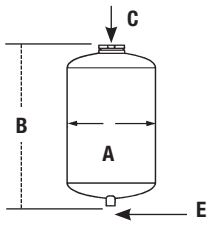
Pressure – Temperature

Maximum Design Pressure: 125psig* (8.5 bar)
Maximum Design Temperature: 240°F (115°C)

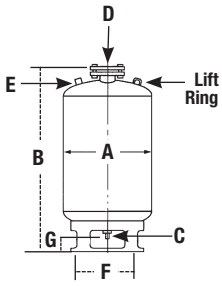
Precharged to 12psi (83 kPa) *200 and 250psig available.

For additional information, reference literature ES-ET-RA.

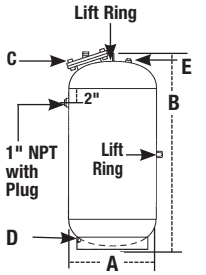
Dimensions — Weights



ET-RA 35 – ET-RA 50



ET-RA 85 – ET-RA 800



ET-RA 1000 – ET-RA 2000

MODEL	TANK VOLUME	DIMENSIONS													WEIGHT	
		A		B		C System Connection		D Drain		E Charging Valve	F		G			
	Gallons	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*		*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
ET-RA 35	10	12	300	25	635	¾	19	–	–	.302"	–	–	–	–	40	18
ET-RA 50	13	14	350	25	635	¾	19	–	–	-32NC	–	–	–	–	50	23
ET-RA 85	23	16	400	37	940	1	25	½	13	–	12	305	5½	140	90	41
ET-RA 130	35	20	500	37	940	1	25	½	13	–	16	406	5½	140	125	57
ET-RA 200	53	24	600	43	1092	1½	38	½	13	.302"	20	508	5¼	133	210	95
ET-RA 300	79	24	600	55	1397	1½	38	¾	19	-32NC	20	508	5¼	133	225	102
ET-RA 400	106	30	750	49	1245	1½	38	¾	19	–	24	610	5¼	133	300	136
ET-RA 500	132	30	750	57	1448	1½	38	¾	19	–	24	610	5¼	133	335	152
ET-RA 600	158	30	750	65	1651	1½	38	¾	19	–	24	610	5¼	133	360	163
ET-RA 800	211	36	900	63	1600	1½	38	¾	19	–	30	762	5¼	133	475	215
ET-RA 1000	264	36	900	74	1880	1½	38	¾	19	–	–	–	–	–	710	322
ET-RA 1200	317	36	900	86	2184	1½	38	¾	19	–	–	–	–	–	720	327
ET-RA 1400	370	36	900	99	2515	1½	38	¾	19	.302"	–	–	–	–	875	397
ET-RA 1600	422	48	1200	72	1829	1½	38	¾	19	-32NC	–	–	–	–	1100	499
ET-RA 2000	528	48	1200	85	2159	1½	38	¾	19	–	–	–	–	–	1280	581

Note: On models ET-RA 85 thru ET-RA 800 both top and bottom connections (C and D) access the bladder.

Series ETX, ETSX

Pressurized Expansion Tanks for Heating and Cooling Systems*

Series ETX and ETSX Pressurized Expansion Tanks for Heating and Cooling Systems are designed to absorb the increased volume of water created when water is heated. These tanks maintain system pressure below the relief setting of the relief valve. The Series ETX and ETSX's pre-pressurized steel tank features a durable expansion membrane that prevents contact of the water with the air in the tank. This rugged diaphragm minimizes loss of the air change and ensures long and trouble-free life for the system.

Features

- Precharged at 12psi (82.7 kPa)
- Rugged flexible butyl diaphragm
- In-line and free standing models
- Compatible with glycol in systems
- Steel construction

Models

ETX - Mounts to supply piping
ETSX - Free standing

Specifications

Furnish and install as shown on plans a Watts Model ETX, ETSX _____ gallon _____ " diameter x ____ " (high) precharged steel expansion tank with a fixed butyl bladder. The tank shall have an NPT system connection and a .302"-32 charging valve connection (standard tire valve) to facilitate the on-site charging of the tank to meet system requirements. The tank shall be factory precharged to 12psi. The tank shall be a Watts Regulator Company Series ETX or ETSX.

ETX

ETSX

Pressure - Temperature

Maximum Working Temperature: 220˚F (104˚C)
Maximum Working Pressure:
ETX-15, ETX-30, ETX-60: 75psi (517 kPa)
ETX-90 and ETSX Series: 100psi (6.89 bar)
Precharge (field adjustable): 12psi (82.7 kPa)

*Not for use on potable water systems.

For additional information, reference literature ES-ETX/ETSX.

Combination Packages

Series ETX-ASF

MODEL	AIR SEPARATOR		FLOAT VENT	EXPANSION TANK		
			FV-4M1	15	30	90
	1" (25mm)	*1¼" (32mm)*	*⅛" (3mm)*			
Combination Packages						
ETX-15-ASF	X		X	X		
ETX-15-ASF		X	X	X		
ETX-30-ASF	X		X		X	
ETX-30-ASF		X	X		X	
ETX-60-ASF	X		X			X
ETX-60-ASF		X	X			X

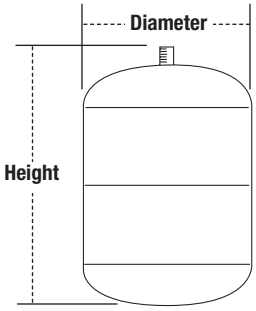
ETX-ASF

Series ETX-ASF hydronic boiler combination packages make it easier to buy system components by including an expansion tank, AS air separator, and FV4 float vent valve all in one package and for a lower cost than buying each of the components separately.

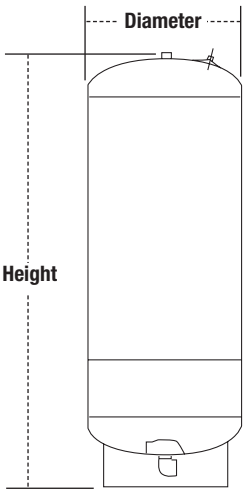
Quick Sizing Chart

Boiler Output Net BTU/H	Finned Tube Baseboard	Convectors or Unit Heaters	Cast Iron Radiators	Cast Iron Baseboard
	Suggested Selection			
20,000	ETX-15	ETX-15	ETX-15	ETX-15
30,000	ETX-15	ETX-15	ETX-15	ETX-15
40,000	ETX-15	ETX-30	ETX-30	ETX-30
50,000	ETX-15	ETX-30	ETX-30	ETX-30
60,000	ETX-30	ETX-30	ETX-60	ETX-60
70,000	ETX-30	ETX-30	ETX-60	ETX-60
80,000	ETX-30	ETX-30	ETX-60	ETX-60
90,000	ETX-30	ETX-30	ETX-60	ETX-60
100,000	ETX-30	ETX-60	ETX-60	ETX-60
125,000	ETX-30	ETX-60	ETX-60	ETX-90
150,000	ETX-30	ETX-60	ETX-90	ETX-90
175,000	ETX-60	ETX-60	ETX-90	ETX-90
200,000	ETX-60	ETX-60	ETX-90	ETX-90
250,000	ETSX-30	ETSX-30	ETSX-40	ETSX-30
300,000	ETSX-30	ETSX-40	ETSX-40	ETSX-30
350,000	ETSX-30	ETSX-40	ETSX-60	ETSX-30
400,000	ETSX-30	ETSX-60	ETSX-90	ETSX-40
500,000	ETSX-40	ETSX-60	ETSX-90	ETSX-40
600,000	ETSX-40	ETSX-90	ETSX-90	ETSX-60
700,000	ETSX-60	ETSX-90	ETSX-90	ETSX-60
800,000	ETSX-60	ETSX-110	ETSX-110	ETSX-90
900,000	ETSX-60	ETSX-110	ETSX-110	ETSX-90
1,000,000	ETSX-90	ETSX-110	ETSX-110	ETSX-90
1,200,000	ETSX-90	ETSX-110	ETSX-160	ETSX-90
1,400,000	ETSX-110	ETSX-160	ETSX-160	ETSX-110
1,500,000	ETSX-110	ETSX-160	ETSX-110 (2)	ETSX-110

Note: These recommendations are based on the average water volume of typical closed systems.
Fill pressure 12psi, relief valve set pressure of 30psi and system temperature of 200˚F.



ETX



ETSX

Dimensions — Weights

MODEL	CONNECTION SIZE (DN)		TANK VOLUME		ACCEPT. VOLUME		DIAMETER		HEIGHT		WEIGHT	
	in.	*mm*	*gal.*	*liters*	*gal.*	*liters*	*in*	*mm.*	*in*	*mm.*	*lbs.*	*kgs.*
ETX-15	½" MNPT	15	2.1	7.9	1.0	3.8	8	203	12½	318	5	2.3
ETX-30	½" MNPT	15	4.5	17.1	2.5	9.5	11	279	14	356	10.0	4.54
ETX-60	½" MNPT	15	6.0	22.8	3.0	11.4	11⅜	290	17 3/16	437	11.5	5.22
ETX-90	¾" MNPT	20	15.0	57.0	6.0	22.8	16	406	20 13/16	528	28.0	12.70
ETSX-30	1" FNPT	25	15.0	57.0	6.0	22.8	16	406	21 11/16	551	32.0	14.51
ETSX-40	1" FNPT	25	20.0	76.0	8.0	30.4	16	406	28 13/16	732	39.0	17.69
ETSX-60	1" FNPT	25	33.0	125.4	13.3	50.5	16	406	42 13/16	1087	57.0	28.85
ETSX-90	1¼" FNPT	32	44.0	167.2	17.7	67.3	21	533	36 3/16	919	72.0	32.66
ETSX-110	1¼" FNPT	32	62.0	235.6	24.9	94.6	21	533	47⅞	1217	112.0	50.80
ETSX-160	1¼" FNPT	32	81.0	307.8	32.6	123.9	21	533	62	1575	123.0	55.79

For additional information, reference literature ES-ETX-ASF.

Purge and Balancing Valves

Used on boiler return piping to facilitate removal of air from heating zones on initial fill and to control water flow through circulation loop. A purge and balancing valve also serves as a shutoff valve and a drain valve for each zone or loop.

Series RPVM1

Residential Purge, Drain and Balancing Valves

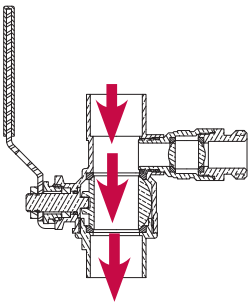
Sizes: ¾" – 1¼" (20 – 32mm)

Residential Purge, Drain and Balancing Valves, (RPV) provide a unique and low cost solution for start-up purging, balancing and draining of hydronic heating loops. Using a rugged, dual-ball valve design, the small and compact RPV facilitates: 1) high-volume purging; 2) accurate balancing; 3) a tight shutoff; 4) hose connection for draining and purging.

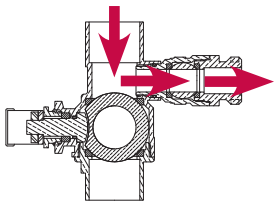
RPVM1

Features

- One-piece convenience — no extra assembly required
- Maximum air purging — purges 500 foot loop in 10 seconds
- Positive shutoff dual-ball valve design — drip tight seal on balance port maximizes effectiveness of purging



RPVM1
Open – Flowing Position



RPVM1
Purge Position

Models

RPVM1-S - solder inlet x solder outlet, ¾", 1", 1¼"

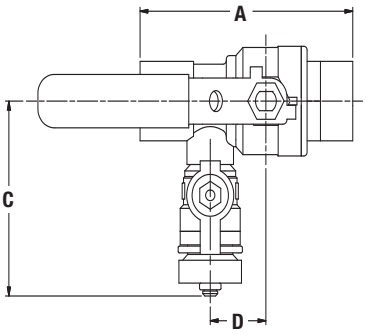
RPVM1-ST - solder inlet x female NPT outlet, ¾", 1", 1¼"

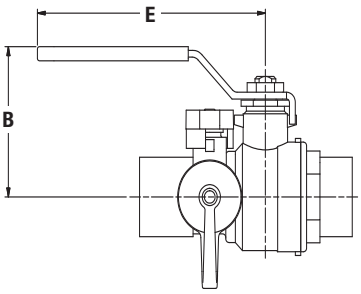
Pressure – Temperature

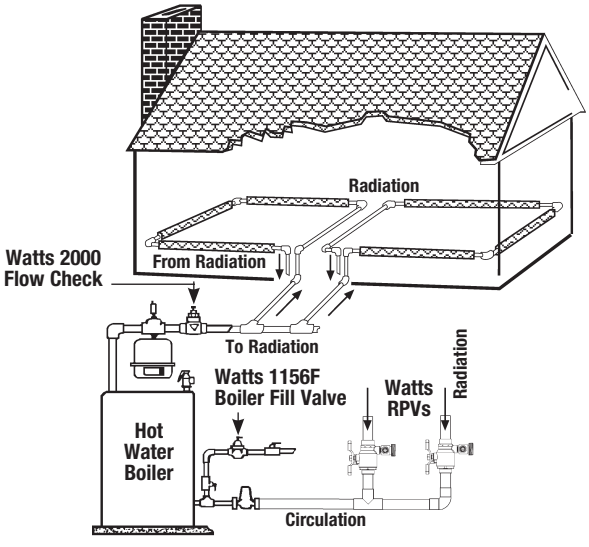
Working Pressure: 50psi (344 kPa)
Maximum Inlet Temperature: 250°F (121°C)

For dimensions and weights for Model RPVM1-ST, reference literature ES-RPVM1.

Dimensions — Weights







Hydronic Heating Circuit

MODEL	CONNECTIONS		DIMENSIONS												WEIGHT	
			Size		A		B		C		D		E			
	inlet	*outlet*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
RPVM1-S	solder	solder	¾"	20	3 5/16	84	2 1/16	52	3 3/16	81	7/8	22	4	102	1.0	0.5
RPVM1-S	solder	solder	1"	25	4	102	2 7/16	62	3 3/16	81	1 1/16	27	4 1/4	108	1.5	0.7
RPVM1-S	solder	solder	1¼"	32	4 3/8	111	2 9/16	65	3 5/16	84	1 3/16	30	4 1/4	108	2.0	0.9

Isolation Pump Flanges

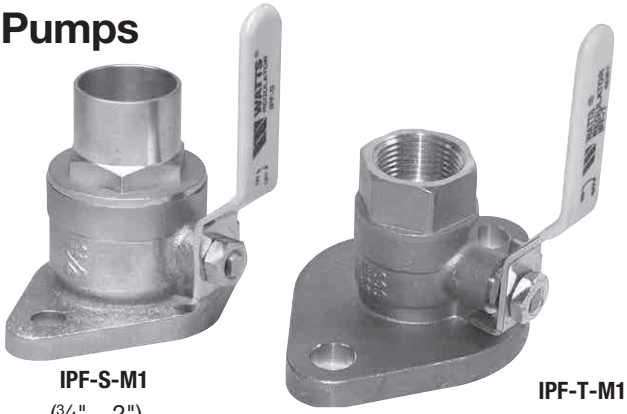
Designed to isolate circulator pumps to facilitate circulator pump replacement or repairs.

Series IPF

Isolation Pump Flanges for Circulator Pumps

Sizes: ¾" – 2" (20 – 50mm)

Series IPF Isolation Pump Flanges are designed to isolate circulator pumps to facilitate circulator pump replacement or repairs.



IPF-S-M1
(¾" – 2")

IPF-T-M1
(¾" – 2")

Features

- Brass body and flange
- Adjustable Virgin PTFE packing
- Buna-N stem O-ring seal
- Supplied with lever handle
- Optional T-handle included
- Virgin PTFE seats
- Bottom loaded, blowout proof stem

Models

IPF-T-M1 - ¾" – 2" (20 – 50mm) NPT threaded end connection

IPF-S-M1 - ¾" – 2" (20 – 50mm) Solder end connection

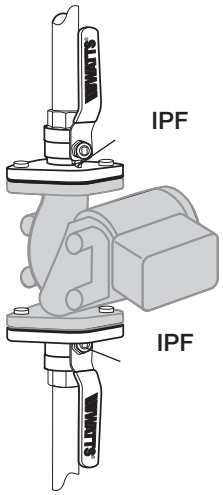
Pressure – Temperature

Maximum Working Pressure: 600psi (41.4 bar) WOG

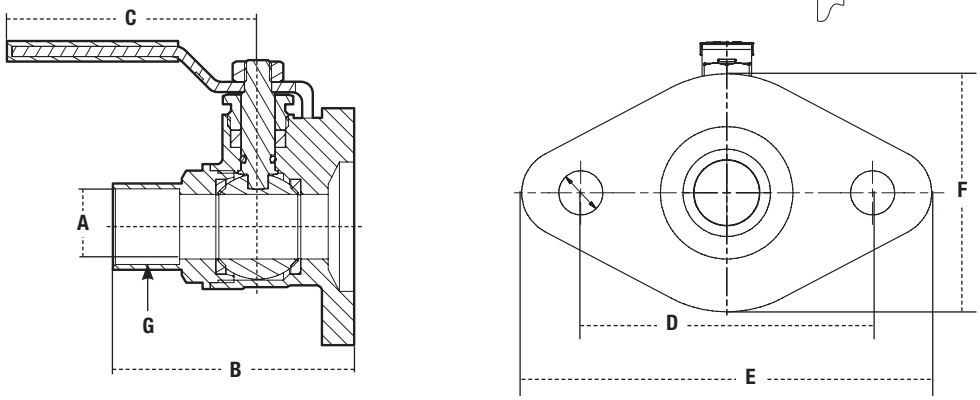
Maximum Temperature: 406°F (208°C) at 100psi (6.9 bar)

For additional information, reference literature ES-IPF-M1.

Typical Installation



Dimensions — Weights



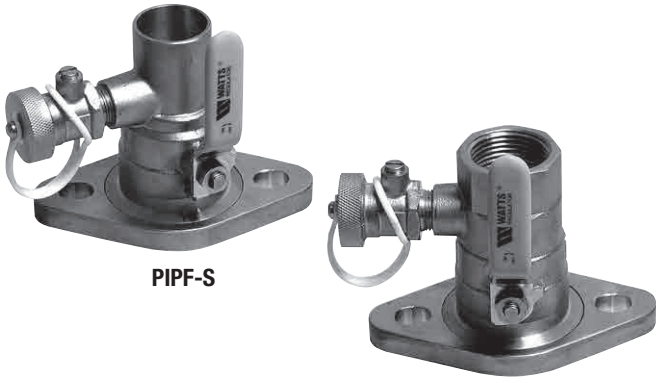
SIZE (DN) in.	mm	A in.	mm	B in.	mm	C in.	mm	D in.	mm	E in.	mm	F in.	mm	G in	WEIGHT lbs.	kg
IPF-T-M1																
¾	20	¾	19	2¼	54	3	77	3 3/16	80	4⅝	118	2 11/16	69	¾" NPT	1.3	.61
1	25	1	25	2⅝	63	3	77	3 3/16	80	4⅝	118	2 11/16	69	1" NPT	1.6	.72
1¼	32	1¼	31	2 13/16	72	4	107	3 3/16	80	4⅝	118	2 11/16	69	1¼" NPT	2.1	.97
1½	40	1½	39	3¼	79	4	107	3 3/16	80	4⅝	118	2 11/16	69	1½" NPT	2.5	1.13
2	50	1⅞	47	3¾	90	4	107	3 7/16	87	4⅝	118	2 11/16	69	2" NPT	2.5	1.16
IPF-S-M1																
¾	20	¾	19	2⅛	54	3	77	3 3/16	80	4⅝	118	2 11/16	69	—	1.3	.60
1	25	1	25	2½	63	3	77	3 3/16	80	4⅝	118	2 11/16	69	—	1.6	.72
1¼	32	1¼	31	2 13/16	72	4	107	3 3/16	80	4⅝	118	2 11/16	69	—	2.1	.97
1½	40	1½	39	3⅛	79	4	107	3 3/16	80	4⅝	118	2 11/16	69	—	2.5	1.13
2	50	1⅞	47	3½	90	4	107	3 7/16	87	4⅝	118	2 11/16	69	—	3.0	1.36

Series PIPF

Isolation Pump Flanges with Purge Port & Swivel Flange

Sizes: ¾" – 1¼" (20 – 32mm)

Series PIPF Isolation Pump Flanges with Purge Port & Swivel Flange are designed to provide circulator pump isolation to facilitate the circulator pump replacement or repair while the integral purge port facilitates system purging.



PIPF-S

PIPF-T

Features

- Ball valve isolation for circulator pumps
- Integral purge port saves time and money compared to purge stations made with ball valves, boiler drains, and copper tees
- Swivel flange allows purge port to be positioned for optimal purging convenience
- Brass body and flange
- Pressure rated to 400psi (28 bar) WOG
- Double O-ring stem sealing technology eliminates packing leaks
- Bottom loaded, blowout, proof stem

Models

PIPF-T - ¾" – 1¼" (20-32mm) threaded NPT end connections

PIPF-S - ¾" – 1¼" (20-32mm) solder end connections

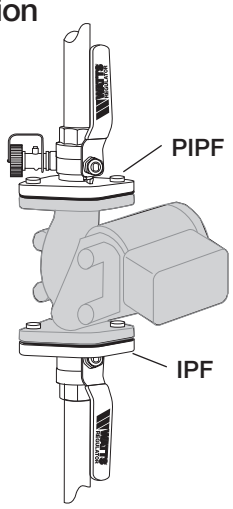
Pressure – Temperature

Pressure Rated: 400psi (28 bar) WOG

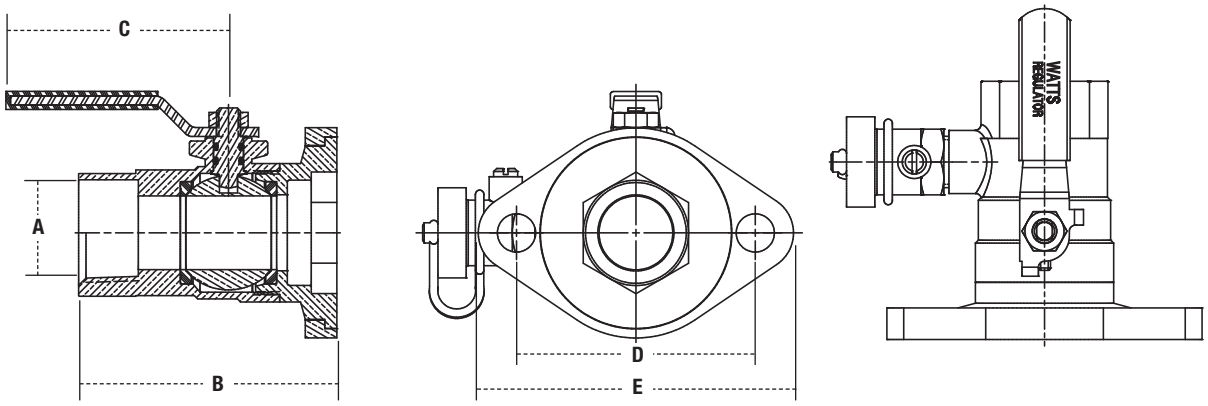
Maximum Operating Temperature: 406°F (208°C) at 100psi (6.9 bar)

For additional information, reference literature ES-PIPF.

Typical Installation



Dimensions — Weights



MODEL	SIZE (DN)		DIMENSIONS										WEIGHT	
			A		B		C		D		E			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
PIPF-T	¾	20	¾	19	3	76	2 15/16	74	3⅛	79	4⅛	105	1.86	0.84
	1	25	1	25	3⅜	86	2 15/16	74	3⅛	79	4⅛	105	2.24	1.02
	1¼	32	1¼	31	3 11/16	93	4 1/16	103	3⅛	79	4⅛	105	2.83	1.28
PIPF-S	¾	20	¾	19	3⅛	80	2 15/16	74	3⅛	79	4⅛	105	1.71	0.77
	1	25	1	25	3½	89	2 15/16	74	3⅛	79	4⅛	105	1.99	0.90
	1¼	32	1¼	31	3 13/16	98	4 1/16	103	3⅛	79	4⅛	105	2.43	1.10

Series PIPFM1

Isolation Pump Flanges with Purge Port and Swivel Flange

Sizes: ¾" – 1¼" (20-32mm)

Series PIPFM1 Isolation Pump Flanges with Purge Port and Swivel Flange are designed to provide circulator pump isolation to facilitate circulator pump replacement or repair while the integral ½" purge port provides fast system purging.

Features

- Ball valve isolation of circulator pumps
- Integral purge port saves time and money compared to purge stations made with a ball valve, boiler drain and copper tee.
- ½" purge port provides fast complete system purging.
- Swivel flange allows purge port to be positioned for optimal purging convenience and provides for neat attractive installations.
- Brass body and flange pressure rated to 600 psi (41 bar) WOG.
- Stem seal is PTFE adjustable packing design.
- Purge port has compact aluminum die cast handle for easy operation.

Models

PIPFM1-T - ¾" – 1¼" (20-32mm) threaded NPT end connection

PIPFM1-S - ¾" – 1¼" (20-32mm) solder end connection

Pressure – Temperature

Maximum Working Pressure: 600psi (41 bar) WOG

Maximum Temperature: 406°F (208°C) @ 100psi (6.9 bar)

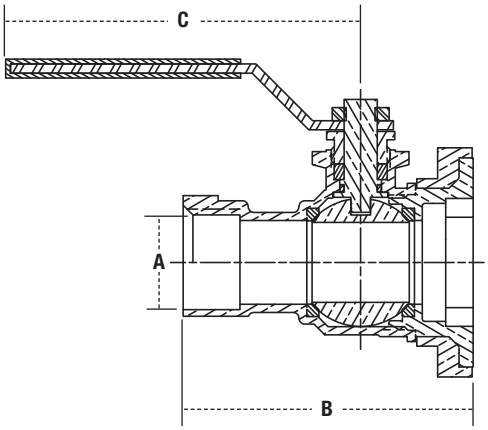
PIPFM1-S*

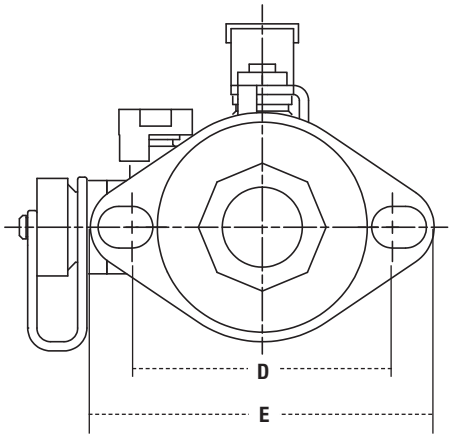
PIPFM1-T

*This valve is designed to be soft soldered into lines without disassembly, using a low temperature solder to 420°F (216°C). Higher temperature solders may damage the seat material.
Apply heat with the flame directed AWAY from the center of the valve body. Excessive heat can harm the seats.

For additional information, reference literature ES-PIPFM1.

Dimensions – Weights





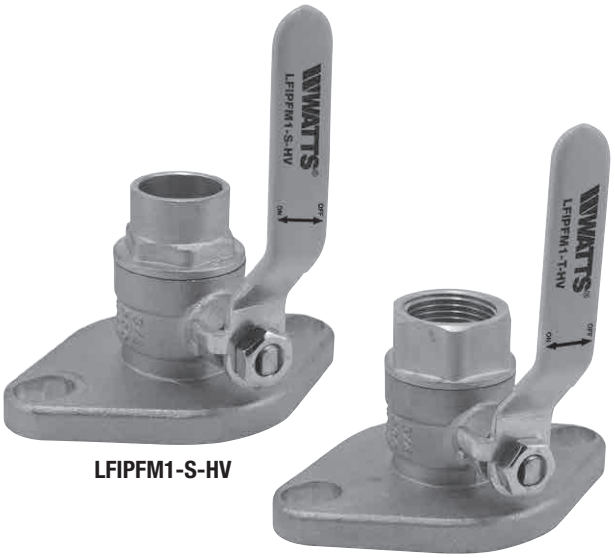
MODEL	SIZE (DN)		DIMENSIONS										WEIGHT	
			A		B		C		D		E			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kg*
PIPFM1-T	¾	20	¾	19	3⅛	80	4	101	3⅛	79	4⅛	105	2.15	0.98
	1	25	1	25	3½	88	4¼	108	3⅛	79	4⅛	105	2.51	1.14
	1¼	32	1¼	31	3 13/16	97	4¼	108	3⅛	79	4⅛	105	2.97	1.35
PIPFM1-S	¾	20	¾	19	3 5/16	84	4	101	3⅛	79	4⅛	105	2.09	0.95
	1	25	1	25	3 11/16	94	4¼	108	3⅛	79	4⅛	105	2.44	1.11
	1¼	32	1¼	31	4 1/16	104	4¼	108	3⅛	79	4⅛	105	2.88	1.31

Series LFIPF-HV

Isolation Pump Flanges for Circulator Pumps

Sizes: ¾" – 2" (20 – 50mm)

LEAD FREE* Series LFIPF-HV Isolation Pump Flanges are designed to isolate circulator pumps to facilitate circulator pump replacement or repair. The Series LFIPF-HV features Lead Free* construction to comply with Lead Free* installation requirements.



LFIPFM1-S-HV

LFIPFM1-T-HV

Features

- Lead Free* Brass body and flange
- Adjustable Virgin PTFE packing
- Buna-N stem O-ring seal
- Supplied with lever handle
- Virgin PTFE seats
- Bottom loaded, blowout proof stem

Models

LFIPFM1-T-HV ¾" – 1½" (20 – 40mm) NPT threaded end connection

LFIPFM1-S-HV ¾" – 1½" (20 – 40mm) Solder end connection

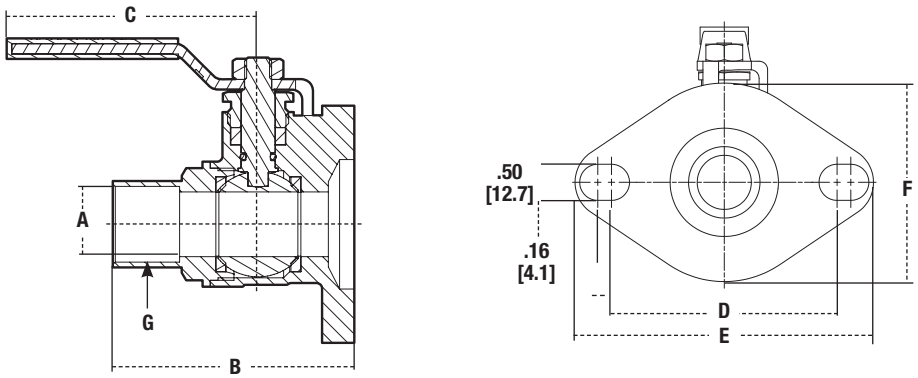
LFIPFM2-T-HV 2" (50mm) NPT threaded end connection

LFIPFM2-S-HV 2" (50mm) solder end connection

For additional information, reference literature ES-LFIPF-HV.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Dimensions – Weights



SIZE				DIMENSIONS												WEIGHT	
(DN)		A		B		C		D		E		F		G			
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in		lbs.	kg
LFIPFM1-T-HV																	
¾	20	¾	19	2¼	54	3	77	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	¾"	NPT	1.3	.61
1	25	1	25	2⅝	63	3	77	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	1"	NPT	1.6	.72
1¼	32	1¼	31	2¹³⁄₁₆	72	4	107	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	1¼"	NPT	2.1	.97
1½	40	1½	39	3¼	79	4	107	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	1½"	NPT	2.5	1.13
LFIPFM2-T-HV																	
2	50	1⅞	47	4⁵⁄₁₆	110	4	107	3⅛	87	4⅝	118	2¹¹⁄₁₆	69	2"	NPT	2.5	1.16
LFIPFM1-S-HV																	
¾	20	¾	19	2⅛	54	3	77	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	—		1.3	.60
1	25	1	25	2½	63	3	77	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	—		1.6	.72
1¼	32	1¼	31	2¹³⁄₁₆	72	4	107	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	—		2.1	.97
1½	40	1½	39	3⅛	79	4	107	3⅛	80	4⅝	118	2¹¹⁄₁₆	69	—		2.5	1.13
LFIPFM2-S-HV																	
2	50	1⅞	47	4⅞	124	4	107	3⅛	87	4⅝	118	2¹¹⁄₁₆	69	—		3.0	1.36

Thermostatic Mixing Valves

Used on boiler supply lines to control the temperature of supply water to heating zones by mixing hot boiler water with cooler return water. They are used to provide control of tempered water to the domestic hot water system. They are also used to prevent re-circulation of cold return water to the boiler to prevent condensation in the boiler.

Series LF1170 and LFL1170

Hot Water Temperature Control Valves

Sizes: ½" – 1"

LF1170-US-M2

LF1170-QC-M2

LEAD FREE Series LF1170, LFL1170 Hot Water Temperature Control Valves are specifically designed for mixing hot and cold water on hot water supply systems. They can be used for a variety of applications to reduce the temperature of the hot water from the system and are ideal for radiant heat applications. This series features a "double throttling" design which combines the control of the hot and cold water to provide a sensitive response to changes in water temperature passing through the mixing chamber.

The LF1170-M2 can be set to any temperature between 90°F and 160°F (60°F and 120°F for model LFL1170-M2) with flow rates as low as 0.5 gpm and as high as 23 gpm (refer to capacity chart on the back). The superior flow characteristics of this valve provide accurate temperature control to the requirements of ASSE 1017** across the rated flow range. The LF1170 and LFL1170 feature Lead Free* construction to comply with Lead Free* installation requirements.

These valves also provide additional safety as they restrict mixed water out to a drip upon loss of cold water supply to the valve.

As an added feature, the LF1170-M2 and LFL1170-M2 incorporate integral check valves and filter washers in both the hot and cold water inlets to protect against cross flow. Available with threaded (-UT), solder (-US), Pex (-PEX), Quick-Connect (-QC) or CPVC (-CPVC) connections.

Features

- Lead Free* cast copper silicon alloy body construction
- Solid wax hydraulic principle thermostat assures dependable mixing of hot and cold water
- Thermostat controls both hot and cold water
- Models available with solder, thread, Pex, Quick-Connect or cpvc end connections
- Integral filter washers and check valves
- Adjustment cap with locking feature
- ASSE 1017 listed**and IAPMO UPC

Approvals

Approval: CSA B125 certified
Listing: ASSE 1017 and IAPMO UPC

For additional information, reference literature ES-LF1170_LFL1170.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

**ASSE 1017 listing is for valves used in hot water source applications.

Pressure — Temperature

Minimum Supply Pressure (Static): 30psi (207 kPa)

Inlet Temperatures: hot inlet, 120°F – 200°F (49°C – 93°C), cold inlet, 40°F – 85°F (4°C – 29°C)

Hot Water Inlet to Outlet Temperature Differential: 5°F (3°C) above set point

LF1170-M2 Temperature Out: Field range: 90°F – 160°F (32°C – 71°C), adjustable: Accurate within ±3°F (1.7°C)

LFL1170-M2 Temperature Out: Field range: 60°F – 120°F (16°C – 49°C), adjustable. Accurate within ±3°F (1.7°C)

Maximum Temperature: 200°F (93°C)

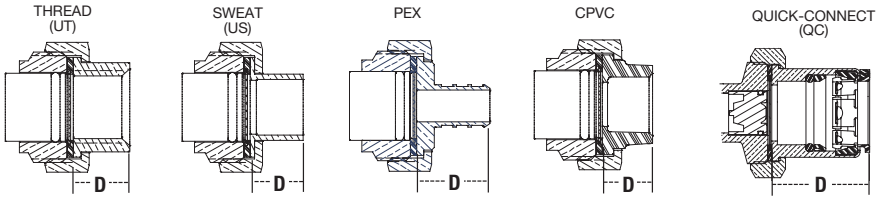
Maximum Pressure: 150psi (10.3 bar)

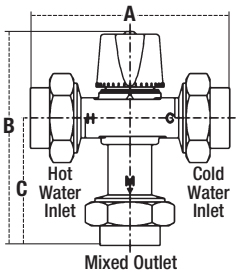
Maximum Pressure Differential Between Hot and Cold Water Supplies: 25%.

Thermostatic Mixing Valves

Series LF1170 and LFL1170 cont.

Dimensions — Weights





SIZE	MODEL	DIMENSIONS								WEIGHT	
		A		B		C		D			
in.		in.	mm.	in.	mm.	in.	mm.	in.	mm.	lbs.	kg.
½	LF1170-UT-M2	4 7/8	124	5 7/16	137	3 3/16	80	5/8	16	1.8	0.8
¾		4 7/8	124	5 7/16	137	3 3/16	80	5/8	16	2.4	1.1
1		5 5/16	135	5 5/8	143	3 3/8	86	¾	20	3.0	1.4
½	LF1170-US-M2	4 13/16	123	5 3/8	137	3 1/8	80	5/8	15	1.7	0.8
¾		5 5/16	135	5 5/8	143	3 3/8	86	7/8	22	2.3	1.0
1		5 13/16	148	5 7/8	149	3 5/8	92	1 1/8	28	2.9	1.3
½	LF1170-PEX-M2	5 1/4	133	5 9/16	142	3 5/16	85	13/16	21	1.8	0.8
¾		5 1/2	140	5 11/16	145	3 7/16	88	15/16	24	2.5	1.1
1		5 7/8	149	5 7/8	150	3 5/8	93	1 1/8	29	3.1	1.4
½	LF1170-CPVC-M2	4 3/4	121	5 5/16	136	3 1/16	79	9/16	14	1.6	0.7
¾		5 1/4	133	5 9/16	142	3 5/16	85	13/16	21	2.2	1.0
1		5 11/16	144	5 13/16	147	3 9/16	90	1	26	2.6	1.2
½	LF1170-QC-M2	6 5/8	168	6 1/4	159	4	102	1 1/2	38	2.1	0.9
¾		6 15/16	177	6 7/16	163	4 3/16	106	1 11/16	42	2.8	1.3
1		7 1/8	181	6 1/2	165	4 1/4	108	1 3/4	44	3.5	1.6

Thermostatic Master Mixing Valves

Used to provide control of tempered water to the domestic hot water system.

Series LFN170-M3 ASSE 1017**

Hot Water Master Tempering Valves

Sizes: ¾" – 2" (20 – 50mm)

LEAD FREE* Watts Series LFN170 hot water master tempering valves are especially designed for use on larger hot water supply systems for mixing hot and cold water for a variety of applications to extend the hot water supply. This series uses paraffin-based thermostat to sense and adjust outlet temperature. The LFN170s feature Lead Free* construction to comply with Lead Free* installation requirements.

LFN170-M3

LFN170-M3-CSUT

Features

- Lead Free* brass body construction
- ASSE 1017 and IAPMO CUPC Listed
- LFN170-M3 uses paraffin-based thermostat to sense and adjust outlet temperature
- Dirt and lime resistant poppet and seat design
- Virtual shutoff if supply pressure fails
- Vandal-resistant locking mechanism to secure temperature setting
- Factory tested

Pressure – Temperature

Maximum Operating Pressure: 125 psig (861 kPa)
Maximum Hot Water Temperature: 200°F (93°C)
Minimum Hot Water Supply Temperature (with Equal Pressure): 5°F (3°C) Above Set Point
Temperature Adjustment Range: 90°-180°F (32°-82°C)
Hot Water Inlet Temperature Range: 120°-180°F (42°-82°C)
Cold Water Inlet Temperature Range: 40°-80°F (4°-27°C)
Listing: ASSE 1017, IAPMO cUPC
Approval Standards: ASSE 1017, CSA B125.3

For additional information, reference literature ES-LFN170-M3.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

****Watts Hot Water Extender Tempering Valves and Thermostatic Master Mixing Valves cannot be used for tempering water temperature at fixtures. Severe bodily injury (i.e., scalding or chilling) and/or death may result depending upon system water pressure changes and/or supply water temperature changes. ASSE Standard 1016 or ASSE 1069, 1070 listed devices such as Watts USG, MMV-M1 and L111 Series Valves should be used at fixtures to prevent possible injury.**

The Watts hot water tempering valves are designed to be installed at or near the boiler or water heater. They are not designed to compensate for system pressure and/or temperature fluctuations and should not be used where ASSE 1016 or ASSE 1070 valves are required. These Watts valves should never be used to provide "anti-scald" or "anti-chill" service.

For radiant heat application we recommend Watts models 1170-M2, L1170-M2.

Hot Water Extender Tempering Valve

Series LF70A, LFL70A**

Hot Water Extender Tempering Valves

Sizes: ½" - ¾" (15 – 20mm)

LEAD FREE* You can meet various installation requirements with the Watts LF70A Series Hot Water Extender Tempering Valves. They are available in ½" and ¾" (15 and 20mm) sizes, with sweat or threaded connections. Temperature range 120° to 160°F (49° to 71°C).

The hydraulically-operated thermostat opens a spring loaded check in the cold water inlet allowing cold water to mix with the hot water.

No. LF70A-F furnished in ½" and ¾" (15 - 20mm) size with sweat connections.

No. LF70A-T in ½" and ¾" (15 - 20mm) threaded connections.

No. LF70A-F
Sweat connections

Series LFL70A

Identical to above except furnished for low temperature range applications between 100° to 130°F (38° to 54°C).

Features

- Lead Free* brass valve bodies
- Simple maintenance thermostat assembly is easily removed and replaceable as a unit.
- "FINGER TIP" Dial adjustment Cap
- Sweat or threaded connections
- Stainless steel springs

Pressure – Temperature

Standard Temperature Range: 120°F – 160°F (49°C – 71°C).
Maximum Temperature: 210°F (99°C)
Maximum Pressure: 150psi (10.3 bar)

Models LFL70A , LFL70A-F, LFL70AT are available for low temperature range 100°F – 130°F (38°C – 54°C).

For additional information, reference literature ES-LF70A.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Flow Control Valve

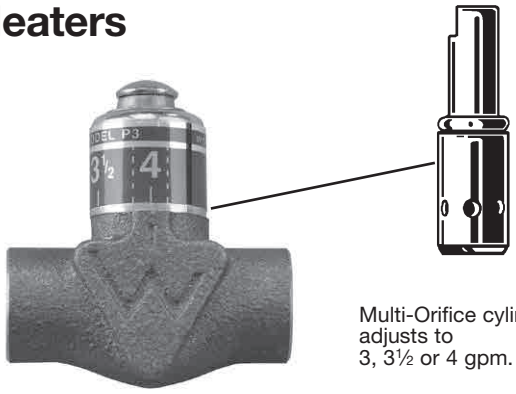
Model LFP3

Multi-Orifice Flow Control for Tankless Heaters

Adjusts to: 3, 3½ or 4 gpm

LEAD FREE* Watts LFP3 Flow Control valve is designed to limit the flow of water to equipment and is used for tankless heater installations. It features a multi-orifice design which lets you select a flow of 3, 3½ or 4 gpm, simply and quickly, by turning the cap to the desired setting. If a different setting is desired, simply move the adjusting cap to the desired setting, locating this over the matching line on the body.

ADJUSTMENT SETTING NO.	FLOW GPM
3	3.8
3½	4.4
4	5.1



Multi-Orifice cylinder adjusts to
3, 3½ or 4 gpm.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFP3.

****Watts Hot Water Extender Tempering Valves and Thermostatic Master Mixing Valves cannot be used for tempering water temperature at fixtures. Severe bodily injury (i.e., scalding or chilling) and/or death may result depending upon system water pressure changes and/or supply water temperature changes. ASSE Standard 1016 or ASSE 1069, 1070 listed devices such as Watts USG, MMV-M1 and L111 Series Valves should be used at fixtures to prevent possible injury.**

The Watts hot water tempering valves are designed to be installed at or near the boiler or water heater. They are not designed to compensate for system pressure and/or temperature fluctuations and should not be used where ASSE 1016 or ASSE 1070 valves are required. These Watts valves should never be used to provide "anti-scald" or "anti-chill" service.

For radiant heat application we recommend Watts models 1170-M2, L1170-M2.

Flow Measurement / Balancing Valves

Used to measure and control the flow of water to individual heating units, assuring proper heat transfer. They are used on pipe risers and headers and at pumps to measure and control flow.

Series LFCSM-61-S / CSM-61-T

Sizes: ½" – 3" (15 – 80mm)

Series LFCSM-61-S and CSM-61-T valves are specifically designed for application on low or medium flow rate HVAC units. Its compact size allows for easy installation and use on crowded piping compartments. Provides positive shut off, eliminating the need for a separate service valve.

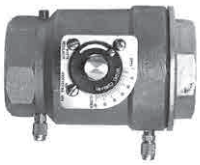
Features

- Accurate flow measurement
- Easy-to-use memory stop
- Safe "blowout" proof design
- Bidirectional flow
- Positive shutoff
- Available with threaded and solder end connections
- Integral drain port

LEAD FREE **Series LFCSM-61-S** features Lead Free brass body and complies with Lead Free* installation requirements. Solder ends.

Series CSM-61-T features bronze construction and are for use in non-potable applications. Threaded ends.

LFCSM-61-M1-T
½" – 1" (15 – 25mm)

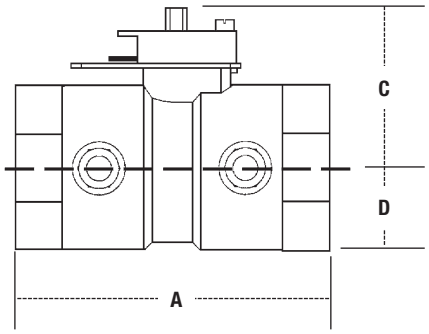


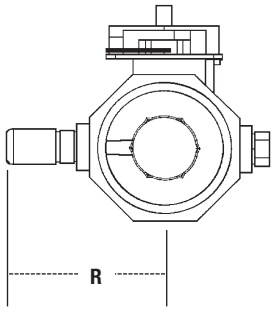
CSM-61-M1-T
1¼" – 3" (32 – 80mm)

BAA/ARRA Compliant*

*This product complies with the Buy American Act and The American Recovery and Reinvestment Act. For more information, visit watts.com.

Dimensions — Weights





For additional information, reference literature ES-CSM-61-T or ES-LFCSM-61-S.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

MODEL	SIZE (DN)		DIMENSIONS								WEIGHT	
			A		C		D		R			
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LFCSM-61-M1-S	½	15	2 11/16	68	1 5/8	41	½	13	1 3/4	45	1.0	0.45
LFCSM-61-M1-S	¾	20	3 1/8	79	1 11/16	43	9/16	15	1 7/8	47	1.3	0.59
LFCSM-61-M1-S	1	25	3 13/16	97	1 7/8	47	13/16	20	2 1/16	52	1.8	0.82
LFCSM-61-M2-S	1¼	32	4 9/16	116	1 7/8	47	1 1/8	29	2 3/16	56	1.5	0.68
LFCSM-61-M2-S	1½	40	4 7/8	123	2	50	1 5/16	33	2 5/16	59	1.9	0.86
LFCSM-61-M2-S	2	50	6	153	2 9/16	66	1 9/16	40	2 5/8	67	3.4	1.54
CSM-61-M1-T	½	15	2 3/8	60	1 5/8	41	½	13	1 3/4	45	1.0	0.45
CSM-61-M1-T	¾	20	2 5/8	67	1 11/16	43	9/16	15	1 7/8	47	1.3	0.59
CSM-61-M1-T	1	25	3 1/8	80	1 7/8	47	13/16	20	2 1/16	52	1.9	0.86
CSM-61-M1-T	1¼	32	3 3/4	94	1 7/8	47	1	25	2 3/16	56	1.9	0.86
CSM-61-M1-T	1½	40	3 15/16	100	2	50	1 1/16	27	2 5/16	59	2.3	1.04
CSM-61-M1-T	2	50	4½	114	2 9/16	66	1 5/16	33	2 9/16	66	4.0	1.81
CSM-61-M1-T	2½	65	6½	165	4⅛	104	2 3/16	55	3⅛	80	13.0	5.90
CSM-61-M1-T	3	80	6 13/16	173	4⅜	112	2⅞	73	3⅝	92	17.0	7.71

Suffix: S = Solder Ends, T = Threaded Ends

Series CSM-81-F

Sizes: 2½" – 8" (65 – 200mm)

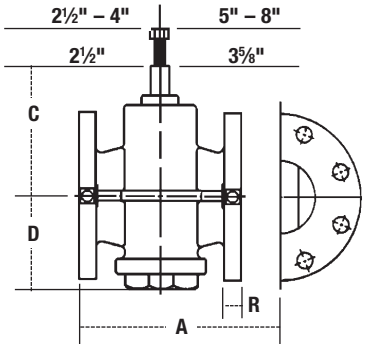
Series CSM-81-F valves are designed for application on medium to high volume flow rate HVAC units. The valve construction allows the flow measurement valve to function reliably both as a balancing valve and bubble-tight service valve, in closed hot or cold water service.

Features

- Accurate flow measurement
- Flanged end connections
- Checked metering ports
- Low torque
- Positive shutoff
- Face to face dimensions to ANSI B16.10

For additional information, reference literature ES-CSM-81.

CSM-81-F



CSM-81-F

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS								WEIGHT	
			A		C		D		R			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
CSM-81-F	2½	65	7½	191	5⅛	130	3 15/16	100	11/16	17	29.5	13.4
CSM-81-F	3	80	8	203	5 7/16	138	4 3/16	113	¾	19	39	17.7
CSM-81-F	4	100	9	229	6½	165	4 15/16	125	15/16	24	61.5	27.9
CSM-81-F	5	125	10½	267	7¾	197	6	152	1	25	88	39.9
CSM-81-F	6	150	10½	267	7¾	197	6	152	1	25	100	45.4
CSM-81-F	8	200	11½	292	9 3/16	233	6½	165	1⅛	29	172	78.0

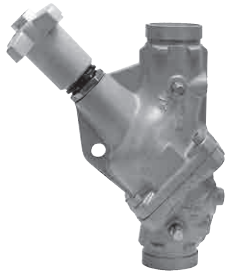
BAA/ARRA Compliant*

*This product complies with the Buy American Act and The American Recovery and Reinvestment Act. For more information, visit watts.com.

Series CSM-91

Sizes: 2½" – 10" (65 – 250mm)

For medium or large flow rate HVAC systems, pump packages, and cooling towers. They feature a multi-turn adjustment range for maximum control, pressure differential readout ports on both sides of the valve to allow for easier installation and positive shutoff for servicing equipment.



CSM-91
Straight

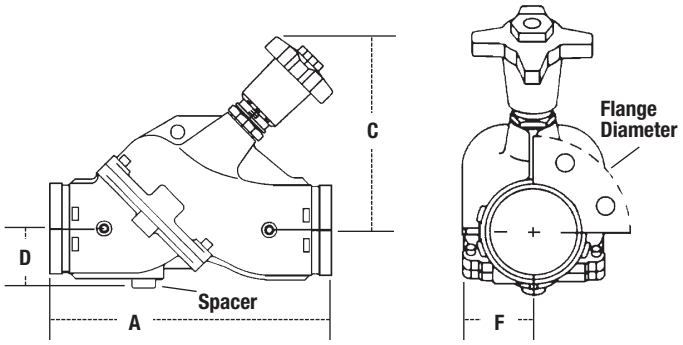
CSM-91
Angle

Features

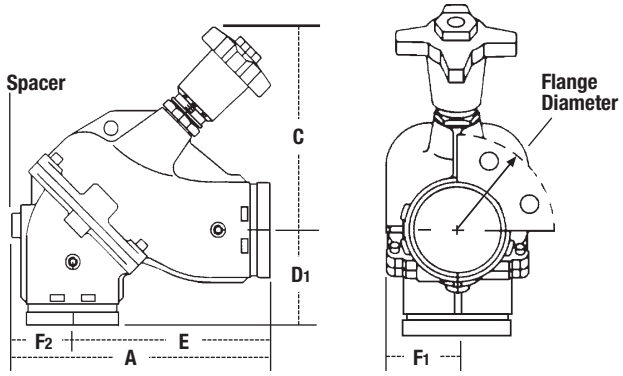
- Multi-turn adjustment
- Interchangeable metering and drain ports on both sides of valve
- Positive shutoff
- Tamper-proof memory stop
- Micrometer type handwheel adjustment - visually readable from a distance
- Field convertible for straight or angle pattern
- Grooved end connections with optional flange adapters

For additional information, reference literature ES-CSM-91.

Dimensions — Weights



CSM-91 - Factory Standard
Straight Design



Series CSM-91
Field Convertible Angle Pattern

Series CSM-91 - Straight

SIZE (DN)		DIMENSIONS								FLANGED DIAMETER		SPACER		WEIGHT	
		A		C		D		F		125#					
in.	*mm.*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
2½	65	12	305	9⅝	245	2¾	70	2 9/16	64	7	178	1	25	19	8.6
3	80	12	305	10½	267	2 7/16	61	3	76	7½	191	1	25	24	10.9
4	100	14	356	10 9/16	264	3	76	3 7/16	87	9¼	235	1¼	32	42	19.0
5	125	17½	445	13 1/16	332	3⅝	92	4 15/16	124	10	150	1¼	32	81	36.7
6	150	20 11/16	526	13¾	349	4 7/16	111	5⅞	149	11	279	2	50	120	54.4
8	200	28 3/16	716	24⅝	626	5 11/16	145	7⅞	200	13½	343	2¼	57	310	140.6
10	250	30	762	26½	673	6 9/16	161	9 15/32	240	16	406	2¼	57	460	208.6

Series CSM-91 - Angle - Field Convertible*

SIZE (DN)		DIMENSIONS												FLANGED DIAMETER		SPACER		WEIGHT	
		A		C		D1		E		F1		F2		125#					
in.	*mm.*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
2½	65	10⅛	257	9⅝	245	4⅝	117	7⅜	187	2 9/16	64	2¾	70	7	178	1	25	19	8.6
3	80	10 3/16	275	10½	267	3⅞	98	8⅜	213	3	76	2 7/16	61	7½	191	1	25	24	10.9
4	100	12⅝	321	10 9/16	264	4⅜	111	9⅝	245	3 7/16	87	3	76	9¼	235	1¼	32	42	19.0
5	125	15⅝	397	13 1/16	332	5½	140	12	305	4 15/16	124	3⅝	92	10	150	1¼	32	81	36.7
6	150	18 9/16	471	13¾	349	6⅝	168	14⅛	359	5⅞	149	4 7/16	111	11	279	2	50	120	54.4
8	200	24⅝	625	24⅝	626	9 3/16	234	18 15/16	481	7⅞	200	5 11/16	145	13½	343	2¼	57	310	140.6
10	250	26⅞	683	26½	673	9¾	248	20 5/16	516	9 15/32	240	6 9/16	161	16	406	2¼	57	460	208.6

*Series CSM-91 valves are shipped as straight pattern from factory. To convert to angle pattern refer to installation sheet shipped with valve.

Low Water Cut-Offs

Protect boilers against emergency low water conditions.

Series N50

Low Water Cut-offs

Size: 1" (25mm)

- Protects hot water heating boilers against emergency low water conditions
- Used on low pressure process boilers

N50

Specifications

- Float chamber has 1" (25mm) NPT female top and bottom connections.

Models

N50S – Single switch assembly for burner service with extra terminal for line voltage single pole, double throw service

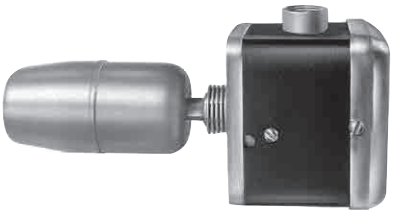
N50D – Dual switch assembly for line voltage burner service and independent low (or high) voltage alarm, feed valve or pump starter

For additional information, reference literature IS-N50D.

Series SAN89, SAN50

Float and Switch Assemblies for Servicing Low Water Cut-offs

Sizes: ½" – 1"(15–25mm)



SAN89

One piece unit facilitates installation and assures user of the most up-to-date construction

Models

SAN89D – Complete float and dual switch assembly. Maximum steam pressure 15psi (103.4 kPa).

SAN89S – Same as above, but with single switch assembly for Watts N89S and N101S.

SAN50D – Complete assembly with dual switch. Maximum boiler pressure 50psi (344.8 kPa).

SAN50S – Same as above, but furnished with single switch assembly.

For additional information, reference literature IS-N89 or IS-N50D.

Series LF600

Bronze Silent Check Valves

Sizes: ¼" – 2" (8 – 50 mm)

LEAD FREE*

LF600

Features

- PTFE seats and brass disc
- Install in a horizontal or vertical position
- Stainless steel guide rod and spring
- Silent check operation
- Prevents water hammer

For additional information, reference literature ES-LF600.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Series HWA

Hot Water Angle Valves

Sizes: ½" – 1¼" (15 – 32mm)

½" – 1¼" bronze — FIP x male union.
½" – ¾" bronze — solder x male union.
Phenolic handwheel.

Working Pressure non-shock for hot water: 60psi (413.7 kPa).

For additional information, reference literature ES-HWA.

HWA

Series UL

Union Elbows

Models

UL-1 - ½" – 1¼" (15 – 32mm)
Bronze body, FIP x male union

UL-2 - ½", ¾" (15, 20mm)
Bronze body, solder x male union

For additional information, reference literature ES-UL.

UL-1

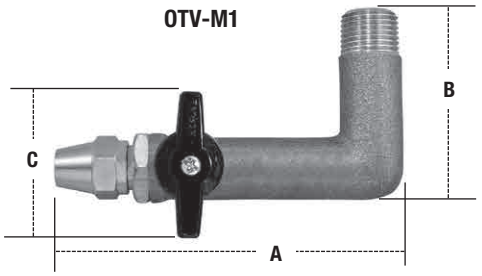
Series OTV-M1
Oil Tank Valves

Features

- ¼-Turn ball valve design
- Heavy duty brass
- Adjustable packing nut
- PTFE seat and packing

Pressure

Working Pressure Non-Shock:
125psi WOG



Dimensions — Weights

MODEL	SIZE		DIMENSIONS						WEIGHT	
			A		B		C			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs*
OTV-FL-M1	½ M x ⅜ FL	15 x 10	4 15/16	125	2 9/16	65	1 15/16	49	.76	.34
OTV-M-M1	½ M x ⅜ M	15 x 10	4½	114	2 9/16	65	1 15/16	49	.70	.32

For additional information, reference literature ES-OTV-M1.

Model RBFF
Residential Boiler Fill Fitting

Size: ½" (15mm)

Model RBFF Residential Boiler Fill Fitting provides a convenient solution to comply with boiler manufacturers' piping requirements and provide ease of service for expansion tanks and water pressure regulator valves in closed-loop hot water heating systems. Using a unique 3-way ball valve design, the RBFF eliminates up to twelve 1/2 inch fittings in a compact package.

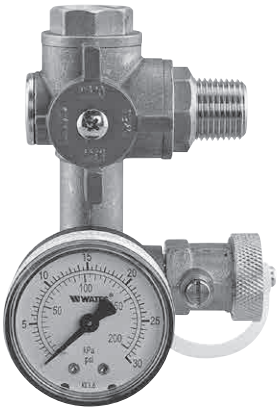
Features

- One-piece construction, eliminating up to 11 threaded joints
- Unique 3-way ball valve for isolation of water pressure regulator and expansion tank from system pressure
- Drain port with integral ball valve for unloading pressure from waterside of expansion tank diaphragm for air charge servicing and maintenance. Drain port can also be used for a variety of system draining and filling operations.
- 0 to 30psi (0 to 87kPa) pressure gauge for convenient system pressure reference

Pressure – Temperature

Maximum Working Pressure: 125psi (860 kPa)
Maximum Inlet Temperature: 250°F (121°C)

For additional information, reference literature ES-RBFF.



RBFF

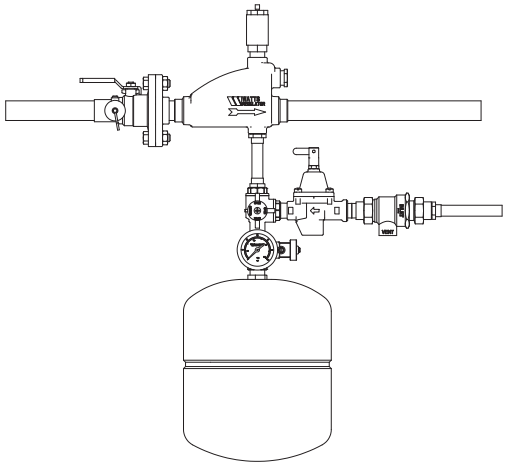


Fig. 1

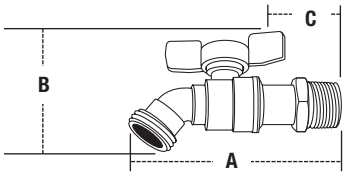
Series LFBD-QT / BD-QT

Quarter-Turn Boiler Drain Shutoffs

Sizes: ½" and ¾" (15 and 20mm)

Provide speed and convenience of quarter-turn ball valve performance for boiler drain or sill cock applications. Uses rugged brass body, adjustable Teflon® stem packing, and aluminum tee handle. The ½" (15mm) model has a dual-pattern combination threaded and solder end by ¾" (20mm) hose connection. The ¾" (20mm) model is available in either solder or threaded ends.

LFBD-QT / BD-QT
¾" (20mm)



Features

- Quarter-turn ball valve design
- Positive shutoff
- Rugged aluminum Tee-handle design
- Adjustable Teflon® stem packing

LEAD FREE **Series LFBD-QT** features Lead Free* brass construction and complies with Lead Free* installation requirements.

Series BD-QT features forged brass construction and are for use in non-potable applications.

Pressure – Temperature

Maximum Pressure: 200psi (13.8 bar)
Maximum Temperature: 250°F (121°C)

For additional information, reference literature ES-LFBD-QT or ES-BD-QT.

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS						WEIGHT	
			A		B		C			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
LFBD-QT/BD-QT	½	15	3⅜	86	2¼	57	15⁄16	24	.04	.018
LFBD-QT/BD-QT	¾	20	4⅛	104	2 7⁄16	62	1⅛	29	.05	.022

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Series LFBD / BD

Brass Boiler Drain Shutoffs for Water Service

Sizes: ½" x ¾"— ¾" x ¾" (15 x 20mm – 20 x 20mm)

Features

- ¾" hose thread connection on outlet
- Dual solder or IP connection models
- Angle and straight pattern models

LEAD FREE **Series LFBD** features Lead Free* brass construction and complies with Lead Free* installation requirements.

Series BD features brass construction and are for use in non-potable applications.

Pressure – Temperature

Pressure Rating: 200psi (13.8 bar) non-shock WOG
Maximum Temperature: 180°F (82°C)

Models

LFBD1C / BD1C Size ½" (15mm) dual connection, solder or male IPS x ¾" (20mm) hose thread connection, angle pattern

LFBD2 / BD2 Size ¾" (20mm) male IPS x ¾" (20mm) hose thread connection, angle pattern

LFBD2C / BD2C Size ¾" (20mm) MIP x ¾" (20mm) hose thread connection, angle pattern

LFBD3F / BD3F Size ½" (15mm) female IPS x ¾" (20mm) hose thread connection, angle pattern

LFBD4F / BD4F Size ¾" (20mm) female IPS x ¾" (20mm) hose thread connection, angle pattern

LFBD5 / BD5 Size ½" (15mm) dual connection, solder or male IPS x ¾"(20mm) hose thread connection, straight pattern, hose thread connection

LFBD6 / BD6 Size ¾" (20mm) Male IPS x ¾" (20mm) hose thread connection, straight pattern

LFBD1C / BD1C

LFBD2 / BD2

LFBD3F / BD3F

LFBD4F / BD4F

LFBD5 / BD5

LFBD6 / BD6

For additional information, reference literature ES-LFBD or ES-BD.

Series GBV

2-Piece, Brass Gas Ball Valves

Sizes: ⅜" – 1" (10 – 25mm)

- Brass two-piece body construction
- Available with tee handle or square handle

GBV

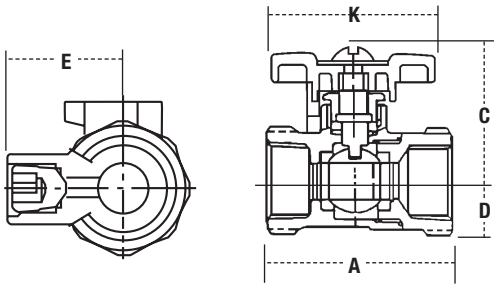
Models

GBV – Sizes: ⅜" – 1" (10 – 25mm), NPT female connections and tee handle.

GBV-FL – Sizes: ½" x ⅜", ½" x ½", ¾" x 15⁄16" (15 x 10, 15 x 15, 20 x 24mm), Female NPT x Flare connections and tee handle.

GBV and GBV-FL – rated 20°F – 125°F (-29° – 52°C). CSA approved @ ½, 2 and 5psi (3.4, 13.8, 34.5 kPa). UL listed @ 5psi (34.4 kPa).

For additional information, reference literature ES-GBV.



Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS										WEIGHT	
			A		C		D		K		E			
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
GBV	⅜	10	1 13⁄16	45	1⅜	37	⅜	10	1¾	45	–	–	.41	.19
GBV	½	15	2 3⁄16	56	1⅜	37	⅜	10	1¾	45	–	–	.51	.23
GBV	¾	20	2 7⁄16	60	1 7⁄16	42	9⁄16	15	1¾	45	–	–	.73	.33
GBV	1	25	2⅞	73	1 9⁄16	40	13⁄16	20	1¾	45	–	–	.59	.27
GBV-FL	½ x ⅜	15 x 10	2 7⁄16	62	1¼	32	½	13	1¾	45	–	–	.53	.24
GBV-FL	½ x ½	15 x 15	2½	64	1¼	32	½	13	1¾	45	–	–	.58	.26
GBV-FL	¾ x 15⁄16	20 x 24	3 1⁄16	77	1 7⁄16	36	⅝	16	1¾	45	–	–	.86	.39

Series GBV-1

One Piece Gas Ball Valves

Sizes: ½" and ¾" (15 and 20mm)

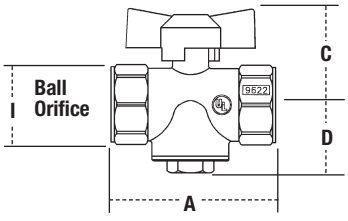
- Sizes ½" and ¾" (15 and 20mm) NPT female connections.
- Blowout proof stem design.

GBV-1

Features

- Blowout proof stem design
- One-piece body
- UL approved @5psi (34.4 kPa)
- Approved by CSA @ ½, 2 and 5psi (3.4, 13.8, 34.5 kPa). UL Listed @ 5psi (34.4 kPa).
- Capacity: ½" @ 295 ft.3/hr., ¾" @ 760 ft.3/hr
- Tested under Standards Z21.15 IAS Requirement

For additional information, reference literature ES-GBV-1.



Dimensions — Weights

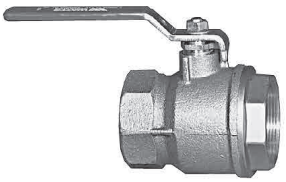
SIZE (DN)		DIMENSIONS								WEIGHT	
		A		C		D		I			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
½	15	2 5⁄16	59	1 7⁄16	37	15⁄16	24	½	15	.41	.19
¾	20	2 11⁄16	68	1⅝	41	1⅛	29	9⁄16	15	.65	.30

Note: This valve is not to be used as a mainline shutoff valve. Refer to literature ES-FBV-3 for mainline shutoff applications.

Series LFB6000 and LFB6001

2-Piece, Standard Port, Bronze Ball Valves

Sizes: ¼" – 4" (8 – 100mm)



LFB6000

LFB6001

LEAD FREE* Lead Free* Series LF6000 and LFB6001 2-Piece, Standard Port, Bronze Ball Valves feature a blowout proof pressure retaining stem. The B6000, B6001, LFB6000 and LFB6001 standard port orifice ensures minimal pressure drop, while Durafill® and Uniseal® seats and chrome plated brass ball provide lasting service for a wide range of liquids and gases. LFB6000 and LFB6001 models are constructed using Lead Free* brass and comply with Lead Free* installation requirements.

Features

- Durafill® (carbon/glass filled PTFE) seats for sizes ¼" - ½" (8 – 15mm) and 1¼" - 4" (32 – 100mm) and Uniseal® (enhanced PTFE) seats for sizes ¾" & 1" (20 & 25mm) for lasting service for a wide range of liquids and gases
- 316 stainless steel ball and stem
- Blowout proof, pressure retaining stem
- High cycle life reinforced PTFE stem packing seal and thrust washer
- Vinyl insulator on heavy duty, zinc-plated, carbon steel handles
- Low operating torque
- Adjustable stem packing gland
- Each valve factory tested

Models

LFB6000 – ¼" - 4" (8 – 100mm) threaded NPT end connections (Lead Free*).
LFB6001 – ⅜" - 3" (10 – 80mm) solder end connections (Lead Free*).

Options

Suffix
LH – Locking lever handle
SH – 304 Stainless steel handle and nut
XH – Extended lever handle
TH – Tee handles ¼" – 2" (8 – 50mm)
UL – UL approved as follows:
- Flammable Liquids (YRBX)
- LP Gas (YSDT)
- Compressed Gas (YQNZ)
- Natural/Manufactured Gas (YRPV)
- Fire Protection (HNFX)
- For #1/#2 Fuel Oils (MHKZ)

Pressure – Temperature

Temperature Range: 0°F – 450°F (-18°C – 232°C) @ 50psi (3.4 bars)
Pressure Range:
¼" – 3" (8 – 80mm), 600psi (41 bar) WOG non-shock; 150psi (10 bar) WSP
4" (100mm), 400psi (28 bar) WOG non-shock; 125psi (8.6 bar) WSP

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFB6000.

Series LFFBV

2–Piece, Full Port Lead Free* Ball Valves

Sizes: ½" – 2" (15 – 50mm)

LFFBV

LEAD FREE* Series LFFBV 2-Piece, Full Port, Lead Free* Bronze Ball Valves comply with MSS-SP-110 and feature a blowout proof stem and virgin PTFE seats. The LFFBV full port design ensures maximum flow capacity and minimal pressure drop. The LFFBV features Lead Free* construction to comply with Lead Free* installation requirements.

Features

- Suitable for a full range of liquids and gases
- Minimal pressure drop due to full size ports
- Bottom loaded blowout proof stem
- Virgin PTFE stem packing seal, thrust washer and seat
- Vinyl insulator on heavy duty zinc plated carbon steel handles
- Fast quarter-turn open or close operation
- Excellent for throttling and balancing application of non-abrasive fluids where minimum flow is 20% to 100% of valve capacity
- Low operating torque
- Adjustable stem packing gland
- 600psi (41 bar) WOG, 125psi (8.6 bar) WSP

Pressure – Temperature

Temperature Range: 0°F – 350°F (-18°C – 177°C) @ 50psi (3.4 bar)

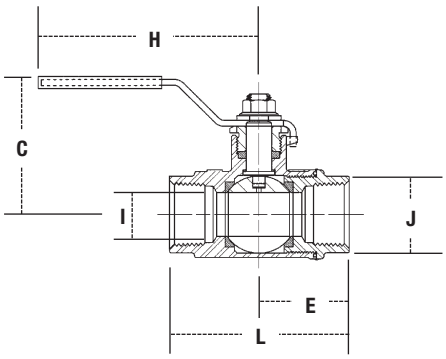
Maximum Working Pressure: 600psi (41 bar) WOG non-shock @ 100°F (38°C) and 125psi (8.6 bar) WSP

Models

LFFBV ½" – 2" (15 – 50mm) threaded end connections

For additional information, reference literature ES-LFFBV.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**



Dimensions — Weights

SIZE (DN)		DIMENSIONS										WEIGHT	
		C		E		H		I		L			
In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	lbs.	kgs.
½	15	1¾	44	1 3/32	28	3⅜	86	½	13	2 3/16	56	.6	.3
¾	20	2 1/16	52	1 9/32	33	3⅝	92	¾	19	2 9/16	65	.8	.4
1	25	2½	64	1 7/32	31	4⅜	111	1	25	3 1/16	78	1.5	.7
1¼	32	2⅝	67	1 9/16	40	4⅜	111	1¼	32	3½	89	2.5	1.1
1½	40	3⅛	79	1 5/16	49	6⅛	156	1½	38	3⅞	98	3.5	1.6
2	50	3½	89	2 7/32	56	6⅛	156	2	51	4 7/16	113	5.5	2.5

Series LFFBV-3C, LFFBVS-3C

2-Piece Full Port Brass Ball Valves

Sizes: ¼" – 4" (8 – 100mm)

LEAD FREE Series LFFBV-3C 2-piece, full ball valves are used in commercial and industrial applications for a full range of liquids and gases. They feature a bottom-loaded blowout proof stem, virgin PTFE seats, thrust washer, and adjustable stem packing gland, stem packing nut, chrome plated Lead Free* brass ball, copper silicon alloy brass adapter, and steel handle. The Series LFFBV-3C, LFFBVS-3C features Lead Free* construction to comply with Lead Free* installation requirements.

Standard material FBV-3C and FBVS-3C are also available for use in non-potable applications.

LFFBV-3C

LFFBVS-3C**

Features

- Lead Free* forged copper silicon alloy body and adapter
- Certified to NSF/ANSI standard 61/8
- CSA approved threaded valves only ¼" – 3" (15 – 80mm)
- UL/FM approved threaded valves ½" – 2" (15 – 50mm)
- UL Listed solder valves ½" – 2" (15 – 50mm)
- Fluorocarbon elastomer stem O-ring prevents stem leaks
- Adjustable stem packing gland
- PTFE stem packing seal, thrust washer, and seats
- Bottom loaded blowout proof stem
- Machined chrome plated Lead Free* brass ball
- Valves comply to MSS-SP-110 standard

Models

LFFBV-3C – ¼" – 4" (8 – 100mm), with threaded connections.
LFFBVS-3C – ½" – 3" (15 – 80mm), with solder connections.

Pressure – Temperature

Temperature Range: -40°F 50 400°F (-40°C to 204°C)

Pressure Ratings:

LFFBV-3C: Sizes ¼" – 2" (8 – 50mm) 600psi (41 bar) WOG non-shock, 150psi (10.3 bar) WSP
Sizes 2½" – 4" (65 – 100mm) 400psi (27.5 bar) WOG non-shock, 125psi (8.6 bar) WSP

LFFBVS-3C: Sizes ½" – 2" (15 – 50mm) 600psi (41 bar) WOG non-shock, 150psi (10.3) WSP
Sizes 2½" – 3" (65 – 80mm) 400psi (27.5 bar) WOG non-shock, 125psi (8.6 bar) WSP

Approvals

¼" – 3" (8 - 80mm) LFFBV-3C
Certified to NSF/ANSI standard 61/8** NSF

½" – 3" (15 – 80mm) LFFBVS-3C
Certified to NSF/ANSI standard 61/8** NSF
**Domestic cold water at 73ºF (23ºC)

½" – 2" (15 – 50mm) LFFBV-3C UL/FM approved
½" – 1" (15 – 25mm) LFFBV-3C-TH
UL FM approved

½" – 2" (15 – 50mm) LFFBVS-3C UL Listed UL
½" – 1" (15 – 25mm) LFFBVS-3C-TH

Gas Approvals (Threaded Valves Only)

¼" – ⅜" (8 – 10mm) CSA c SP® US

½ psig, 5psig, (14, 34 kPa)

@ -40ºF to 125ºF (-40ºC to 52ºC)

½" – 2" (15 – 50mm) ASME B16.33, CSA
ASME B16.44, CSA c SP® US

½ psig, 5psig, and 125psig (14, 34 and 862 kPa)
@ -40ºF to 125ºF (-40ºC to 52ºC)

2½" – 3" (65 – 80mm)

ASME B16.38, CSA
ASME B16.44, CSA c SP® US

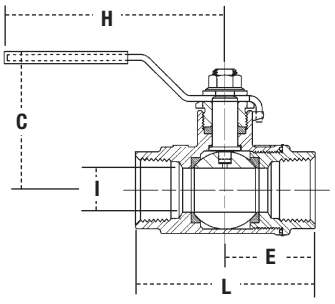
½ psig, 5psig, and 125psig (14, 34 and 862 kPa)
@ -40ºF to 125ºF (-40ºC to 52ºC)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, refer to literature ES-LFFBV-3C.
Refer to ES-FBV-3C for standard material ball valve.

Dimensions — Weights

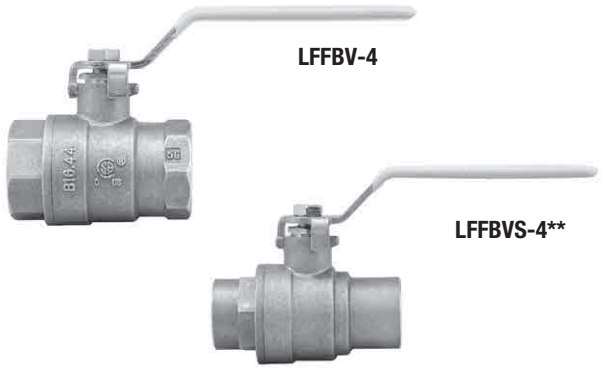
SIZE (DN)		DIMENSIONS										WEIGHT	
		C		E		H		I		L			
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg.
½	15	1¾	44	1 3/32	28	3⅜	86	½	13	2 3/16	56	.6	.3
¾	20	2 1/16	52	1 9/32	33	3⅝	92	¾	19	2 9/16	65	.8	.4
1	25	2½	64	1 7/32	31	4⅜	111	1	25	3 1/16	78	1.5	.7
1¼	32	2⅝	67	1 9/16	40	4⅜	111	1¼	32	3½	89	2.5	1.1
1½	40	3⅛	79	1 15/16	49	6⅛	156	1½	38	3⅞	98	3.5	1.6
2	50	3½	89	2 7/32	56	6⅛	156	2	51	4 7/16	113	5.5	2.5



Series LFFBV-4, LFFBVS-4

2-Piece, Full Port, Brass Ball Valves

Sizes: ¼" – 3" (8 – 80mm)



LEAD FREE* Series LFFBV-4, LFFBVS-4 2-Piece, Full Port, Lead Free* Brass Ball Valves are suitable for a full range of liquids and gases in residential and commercial applications.

These valves feature an adjustable packing for longer service life, a bottom loaded blow-out proof stem for safety, a fluorocarbon elastomer stem O-ring to prevent stem leaking at installation, and are rated to 600psi WOG/150psi WSP ¼"–2" (8–50mm) and 400psi WOG/125psi WSP 2½"–3" (65–80mm). The LFFBV-4, LFFBVS-4 features Lead Free* construction to comply with Lead Free* installation requirements.

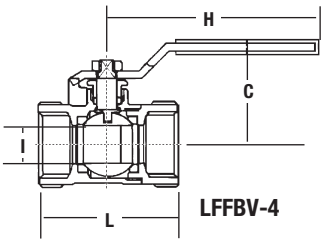
Features

- CSA approved threaded valves only ¼" – 3"
- Certified to NSF/ANSI Standard 61/8
- Metal-to-metal adapter body seal to eliminate adapter leaks after soldering
- Fluorocarbon elastomer stem O-ring prevents stem leaks
- Adjustable stem packing gland provides longer service life
- Bottom loaded blowout proof stem
- PTFE stem packing seal and seats
- Machined chrome-plated Lead Free* brass ball
- Complies with MSS-SP-110

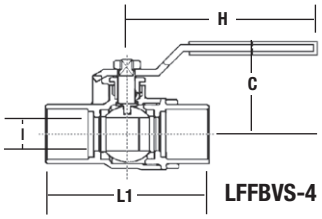
Models

LFFBV-4 – ¼" – 3" (8 – 80mm) threaded end connections

LFFBVS-4 – ½" – 3" (15 – 80mm) solder end connections**



LFFBV-4



LFFBVS-4

Approvals

¼" – 3" LFFBV-4 NSF

½" – 3" LFFBVS-4
Certified to NSF/ANSI Standard 61/8
**Domestic cold water at 73°F

Gas Approvals (Threaded Valves Only)

¼" – 3"
CSA
½ psig, 5 psig
@ -40°F to 125°F

Pressure — Temperature

Temperature Range: -40ºF to 400ºF (-40ºC to 204ºC)

Pressure Rating:

Sizes: ¼" – 2" (8 – 50mm)
600psi (41.4 bar) WOG non-shock, 150psi (10.3 bar) WSP

Sizes: 2½" – 3" (65 – 80mm)
400psi (27.6 bar) WOG non-shock, 125psi (8.6 bar) WSP

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, refer to literature ES-LFFBV-4.
Refer to ES-FBV-3C for standard material ball valve.

Dimensions — Weights

SIZE (DN)		DIMENSIONS										WEIGHT			
		C		H		I		L		L1		FBV-4		FBVS-4	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg.	lbs.	kg.
¼	8	1 13/16	46	3 7/16	87	7/16	11	1¾	45	—	—	0.4	0.16	—	—
⅜	10	1 13/16	46	3 7/16	87	½	13	1¾	44.7	—	—	0.4	0.17	—	—
½	15	1 13/16	46	3 7/16	87	½	13	2	50	2 1/16	53	0.4	0.18	0.4	0.16
¾	20	2 1/16	53	3 15/16	101	11/16	18	2¼	57	2⅝	67	0.6	0.27	0.5	0.24
1	25	2 7/16	62	4¼	108	15/16	24	2 13/16	71	3 4/16	83	1.1	0.49	1.0	0.44
1¼	32	2½	64	4¼	108	1 3/16	31	3⅛	80	3 11/16	93	1.5	0.68	1.4	0.64
1½	40	3	76	5 5/16	135	1 7/16	37	3 7/16	88	4 3/16	107	2.3	1.06	2.1	0.95
2	50	3½	89	6	153	2	51	4⅛	105	5 5/16	135	3.7	1.69	3.8	1.74
2½	65	4 1/16	104	7⅜	188	2½	64	5 5/16	134	6 3/16	158	7.9	3.57	7.2	3.27
3	80	4½	114	7¾	197	3	76	6⅛	155	7¼	184	11.8	5.37	11.0	4.99

Series LFEMVII-6400SS

Electric Motor Valves

Sizes ¼" – 3" (8 – 80mm)

LEAD FREE* Combines our positive shutoff, quarter-turn ball valves with a highly efficient, reliable, electric operator. Compact, completely assembled.

Features

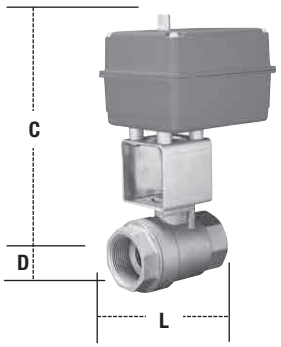
- Zone control valve for space heating with hot water or steam
- Zone control valve for air conditioning with chilled water

Pressure – Temperature

Steam working pressure: 100psi (6.9 bar), 600psi (41.4 bar) WOG for ¼" – 2" (8 – 50mm), 400psi (27.6 bar) WOG for 2½" and 3" (65 and 80mm).

Maximum operating temperature 150°F (66°C). 24VAC and 115 VAC models.

For additional information, reference literature ES-LFEMVII-6400SS.



LFEMVII-6400SS

Dimensions — Weights

MODEL	SIZE (DN)		DIMENSIONS						Cv Ratings	WEIGHT	
			C		D		L				
	in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*		*lbs.*	*kgs.*
† LFEMVII-6400SS-115-8	¼	8	7⅞	200	⅝	16	2¼	57	6.3	8.75	4.0
† LFEMVII-6400SS-115-8	⅜	10	7⅞	200	⅝	16	2¼	57	6.3	8.75	4.0
† LFEMVII-6400SS-115-8	½	15	7⅞	200	⅝	16	2¼	57	9.0	8.75	4.0
† LFEMVII-6400SS-115-35	¾	20	8	203	¾	19	2⅞	73	24.5	9.25	4.2
† LFEMVII-6400SS-24-40	1	25	8⅛	206	1	25	3⅜	86	45.5	10.25	4.6
† LFEMVII-6400SS-115-35	1¼	32	8⅞	225	2⅛	29	4	102	45.5	10.75	4.9
† LFEMVII-6400SS-24-40	1½	40	9⅛	232	1⅜	35	4⅜	111	73.0	11.75	5.3
† LFEMVII-6400SS-24-40	2	50	9½	241	1⅝	41	4⅞	124	102.0	14.25	6.5
†† LFEMVII-6400SS-115-25	2½	65	14	356	–	–	6½	165	200.0	23.00	10.4
†† LFEMVII-6400SS-115-25	3	80	14½	368	–	–	6⅞	175	300.0	27.50	12.5

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

† Sizes ¼" – 2 (8 – 50mm) are available 115-8, 115-35 and 24-40.

†† Sizes 2½" & 3" (65 & 80mm) also available 24 – 25. Contact your local Watts Agent.

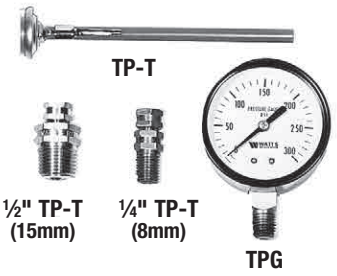
Series LFTP

Temperature or Pressure Test Plugs

Sizes: ¼" and ½" NPT (8, 15mm)

LEAD FREE* Watts LFTP Series allows you to take pressure or temperature readings - quickly - and eliminate the need for leaving costly gauges or temperature recorders on the line. Can be used on various applications of gas, air, water or chemicals to 500psi (34 bar). The LFTP features Lead Free* construction to comply with Lead Free* installation requirements. Recommended maximum temperature ratings of Neoprene is 200°F (93°C), EPDM is 275°F (135°C) and Viton® is 400°F (204°C).

The pressure gauge adapter has a .076 diameter probe of 300 series stainless steel with Lead Free* brass union nut. The probe operates in either ¼" or ½" NPT sizes to accommodate insulated pipe applications.



Features

- Allows quick and efficient temperature or pressure readings
- Eliminates leaving expensive gauges or temperature recorders in line
- Economical means of balancing heating and air conditioning systems
- Eliminates shutting down system for temperature and pressure checks

Models

Neoprene (Blue) – Natural gas and petroleum products. Temperature range -40°F – 200°F (-40°C – 93°C)

EPDM (White) – Hot and cold water service. Temperature range -40°F – 275°F (-40°C – 135°C)

Viton® (Green) – Hot oil service, chemical resistance. Temperature range -10°F – 400°F (-23°C – 204°C)

Note 1: Viton® Test Plugs are not recommended for use with probes larger than .080 diameter or continuous leakage may occur.
Note 2: Maximum temperature for TPG gauges is 185°F.

For additional information, reference literature ES-LFTP.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Dimensions — Weights

MODEL	ORDER NO.	SIZE	MATERIAL	MAX. TEMP./ PRESSURE	MASTER CARTON NO. PIECES	WEIGHT (LBS.)
LFTP-N (NEOPRENE)	0123012	¼" NPT	LEAD FREE* BRASS	200°F-500PSI	180	17
LFTP-E (EPDM)	0123005	¼" NPT	LEAD FREE* BRASS	275°F-500PSI	180	17
LFTP-V (VITON®)	0123008	¼" NPT	LEAD FREE* BRASS	400°F-500PSI	180	17
LFTP-N (NEOPRENE)	0123013	½" NPT	LEAD FREE* BRASS	200°F-500PSI	72	14
LFTP-E (EPDM)	0123006	½" NPT	LEAD FREE* BRASS	275°F-500PSI	72	14
EXTENSIONS LFTP-X (3")	0123007	¼"M X ¼"F	LEAD FREE* BRASS		90	23
LFTP-X (3")	0123009	½"M X ½"F	LEAD FREE* BRASS		36	23
GAUGES LFDPG1-30	0121638	¼" NPT	LEAD FREE* BRASS COPPER BOURDON TUBE SOCKET	185°F-30PSI	40	.06
LFDPG1-160	0121641	¼" NPT		185°F-160PSI	40	.06
LFDPG1-300	0121643	¼" NPT		185°F-300PSI	40	.06
GAUGE ADAPTORS LFTP-GA1	0123044	¼" NPT	LEAD FREE* BRASS BODY 300 SERIES SS PROBE		90	23

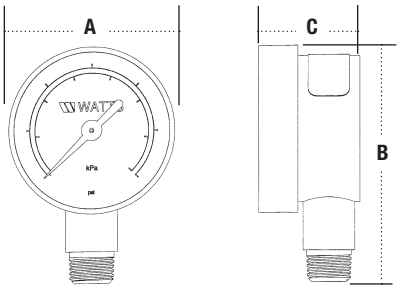
Series LFDPG1

Pressure Gauges

Size: 2", 2½", 3", 4" (50, 65, 80, 100)

Bottom Entry Pressure Gauges

LFDPG1



LEAD FREE* Series LFDPG-1 Bottom-Entry Pressure Gauges are used in commercial, residential, and institutional HVAC applications. These gauges feature ABS polymer cases, Kostil Polymer windows, 1/4" NPT connections, and copper alloy Bourdon tube sensing elements. The LFDPG-1 features Lead Free* construction to comply with Lead Free* installation requirements. Accuracy is ASME, Type B. Series LFDPG-1 gauges are available in various pressure-rating scales. The dual scale features PSI and kPa measurements.

Features

- ABS polymer case
- Kostil polymer window
- Copper alloy Bourdon sensing element
- Tin alloy welding
- 1/4" Lead Free Brass NPT connection
- ASME Type "B" accuracy

Pressure – Temperature

Working Temperature: -4°F to 176°F (-20°C to 80°C)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFDPG1.

Dimensions — Weights

MODEL	SCALE		SIZE	DIMENSIONS						WEIGHTS	
				A		B		C			
			in.	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LEAD FREE*	LFDPG1-2	0 – 15psi	103 kPa	¼	2	50	2 13/16	72	1 1/16	28	.2	.09
	LFDPG1-2	0 – 60psi	413 kPa	¼	2	50	2 13/16	72	1 1/16	28	.2	.09
	LFDPG1-2	0 – 100psi	689 kPa	¼	2	50	2 13/16	72	1 1/16	28	.2	.09
	LFDPG1-2	0 – 160psi	1103 kPa	¼	2	50	2 13/16	72	1 1/16	28	.2	.09
	LFDPG1-2	0 – 200psi	1379 kPa	¼	2	50	2 13/16	72	1 1/16	28	.2	.09
	LFDPG1-2½"	0 - 15psi	103 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 - 30psi	207 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 – 60psi	413 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 – 100psi	689 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 – 160psi	1103 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 – 200psi	1379 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-2½"	0 – 300psi	2069 kPa	¼	2½	63	3 5/16	85	1 1/8	28	.3	.14
	LFDPG1-3	0 – 15psi	103 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 30psi	207 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 60psi	413 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 100psi	689 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 160psi	1103 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 200psi	1379 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-3	0 – 300psi	2069 kPa	¼	3	80	3 7/8	99	1 1/8	29	.4	.18
	LFDPG1-4	0 – 30psi	207 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 60psi	413 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 100psi	689 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 160psi	1103 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 200psi	1379 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 300psi	2069 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23
	LFDPG1-4	0 – 600psi	4137 kPa	¼	4	100	4 3/4	120	1 1/4	31	.5	.23

Series LFDPG3

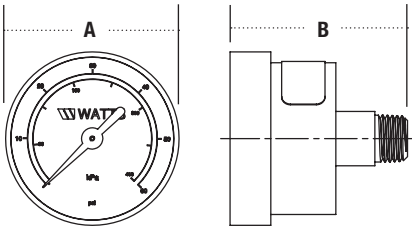
Pressure Gauges

Dial Sizes: 1½", 2", 2½", 3" (40, 50, 65, 80mm)

Center Back-Entry Pressure Gauge

LFDPG3

LEAD FREE* Series LFDPG-3 Center Back-Entry Pressure Gauges are used in commercial, residential, and institutional HVAC applications. They gauges feature ABS polymer cases, Kostil Polymer windows, 1/8" or 1/4" NPT connections, and copper alloy Bourdon tube sensing elements. The LFDPG-3 features Lead Free* construction to comply with Lead Free* installation requirements. Accuracy is ASME, Type B. Series LFDPG-3 gauges are available in various pressure rating scales. The dual scale features PSI and kPa measurements.



Features

- ABS polymer case
- Kostil polymer window
- Copper alloy Bourdon sensing element
- Tin alloy welding
- 1/8" or 1/4" NPT connections
- ASME Type “B” accuracy

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFDPG-3.

Pressure – Temperature

Working Temperature: -4°F to 176°F (-20°C to 80°C)

Dimensions — Weights

MODEL	SCALE		SIZE	DIMENSIONS				WEIGHTS	
				A		B			
			in.	in.	mm	in.	mm	lbs.	kgs.
LFDPG3-1½	0 – 160psi	1103 kPa	1/8	1½	38	1 9/16	40	.1	.05
LFDPG3-2	0 – 60psi	413 kPa	1/4	2	50	1 15/16	49	.2	.09
LFDPG3-2	0 – 160psi	1103 kPa	1/4	2	50	1 15/16	49	.2	.09
LFDPG3-2	0 – 200psi	1379 kPa	1/4	2	50	1 15/16	49	.2	.09

LEAD FREE*

Series LFDPG5

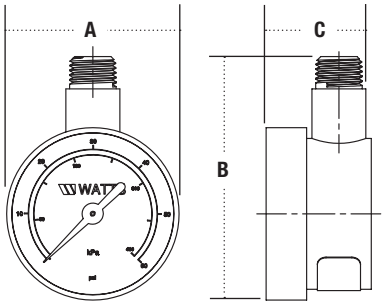
Pressure Gauges

Dial Sizes: 2" (50mm)

Top Entry Pressure Gauges

LFDPG5

LEAD FREE* LFDPG-5 Top-Entry Pressure Gauges are used in commercial, residential, and institutional HVAC applications. The LFDPG-5 features Lead Free* construction to comply with Lead Free* installations requirements. These gauges feature ABS polymer cases, Kostil Polymer windows, 1/8" or 1/4" NPT connections, and copper alloy Bourdon tube sensing elements. Accuracy is ASME, Type B. Series LFDPG-5 gauges are available in various pressure rating scales. The dual scale features PSI and kPa measurements.



Features

- ABS polymer case
- Kostil polymer window
- Copper alloy Bourdon sensing element
- Tin alloy welding
- 1/8" or 1/4" Lead Free Brass NPT connections
- ASME Type "B" accuracy

Pressure – Temperature

Working Temperature: -4°F to 176°F (-20°C to 80°C)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFDPG-5.

Dimensions — Weights

MODEL	SCALE		SIZE	DIMENSIONS						WEIGHT	
				A		B		C			
			in.	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LFDPG5-2	0 – 160psi	1103 kPa	1/8	2	50	2 11/16	68	1 1/16	27	.15	.07
LFDPG5-2	0 – 160psi	1103 kPa	1/4	2	50	2 13/16	71	1 1/16	27	.2	.09

Series LFDPTG3

Center Back Entry Combination Pressure/ Temperature Gauges

Dial Sizes: 2½" and 3" (65, 80mm)

3" Dial 2½" Dial

LFDPTG3

LEAD FREE* Series LFDPTG-3 Combination Pressure and Temperature Gauges are used in commercial, residential, and institutional HVAC applications. These gauges are center back entry type models with black enamel steel cases, Kostil Polymer windows, 1/2" NPT connections, copper alloy Bourdon tube pressure elements, and bimetal spiral springs. The LFDPTG-3 features Lead Free* construction to comply with Lead Free* installation requirements. Accuracy is ASME, Type B. Series LFDPG-5 gauges are available in various pressure rating scales. The dual scale features PSI and kPa measurements.

Features

- Black enamel steel case
- Kostil polymer window
- Copper alloy Bourdon pressure element
- Bimetal spiral spring temperature element
- Tin alloy welding
- 1/2" Lead Free Brass NPT connection
- ASME Type "B" accuracy

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

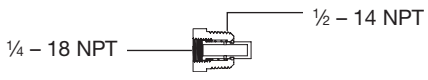
Pressure – Temperature

Working Temperature: 60°F – 320°F (20°C to 160°C)

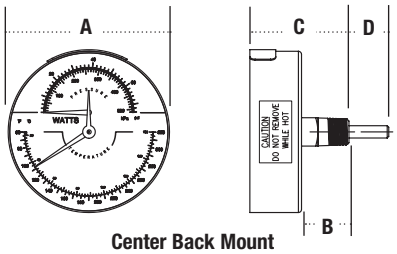
Models

LFDPTG-3 - Center back entry
LFDPTG-3A - Center back entry with extended temperature element
LFDPTG-3L - Center back entry with extended mounting nut

For additional information, reference literature ES-LFDPTG-3.



½" DPG-VR retaining valve included with gauge as indicted in table.



Center Back Mount DPTG3

Dimensions — Weights

MODEL	SCALE		TEMP. RANGE		INCLUDES VR RETAINING VALVE	SIZE	DIMENSIONS								WEIGHTS	
							A		B		C		D			
			°F	°C		in.	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LFDPTG3-2½	0 – 50psi	340 kPa	60 – 320	15-160	Y	½	2½	64	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3-2½	0 – 75psi	520 kPa	60 – 320	15-160	Y	½	2½	64	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3-2½	0 – 200psi	1379 kPa	60 – 320	15-160	Y	½	2½	64	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3-2½	0 – 75psi	520 kPa	60 – 320	15-160	N	¼	2½	64	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3-3	0 – 50psi	340 kPa	60 – 320	15-160	Y	½	3	76	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3-3	0 – 200psi	1379 kPa	60 – 320	15-160	Y	½	3	76	1	25	1 15/16	49	⅞	23	.5	13
LFDPTG3A-2½	0 – 75psi	520 kPa	60 – 320	15-160	N	¼	2½	64	1	25	1 15/16	49	2	51	.5	13
LFDPTG3A-3	0 – 75psi	520 kPa	60 – 320	15-160	N	¼	3	76	1	25	1 15/16	49	2	51	.5	13
LFDPTG3L-2½	0 – 75psi	520 kPa	60 – 320	15-160	N	¼	2½	64	2	51	3 15/16	100	1	25	.5	13
LFDPTG3L-3	0 – 75psi	520 kPa	60 – 320	15-160	N	¼	3	76	2	51	3 15/16	100	1	25	.5	13

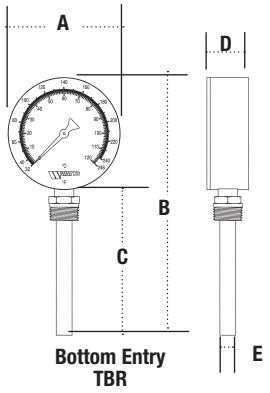
LEAD FREE*

Series LFTBR

Bottom Entry Bimetal Thermometers

Dial Size: 3" (80mm)

LEAD FREE* Series LFTBR Bottom-Entry Bimetal Lead Free* Thermometers are used in commercial, residential, and institutional HVAC applications. These thermometers feature chrome steel cases, Kostil polymer windows, Lead Free* brass stems, brass amplifying movements, ½" NPT Lead Free* brass snap-in thermowells, and bimetal spiral spring sensing elements. The LFTBR features Lead Free* construction to comply with Lead Free* installlation requirements. The Series LFTBR thermometers are available in various temperature rating scales.



Bottom Entry
TBR


LFTBR

Features

- Chrome steel case
- Kostil polymer window
- Lead Free* Brass stem
- Brass amplifying movements
- ½" NPT Lead Free* brass snap-in thermowells
- Bimetal spiral spring sensing element

Pressure – Temperature

Working Temperature: 32°F to 248°F (0°C to 120°C) or
-22°F to 122°F (-30°C to 50°C)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFTBR.

Dimensions — Weights

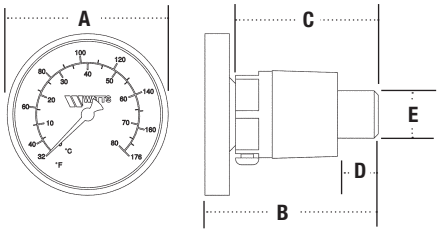
SIZE	MODEL	SCALE		PROBE SIZE		DIMENSIONS										WEIGHT	
						A		B		C		D		E			
in.		*°F*	*°C*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
½	LFTBR-3-232-248	32 – 248	0 – 120	2	51	3	80	5⅜	137	2	51	1 3/16	30	7/16	11	.4	.18
½	LFTBR-3-332-140	32 – 140	0 – 60	4	102	3	80	7 5/16	186	3 15/16	100	1 3/16	30	7/16	11	.8	.36

Series LFTB

Center Back Entry Bimetal Thermometers

Dial Size: 1½", 2½", 3", 4" (40, 65, 80, 100mm)

LEAD FREE* Series LFTB Center Back-Entry Bimetal Lead Free* Thermometers are used in commercial, residential, and institutional HVAC applications. These thermometers feature zinc plated steel cases, Kostil Polymer windows. They are furnished with a ½" NPT Lead Free* brass thermowells with set screw, and bimetal spiral spring sensing elements. The LFTB features Lead Free* construction to comply with Lead Free* installlation requirements. Series LFTB thermometers are available in various temperature rating scales, probe lengths and dual reading scale (°F, °C).



Center Back Entry
TB


LFTB

Features

- Zinc plated steel case
- Kostil polymer window
- Furnished with 1/2" NPT Lead Free* brass thermowells with set screw
- Bimetal spiral spring sensing element

Pressure – Temperature

Differs According to Model
Working Temperature Range: -22°F to 248°F (-30°C to 120°C)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFTB.

Dimensions — Weights

SIZE	MODEL	SCALE		PROBE SIZE		DIMENSIONS										WEIGHT	
						A		B		C		D		E			
in.		*°F*	*C°*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs*	*kgs*
½	½ LFTB-1½-132-176	32 – 176	0 – 80	1	25	1½	40	1 9/16	40	1⅜	35	⅜	10	7/16	11	0.4	0.18
½	½ LFTB-2½-232-140	32 – 140	0 – 60	2	51	2½	63	2⅜	60	1 15/16	49	1	25	7/16	11	0.4	0.18
½	½ LFTB-2½-4 32-248	32 – 248	0 – 120	3	76	2½	63	2⅜	60	1 15/16	49	1	25	7/16	11	0.4	0.18
½	½ LFTB-2½-232-248	32 – 248	0 – 120	4	102	2½	63	4⅜	111	3 15/16	100	2 15/16	75	7/16	11	0.4	0.18
½	½ LFTB-3-2-144	-22 – 122	30 – 49	2	51	3	80	2⅝	67	1 15/16	49	1	25	7/16	11	0.4	0.18
½	½ LFTB-3-2 32-248	32 – 248	0 – 120	2	51	3	80	2 9/16	64	1 15/16	49	1	25	7/16	11	0.4	0.18
½	½ LFTB-3-4 32-140	32 – 140	0 – 60	4	102	3	80	4 9/16	126	3 15/16	100	2 15/16	75	7/16	11	0.8	0.36
½	½ LFTB-4-2 32-248	32 – 248	0 – 120	2	51	4	100	2⅝	67	1 15/16	49	1	25	7/16	11	1.2	0.54

Series TBP

Pipe-Mount Bimetal Thermometers

Dial Size: 2½" (65mm)

Type: Pipe Mount

Case: Steel, Black Enamel

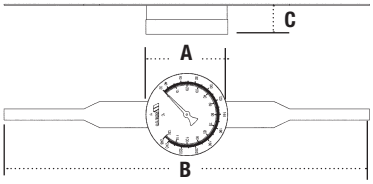
Ring: Chromed Steel

Window: Kostil Polymer

Sensing Element: Bimetal Spiral Spring

For additional information, reference literature ES-TBP.

TBP



Dimensions — Weights

MODEL	SIZE (DN)		SCALE	FIXING PART	DIMENSIONS						WEIGHT	
					A		B		C			
	in.	*mm*	*°F*		*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
TBP-M-2½	½	15	32 – 248	spring	2½	63	–	–	⅞	22	.4	.18
TBP-F-2½	½	15	32 – 248	strip	2½	63	11	279	⅞	22	.4	.18

Series TBC

Bimetal Thermometers
Chimney Mount Center Back Entry

Dial Size: 2½" (65mm)

Type: Chimney Mount-Center Back Entry

Case: Steel, Zinc Plate

Ring: Chromed Steel

Window: Glass

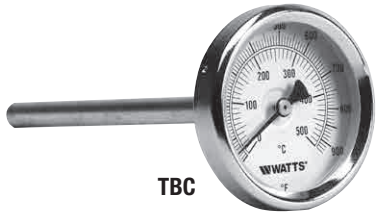
Stem: Brass

Sensing Element: Bimetal Spiral Spring

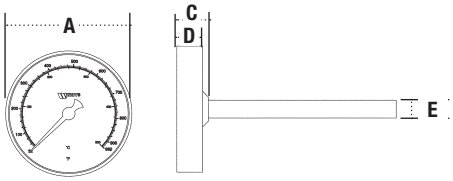
Stem: Zinc Plated Steel

Thermowell: None

For additional information, reference literature ES-TBC.



TBC



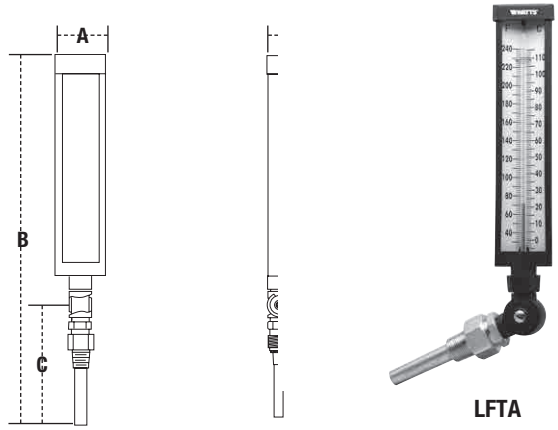
Dimensions — Weights

MODEL	SCALE	PROBE SIZE		DIMENSIONS										WEIGHTS	
				A		B		C		D		E			
	°F	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
TBC-2½-4	32 – 932	4	102	2½	63	4⅜	111	½	13	⅝	16	⅜	9	.5	.23
TBC-2½-6	32 – 932	6	152	2½	63	6 5/16	160	½	13	⅝	16	⅜	9	.5	.23
TBC-2½-8	32 – 932	8	203	2½	63	8 5/16	211	½	13	⅝	16	⅜	9	.5	.23
TBC-2½-12	32 – 932	12	305	2½	63	12¼	311	3 15/16	100	2 15/16	75	⅜	9	.5	.23

Series LFTA

Liquid Fill Thermometers

Adjustable Angle Thermometer
Scale Size: 9"



LEAD FREE* Series LFTA Liquid-Fill, Adjustable Angle Lead Free* Thermometers are used in commercial, residential, and institutional HVAC applications. These thermometers are sealed glass tube type models with a Valox case, glass lens, non-mercury sensing fluids, and a Lead Free* brass thermowell. The LFTA features Lead Free* construction to comply with Lead Free* installation requirements. Accuracy is +/-1 % of full scale. Series LFTA thermometers are available in various temperature rating scales.

Features

- Valox case
- Glass lens
- Non-Mercury sensing fluids
- Lead Free* Brass thermowell

Pressure – Temperature

Differs According to Model
Working Temperature Range: From -40°F to 300°F (From -40°C to 148°C)

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LFTA.

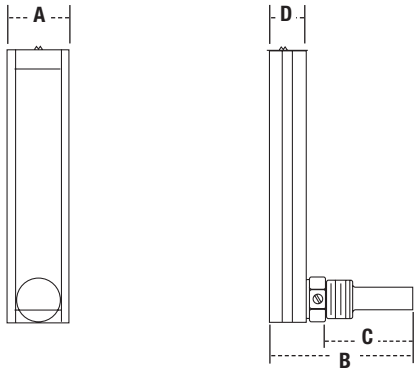
Dimensions — Weights

MODEL	TEMP. RANGE	SIZE (DN)		STEM		DIMENSIONS								WEIGHT	
						A		B		C		D			
	°F	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg.
LFTA-9-3.5 0-12	0 - 120	¾	20	3½	89	2⅜	60	17⅜	442	5⅝	144	1 1/16	26	1.65	.75
LFTA-9-3.5 0-160	20 - 160	¾	20	3½	89	2⅜	60	17⅜	442	5⅝	144	1 1/16	26	1.65	.75
LFTA-9-3.5 30-240	30 - 240	¾	20	3½	89	2⅜	60	17⅜	442	5⅝	144	1 1/16	26	1.65	.75

Model LFTL

Liquid Fill Angle Thermometers

Scale Size: 5"



LEAD FREE*

Features

- Lead Free* construction to comply with Lead Free* installation requirements
- Glass lens
- Non-Mercury sensing fluids
- Lead Free* Brass 1/2" NPT thermowell

Temperature

Working Temperature Range: 32°F to 932°F (0°C to 500°C)

For additional information, reference literature ES-LFTL.

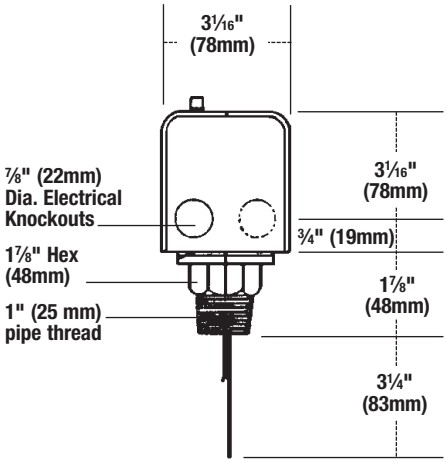
Dimensions — Weights

MODEL	TEMP. RANGE	SIZE		STEM		DIMENSIONS										WEIGHT	
						A		B		C		D		E			
	°F	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LFTL-5-2 30-240	30 – 240	½	20	1 5/16	33	1⅜	34	3⅛	79	1⅞	48	13/16	21	5 13/16	147	.52	24

Series FS10-C

Paddle-Type Flow Switch Actuated by Liquid Flow for Automatic Control or Safety Devices

Used to monitor liquid flow in pipelines servicing water systems, heating systems, air conditioning and processing installations. An automatic control or safety device will start/stop a motor when a flow or no flow condition exists or actuate an alarm when flow is inadequate.



Features

- Segmented 3 in 1 paddle-beryllium copper
- Paddle adaptable for 1" – 3" (25 – 80mm) pipe
- Extended paddle for large pipe sizes up to 6" (150 mm)

Standards

GENERAL SIGNALING EQUIPMENT LISTED 11S1

Underwriter's Laboratories Listed U.S.A. No. 11S1

Pressure – Temperature

Maximum Pressure: 175psi (12.1 bar).
Maximum Temperature: 300°F (93°C). 1" (25mm) NPT connection

FS10-C – Standard unit
FS10-CL – with indicator light

For additional information, reference literature ES-FS10-C.

Series FS20

Nema 4X Type Flow Switch

Sizes: For Pipes 1" - 6" (25 - 150mm)

Used as an automatic control or safety device. Provides accurate monitoring of flow in pipelines servicing water systems. Recommended for use in installations requiring Nema 4X watertight, dust-tight and corrosion-resistant enclosures. It can be wired to start or stop a motor when a flow or no flow condition exists or actuate an alarm.

FS20

Features

- Segmented 3 in 1 paddle - beryllium copper
- Paddle adaptable for 1" – 3" (25mm – 80mm) pipe
- Extended paddle for larger pipe size to 6" (150mm)

Pressure – Temperature

Maximum Pressure: 150psi (10.3 bar)
Maximum Temperature: 300°F (149°C). Shipping weight 3 lbs (1.4 kg.).
1" (25mm) NPT connection

For additional information, reference literature ES-FS20.

Series 77SM1

Cast Iron, Wye-Pattern Strainers

Sizes ¼" – 3" (8 – 80mm)

77S-M1

LEAD FREE* The Series 77S Threaded, Wye-Pattern, Cast Iron Strainers are manufactured by Watts. These strainers are designed to protect system components from dirt, rust, and other damaging debris in the piping system. Series 77S are used in steam and liquid applications. They are furnished with a machined seat that allows the screen to be self-aligning to assure a perfect fit. All sizes come with a PTFE gasket, threaded screen retainer cap, tapped blowdown connection, and an easily removable stainless steel screen. Blowdown plug is not furnished.

Features

- Cast iron body
- Wye-pattern
- Tapped retainer cap
- Threaded connections

Pressure – Temperature

Maximum Working Pressure:

400psi (27.6 bar) @ 150ºF (66ºC) WOG

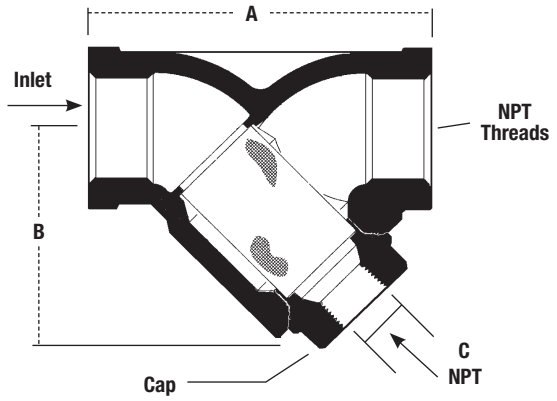
250psi (17.2 bar) @ 406ºF (208ºC) WSP

For additional information, reference literature ES-77S-M1.

BAA/ARRA Compliant*

*This product complies with the Buy American Act and The American Recovery and Reinvestment Act. For more information, visit watts.com.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**



Dimensions — Weights

MODEL	SIZE		DIMENSIONS						WEIGHTS	
			A		B		C (NPT)			
	In.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
77S M1	¼	8	3	76	2¼	57	⅜	10	1.3	.6
77S M1	⅜	10	3	76	2¼	57	⅜	10	1.3	.6
77S M1	½	15	3	76	2¼	57	⅜	10	1.3	.6
77S M1	¾	20	3 5/16	84	2 7/16	62	½	15	1.7	.8
77S M1	1	25	4½	114	3	76	¾	20	3.7	1.7
77S M1	1¼	32	5 3/16	132	3¼	83	¾	20	4.6	2.1
77S M1	1½	40	5⅞	149	3 13/16	97	¾	20	6.4	2.9
77S M1	2	50	6 3/16	157	5¼	133	¾	20	11.6	5.3
77S M1	2½	65	8 3/16	208	5⅛	130	1	25	15.5	7.0
77S M1	3	80	10 3/16	259	6 3/16	157	1½	40	26.0	11.8

Series LF777S, LFS777

Wye-Pattern Lead Free* Bronze Strainers

Sizes ¼" – 4" (8 – 100mm)

LF777

LFS777

LEAD FREE* Series LF777, LFS777 Wye-Pattern Lead Free* cast copper silicon alloy Strainers are designed to protect system components from dirt, rust and other damaging debris in the piping system. This series features a solid retainer cap with gasket. The LF777 and LFS777 features Lead Free* construction to comply with Lead Free* installation requirements.

Features

- Lead Free* cast copper silicon alloy body
- Wye-pattern
- Solid retainer cap with gasket

Models

LF777 – ¼" – 4" (8 – 100mm) threaded connections

LFS777 – ½" – 2" (15 – 50mm) solder connections

Pressure – Temperature

Maximum Working Pressure:

¼" – 3" (8-75mm) 400psi (27.6 bar) WOG @ 210ºF (99ºC), 125psi (8.6 bar) WSP @ 353ºF (178ºF)

4" (100mm) 300psi (20.7 bar) WOG @ 210ºF (99ºC), 125psi (8.6 bar) WSP @ 353ºF (178ºF)

BAA/ARRA Compliant**

**This product complies with the Buy American Act and The American Recovery and Reinvestment Act. For more information, visit watts.com.

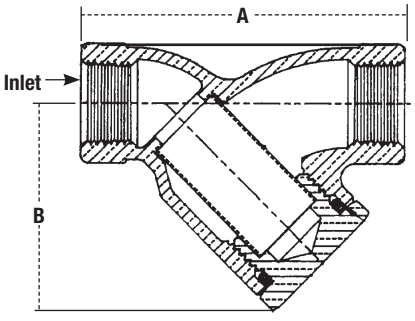
***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

For additional information, reference literature ES-LF777.

Dimensions – Weights

LF777

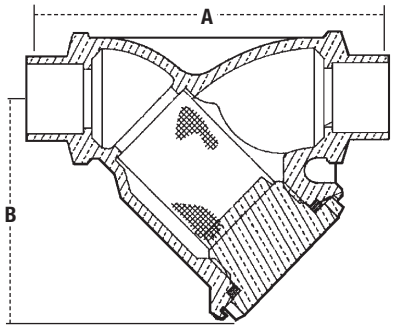
SIZE (DN)		DIMENSIONS				WEIGHT	
		A		B			
in.	mm	in.	mm	in.	mm	lbs.	kgs.
¼	8	2 11/16	68	1 11/16	43	1.7	0.77
⅜	10	2 11/16	68	1 11/16	43	1.7	0.77
½	15	3	76	2	51	1.7	0.77
¾	20	3 5/16	84	2 5/16	59	1.7	0.77
1	25	4½	114	2 5/16	59	2.7	1.22
1¼	32	5⅛	130	3⅛	79	3.0	1.36
1½	40	5⅞	149	3¾	95	4.0	1.81
2	50	6 3/16	157	4⅞	124	7.4	3.36
2½	65	8⅛	206	4 15/16	125	12.0	5.44
3	75	10⅛	257	6 11/16	170	24.0	10.90
4	100	13	325	10½	267	41.0	18.60



LF777

LFS777

SIZE (DN)		DIMENSIONS				WEIGHT	
		A		B			
in.	mm	in.	mm	in.	mm	lbs.	kgs.
½	15	3⅜	86	2 1/16	52	1.5	0.68
¾	20	3¾	95	2 7/16	63	1.6	0.73
1	25	5	127	3	76	2.5	1.13
1¼	32	5⅝	143	3¼	82	2.8	1.25
1½	40	6 7/16	164	3 13/16	97	4.0	1.81
2	50	7½	191	4⅝	118	7.4	3.39



LFS777

For Technical and Ordering Assistance, please call us at 978-688-1811.

To locate your nearest Watts representative, please click on our *find a sales rep* locator on watts.com.

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