

## ACV Schematic

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# LFF115 (Globe)

## Pressure Reducing Control Valve

### Features

- Throttles to reduce high upstream pressure to constant lower downstream pressure
- Reducing setpoint is adjustable

### Standard Components

- 1—Main Valve (Single Chamber)
- 2—Pressure Reducing Control
- 3—Fixed Orifice
- X—Isolation Cocks

### Options and Accessories

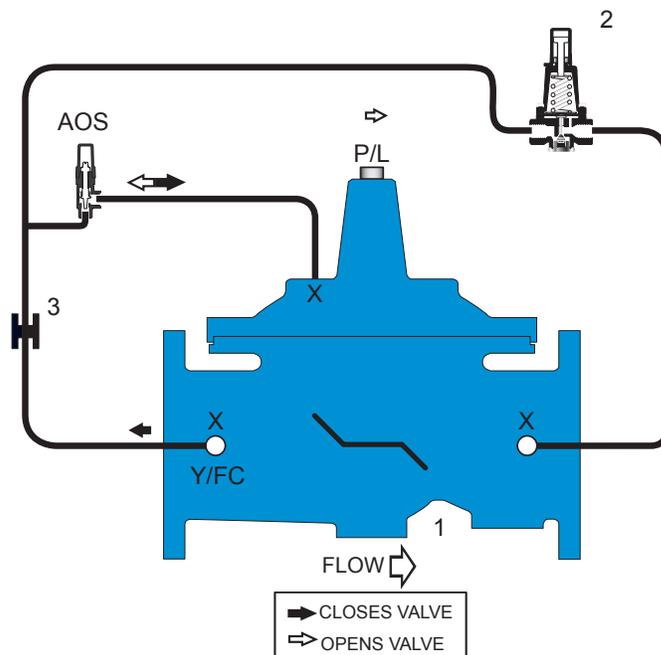
- FC Flo-Clean Strainer (Standard 1 ¼" – 4")
- Y Y-Strainer (Replaces Flo-Clean)
- ACS Adjustable Closing Speed (Replaces Fixed Orifice)
- AOS Adjustable Opening Speed (Standard 1 ¼" – 4")
- P Position Indicator
- L Limit Switch

### Operation

The ACV Pressure Reducing Control Valve is designed to automatically reduce a fluctuating higher upstream pressure to a constant lower downstream pressure regardless of varying flow rates. It is controlled by a normally open, pressure reducing pilot designed to:

- 1) Open (allowing fluid out of the main valve cover chamber) when downstream pressure is below the adjustable setpoint, and
- 2) Close (allowing fluid to fill the main valve cover chamber) when downstream pressure is above the adjustable setpoint.

A decrease in downstream pressure causes the valve to modulate toward an open position, raising downstream pressure. An increase in downstream pressure causes the valve to modulate toward a closed position, lowering downstream pressure.



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

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## Classic Series Basic Valves

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## F100 / F1100

### Full Port Ductile Iron Single Chamber Basic Valve

The Watts ACV Models F100 and F1100 are full port, single chamber basic valves that incorporate a one-piece disc and diaphragm assembly. This assembly is the only moving part within the valve allowing it to open, close, or modulate as commanded by the pilot control system.

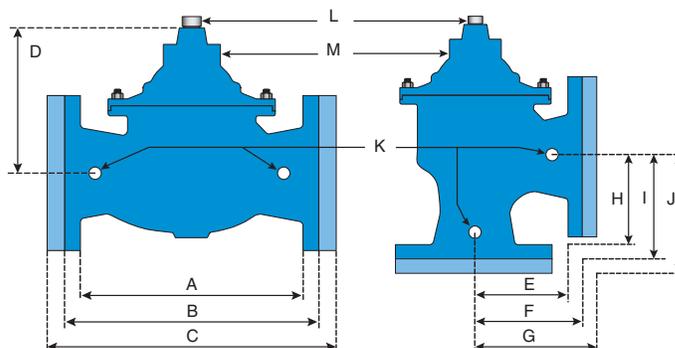
Watts ACV Main Valves are Lead Free. The Watts ACV piloting system contains Lead Free\* components, ensuring all of our configurations are Lead Free compliant.

**Model F100:** Globe Pattern Single Chamber Basic Valve

**Model F1100:** Angle Pattern Single Chamber Basic Valve

F100 (Globe)

F1100 (Angle)



### Dimensions

Valve Size	Globe Thread		Globe 150#		Globe 300#		Cover To Center		Angle Thread		Angle 150#		Angle 300#		Angle Thread		Angle 150#		Angle 300#		Port Size NPT	Port Size NPT	Port Size NPT	Shipping Weights*	
	A		B		C		D		E		F		G		H		I		J		K	L	M	lbs.	kgs.
in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	in.	in.		
1¼	7¼	184					3½	89	3¼	83					1⅞	48					¼	½	⅜	15	7
1½	7¼	184	8½	216			3½	89	3¼	83	4	102			1⅞	48	4	102			¼	½	⅝	15	7
2	9⅜	238	9⅜	238	10	254	4⅞	125	4	102	4	102	4¼	108	4	102	4	102	4¼	108	½	½	¾	35	16
2½	11	279	11	279			7	178	5½	140	5½	140	5⅜	148	4	102	4	102	4⅞	110	½	½	¾	65	30
3	10½	267	12	305	13¼	337	7	178	5¼	133	5¾	146	6⅞	156	5¼	133	5¾	146	6⅞	156	½	½	¾	95	43
4			15	381	15⅝	397	8⅝	219			6¾	171	7⅞	181			6¾	171	7⅞	181	½	½	¾	190	86
6			20	508	21	533	11¾	298			8½	216	8⅞	225			8½	216	8⅞	225	½	½	½	320	145
8			25⅜	645	26⅜	670	15¾	400			11	279	11½	292			11	279	11½	292	½	1	½	650	295
10			29¾	756			18¾	476													1	1	1	940	426

### Standard Materials

Body & Cover: Ductile Iron ASTM A536

Coating: NSF Listed Fusion Bonded Epoxy Lined and Coated

Trim: 316 Stainless Steel

Elastomers: Buna-N (standard)  
EPDM (optional)  
Viton (optional)

Stem, Nut & Spring: Stainless Steel

### Operating Pressure

Threaded = 400psi (27.6 bar)

150 Flanged = 250psi (17.2 bar)

300 Flanged = 400psi (27.6 bar)

### Operating Temperature

Buna-N: 160°F (71°C) Maximum

EPDM: 300°F (140°C) Maximum

Viton®: 250°F (121°C) Maximum

Epoxy Coating\*\*: 140°F (60°F) Maximum

\*\* Valves can be provided without internal epoxy coating consult factory

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

Viton® is a registered trademark of DuPont Dow Elastomers.

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# F100 / F1100 – Full Port Ductile Iron Single Chamber Basic Valve

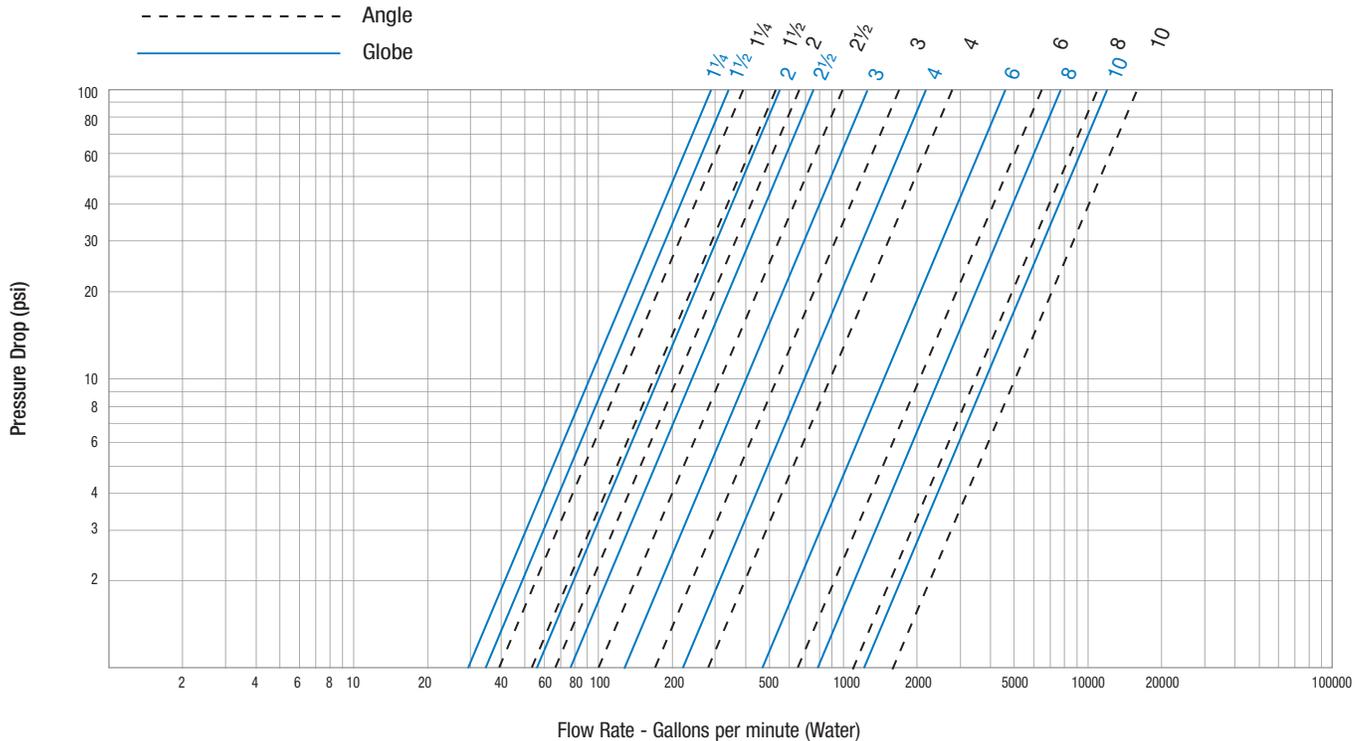
## Flow Data - ACV F100 (Globe) / F1100 (Angle)

Valve Size - Inches		1¼	1½	2	2½	3	4	6	8	10
Suggested	Maximum Continuous Flow Rate Gpm (Water)	93	125	208	300	460	800	1800	3100	4900
	Maximum Intermittent Flow Rate Gpm (Water)	115	158	260	370	570	1000	2300	3900	6000
	Minimum Flow Rate Gpm (Water)	3	5	6	9	15	16	17	25	55
C <sub>v</sub>	Factor GPM (Globe)	29	34	55	75	125	220	460	775	1200
	Factor GPM (Angle)	39	53	66	99	170	280	650	1100	1600

- Maximum continuous flow based on velocity of 20 ft. per second.
- Maximum intermittent flow based on velocity of 25 ft. per second.
- Minimum flow rates based on a 20-40 psi pressure drop.
- The C<sub>v</sub> Factor of a valve is the flow rate in US GPM at 60°F that will cause a 1psi drop in pressure.
- C<sub>v</sub> factor can be used in the following equations to determine Flow (Q) and Pressure Drop (ΔP):

$$Q \text{ (Flow)} = C_v \sqrt{\Delta P} \quad \Delta P \text{ (Pressure Drop)} = (Q/C_v)^2$$

- The C<sub>v</sub> factors stated are based upon a fully open valve.
- Many factors should be considered in sizing control valves including inlet pressure, outlet pressure and flow rates.
- For sizing questions including cavitation analysis consult Watts with system details.



## Valve Cover Chamber Capacity

Valve Size - Inches	1¼	1½	2	2½	3	4	6	8	10
fl.oz.	4	4	4	10	10	22	70		
U.S. Gal								1 ¼	2 ½

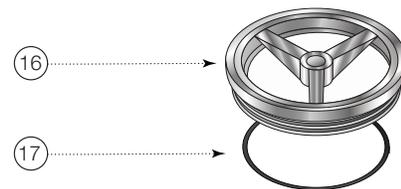
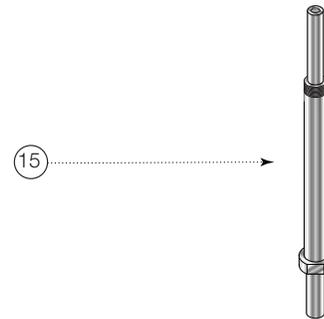
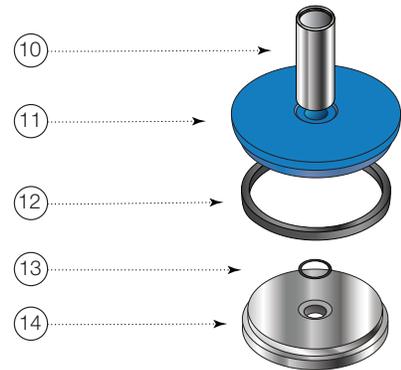
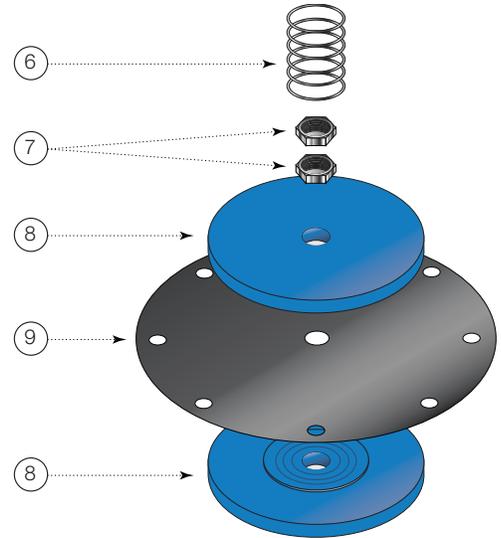
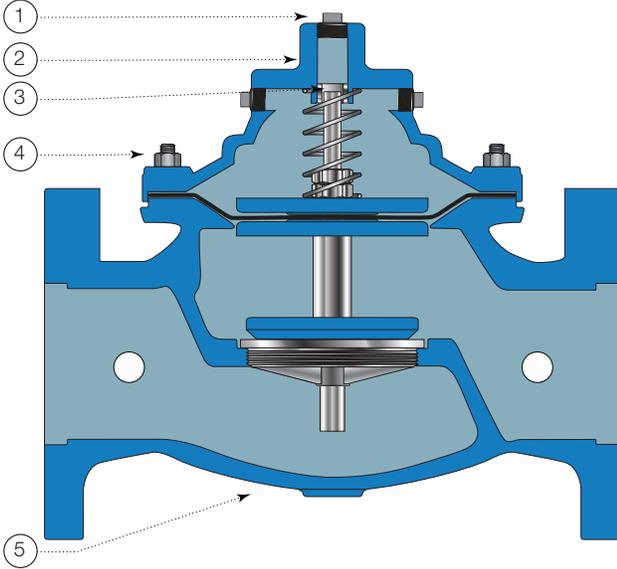
## Valve Travel

Valve Size - Inches	1¼	1½	2	2½	3	4	6	8	10
Travel - Inches	¾	¾	½	¾	¾	1	1½	2	2½

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## F100

### Full Port Ductile Iron Single Chamber Basic Valve



Item	Description	Material
1	Pipe Plug	Lead Free Brass
2	Cover	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
3	Cover Bearing	ASTM A276 304 Stainless Steel
4	Stud with Cover Nut and Washer	ASTM A570 Gr.33 Zinc Plated Steel
5	Body	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
6	Spring	ASTM A276 302 Stainless Steel
7	Stem Nut	ASTM A276 304 Stainless Steel
8	Diaphragm Washer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
9	Diaphragm*	Buna-N (Nitrile)
10	Spacer	ASTM A276 304 Stainless Steel
11	Quad Seal Retainer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
12	Quad Seal*	Buna-N (Nitrile)
13	O-Ring*	Buna-N (Nitrile)
14	Quad Seal Plate	ASTM A743 CF8M (316) Stainless Steel
15	Shaft / Stem	ASTM A276 304 Stainless Steel
16	Seat Ring	ASTM A743 CF8M (316) Stainless Steel
17	Seat Gasket*	Buna-N (Nitrile)

\* Contained in Main Valve Repair Kit



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## Model LF263AP

### Pressure Reducing Pilot

**Size: ½" NPT**

The Model LF263AP is a direct acting, diaphragm actuated control pilot that automatically reduces a higher upstream (inlet) pressure to a constant downstream (outlet) pressure. It is normally held open by the force of the adjustable spring setting above the diaphragm.

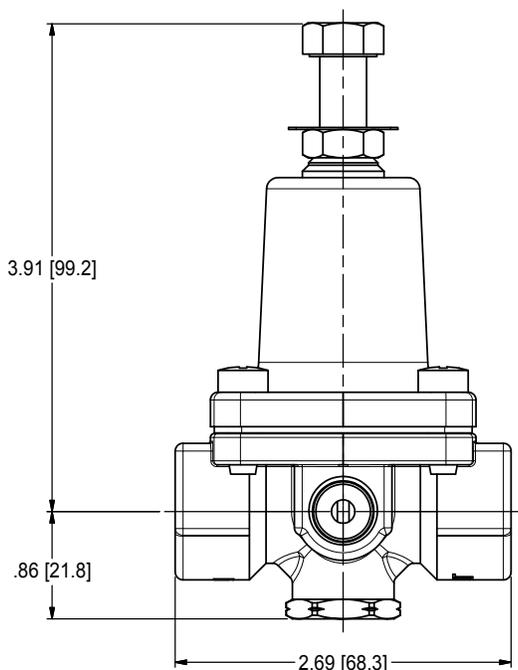
The pilot modulates towards a closed position when outlet pressure exceeds the spring setpoint, lowering the delivery pressure. It modulates towards an open position when the outlet pressure falls below the spring setpoint, increasing the delivery pressure.

When a Model LF263AP is installed in the piping circuit of an Automatic Control Valve, its throttling action causes the Main Valve to throttle open or closed accordingly. Turning the adjustment screw clockwise raises the control setpoint, increasing valve outlet pressure. Turning the adjustment screw counterclockwise lowers the control setpoint, decreasing valve outlet pressure.

The Model LF263AP is equipped with ½" NPT inlet and outlet ports and a ¼" NPT side outlet port. The ¼" NPT side outlet port may be plugged or used as an outlet pressure gauge connection.



Model LF263AP



### Specifications

<b>Size:</b>	½" NPT
<b>Body Material:</b>	Lead Free Brass
<b>Seat:</b>	Stainless Steel
<b>Elastomers:</b>	Buna-N
<b>Inlet Pressure Rating:</b>	400psi maximum
<b>Adjustment Range:</b>	20-175 (standard) 0-30 (optional)

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

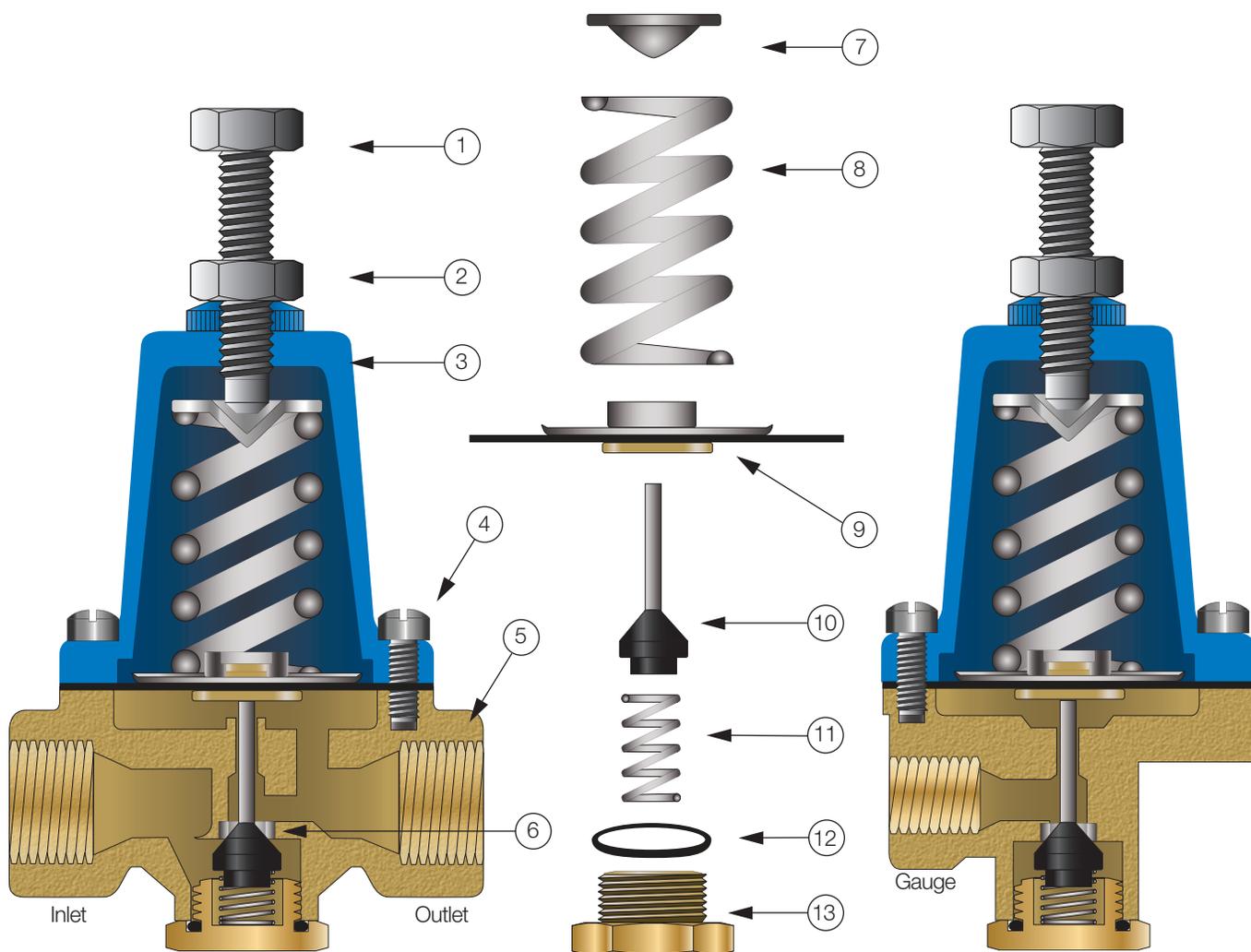
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## Model LF263AP Pressure Reducing Pilot



Item	Description
1	Adjusting Screw
2	Jam Nut
3	Spring Housing
4	Cap Screw
5	Body
6	Spring Guide
7	Spring
8	Diaphragm Washer
9	Diaphragm*
10	Stem Guide
11	O-Ring*
12	Stem Assembly*
13	Spring
14	O-Ring*
15	Bottom Cap

\*Included in Repair Kit



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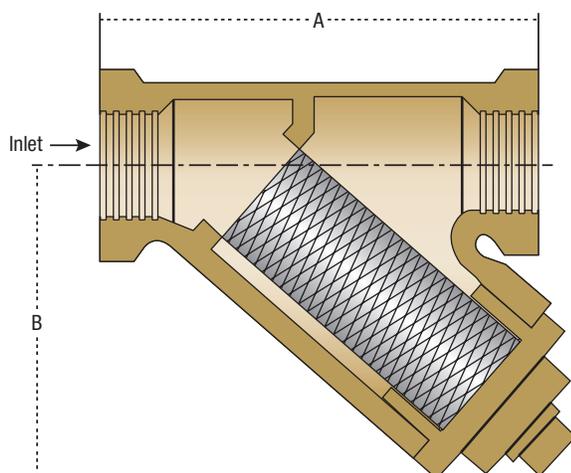
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## Model LF60-1

### Y-Pattern Strainer

Size: 1/4" - 3/4" NPT

Model LF60-1 Y-Pattern Strainers are used to filter the fluid passing through the pilot circuit, and provide protection to pilot circuit speed controls and pilots. The filter element can be accessed for cleaning by removing the clean-out cap, or may be cleaned by installing an optional "blow-down" ball valve.



### Specifications

<b>Body Material:</b>	Lead Free Copper Silicon Alloy CF8M (316) Stainless Steel (optional)
<b>Retainer Cap:</b>	Lead Free Copper Silicon Alloy
<b>Cap Gasket:</b>	EPDM
<b>Pressure Rating:</b>	400psi (27.6 bar)
<b>Filter Element:</b>	304 Stainless Steel
<b>Mesh Options:</b>	60 Mesh (standard) 100 Mesh (optional)

### Dimensions

SIZE	DIMENSIONS				WEIGHT	
	A		B		lbs.	kgs.
in.	in	mm	in	mm		
1/4	211/16	68	111/16	43	1.7	0.77
3/8	211/16	68	111/16	43	1.7	0.77
1/2	3	76	2	51	1.7	0.77
3/4	35/16	84	25/16	59	1.7	0.77

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

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# Controls and Accessories

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## Model LFFC

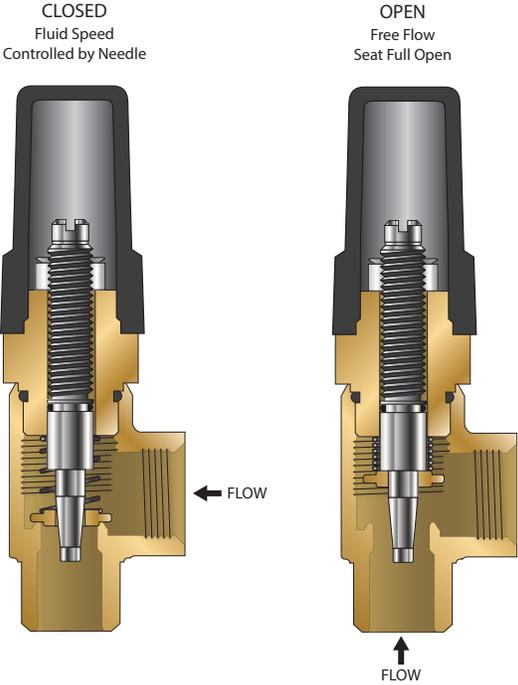
### Flow Control

Size: 1/2" NPT

A Flow Control is an adjustable device used for tuning valve performance. It can be installed to either control the opening or closing the speed of the automatic control main valve. When the flow is in the direction of the needle the flow control is an adjustable restriction. In the free flow direction the seat moves out of the flow path to all unrestricted flow.



LFFC Flow Control



### Specifications

- Size:** 1/2" NPT
- Body Material:** Lead Free Brass  
Stainless Steel (optional)
- Seat:** Lead Free Brass
- Needle:** Stainless Steel (304)
- Elastomers:** Buna-N (standard)

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**Model BV**

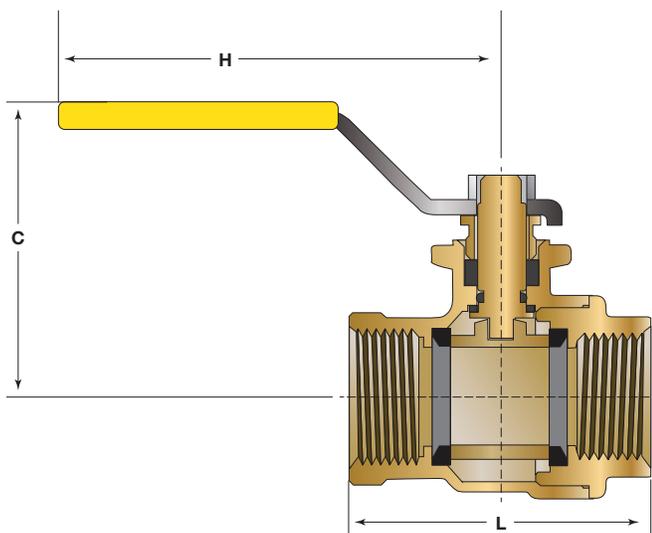
**Ball Valve**

Size: 1/4" - 1" NPT

Model BV Ball Valves are used in pilot lines to provide a positive shutoff in any override or maintenance situation for simple trouble shooting. This 2-piece, full port valve features: bottom loaded stems, PTFE seats and packing.



Lead Free Ball Valve



**Specifications**

- Standard Material:** Copper Silicon Alloy Body and Adaptor  
Chrome Plated Ball
- Optional Material:** Stainless Steel Housing, Body and Adaptor  
Stainless Steel Ball
- Pressure Rating:** 600psi (41 bar) Non Shock
- Temp Rating:** -40°F - 400°F

Size	Dimensions						Weight	
	C		H		L			
in.	in.	mm	in.	mm	in.	mm	lbs.	kg.
1/4	1 13/16	46	3 7/16	87	1 3/4	45	0.4	0.2
3/8	1 13/16	46	3 7/16	87	1 3/4	45	0.4	0.2
1/2	1 13/16	46	3 7/16	87	1 15/16	50	0.4	0.2
3/4	2 1/4	57	4	101	2 5/16	59	0.8	0.3

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