
Classic Series

F110-14 (Globe)
F1110-14 (Angle)**Operation**

The Watts ACV On-Off Float Control Valve is designed to open fully or close drip-tight as commanded by the Float Control Pilot. The Float Pilot may be either valve or remote mounted. The valve closes drip tight when water level reaches the adjustable high-level setpoint, and opens fully when water level is below the adjustable low-level setpoint, allowing a calculated "draw-down" of water level to increase tank circulation. The On-Off Float Pilot commands the routing of fluid and pressure into and out of the cover chamber of the main valve. When water level reaches the adjustable high-level setpoint, the Float Pilot connects the cover chamber of the valve to upstream pressure, closing the valve drip tight. The valve remains closed as water level decreases. When water level reaches the adjustable low-level setpoint, the Float Pilot connects the cover chamber of the valve to atmosphere (wet drain), opening the valve fully. High and low levels are separately adjustable by positioning stop collars on the float rod(s) at desired opening and closing setpoints.

If desired, the on-off action of the valve can be "reversed" by modifying the hydraulic connections of the On-Off Float Pilot.

Installation Guidelines

- Prior to installation, flush line to remove debris.
- Install valve horizontally "in line" (cover facing UP), so flow arrow matches flow through the line. Avoid installing valves 6" and larger vertically. Consult factory **prior** to ordering if installation is other than described.
- Install inlet and outlet isolation valves. **NOTE:** When using butterfly valves, insure disc does not contact control valve. Damage or improper valve seating may occur.
- Provide adequate clearance for valve servicing and maintenance.
- Install pressure gauge to monitor valve inlet pressure.
- Provide adequate drain for cover chamber discharge. Consult "Valve Cover Capacity" chart on appropriate main valve Engineering Bulletin.
- If On-Off Float Pilot is remotely mounted it should be field connected with 3/8" minimum copper tubing in accordance with factory piping schematic.
- Float Pilot, Rods, and Ball should be mounted in a field installed "stilling well" for protection against surface turbulence and interference.
- Additional 12" Float Rods available. Consult Factory.

Other Watts ACV Float Control Valves

F110-10 / F1110-10 Modulating Float Control Valve
F110-13 / F1110-13 Modulating Float Control Valve with Pressure Sustaining Feature
F110-AS / F1110-AS Modulating Float Control Valve with Solenoid (On-Off) Feature
F110-18 / F1110-18 On-Off Float Valve with Pressure Sustaining Feature

Classic Series

F110-14 (Globe)
F1110-14 (Angle)**Specification**

The On-Off Float Control Valve shall be a pilot operated diaphragm valve designed to open fully or close drip-tight as commanded by the Float Control Pilot. The Float Pilot may be either valve or remote mounted. The valve shall close drip tight when water level reaches the adjustable high-level setpoint, and open fully when water level is below the adjustable low-level setpoint, allowing a calculated "draw-down" of water level to increase tank circulation.

The main valve shall be a hydraulically operated, single diaphragm actuated, globe or angle pattern valve. Y-pattern valves shall not be permitted. The valve shall contain a disc and diaphragm assembly that forms a sealed chamber below the valve cover, separating operating pressure from line pressure. The diaphragm shall be constructed of nylon reinforced Buna-N, and shall not seal directly against the valve seat and shall be fully supported by the valve body and cover. Rolling diaphragm construction will not be allowed and there shall be no pistons operating the main valve or any pilot controls.

The main valve body and cover shall be Ductile Iron ASTM A536, and all internal cast components shall be Ductile Iron or CF8M (316) Stainless Steel. All Ductile Iron components, including the body and cover, shall be lined and coated with an NSF 61 Certified Epoxy Coating applied by the electrostatic heat fusion process. All main valve throttling components (valve seat and disc guide) shall be Stainless Steel. The valve body and cover must be machined with a 360-degree locating lip to assure proper alignment.

The disc and diaphragm assembly shall contain a Buna-N synthetic rubber "Quad Seal" that is securely retained on 3-1/2 sides by a disc retainer and disc guide. Diaphragm assemblies utilizing bolts or cap screws for component retention will not be permitted.

The exposed portion of the Quad Seal shall contact the valve seat and seal drip-tight. The disc and diaphragm assembly must be guided by two separate bearings, one installed in the valve cover and one concentrically located within the valve seat, to avoid deflection and assure positive disc-to-seat contact. Center guided valves will not be permitted. All necessary repairs shall be made from the top of the valve while the body remains in line.

Pilot control systems for valves 3" and smaller shall contain a Flow Clean Strainer, On-Off Float Pilot, (2) 12" Float Rods and a Float Ball. Pilot control systems for 4" valves shall contain an On-Off Float Pilot, (2) 12" Float Rods, Float Ball, an external Y-Strainer and Isolation Ball Valves on all body connections. All pilot control systems shall utilize copper tubing and brass fittings regardless of valve size.

The valve shall be Watts ACV Model F110-14 (Globe) or F1110-14 (Angle) On-Off Float Control Valve.

Classic Series Basic Valves

LEAD FREE*

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.

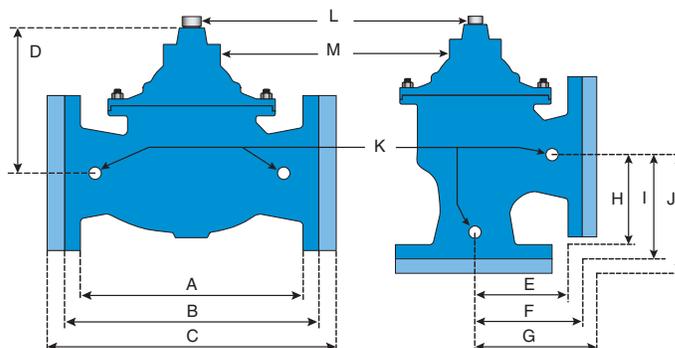
Watts ACV Main Valves are Lead Free. The Watts ACV piloting system contains Lead Free* components, ensuring all of our configurations are Lead Free compliant.

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	¼	35	16
2½	11	279	11	279			7	178	5½	140	5½	140	5⅜	148	4	102	4	102	4⅞	110	½	½	⅜	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	⅜	95	43
4			15	381	15⅝	397	8⅝	219			6¾	171	7⅞	181			6¾	171	7⅞	181	½	½	⅜	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

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

*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.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

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

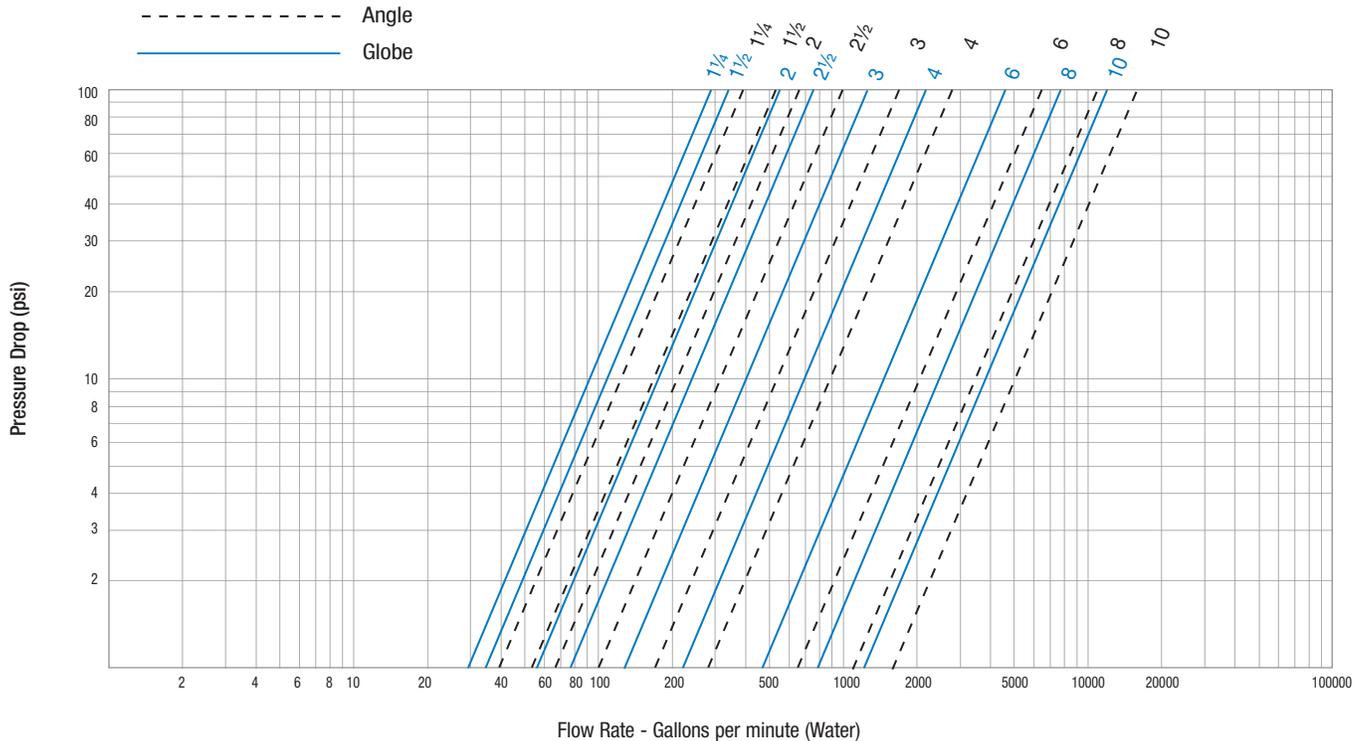
Flow Data - ACV F100 (Globe) / F1100 (Angle)

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 _v	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_v Factor of a valve is the flow rate in US GPM at 60°F that will cause a 1psi drop in pressure.
- C_v 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_v 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

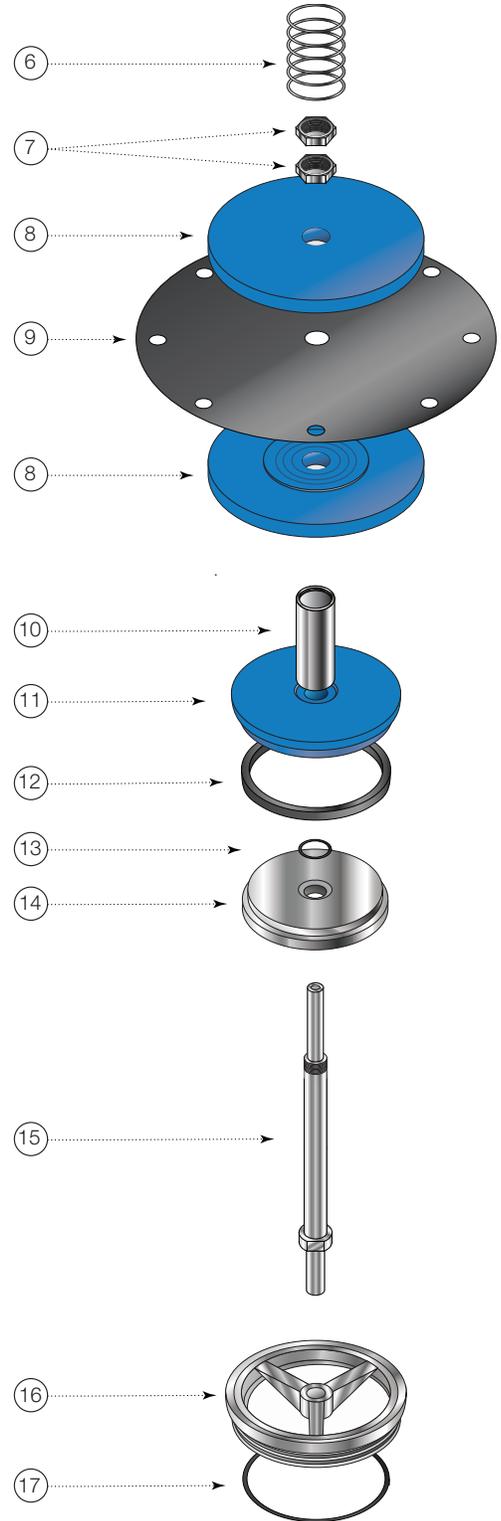
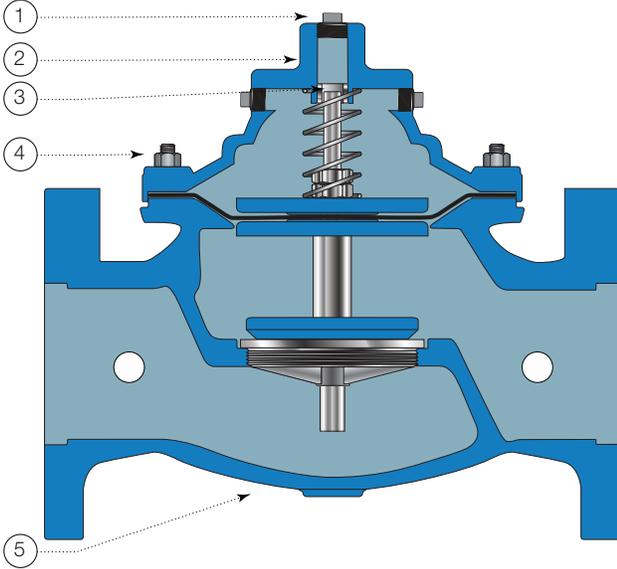
Valve Travel

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

LEAD FREE*

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)

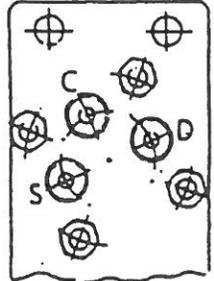
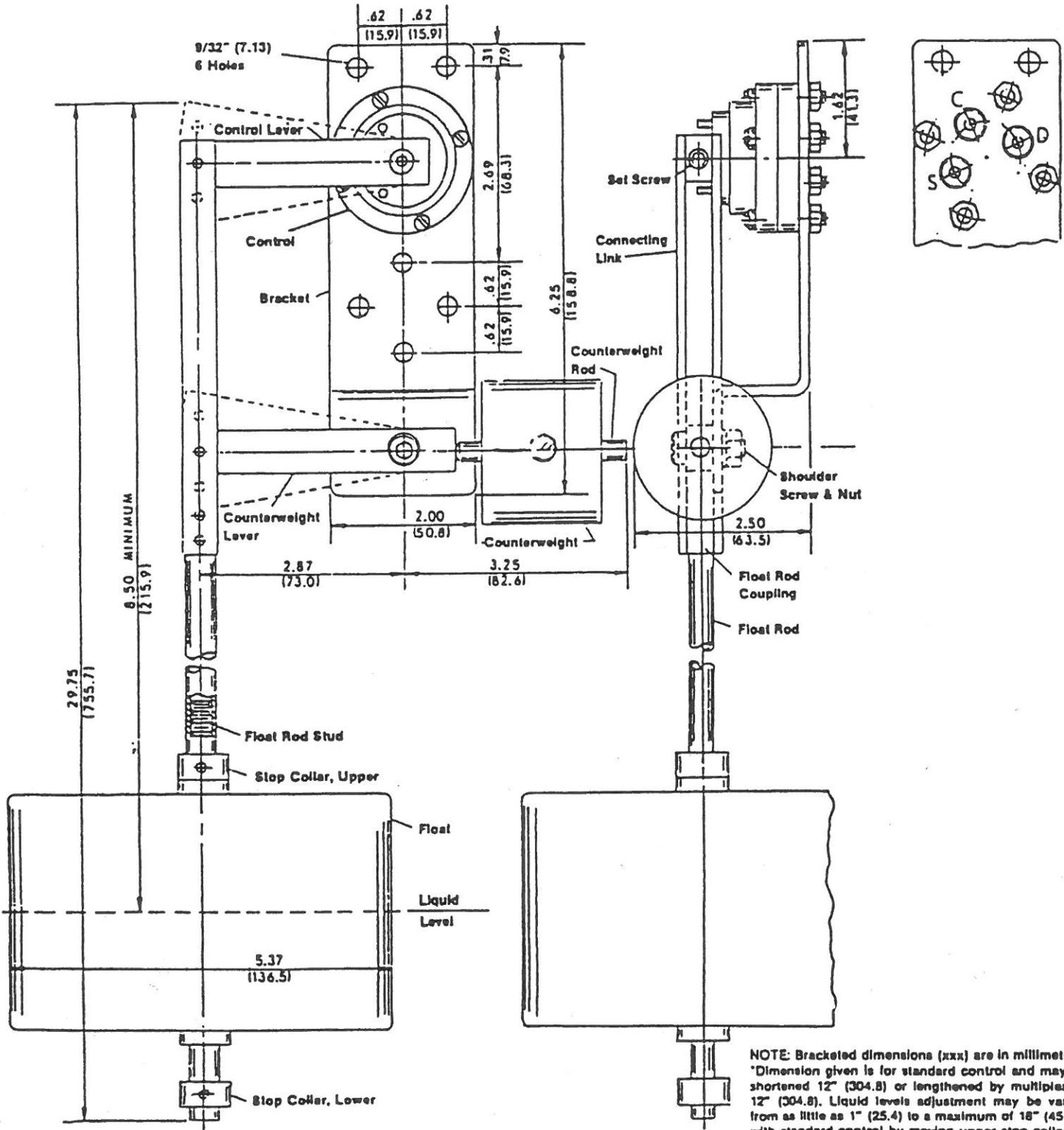
* Contained in Main Valve Repair Kit



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**FIGURE 10-13 FLOAT CONTROL
VERTICAL ROD / ADJUSTABLE HIGH-LOW STOPS**

8550 HANSEN ROAD, HOUSTON, TEXAS 77275-2289, (713)943-0688, FAX (713)944-9445



NOTE: Bracketed dimensions (xxx) are in millimeters. Dimension given is for standard control and may be shortened 12" (304.8) or lengthened by multiples of 12" (304.8). Liquid levels adjustment may be varied from as little as 1" (25.4) to a maximum of 18" (457.2) with standard control by moving upper stop collar as high as possible.

Controls and Accessories

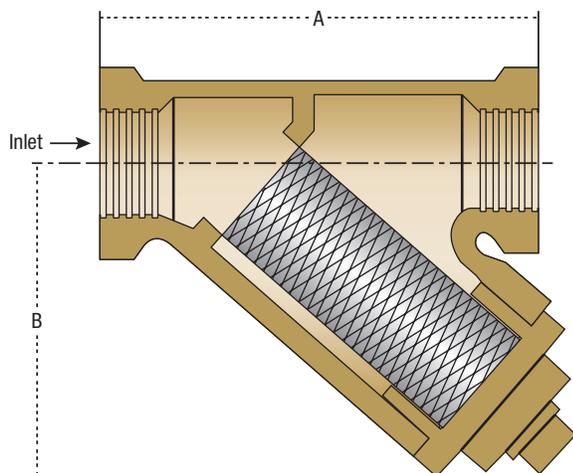
LEAD FREE*

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

Body Material:	Lead Free Copper Silicon Alloy CF8M (316) Stainless Steel (optional)
Retainer Cap:	Lead Free Copper Silicon Alloy
Cap Gasket:	EPDM
Pressure Rating:	400psi (27.6 bar)
Filter Element:	304 Stainless Steel
Mesh Options:	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 BV

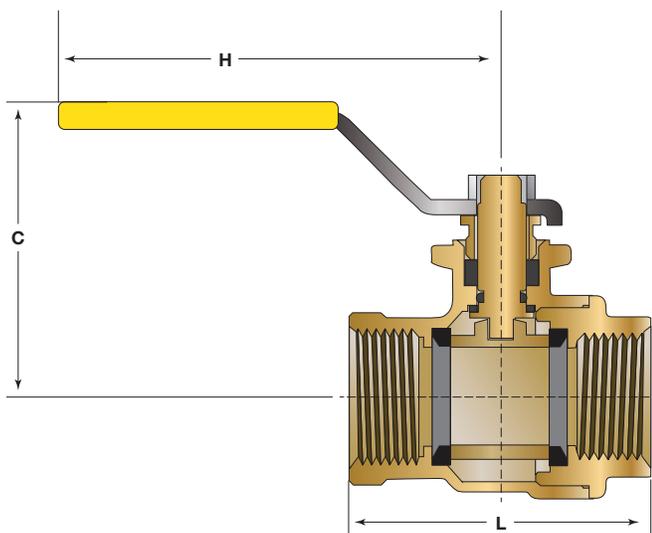
Ball Valve

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



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

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

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

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