

High flow 2-way motorized ball valves

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Function

The 638 series high flow 2-way motorized ball valves are perfect for shutoff and isolation in hydronic heating or cooling applications. Bubble-tight sealing, high differential pressure closeoff and significant Cv flow coefficients make the 638 series ideal for application in large-scale hydronic and geothermal systems. The valve body has dual Posi-Stop™ union connections for installation and service efficiency.

The 3-wire floating control fail-in-place actuator includes auxiliary contacts, a convenient integral manual override feature and a user-friendly position indicator.

Product range

638 series: Two-way motorized ball valve for hydronic and geothermal systems, 24 VAC, 6 VA
.....connections ¾", 1", 1¼", 1½", 2" press, NPT male, sweat union

Technical specification

Materials

Valve body:	brass EN 12165 CW617N
Ball:	brass EN 12165 CW617N, chrome plated
Ball seal:	PTFE with EPDM o-ring
Control stem seal:	double EPDM o-ring
Union seal (Posi-Stop™) for sizes ¾", 1", 1¼":	EPDM

Actuator:

Synchronous Motor	
Power:	24 VAC, 6VA
Protection class:	NEMA 4 (IP 65)
Stroke time (90 degrees rotation):	50 seconds
Dynamic torque:	133 lbf-in (15 N-m)
Aux. contacts rating:	6A at 24 VAC
Supply cable length:	32 inches (0.8 m)

Performance

Suitable fluids:	water, glycol solutions
Max. percentage of glycol:	50%

Max. working pressure:	230 psi (16 bar)
Max. differential pressure:	
¾" to 1¼" sizes:	150 psi (10 bar)
1½" to 2" sizes:	75 psi (5 bar)

Fluid temperature range:

14 to 230 °F (-10 to 110 °C)

Operating ambient temperature range:

14 to 230 °F (-10 to 110 °C)

Shutoff leakage: bubble-tight

Flow coefficient:

¾" size:	Cv=20 (Kv=17)
1" size:	Cv=42 (Kv=36.5)
1¼" size:	Cv=56 (Kv=48)
1½" size:	Cv=89 (Kv=77)
2" size:	Cv=162 (Kv=140)



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



CAUTION: If the 638 series ball valve is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.



CAUTION: Make sure that all the connecting pipework is water tight.



CAUTION: When making the water connections, make sure that the pipework connecting the 638 series ball valve is not mechanically overstressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



CAUTION: Water temperatures higher than 100 °F (38 °C) can be dangerous. During the installation, commissioning and maintenance of the 638 series ball valve, take the necessary precautions to ensure that such temperatures do not endanger people.



CAUTION: To prevent any damage which will cause the electronic mixing valve to not operate correctly, treat highly aggressive water before entering the thermostatic mixing valve. Be sure water hardness is less than 10 grains.



WARNING: The outer surface of the device, especially in polymer type components, must not come into contact with any chemical substance, either on purpose or accidentally. The system fluid and any chemical additives used within the water piping system – whether for washing or as protection – must be compatible with the materials used to make the device and with the function it performs.

Caleffi shall not be liable for damages resulting from stress corrosion, misapplication or misuse of its products.

LEAVE THIS MANUAL WITH THE USER.



CONSIGNE DE SÉCURITÉ

Ce symbole d'avertissement servira dans ce manuel à attirer l'attention sur la sécurité concernant instructions. Lorsqu'il est utilisé, ce symbole signifie.

ATTENTION! DEVENEZ ALERTE ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SECURITE.



AVERTISSEMENT: Ce produit peut vous exposer à des produits chimiques comme le plomb, qui est connu dans l'État de Californie pour causer le cancer, dommages à la naissance ou autre. Pour plus d'informations rendez-vous www.P65Warnings.ca.gov.



ATTENTION: Tous les travaux doivent être effectués par du personnel qualifié formé à la bonne application, installation et maintenance des systèmes conformément aux codes et règlements locaux.



ATTENTION: Si le 638 series vannes a sphere motorisees, n'est pas installé, mis en service et entretenu correctement, selon les instructions contenues dans ce manuel, il peut ne pas fonctionner correctement et peut mettre en danger l'utilisateur.



ATTENTION: S'assurer que tous les raccordements sont étanches.



ATTENTION: Lorsque vous effectuez les raccordements d'eau, assurez-vous que la tuyauterie reliant le Robinet à bille série 638 n'est pas mécaniquement des overstressed. Au fil du temps, ceci pourrait causer des ruptures, avec pour conséquence des pertes en eau qui, à leur tour, peuvent causer des dommages à la propriété et/ou les gens.



ATTENTION: Les températures de l'eau supérieure à 100 °F (38 °C) peut être dangereux. Au cours de l'installation, mise en service et l'entretien de le réducteur de pression, le 638 series vannes a sphere motorisees, prendre les précautions nécessaires afin de s'assurer que de tels températures ne compromettent pas les gens.



ATTENTION: Pour prévenir tout dommage qui provoque le mitigeur électronique à ne pas fonctionner correctement, le traitement de l'eau très agressive avant d'entrer dans la termostatico regolabile. Assurez-vous que la dureté de l'eau est inférieure à 10 grains.



AVERTISSEMENT: La surface extérieure de l'appareil, en particulier les composants de type polymère, ne doit pas entrer en contact avec des substances chimiques, que ce soit volontairement ou accidentellement. Le produit et les additifs chimiques utilisés dans les canalisations d'eau - que ce soit pour le lavage ou la protection - doivent être compatibles avec les matériaux utilisés pour la fabrication de l'appareil et avec la fonction qu'il remplit.

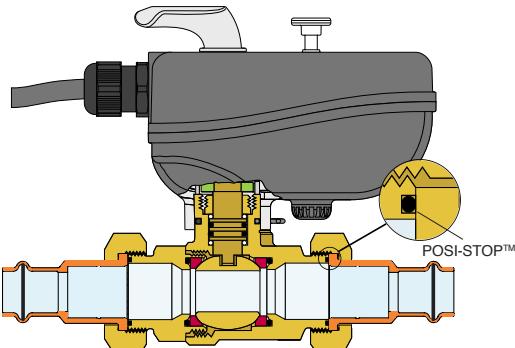
Caleffi ne pourra être tenue responsable des dommages résultant de la corrosion, d'une mauvaise utilisation ou une mauvaise utilisation des produits.

LAISSEZ CE MANUEL AVEC L'UTILISATEUR

Construction details

Valve

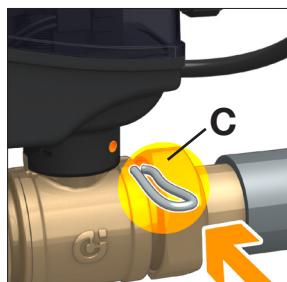
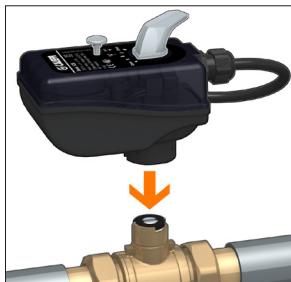
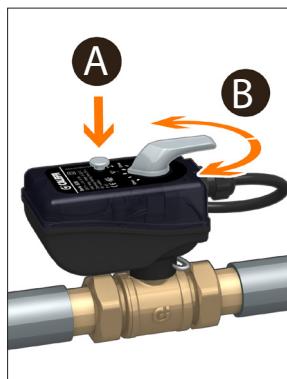
The valves are designed with union connections and Posi-Stop™ union seals on both tailpiece connections for sizes 3/4, 1 and 1-1/4 inch. Sizes 1-1/2 and 2 inch have fiber washer union seals. The ball is designed to allow high differential operating pressures and, when fully open, low differential pressure loss. The low opening and closing torques combined with 133 lbf-in (15 N-m) actuator dynamic torque, provides short 50 second 90 degree stroking time.



Actuator manual opening/closing

The actuator has a control lever (B), for valve manual opening and closing, that can be operated by pressing the button (A). The lever also acts as a position indicator.

Install the actuator on the valve body, with the stainless steel clip (C), which also enables quick disassembly in order to check and operate the control stem of the ball with the aid of a screwdriver.



Determining flowing condition and ball valve position

When the actuator is removed, a slot becomes visible at the top of the control stem where the actuator pin connects:

- This slot allows manual opening and closing of the valve using a screwdriver.
- The ball's position and flow condition are indicated by the slot direction, which is useful during testing or system inspection.
- Flow condition given slot position are shown in figures below.



Protection class

The valve can be installed in a vertical, horizontal or upside-down position, as shown in the figure, as the actuator is certified to NEMA 4 (IP 65) protection class.



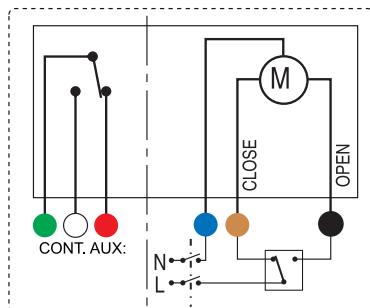
Electrical connections

Wiring diagram

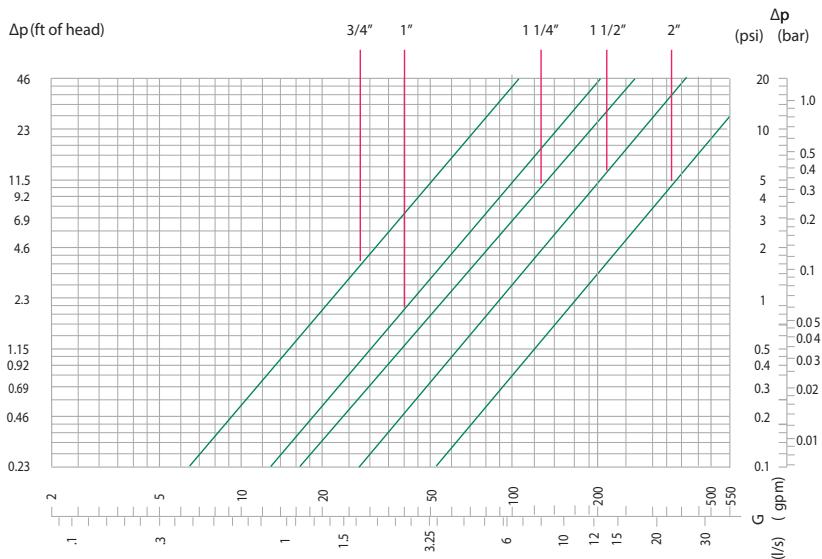
Internal diagram while valve is in closed position.

Auxiliary microswitch

The auxiliary microswitch is activated when the actuator begins to open. It deactivates when the actuator is 95% closed.



Flow curve



	Flow coefficient				
Size	3/4"	1"	1 1/4"	1 1/2"	2"
Cv	20	42	56	89	162
Kv	17	36.5	48	77	140

Installation

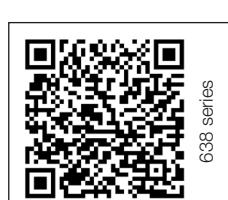
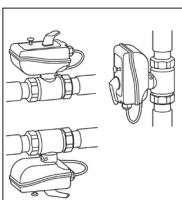
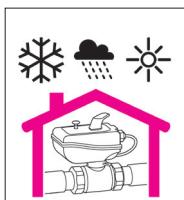


Before installing a Caleffi 638 series 2-way motorized ball valve, the system must be inspected to ensure that its operating conditions are within the range of the valve, checking, for example, the supply temperature, supply pressure, etc.

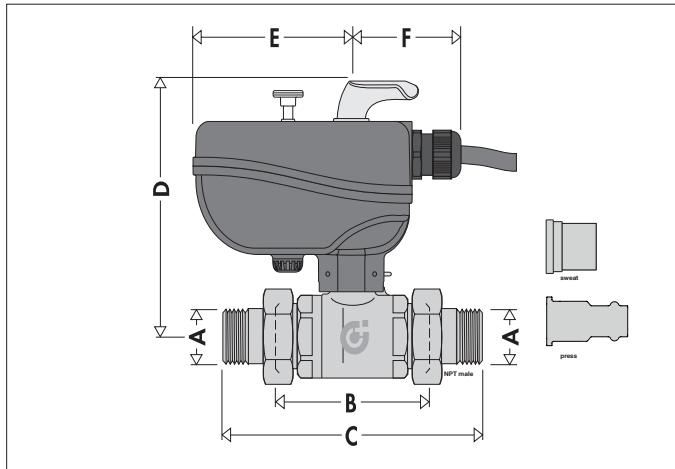
Systems where the 638 series will be installed must be drained and cleaned out to remove any dirt or debris which may have accumulated during installation.

Caleffi 638 series ball valves must be installed by qualified personnel in accordance with the diagrams in this brochure, taking into account all current applicable standards.

Caleffi 638 series ball valves must be installed indoors and can be installed in any position, either vertical or horizontal, or upside down.

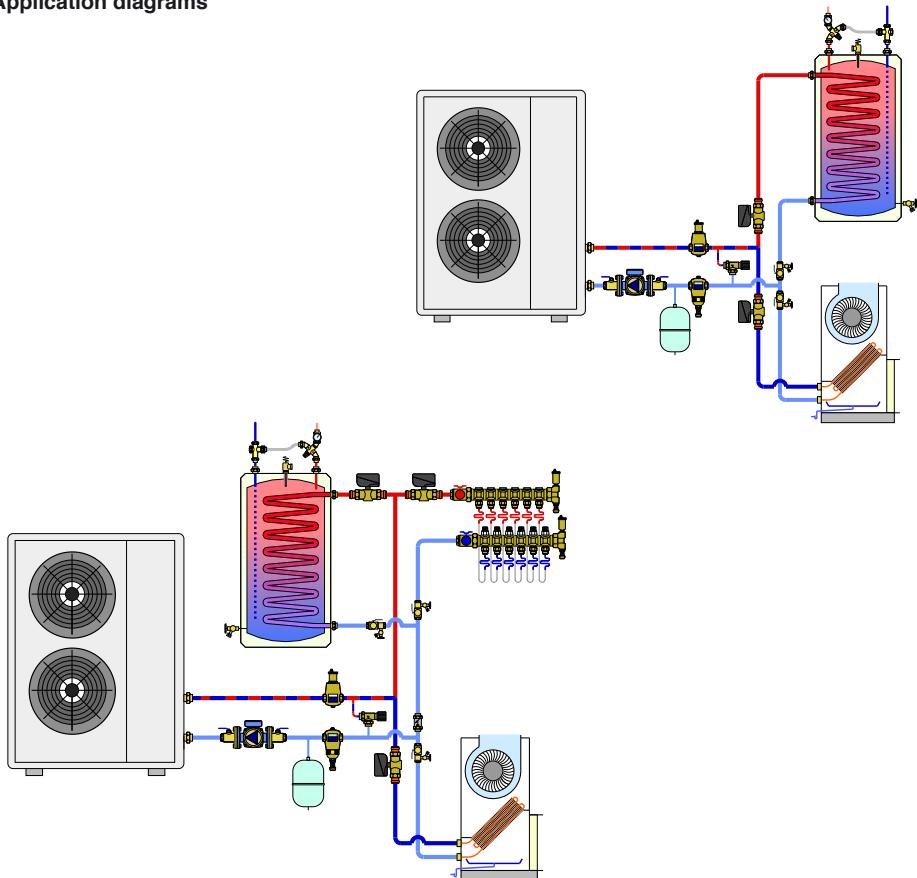


Dimensions



Code	A	B	C	D	Lay Length	E	F	Wt. (lb.)	Cv (Kv)
638054A 103	$\frac{3}{4}$ " NPT male	$3\frac{5}{16}$ "	$5\frac{1}{2}$ "	$4\frac{3}{4}$ "	--			3.3	20 (17)
638064A 103	1" NPT male	$3\frac{3}{4}$ "	$8\frac{1}{16}$ "	5"	--			4.5	42 (36.5)
638074A 103	$1\frac{1}{4}$ " NPT male	$4\frac{1}{16}$ "	$7\frac{11}{16}$ "	5"	--			5.6	56 (48)
638084A 103	$1\frac{1}{2}$ " NPT male	$4\frac{3}{4}$ "	$9\frac{3}{16}$ "	$7\frac{5}{8}$ "	--			12	89 (50)
638094A 103	2" NPT male	$4\frac{3}{4}$ "	$9\frac{3}{8}$ "	$7\frac{5}{8}$ "	--			12.4	162 (140)
638054A 109	$\frac{3}{4}$ " sweat	$3\frac{5}{16}$ "	$5\frac{9}{16}$ "	$4\frac{3}{4}$ "	$3\frac{13}{16}$ "			3.3	20 (17)
638064A 109	1" sweat	$3\frac{3}{4}$ "	$5\frac{13}{16}$ "	5"	4"			4.5	42 (36.5)
638074A 109	$1\frac{1}{4}$ " sweat	$4\frac{1}{16}$ "	$6\frac{3}{8}$ "	5"	$4\frac{1}{4}$ "	$3\frac{3}{8}$ "	$2\frac{5}{16}$ "	5.6	56 (48)
638084A 109	$1\frac{1}{2}$ " sweat	$4\frac{3}{4}$ "	$7\frac{1}{8}$ "	$7\frac{5}{8}$ "	$4\frac{15}{16}$ "			12	89 (50)
638094A 109	2" sweat	$4\frac{3}{4}$ "	$7\frac{5}{8}$ "	$7\frac{5}{8}$ "	$4\frac{1}{2}$ "			12.4	162 (140)
638054A 106	$\frac{3}{4}$ " press	$3\frac{5}{16}$ "	$6\frac{3}{16}$ "	$4\frac{3}{4}$ "	$4\frac{5}{16}$ "			2.7	20 (17)
638064A 106	1" press	$3\frac{3}{4}$ "	$7\frac{1}{8}$ "	5"	5"			4.8	42 (36.5)
638074A 106	$1\frac{1}{4}$ " press	$4\frac{1}{16}$ "	$10\frac{1}{8}$ "	5"	$7\frac{15}{16}$ "			5.8	56 (48)
638084A 106	$1\frac{1}{2}$ " press	$4\frac{3}{4}$ "	$10\frac{1}{8}$ "	$7\frac{5}{8}$ "	$7\frac{3}{8}$ "			11.6	89 (50)
638094A 106	2" press	$4\frac{3}{4}$ "	$13\frac{5}{16}$ "	$7\frac{5}{8}$ "	$10\frac{1}{4}$ "			11.8	162 (140)

Application diagrams



LEAVE THIS MANUAL WITH THE USER.

Laissez ce manuel à la disposition de l'utilisateur.

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