Z-one[™] motorised zone valve

642 - 643 series





Function

The zone valves can be used to automatically shut off hydraulic circuits in heating and cooling systems.

The zone valves in the 642 series (2-way) and 643 series (3-way) are fitted with an obturator with spring return, as well as an actuator with synchronous motor and auxiliary microswitch. These solutions make the devices extremely versatile, which means application is possible in both heating and cooling systems.

The actuator is connected to the valve body by means of a special rapid coupling system, which makes its removal easier, if required.

CE

Product range

642 series Motorised two-way zone valve 643 series Motorised three-way zone valve

Technical specifications

Valve body

Materials

Body: Obturator control stem: Obturator:

Performance

Medium:	water, glycol solutions
Max. percentage of glycol:	30 %
Working temperature range:	0–90 °C
Medium peak temperature:	110 °C
Maximum working pressure:	16 bar
Threaded connections:	1/2", 3/4", 1" F (ISO 228-1)

brass, EN 12165 CW617N

stainless steel

EPDM

Actuator

Materials Base and cover:	PC G10
Performance Synchronous motor Normally closed	
Electric supply: Power consumption:	230 V - 50/60 Hz 6 5 W: 7 VA
Opening time:	70–75 s
Auxiliary microswitch contact rating:	0.8 A
Maximum ambient temperature:	40 °C
Complies with Directives:	EN 60730-1 • EN 60730-2-14 2014/35/EU • 2014/30/EU
Supply cable length:	5x0,75 mm ² - length 95 cm

Ambient conditions (valve + control head)

Medium working temperature range: Ambient temperature: 0–90 °C

sizes 1/2", 3/4" and 1" F

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 Operation:
 0-40 °C EN 60721-3-3 Cl. 3K3, max. humidity 85 %

 Transportation:-20-70 °C EN 60721-3-2 Cl. 2K2, max. humidity 95 %

 Storage:
 -5-50 °C EN 60721-3-1 Cl. 1K2, max. humidity 95 %

Dimensions



Code	Mass (kg)	D	С	В	Α
643 04	0,97	90	24	78	1/2"
643 05	0,98	94	24	78	3/4"
643 06	1,10	94	24	88	1"



Code	Α	В	С	D	Mass (kg)
643 042	1/2"	78	31,5	90	1,03
643 052	3/4"	78	31,5	94	1,05
643 062	1"	88	46,5	94	1,20

Operating principle

In the absence of electric supply, the actuator keeps the obturator in its closed position.

A room thermostat or other electrical device that closes the contact drives the electrically-powered actuator to move the obturator to its opened position.

In the absence of the electric supply, the valve closes again through the action of a spring return mechanism.

Valve operating conditions

	2-way	3-way
Without electric supply	Channel "A" closed	Channel "A" closed Channel "B" open Channel "AB" open
With electric supply	Channel "A" open	Channel "A" open Channel "B" closed Channel "AB" open
Manual opening	Channel "A" open	Channel "A" open Channel "B" open Channel "AB" open





Three-way zone valve 643 series



Construction details

• Auxiliary microswitch

The actuator has a microswitch for controlling devices such as, for example, the circulation pump. The microswitch closes to 60% of the valve aperture position.

Manual opening

Manual opening can be carried out directly using the opening lever. When the electric supply is restored, manual control is disabled automatically.

Actuator quick-coupling

Thanks to its rapid coupling system, the actuator can easily be separated from the valve body for replacement or maintenance operations.



Caution: the actuator can only be coupled with Caleffi 642 and 643 series valve bodies.

Operation

The actuator features a special mechanism which makes obturator movement progressive and prevents potential adverse effects due to gearmotor inertia.

Hydraulic characteristics



Connection	Kv (m³/h)		Max. differential pressure (kPa)
	(2-way)	(3-way)	
1/2"	2,5	2,5	210
3/4"	4,5	4,5	150
1"	6	6	100

Installation

- The valve can be installed either vertically or horiziontally, with the control in any position **except upside down**.



- If installed in a box for manifolds, you should make sure there is sufficient ventilation inside it.
- The three-way valve cannot be transformed into a two-way valve and vice-versa.
- The zone valves must be installed in accordance with the direction of flow indicated in the following diagrams.
- The two-way zone valve can be installed on both the flow and return channel; for correct installation, observe the direction of flow indicated by the arrow on the valve body.

2-way

(if there is no electric supply, channel A is closed)





3-way

(if there is no electric supply, channel A is closed)





3-way installed on the flow pipe with diverter position and ON/OFF operation



3-way installed on the return pipe with mixing valve position and ON/OFF operation



Removing the actuator

- Set the lever on the side of the actuator to its unlocked (or manual opening) position.
- **2.** Press the unlock button on the side of the actuator and remove the actuator.



Mounting the actuator

- 1. Set the lever on the side of the actuator to its unlocked (or manual opening) position.
- **2.** Make sure the actuator is in the correct position in relation to the valve; the position is determined by the different dimensions of the control stem and the fixing pin.
- **3.** Press and hold the unlock button firmly, engage the actuator and release the button.



Electrical connections



2-way installed on the return pipe

Utility

2-way installed on the flow pipe

Application diagram



SPECIFICATION SUMMARY

642 series

Motorised two-way zone valve. 1/2" F (from 1/2" to 1") (ISO 228-1) threaded connections. Brass body. EPDM obturator. Reinforced polycarbonate cover. Working temperature range 0–90 °C. Medium peak temperature 110 °C. Maximum working pressure 16 bar. Maximum differential pressure 210 kPa (1/2": 210 kPa, 3/4": 150 kPa, 1": 100 kPa). Max. percentage of glycol 30 %. Actuator: Voltage 230 V (AC). Power consumption 6.5 W; 7 VA. Maximum ambient temperature 40 °C. Opening time 70–75 s. Closing time 5–7 s. Equipped with auxiliary microswitch, contact rating 0,8 A. Protection class IP 20.

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