

# Zone valves

## 676 series



### Function

Zone valves are used to shut off the heat-transfer medium in air conditioning systems.

When coupled with a thermo-electric actuator and controlled by a room thermostat, they automatically shut off the part of the plumbing circuit in which they are inserted.

They feature a high flow coefficient, which is why they are typically installed for zone control. Thanks to their special balanced obturator, they can work at high differential pressures.

PATENT PENDING.

### Reference documents:

- Tech. Brochure 01142 6563 series thermo-electric actuator
- Tech. Brochure 01042 6561 series thermo-electric actuator

### Product range

Code 676500 Two-way zone valve size DN 20 (1")

### Technical specifications

#### Valves

##### Materials

Body: brass EN 12165 CW617N  
Obturator: brass EN 12165 CW614N  
Control stem: stainless steel EN 10088-3 (AISI 303)  
Hydraulic seals: EPDM  
Knob: nylon

##### Performance

Medium: water, glycol solutions  
Maximum percentage of glycol: 30%  
Operating temperature range: 0–95 °C  
Max. pressure: 10 bar  
Max. differential pressure: 2.5 bar

Connections:  
1" M (ISO 228-1)

#### Actuator

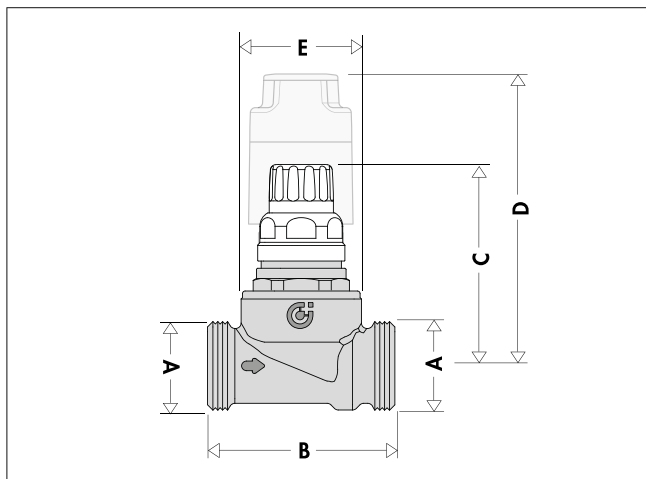
##### Materials

Protective shell: self-extinguishing polycarbonate  
Colour: (code **6563**02/04 - **6561**02/04) white RAL 9010  
(code **6563**12/14 - **6561**12/14) grey RAL 9002

##### Performance

Normally closed  
Electric supply: 230 V (ac) - 24 V (ac) - 24 V (dc)  
Starting current: ≤1 A  
Running current: 230 V (ac) = 13 mA  
24 V (ac) - 24 V (dc) = 140 mA  
Running power consumption: 3 W  
Auxiliary microswitch contact rating  
(code **6563**12/14 - **6561**12/14): 0.8 A (230 V)  
Protection class: IP 40 (code **6563**..) IP 44 (code **6561**..)  
Double insulation construction: ☐ CE  
Maximum ambient temperature: 50 °C  
Operating time: opening and closing from 120 s to 180 s  
Length of supply cable: 80 cm

## Dimensions

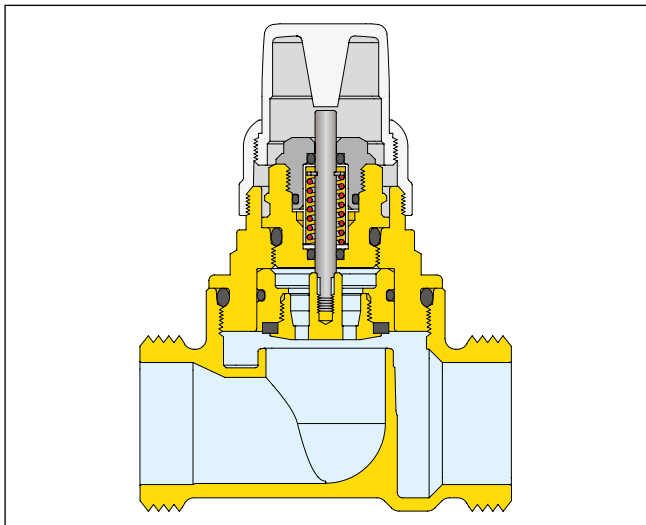


Code	DN	A	B	C	D	E	Mass (kg)
676500	20	1"	70	75	115	Ø45	0,476

## Operating principle

When a room thermostat trips, the thermo-electric actuator opens or closes the obturator of the valve that controls the heat-transfer medium.

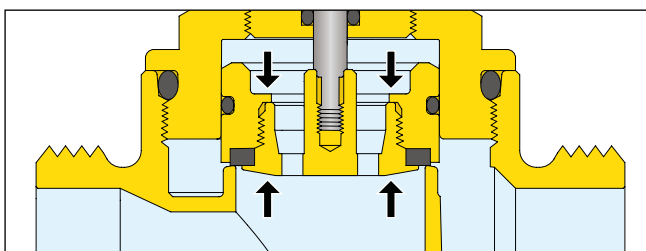
The actuator is operated by a wax expansion thermostat heated by a PTC resistor, which automatically limits the current flow when the working temperature is reached.



## Construction details

### High maximum differential pressure

The zone valve, code 676500, has a special obturator that can work at high differential pressures. As shown in the figure, the thrust towards the opening is counterbalanced by the force created by the pressure acting on the internal surface of the obturator. This feature reduces the thrust needed to close the obturator.

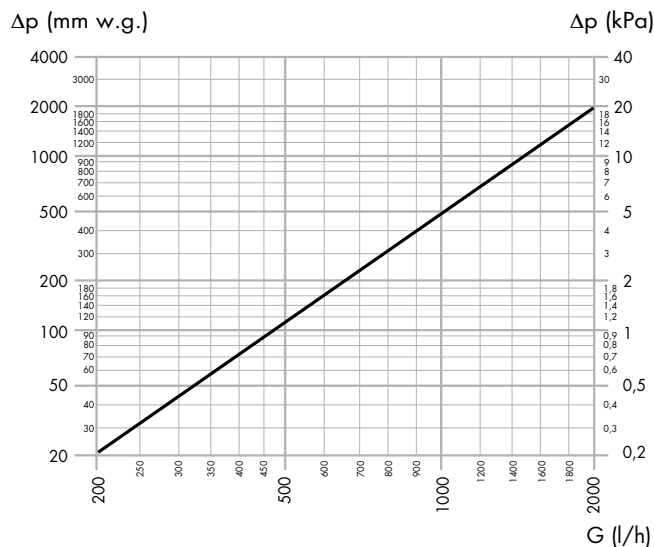


### High Kv

The internal fluid-dynamic conformation of the obturator and body ensure fairly low pressure drops.

## Hydraulic characteristics

### Valve "OPENING" operation




Code	DN	CONNECTION	Kv (m <sup>3</sup> /h)	$\Delta p_{max}^*$ (bar)
676500	20	1"	4.77	2.5

\* Maximum pressure differential assured by the servo control for regular operation

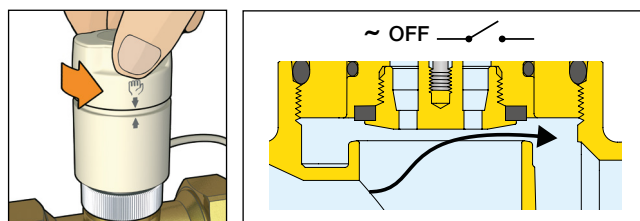
## Use with 6563 series thermo-electric actuator

### Manual opening

Turn the knob on the top of the actuator anticlockwise until its limit stop trips and the arrow symbols and overlap .

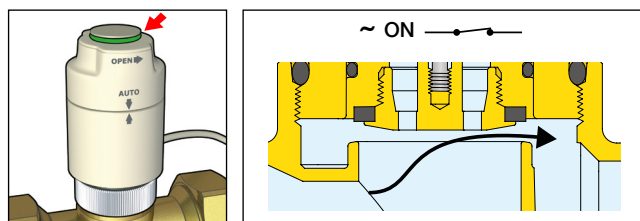
To close the valve manually and restore automatic operation of the device, turn the knob clockwise onto "AUTO".

**Note:** On the series equipped with an auxiliary microswitch, in the manual opening position the micro contact is closed.

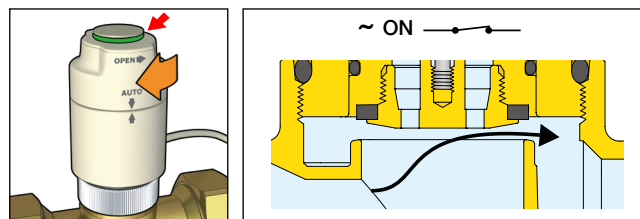


### Automatic operation

Normal valve operation in automatic mode.



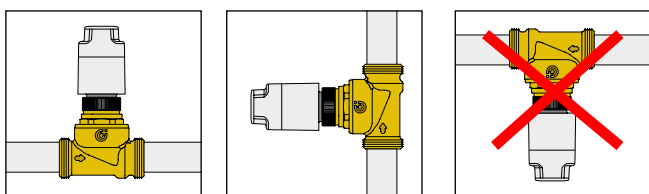
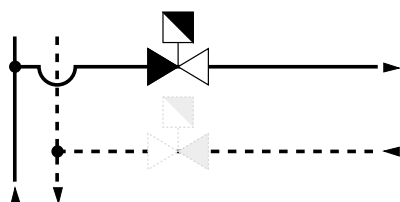
Automatic return from manual to automatic position.



## Installation

When installing zone valves, ensure that the water flow is in the direction of the arrows on the valve body.

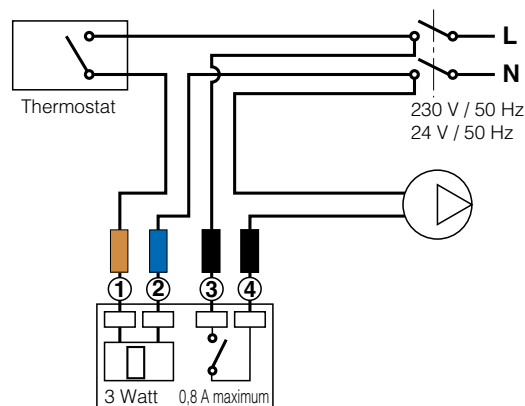
**The valve can be installed on either the supply or return pipe. Install the valve with the control knob pointing upwards or horizontal, never upside down.**



## Electric connections with an auxiliary microswitch

### Diagram with pump disconnection

The auxiliary microswitch can be used to turn off the pump when the user circuits need no heat and the valves are closed. If the pump consumption exceeds the capacity of the contacts equal to 0,8 A, an intermediate contactor should be used.



## Thermo-electric actuators



**6561**

Thermo-electric actuator.  
Normally closed.

tech. broch. 01042



Code	Voltage (V)	
656102	230	
656104	24	
656112	230	With auxiliary microswitch
656114	24	With auxiliary microswitch

## Technical specifications

### Materials

Protective shell:  
Colour:

self-extinguishing polycarbonate  
(code 656102/04) white RAL 9010  
(code 656112/14) grey RAL 9002

### Performance

Normally closed

Electric supply:

230 V (ac) - 24 V (ac) - 24 V (dc)

Starting current:

≤ 1 A

Running current:

230 V (ac) = 13 mA

24 V (ac) - 24 V (dc) = 140 mA

Running power consumption:

3 W

Auxiliary microswitch contact rating (code 656112/114): 0.8 A (230 V)

Protection class:

IP 44 (in vertical position)

Double insulation construction:

CE

Maximum ambient temperature:

50 °C

Operating time:

opening and closing from 120 s to 180 s

Length of supply cable:

80 cm

## Thermo-electric actuators with manual opening knob and position indicator



**6563**

Thermo-electric actuator.  
Normally closed.  
PATENTED.

tech. broch. 01142



Code	Voltage (V)	
656302	230	
656304	24	
656312	230	With auxiliary microswitch
656314	24	With auxiliary microswitch

## Technical specifications

### Materials

Protective shell:  
Colour:

self-extinguishing polycarbonate  
(code 656302/04) white RAL 9010  
(code 656312/14) grey RAL 9002

### Performance

Normally closed

Electric supply:

230 V (ac) - 24 V (ac) - 24 V (dc)

Starting current:

≤ 1 A

Running current:

230 V (ac) = 13 mA

24 V (ac) - 24 V (dc) = 140 mA

Running power consumption:

3 W

Auxiliary microswitch contact rating (code 656312/14): 0.8 A (230 V)

Protection class:

IP 40

Double insulation construction:

CE

Maximum ambient temperature:

50 °C

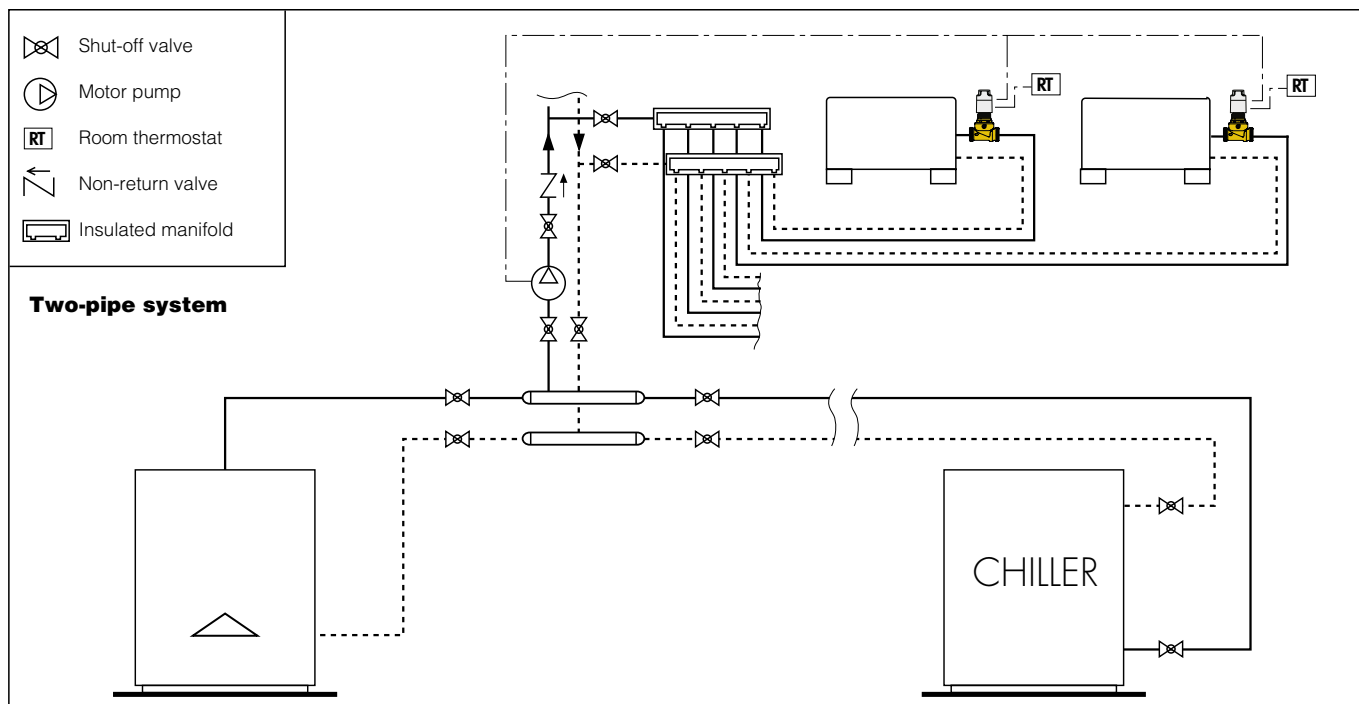
Operating time:

opening and closing from 120 s to 180 s

Length of supply cable:

80 cm

## Application diagrams



## SPECIFICATION SUMMARY

### Code 676500

Two-way zone valve. Fitted for thermo-electric actuator. 1" M connections. Brass body. Size DN 20. Stainless steel control stem. Control stem seal with double EPDM O-Ring seal. Manual control knob made of nylon. Working temperature range 0–95°C. Maximum working pressure 10 bar. Maximum differential pressure 2,5bar.

### Code 656102/04

Thermo-electric actuator. Normally closed. Electric supply 230 V (ac); 24 V (ac); 24 V (dc). Starting current 1 A. Running current 13 mA (230 V (ac)); 140 mA (24 V (ac) - 24 V (dc)). Running power consumption 3 W. Protection class IP 44 (in vertical position). Ambient temperature range 0–50°C. Operating time from 120 to 180 seconds. Length of supply cable 80 cm.

### Code 656112/14

Thermo-electric actuator. Normally closed, with auxiliary microswitch. Electric supply 230 V (ac); 24 V (ac); 24 V (dc). Starting current  $\leq 1$  A. Running current 13 mA (230 V (ac)), 140 mA (24 V (ac) - 24 V (dc)). Running power consumption 3 W. Protection class IP 44 (in vertical position). Auxiliary microswitch contact capacity 0,8 A (230 V). Ambient temperature range 0–50°C. Operating time from 120 to 180 seconds. Length of supply cable 80 cm.

### Code 656302/04

Thermo-electric actuator with manual opening and position indicator. Normally closed. Self-extinguishing polycarbonate protective shell. White RAL 9010. Electric supply voltage 230 V (ac); 24 V (ac); 24 V (dc). Starting current  $\leq 1$  A. Running current 13 mA (230 V (ac)), 140 mA (24 V (ac) - 24 V (dc)). Running power consumption 3 W. Protection class IP 40. Made with double insulation. Ambient temperature range 0–50 °C. Opening/closing time from 120 to 180 s. Length of supply cable 80 cm.

### Code 656312/14

Thermo-electric actuator with manual opening and position indicator. Normally closed, with auxiliary microswitch. Self-extinguishing polycarbonate protective shell. Colour grey RAL 9002. Electric supply voltage 230 V (ac); 24 V (ac); 24 V (dc). Starting current  $\leq 1$  A. Running current 13 mA (230 V (ac)), 140 mA (24 V (ac) - 24 V (dc)). Running power consumption 3 W. Auxiliary microswitch contact rating 0,8 A (230 V). Protection class IP 40. Made with double insulation. Ambient temperature range 0–50 °C. Opening/closing time from 120 to 180 s. Length of supply cable 80 cm.

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