

# Zone valves



01072/19 GB

replaces dp 01072/02



## 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 inserted.

They feature limited flow rate coefficient values, which is why they are typically installed for small zone or direct radiator control.

### PATENT (6563 series)

#### Reference documentation:

- Tech. Brochure 01042 6560 and 6561 series thermo-electric actuator
- Tech. Brochure 01198 6562 and 6564 series thermo-electric actuator with low power consumption
- Tech. Brochure 01142 6563 series thermo-electric actuator

### Product range

676 series	Two-way zone valve	size 1/2", 3/4" and 1"
677 series	Three-way zone valve	size 1/2", 3/4" and 1"
678 series	Three-way zone valve with telescopic by-pass tee	size 1/2", 3/4" and 1"
6563 series	Thermo-electric actuator with manual opening and position indicator	230 V (ac) - electric supply 24 V (ac/dc)
6563 series	Thermo-electric actuator with manual opening, position indicator and auxiliary microswitch	230 V (ac) - electric supply 24 V (ac/dc)
6562 series	Thermo-electric actuator with opening position indicator	230 V (ac) - electric supply 24 V (ac/dc)
6564 series	Thermo-electric actuator with low power consumption and opening position indicator	230 V (ac) - electric supply 24 V (ac/dc)

### Technical specifications

#### Valves

##### Materials

Body:	brass EN 12165 CW617N
Obturator:	brass EN 12165 CW617N
Control stem:	stainless steel
Hydraulic seals:	EPDM

##### Performance

Medium:	water, glycol solutions
Max. percentage of glycol:	30%
Working temperature range:	0-95 °C
Max. pressure:	10 bar
Max. differential pressure:	1.2 bar
Connections:	1/2", 3/4", 1" M with union
3-way bottom connection:	1/2" M with union

#### Actuator

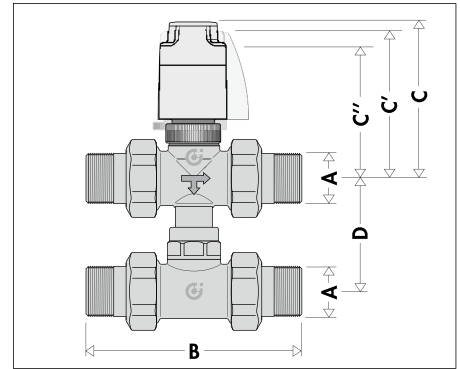
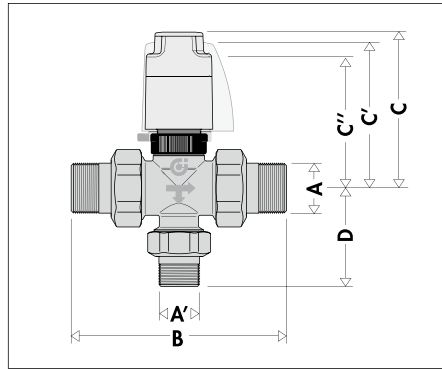
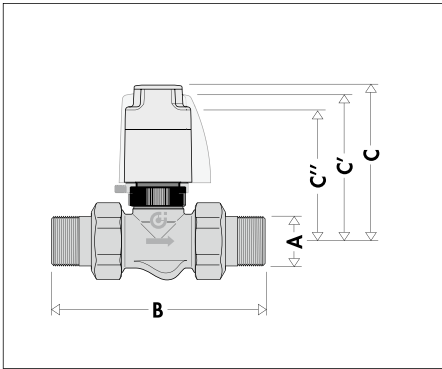
##### Materials

Protective shell:	self-extinguishing polycarbonate
Colour:	(code <b>656.02/04</b> ) white RAL 9010 (code <b>656.12/14</b> ) grey RAL 9002

##### Performance

Normally closed	
Electric supply:	230 V (ac) - 24 V (ac) - 24 V (dc)
Starting current:	- 6561 / 6562 / 6563 series ≤1 A - 6564 series ≤250 mA (230 V)
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 <b>656.12/14</b> ):	0.8 A (230 V)
Protection class:	IP 40
Double insulation construction:	☑ CE
Max. ambient temperature:	50 °C
Operating time:	opening and closing from 120 s to 180 s
Electric supply cable length:	80 cm

## Dimensions



Code	A	B	C	C'	C''	Mass (kg)
676040	1/2"	113	95	89	81	0,738
676050	3/4"	113	95	89	81	0,791
676060	1"	122	95	89	81	0,828

Code	A	A'	B	C	C'	C''	D	Mass (kg)
677040	1/2"	1/2"	113	95	89	81	52	0,808
677050	3/4"	1/2"	113	95	89	81	52	0,878
677060	1"	1/2"	122	95	89	81	52	0,898

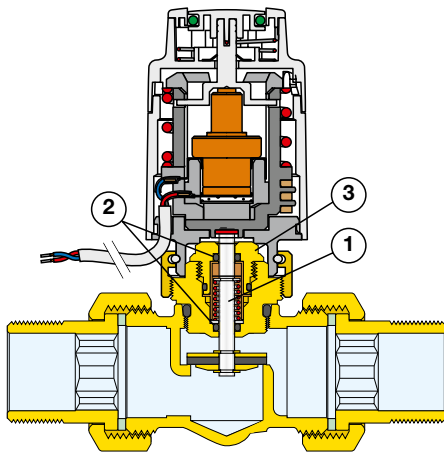
Code	A	B	C	C'	C''	D	Mass (kg)
678040	1/2"	113	95	89	81	49-63	1,118
678050	3/4"	113	95	89	81	49-63	1,161
678060	1"	122	95	89	81	49-63	1,288

C 6563 series thermo-electric actuator C' 6562/4 / series thermo-electric actuator C'' 6561 series thermo-electric actuator

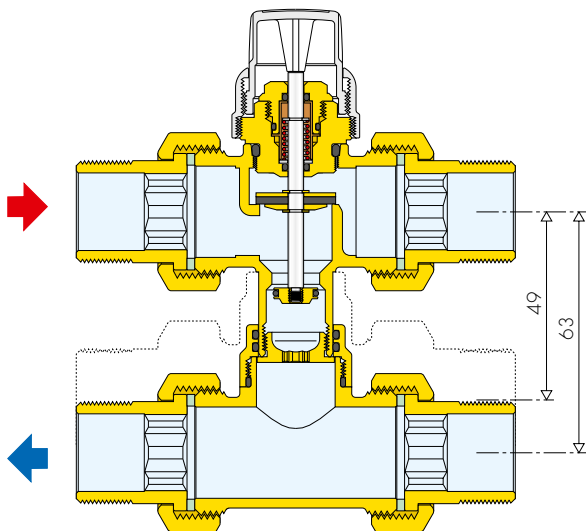
## Operating principle

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.



676 series 2-way valve with 6563 series actuator



678 series 3-way valve with telescopic by-pass tee

## Construction details

### Control stem

The stainless steel control stem (1) has a double hydraulic seal (2) created using two EPDM O-rings; this means the upper portion of the headwork (3) can be replaced even while the system is running.

### Variable centre distance

The 678 series four-way valve has a centre distance between connections which can be adjusted between 49 and 63 mm, to allow direct coupling with dual distribution manifolds.

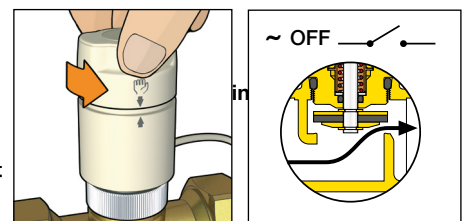
## Use with 6563 series thermo-electric actuator

### Manual opening

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

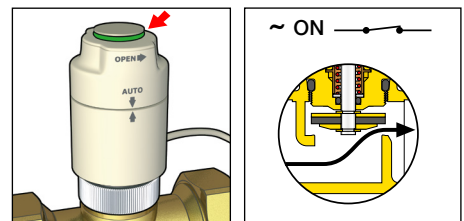
To close the valve manually and restore automatic operation of the device, turn the knob clockwise onto "AUTO".

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

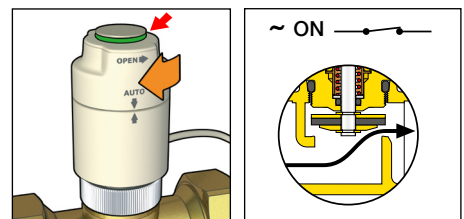


### Automatic operation

Normal valve operation in automatic mode.

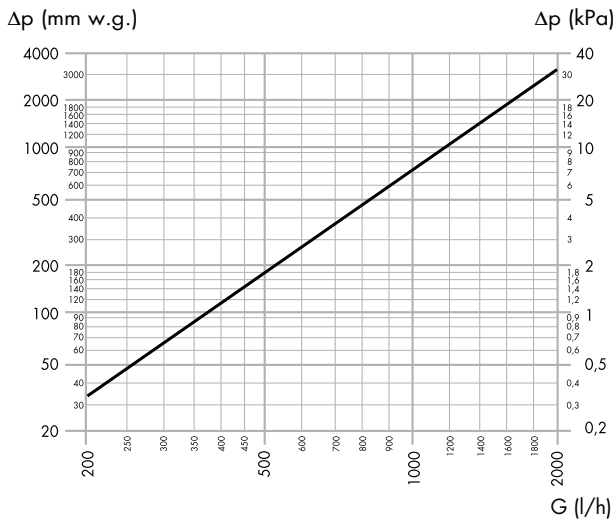


Automatic return from manual to automatic position.

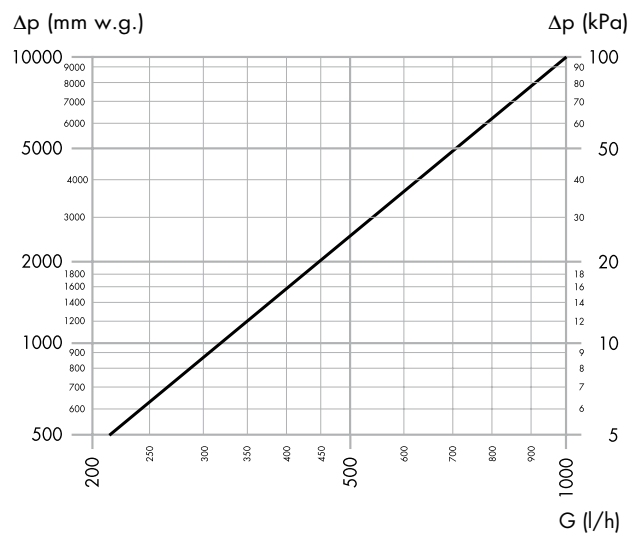


## Hydraulic characteristics

### Valve "OPENING" operation



### Valve in "BY-PASS" operating mode



Zone valve + 656 series	Series	DN	Kv (m³/h)		Δp <sub>max</sub> * (bar)
	676		open	by-pass	
	676	1/2" - 1"	3,7	-	1,2
	677		3,7	1,0	1,2
	678		3,7	1,0	1,2

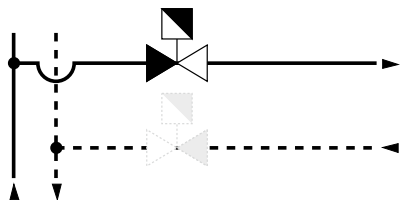
Table of hydraulic characteristics of control 6563 + valve body

\* Maximum differential pressure guaranteed by the actuator for regular operation

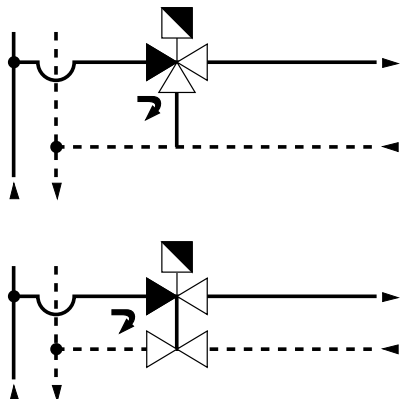
## Installation

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

The 676 series two-way valve can be installed on both the flow and return pipes.



The 677 series three-way valves with by-pass and 678 series three-way valves with telescopic by-pass tee must be installed on the flow pipe.



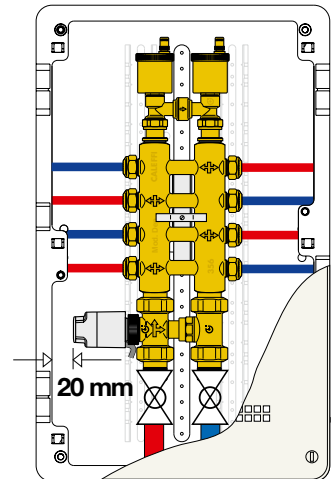
Install the valve with the control knob pointing upwards or in a horizontal position, never upside down. The three-way valve cannot be transformed into a two-way valve.

## Box mounting

When installing the valves in the zone boxes, leave sufficient space (20 mm) above the actuator so that the latter can be replaced if necessary.

To prevent the temperature from becoming too high, it is wise to make sure there is sufficient air circulation inside the box.

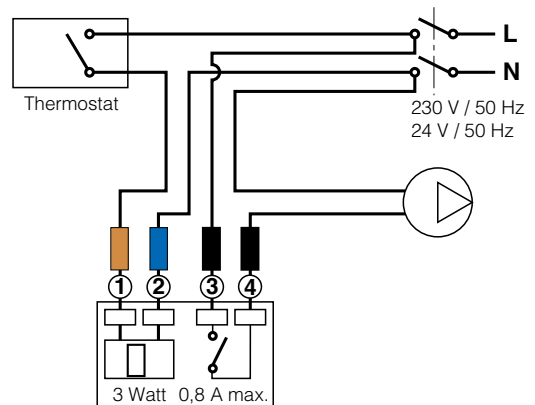
The adjacent figure illustrates installation in a 362 series inspection box with 356 series controlled-pressure dual distribution manifold.



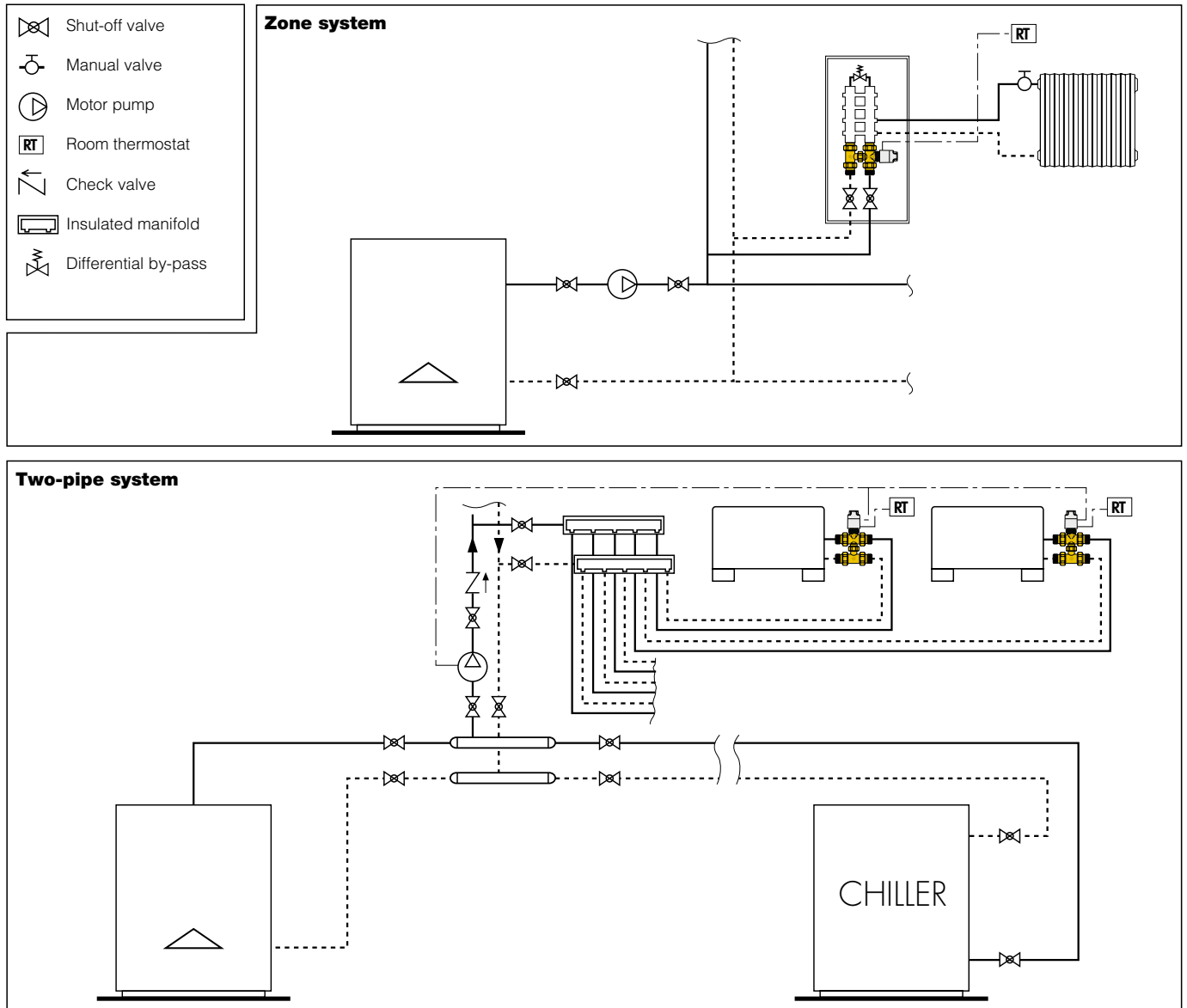
## Electric connections with an auxiliary microswitch

### 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 power consumption exceeds the contact rating of 0,8 A, an intermediate contactor should be used.



## Application diagrams



## SPECIFICATION SUMMARY

### 676 series

Two-way zone valve Fitted for thermo-electric actuator Connections 1/2" (from 1/2" to 1") M, with union. Brass body. Stainless steel control stem. Control stem seal with double EPDM O-Ring seal. Manual control knob in ABS. Working temperature range 0–95 °C. Maximum working pressure 10 bar. Maximum differential pressure 1,2 bar.

### 677 series

Three-way zone valve. Fitted for thermo-electric actuator Connections 1/2" (from 1/2" to 1") M, with union. Bottom connection 1/2" M, with union. Brass body. Stainless steel control stem. Control stem seal with double EPDM O-Ring seal. Manual control knob in ABS. Working temperature range 0–95 °C. Maximum working pressure 10 bar. Maximum differential pressure 1,2 bar.

### 678 series

Three-way zone valve with telescopic by-pass tee. Fitted for thermo-electric actuator Connections 1/2" (from 1/2" to 1") M, with union. Brass body. Stainless steel control stem. Control stem seal with double EPDM O-Ring seal. Manual control knob in ABS. Working temperature range 0–95 °C. Maximum working pressure 10 bar. Maximum differential pressure 1,2 bar.

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