

# Thermo-electric actuator with manual opening and position indicator

## 6563 series



01142/18 GB

replaces dp 01142/17 GB



### Function

The thermo-electric actuator, coupled with zone valves and distribution manifolds for radiant panel systems and radiators, allows automatic shut-off of the medium under the control of a room thermostat or of another electrical switch.

The 6563 series thermo-electric actuator is equipped with a control knob for manual opening, valve opening/closing indicator and a device for returning to automatic operation from the manual position when the electric supply is restored.

It also has a low power consumption version that is ideal during the start-up phase.

### European directive conformity

CE mark in accordance with directives 2014/35/EU and 2014/30/EU.

### Reference documentation

- Brochure 01072 Zone valve series 676
- Brochure 01144 Preassembled distribution manifold for radiant panel systems 668...S1 series
- Brochure 01065 Preassembled distribution manifolds for heating and air-conditioning systems 663 series
- Brochure 01180 Distribution manifold for heating systems 662 series
- Brochure 01126 Manifolds in composite specifically designed for radiant panel systems 670 series

### Product range

- Code 656302 Thermo-electric actuator with manual opening and position indicator \_\_\_\_\_ power supply 230 V (ac)
- Code 656304 Thermo-electric actuator with manual opening and position indicator \_\_\_\_\_ power supply 24 V (ac) or 24 V (dc)
- Code 656312 Thermo-electric actuator with manual opening, position indicator and auxiliary microswitch \_\_\_\_\_ power supply 230 V (ac)
- Code 656314 Thermo-electric actuator with manual opening, position indicator and auxiliary microswitch \_\_\_\_\_ power supply 24 V (ac) or 24 V (dc)
- Code 656344 Thermo-electric actuator with manual opening, position indicator and low power consumption \_\_\_\_\_ power supply 24 V (ac) or 24 V (dc)
- Code 656354 Thermo-electric actuator with manual opening, position indicator, auxiliary microswitch and low power consumption \_\_\_\_\_ power supply 24 V (ac) or 24 V (dc)

### Technical specifications

#### Materials

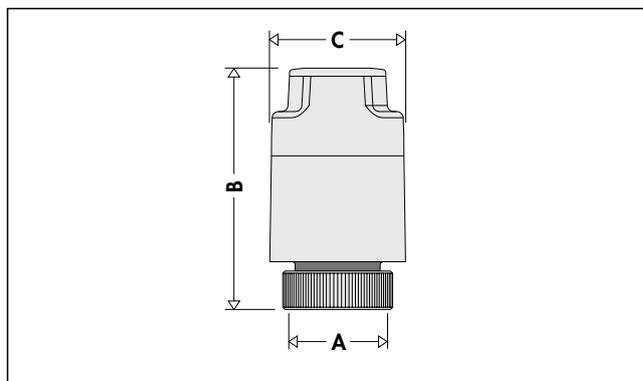
Protective shell: self-extinguishing polycarbonate  
 Colour: (code 656302/04/44) white RAL 9010  
 (code 656312/14/54) grey RAL 9002

#### Performance

Normally closed  
 Electric supply: 230 V (ac) - 24 V (ac) - 24 V (dc)  
 Starting current:  $\leq 1$  A,  $\leq 250$  mA (656344/54)  
 Running current: 230 V (ac) = 13 mA  
 24 V (ac) - 24 V (dc) = 140 mA (125 mA code 656344/54)  
 Running power consumption: 3 W  
 Auxiliary microswitch contact rating (code 656312): 0,8 A (230 V)  
 Protection class: IP 40  
 Double insulation construction:  CE  
 Device: type 1 action in accordance with EN 60730-1 par. 2,6  
 Ambient temperature range: 0–50°C  
 Operating time: opening and closing from 120 s to 180 s  
 Opening time 80% (code 656344/54): 300 s  
 Opening time 100%: (code 656344/54): 600 s  
 Closing time: (code 656344/54): 240 s

Aux. microswitch closing time: (code 656344/54): 300 s  
 Length of supply cable: 80 cm

### Dimensions



Code	A	B	C	Mass (kg)
6563..	M 30 x 1,5	76	42	0,18

## Operating principle

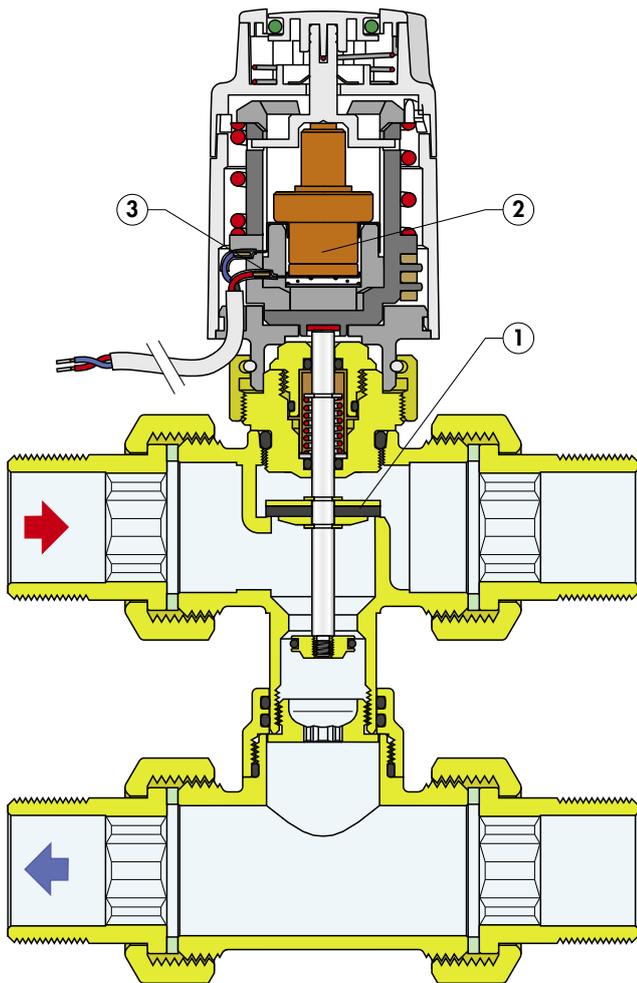
When the power supply is OFF, the device (actuator + valve) is "normally closed" with the obturator (1) lying against its seat. With power, the valve opens thanks to the action of a wax thermostatic expansion element (2) governed directly by a PTC resistor (3).

## Construction details

The 6563 series thermo-electric actuator is equipped with an automatic valve opening position indicator, a knob for opening the valve manually and a mechanism for returning to automatic mode if the electricity supply is restored.

The control knob for manual opening and the automatic return from the manual to the automatic position is particularly useful when testing or servicing the system if:

- hydraulic tests need to be carried out without necessarily having to connect and power up the controls.
- the knob is left in the manual position at the end of the tests. In this case the control automatically reverts to automatic operation when the system is electrically put into operation.

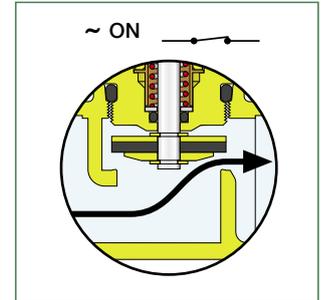
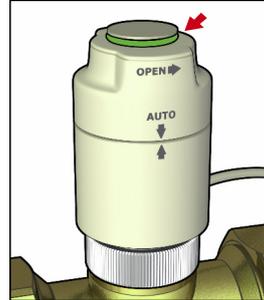


Valve in by-pass position

## Using the thermo-electric actuator

### 1. Normal operation of the actuator in automatic mode.

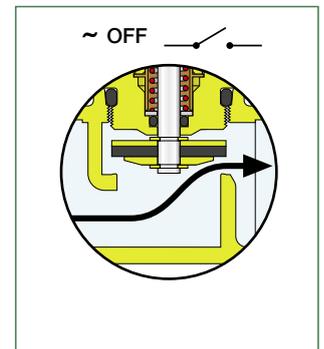
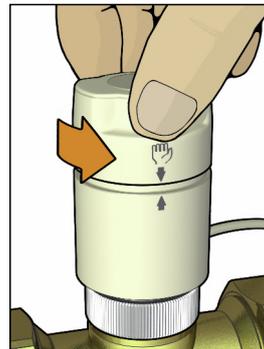
In automatic mode, when the thermo-electric actuator is electrically powered, it opens the valve. Opening is displayed by the central disc rising on the top of the knob and by the presence of the green circular indicator.



### 2. Using the knob to open the valve manually:

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".

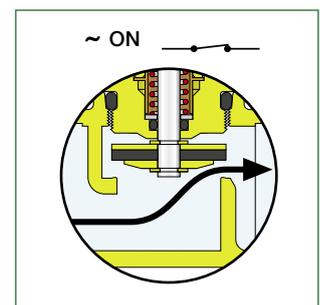
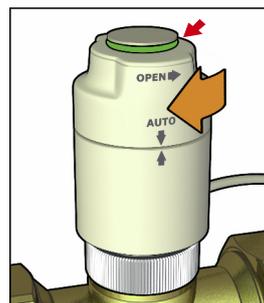
**Note:** On the series equipped with an auxiliary microswitch, in the manual opening position the micro contact is closed.



### 3. Automatic return from manual to automatic position.

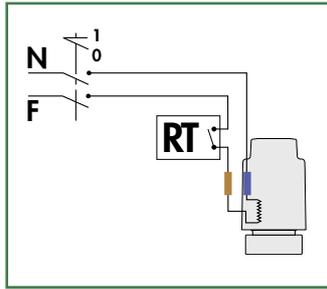
When the actuator is powered in the manual position, an internal mechanism enables automatic release from this position and the return to normal operation.

A few seconds after powering up, the knob will automatically return to the "AUTO" position and the opening indicator will stay on the open position (green).



## Electric connections

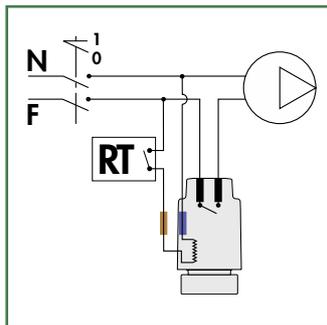
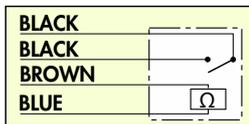
- Electrical connections for codes 656302, 656304 and 656344.



- Electrical connections for codes 656312, 656314 and 656354. **Wiring 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.



The auxiliary microswitch shuts off for an average thermo-electric actuator opening value of 80%.

## Coupling table

 			<b>656302</b> <b>656344</b> <b>656304</b> <b>656354</b> <b>656312</b> <b>656314</b>
<b>676</b> 	<b>677</b> 	<b>678</b> 	
<b>662</b> 	<b>663</b> 	<b>670-671</b> 	
	<b>666-668 S1</b> 		

## Hydraulic characteristics

Table of hydraulic characteristics of control 6563 + valve body

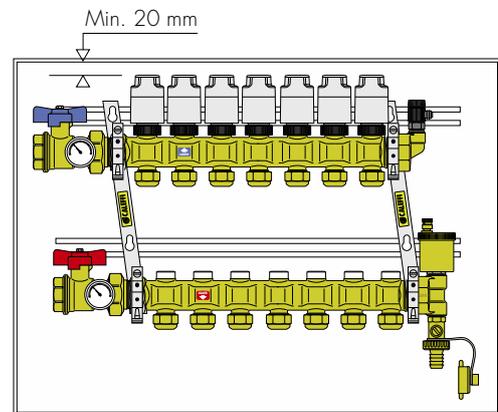
656302, 656304, 656312, 656314 +	series	DN	kv <sub>0,01</sub> (l/h)	Δp <sub>max</sub> * (m w.g.)
Zone valve (straight/bypass)	676		370	12
	677	1/2" - 1"	370/100	12
	678		370/100	12
Manifold for radiant panel systems and radiators	662	1"	410	18
	663	1 1/4"	287	25
	666 S1	1 1/4"	250	25
	668 S1	1 1/4"	250	25
	670/671	1"	240	25

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

## Installation

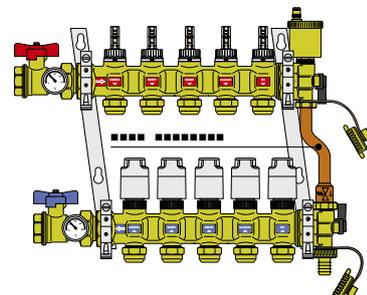
- The thermo-electric actuator should be tightened by hand without the use of tools.
- The thermo-electric actuator should not be dismantled for possible repairs. Tampering with it leads to permanent damage.
- The actuator should always be fitted in a horizontal or vertical position, **but never upside down**. In chilled water circuits, positions which allow condensation to get into the actuator are not advisable.
- For the actuator to work correctly, **the electric system must be sized according to the starting current**.
- If it is necessary to make regulations of several zones by means of actuators in parallel with the same thermostat, an intermediate relay could be needed to avoid electric overloads.**
- When assembling with a zone valve or manifold in a box, leave a gap of at least 20 mm between the thermo-electric actuator and the frame for any replacement or maintenance work.

## Recommendations for use



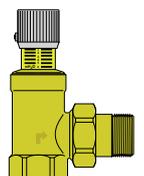
When the thermo-electric actuators are installed on devices that automatically shut off the heating terminals, it is always advisable to use a differential by-pass to control overpressure in the system during the partial or total closing phase of the circuits:

- Available as an accessory for 668...S1 series preassembled manifolds is the differential by-pass with fixed setting 2500 mm w.g. code 668000S1; available as an accessory for 662 series preassembled manifolds is the differential by-pass with fixed setting 2000 mm w. g. code 662000; available as an accessory for



663 series preassembled manifolds is the differential by-pass with fixed setting 2000 mm w. g. code 663000.

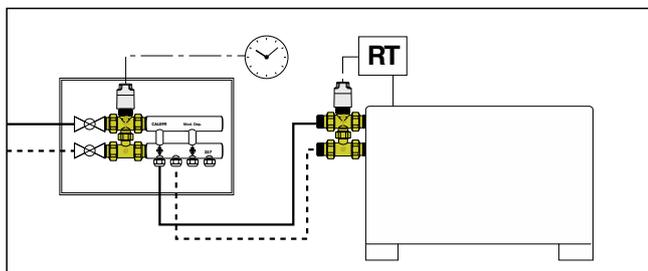
- For centralised installations or installations with risers, a differential by-pass valve is available with an adjustable setting of 1 to 6 m w.g., 519 series.



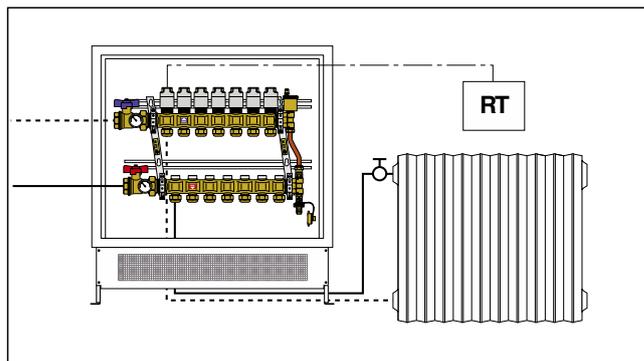
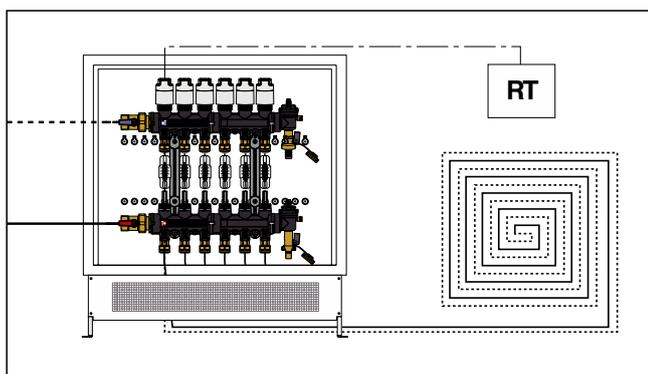
## Applications

The thermo-electric actuators with manual opening and position indicator can be installed in the various types of systems listed below:

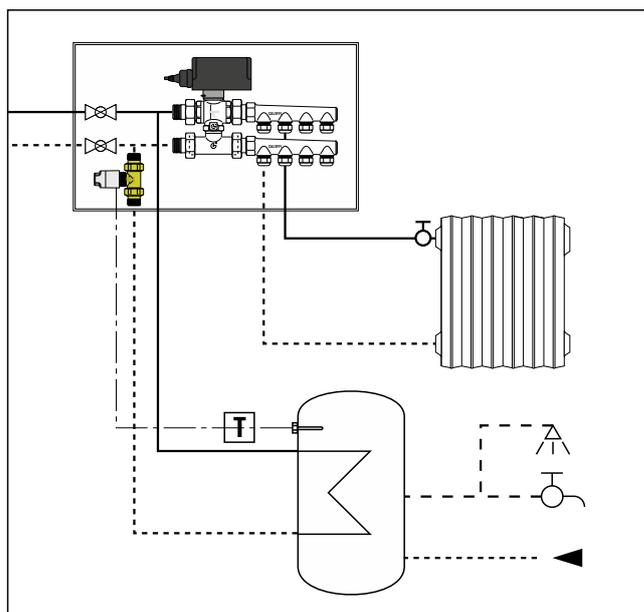
- In zone systems, where reduced dimensions and limited flow rate coefficient at the automatic regulating valve are required.
- In fan-coil systems, if they are to be fitted with valves for automatic shut-off of the medium.



- In radiant panel and radiator systems, if you want to:
  - control the temperature in the single rooms heated by the circuits branching out from the manifold.
  - shut off each circuit directly at the manifold, with less labour and cost for making the electric connections.



- In heating and domestic hot water systems, for temperature control in hot water storage heaters.



## SPECIFICATION SUMMARY

### 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. Supply cable length 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. Supply cable length 80 cm.

### Code 656344/54

Thermo-electric actuator with manual opening, position indicator and low power consumption. Normally closed, with auxiliary microswitch (cod. 656354). Self-extinguishing polycarbonate protective shell. Colour white RAL 9010 cod. 656344, grey RAL 9002 cod. 656354. Electric supply voltage 230 V (ac); 24 V (ac); 24 V (dc). Starting current  $\leq 250$  mA. Running current 125 mA. Running power consumption 3 W. Protection class IP 40. Made with double insulation. Ambient temperature range 0–50°C. Operation time: opening time 80%: 300 s, opening time 100%: 600 s, closing time: 240 s, auxiliary microswitch closing time: 300 s. Supply cable length 80 cm.

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