

Thermo-electric actuator. Thermo-electric actuator with low power consumption.

6562 series

6564 series



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.

This thermo-electric actuator is equipped with a valve opening/closing indicator and it can also be installed upside-down. In addition, it is supplied with a quick-coupling system with a clip adapter to facilitate installation.

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 2006/95/EC and 2004/108/EC



Product range

Code 656202 Thermo-electric actuator	electric supply 230 V (ac)
Code 656204 Thermo-electric actuator	electric supply 24 V (ac) or 24 V (dc)
Code 656212 Thermo-electric actuator with auxiliary microswitch	electric supply 230 V (ac)
Code 656214 Thermo-electric actuator with auxiliary microswitch	electric supply 24 V (ac) or 24 V (dc)
Code 656402 Thermo-electric actuator with low power consumption	electric supply 230 V (ac)
Code 656404 Thermo-electric actuator with low power consumption	electric supply 24 V (ac) or 24 V (dc)
Code 656412 Thermo-electric actuator with low power consumption and auxiliary microswitch	electric supply 230 V (ac)
Code 656414 Thermo-electric actuator with low power consumption and auxiliary microswitch	electric supply 24 V (ac) or 24 V (dc)

Technical specifications

Materials

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

Performance

Normally closed	
Electric supply:	230 V (ac) - 24 V (ac) - 24 V (dc)
Starting current:	≤ 1 A (6562), ≤ 250 mA (6564)
Running current:	
-6562 series: 230 V (ac) = 13 mA; 24 V (ac) - 24 V (dc) = 140 mA	
-6564 series: 230 V (ac) = 15 mA; 24 V (ac) - 24 V (dc) = 125 mA	
Running power consumption:	3 W
Aux. microswitch contact rating (code 656.12/14):	0,8 A (230 V)
Protection class (fitted in all positions):	IP 54
Double insulation construction:	<input checked="" type="checkbox"/> CE

Operating time 6562 series

Operating time:	opening and closing from 120 s to 180 s
Aux. microswitch closing time:	from 120 s to 180 s

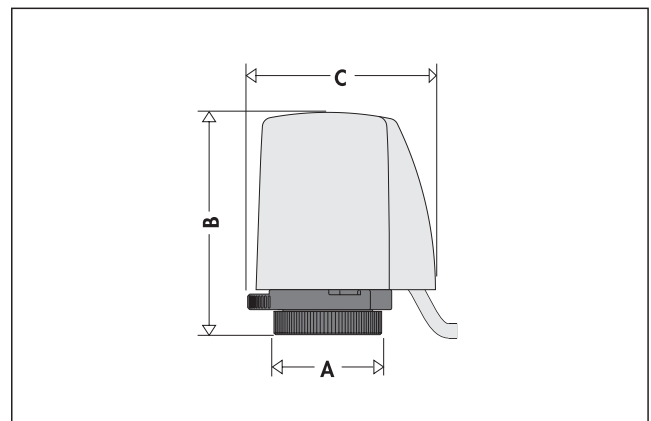
Operating time 6564 series

Opening time 80%:	300 s
Opening time 100%:	600 s
Closing time:	240 s
Aux. microswitch closing time:	300 s
Length of supply cable:	80 cm

Ambient conditions (valve + actuator)

Medium working temperature range:	5-75°C
Ambient temperature:	
Operation:	0-50°C EN 60721-3-3 Cl. 3K3, max. humidity 85%
Transportation:	-10-70°C EN 60721-3-2 Cl. 2K2, max. humidity 95%
Storage:	-5-50°C EN 60721-3-1 Cl. 1K2, max. humidity 95%

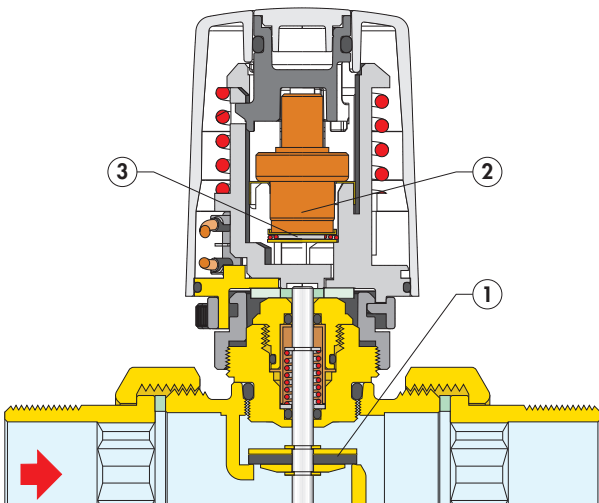
Dimensions



Code	A	B	C	Mass (kg)
656...	M 30 x 1,5	70	59	0,16

Operating principle

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



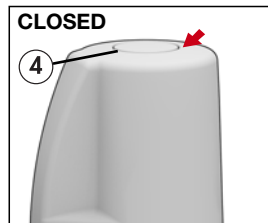
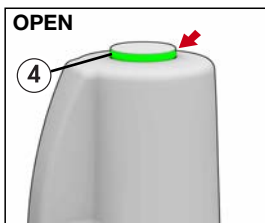
Construction details

Opening/closing indicator

The thermo-electric actuator, when it is electrically powered, opens the valve.

Opening is displayed by the central disc rising (4) on the top of the knob and by the presence of the green circular indicator.

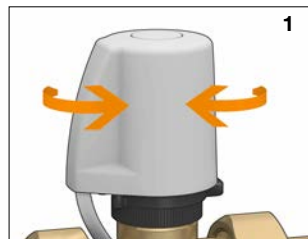
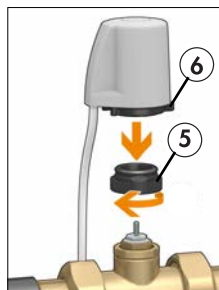
The presence of the opening/closing position indicator is especially useful at the time of testing if it is necessary to check its operation, without necessarily having to activate the system or uninstal the device for the checks.



Straightforward installation and compatible coupling

The thermo-electric actuator can be installed quickly on the entire Caleffi product range requiring it to be used (such as zone valves, distribution manifolds, radiator valves), thanks to an innovative quick-coupling system.

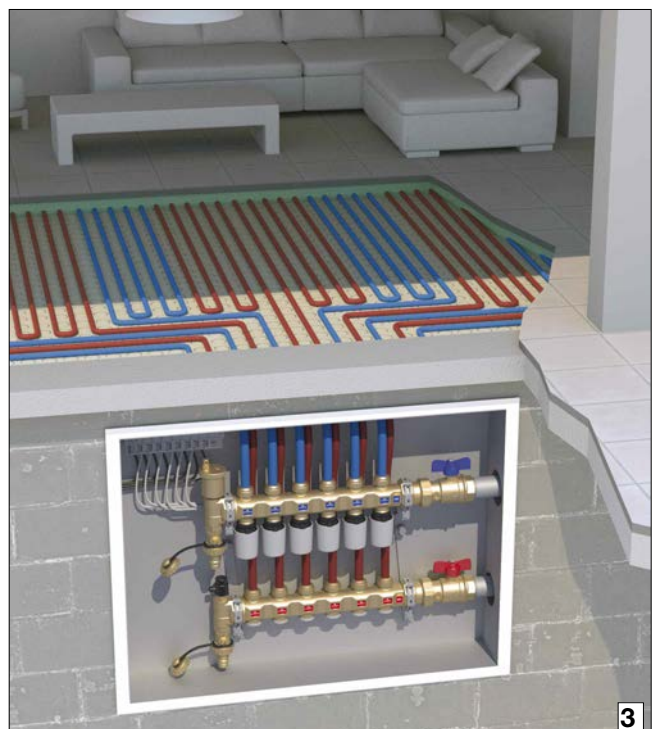
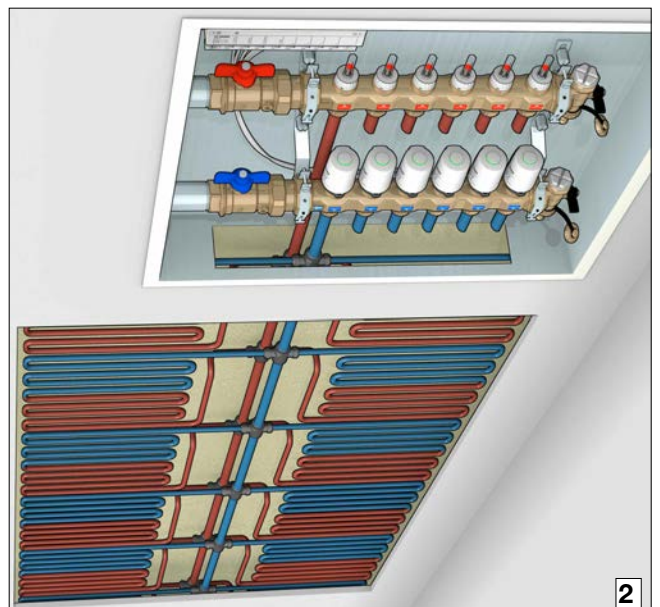
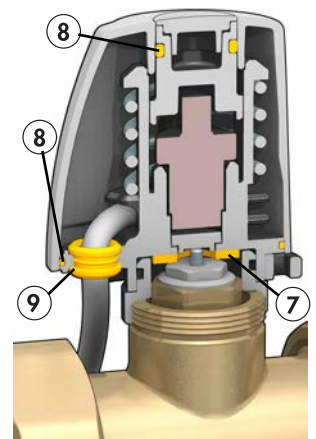
A special manual screw nut (5) once installed, enables coupling/uncoupling the thermo-electric actuator from the valve by means of a straightforward fixing clip (6). This type of coupling moreover makes it possible to be able to rotate the actuator, once installed, for easier arrangement of the electric supply cables (fig. 1).



Protection class IP

The protection class of the thermo-electric actuator, assembled on the valve, is IP 54. This type of electric insulation, made with seals (7), O-Rings (8) and the fairlead (9), enables installation also in the upside-down position.

The installation of the actuator in the upside-down position is especially advantageous in wall or ceiling radiant panel systems (fig. 2) or in cases in which the manifold of the underfloor radiant panel must be installed upside-down in the floor below the room to be air-conditioned (fig. 3).

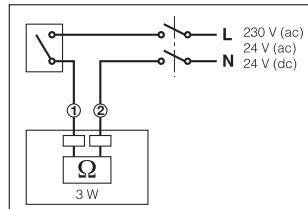


Low starting current

The 6564 series of thermo-electric actuators is termed low power consumption because it features a low starting current in the opening phase. This enables not having to oversize the power transformers to supply a high number of actuators, connecting them without any trouble to common control devices such as, for example, control bars and thermostats.

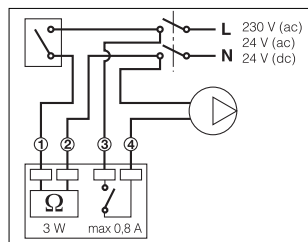
Wiring diagrams

- Wiring diagrams for codes 656202, 656204, 656402, 656404.

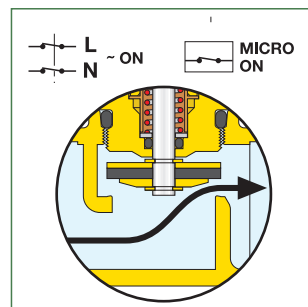
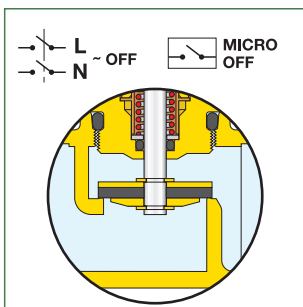


- Wiring diagrams with auxiliary microswitch for codes 656212, 656214, 656412, 656414.

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, a relay must be used.



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



Coupling table

Table of coupling/hydraulic characteristics of actuator 656. + valve body

Series	338-401				339-402				421-425		422-426			455	
Sizes	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/4"	1"	3/8"	1/2"	3/8"	1/2"	1/2"	3/4"	1"
Kv _{0.01} (l/h)	185	210	270	440	110	145	225	420	130	140	90	100	200/110		
Δp _{MAX} (kPa)	250	250	180	120	250	250	180	120	250	250	250	250	100		

Series	220-222			221-223			224-227		225		663		666 S1 668 S1		662 671		670 671	
Sizes	3/8"	1/2"	3/4"	3/8"	1/2"	3/4"	3/8"	1/2"	3/8"	1/2"	1 1/4"	1 1/4"	1"	1"	1"	1"	1"	1"
Kv _{0.01} (l/h)	180	200	255	100	135	200	80	125	85	125	287	250	410	240	240	240	240	240
Δp _{MAX} (kPa)	250	250	180	250	250	180	250	250	250	250	250	250	250	180	250	250	250	250

** With adapter code F36077

Installation

The actuator can be installed in every position (fig. 4).

Tighten the locking nut as fully as possible.

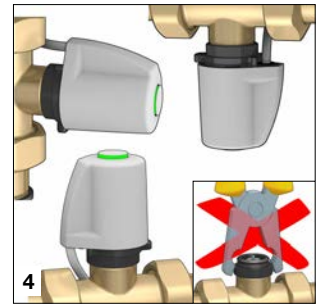
- The thermo-electric actuator should be tightened by hand without the use of tools.

- The thermo-electric actuator should not be dismantled for possible repairs. Its tampering leads to permanent damage.

- For a proper actuator working, 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.

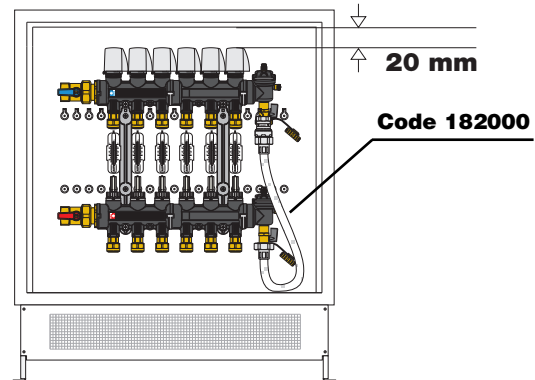
- When assembling with a zone valve or manifold in a box, leave a gap of at least 20 mm between the thermo-electric actuator and the frame for any replacement or maintenance work.



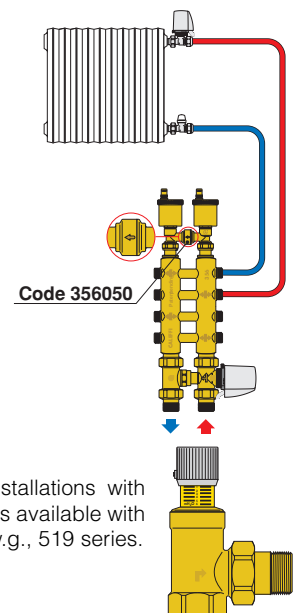
Recommendations for use

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:

- For pre-assembled manifolds 670 series a differential by-pass is available, pre-installed or as an accessory, with a fixed calibration setting of 2500 mm w.g., code 182000; for pre-assembled manifolds 662 series a differential by-pass is available as an accessory with a fixed calibration setting of 2000 mm w.g., code 662000; for pre-assembled manifolds 663 series a differential by-pass is available as an accessory with a fixed calibration setting of 2000 mm w.g., code 663000.



- For installations with cast monoblock dual and single sided manifolds 356 - 357 series, a by-pass is available with a fixed differential setting of 2000 mm w.g., code 356050.

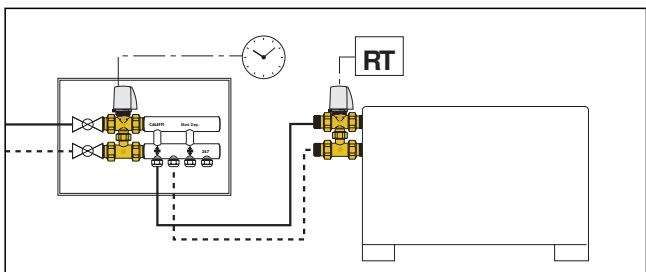


- For centralised installations or installations with risers, a differential by-pass valve is available with an adjustable setting of 1 to 6 m w.g., 519 series.

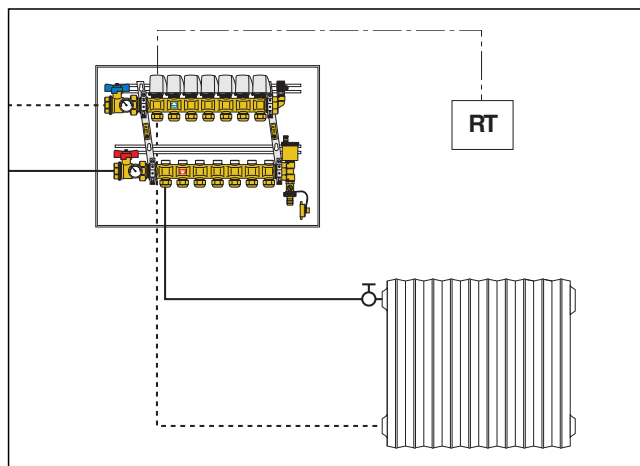
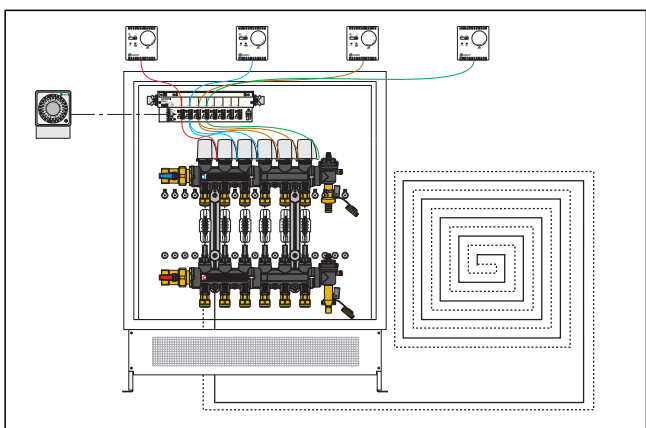
Applications

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

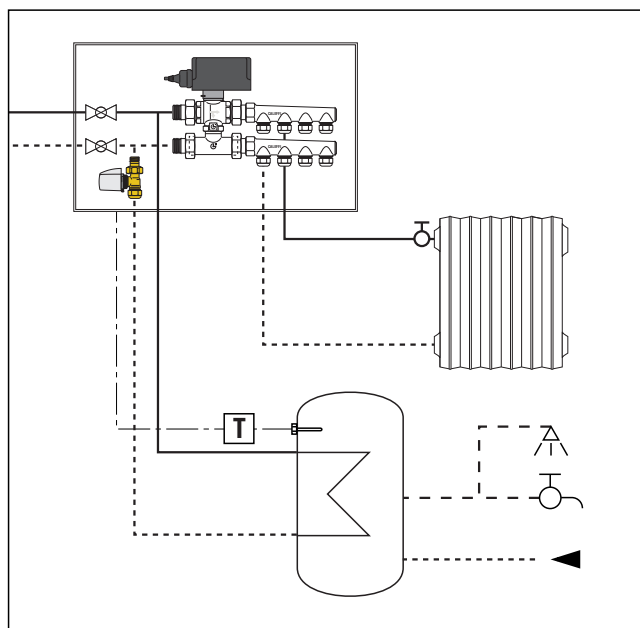
- In zone systems, where reduced dimensions and limited flow rate coefficient at the automatic regulating valve are required.
- In fan-coil systems, if they are to be fitted with valves for automatic shut-off of the medium.



- 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

6562 series

Thermo-electric actuator, with position indicator. Normally closed, with auxiliary microswitch (code 656212/4). Self-extinguishing polycarbonate protective shell. Colour white RAL 9010 (code 656202/4), grey RAL 9002 (code 656212/4). 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. Auxiliary microswitch contact rating (code 656212/4) 0,8 A (230 V). Protection class IP 54. Made with double insulation. Medium working temperature range 5–75°C. Ambient temperature: operation 0–50°C EN 60721-3-3 Cl. 3K3, maximum humidity 85%, transportation -10–70°C EN 60721-3-2 Cl. 2K2, maximum humidity 95%, storage -5–50°C EN 60721-3-1 Cl. 1K2, maximum humidity 95%. Opening/closing time from 120 to 180 s. Supply cable length 80 cm. To ENEC and SEV standard.

6564 series

Thermo-electric actuator with low power consumption, with position indicator. Normally closed, with auxiliary microswitch (code 656412/4). Self-extinguishing polycarbonate protective shell. Colour white RAL 9010 (code 656402/4), grey RAL 9002 (code 656412/4). Electric supply 230 V (ac); 24 V (ac); 24 V (dc). Starting current ≤ 250 mA. Running current 15 mA 230 V (ac); 125 mA 24 V (ac) - 24 V (dc). Running power consumption 3 W. Auxiliary microswitch contact rating (code 656412/4) 0,8 A (230 V). Protection class IP 54. Made with double insulation. Medium working temperature range 5–75°C. Ambient temperature: operation 0–50°C EN 60721-3-3 Cl. 3K3, maximum humidity 85%, transportation -10–70°C EN 60721-3-2 Cl. 2K2, maximum humidity 95%, storage -5–50°C EN 60721-3-1 Cl. 1K2, maximum humidity 95%. 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. To ENEC and SEV standard.

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