

# Thermo-electric actuator with low current draw

6564 series



01198/14 NA  
Replaces 01198/012 NA



## Function

The thermo-electric actuator, mounted to a zone valve or manifold, allows automatic shut-off of the medium under the control of a room thermostat or electrical switch. The 6564 series features low current draw, ideal during the start-up phase.

It is equipped with a valve opening/closing indicator, and a quick-coupling system with a retainer clip adapter for easy installation. It features NEMA 5 protection allowing upside-down installation.



## Product range

- Code **656404** Thermo-electric actuator with low power consumption . . . . . electric supply 24 V (ac) or 24 V (dc)
- Code **656414** Thermo-electric actuator with low power consumption and auxiliary micro-switch . . . . . electric supply 24 V (ac) or 24 V (dc)

## Technical specifications

**Materials** - protective shell: self-extinguishing polycarbonate  
 - color: white RAL 9010 (code **656404**)  
 grey RAL 9002 (code **656414**)

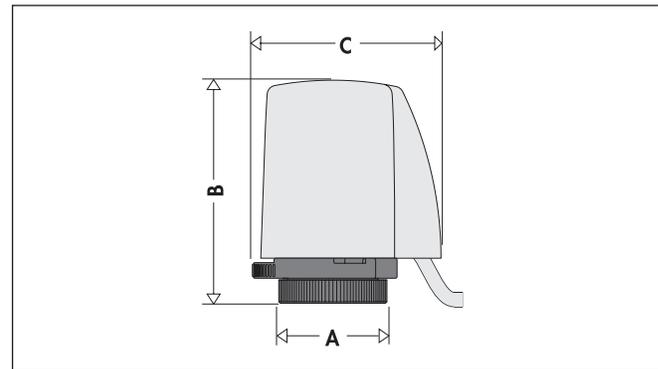
### Performance

Normally closed  
 Electric supply: 24 V (ac) – 24 V (dc)  
 Starting (in rush) current: ≤ 250 mA  
 Holding current: 125 mA  
 Running power consumption: 3 W  
 Aux. micro-switch contact rating: 5 A (24 V)  
 Protection class (installed in all positions): NEMA 5 (IP 54)  
 Double insulation construction: ☐ CE  
 Opening time 80%: 300 s  
 Opening time 100%: 600 s  
 Closing time: 240 s  
 Aux. microswitch closing time: 300 s  
 Length of supply cable: 31.5" (80 cm)  
 Available stroke length: 4 mm

### Ambient conditions (valve + actuator)

Medium working temperature range: 40–170°F (5–75°C)  
 Ambient temperature:  
 Operation: 32–120°F (0–50°C), max. humidity 85%  
 Transportation: 15–160°F (-10–70°C), max. humidity 95%  
 Storage: 20–120°F (-5–50°C), max. humidity 95%

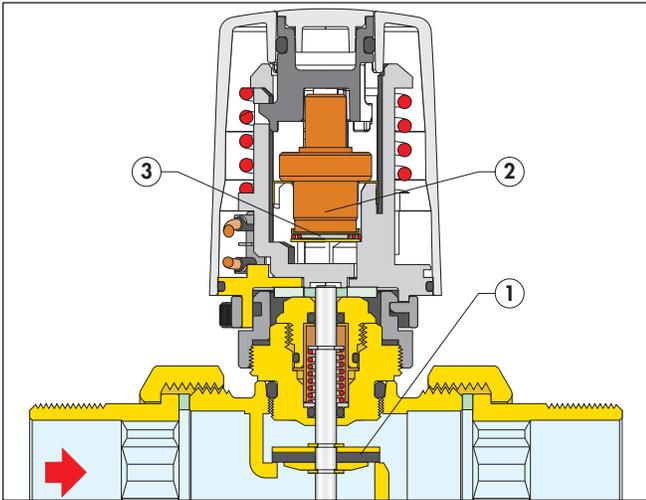
## Dimensions



Code	A	B	C	Wt. (lb.)
<b>656404/656414</b>	M30 x 1.5	2 3/4"	2 5/8"	0.4

## Operating principle

When the power supply is OFF, the device (actuator + valve) is “normally closed” with the valve plug (1) pushed against the seat. When the power supply is ON, the valve opens as the wax thermostatic element expands (2) controlled directly by a PTC resistor (3).



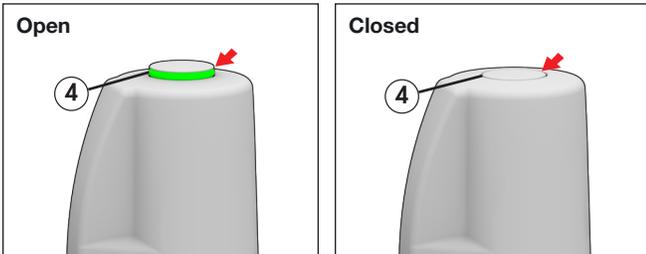
## Construction details

### Opening/closing indicator

The 6564 series 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 opening/closing position indicator is especially useful during testing to check for proper operation without having to activate the system.

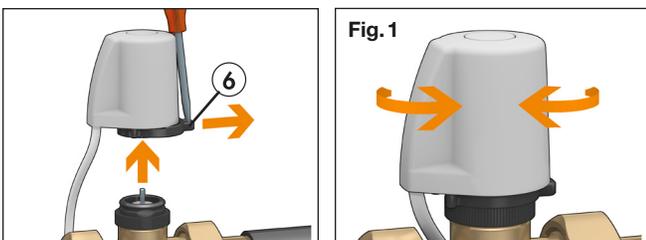
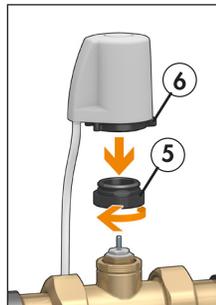


### Easy installation and compatible coupling

The 6564 series thermo-electric actuator can be quickly installed on all compatible Caleffi products (zone valves, distribution manifolds, radiator valves), with an innovative quick-coupling system.

A special manual coupler (5) when installed, enables coupling and uncoupling the 6564 series thermo-electric actuator to and from the valve with a retaining clip (6).

This type of coupling also makes it easy to rotate the actuator, once installed, for easier arrangement of the electric supply cables (fig. 1).



## Protection class NEMA 5

The protection class of the 6564 series thermo-electric actuator, assembled on the valve, is NEMA 5 (IP 54).

This type of protection, made with seals (7), o-rings (8) and a grommet (9), enables upside-down position installation.

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

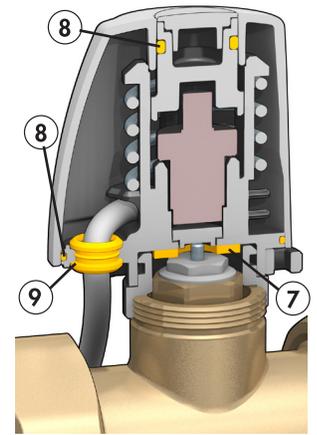


Fig. 2

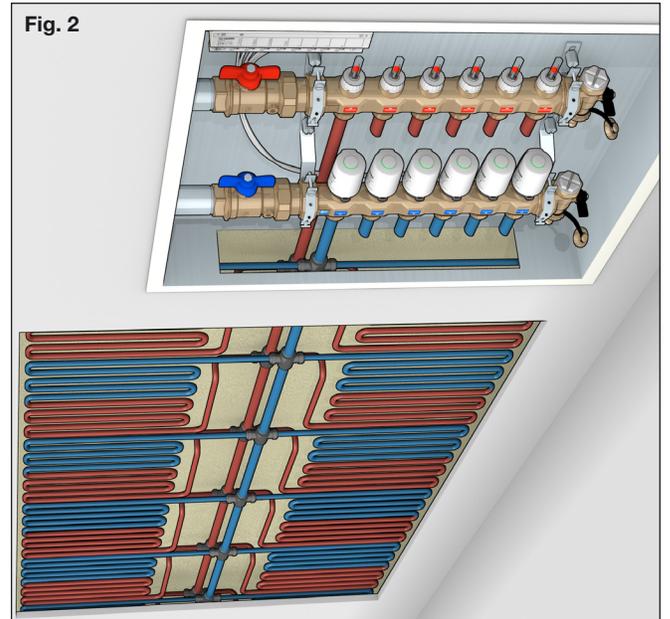
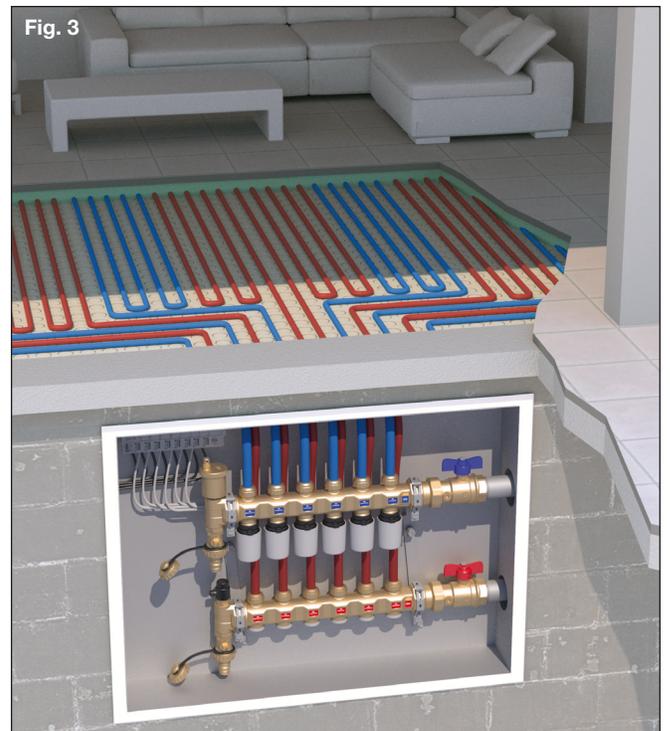


Fig. 3

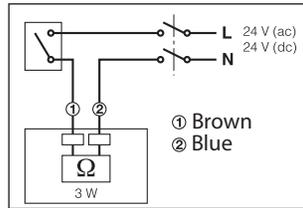


## Low starting current

The 6564 series thermo-electric actuator features a low starting (in-rush) current. This prevents having to oversize the power transformers to supply a high number of actuators, connecting them to common control devices such as controllers and thermostats.

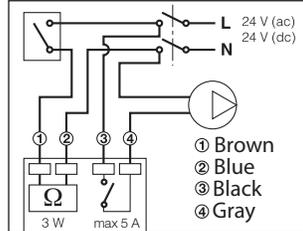
## Wiring diagrams

Wiring diagram for code **656404**.

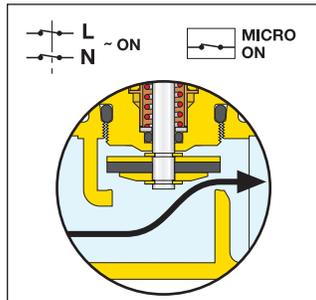
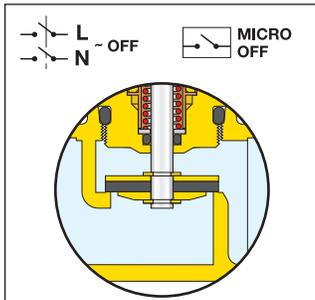


Wiring diagram with auxiliary micro-switch for code **656414**.

The auxiliary micro-switch can be used to turn off the pump when there is no call for heat and the valves are closed. If the pump power consumption exceeds the contact rating of 5 A, a relay must be used.



The auxiliary micro-switch shuts off for an average actuator opening value of 80%.



## 6564 series valve or manifold assembly characteristics

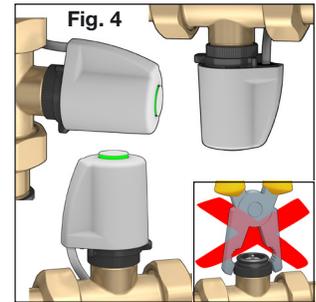
Series	Sizes	max. Cv	ΔP max. (psi)
<b>338452</b>	1/2"	2.4	35
<b>339452</b>	1/2"	1.7	35
<b>220</b>	1/2"	2.3	35
	3/4"	3.0	25
<b>221</b>	1/2"	1.5	35
	3/4"	2.3	25
<b>663</b>	1 1/4"	3.2	35
<b>668 S1</b>	1 1/4"	2.9	35
<b>676</b>	1/2" - 1"	4.0	35

## Installation

The actuator can be installed in any position (**fig. 4**). Tighten the locking nut as fully as possible.

The 6564 series thermo-electric actuator should be tightened by hand without the use of tools.

The 6564 series thermo-electric actuator can not be repaired. Any attempt to disassemble to make any repairs can lead to permanent damage. Repair this actuator by replacement only.



For proper operation, **the electric system must be sized according to the starting (in-rush) current.**

**If it is necessary to control several zones with these actuators in parallel with the same thermostat, an intermediate relay may be needed to avoid electric overloads.**

When assembling with a zone valve or manifold in a box, leave a gap of at least 3/4" (20 mm) between the 6564 series thermo-electric actuator and the frame for any replacement or maintenance work.

## SPECIFICATION SUMMARIES

### 6564 series

Thermo-electric actuator with low current draw, with position indicator. Normally closed, with auxiliary micro-switch (code **656414**). Self-extinguishing polycarbonate protective shell. Color white RAL 9010 (code **656404**), gray RAL 9002 (code **656414**). Electric supply 24 V (ac); 24 V (dc). Starting (in-rush) current  $\leq 250$  mA. Holding current 125 mA 24 V (ac) - 24 V (dc). Running power consumption 3 W. Auxiliary micro-switch contact rating (code **656414**) 5 A (24 V). Protection class NEMA 5 (IP 54). Made with double insulation per CE. Medium working temperature range 40–170°F (5–75°C). Ambient temperature: operation 32–120°F (0–50°C), maximum humidity 85%, transportation 15–160°F (-10–70°C), maximum humidity 95%, storage 20–120°F (-5–50°C), maximum humidity 95%. Operation time: opening time 80%: 300 s, opening time 100%: 600 s, closing time: 240 s, auxiliary micro-switch closing time: 300 s. Supply cable length 31.5" (80 cm). Available stroke length 4 mm.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.



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