

# ACTUATORS

## How do they work?

At the heart of the Actuator head is an electrothermic element. The element uses a wax compound that expands when it takes on heat. This expansion drives a small piston in a linear direction. The heat is created when current is passed through a PTC resistor attached to the element body.

Both N/O and N/C valves use the same electrothermic element but in slightly different ways. In the N/C valve the element sits in a plastic cradle surrounded by a spring. The spring pressure forces the element down onto a black plastic plunger which in turn pushes down on a spring loaded mechanical pin projecting from the manifold electrothermic body. When power is applied to the valve, current passes through the PTC warming the wax compound, this causes the piston to move, forcing the element to compress the spring. This removes pressure on the black plunger allowing the manifold pin to push the plunger back up into the valve head.

The N/O valve element again sits in a spring loaded plastic cradle, this time when power is applied to the valve the element piston acts directly on the plastic plunger pushing down on the mechanical pin contained within the electrothermic body. When not actuated, the counter spring gradually pushes the piston back into the element. This spring also absorbs any over stroke, when on full actuation.



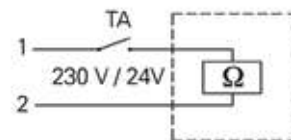
1. Polycarbonate case
2. Stainless steel spring
3. Indicator PPA (35% FV)
4. Steel radial stop ring
5. Brass shelf TN UNI EN 12164 CW614N
6. Polycarbonate base
7. M30x1.5 ring nut PA 66 (50% FV)
8. PVC cable
9. Microswitch 5A
10. Wax expansion electrothermal actuator

## Features and Benefits

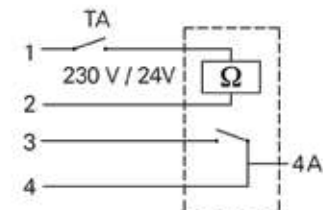
- Unique oval shape allows finger access either side of the head when mounting the electrothermic head onto the manifold body (this is done by screwing the loose ring).
- Black pop up indicator, which tells you whether the valve is opened or closed. This pop up indicator is in a separate channel, to avoid ingress of water into the electrical parts.
- IP44 in vertical position, IP40 horizontal or inverted.
- Reaction time – it responds in a linear fashion, taking 5 minutes (80% of travel is completed in 3 minutes)
- Low energy input approx. 3W – 3.5W, therefore a low cost, energy efficient device
- Breakaway current: 0.25A (230V)
- It exerts a strong force, overcoming between 45 N to 140 N spring resistance
- Pin travel 3.6mm
- Maintenance free.
- They are silent running.
- PVC cable 1m length

## Wiring Diagrams

NC 24V / 230V  
NO 24V / 230V



NC 24V / 230V - c/micro (\*)



Cable identification: 1: Brown / 2: Blue / 3: Black / 4: Black

Coil resistance:

24V: 115 Ohms +/-29

230V: 6000 Ohms +/-2100/-1500

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