

## VA-7040 Electric Thermal Actuator

### **I**ntroduction

*The VA-7040 electric thermal actuator provides a two position (open / closed) control and can easily be mounted onto VG5000 forged brass valves.*

*The VA-7047 can be mounted onto VB-5040-S forged brass valves using a threaded adapter.*

*The construction of the power element provides a smooth opening or closing action and is ideal for comfort installations.*



**VA-7040 with VG5000 valve body (left)**

**VA-7047 with VB-5040-S valve body (right)**

### Features and Benefits

|   |  |
|---|--|
| <input type="checkbox"/> <b>Low and line voltage models available</b>                                       | Flexible application   |
| <input type="checkbox"/> <b>Compact design</b>  | Ideal for installation in confined spaces (fan coils, etc.)                            |
| <input type="checkbox"/> <b>Can be mounted after valve body is installed</b>                                | Easier to install. Allows more flexibility in actuator selection                       |
| <input type="checkbox"/> <b>Actuator can be rotated after mounting</b>                                      | Allows location of the cable entry in the required position. Makes installation easier |
| <input type="checkbox"/> <b>Smooth action</b>   | No noise. Suitable for comfort installations   |
| <input type="checkbox"/> <b>NC/NO field-selectable when used in combination with VB-5040-S valve series</b> | Allows flexibility in actuator selection   |

## Ordering data

|                           |   |     |   |
|---------------------------|---|-----|---|
| VA-704                    | □ | - 2 | □ |
| <b>Supply voltage</b>     |   |     |   |
| 1 24 VAC or 24VDC         |   |     |   |
| 3 230 VAC                 |   |     |   |
| <b>Valve combinations</b> |   |     |   |
| 0 VG5000 Series           |   |     |   |
| 7 VB-5040-S Series        |   |     |   |

## Actuator combinations

The VA-7040 series thermal valve actuators are designed to be used with the VG5000 and VB-5040-S valve series. An adapter is required when used in combination with VB-5040-S valve series. The ordering data for these valve bodies and adapters are as follows:

### ● VG5000 series

|              |   |
|--------------|---|
| VG52 □ □ □ C | 2-way Push Down To Close                        |
| VG54 □ □ □ C | 2-way Push Down To Open                         |
| VG55 □ □ □ C | 3-way mixing with built-in Normally Open bypass |
| VG58 □ □ □ C | 3-way mixing                                    |

Please refer to the product bulletin "VG5000 Forged Brass Valves" for complete ordering information.

### ● VB-5040-S series (male connections)

|                   |   |
|-------------------|---|
| VB-5440-S □ □ □ □ | 2-way Push Down To Open                           |
| VB-5540-S □ □ □ □ | 3-way with built-in Normally Open bypass          |
| VB-5840-S □ □ □ □ | 3-way mixing                                      |
| VB-5000-8040      | Adapter set to be ordered separately (pack of 10) |

Please refer to the product bulletin "VB-5040-S Forged Brass Valves 1/2" and 3/4" male thread" for complete ordering information.

## Operation

### VA-7040 with VG5000 valve series

When energised, the actuator power element pushes down axially on the valve stem against the force of the valve return spring to open the normally closed port of the valve.

When the actuator is de-energised, the valve return spring brings back the valve to its normal position.

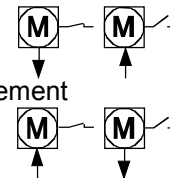
### VA-7047 with VB-5040-S valve series

The actuator is delivered with a clip that allows the choice for:

a push-down movement

or

a pull-up movement



(Normally Closed configuration, factory setting)

(Normally Opened configuration)

when energised.

This results in a respectively Normally Closed or Normally Open function of the valve.

A screwdriver (width 2 mm) and a pliers are needed to change the actuator from normally open to normally closed configuration. Read the instruction sheet for more details. The actuator is delivered from factory in a NC configuration (push-down when energised).

### Normally closed configuration (factory setting)

When energised, the actuator power element pushes down axially on the valve stem against the force of the valve return spring to open the normally closed port of the valve.

When the actuator is de-energised, the valve return spring brings back the valve to its normal position against the pressure of the medium.

### Normally open configuration

When the actuator is energised, the valve return spring brings back the valve to the closed position against the pressure of the medium.

When the actuator is de-energised, the actuator spring pushes down axially on the valve stem against the force of the valve return spring to open the normally closed port of the valve.

## Valve Action Summary

See "Operation" for information about spindle movement.

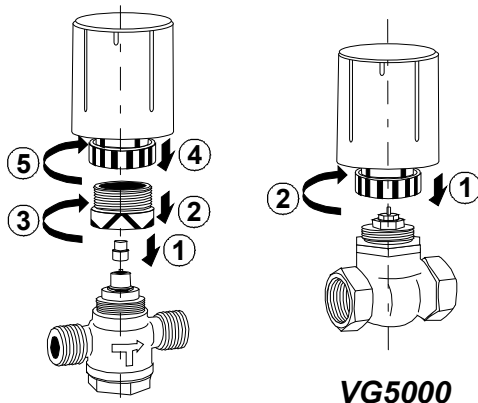
| Valve Code                | Valve Type        | Stem movement / flow   |
|---------------------------|-------------------|--|
| VG52x0xC                  | 2-way NO, PDTC *) | <br>= flow (triangle pointing right)<br>= no flow (triangle pointing left) |
| VG54x0xC<br>VB-5440-Sxxxx | 2-way NC, PDTO *) | <br>= flow (triangle pointing right)<br>= no flow (triangle pointing left) |
| VG55x0xC<br>VB-5540-Sxxxx | 3-way + NO ByPass | <br>= flow (triangle pointing right)<br>= no flow (triangle pointing left) |
| VG58x0xC<br>VB-5840-Sxxxx | 3-way, mixing     | <br>= flow (triangle pointing right)<br>= no flow (triangle pointing left) |

\*) PDTC = Push down to close  
 PDTO = Push down to open

## Mounting instructions

When mounting the actuator on a VG5000 or a VB-5040-S valve, please follow the instructions below:

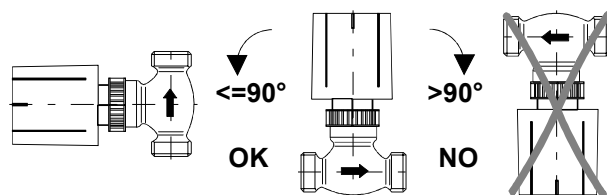
- Mount the VB-5000-8040 adapter set when used with VB-5040-S only (steps ①, ②, ③)



VB-5040-S

VG5000

- Never use the actuator as a mounting lever.
- Mounting position:



## Wiring instructions

### ⚠ WARNING

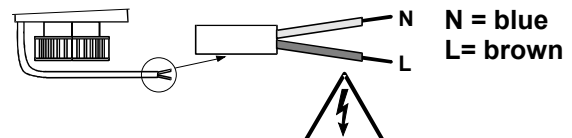
When servicing make sure that:

- the electric supply to the actuator is switched off to avoid possible damage to the equipment, personal injury or shock.
- you do not touch or attempt to connect or disconnect wires when electric power is on.
- Do not open or repair, contact the nearest Johnson Controls Commercial System wholesaler.

When wiring the actuator, please follow the instructions below:

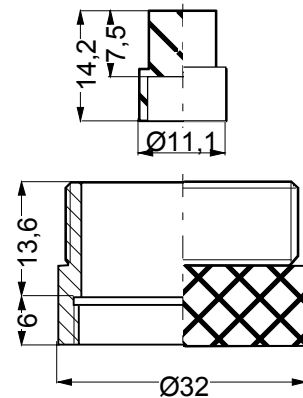
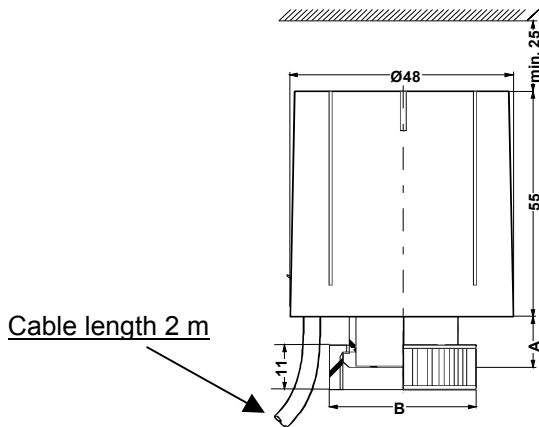
- Before mounting, wiring or adjusting the actuator, make sure that the power supply has been disconnected to avoid possible harm to material or person.
- Make sure that the line power supply is in accordance with the power supply specified on the actuator.
- All wiring should conform to local codes and must be carried out by authorised personnel only.

### Wiring diagram



N = blue  
 L = brown

## Dimensions (in mm)



**Adapter set VB-5000-8040  
for combination with VB-5040-S valve bodies**

| Actuator | A (mm) | B (mm) |
|----------|--------|--------|
| VA-7040  | 13,5   | Ø 32   |
| VA-7047  | 12,5   | Ø 34   |

## Specifications

| Models:  | VA-704x-21  | VA-704x-23          |
|--|---|---------------------|
| <b>Type of motor:</b>                              | Thermal ("Wax" power element)   |                     |
| <b>Action:</b>                                     | On/Off  |                     |
| <b>Supply voltage (50/60 Hz):</b>                  | 24 VAC or 24 VDC ± 15%  | 230 VAC ± 20%       |
| <b>Power consumption:</b>                          |   |                     |
| <b>Continuous</b>                                  | 3 W   | 2,5 W               |
| <b>Start-up</b>                                    | 6 VA (250 mA) max.  | 58 VA (250 mA) max. |
| <b>Nominal force:</b>                              | 125 N   |                     |
| <b>Nominal stroke:</b>                             | VA-7040: 4,4 mm<br>VA-7047: 3,6 mm  |                     |
| <b>Full stroke time at ambient temperature of:</b> | "ON"  | "OFF"               |
| - 5°C  | 3 min   | 3 min               |
| 20°C   | 2 min   | 4 min               |
| 50°C   | 1 min   | 10 min              |
| <b>Protection:</b>                                 | IP43 (IEC 60529)  |                     |
| <b>Connection to Valves:</b>                       | M 28x1,5 (VA-7040)<br>M 30x1,5 (VA-7047)  |                     |
| <b>Ambient Operating condition:</b>                | -5 to +50 °C, non condensing  |                     |
| <b>Ambient Storage condition:</b>                  | -30 to +65 °C, non condensing   |                     |
| <b>Weight, excl. Packaging:</b>                    | 170 g   |                     |
| <b>CE Compliance:</b>                              | EMC directive (89 / 336 EEC) according to standard<br>EN 50081-1, EN 50082-1<br>LVD directive (73 / 23 / EEC) according to standard<br>EN 60335 |                     |

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office.

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