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VA-703x Electrothermic Actuator

Product Bulletin

PB_VA-703x
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The VA-703x electrothermic actuator provides a two position (open / closed) control in HVAC applications.

The compact design of this actuator makes it suitable for installation in confined spaces, such as fan coil applications.

The VA-703x series actuator is designed for field mounting onto VG6000 series terminal unit valves (*see pertinent bulletin*).



Figure 1: VA-703x Electrothermic actuator

Table 1: Features and Benefits

Features	Benefits
Low and line voltage models available	Flexible application
Thermal two position control	Can be used in connection with ON/OFF thermostats and in connection with controllers with DAT output a modulating operation can be achieved
Compact design	Ideal for installation in confined spaces (fan coils, etc.)
Thermal power element	Smooth and silent operation. Suitable for comfort installation
Threaded mounting nut	Actuator can easily be mounted onto the valve without the need of any tool
Stroke indication	Allows visual ascertaining of stem position and provides easy commissioning
Separated models for Direct Action and Reverse Action	Allows flexibility in valve selection
Auxiliary microswitch	Allows connection with additional commands (metering, control of pump, fan or other equipment)

Ordering Code

Item code	Action	Auxiliary Switch	Supply voltage
VA-7030-21NO	Direct Acting (stem extends when actuator is energized)	---	24 VAC / VDC
VA-7035-21NO		X	
VA-7030-21NC	Reverse Acting (stem retracts when actuator is energized)	---	
VA-7035-21NC		X	
VA-7030-23NO	Direct Acting (stem extends when actuator is energized)	---	230 VAC / VDC
VA-7035-23NO		X	
VA-7030-23NC	Reverse Acting (stem retracts when actuator is energized)	---	
VA-7035-23NC		X	

Models with different cable lengths or models with auxiliary switch are available upon special request.

Valve actuator combinations

The VA-703x series thermal valve actuators are designed to be used with the VG6000 valve series. The ordering data for these valve bodies and adapters are as follows:

VG6000 series

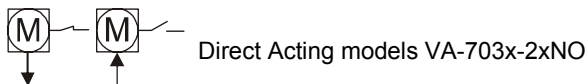
VG6x10xC All body types

Please refer to the product bulletin "VG6000 Series Brass Valves" for complete ordering information.

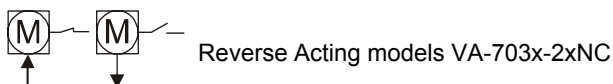
Operation

The actuator allows the choice for:

a push-down movement



or a pull-up movement



when energised.

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

Direct Acting configuration (VA-703x-2xNO models)

When energised, the actuator power element pushes down axially on the valve stem against the force of the valve return spring to close the normally opened straight through port of the valve.

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

In this version with microswitch (4 wire) the contact, is provided normally close (version NO).

Reverse Acting configuration (VA-703x-2xNC models)

When the actuator is energised, the valve return spring brings back the valve stem to the opened position of the control port.

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 close the normally opened straight through port of the valve.

In this version with microswitch (4 wire) the contact, is provided normally open (version NC).

Valve Code	Actuator Code	Power	Stem movement and flow through valve straight through port ▶ = flow ◀ = no flow
VG6x10xC	VA-703x-2xNO	When energised	Actuator stem down
		When not energised	Actuator stem up
	VA-703x-2xNC	When energised	Actuator stem up
		When not energised	Actuator stem down

Table 2: Valve Action Summary

Application with DAT controllers

With a DAT signal, which effects a periodic open/close position, a modulating operation of the valve can be achieved.

It is recommended to not exceed following number of actuators connected to a single DAT output.

Controller Series	Recommend maximum number of actuators per connected to a single DAT output	
	VA-703x-21Nx (24 VAC)	VA-703x-23Nx (230 VAC)
FX03	3	3
FX07	3	3
FX14	3	3
FX15	3	3
FX16	3	3
DX	3	Not applicable
TC-910x	3	Not applicable
AD-TCU	3	3
TC-8900	3	Not applicable
TC-8900 Series in connection with PM-8900 power modules	3	3
AD-FCC	Not applicable	1
AD-FCD	Not applicable	1
AD-IRC	Not applicable	1
FEC	3	Not applicable
TEC	2	Not applicable

Mounting Instructions

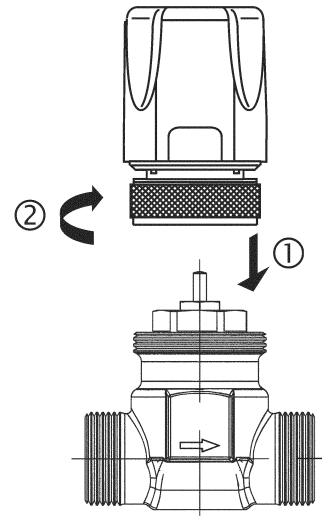


Figure 2: Mounting VA-703x actuators on VG6000 valves

Note: Never use the actuator as a mounting lever.

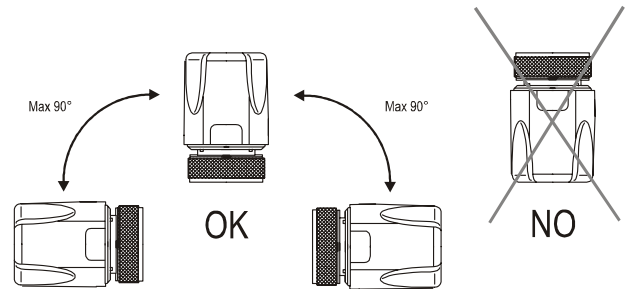


Figure 3: Mounting VA-703x actuators on VG6000 valves

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:

- 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.

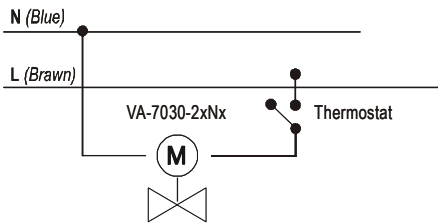


Figure 4: Wiring Diagram VA-7030-2xNx

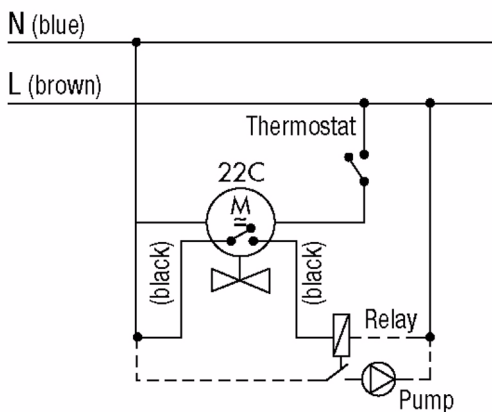


Figure 5: Wiring Diagram VA-7035-2xNC

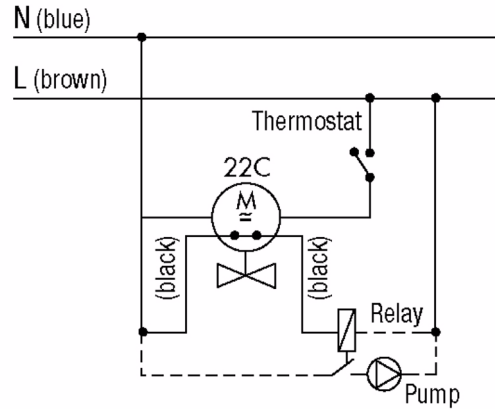
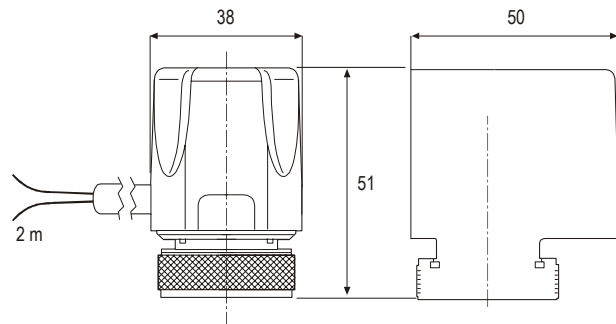



Figure 6: Wiring Diagram VA-7035-2xNO

Dimensions in mm



Technical Specifications

Products	VA-703x	
Models	VA-703x-21NO VA-703x-21NC	VA-703x-23NO VA-703x-23NC
Type of motor	Thermal	
Action	ON/OFF	
Supply voltage	24 VAC/VDC +20% -20%	230 VAC/VDC +15% -15%
Power consumption:		
Continuous	2.5 W	2.5 W
Start-up	6 W (for 0.5 s)	95 W (for 0.5 s)
Auxiliary microswitch	Max 700 mA - 250 V ~	
Nominal Force	100N (+/- 10%) for VA-703x-2xNC 80N (+/- 10%) for VA-703x-2xNO	
Nominal Stroke	3.5 mm	
Full stroke time at 20 °C (ambient temp)	5 min	3 min
Protection	IP 44 (EN 60529)	
Electrical Connection	2 m cable length: 2 pole x 0.75 mm ² 4 pole x 0.75 mm ²	
Connection thread to valves	M30 x 1.5	
Ambient operating condition	0 to +50°C, < 95% RH	
Ambient storage condition	-25 to +60°C, non condensing	
Shipping Weight	0.15 Kg	
 Compliance	EMC 89 / 336 EEC as per EN 61000-1 / EN 61000-2, EN 61000-3 / EN 61000-4 LVD directive 73 / 23 / EEC as per EN 60730-1 / EN 60730-2-14	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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