# VA-707x Thermal Valve Actuators

The VA-707x series terminal unit valve actuators provide ON/OFF and DAT control in HAVC application.

The compact design of these actuators make them suitable for installations in confined spaces, such as fan-coil applications.

The VA-707x actuators are designed for field mounting onto all Johnson Controls terminal unit valves: VG6000, V5000, VG4000 and VG5000 (see pertinent bulletins).

Moreover, thanks to an innovative fixing system, the VA-707x is suitable for almost all the terminal unit valves in the market.



VA-707x Thermal Valve Actuator

- Low and line voltage models available Flexible applications
- Suitable to Johnson Controls and almost all of terminal unit valve on the market No limits in valve selection and retrofitting
- Easy mounting solution (bayonet system) Easy to install, no expert required
- Compact design Ideal for installation in confined spaces (fan coils, etc.)
- Can be mounted after valve body is installed Easier to install. Allows more flexibility in actuator selection
- Actuator stroke indicator highly visible Actuator stroke visible in any direction, in confined space and in dark environment
- **Removable cable** No expert require for connection or replacement
- Different cable length available as separate kit OEM's version easily available
- **IP54** Installation permitted in any direction



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Product Code	Power Supply	Control Type	Factory Setting	Mounting Thread	Valve Combinations	Packaging
VA-7071-21			Normally Closed (stem retracts when energized) 2 m cable lenght	M28x1.5	VG4000 and VG5000	Single packaged in carton box
VA-7078-21	24 VAC/VDC			M30x1.5	V5000 and VG6000	
VA-7071-23				M28x1.5	VG4000 and VG5000	
VA-7078-23	230 VAC	ON/OFF		M30x1.5	V5000 and VG6000	
VA-7071-01D		Or DAT	Normally Closed (stem retracts when energized) Cable not included. Must be ordered separately	M28x1.5	VG4000 and VG5000	Bulk pack 50 pcs
VA-7078-01D	24 VAC/VDC	DAI		M30x1.5	V5000 and VG6000	
VA-7071-03D	000 1/4 0			M28x1.5	VG4000 and VG5000	
VA-7078-03D	230 VAC			M30x1.5	V5000 and VG6000	
VA-7070-21		ON/OFF	Normally Open (stem extends when energized) 2 m cable lenght	M28x1.5	VG4000 and VG5000	Single packaged in carton box
VA-7077-21	24 VAC/VDC			M30x1.5	V5000 and VG6000	
VA-7070-23	230 VAC			M28x1.5	VG4000 and VG5000	
VA-7077-23				M30x1.5	V5000 and VG6000	
VA-7070-01D		οι DΔT	or DAT Normally Open (stem extends when energized) Cable not included. Must be ordered separately	M28x1.5	VG4000 and VG5000	Bulk pack 50 pcs
VA-7077-01D	24 VAC/VDC	(stem		M30x1.5	V5000 and VG6000	
VA-7070-03D	220 1/4 C			M28x1.5	VG4000 and VG5000	
VA-7077-03D	230 VAC			M30x1.5	V5000 and VG6000	

# **Ordering Codes**

# Accessories (order separately)

Accessory Code	Description	Packaging	
0550602801	Cable kit 0.8 m		
0550602011	Cable kit 1 m	Single packaged in Carton Box	
0550602021	Cable kit 2 m		
0550602032	Cable kit 3 m		
0550602042	Cable kit 4 m		
0550602052	Cable kit 5 m		
0550602062	Cable kit 6 m		
0550602072	Cable kit 7 m		
0550602102	Cable kit 10 m		
0550602152	Cable kit 15 m	Single packaged in Plastic Bag	
0550602023	Cable kit 2 m – Halogen free		
0550602053	Cable kit 5 m – Halogen free		
0550602103	Cable kit 10 m – Halogen free		
0550390001	Threaded nut M30x1.5 with normal and short pin		
0550390101	Threaded nut M28x1.5 with normal and short pin		
0550390201	Threaded nut M30x1 with normal and short pin		
0550484101	Kit auxiliary switch (Normally Closed) 1 m cable	Single packaged in Carton Box	
0550484121	Kit auxiliary switch (Normally Closed) 2 m cable	Single packaged in Plastic Bag	
0550484201	Kit auxiliary switch (Normally Opened) 1 m cable	Single packaged in Carton Box	
0550484221	Kit auxiliary switch (Normally Opened) 2 m cable	Single packaged in Plastic Bag	



### **Valve Combinations**

The VA-707x series thermal valve actuator are designed to be used with Johnson Controls terminal unit valve V5000, VG6000, VG4000 and VG5000 (see pertinent bulletins).

Moreover, thanks to an innovative fixing system the VA-707x is suitable for all the terminal unit valve in the market.

To find the right bayonet to use, please check the closing dimension of the valve.

The closing dimension of a value is the distance between the face of the stem (pushed in with pretension of 100 N) and the contact surface of the lower thread. This contact surface is the reference stop of the bayonet nut.



Example: V5200 Valve

Value Celler thread	Bayonet nut				
valve Collar thread	Elevated nut	Standard nut	Elevated nut	Elevated nut	
M30 x 1.5	Yes, black	Yes, black	Yes, black	Yes, black	
M28 x 1.5	Yes, grey	Yes, grey	Yes, grey	Yes, grey	
M30 x 1	Yes, white	Not available	Yes, white	Yes, white	
Insert	S reduced white	Not applicable	N normal black	Without insert	
Closing dimension NC (mm)	4.59.5	8.513.5	8.513.5	13.518.5	
Closing dimension NO (mm)	8.513.5	12.514.5	12.517.5	17.522.5	





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## Operation

When the actuator is de-energized, the stem extends. When the actuator is energized, the stem retracts.

#### VG6000 and V5000

Valve Type		Stem Movement / Flow = flow > = no flow		
functifype		Actuator Stem Extended	Actuator Stem Retracts	
	2-Way PDTC (NO)		∭ ★	
	3-Way MIXING		M ×	
	3-Way DIVERTING	M ★	M M	
	3-Way + Bypass	$^{\mathbb{M}}$	$\xrightarrow{M}$	
	3-Way + Bypass			

#### VG5000 and VG4000

Valve Type		Stem Movement / Flow 🕨 = flow 🗁 = no flow		
		Actuator Stem Extended	Actuator Stem Retracts	
	2-Way PDTC (NO)			
	2-Way PDTO (NC)			
	3-Way MIXING			
RETURN	3-Way + Bypass			



### **Mounting Instructions**

When mounting the actuator on the V5000, VG6000, VG4000 or VG5000 valve series, please follow the instruction below:



How to do...

- First screw the bayonet nut to the valve and tighten.
- Then fit the actuator to the valve without force.
- Turn the bayonet ring clockwise until the "2x click". This position is the safety position to prevent potential loosening due to vibration.
- Whilst the bayonet nut is being rotated, the drive adapts itself to the closing dimension of the valve.



# **Mounting Position**



### Wiring Instructions

#### 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
- $\cdot\,$  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 authorized personnel only
- $\cdot \,$  do not touch or attempt to connect or disconnect wires when electric power is on
- · do not open or attempt to repair, contact your Johnson Controls dealer





Mounting of the cable





Wiring diagram

Auxiliary switch wiring diagram

# **Dimensions in mm**



VA-707x Actuator (mounted onto valve)



# **Technical Specifications**

Models	VA-707x-23	VA-707x-21		
Type of motor	Thermal ("Wax" power element)			
Type of control	ON/OFF or DAT			
Autor	Normally closed (stem retracts when energized)			
Action	Normally open (stem extends when energized)			
Supply voltage (50/60 Hz)	230 VAC ±10%	24 VAC/VDC ±20%		
Power Consumption				
- Continuous	2.5 W	3 W		
- Start up	150 mA	220 mA		
Nominal Force	125 N			
Nominal Stroke	4.5 mm			
Running Time	3.5 min	4.5 min		
Electrical connection	2 m PVC cable, wire sections 2 x 0.75 mm <sup>2</sup>			
Protection	IP 54 (E	N60529)		
Connection to uply of	M28 x 1.5 (VA-7071)			
Connection to valves	M30 x 1.5 (VA-7078)			
Max valve operating temperature	100 °C			
Ambient operating condition	-5 to +50 °C, non condensing			
Ambient storage condition	-25 to +70 °C, non condensing			
Weight, excl. packaging 0.2				
	Low Voltage Directive 2006/95/EC: EN60730-1/EN60730-2-14	EMC directive 2004/108/EC: EN61000-6-1/EN61000-6-2		
CEConformity	EMC directive 2004/108/EC: EN61000-6-1/EN61000-6-2 EN61000-6-3/EN61000-6-4	EN61000-6-3/EN61000-6-4		

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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