

VA-7000 SERIES ACTUATOR

DESCRIPTION

VA-7000 series actuator is electromechanical product, and can be mounted on VB-7000 series valves. If with different connectors, it can be fitted with other kinds of valve bodies.

VA-7000 series actuator has 3 basic types:

1. VA-7100 (VA-7200) reversible motor operation and provide increasing control;
2. VA-7101 (VA-7201) can accept input 0~10V DC or 4~20mA DC control signal and provide proportional control, and also can provide 0~10V DC feedback signal to indicate the position of the actuator;
3. VA-7102 (VA-7202) can accept input 0~10V DC or 4~20mA DC control signal and provide proportional control.



(Fig. 1)

CHARACTERISTICS

- Low AC voltage synchronic reversible motor.
- The action uses gear to transit. Output gear rollers are supported by surface rolling bearing, which rotate around the central bearing.
- Valve working position indicator.
- Fireproof ABS plastic casing.
- Conveniently mounting.
- 0~10V DC or 4~20mA DC control (For VA-7101 (VA-7201) and VA-7102 (VA-7202) only)
- Working state (DA or RA) can be selected by jumper.
- Apply to 24mm, 36mm, 40mm, or 42mm stroke can be selected by jumper.
- Have overtime protection function, and failure protection function when without control signal.
- Have 0~10V DC feedback signal.
- Have manual open or close valve function (only for VA-7XXXM)

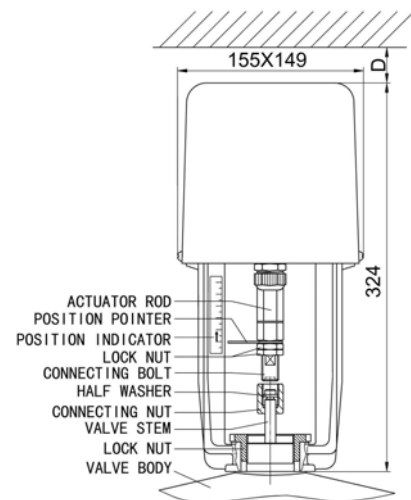


Fig.2

*Note: "D" in Fig. 2 should be more than 160mm for installation and maintenance.

OPERATION

1. Actuator is driven by reversible synchronous motor. Valve stem upward or downward operation makes the valve open or close. When the valve is fully opened or closed, it will create a counterforce against the actuator, and make the internal micro-switch of the actuator power off and the actuator will stop operation. When the actuator receives a control signal, it will make the valve open to a certain angle and stop at any position when there is no signal.
2. The signal of the increasing or proportional type controller can make the motor rotate clockwise or anti-clockwise.
3. Ex-factory setting for VA-7101 (VA-7201) and VA-7102 (VA-7202) are: 42mm stroke, 0~10V DC mode, DA working state, UP direction failure protection. If the manufacturer has already mounted the actuator on the valve body, it will fit with the valve's stroke. Furthermore, it can select direct (DA) or reversible (RA) working mode. The two modes are just opposite. When there is no control signal, it can select DOWN/UP jumper to select the working direction. For VA-7101 (VA-7201) model, it also has 0~10V DC feedback signal output. Since the 0~10V DC and 4~20mA DC control signals are quite different, so it need 4~20mA DC mode, please indicate when ordering, and the factory will adjust the parameter of the PCB.

INSTALLATION

1. Install the actuator bracket on the valve body. Mount the connecting nut on the valve stem. Put the two half washer into the groove of the top of valve stem, then screw the connecting bolt into the connecting nut. The degree of tightness depends on whether the valve stem and other parts can rotate correspondingly and without axis clearance. And then lock the nut tightly. Finally use lock nut to tighten the actuator. (See Fig. 2)
2. Give priority to vertically installation, and the lean should not more than 30°, remain enough space for maintenance use. (See Fig. 2)
3. Connect the wires according to the Wiring Diagram. (See Fig. 3)

4. Power supply test: For VA-7100 (VA-7200) actuator, make the valve stem move upward to the top end (fully-close) or downward to the bottom end (fully-open), the motor will be powered off and stop operation. If the valve stem has not moved to the top or bottom end but the motor has been locked (the main axis of the motor is shaking continuously), readjust the connecting length between the connecting bolt and actuator rod until they are fitted each other very well. (The connecting bolt and actuator rod have been adjusted in suitable length and tightened when ex-factory, it is not necessary to adjust them if there is no special requirement.) For VA-7101 (VA-7201) and VA-7102 (VA-7202) actuator, it should select the STROKE jumper (J5) according to the valve's stroke, then provide fully-close signal, for example, if provide 0V signal when at 0~10V mode, actuator will move upwards till the red indicator lamp turns dark. If the indicator lamp is still on, it needs to decrease a little the threads' depth of connecting bolt and nut till the lamp turns dark, this is the fully-close position of the valve. Provide 10V fully-open signal, actuator will move downwards till the indicator lamp turns dark. If happens the gears of the actuator have stopped, but the indicator lamp is still on, it means the set stroke is a little more than the valve's actual stroke, it needs to anticlockwise micro-adjust the stroke potentiometer PT1 (STROKE) till the indicator lamp turns dark, this is the fully-open position of the valve. Finally operating a working circle to ensure fully-open and fully-close will make the indicator lamp turns dark.

SPECIFICATIONS AND TECHNICAL DATA

MODEL		VA-7100X* (VA-7200X*)	VA-7101X* (VA-7201X*)	VA-7102X* (VA-7202X*)
OPERATION/CONTROL		Reversible and increasing control	Proportional control, direct or reversible	
MOTOR ELECTRICAL RATING		24VAC \pm 10%, 50 / 60Hz, 10VA 230VAC \pm 10%, 50 / 60Hz, 10VA	24VAC \pm 10%, 50 / 60Hz, 10VA	
ELECTRICAL CIRCUIT		—	Power: 24V AC \pm 10%, 50/60Hz, Input signal range: 0~10V DC or 4~20mA DC Feedback signal: 0~10V DC (5mA)	Power: 24V AC \pm 10%, 50/60Hz, Input signal range: 0~10V DC or 4~20mA DC
MOTOR TYPE		Bi-directional AC Synchronous motor.		
POWER CONSUMPTION OF PCB		—	2VA	
NORMAL TORQUE		2500N (#4000N)		
MATERIAL	GEAR	Stainless steel, Brass		
	REDUCER CHASSIS	Zinc-plated steel		
	BRACKET	Die-casting aluminum alloyed		
	CASING	Fire-proof ABS engineering plastic (UL94V-0)		
OPERATION TIME		50Hz: 4.6s/mm (# 50Hz: 8.3s/mm) 60Hz: 3.8s/mm (# 60Hz: 6.9s/mm)		
ROOM TEMP.	OPERATION	2~55 $^{\circ}$ C		
	STORAGE	-20~65 $^{\circ}$ C		
MAX. RH		<90% no condensation		
CONNECTING WIRES		0.5~1 mm ²		
EX-FACTORY SETTING		Move downwards to fully-open position	Stroke: 42mm; Input signal: 0~10V DC; Working mode: DA; Failure protection: UP; Move downwards to fully-open position	
ACCESSORIES		Lock nut, connecting nut, half washer, position indicator		
NET WEIGHT		4.1kg	4.3kg	

- The "X" with "*" is additional code: M-with manual switch; omitted-standard type
- The data with "#" is the data of VA-72XXX

NOTE

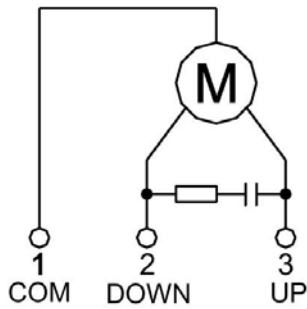
- Actuator must be protected and prevented from water dripping.
- Actuator can't be covered with adiabatic material.

CAUTION

- Cut off power supply when repair the actuator, to avoid destroying elements or cause casualty because of leakage of electricity.
- When power is on, don't try to connect or disconnect the electrical wires.

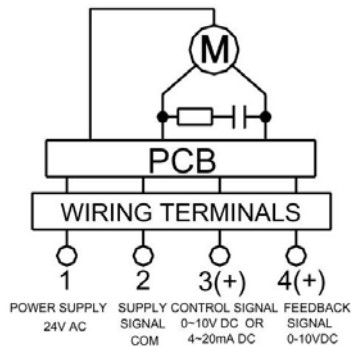
WIRING DIAGRAM AND SETTING DIAGRAM

VA-7100X (VA-7200X) WIRING DIAGRAM



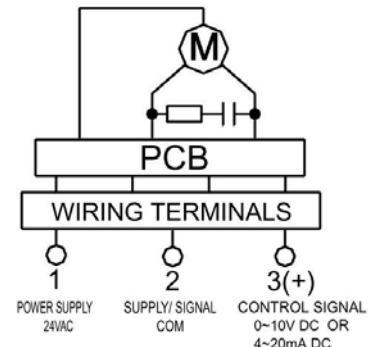
TERMINAL	ACTUATOR ROD
1-2	DOWN EXTEND
1-3	UP CONTRACT

VA-7101X (VA-7201X) WIRING DIAGRAM



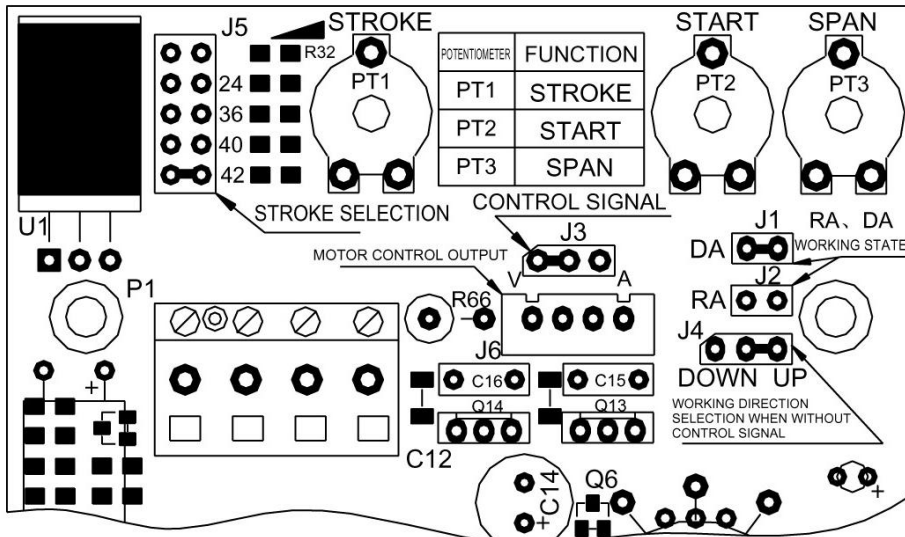
INPUT CONTROL SIGNAL		ACTUATOR ROD
DA	RA	DOWN
INCREASE	DECREASE	DOWN
DECREASE	INCREASE	UP

VA-7102X (VA-7202X) WIRING DIAGRAM

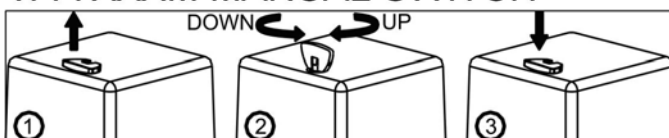


INPUT CONTROL SIGNAL		ACTUATOR ROD
DA	RA	DOWN
INCREASE	DECREASE	DOWN
DECREASE	INCREASE	UP

PCB SETTING DIAGRAM (IF ANY)



VA-7XXXM MANUAL SWITCH



VB-7000 SERIES FLANGED VALVE

DESCRIPTION

VB-7000 series flanged valve is widely used in central air-conditioning, heating, water handling and industrial processing industry system to control the fluid of steam or cool / heat water.



MATERIAL DESCRIPTION AND TECHNICAL DATA

PRODUCT		VB-7000 Standard Valve	VB-7000V High temperature valve (Steam Valve)
MATERIAL	VALVE BODY	HT250/Q235A	HT250/Q235A
	VALVE STEM	1Cr18Ni9 (AISI302) Ø9 Stainless steel	1Cr18Ni9 (AISI302) Ø9 Stainless steel
	VALVE PLUG	Casting brass	High intensity casting brass + stainless steel valve seat
	SEALING MATERIAL	polytetrafluoroethylene filler and stainless steel spring	polytetrafluoroethylene filler and stainless steel spring
	VALVE PLATE	Brass	Brass
PRESSURE RATING		1.6MPa	1.6MPa
WORKING MEDIUM		Water	Water / Steam
FLUID TEMPERATURE		2~95℃	2~180℃
FLOWING CHARACTERISTICS		Equal percentage	
PIPE CONNECTION		NP16 Flanged	
LEAKAGE		Less than 0.05% of Kv factor	
CLOSING DIRECTION		Valve stem going up is closing	

INSTALLATION

1. The valve should be mounted horizontal, the lean angle should not be more than 30°. Otherwise it will influence the working life of the valve. (See Fig. 1 and Fig. 2)
2. Before mounting the valve, make sure that the pipe is clean and free from soldering scraps, sand, stone or other sundries.
3. The pipe and valve body must be connected perfectly without vibration.
4. If the valve is mounted in the factory, which is working with high temperature fluid (steam, overheated water, diathermic liquid), it is necessary to use expansion joint to avoid expanding the pipe and pressing the valve.
5. The actuator should be mounted vertically on the valve body. Remain enough space so that the actuator can be taken down from the valve body during the daily maintenance.
6. Power supply must be shut off or insulated when maintain the valve. There should not have pressure in the water system.
7. For other installation requirements, please refer to the Installation Instruction of the actuator.

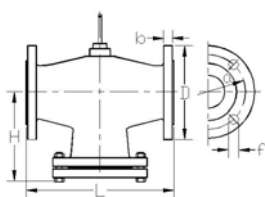
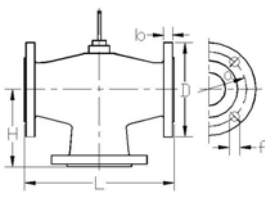
SPECIFICATIONS AND TECHNICAL DATA

STANDARD VALVE MODEL	STEAM VALVE MODEL	TYPE	SIZE (DN)		Kv	MAX. DIFFERENTIAL PRESSURE (MPa)		STROKE (mm)
			mm	in		FIT WITH VA-71XX	FIT WITH VA-72XX	
VB-7200-65*	VB-7200-65V*	2-Way	65	2½"	63	0.4	—	22
VB-7200-80	VB-7200-80V		80	3"	100	0.4	0.4	42
VB-7200-100	VB-7200-100V		100	4"	160	0.3	0.4	42
VB-7200-125	VB-7200-125V		125	5"	250	0.2	0.3	42
VB-7200-150	VB-7200-150V		150	6"	360	0.12	0.2	42
VB-7200-200	VB-7200-200V		200	8"	550	—	0.12	42
VB-7300-65*	VB-7300-65V*	3-Way	65	2½"	63	0.4	0.4	22
VB-7300-80	VB-7300-80V		80	3"	100	0.4	0.4	42
VB-7300-100	VB-7300-100V		100	4"	160	0.3	0.4	42
VB-7300-125	VB-7300-125V		125	5"	250	0.2	0.3	42
VB-7300-150	VB-7300-150V		150	6"	360	0.12	0.2	42
VB-7300-200	VB-7300-200V		200	8"	550	—	0.12	42

The model with "*" means maximum differential pressure of VB-72(3)00-65 fitted with VA-3200 actuator.

Add "Q" behind model number indicates Easy Installation type valve. The Easy Installation Actuator can only be installed on Easy Installation type valve. If Easy Installation type valve is required on steam valve, radiator is not available.

DIMENSIONS

FIGURE	MODEL	DIMENSIONS (mm)							QTY OF FLANGE	WT (kg)
		L	H	D	b	a	f			
	VB-7200-65(V)	290	148	185	20	145	18	4	30	
	VB-7200-80(V)	310	185	200	20	160	18	8	35	
	VB-7200-100(V)	350	206	220	20	180	18	8	44	
	VB-7200-125(V)	400	227	250	22	210	18	8	64	
	VB-7200-150(V)	480	272	285	22	240	22	8	92	
	VB-7200-200(V)	600	337	340	24	295	22	12	141	
	VB-7300-65(V)	290	148	185	20	145	18	4	26	
	VB-7300-80(V)	310	155	200	20	160	18	8	30	
	VB-7300-100(V)	350	174	220	20	180	18	8	36	
	VB-7300-125(V)	400	195	250	22	210	18	8	57	
	VB-7300-150(V)	480	238	285	22	240	22	8	80	
	VB-7300-200(V)	600	300	340	24	295	22	12	123	

FLOW DIRECTION DIAGRAM

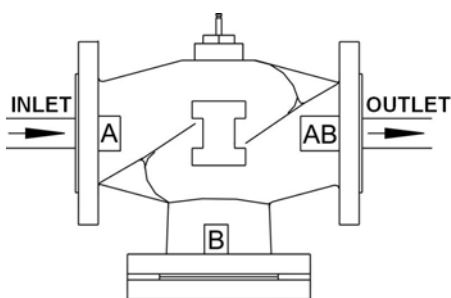


Fig. 1 Two-way valve

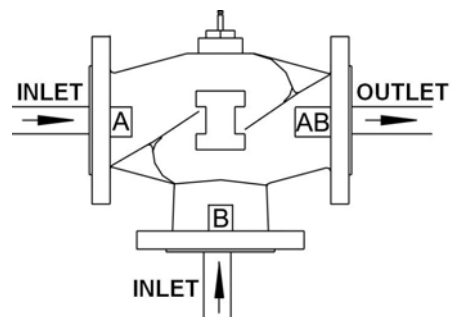


Fig. 2 Three-way valve