

VA-2000 SERIES ACTUATOR

DESCRIPTION

VA-2000 series actuator is electromechanical product, and can be mounted on VB-2000 series valves.

VA-2000 series actuator has 3 basic types:

1. VA-2100 reversible motor operation and provide increasing control;
2. VA-2101 can accept input 0(2)~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-2102 can accept input 0(2)~10V DC or 4~20mA DC control signal and provide proportional control.



Fig.1

CHARACTERISTICS

- Low AC voltage synchronic reversible motor.
- Magnetism clutch.
- 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(2)~10V DC or 4~20mA DC control (For VA-2101 and VA-2102 only)
- Working state (DA or RA) can be selected by jumper.
- Apply to 13mm, 15mm, 17mm or 19mm 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/close valve function (only for VA-2XXXM)
- Have auxiliary micro-switch (only for VA-2XXXS)
- Have manual open/close valve function and auxiliary micro-switch (only for VA-2XXXK)

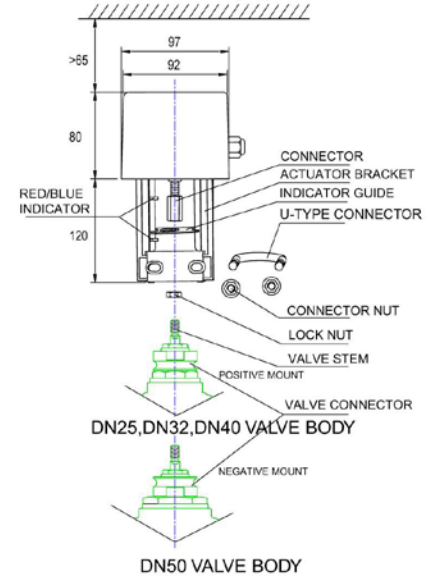


Fig.2

OPERATION

1. Actuator is driven by reversible synchronous motor with magnetism clutch. Motor can create stable torsion at stopping condition depending on the magnetism effort, which is created by motor rotor and magnetism clutch. And the motor can stop at any position when there is no current pass through.
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-2101 and VA-2102 are: 19mm stroke, 0(2)~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. Further more, 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-2101 model, it also has 0~10V DC feedback signal output. Since the 0(2)~10V DC and 4~20mA DC control signals are quite different, so if need 4~20mA DC mode, please indicate when ordering, and the factory will adjust the parameter of the PCB.

INSTALLATION

1. Tightly screw the valve connector on the valve body. Please pay attention to the direction of the connector. (See Fig. 2)
2. Install the actuator bracket on the valve connector.
3. Insert the U-type connector into the bracket, and lock the connector nut.
4. Lift up the valve stem and put the lock nut and indicator guide onto it, then rotate the connecting rod of the actuator and let it rotate onto the valve stem. Use spanner to lock the locknut after adjusted the position. (See Fig. 2, the actuator have been set to fully-close position for the valve body, if no special requirements, it should not be changed.)
5. Give priority to vertical installation and remain enough room for screw off the actuator when repair the valve body. (See Fig.2)
6. Connect the wires according to the Wiring Diagram. (See Fig. 3)
7. Power supply test: VA-2100 actuator UP or DOWN operation can reliable CLOSE or OPEN valve. For VA-2101 and VA-2102 actuator, it should select the STROKE jumper (J5) according to the valve's stroke, then provide fully-open signal, for example, if provide 10V signal when at 0(2)~10V mode, actuator will move downwards till the red 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 micro-adjust the stroke potentiometer PT1 (STROKE) till the indicator lamp turns dark, this is the fully-open position of the valve. Provide 0(2)V fully-close signal, actuator will move upwards till the indicator lamp turns dark, this is the fully-close position of the valve (Ex-factory setting). If the indicator lamp is still on, it needs to decrease a little the threads' depth of screwing into the valve stem till the lamp turns dark. 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-2100X*	VA-2101X*	VA-2102X*
MOTOR		Bi-directional Synchronous motor with magnetic clutch.		
POWER FOR MOTOR		24VAC±10%, 50/60Hz, 2.5VA 230VAC±10%, 50/60Hz, 5VA	24VAC±10%, 50 / 60Hz, 2.5VA	
OPERATION/CONTROL		Reversible & increasing control	Proportional control, direct or reversible	
ELECTRICAL CIRCUIT		—	Power: 24V AC±10%, 50/60Hz, Input signal range: 0(2)~10V DC or 4~20mA DC Feedback signal: 0~10V DC (5mA)	Power: 24V AC±10%, 50/60Hz; Input signal range: 0(2)~10V DC or 4~20mA DC
POWER CONSUMPTION OF PCB		—	2VA	
NORMAL TORQUE		500N		
MATERIAL		GEAR: POM plastic		
		REDUCER DOWN PANEL: Zinc-plated steel		
		BRACKET: Die-casting aluminum alloyed		
		CASING: Fire-proof ABS engineering plastic (UL94V-0)		
OPERATION TIME		50Hz: 12.4s/mm; 60Hz: 10.3s/mm		
ROOM TEMP.	OPERATION	2~55 °C		
	STORAGE	-20~65 °C		
MAX. RH		<90% no condensation		
CONNECTING WIRES		0.5~1 mm ²		
EX-FACTORY SETTING		Move upwards to fully-close position	Stroke: 19mm; Input signal: 0(2)~10V DC; Working mode: DA; Failure protection: UP; Move upwards to fully-close position	
ACCESSORIES		U-type connector, lock nut, indicator guide, valve connector		
NET WEIGHT		0.82kg	0.87kg	

Note: The "X" with "*" is additional code: **M**-with manual open/close function; **S**-with auxiliary micro-switch; **K**-with manual open/close function and auxiliary micro-switch; omitted-standard type

NOTE

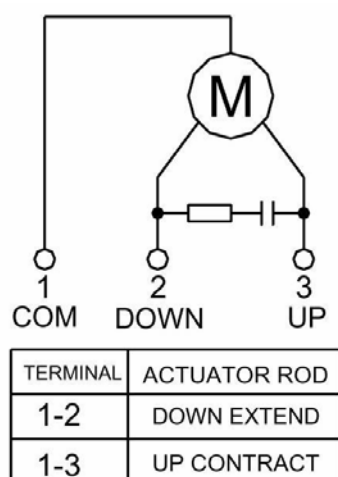
- Actuator must be protected and prevented from water dripping to destroy internal elements and motor.
- Actuator can't be covered with adiabatic material.

CAUTION

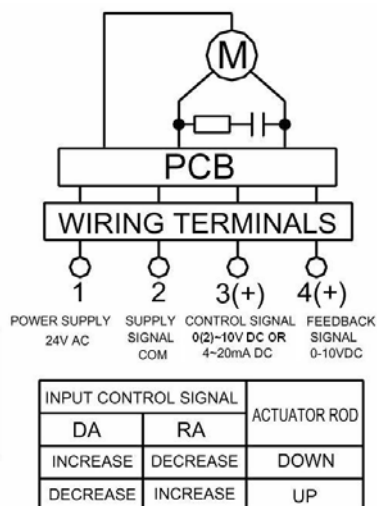
- Cut off power supply when repair the actuator, to avoid destroying elements or cause casualty because of leakage of electricity.
- When power is on, don't try to connect or disconnect the electrical wires.

WIRING DIAGRAM AND SETTING DIAGRAM

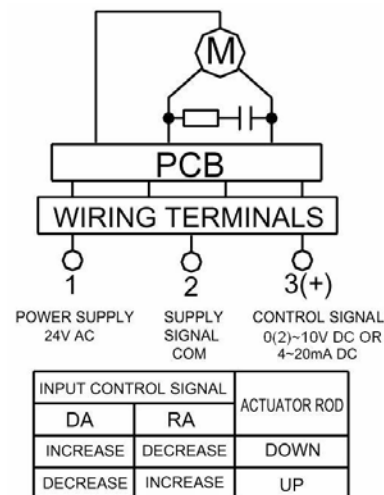
VA-2100X WIRING DIAGRAM



VA-2101X WIRING DIAGRAM



VA-2102X WIRING DIAGRAM



PCB SETTING DIAGRAM (IF ANY)

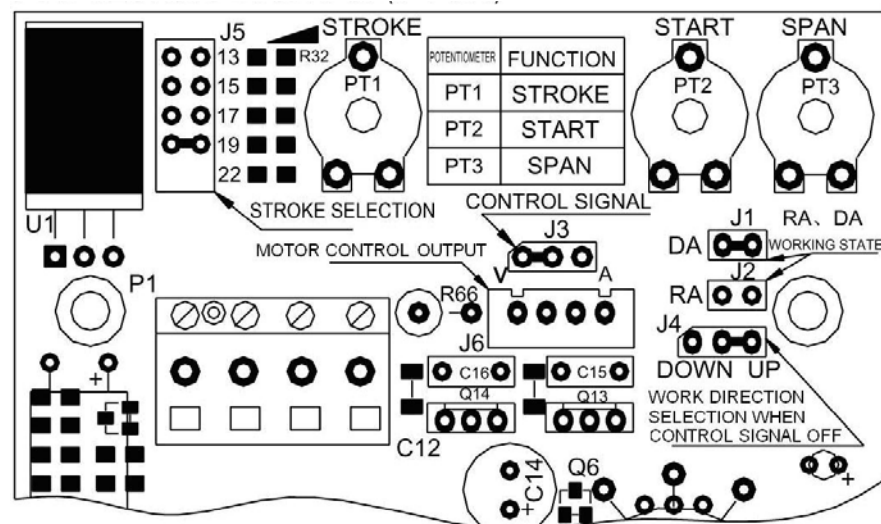


Fig.3-2

VA-2XXXM MANUAL SWITCH:

