

## Description

VG series accurately regulate the flow of water or steam in response to the demand of a controller in heating, ventilating and air conditioning systems. These valves are available in normally open, normally closed, and three-way mixing configurations. Both electric and pneumatic actuators can be used. Valves are available in 1" through 2-1/2" size.



## Specifications

- Complies with ANSI Class 250 (PSIG) standard.
- Flexible ordering using the guide provided in the spec sheets.
- Every valve tested for tight shutoff assuring occupant comfort and energy conservaiton.
- Uses standard ring pack packing providing industry leading reliability and operating life.
- complete actuator interchangeability allowing easy field retrofit or mounting using standardized mounting kits.
- All valve sizes available with brass trim for use in saturated steam applicaitons of up to 100psig.

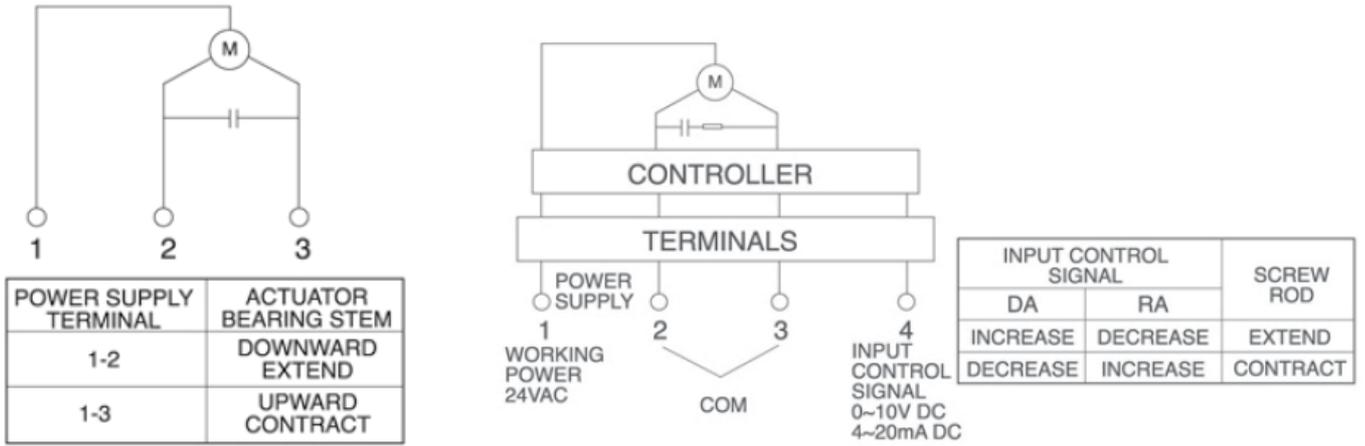
## Installation Instructions

Install Temco globe valves with the fluid passing in the direction shown on the valve body and with suitable, strainers to prevent pipe shavings and debris from entering the valve body. Preferred installation is upright, however, in high temperature installations (and where space restrictions dictate) the valve assembly should be mounted on its side, slightly above horizontal, so that the high temperatures rising from the pipe do not over heat the actuator. This will ensure maximum life expectancy and best performance while any leaking from the valve packing will run off the valve body rather than onto the operator.

## Ordering Information

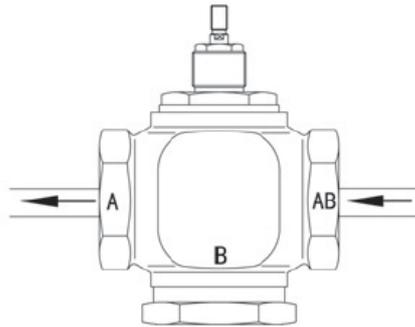
Model	Globe Valve Model Description			
VG	Globe Valve, Hot Water or Steam Applications			
	Ports	Ports Desc		
	-2W	2 Way		
	-3W	3 Way		
	Action	Actuator Desc		
	-2P	2 Position (AVAIL NOW)		
	-FL	3 Wire Floating Control (AVAIL NOW)		
	-MOD	0-10v Modulating (*AVAIL 2ND QTR 2000)		
		Size	Size Desc	Cv
		-DN25	1" (25mm)	11.6
		-DN32	1-1/4" (32mm)	18.5
		-DN40	1-1/2" (40mm)	28.9
		-DN50	2" (50mm)	46.2
		-DN65	2-1/2" (65mm)	64.0
		Volts		
		-24V		

# Wiring Diagram

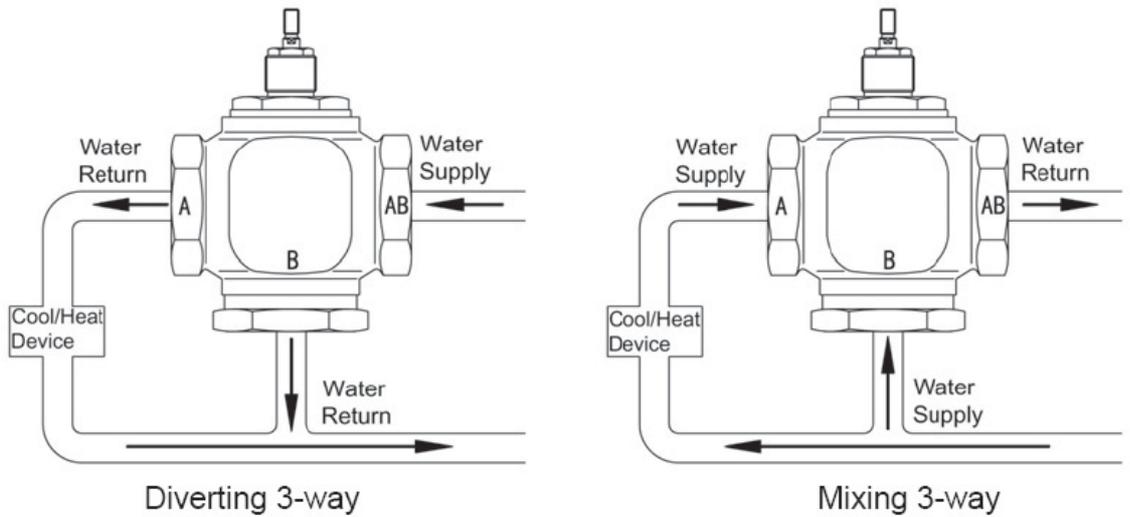


# Piping Diagram

TWO-WAY VALVE



THREE-WAY VALVE



# VA-3000 SERIES

## EASY INSTALLATION INTELLIGENT ACTUATOR

### DESCRIPTION

VA-35(6)00 series actuator is electromechanical product, and can be mounted on VB-3000Q series valves. VA-3000 series intelligent actuator is electromechanical product. Used with VB-3000Q series valve, it can control flow rate in central air-conditioning system, heating system, water treatment or industrial processing industry. With different connectors, it can match with other different valve bodies.



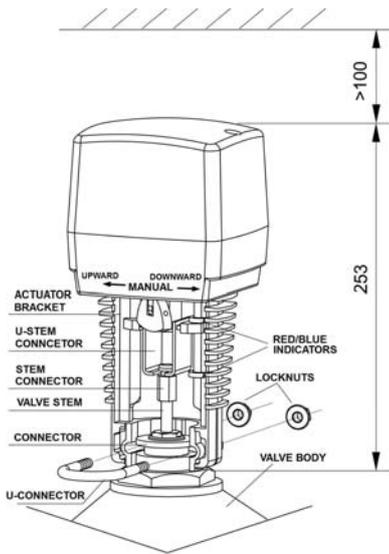
### CHARACTERISTICS

- Low AC voltage synchronic reversible motor.
- Hall switch sensor
- Self-adjusting function, automatic record stroke data
- Working state (DA or RA) can be selected by jumper.
- 0(2)~10V DC or (0)4~20mA DC input signal control, proportional control
- 0~10V DC feedback signal.
- Fire-resistant ABS plastic casing.
- Conveniently mounting.
- With LED stroke display

### SPECIFICATIONS AND TECHNICAL DATA

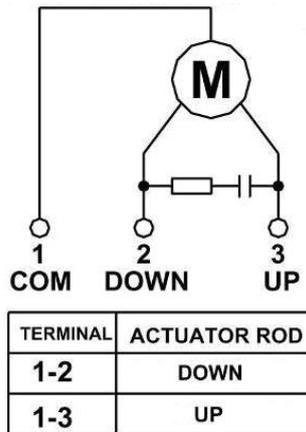
MODEL		VA-3500	VA-3503	VA-3503D	VA-3603	VA-3603D	VA-3600
STROKE DISPLAY (LED)		N/A	N/A	Available	N/A	Available	N/A
NORMAL FORCE		1000N			1500N		
OPERATION TIME		50Hz: 4.6s/mm; 60Hz: 3.8s/mm			50Hz: 7.77s/mm; 60Hz: 6.45s/mm		
MOTOR		24VAC 230VAC	24VAC±10%			24VAC 230VAC	
		50/60Hz, 5.5VA					
CONTROL SIGNAL		--	0(2)~10V DC (input impedance: 200KΩ) Or 0(4)~20mA DC (input impedance: 500Ω)			--	
FEEDBACK		--	0~10V DC(1mA)			--	
POWER CONSUMPTION OF PCB		--	1VA			--	
MAX. STROKE		--	29mm			--	
OPERATION		Reversible Ascending control	Proportional control, direct or reversible			Reversible Ascending control	
DEFAULT SETTING		Upwards to fully closed	Input signal: 0~10V DC Working mode: DA			Upwards to fully closed	
MATERIAL	GEARS	Stainless steel; POM plastic			Stainless steel; brass		
	BRACKET	Die-casting aluminum alloyed					
	HOUSING	Fire-proof ABS engineering plastic (UL94V-0)					
OPERATION TEMP.		2~55□					
STORAGE TEMP.		- 20~65□					
MAX. HUMIDITY		< 90% no condensation					
WIRING		0.5 ~ 1mm <sup>2</sup>					
ACCESSORIES		U-connector, lock nut					
IP CLASS		Ip54					

# INSTALLATION

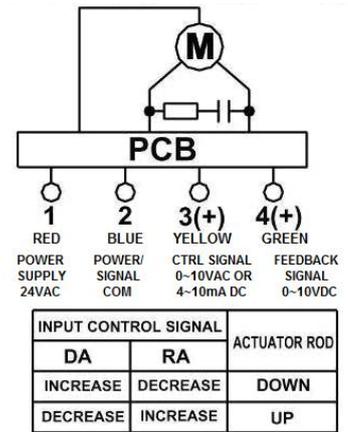


# WIRING

VA-35(6)00 ACTUATOR



VA-35(6)03 ACTUATOR



# PCB SETTING

- Study status:** After power is on, set JP1 switch as request (refer to the following list). First, switch "4" of JP1 to position ON, then press SW1 STUDY/REPOSITON button, buzzer will sound every 5 seconds, and the actuator stem is going down (opening valve) until gears are blocked (has reached the maximum stroke). Then the stem will go upward until gears are blocked again (has been in the initial position). Buzzer will make a long sound to indicate the study status is over. MCU will keep the data in memory even power is off.  
Then switch "4" of JP1 back to position OFF to transform to running status. If this step is missed, the actuator will operate as usual, but it will go through the study status every time when power is on.
- Running status:** The actuator will return to fully closed position every time when power is on. It will close the valve at first, and then the buzzer will make a long sound to indicate the actuator is ready for control signal.
- Study/running status shift:** If user needs to switch study/running status, make sure the JP1 has been set correctly, then press SW1 STUDY/REPOSITON button. Don't need to cut off power.

JP1 SWITCH SETTING:					PCB DIAGRAM
CONTROL SIGNAL	0~10V DC	2~10V DC	0~20mA DC	4~20mA DC	
RUNNING STATUS	DA	OFF ON 1 2 3 4	OFF ON 1 2 3 4	OFF ON 1 2 3 4	
	RA	OFF ON 1 2 3 4	OFF ON 1 2 3 4	OFF ON 1 2 3 4	
STUDY STATUS	DA	OFF ON 1 2 3 4	OFF ON 1 2 3 4	OFF ON 1 2 3 4	
	RA	OFF ON 1 2 3 4	OFF ON 1 2 3 4	OFF ON 1 2 3 4	

DEFAULT SETTING: OFF ON 1 2 3 4

NOTICE: We strongly recommend that JP1 switch should be set on running status in normal use.

If power supply is switched from 50Hz to 60Hz, please operate Study/running status shift again. For a fully function of the actuator, Please indicate current frequency of local power in orders.

# 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)

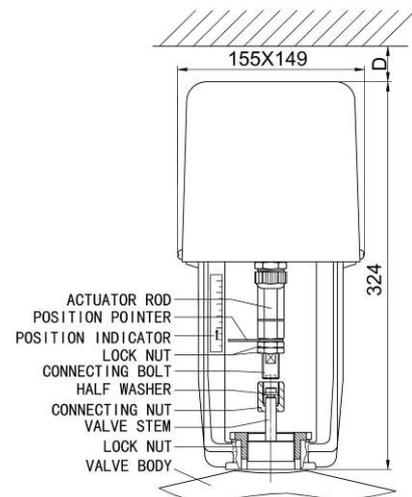


Fig.2

\*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 if 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 ± 10%, 50 / 60Hz, 10VA 220 / 230VAC ± 10%, 50 / 60Hz, 10VA (Please indicate in order)	24VAC ± 10%, 50 / 60Hz, 10VA	
ELECTRICAL CIRCUIT		—	Power: 24V AC ± 10%, 50/60Hz, Input signal range: 0(2)~10Vdc (input impedance: 1MΩ) or 0(4)~20mA dc (input impedance: 500Ω) Feedback signal: 0~10V DC (1mA)	Power: 24V AC ± 10%, 50/60Hz, Input signal range: 0(2)~10Vdc (input impedance: 1MΩ) or 0(4)~20mA dc (input impedance: 500Ω)
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℃		
	STORAGE	-20~65℃		
MAX. RH		<90% no condensation		
CONNECTING WIRES		0.5~1 mm <sup>2</sup>		
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

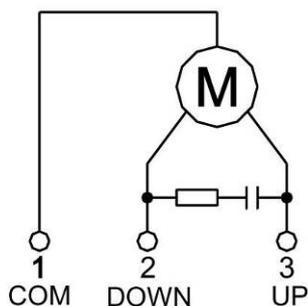
- Actuator must be protected and prevented from water dripping.
- Actuator can't be covered with adiabatic material.

## 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.

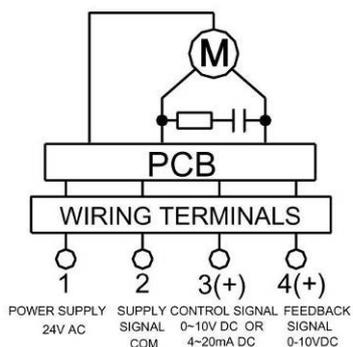
## WIRING DIAGRAM AND SETTING DIAGRAM

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



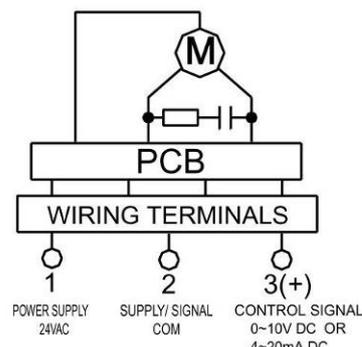
TERMINAL	ACTUATOR ROD
1-2	DOWN EXTEND
1-3	UP CONTRACT

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



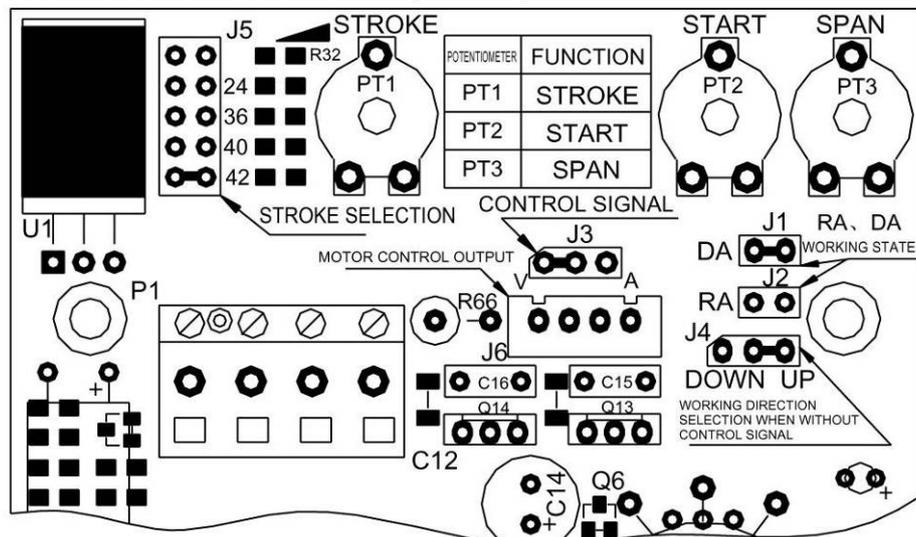
INPUT CONTROL SIGNAL		ACTUATOR ROD
DA	RA	DOWN
INCREASE	DECREASE	DOWN
DECREASE	INCREASE	UP

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

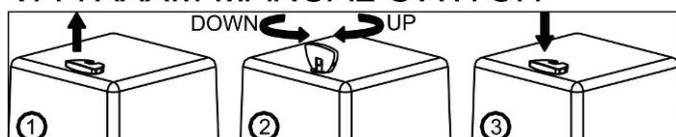


INPUT CONTROL SIGNAL		ACTUATOR ROD
DA	RA	DOWN
INCREASE	DECREASE	DOWN
DECREASE	INCREASE	UP

## PCB SETTING DIAGRAM (IF ANY)



## VA-7XXXM MANUAL SWITCH



PART MODEL	TEMCO MODEL	DESCRIPTION	NORMAL TORQUE
VB-3200-25+ VA-3500	VG-2WFL-DN25	Motorized Globe Valve, normally closed, 1", 2 way, Floating Control, cv=9	1000N
VB-3200-32+VA-3500	VG-2WFL-DN32	Motorized Globe valve, normally closed, 1-1/4", 2 way, Floating Control, cv=19	1000N
VB-3200-40+VA-3500	VG-2WFL-DN40	Motorized Globe Valve, normally closed, 1-1/2", 2 way, Floating Control, cv=29	1000N
VB-3200-50+VA-3600	VG-2WFL-DN50	Motorized Globe Valve, 2", 2 way, Floating Control, cv=47	1500N
VB-3200-65+VA-3600	VG-2WFL-DN65	Motorized Globe Valve, normally closed, 2-1/2", 2 way, Floating Control, cv=74	1500N
VB-3300-25+VA-3500	VG-3WFL-DN25	Motorized Globe Valve, normally closed, 1", 3 way, Floating Control, cv=9	1000N
VB-3300-32+VA-3500	VG-3WFL-DN32	Motorized Globe Valve, normally closed, 1-1/4", 3 way, Floating Control, cv=19	1000N
VB-3300-40+VA-3500	VG-3WFL-DN40	Motorized Globe Valve, normally closed, 1-1/2", 3 way, Floating Control, cv=29	1000N
VB-3300-50+VA-3600	VG-3WFL-DN50	Motorized Globe Valve, normally closed, 2", 3 way, Floating Control, cv=47	1500N
VB-3300-65+VA-3600	VG-3WFL-DN65	Motorized Globe Valve, normally closed, 2-1/2", 3 way, Floating Control, cv=74	1500N
VB-7200-65+ VA-7100	VG-2WFL-DN65	Motorized Globe Valve, normally closed, 2-1/2", 2 way, Floating Control, cv=74	2500N
VB-7200-80+ VA-7100	VG-2WFL-DN80	Motorized Globe Valve, normally closed, 3", 2 way, Floating Control, cv=117	2500N
VB-7200-100+ VA-7100	VG-2WFL-DN100	Motorized Globe Valve, normally closed, 4", 2 way, Floating Control, cv=187	2500N
VB-7200-125+ VA-7200	VG-2WFL-DN125	Motorized Globe Valve, normally closed, 5", 2 way, Floating Control, cv=293	4000N
VB-7200-150+ VA-7200	VG-2WFL-DN150	Motorized Globe Valve, normally closed, 6", 2 way, Floating Control, cv=421	4000N
VB-7300-65+ VA-7100	VG-3WFL-DN65	Motorized Globe Valve, normally closed, 2-1/2", 3 way, Floating Control, cv=74	2500N
VB-7300-80+ VA-7100	VG-3WFL-DN80	Motorized Globe Valve, normally closed, 3", 3 way, Floating Control, cv=117	2500N
VB-7300-100+ VA-7100	VG-3WFL-DN100	Motorized Globe Valve, normally closed, 4", 3 way, Floating Control, cv=187	2500N
VB-7300-125+ VA-7200	VG-3WFL-DN125	Motorized Globe Valve, normally closed, 5", 3 way, Floating Control, cv=293	4000N
VB-7300-150+ VA-7200	VG-3WFL-DN150	Motorized Globe Valve, normally closed, 6", 3 way, Floating Control, cv=421	4000N