

Motorized Two-Way/Three-Way Valve With Screwed-End Connection

Model GY-VT Series

General

Model GY-VT series is a series of compact motorized 2- and 3-way valves to be used for FCU (fan coil unit) and various heating/cooling applications.

Model GY-VT can be installed on FCU (fan coil unit) or AHU (air handling unit).



Features

- Hysteresis synchronous motor serves long operating life.
- Spring return operation provides a fail-safe.
- Rated static pressure of the valve body is 2 MPa.
- Various voltages are available for the actuator.
- Actuator mounts directly onto valve without linkage.
- Manual override lever is provided on the actuator combined with a normally closed (N.C.) valve.
- Actuator can be replaced without any tools, or removal of the valve from system.

Safety Instructions

Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual nearby for ready reference.

Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life may be affected. If this product is used in a clean room or a place where reliability or control accuracy is particularly required, please contact Yamatake's sales representative. Yamatake Corporation will not bear any responsibility for the results produced by the operators.

WARNING



- DANGER: To prevent the risk of severe or fatal electrical shock, always disconnect power source (and product power supply) before performing any wiring.



- Make sure all the wires are tightly connected. Burn injury due to heat generation or equipment malfunction may result.

CAUTION



- Installation must be performed by qualified personnel in accordance with all applicable safety standards.



- This product must be operated within its operating ranges specified in this manual. Failure to comply will cause equipment damages.



- Installation must be carried out according to the operating conditions specified in this manual to prevent equipment damages.



- All wiring must comply with local codes of indoor wiring and electric installation rules.



- To prevent over current due to short-circuit, externally install a circuit breaker.



- Do not leave the controlled fluid frozen. Equipment damage and fluid leakage may result.



- Make sure the flow direction and install the product in the direction and position specified in this manual. Excessively tight connection of piping and improper installation position may cause equipment damages.



- Flush the piping so that no foreign substance remains. Attach a strainer at upstream side of the piping to prevent equipment damage.



- After the piping installation, make sure no fluid leaks from the connecting parts.



- Do not install the product in a location adjacent to a steam coil or hot-water coil. High temperature radiation may result in an actuator malfunction.



- Avoid application that keeps equipment operating cycle excessively frequent so as not to shorten the equipment operating life.



- When the product is used in a chilled water application, be sure to install the product over a drip pan.



- To prevent equipment damage, do not disassemble the product at any time except when removing the cover to wire or replacing a part.

Specifications

Valve

Item	Specification				
Type	Two-way or three-way valve with screwed-end connection				
Body pressure rating	PN20 (Max. 2.0 MPa)				
Size, Cv, Close-off pressure	Size (in inch)	Cv		Close-off pressure	
		2-way valve	3-way valve	General close-off ΔP (kPa)	High close-off ΔP (kPa)
	DN15 (1/2")	1.0	1.5	350	525
	DN15 (1/2") and DN20 (3/4")	2.5	3.0	210	350
		3.5	4.0	140	210
	DN20 (3/4")	5.0	5.0	90	175
7.0		7.0	70	105	
DN25 (1")	8.0	7.5	103	140	
Materials	Body: Forged brass Stem: Nickel-plated Seat: Brass Paddle: Buna N				
Applicable fluid	Chilled/hot water (with up to 50 % glycol included)				
Allowable fluid temperature at ambient temperature	0 °C to 94 °C (fluid) at 40 °C (ambient)				
Seat leakage	Zero leakage (100 % bubble-tight close-off)				

Actuator

Item	Specification	
Power supply	<ul style="list-style-type: none"> • 24 V AC at 50 Hz/60 Hz • 110 V AC at 50 Hz and 120 V AC at 60 Hz • 208 V AC at 60 Hz 	<ul style="list-style-type: none"> • 220 V AC/230 V AC at 50 Hz/60 Hz • 277 V AC at 50 Hz/60 Hz
Power consumption	6.5 W, 7.5 VA	
Control type	ON/OFF 2 position control with spring-return	
Timing (full open to full close)	9 seconds to 11 seconds for general close-off / 13 to 18 seconds for high close-off 4 seconds to 5 seconds for spring return	
Materials	Base plate: Stainless steel Cover: Aluminum	
Allowable fluid temperature at ambient temperature	0 °C to 94 °C (fluid) at 40 °C (ambient)	
Agency listings	CE Marking complied	

Model Number Specifications

Model number										Specification	
GY-V											Base model number
	T										ON/OFF valve
		2									2-way valve
		3									3-way valve
			2								Valve size: DN15 (1/2")
			3								Valve size: DN20 (3/4")
			4								Valve size: DN25 (1")
				3							Valve with screwed-end connection (Rc: ISO 7/1) (ISO: International organization for standardization)
					1						Cv 1.0 for two-way DN15 valve Cv 1.5 for three-way DN15 valve
					2						Cv 2.5 for two-way DN15 or DN20 valve Cv 3.0 for three-way DN15 or DN20 valve
					3						Cv 3.5 for two-way DN15 or DN20 valve Cv 4.0 for three-way DN15 or DN20 valve
					5						Cv 5.0 for two-way or three-way DN20 valve
					7						Cv 7.0 for two-way or three-way DN20 valve Cv 8.0 for two-way or Cv7.5 for three-way DN25 valve
						G					ON/OFF actuator for general close-off rating
						H					ON/OFF actuator for high close-off rating
							1				Spring return normally closed (for two-way or three-way valve)
							2				Spring return normally open (only for two-way valve)
								3			Actuator for general temperature rating
									A		24 V AC at 50 Hz/60 Hz power
									B		110 V AC at 50 Hz and 120 V AC at 60 Hz power
									D		208 V AC at 50 Hz/60 Hz power
									T		277 V AC at 50 Hz/60Hz power
									U		220 V AC/230 V AC at 50 Hz/60 Hz power
										00	6" motor wires
											0 No options

Order for Replacing Valve or Actuator

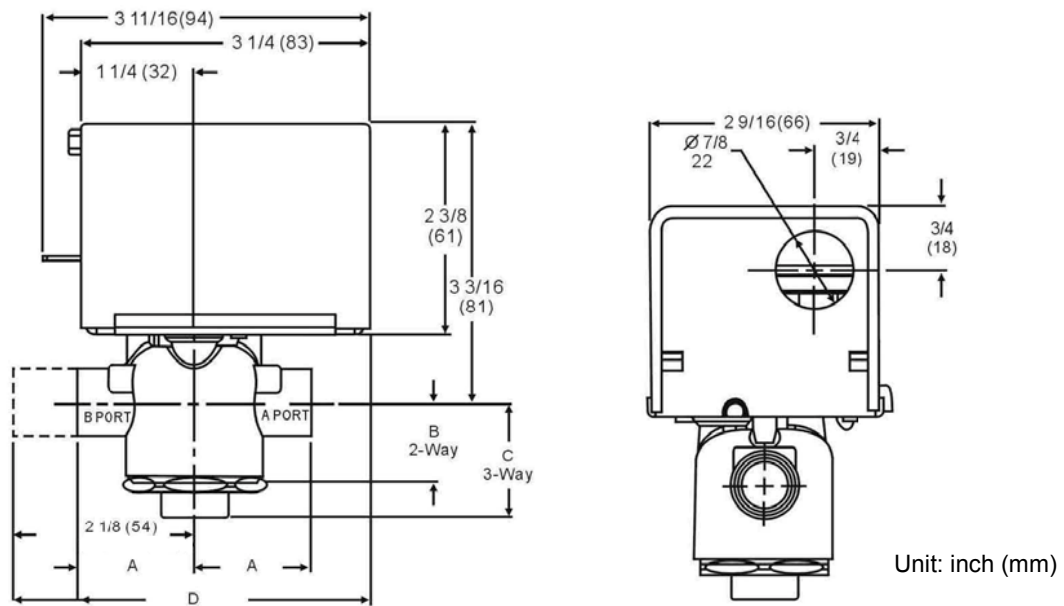
- When ordering the valve only, use the first four digits after 'GY-VT' and prefix 'GY-VT' to configure the valve model number. (e.g., Model GY-VT2231)
- When ordering the actuator only, use the last seven digits and prefix 'GY-A' to configure the actuator model number. (e.g., Model GY-AG13A000)

Valve and actuator combination requirements

Valve	Actuator
Model GY-VT <u>X</u> XXX	Model GY-A <u>X</u> XXXXX
When <u>X</u> is	When <u>X</u> is
2: 2-way valve	1: Spring return for N.C.
3: 3-way valve	2: Spring return for N.O.

- If the underlined model number configuration of the valve (valve type) is '2', the underlined configuration of the actuator (spring return mode) can be '1' or '2'.
- If the underlined model number configuration of the valve (valve type) is '3', the underlined configuration of the actuator (spring return mode) must be '1'.
- If the underlined model number configuration of the actuator (spring return mode) is '1', the underlined configuration of the valve (valve type) can be '2' or '3'.
- If the underlined model number configuration of the actuator (spring return mode) is '2', the underlined configuration of the valve (valve type) must be '2'.

Dimensions



Nominal size	Pipe thread	A (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
DN15	Rc 1/2"	35	23	33	86	0.8
DN20	Rc 2/4"	43	23	37	92	0.9
DN25	Rc 1"	47	25	43	94	1.0

Figure 1. Dimensions

Actuator Parts Identification

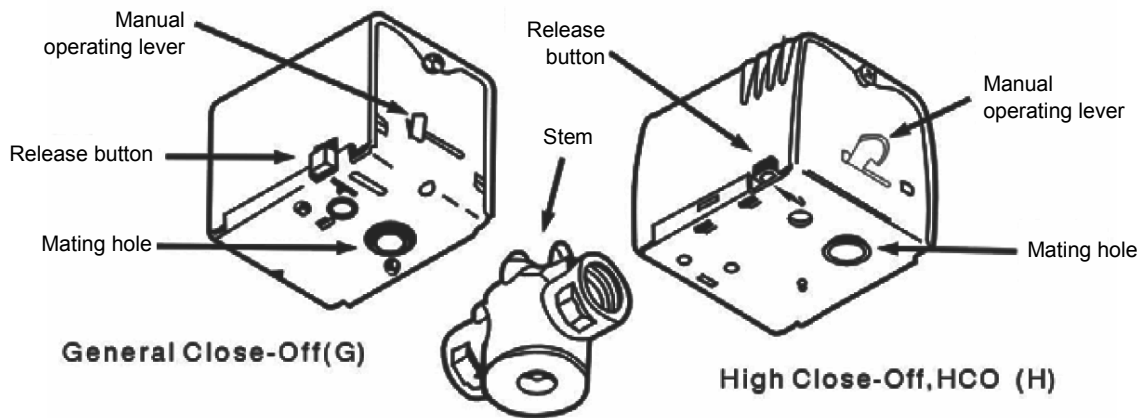


Figure 2. Actuator parts identification

Installation

Valve to pipe

Pipe is installed into a valve with threaded connection. Apply Teflon tape to all but the last two threads of male pipe thread. Hand-screw the pipe into the valve, turning it as far as it goes. Use a wrench to fully tighten the valve to the pipe. Do not over-tighten or strip threads.

Actuator on valve

Slowly latch the manual operating lever of the actuator in the engaged position (indicated with 'OPEN' for N.C. actuator only). Depress the release button. (See Fig. 2.) Align the valve with the actuator to ensure the valve stem is inserted into the large mating hole on the bottom side of the actuator. Engage the actuator on the valve and release the button. Actuator Model GY-AG2 or GY-AH2 series is used for N.O. (normally open) operation. Model GY-AG1 or GY-AH1 series is used for N.C. (normally closed) operation.

Mounting Precautions

The valve can be mounted vertically or horizontally. If being mounted horizontally, the valve should be mounted within 90° of upright position. (See Fig. 3.) If the valve is mounted vertically (in upright position), care should be taken to ensure moisture does not drip onto the actuator. The valve and actuator should not be mounted upside down.

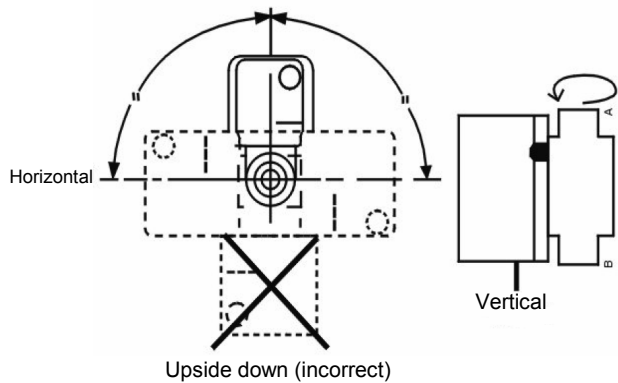


Figure 3. Mounting position

Piping and Application Tips

The valve must be piped so that the paddle closes against the direction of low. (See Fig. 4.) When the actuator is being installed to N.C. valve, the actuator must be placed in the manually open position by using the manual operating lever. The first time the valve is operated electrically, the manual operating lever of the actuator will transfer to the automatic position. The manual operating lever can be used for flushing of the piping system after installation.

The valve is designed for application to closed hydronic heating and cooling systems. Use in systems which have substantial make-up water (open system) is not recommended. High levels of dissolved oxygen and chlorine found in open system may attack the valve materials and result in premature failure. Due to condensation in chilled water applications, install over a drip pan.

Valve Configuration

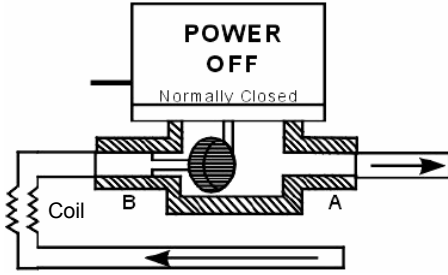


Figure 4. 2-way normally closed to the coil

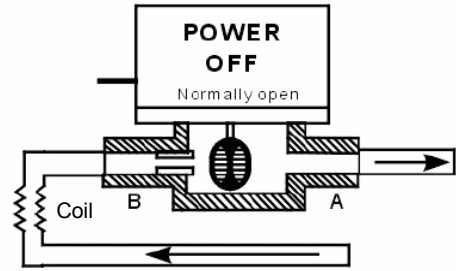


Figure 5. 2-way normally open to the coil

3-way is only configured as N.C. to B port.
For N.O. configuration to the coil, simply turn the valve around.

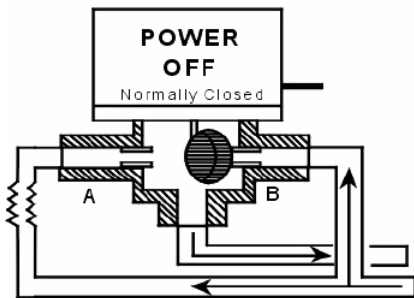


Figure 6. 3-way valve in mixing configuration, normally open to the coil

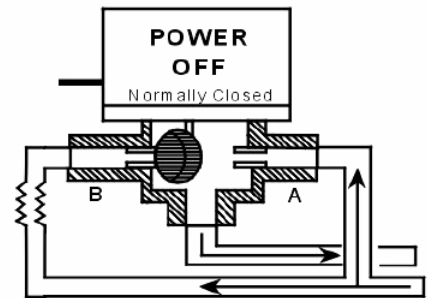


Figure 7. 3-way valve in mixing configuration, normally closed to the coil

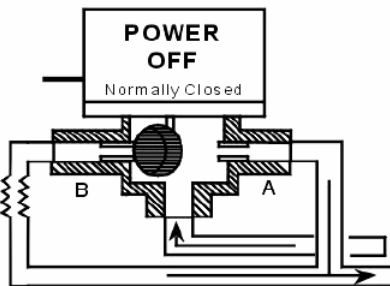


Figure 8. 3-way valve in diverting configuration, normally closed to the coil

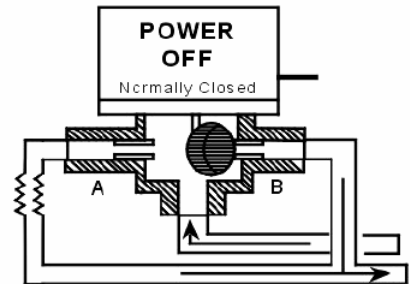


Figure 9. 3-way valve in diverting configuration, normally open to the coil

Actuator Wiring

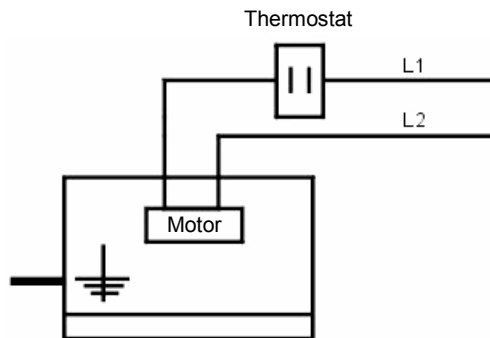


Figure 10. Actuator wiring



Specifications are subject to change without notice.

Yamatake Corporation
Building Systems Company

<http://www.yamatake.com>