

# ACTIVAL™-Mini Two-way Ball Valve for Fan Coil

## ■ General

ACTIVAL-Mini Model VY5502 is a two-way ball valve with threaded-end connection. It proportionally controls chilled/hot water for the fan coil unit.

Model VY5502 has bronze valve body, and the components exposed to process fluid are made of stainless steel or corrosion resistant materials. Cv value and size of Model VY5502 are suitable for controlling the fan coil unit.

This product is used in combination with the actuator Model MY5560C\_.

Note: Regarding the detailed information on the actuator, refer to AB-6586, *ACTIVAL-Mini Electro-Mechanical Actuator for Proportional Valve for Fan Coil*.



## ■ Features

- (1) Since water flowing sound is small in the various flow rate range, it is suitable to control temperature for the hotel guest rooms.
- (2) Bronze valve body applicable to fluid pressure PN16 (1.6 MPa)
- (3) Easy assembly with Model MY5560C actuator using no tool, and no adjustment required
- (4) Equal percentage flow characteristic

**IMPORTANT** • If you want to use this product combined with a third party's controller, please contact the salesperson at Azbil corporation.

## Safety Instructions

Please read instructions carefully and use the product as specified in this manual.

Be sure to keep this manual near by for ready reference.

### Usage Restrictions

This product is targeted for general air conditioning. Do not use this product in a situation where human life might be affected.

Also, do not install this product in an atmosphere containing explosive gas or flammable gas.

If this product is used in a clean room or a place where particularly high reliability or control accuracy is required, please contact our sales representative. Azbil Corporation will not bear any responsibility for the results produced by the operators.

### Warnings and Cautions

 **WARNING** Alerts users that improper handling may cause death or serious injury.

 **CAUTION** Alerts users that improper handling may cause minor injury or material loss.

### Signs

 Alerts users possible hazardous conditions caused by erroneous operation or erroneous use. The symbol inside  $\triangle$  indicates the specific type of danger.  
(For example, the sign on the left warns of the risk of electric shock.)

 Notifies users that specific actions are prohibited to prevent possible danger. The symbol inside  $\odot$  graphically indicates the prohibited action.  
(For example, the sign on the left notifies that disassembly is prohibited.)

 Instructs users to carry out a specific obligatory action to prevent possible danger. The symbol inside  $\bullet$  graphically indicates the actual action to be carried out. (For example, the sign on the left indicates general instructions.)

### $\triangle$ CAUTION

 Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications.  
Failure to do so might cause fire or device failure.

 Use this product within the lifespan given in the specifications and avoid instrumentations that keep this product to operate excessively.  
Continued use beyond the lifespan might cause fire or device failure.

 Keep the products in package for storage.  
Failure to do so might damage or stain the products.

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

 Do not install this product nearby a steam coil or a hot-water coil.  
High temperature radiation might cause malfunction of its actuator.

 Do not use the product in an atmosphere corrosive to the actuator, valve, and their components.  
Doing so might cause device failure.

⚠ CAUTION	
⊘	Install this product in the proper position as specified in this manual. Excessively tight connection or improper installation position might damage the product. Failure to do so might damage the valve body.
⊘	Do not excessively screw the valve into a pipe. Doing so might damage or deform the inside of the valve causing leakage and malfunction.
❗	Install this product so that no foreign objects remains inside the pipes. Be sure to provide a strainer (with 40 or more meshes) on the inflow side of the piping. Flush the piping to remove the foreign objects after installation. Foreign objects inside the piping might damage the product.
❗	After installation, make sure no fluid leaks from the valve-pipe connections. Incorrect installation might cause fluid leakage.

⚠ CAUTION	
⊘	Do not allow the fluid to freeze. Doing so might damage the valve body and cause fluid leakage.
⚠	Do not carelessly touch this product when being used to control hot water. The product temperature goes high, and you might get burned.
⊘	Do not disassemble this product. Doing so might cause device failure.
❗	Dispose of this product as industrial waste in accordance with your local regulations. Do not reuse all or part of this product.

■ Model Numbers and Cv Value

Model number	Valve size	Cv value	Color of seal*2	Weight (kg)*1	Closed-off rating	Body material
VY5502A0021	20A	1.6	Black	0.6	0.4 MPa	Bronze casting (CAC406)
VY5502A0022		2.5	Red			
VY5502A0023		4	Blue			

\*1 Weight of the actuator is excluded.

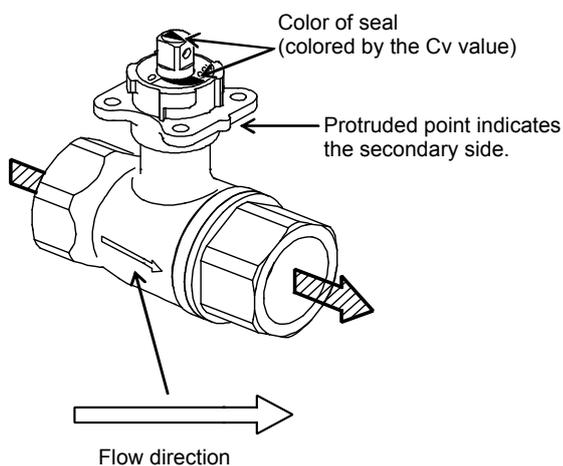


Figure 1.

■ Specifications

Item		Specification	
Dedicated actuator		Model MY5560C	
Type		Two-way valve, threaded-end connection	
Rated pressure		1.6 MPa	
Applicable fluid		Chilled/hot water	
Temp. of fluid		0–80 °C (without freezing)	
Flow characteristics		Equal percentage characteristic	
Rangeability		50:1	
Leakage at fully closed		0.01 % of Cv	
Major materials (See Fig. 2)	No.	Part	Model VY5502
	①	Valve body	Bronze casting (CAC406)
	②	Valve body	Bronze casting (CAC406)
	③	Seat ring	Polytetrafluoroethylene
	④	Ball	Stainless steel casting (SUS316)
	⑤	Stem	Stainless steel (SUS303)
	⑥	O-ring	Acrylonitrile butadiene rubber
Environmental operating conditions	Rated operating conditions	Ambient temperature	0–50 °C
		Humidity	5–95 % RH
		Vibration	5 m/s <sup>2</sup> (10–150 Hz)
	Transportation/storage conditions	Ambient temperature	-20 to 70 °C
		Humidity	5–95 % RH
		Vibration	20 m/s <sup>2</sup> (10–150 Hz)
Installation direction (see Fig. 5)		Horizontal or vertical piping	

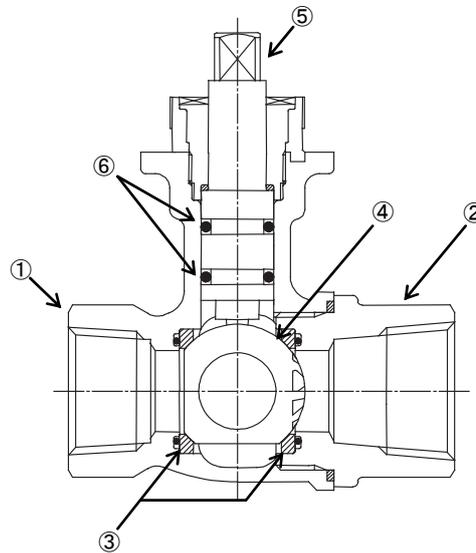


Figure 2. Cross section of valve

■ Dimensions

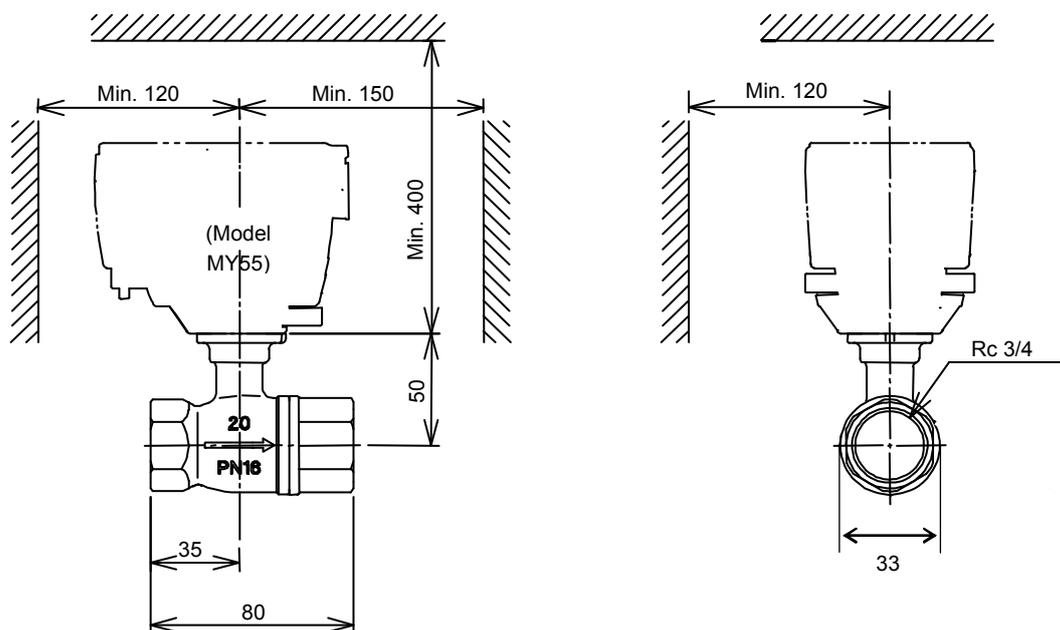


Figure 3. Actuator dimensions (mm)

■ Installation

⚠ CAUTION	
⚠	Use this product under the operating conditions (for temperature, humidity, power, vibration, shock, mounting direction, atmosphere, etc.) listed in the specifications. Failure to do so might cause fire or device failure.
!	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
⊘	Do not use the product in an atmosphere corrosive to the actuator, valve, and their components. Doing so might cause device failure.
⊘	Install this product in the proper position as specified in this manual. Excessively tight connection or improper installation position might damage the product. Failure to do so might damage the valve body.
⊘	Do not excessively screw the valve into a pipe. Doing so might damage or deform the inside of the valve causing leakage and malfunction.

⚠ CAUTION	
!	Install this product so that no foreign objects remains inside the pipes. Be sure to provide a strainer (with 40 or more meshes) on the inflow side of the piping. Flush the piping to remove the foreign objects after installation. Foreign objects inside the piping might damage the product.
!	After installation, make sure no fluid leaks from the valve-pipe connections. Incorrect installation might cause fluid leakage.

● Notes for Installation

- Provide a strainer (with 40 or more meshes) on the inflow side of the valve to eliminate the foreign materials. If the strainer cannot be installed just before the inlet of valve, install it on the pipe diverting sections (sections diverting from main piping system to sub piping system) to eliminate the foreign materials.
- Install the valve so that fluid flows in the direction pointed by the arrow on the valve body.

● Installation Location

<b>⚠ CAUTION</b>	
⊘	Do not install this product nearby a steam coil or a hot-water coil. High temperature radiation might cause malfunction of its actuator.
⊘	Do not use the product in an atmosphere corrosive to the actuator, valve, and their components. Doing so might cause device failure.

- Install the product where maintenance or inspection can be done easily.  
Note: For the allowable maintenance or inspection space, refer to Fig. 3. Actuator dimensions (mm).
- When installing the product in the ceiling, make a trapdoor within 50 cm around the valve.  
And, place a drain pan under the valve.
- Avoid connecting the product to pipes where water hammer may occur or slag, etc. easily accumulates.
- When piping is done in the fan coil unit that has drain pans, if heat installation is not provided, equip drain boards, etc. so as not to let the condensed water from the valve and pipes reach the cold reserving part of the fan coil unit.

● Mounting Orientation

The product can be mounted with any position from upright to sideways (max. 90-degree inclination). Mount the product so that the actuator is located above the valve (see Fig. 4). When the product is installed outdoors, place it in upright position.

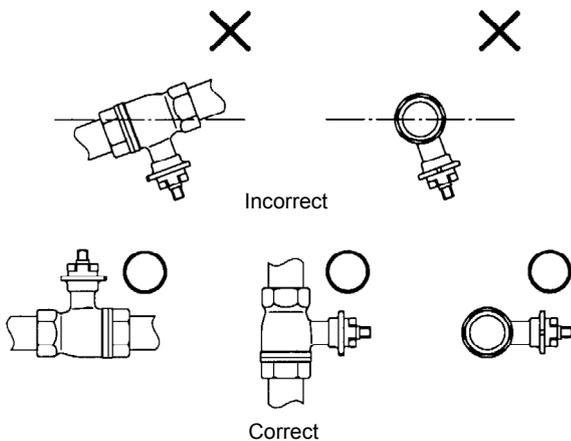


Figure 4. Mounting orientation

● Piping

- (1) Install the bypass pipes for this product and install the gate valves at the inflow, outflow, and bypass side.  
Also, install a strainer on the inflow side of the piping.
- (2) Do not allow refuses generated by cutting pipes or threads, materials for connecting valve to enter into the product.  
If the chippings are caught in, the valve may not be fully closed, or fluid may be leaked due to damages on the seat.
- (3) When piping, do not apply too much sealing material, such as solidifying liquid and tape, to the pipe connection sections so that these materials do not flow into the valve.  
If the sealing materials or seal tape are caught in, the valve may not be fully closed, or fluid may be leaked due to damages on the seat.
- (4) When connecting pipes, hold the valve body at the screw-in side by a wrench, then screw the pipe into the valve (see Fig. 5).  
Do not excessively screw the pipe into the valve. The maximum torque to screw is 60 N·m.

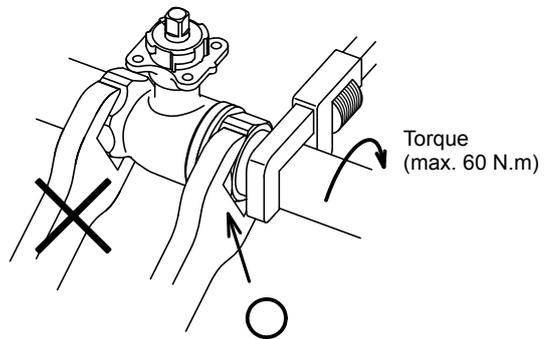


Figure 5. Attaching to pipes

- (5) When fluid flows for the first time, fully open the valve and flush fluid at the maximum rate to clean out the foreign materials and refuse in the pipes.  
Shipping default is fully open.

● Heat Insulating

Apply heat insulation as illustrated by in Fig. 6. Do not cover the connection port of the actuator with the insulation material.

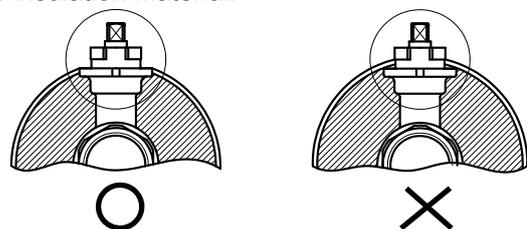


Figure 6. Heat insulating area

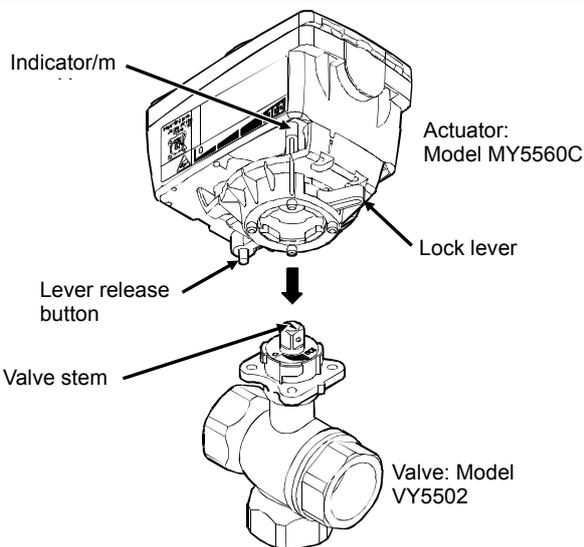
● Mounting Actuator on Valve

Describes how to mount the actuator Model MY5560C.

(See Fig. 7)

**IMPORTANT**

- As shown in Fig. 7. *Mounting on valve*, check the factory setting position of the actuator and valve. The actuator and valve can be assembled by 90° steps.
- When the connection position of actuator is changed, change at the 100 % open position.
  - Actuator  
The lever should be at 100.
  - Valve  
The arrow on the stem points to the 100 position.  
Align the round hole on the side of the valve stem with the tip of the valve flange.
- If the valve and actuator are assembled in the fully closed position and fully open position respectively, gears in the actuator will be damaged because the actuator will try to close the valve although it is in the fully closed position.
- If the valve and actuator are assembled in their different positions, counter actions etc. will occur and the valve cannot be controlled correctly.



Note: Do not press the lever release button while operating. Keep the heat insulator away from the lever release button or the indicator/manual lever.

Figure 7. Mounting actuator on valve

- (1) While pressing the lever release button, turn the indicator/manual lever to the 100 % position.

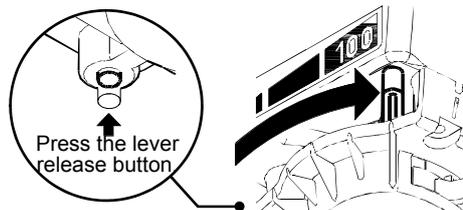


Figure 8. Indicator/manual lever

- (2) Turn the lock lever to the right end.

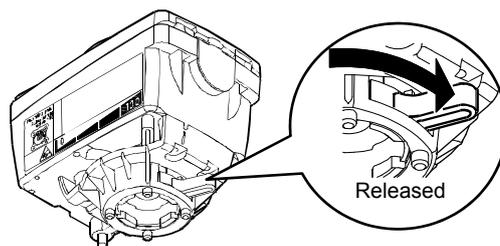


Figure 9. Lock lever

- (3) As shown in Fig. 10. *Valve stem*, check that the valve stem points to the 100 % position. When the valve stem points to the 100 % position, the round hole on the side of the valve stem faces to the tip of the valve flange.

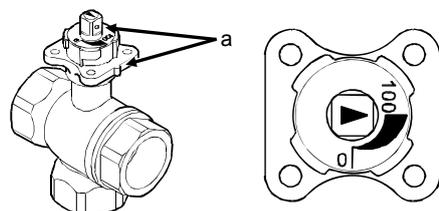


Figure 10. Valve stem

- (4) Mount the actuator (Model MY53\_0A) on the valve (Model VY53 series). Align the four holes on the valve with the tip of the valve flange.
- (5) Turn the lock lever to the left end (marker).

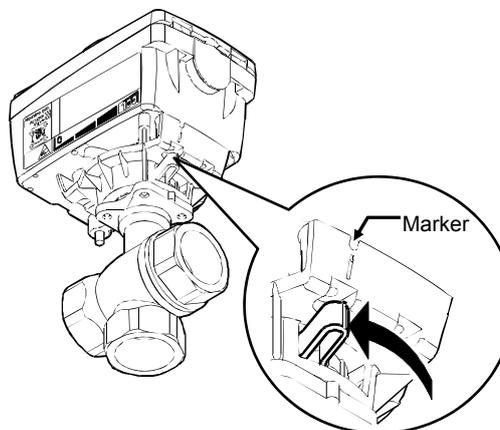


Figure 11. Locked position

■ Maintenance

<b>⚠ CAUTION</b>
 Do not carelessly touch this product when being used to control hot water. The product temperature goes high, and you might get burned.

- (1) After the product is connected to pipes, if the product is not operated for a long period, execute valve open and close operation at least once a month.
- (2) Execute maintenance according to *Table 1. Inspection items and inspection method*.
- (3) Once every six months or so, visually check that there is no leakage from the valve and the actuator operates smoothly.

if any trouble occurs, take measures according to *Table 2. Troubleshooting*.

Although the measures are taken, if the trouble cannot be recovered, please contact the sales person at Azbil Corporation.

Table 1. Inspection items and inspection method

Item	Inspection cycle	Inspection method
Visual check	6 months	<ul style="list-style-type: none"> <li>Check that the lock lever is firmly assembled to the valve.</li> <li>Check damage on the actuator.</li> <li>Check that there is no leakage from the gland or connection with the pipes.</li> </ul>
Operation status	6 months	<ul style="list-style-type: none"> <li>Check that the valve is smoothly opened or closed.</li> <li>Check that there is no abnormal sound or vibration.</li> </ul>
Regular inspection	At any time	<ul style="list-style-type: none"> <li>Check that the valve is smoothly opened or closed.</li> <li>Check that there is no abnormal sound or vibration.</li> <li>Check that there is no hunting of valve.</li> </ul>

Table 2. Troubleshooting

Abnormal phenomenon	Where to inspect	Measure
Valve does not move smoothly. Valve stops moving in the middle. Valve does not move.	Power line and the input signal are correctly fed? Wires are firmly connected, no disconnected wire? No foreign materials are caught in?	Check the power supply. Check the controller. Check the wirings. Remove the foreign materials by manual open/close operation.
Valve hunting	Level of pressure and differential pressure at the secondary? Stability of control?	Set or adjust the front-back differential pressure of valve again. Set or modify the control parameters of PID for the controller.
Abnormal sound or vibration generated from the place where the actuator is mounted	State of the lock lever? Yoke is damaged?	Close the lock lever. Contact Azbil for details.
Abnormal sound while the actuator is moving		Contact Azbil for details.
There is leakage when the valve is fully closed.	Check the installation procedures described in page 7.	Redo installation according to the procedures described in page 7.



*Specifications are subject to change without notice.*

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