

ACTIVAL™ -Mini

Electro-Mechanical Actuator

for Proportional Valve for Fan Coil

■ General

ACTIVAL-Mini Model MY5560C0000 is designed specifically for Model VY550_ proportional valve for fan coil.

Combining this product and the proportional valve for fan coil, control of chilled/hot water for the fan coil is carried out.

The product can be attached or detached from the valve by adopting the one-touch lever-locking mechanism.

A reversible synchronous motor, which operates at a low voltage of 24 V AC is used.

Proportional control is carried out combining with the following products:

Inflex FC (Model WY5205, Model WY5305)

Microstat (Model WY7605)

Hotel guest room controller (Model WY7118)

Intelligent FCU controller
(Model WY7205, Model WY7305)



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

■ Features

- (1) Compact and lightweight
Energy conservation type, attains low power consumption.
- (2) Using the one-touch lever-locking mechanism, you can attach or detach the actuator (Model MY5560C0000) without a tool.
No adjustment is required.
- (3) Manual open/close mechanism and valve position indicator are equipped.

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 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 your Azbil Corporation sales representative.

For system design, application design, method of using the product, or product applications, please contact your Azbil Corporation 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.)

WARNING



Before wiring or servicing, be sure to turn off the power to this product.

Failure to do might cause electric shock or device failure.



Detach the terminal cover only when wiring and setting the product and reattach the terminal cover after wiring and setting the product.

Failure to do so might cause electric shock.















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.

 CAUTION	
	Keep the products in package for storage. Failure to do so might damage or stain the products.
	Do not allow any shock on this product. Doing so might cause device failure.
	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 damage the product.
	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
	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.
	Do not put load or weight on the actuator of this product. Doing so might damage the product.
	All wiring must comply with applicable codes and ordinances.
	Provide a cutoff device such as a circuit breaker for the power source to the product.
	Use crimp terminals with insulation for connections to the product terminals. Failure to do so might cause short circuit leading to fire or device failure.

 CAUTION	
	Firmly tighten the terminal screws. Insufficient tightening of the terminal screws might cause fire or overheating.
	Do not touch the moving parts of this product. Doing so might cause injury.
	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.

IMPORTANT • In case an Azbil Corporation product fails, you are required to provide your Equipment with safety design such as fool-proof design*¹, and fail-safe design*² (anti-flame propagation design, etc.), whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth. Furthermore, fault avoidance*³, fault tolerance*⁴, or the like should be incorporated so that the said Equipment can satisfy the level of reliability and safety required for your use.

- *1. A design that is safe even if the user makes an error.
- *2. A design that is safe even if the device fails.
- *3. Avoidance of device failure by using highly reliable components, etc.
- *4. The use of redundancy.

■ Model Numbers

Base model number	Control signal	—	Power supply	Wiring type	Description
MY55	6	0	C	0000	Dedicated actuator for Model VY550_.
					Floating
		—			
	24 V AC				
	Wiring on terminal blocks				

■ Specifications

Item		Specification	
Dedicated valve		Model VT550_	
Power supply		24 V AC \pm 15 %, 50/60 Hz \pm 3 Hz	
Power consumption		0.8 VA	
Operation time		60 \pm 5 sec (50 Hz) , 50 \pm 5 sec (60 Hz)	
Control signal		Floating (Valve position is controlled proportionally to the supply duration of power voltage.)	
Operation environment conditions	Rated operating conditions	Ambient temperature	0–50 °C (fluid temperature 0–80 °C, without condensation)
		Ambient humidity	5–95 % RH
		Vibration	5 m/s ² (10–150 Hz)
	Transportation/ storage conditions (in packed state)	Ambient temperature	-20–70 °C
		Ambient humidity	5–95 % RH
		Vibration	20 m/s ² (10–150 Hz)
Installation Location		Indoor Note: Salt air, corrosive gas, and organic solvent must be avoided.	
Mounting orientation		The product can be mounted with any position from upright to sideways (max. 90-degree inclination) . Note: When the product is installed outdoors, place it in upright position.	
Indicator for opening		Can be checked from the lower position Model VY5502: { Indicator 0 : fully closed Indicator 100 : fully open Model VY5503: { Indicator 0 : B-AB (B port fully open) Indicator 100 : A-AB (A port fully open)	
Manual operation		Yes Turn off the power, while pressing the lever release button, turn the indicator/manual lever.	
Factory default settings		100 % fully open	
Wiring		Connections using the terminal blocks (M3.5)	
Insulation resistance	Between terminals and case	5 M Ω or more / 500 V DC	
Withstand voltage	Between terminals and case	500 V/min with leak current 1mA or less	
Case structure		JIS IP40	
Major materials	Case	Polycarbonate resin (color: gray)	
	Cover	Polycarbonate resin (color: gray)	
	Yoke	Polyphenylene sulfide resin (color: black)	
Weight		0.5 kg	

■ Dimensions

● Dimensions and Parts Identification

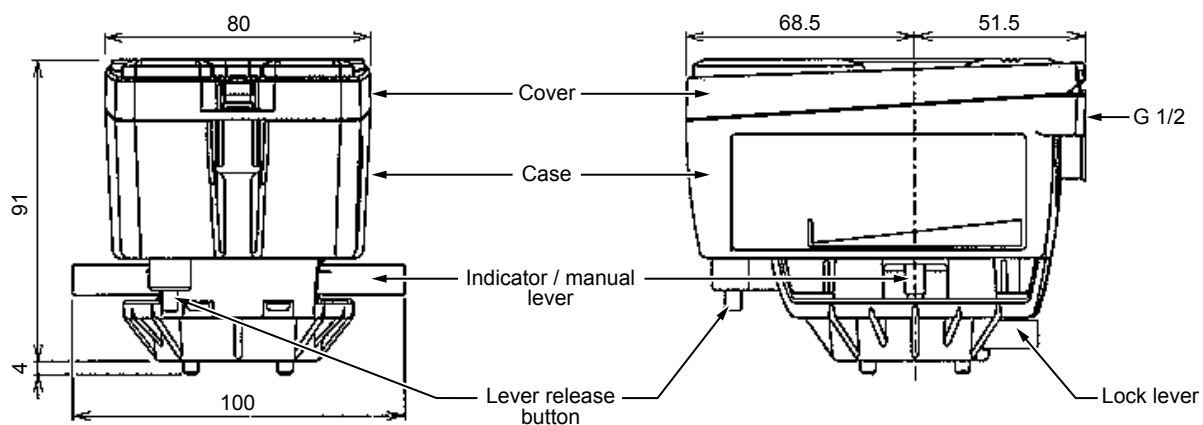


Figure 1. Dimensions (mm)

● Mounting Dimensions

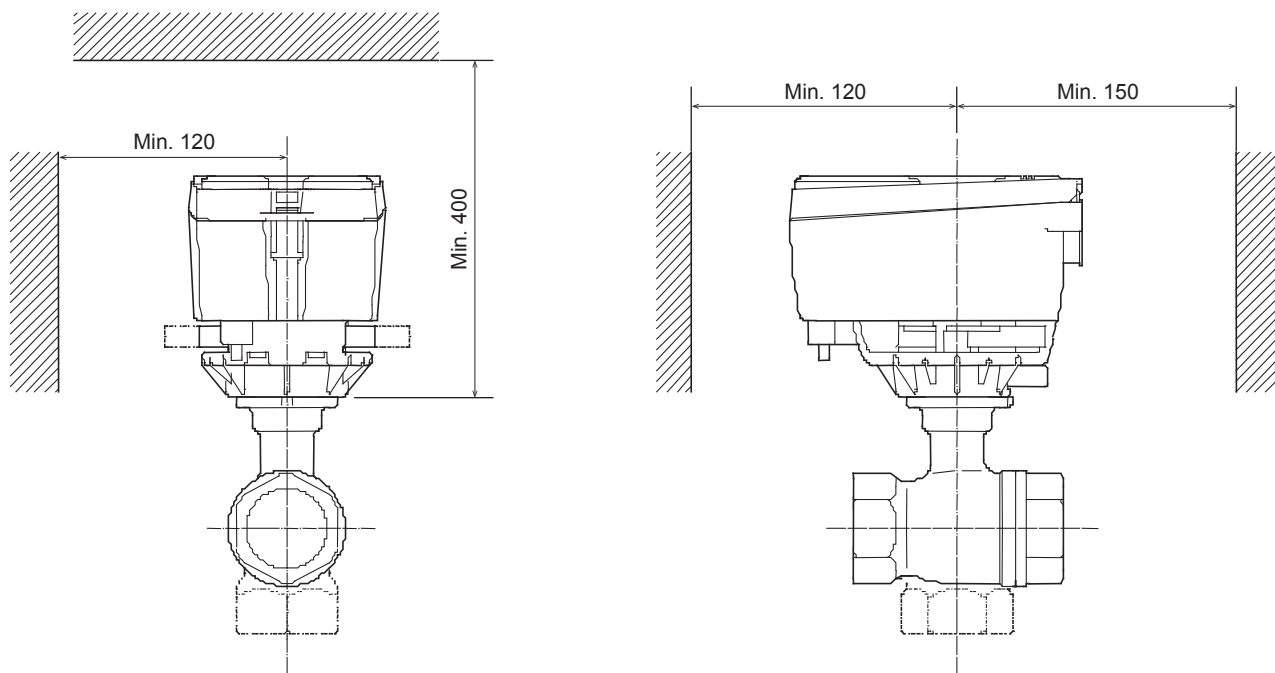


Figure 2. Mounting dimensions (mm)

■ Installation

⚠ CAUTION	
!	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.
⊘	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.
⊘	Do not put load or weight on the actuator of this product. Doing so might damage the product.
!	All wiring must comply with applicable codes and ordinances.

● Installation Location

⚠ CAUTION	
!	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 damage the product.

IMPORTANT • This product is designed for indoor use.

- The case, cover, and terminal cover might be corroded or damaged by various chemicals, organic solvents, their vapor, etc. since they are made from polycarbonate resin. Avoid wiping the product by various chemicals and organic solvents, or using it in their atmosphere.
- Do not use the product in the atmosphere that contains salt air, corrosive gas, and organic solvent.
- Use the product within the rated operating conditions: 0–50 °C.

● Model VY550_ Pipe Connection

- Install the product where maintenance or inspection can be done easily.

Note: For the allowable maintenance or inspection space, refer to Fig. 2. Mounting dimensions.

- 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.

● Mounting Orientation

The proportional valve can be mounted with any position from upright to sideways (max. 90-degree inclination) .

Mount the proportional valve so that the actuator is located above the valve.

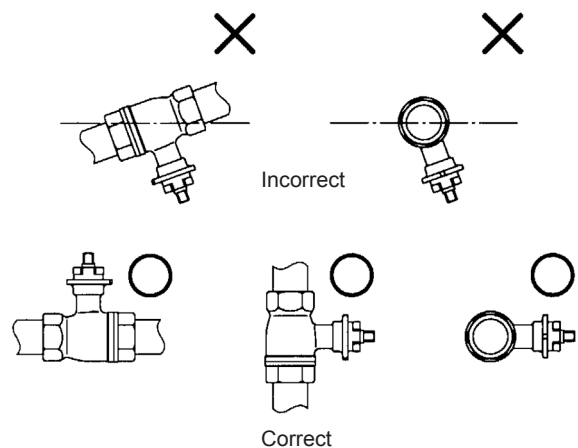


Figure 3. Mounting Orientation

● Piping

- Install the bypass pipes for the proportional valve and install the gate valves at the inflow, outflow, and bypass side.
And, install strainer (with 40 or more meshes) on the inflow side of the piping.
- 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.
- When connecting pipes, hold the valve body at the screw-in side by a wrench, then screw the pipe into the valve (refer to Fig. 4) .
Do not excessively screw the pipe into the valve. The maximum torque to screw is 60 N·m.

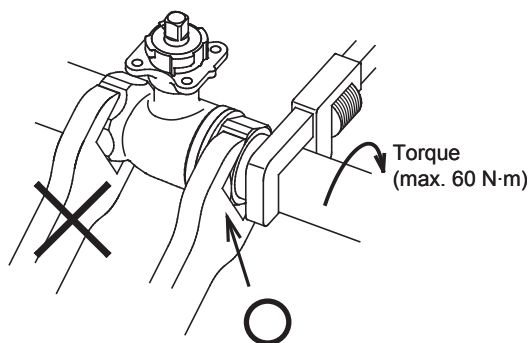



Figure 4. Connecting to pipes

- Install the valve so that fluid flows in the direction pointed by the arrow on the valve body.
- When fluid flows for the first time, fully open the proportional 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. 5. Do not cover the connection port of the actuator with the insulation material.

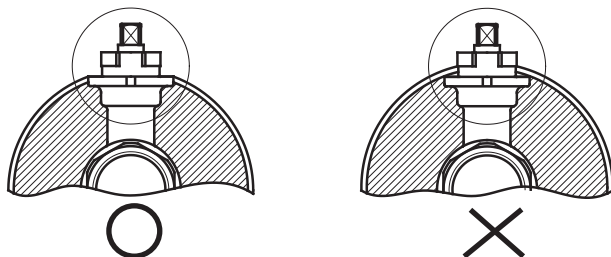


Figure 5. Heat insulating area

● Factory Default Settings

Factory setting of the actuator position is 100 %. Check the indicator/manual lever position (refer to Fig. 6) .

● Manual Operation

⚠ CAUTION	
!	Do not touch the moving parts of this product. Doing so might cause injury.

<p>IMPORTANT • Before opening or closing the valve manually, be sure to turn off the power. If the valve is manually opened or closed while the power 24 V AC active, there is a possibility that the actuator will break down.</p>
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- (1) Turn off the power.
- (2) While pressing the lever release button shown in Fig. 6. Manual open/close operation, turn the indicator/manual lever.

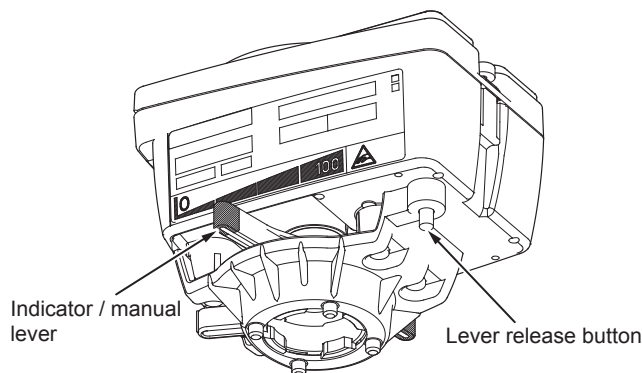


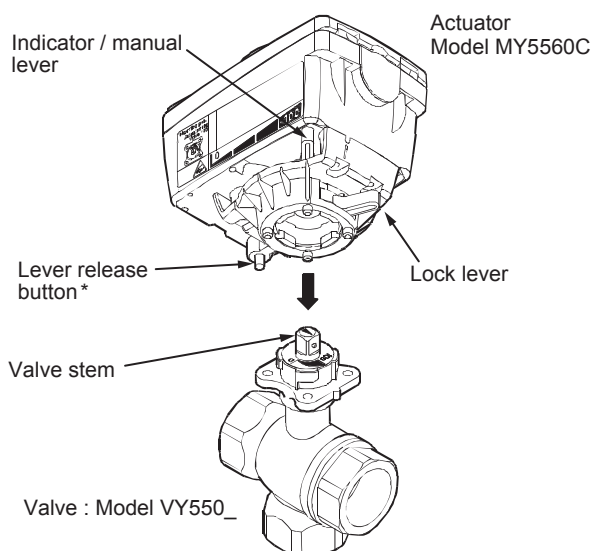
Figure 6. Manual open/close operation

● Mounting on Valve

Describes how to mount the actuator on the proportional valve (Model VY550_) for the fan coil.

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 on valve

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

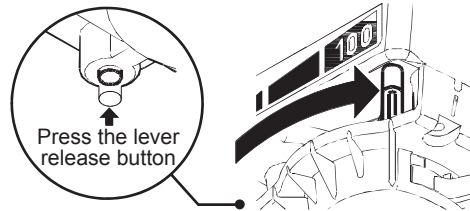


Figure 8. Indicator/manual lever

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

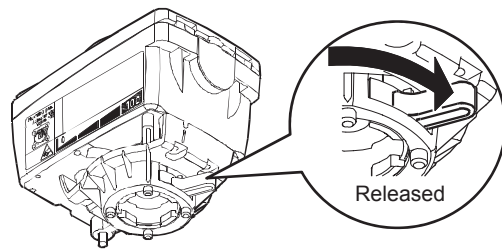


Figure 9. Lock lever

- (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.

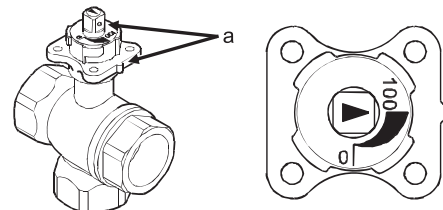


Figure 10. Valve stem

- (4) Mount the actuator (Model MY5560C) on the valve (Model VY550_). Align the four holes on the valve with the tip of the valve flange.
- (5) Turn the lock lever to the left end (marker).

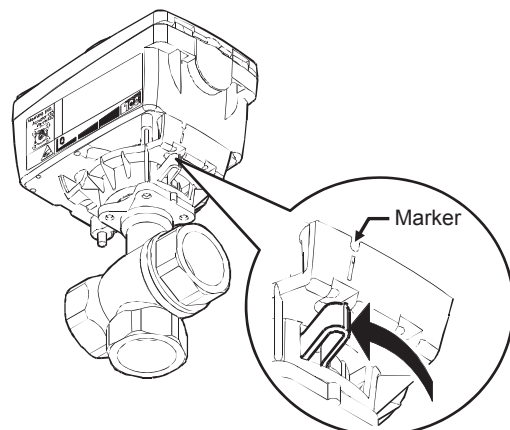


Figure 11. Locked

■ Wiring

⚠ WARNING	
⚠	Before wiring or servicing, be sure to turn off the power to this product. Failure to do might cause electric shock or device failure.
⚠	Detach the terminal cover only when wiring and setting the product and reattach the terminal cover after wiring and setting the product. Failure to do so might cause electric shock.

⚠ CAUTION	
!	Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
!	All wiring must comply with applicable codes and ordinances.
!	Provide a cutoff device such as a circuit breaker for the power source to the product.
!	Use crimp terminals with insulation for connections to the product terminals. Failure to do so might cause short circuit leading to fire or device failure.
⚠	Firmly tighten the terminal screws. Insufficient tightening of the terminal screws might cause fire or overheating.

IMPORTANT • This product is designed for 24 V AC. Never supply 100 V AC or 200 V AC.

- Always close the cover except doing wiring.
- Failure to do so might cause device failure.

- Wiring to this product is done by the terminals (M3.5 screw) .
Do wiring for the product referring to Fig. 13. to 16.
- Select appropriate connectors so as to secure dust-proof of the product.

● Connection Diagram

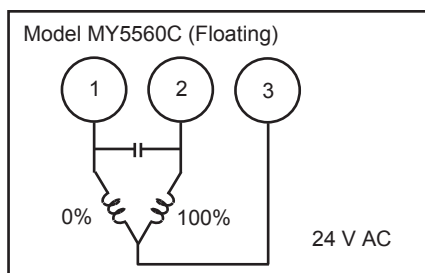


Figure 12. Connection diagram

● Wiring Example

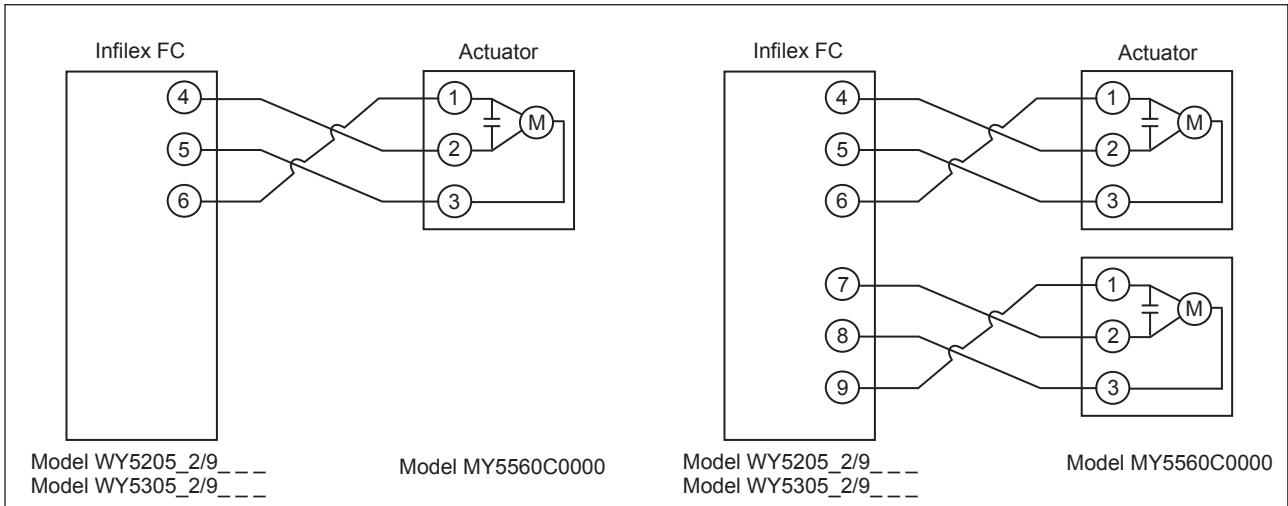


Figure 13. Connection with Inflex FC

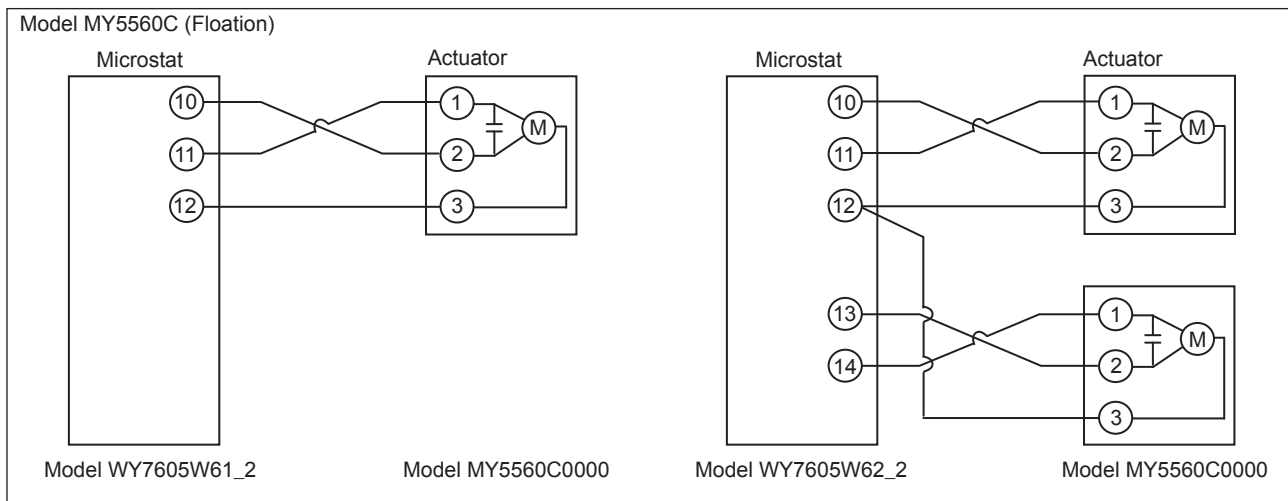


Figure 14. Connection with Microstat

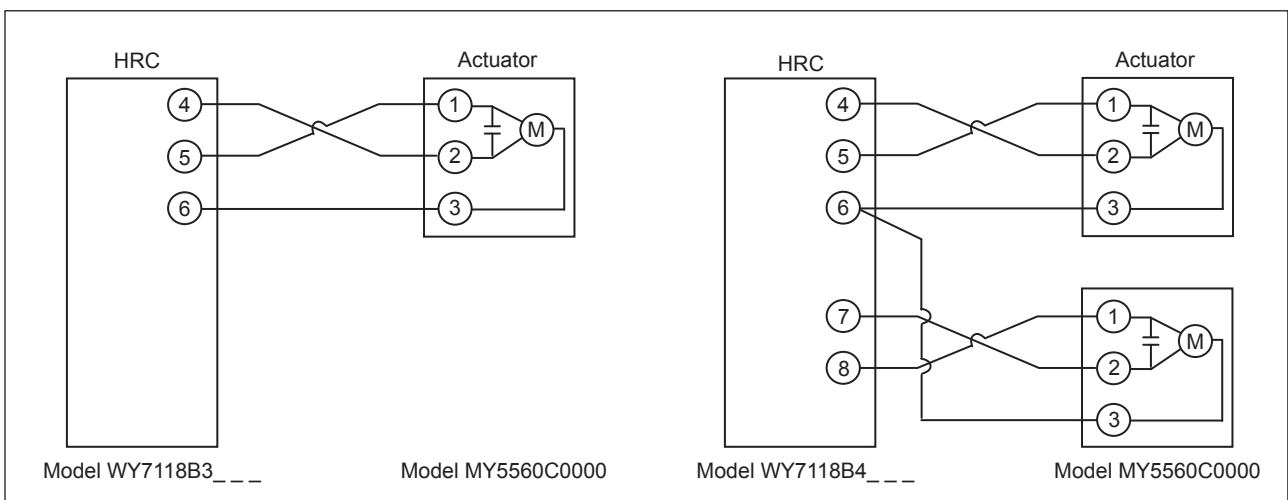


Figure 15. Connection with hotel guest room controller (HRC)

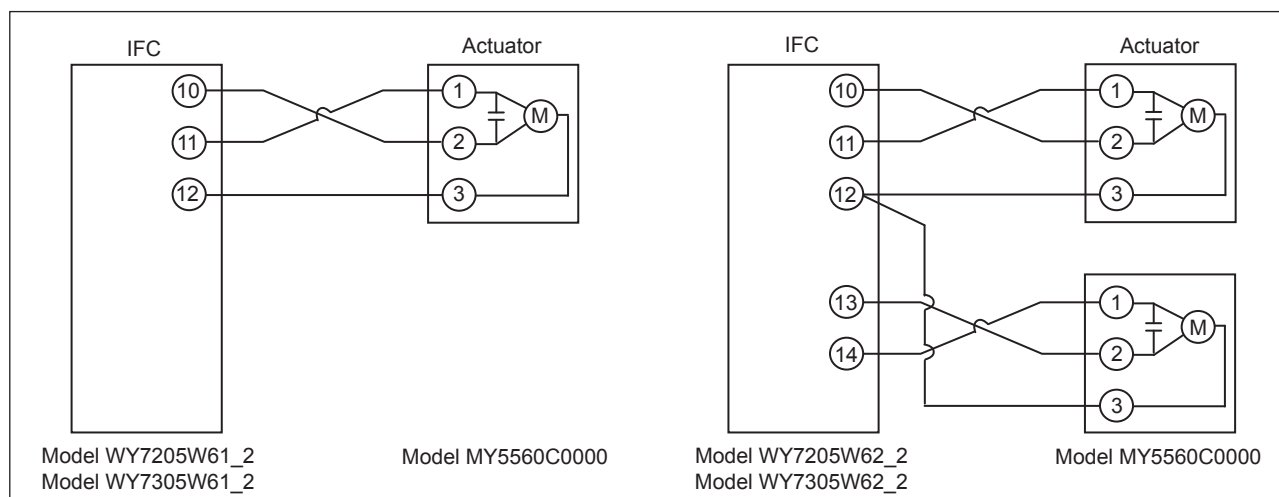


Figure 16. Connection with Intelligent FCU controller (IFC)

IMPORTANT • Operation time of this product is 60 sec for 50 Hz, 50 sec for 60 Hz.
When connecting the product to the controller, check the setting of the operation time.

■ Maintenance

⚠ WARNING



Before wiring or servicing, be sure to turn off the power to this product.
Failure to do might cause electric shock or device failure.



Detach the terminal cover only when wiring and setting the product and reattach the terminal cover after wiring and setting the product.
Failure to do so might cause electric shock.

⚠ CAUTION



Do not touch the moving parts of this product.
Doing so might cause injury.



Dispose of this product as industrial waste in accordance with your local regulations.
Do not reuse all or part of this product.

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

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.



Specifications are subject to change without notice.

Azbil Corporation
Building Systems Company

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