

ACTIVAL

Two-Way Control Ball Valve

Model VY5302A

(Bronze Valve Body with Threaded Connection)

General

ACTIVAL Model VY5302A is a two-way ball valve with threaded connection. It proportionally controls chilled /hot water for HVAC (heating, ventilation, and air conditioning) control.

Model VY5302A has bronze valve body, stainless-steel ball (plug) and stem, and other corrosion resistant materials for the components exposed to the process fluid.

Cv value and nominal size of Model VY5302A are optimum for HVAC control, combining with the actuator Model MY53X0A. Regarding the detailed information on the actuator, refer to the specifications/instructions manual of ACTIVAL Model MY53X0A.

Features

- 1) Compact and lightweight: the valve can be installed in a restricted space such as inside of compact AHU (air handling unit).
- 2) Bronze valve body can be used under PN16 (1.6 MPa) of fluid pressure.
- 3) Model MY53X0A actuator can be mounted/detached without tools, and no adjustment is required.
- 4) Flow characteristic is equal percentage.

Model Numbers and Cv Values

Model number	Nominal size (inch)	Cv value	Weight* (kg)	Close-off ratings
VY5302A0011	DN15 (1/2)	2.5	0.4	1 MPa
VY5302A0012	DN15 (1/2)	4.0	0.4	1 MPa
VY5302A0022	DN20 (3/4)	6.3	0.6	1 MPa
VY5302A0023	DN25 (1)	10	0.8	1 MPa
VY5302A0031	DN32 (1 1/4)	16	1.2	0.5 MPa
VY5302A0041	DN40 (1 1/2)	25	1.5	0.5 MPa
VY5302A0042	DN40 (1 1/2)	40	1.5	0.5 MPa
VY5302A0051	DN50 (2)	40	1.8	0.5 MPa

*Note: Weight here does not include packing or actuator.



Specifications

Item	Specification
Type	Two-way ball valve with female threaded connection
Applicable actuator to be combined	Model MY53X0A: Electro-mechanical actuator
Applicable fluid	Chilled/hot water, glycol solutions (max. 50 %)
Pressure rating	PN16 (1.6 MPa)
Materials	Valve body: Bronze casting (JIS*1 CAC406) Plug and stem: Stainless steel Seat ring: PTFE
Fluid temperature*2	0 °C to 100 °C
Flow characteristic	Equal percentage
Rangeability	30 : 1
Seat leakage in fully closed position	0.01 % or less of rated Cv value (0.0006 Cv or less for Models VY5302A0011, VY5302A0012)
Installation orientation	Installable in any position ranging from upright (with the actuator mounted onto the valve) to sideways

*1. JIS: Japanese Industrial Standards.

*2. Do not allow the fluid to freeze.

Dimensions

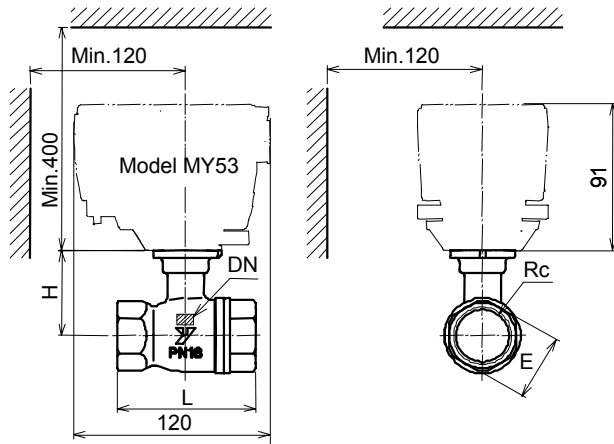


Figure 1. Actuator mounting dimensions (mm)

Table 1. Dimensions of the valve and actuator

Model number	Dimensions				
	Valve size	Pipe thread*	L (mm)	H (mm)	E (mm)
VY5302A0011	DN15	Rc 1/2	63	48	27
VY5302A0012	DN15	Rc 1/2	63	48	27
VY5302A0022	DN20	Rc 3/4	72	50	33
VY5302A0023	DN25	Rc 1	85	54	41
VY5302A0031	DN32	Rc 1 ¹ / ₄	99	69	50
VY5302A0041	DN40	Rc 1 ¹ / ₂	109	72	55
VY5302A0042	DN40	Rc 1 ¹ / ₂	109	72	55
VY5302A0051	DN50	Rc 2	109	73	69

*Note: Pipe thread complies with ISO (International Organization for Standardization) 7-1.

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 representatives. Yamatake Corporation will not bear any responsibility for the results produced by the operators.

⚠ 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 under the operating conditions specified in this manual to prevent equipment damages.
- ❗ For storage, do not stack too many container boxes in which products are packed.
- ❗ 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 damages.
- ❗ When connecting the valve to the piping, do not excessively screw the pipe into the valve. The inner valve may get damaged or deformed, causing the fluid leakage and equipment malfunction.
- ❗ After the piping installation, make sure no fluid leaks from the connecting parts.
- ❗ Do not install the valve and actuator in a location close to a steam coil or a hot-water coil. High temperature radiation may result in an actuator malfunction. (Refer to the specifications/instructions manual of the actuator Model MY53X0A).
- ❗ Avoid instrumentation that keeps equipment operating cycle excessively frequent so as not to shorten the equipment operating life.
- ❗ When this product is used with a controller of another manufacturer, contact Yamatake's sales representatives.
- ❗ Do not disassemble the product at any time to prevent equipment damages.

Precautions for Installation

Environment

⚠ CAUTION	
❗	• Avoid using the valve and actuator in an atmosphere containing oxidizing or explosive gas since it may corrode the actuator, the valve or their components.
❗	• The actuator may malfunction if being placed near by hot objects. Do not install it near by steam coil or hot water coil.

Piping

- 1) Do not install the valve on a pipe where water hammer occurs, or where solid objects may accumulate.
- 2) Install the valve in a position allowing easy access for maintenance and inspection. Fig. 1 shows the minimum clearance for maintenance and inspection. When installing the valve in a ceiling space, place a drain pan under the valve.
- 3) Do not allow any foreign substance (e.g. chips for cutting/threading pipes, etc.) to go inside the valve and the pipe. Due to jammed foreign substance, the valve may not be fully closed, or the valve seat get damaged causing fluid leakage.
- 4) When connecting the valve to a pipe, hold the valve body with a tool such as a wrench, and screw the pipe into the valve. (See Fig. 2) Do not apply excessive torque to the pipe. Refer to Table 1 for the recommended torque.

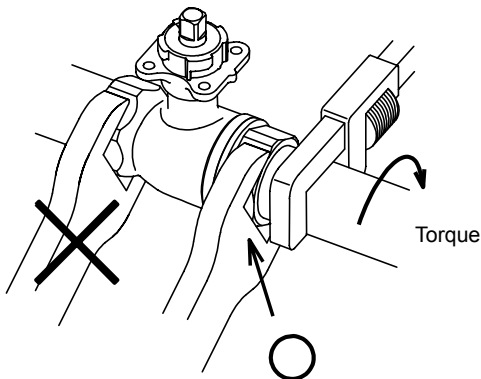


Figure 2. Piping

Table 2. Recommended torque

Valve size (DN)	15	20	25	32	40	50
Max. torque (N.m)	40	60	100	120	150	200

⚠ CAUTION	
⚠	• Avoid touching the installed valve. When being used to control hot water, the valve reaches high temperature and may cause burn injury.

- 5) The process fluid should flow in the arrow direction indicated on the valve body.
- 6) Install a bypass pipe and gate valves on the inflow, outflow and bypass sides. Also, install a strainer on the inflow side.
- 7) The valve can be mounted in any position from upright to sideways. The valve should be installed with its actuator vertically positioned above the valve. (See Fig. 3.)

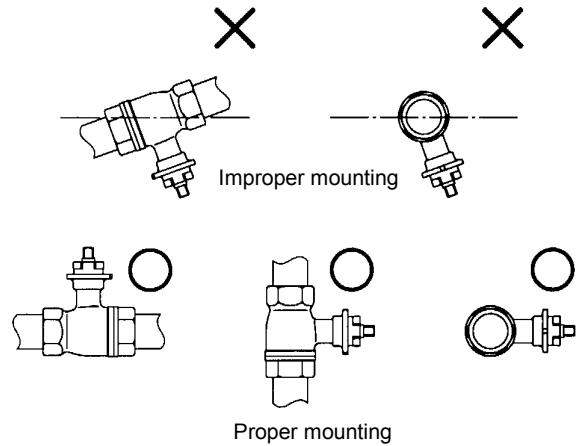


Figure 3. Mounting position

- 8) Do not apply heat insulation to the actuator and the yoke. Apply heat insulation only to shaded area shown in Fig. 4 if necessary.

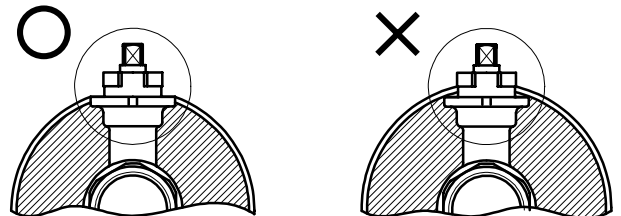


Figure 4. Terminal insulation

Precautions for Flushing

Flushing

Before flushing for the first time, make sure that the valve is in fully open position. Since all the foreign substances remaining inside of the valve and the piping need to be removed, flush water at the maximum flow rate.

Mounting the Actuator Model MY53X0A

(Refer to Fig. 5.)

IMPORTANT:

The actuator can be horizontally rotated every 90 degrees to fit into the valve mounting position (4 mounting positions). Before mounting the actuator onto the valve, make sure positions of the valve and the actuator are as follows.

- Actuator: The indicator lever points at 100 (fully open).
- Valve: The arrow on the top of the valve stem points at 100 (fully open).

The hole on a side of the valve stem is aligned with the tip at the valve flange.

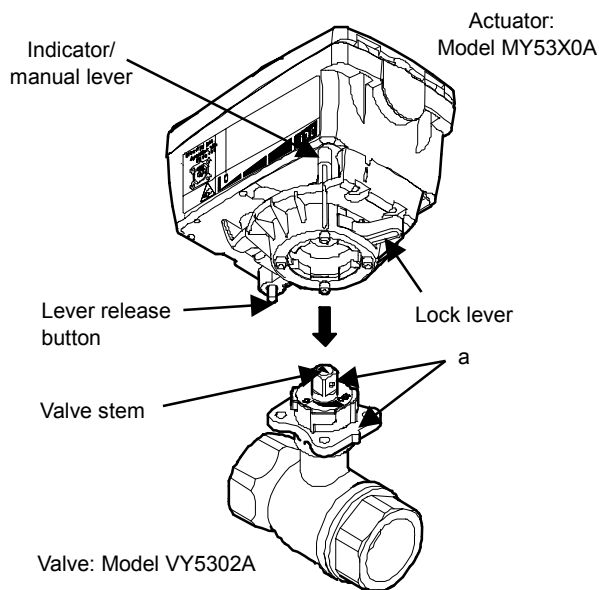
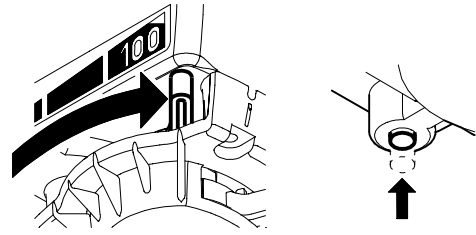
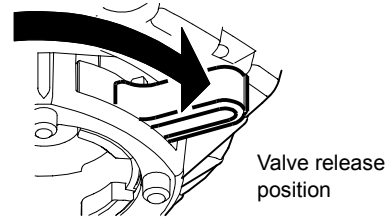


Figure 5. Mounting the actuator onto the valve

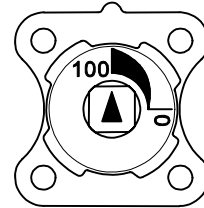
- 1) Adjust the indicator/manual lever to "100" with the lever release button pushed in.



- 2) Move the lock lever to the right-end.

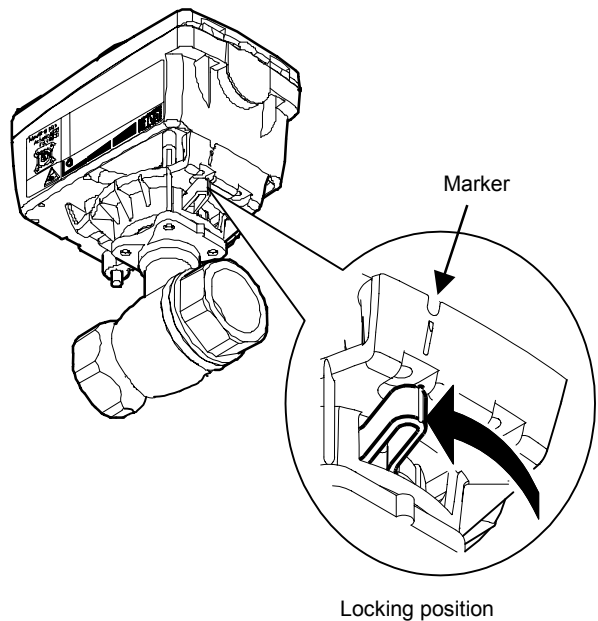


- 3) Adjust the valve stem to "100". When the arrow on the top of the valve stem points at 100, the hole on a side of the stem is aligned with the tip at the valve flange. (See 'a' in Fig. 5.)



- 4) Mount the Model MY53X0A actuator onto the valve.

- 5) Move the lock lever to the left-end (marked with the marker).



Valve Components and Materials

<Valve sizes: DN15 to DN40>

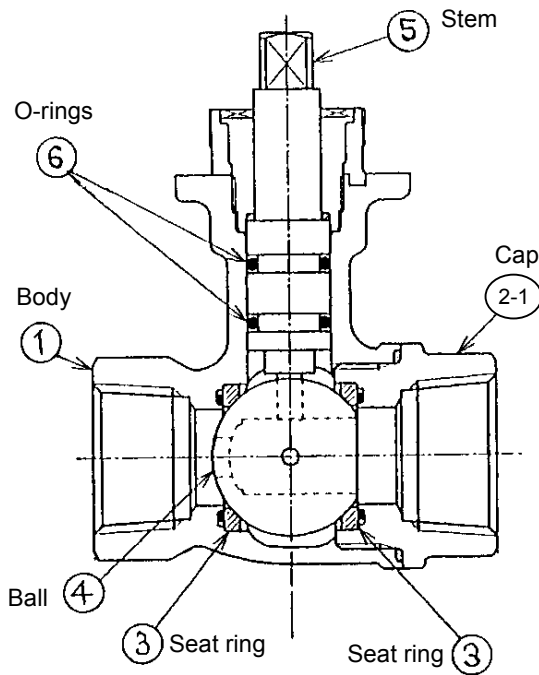


Figure 6. Valve components (for DN15 to DN40 valves)

Flow Characteristic

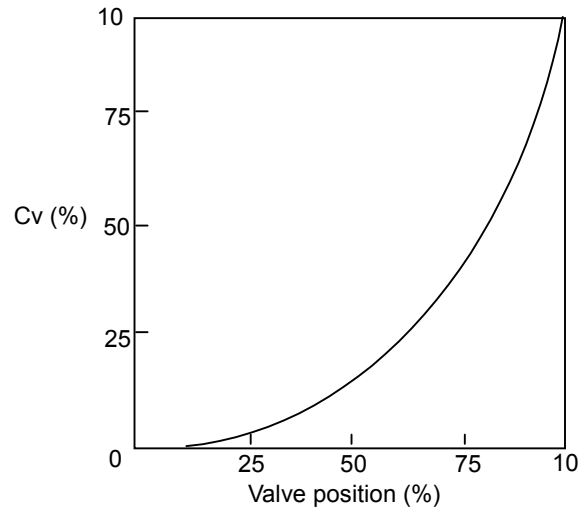


Figure 8. Flow characteristic

<Valve size: DN50>

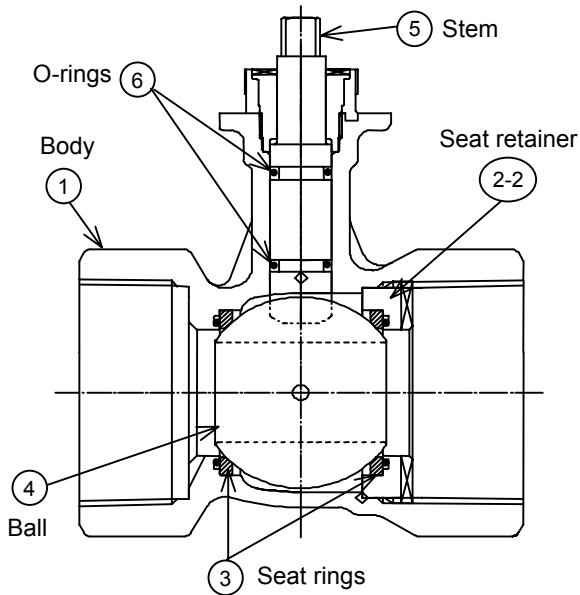




Figure 7. Valve components (for DN50 valve)

Table 3. Valve materials

No.	Name	Materials
1	Body	Bronze casting (JIS CAC406)
2-1	Cap	Bronze casting (JIS CAC406)
2-2	Seat retainer	Copper alloy
3	Seat ring	PTFE
4	Ball (plug)	Stainless steel
5	Stem	Stainless steel
6	O-ring	Fluororubber

Maintenance and Inspection

 CAUTION
 <ul style="list-style-type: none"> Avoid touching the installed valve. When being used to control hot water, the valve reaches high temperature and may cause burn injury.

- 1) Inspection
Inspect the valve and actuator according to Table 4.
- 2) Maintenance
If any of the problems described in Table 5 is found, take corresponding actions shown in the table.

Table 4. Inspection items and details

Inspection item	Inspection interval	Inspection detail
Visual inspection	Semiannual	<ul style="list-style-type: none"> Loose lock to combine valve with actuator (Lock lever is not positioned at the left-end). Valve and actuator damages Fluid leakage from the gland and the connection part with pipe
Operating status	Semiannual	<ul style="list-style-type: none"> Unstable open/close operation Abnormal noise and vibration
Routine inspection	Any time	<ul style="list-style-type: none"> Unstable open/close operation Abnormal noise and vibration Valve hunting

Table 5. Troubleshooting

(If your problem is not solved by the corresponding action, please contact Yamatake near you.)

Problem	Part to check	Action
<ul style="list-style-type: none"> Valve does not operate smoothly / valve stops halfway / valve does not operate at all. 	Conditions of the power applied and of the input signal applied. Wiring condition / disconnected wires. Jammed foreign substances.	Check the power supply and the controller connected to. Check the wiring. Manually open and close the valve to remove the foreign substances.
<ul style="list-style-type: none"> Fluid leaks to the outside of the valve when the actuator is in fully closed position. 	Incorrect mouting of the actuator.	Detach and re-mount the actuator onto the valve according to the procedure in the section "Mouting the Actuator Model MY53X0A".
<ul style="list-style-type: none"> Valve hunting occurs. 	Secondary pressure condition. Differential pressure condition. Control stability.	Reset or adjust the vave inlet/outlet pressure. Correct the control parameter setting of the controller.
<ul style="list-style-type: none"> The auxiliary switch for the actuator does not operate. 	Auxiliary switch (cam switch) condition. Wiring condition / disconnected wires.	Redo the cam switch setting. Check the wiring.
<ul style="list-style-type: none"> Actuator mounting position produces abnormal noise and vibration. 	Locking condition of the lock lever. Yoke damages.	Move the lock lever to the right-end. Consult with Yamatake's sales/service personnel.
<ul style="list-style-type: none"> Flowing noise is too large. 	Excessive flow of the fluid.	Close the hand valve to adjust the flow. Consult with Yamatake's sales/service personnel.
<ul style="list-style-type: none"> Actuator operation produces abnormal noise. 		Consult with Yamatake's sales/service personnel.

Specifications are subject to change without notice.

YAMATAKE

Yamatake Corporation
Building Systems Company

Tamachi Kiyota Building
4-3-4, Shibaura
Minato-ku, Tokyo 108-0023
<http://www.yamatake.com>

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