

ACTIVAL™

Two-Way Ball Valve with Threaded-End Connection

■ Overview

ACTIVAL™ Model VY5332B is a two-way ball valve with threaded-end connection (ASME B1.20.1). It proportionally controls chilled/hot water for HVAC* applications.

Model VY5332B has stainless-steel valve body, ball and stem, and the components exposed to process fluid are made of other corrosion resistant materials.

Cv value and size variation of Model VY5332B are best suited to HVAC* control.

Model VY5332B is used in combination with the actuator Model MY53_0A. Regarding the detailed information on the actuator, refer to:

Specifications/Instructions of ACTIVAL Model MY53_0A

* HVAC: Heating, ventilation, and air conditioning



■ Features

- Compact and lightweight
Valve can be installed in a restricted space such as inside of a compact AHU*.
 - Valve body applicable to 600 psig
 - Easy assembly with Model MY53_0A actuator using no tool, and no adjustment required
 - Equal percentage flow characteristic
- * AHU: Air handling unit

IMPORTANT:

- If you want to use this product combined with a third party's controller, please contact Azbil corporation.
- When attaching the electro-mechanical actuator (Model MY53_0A_00_) to this product, refer to the following manual enclosed with the actuator.
AB-6590, ACTIVAL™ Electro-Mechanical Actuator for Control Ball Valve Specifications/Instructions

■ Dimensions and Maintenance Clearance

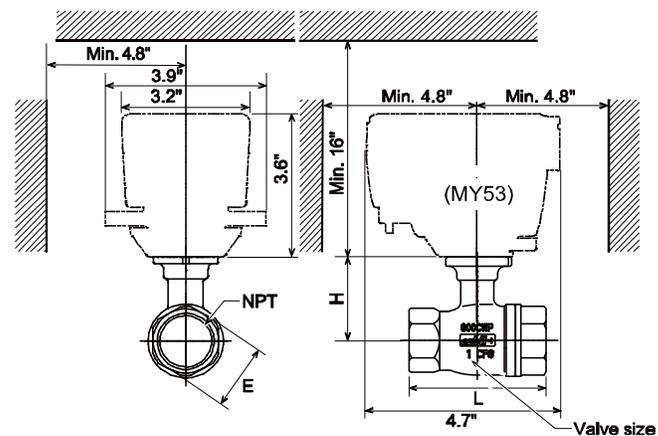


Figure 1. Dimensions and maintenance clearance

Model No.	Dimensions			
	Valve size	L	H	E
VY5332B0011	1/2"	2.48	1.87	1.06
VY5332B0012	1/2"	2.48	1.87	1.06
VY5332B0022	3/4"	2.83	1.97	1.30
VY5332B0023	1"	3.35	2.11	1.61
VY5332B0031	1¼"	3.88	2.70	1.97
VY5332B0041	1½"	4.27	2.83	2.20
VY5332B0042	1½"	4.27	2.83	2.20
VY5332B0051	2"	4.29	2.87	2.72

■ Model Numbers

Base model number	Material	Fixed	Connection of pipe	Fixed	Nominal size / Cv	Description
VY53						Two-way valve with threaded-end connection
	3					600 psig - CF8
		2				Two-way valve
			B			NPT
				0		Fixed
					011	1/2" / 2.5 Cv
					012	1/2" / 4 Cv
					022	3/4" / 6.3 Cv
					023	1" / 10 Cv
					031	1 1/4" / 16 Cv
					041	1 1/2" / 25 Cv
					042	1 1/2" / 40 Cv
					051	2" / 40 Cv

Safety Precautions

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

Restrictions on Use

This product was developed, designed, and manufactured for general air conditioning use.

Do not use the product in a situation where human life may be at risk or for nuclear applications in radiation controlled areas. If you wish to use the product in a radiation controlled area, please contact Azbil Corporation.

Particularly when the product is used in the following applications where safety is required, implementation of fail-safe design, redundant design, regular maintenance, etc., should be considered in order to use the product safely and reliably.

- Safety devices for protecting the human body
- Start/stop control devices for transportation machines
- Aeronautical/aerospace machines

For system design, application design, instructions for use, or product applications, please contact Azbil Corporation.

Azbil Corporation bears no responsibility for any result, or lack of result, deriving from the customer's use of the product.

Recommended Design Life

It is recommended that this product be used within the recommended design life.

The recommended design life is the period during which you can use the product safely and reliably based on the design specifications.

If the product is used beyond this period, its failure ratio may increase due to time-related deterioration of parts, etc.

The recommended design life during which the product can operate reliably with the lowest failure ratio and least deterioration over time is estimated scientifically based on acceleration tests, endurance tests, etc., taking into consideration the operating environment, conditions, and frequency of use as basic parameters.

The recommended design life of this product is 10 years.

The recommended design life assumes that maintenance, such as replacement of the limited life parts, is carried out properly.

Refer to the section on maintenance in this manual.

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



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



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

CAUTION



Do not freeze this product. Doing so may damage the valve body and cause leakage.



When piping this product, be sure there is no foreign matter in the pipes. If foreign matter remains in the pipes, the product may break down.



Install and use this product under the conditions specified by this manual. Failure to do so may cause device failure.



Do not screw a pipe excessively far into this product. Doing so may damage the inside of the valve and cause leakage outside of the valve, or may cause malfunction.



After installation, make sure no fluid leaks from the valve-pipe connections. Improper piping may cause fluid leakage outside of the valve.



Do not put a load or weight on this product. Doing so may damage the product.



Do not carelessly touch this product when it is used to control hot water. Doing so may result in burns, because the product reaches a high temperature.

■ Specifications

Item	Specification			
Type	Two-way ball valve with threaded-end connection (internal), proportional control			
Applicable actuator to be combined	Model MY53_0A			
Pressure rating	Max. working pressure: 600 psig			
Valve size, Cv, close-off rating	Model number	Nominal size	Cv	Close-off rating
	VY5332B0011	1/2"	2.5	145 psi
	VY5332B0012	1/2"	4	145 psi
	VY5332B0022	3/4"	6.3	145 psi
	VY5332B0023	1"	10	145 psi
	VY5332B0031	1¼"	16	72 psi
	VY5332B0041	1½"	25	72 psi
	VY5332B0042	1½"	40	72 psi
	VY5332B0051	2"	40	72 psi
Materials	(1) Body	Cast stainless steel (CF8)		
	(2) Cap	Cast stainless steel (CF8)		
	(3) Seat ring	Carbon Reinforced PTFE		
	(4) Ball	Cast stainless steel		
	(5) Stem	Stainless steel		
	(6) O-ring	EPDM		
End connection	Internal threaded-end (ASME B1.20.1)			
Applicable fluid	Chilled/hot water, ethylene glycol solutions, 50 wt.% max.			
Allowable fluid temperature	32 °F to 212 °F (0 °C to 100 °C), non-freezing			
Flow characteristic	Equal percentage			
Rangeability	100 : 1			
Seat leakage in fully closed position	Model number	Criteria		
	VY5332B0011	0.01% Cv 6.3 or less (0.00063 Cv)		
	VY5332B0012			
	VY5332B0022	Class IV (ANSI/FCI 70-2-2006)		
	VY5332B0023			
	VY5332B0031			
	VY5332B0041			
	VY5332B0042			
VY5332B0051				
Mounting position	On vertical / horizontal pipe			
Weight (Weight of the combined actuator is not included.)	VY5332B0011	0.9 lb		
	VY5332B0012	0.9 lb		
	VY5332B0022	1.3 lb		
	VY5332B0023	1.8 lb		
	VY5332B0031	2.6 lb		
	VY5332B0041	3.3 lb		
	VY5332B0042	3.3 lb		

■ **Parts Identification**

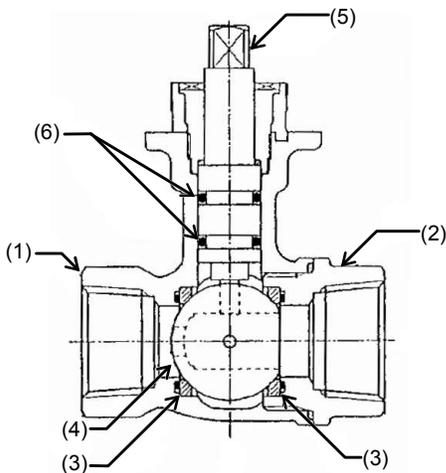


Figure 2. Parts identification

■ **Flow Characteristic**

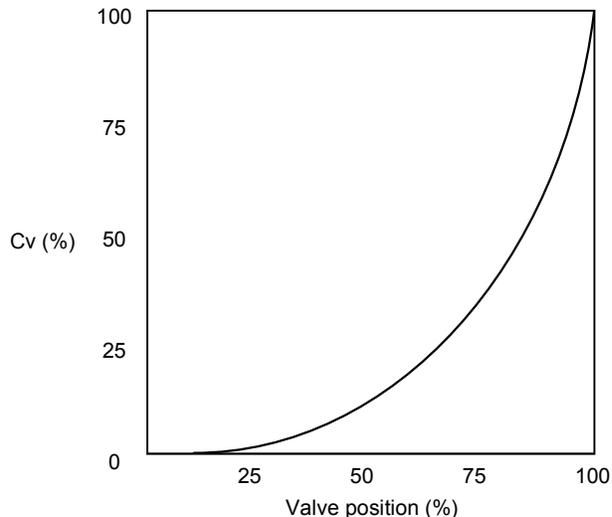


Figure 3. Flow characteristic diagram

■ **Installation**

⚠ CAUTION	
⊘	Do not freeze this product. Doing so may damage the valve body and cause leakage.
!	When piping this product, be sure there is no foreign matter in the pipes. If foreign matter remains in the pipes, the product may break down.
!	Install and use this product under the conditions specified by this manual. Failure to do so may cause device failure.

■ **Installation location**

- To remove foreign substances inside the pipes, install a strainer on the inflow side of each valve. In case that the strainers cannot be installed on the inflow side of each valve, install it on the pipe diverting sections (sections diverting from main piping system to sub piping system).
- Do not install the product nearby a steam coil, pressurized hot-water coil, or any high heat source. High temperature radiation might cause malfunction of its actuator.
- Do not mount the valve on a pipe where water hammer occurs, or where solid objects including slug may accumulate.
- Install a bypass pipe and gate valves on the inflow, outflow, and bypass sides. Also, install a strainer (with 40 or more meshes) on the inflow side.
- Install the valve assembled with the actuator in a position allowing easy access for maintenance and inspection. Fig. 1 shows the minimum clearance for maintenance and inspection. When installing the valve and actuator in a ceiling space, provide an access panel within the 20" radius of the valve and actuator. And, place a drain pan under the valve.

■ Mounting position

The valve (assembled with the actuator) can be mounted in any position ranging from upright to sideways (90° tilted). The valve should be installed with its actuator vertically positioned above the valve body. However, the valve must be installed always in upright position outdoors.



Figure 4. Mounting positions of the valve

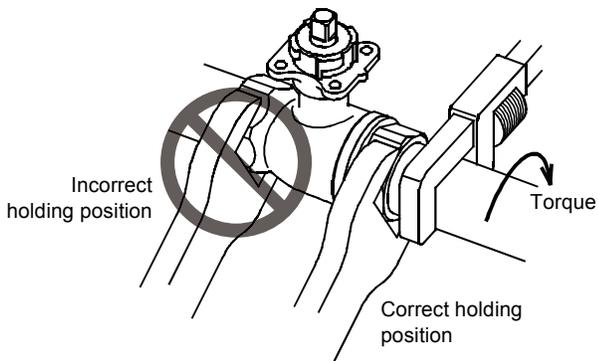
■ Piping

⚠ CAUTION



Do not screw a pipe excessively far into this product. Doing so may damage the inside of the valve and cause leakage outside of the valve, or may cause malfunction.

- Install the valve so that the flow direction of process fluid agrees with the arrow indicated on the valve body.
- When installing the valve to pipes, do not allow any object, such as chips, to get inside a pipe or valve. Valve cannot fully closes, or the valve seat may get damaged causing fluid leakage, due to an foreign object jammed inside the valve.
- When piping, do not apply too much sealing material, such as solidifying liquid and tape, to the pipe connection sections so that these materials flow into the valve. Valve cannot fully closes, or the valve seat may get damaged causing fluid leakage, due to the sealing material jammed inside the valve.
- When connecting the valve to pipes, hold the valve body (where a pipe is screwed) with a tool such as a wrench, and screw the pipe into the valve. (See Fig. 5.) Do not apply excessive torque to the pipe. Refer to the table in Fig. 5 for the recommended torque.



Recommended torque to screw into the pipe

Valve size	1/2"	3/4"	1"	1 1/4"	1 1/2"
Max. torque in- lbs (N·m)	360 (40)	540 (60)	890 (100)	1070 (120)	1340 (150)

Figure 5. Valve connection to a pipe

- Before activating the valve and actuator, flush the pipes (with the valve and actuator installed) at the maximum flow rate to remove all the foreign substances. Fully open (in 100 % position) the valve to flush. (Factory preset position: 100 %)

⚠ CAUTION



After installation, make sure no fluid leaks from the valve-pipe connections. Improper piping may cause fluid leakage outside of the valve.



Do not put a load or weight on this product. Doing so may damage the product.

■ Heat insulation

Do not apply heat insulation to the joint surface. Correctly apply heat insulation to the valve as shown in Fig. 6.

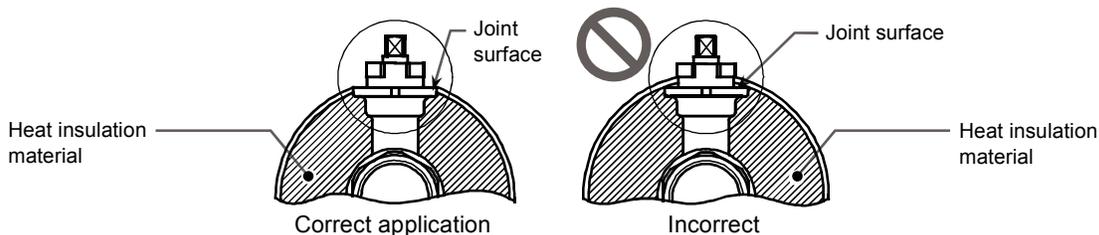


Figure 6. Heat insulation

■ Factory preset position

ACTIVAL is set in fully open (100 %) position before shipment.

■ Attaching the Electro-Mechanical Actuator

IMPORTANT:

- When attaching the electro-mechanical actuator (Model MY53_0A_00_) to this product, refer to "■ Installation," "• Mounting on the valve (Model VY5332/VY5333)" in AB-6590, *ACTIVAL™ Electro-Mechanical Actuator for Control Ball Valve Specifications/Instructions*.

■ Inspection and Troubleshooting

⚠ CAUTION

- Do not put a load or weight on this product. Doing so may damage the product.
- Do not carelessly touch this product when it is used to control hot water. Doing so may result in burns, because the product reaches a high temperature.

- Manually open/close the product at least once a month if it is left in inactive state for a long period after installation.
- Inspect the product according to Table 1.
- Visually inspect the product (e.g., fluid leakage) every six months. If any of the problems described in Table 2 are found, take corresponding actions shown in the table.
If your problem is not solved by the corresponding action, please contact us.

Table 1. Inspection items and details

Inspection item	Inspection interval	Inspection detail
Visual inspection	Semiannual	<ul style="list-style-type: none"> • Valve and actuator damages. • Fluid leakage from the valve gland/pipe connecting part. • Loosened lock lever of the ACTIVAL mounted onto the valve.
Operating status	Semiannual	<ul style="list-style-type: none"> • Valve unstable open/close operation. • Abnormal noise and vibration.
Routine inspection	Any time	<ul style="list-style-type: none"> • Valve unstable open/close operation. • Abnormal noise and vibration. • Valve hunting

Table 2. Troubleshooting

Problem	Part to check	Action
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 to the actuator. Wiring condition/disconnected wires of the actuator. Foreign substance jammed.	Check the power supply and the controller connected to. Check the wiring. Remove foreign substance by manually opening the valve.
Fluid leaks to the outside of the valve when the assembled actuator fully closes the valve.	Confirm the mounting procedure referring to the section Assembling the valve Model VY5332B with the actuator Model MY53_0A.	Dismount and remount the actuator according to the correct mounting procedure.
Valve hunting occurs.	Secondary pressure condition. Differential pressure condition. Control stability.	Reset and adjust the valve inlet/outlet pressure. Modify control parameter/PID setting of the controller in connection to the assembled actuator.
The auxiliary switch of the assembled actuator does not operate.	Auxiliary switch (cam switch) condition. Wiring condition/disconnected wires of the actuator.	Redo the cam switch setting. Check the wiring.
Connecting part between the valve and the actuator vibrates or produces an abnormal noise.	Lock lever condition of the actuator. Yoke damages.	Lock the lock lever. Consult with our sales/service personnel.
Water flowing sound level is too high.	—	Consult with our sales/service personnel.
The assembled actuator in operation produces an abnormal noise.	—	Consult with our sales/service personnel.

■ Disposal

Dispose of this product as industrial waste in accordance with your local regulations.

Do not reuse all or any part of the product.

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