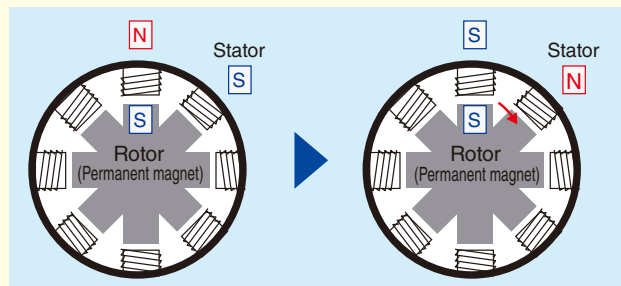


Guidance 1 Stepping Motor

A stepping motor rotates by a constant angle per pulse.

A stepping motor, also called a pulse motor, is a motor that rotates in synchronization with a command pulse signal. The principle of rotation of a simplified 2-phase, 8-pole stepping motor model is shown in the figure below.

A stepping motor consists of a stator with windings and a rotor using a powerful neodymium magnet. Energizing the stator windings to generate a magnetic force is called excitation. By sequentially exciting the multiple stator windings based on the command pulse, the motor rotates stepwise, utilizing the action of attraction and repulsion between the magnetic poles of the stator and rotor. The rotation angle of a stepping motor is always determined by the constant mechanical accuracy (motor structure and machining accuracy) for each command pulse signal. Therefore, a stepping motor performs highly accurate positioning control.



Guidance 2 Open Network

An open network is an industrial network, the specifications of which are made public and can be commonly used by many users and manufacturers.

Open networks are roughly divided into the following two types.

- Those specified by organizations and associations in consultation and recognized as official standards.
 - Those developed by specific manufacturers and organizations and established as de facto standards as a result of promotion activities.
- Both types have well-organized and integrated specifications and are available to everyone for many purposes. Either one can connect different manufacturers' devices (multivendor devices) and brings many benefits to users. Currently, many types of open networks are expanding their tempo of popularization according to the applicable field and country in the market.



Guidance 3 Chemical Resistance (Simplified Chemical Resistance Table)

Chemical name	Hydrochloric acid (HCl)												Sulfuric acid (H ₂ SO ₄)													
	25						35						50						80							
	20	40	60	80	100	120	20	40	60	80	100	120	20	40	60	80	100	120	20	40	60	80	100	120		
Body material	U-PVC	○	○	●	-	-	○	○	●	-	-	○	○	●	-	-	○	○	●	-	-	○	○	●	-	-
	PVDF	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Sealing material	EPDM	○	○	○	x	-	-	○	x	-	-	-	○	○	○	-	-	○	○	○	x	-	-	-	-	
	FKM-F	○	○	○	○	-	-	○	○	-	-	-	○	○	-	-	○	○	-	-	○	○	-	-	-	
	FKM-C	○	○	○	○	△	-	○	○	-	-	-	○	○	-	-	○	○	-	-	○	○	-	-	-	

Chemical name	Sodium hydroxide/Caustic soda (NaOH)												Sodium hypochlorite (NaClO)												
	5						30						3						13						
	20	40	60	80	100	120	20	40	60	80	100	120	20	40	60	80	100	120	20	40	60	80	100	120	
Body material	U-PVC	○	○	●	-	-	○	○	●	-	-	-	○	○	●	-	-	-	○	○	●	-	-	-	-
	PVDF	○	○	○	△	●	-	○	○	○	△	x	-	○	○	-	-	-	○	○	-	-	-	-	-
Sealing material	EPDM	○	○	○	○	-	-	○	○	-	-	-	○	○	-	-	-	-	x	-	-	-	-	-	-
	FKM-F	○	○	△	-	-	-	○	○	-	-	-	○	○	△	-	-	-	○	○	△	-	-	-	-
	FKM-C	○	○	△	-	-	-	○	○	-	-	-	○	○	△	-	-	-	○	○	△	-	-	-	-

○: Never or little affected. ○: Somewhat affected. △: Affected. x: Significantly affected. -: No track records or open data.
 ●: Depends on the fluid pressure. For details, contact ASAHI YUKIZAI's nearest sales office or Contact Center.
 For chemicals and mixtures other than the above, contact ASAHI YUKIZAI's nearest sales office or Contact Center.
 The above table is not intended to guarantee the chemical resistance of the product.

The specifications and other data in this catalog are subject to change without notice for product improvements.

Contact

Your local representative:

Actuator Manufacturer

MG Co., Ltd.
Headquarters
International Sales Department

13th floor, Tradepia Yodoyabashi, 2-5-8 Imabashi, Chuo-ku,
Osaka 541-0042 JAPAN
Tel: +81-(0)6-7525-8801 Fax: +81-(0)6-7525-8810
Website: <https://www.mgco.jp>
E-mail: info@mgco.jp

ASAHI YUKIZAI's ELECTRIC CONTROL VALVE ASAHI AV Series

The electric actuator is made by MG Co., Ltd.

Directly connected to various open networks to save wiring efforts to a great extent!



Open Network Supported

See Guidance 2 on page 8.



No time- and money-consuming air source equipment is required!



Electric control valve is ready to operate immediately after connecting signal and power supply!



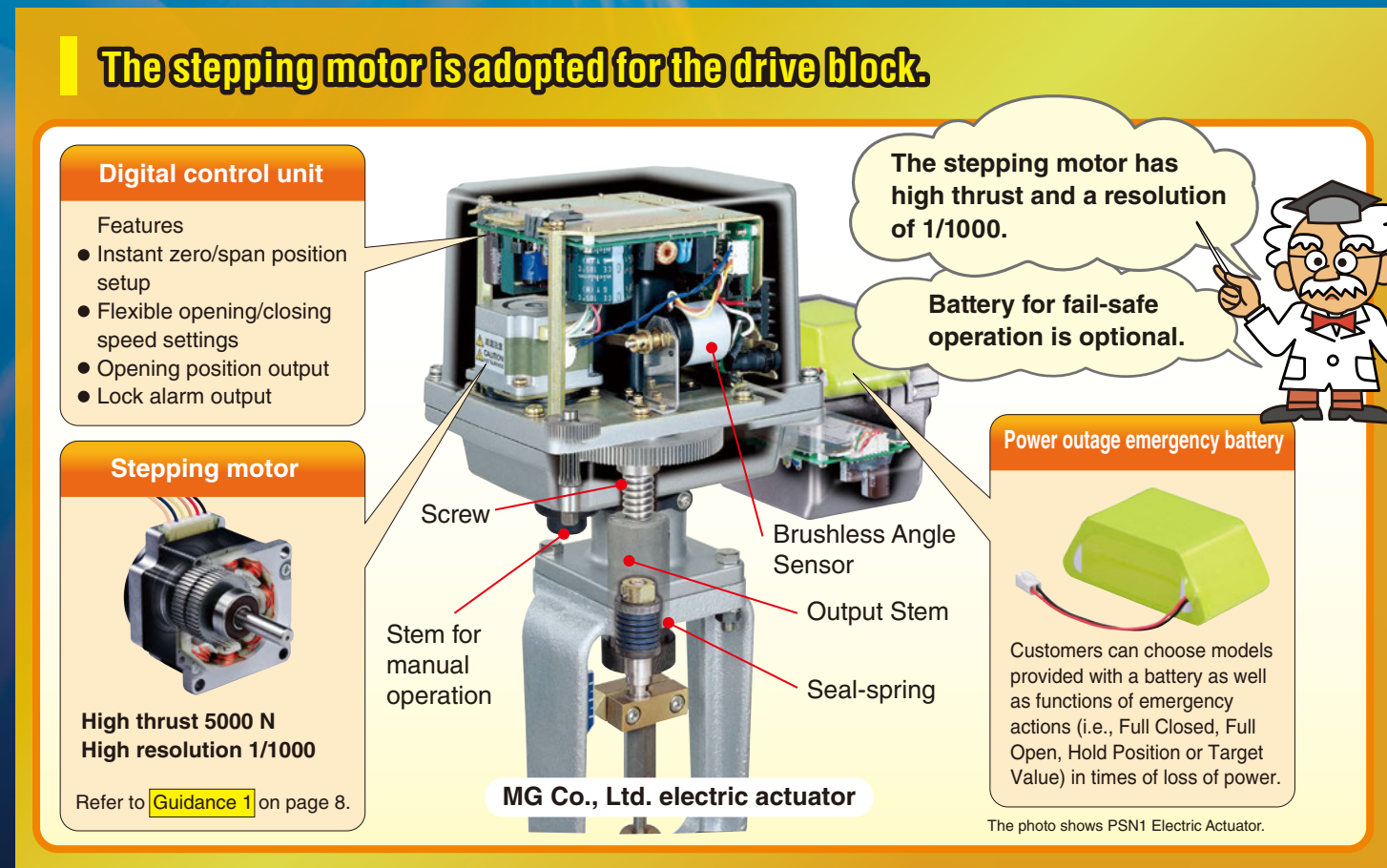
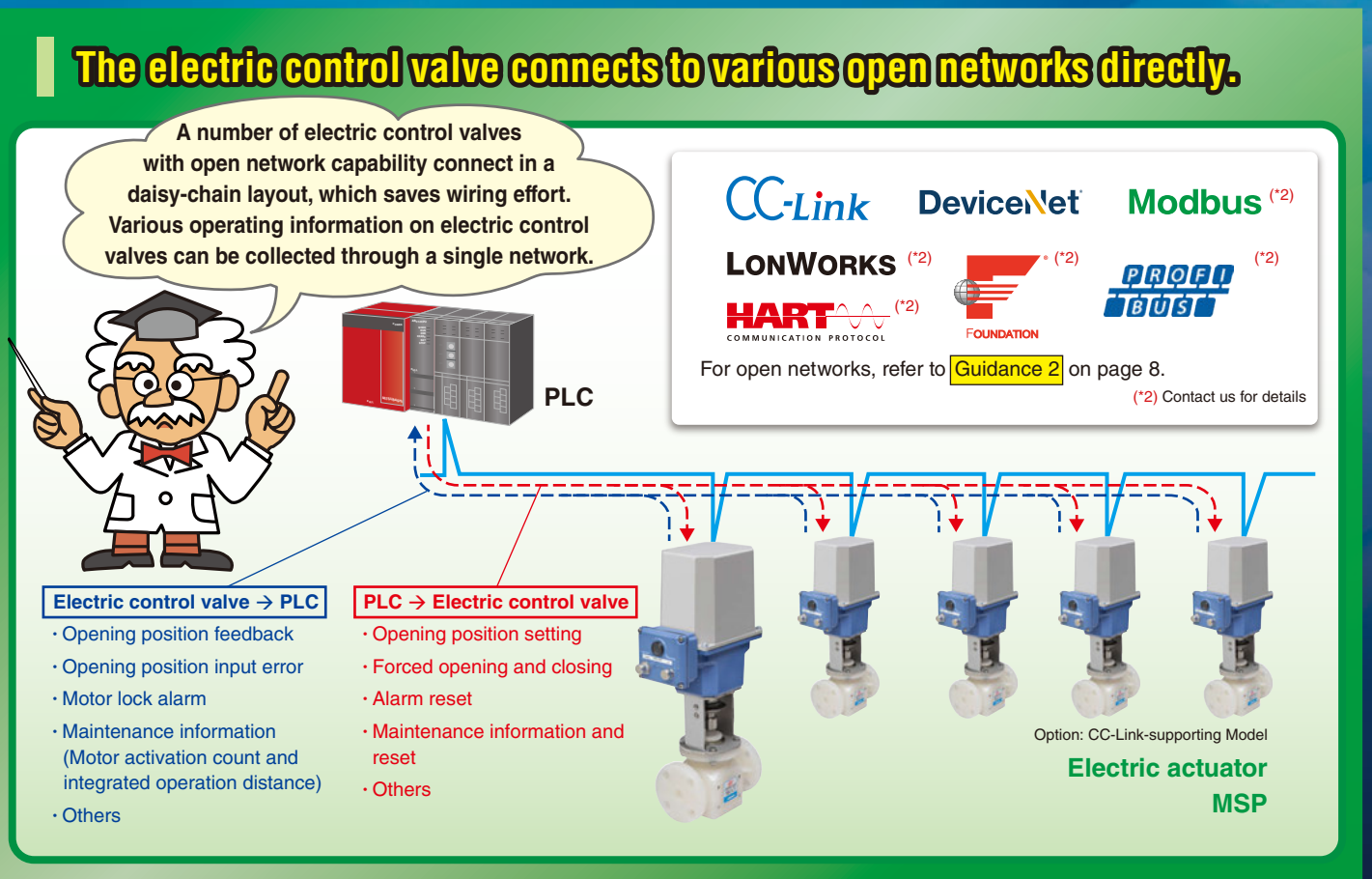
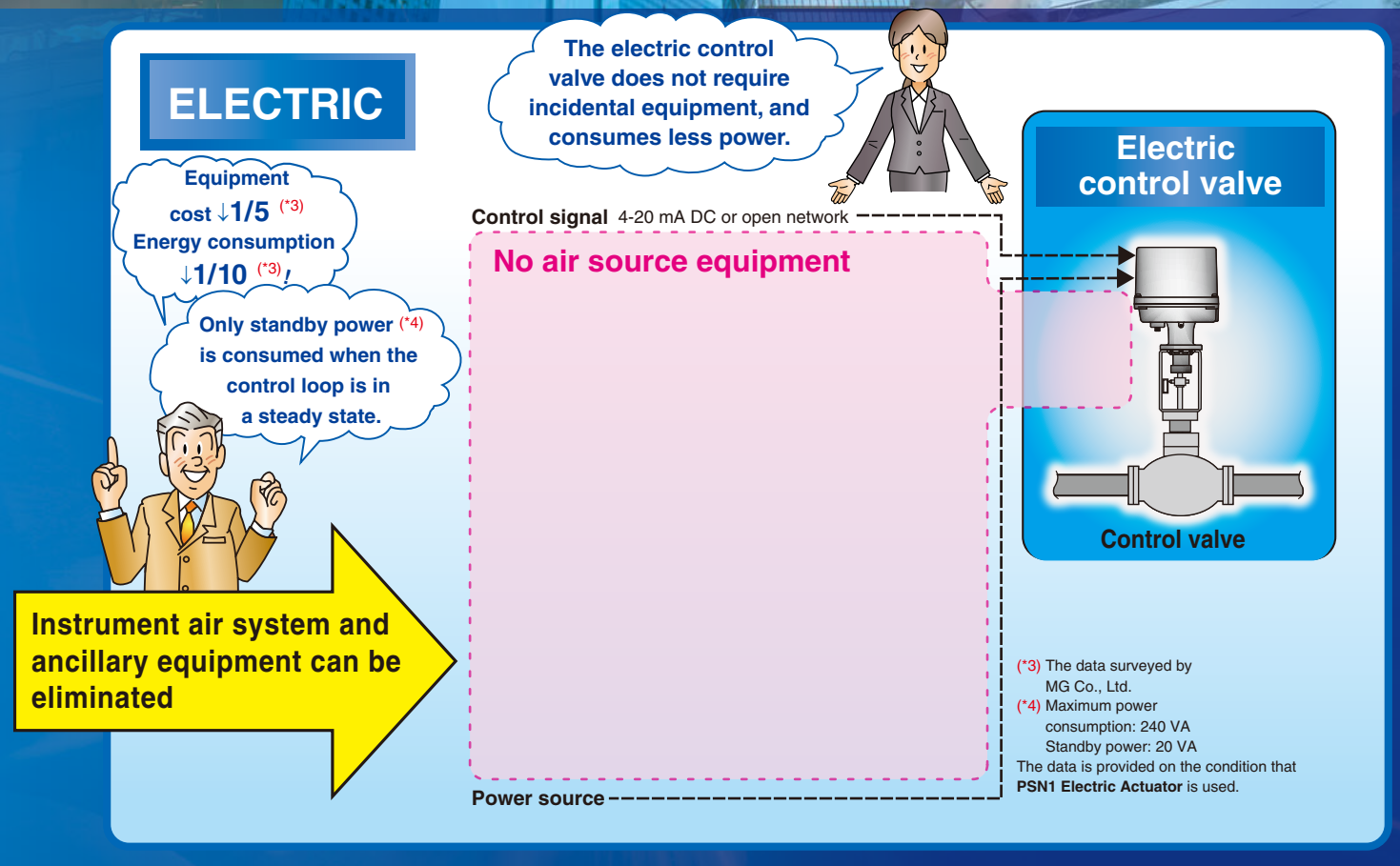
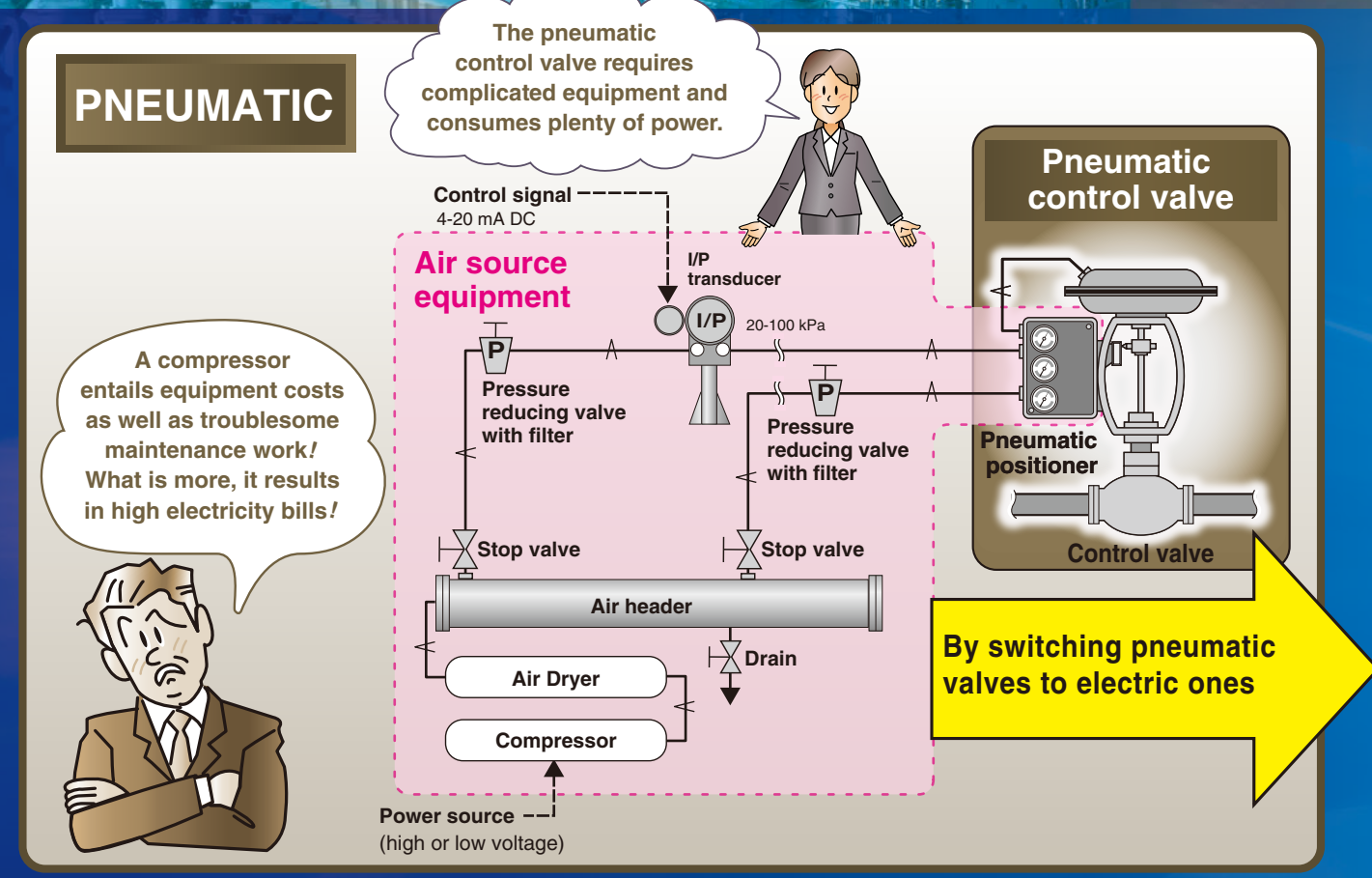
- Energy saving
- Space saving
- Shorter installation work time

Furthermore, many more advantages!

High function and high performance

- High thrust (5000 N)
- High resolution (1/1000)
- A battery-driven model is available as well.

Introducing electric actuators to control valves eliminates not just air source equipment but also its running cost.

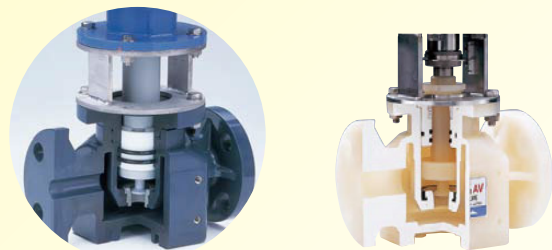


ASAHI AV Series

High-performance and Compact Series of Electric Control Valve

Features of ASAHI AV Series

ASAHI AV Series electric control valves are all-resin products made of unplasticized polyvinyl chloride (U-PVC) or polyvinylidene fluoride (PVDF), and are suitable for the control of corrosive fluid.



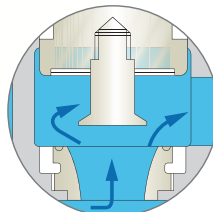
Body material: U-PVC Body material: PVDF

ASAHI AV Series electric control valves are perfect for controlling corrosive fluid. There is no need to worry about selecting materials anymore.



With its unique plug shape, each control valve is rarely affected by the viscosity of the fluid and ensures high-precision flow rate control.

Each control valve incorporates the high-reliability, high-performance electric actuator of MG Co., Ltd. The actuator has an overload protection circuit and an electronic limiter for the fully open and closed positions, thus protecting the resin-made control valve from unexpected damage.



The electric control valve has a remarkably simple structure, as compared to pneumatic control valves. The actuator is compact, which makes it possible to save space between pipes run in parallel.



After installation, the control valve will be ready to work with a power supply and input signal (or network) cable connected.

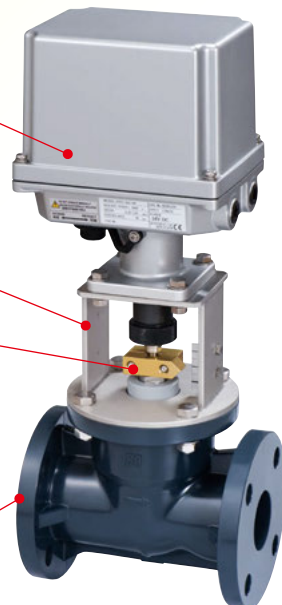
Intermediate-caliber Control Valve (Electrically Actuated Type M)
(with a nominal dia. of 50, 80, or 100 mm)

MG Co., Ltd.
Electric actuator
(Model: PSNx)

Yoke

Coupling

Control valve body



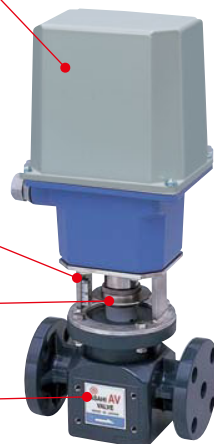
Small-caliber Control Valve (Electrically Actuated Type M)
(with a nominal dia. of 15 or 25 mm)

MG Co., Ltd.
Electric actuator
(Model: MSPx)

Yoke

Coupling

Control valve body



Classified by Industry Application Examples of Electric Control Valve

Semiconductors

Applications

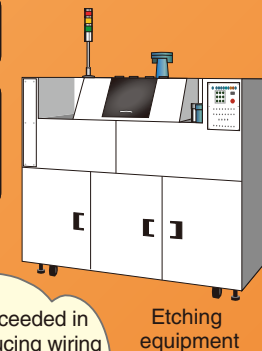
LCD glass manufacturing facilities

Reasons for adoption

Compact / Open network communications



We have succeeded in drastically reducing wiring by utilizing a network connection over the CC-Link.



Etching equipment

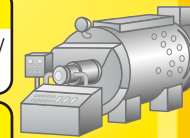
Disposal Plants, Crushing Treatment Facilities, and Clean Centers

Applications

Combustion control / Boiler feedwater control / Combustion exhaust gas control

Reasons for adoption

Space saving / Improved maintainability with no need of air supply equipment / High functions (valve position and other status output signals)



Beverage and Medical Facilities

Applications

Sterile cleaning equipment / Carbon dioxide gas injection equipment

Reasons for adoption

Space saving / Improved maintainability with no need of air supply equipment / High functions / No air leak

We adopted the electric control valve because it keeps the environment clean.



Car Manufacturers

Applications

Environment test equipment / Wind tunnel experiment equipment / Exhaust gas combustion experiment equipment / Others

Reasons for adoption

Improved maintainability with no need of air supply equipment



Water Purification Plant and Water Treatment

Applications

Chemical injection equipment

Reasons for adoption

Improved maintainability with no need of air supply equipment / Improved controllability with high resolution



One of the reasons for adoption is the restoration of the electric control valve as soon as power is recovered in times of earthquake disasters.



Product Material, Building Material, Rubber, and Glass

Applications

Temperature control of molding equipment / Utility equipment / Others

Reasons for adoption

Improved maintainability with no need of air supply equipment / Improved controllability with high functions and high resolution



A high resolution 1/1000 of the full-scale range was the deciding factor for adoption.

1 / 1000

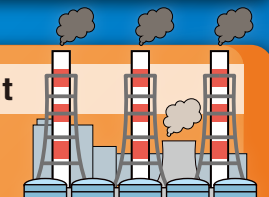
Power plant

Applications

Oxygen supply facility / Others

Reasons for adoption

Energy saving / Improved maintainability with no need of air supply equipment / Improved controllability with high functions and high resolution



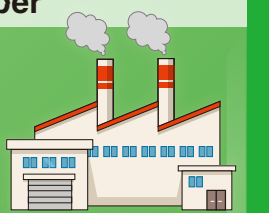
Pulp and Paper

Applications

Paper machine / Bleaching chemical injection equipment

Reasons for adoption

Energy saving / Improved maintainability with no need of air supply equipment



Major Product Lineup of ASAHI AV Series Electric Control Valves

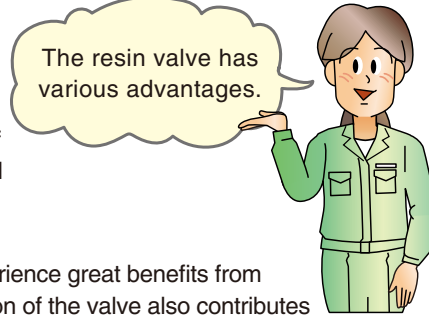
Why is resin a good material?

Corrosion resistance

Do you have to inspect and service metal valves on a monthly basis? By selecting a proper resin material, you can drastically reduce the burden of management and running costs. All of the wetted parts are corrosion-resistant, and there is no need to worry about the wear and tear of the lining and other parts.

Weight

The specific gravity of a resin valve is about 1/7 of that of a metal valve. Users will experience great benefits from day-to-day operations, such as valve installation and maintenance. The weight reduction of the valve also contributes to an extension of the life expectancy of the entire pipeline and lower initial costs (e.g., a reduction in initial support costs).



Selection of Control Valve (Main Body)

Users can select one of two types of lightweight and compact resin control valves, both of which are excellent in chemical resistance and salt damage resistance. The main parts of these valves are made of either U-PVC or PVDF. Furthermore, three types of elastomer sealing materials^(*) are available for users' selection. A wide variety of port sizes are also available, which users can select according to their need.

Please inform ASAHI YUKIZAI of the following information in order to select the suitable material and size:

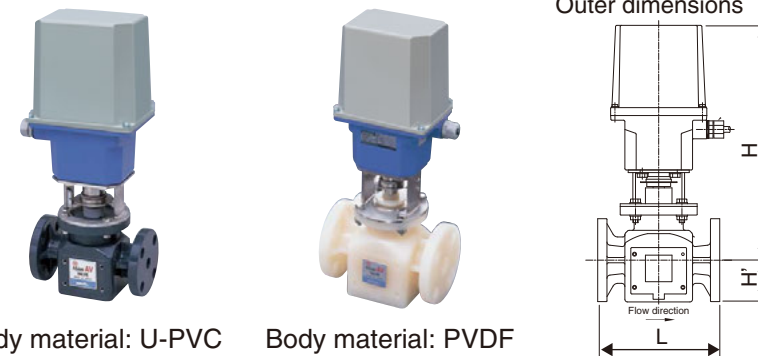
- Fluid information : Fluid name, fluid concentration, and fluid temperature
- Flow pressure information : Desired flow rate, primary pressure, and secondary pressure
- Ambient information : Ambient atmosphere (acidity, alkalinity, and salt damage), and ambient temperature (presence or absence of high-temperature equipment)

The Sales Department of ASAHI YUKIZAI will select a suitable model based on the information that you provide.

(*5) See Guidance 3 on page 8.

Small-caliber Control Valve (Electrically Actuated Type M) (with a nominal dia. of 15 or 25 mm)

Actuator type (MG Co., Ltd. made): Valve nominal dia. of 15 mm (MSP6-x4) / Valve nominal dia. of 25 mm (MSP6-x6)



JIS DIN Unit: mm

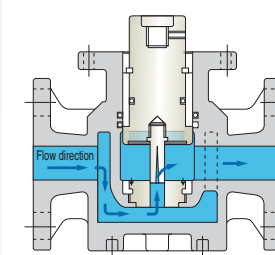
Nominal dia.	H		H'		L
	U-PVC	PVDF	U-PVC	PVDF	
15	335	372.5	51	49.5	160
25	354	366	63	66.5	184

ANSI Class 150 Unit: Inch

Nominal dia.	H		H'		L
	U-PVC	U-PVC	U-PVC	U-PVC	
15	13.19	2.01	2.01	2.01	6.3
25	13.94	2.48	2.48	2.48	7.24

Body material: U-PVC Body material: PVDF

Nominal dia.: 15 mm; Minute Cv value specifications



Sectional view of valve

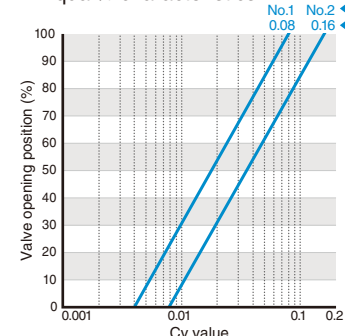
Equal% characteristics

Nominal dia. (mm) : 15
 Inner valve type : No.1 / No.2
 Cv value : 0.08 / 0.16
 Rangeability : 20:1
 Stroke (mm) : 16

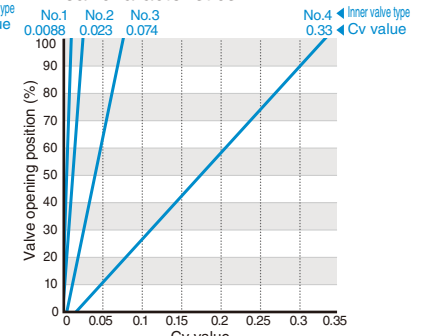
Linear characteristics

Nominal dia. (mm) : 15
 Inner valve type : No.1 / No.2 / No.3 / No.4
 Cv value : 0.0088 / 0.023 / 0.074 / 0.33
 Rangeability : 15:1
 Stroke (mm) : 16

Equal% characteristics

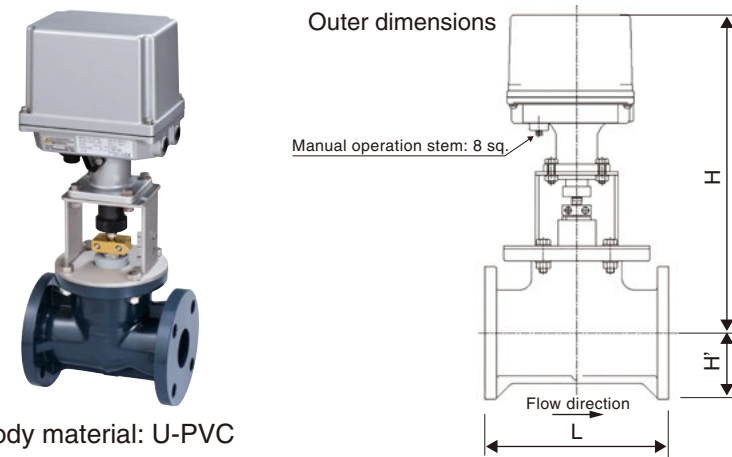


Linear characteristics



Intermediate-caliber Control Valve (Electrically Actuated Type M) (with a nominal dia. of 50, 80, or 100 mm)

Actuator type (MG Co., Ltd. made): PSN1 (Valve nominal dia. of 50 or 80 mm) / PSN3 (Valve nominal dia. of 100 mm)



Body material: U-PVC

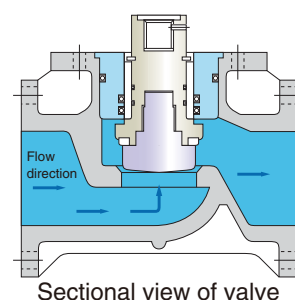
JIS Unit: mm

Nominal dia.	H	H'	L
50	433.5	77.5	200
80	450.5	92	240
100	503.5	105	290

ANSI Class 150 Unit: Inch

Nominal dia.	H	H'	L
50	17.07	3.05	7.87

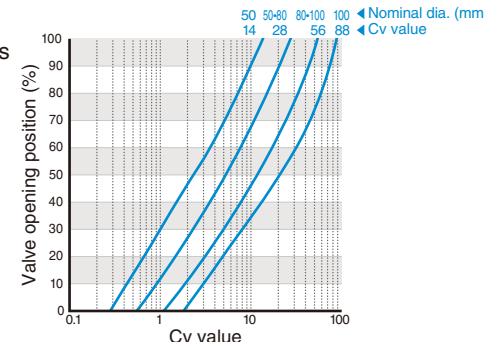
Standard Cv value specifications (Nominal dia. of 50, 80, and 100 mm)



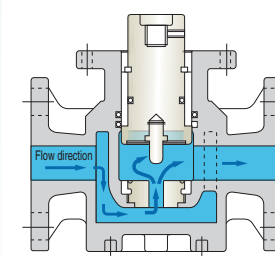
Sectional view of valve

Nominal dia. (mm) : 50 / 80 / 100
 Inner valve type : SL
 Cv value : 14 / 28 / 28 / 56 / 56 / 88
 Rangeability : 50:1
 Stroke (mm) : 26 / 28 / 30 / 28 / 32 / 28

Equal% characteristics



Port size: 6, 8, or 10 mm



Sectional view of valve

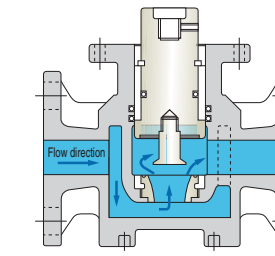
Equal% characteristics

Nominal dia. (mm) : 25 / 15
 Port size [mm] : 6 / 8 / 10
 Cv value : 0.7 / 1.5 / 3
 Rangeability : 20:1 / 30:1 / 40:1
 Stroke Nominal dia. 15 mm: 17 / 16 / 17 (mm)
 Nominal dia. 25 mm: 17 / 16 / 16 (mm)

Linear characteristics

Nominal dia. (mm) : 25 / 15
 Port size [mm] : 6 / 8 / 10
 Cv value : 0.7 / 1.5 / 2.5
 Rangeability : 20:1 / 30:1 / 40:1
 Stroke Nominal dia. 15 mm: 17 / 16 / 17 (mm)
 Nominal dia. 25 mm: 17 / 16 / 16 (mm)

Port size: 15, 20, 25 mm



Sectional view of valve

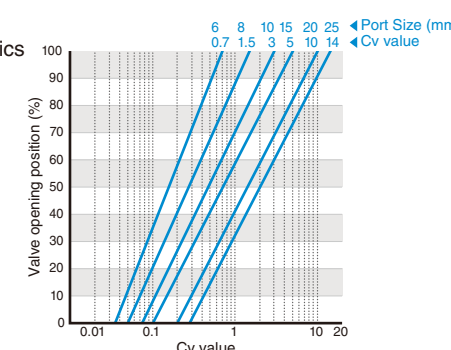
Equal% characteristics

Nominal dia. (mm) : 25 / 15
 Port size [mm] : 15 / 20 / 25
 Cv value : 5 / 10 / 14
 Rangeability : 50:1
 Stroke Nominal dia. 15 mm: 18 / - / - (mm)
 Nominal dia. 25 mm: 16 / 22 / 24 (mm)

Linear characteristics

Nominal dia. (mm) : 25 / 15
 Port size [mm] : 15 / 20 / 25
 Cv value : 4 / 8 / 14
 Rangeability : 40:1 / 50:1 / 50:1
 Stroke Nominal dia. 15 mm: 16 / - / - (mm)
 Nominal dia. 25 mm: 15 / 20 / 25 (mm)

Equal% characteristics



Linear characteristics

