

# Top-Guided Single-Seated Control Valves

Model AGVB\_ \_ \_ /AGVM\_ \_ \_

## OVERVIEW

Top-guided Single-seat Control Valve features a compact valve body with excellent flow control and minimal pressure loss. Model AGVB\_ \_ \_ /AGVM\_ \_ \_ have large Cv values, high range ability, and accurate flow control performance.

When securely held in place by a top-guided stem with a long stroke, the valve plug is highly resistant against vibration and provides flow shutoff performance that fully satisfies IEC standards.

The valve also features a compact but powerful multi-spring actuator.

Model AGVB/AGVM control valves are especially suitable for process control applications where high reliability and tight flow shutoff are essential.

Model AGB/AGM is compliant to Functional Safety Standard (IEC61508).

## 1. Selection of model AGVB/AGVM specifications

Selection of control valves has traditionally required knowledge and experience. However, Model AGVB/AGVM offers you more accurate product specifications, so that you can easily pinpoint the control valve that satisfies fluid specifications (such as flowrate, pressure, and temperature) at your plant and provides the functions that you need.

If you do not find a valve that completely satisfies your requirements, contact the Azbil Group representative for assistance.

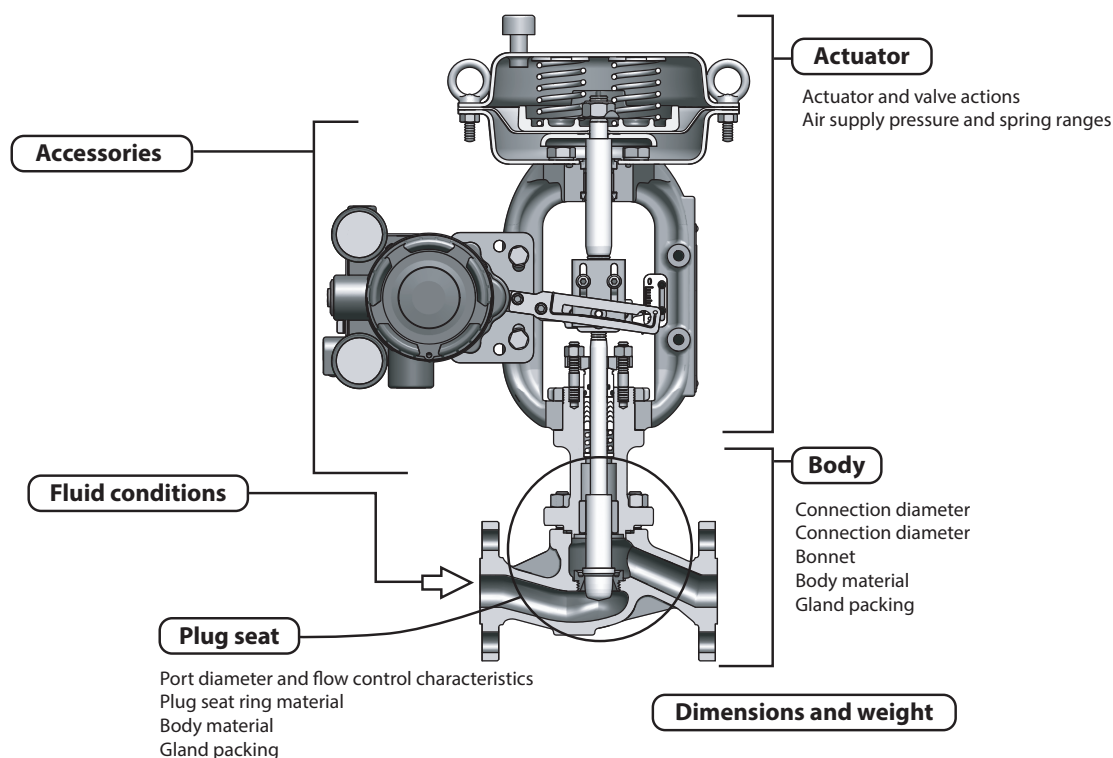


Figure 1. Model AGVB/AGVM selection map

## 2. Basic model numbers

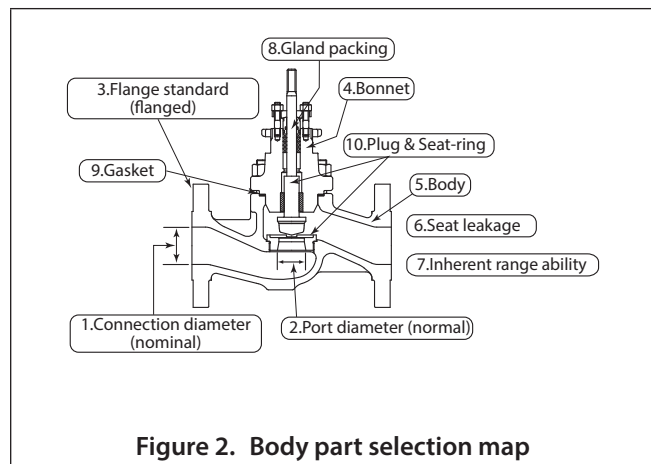
### Basic model: 1/2 to 4 inches

Model AGVB\_ \_ \_ : JIS 10K, ANSI 150, JPI 150

Model AGVM\_ \_ \_ : JIS 16K, JIS 20K, JIS 30K,  
ANSI 300, JPI 300

## 3. Body part optional specifications

Figure 2 shows optional specifications of the body.



### 3-1 Nominal size

Azbil Corporation manufactures diameters from 1/2 inch (15 mm) to 4 inches (100 mm) as shown in Table 6.

### 3-2 Port size and flow characteristics

The selection of the port size and the rated Cv value falls within the scope of Table 1 according to the Nominal size. For nominal sizes 1 inch (25 mm) or less, port sizes are expressed in terms of Cv values. Flow characteristics depend on the rated Cv value, be set to linear model or equal percentage model.

Based on the rated Cv value and the calculated necessary Cv value, check the controllability (valve position) using the flow control characteristics Tables in Figure 4, 5, 6, 7 and 8.

### 3-3 Pressure rating and end connection (flange type)

| Flanged end | Pressure rating        | Standard             |
|-------------|------------------------|----------------------|
| RF          | JIS 10K, 16K, 20K, 30K | JIS B2210-1984       |
|             | ANSI 150, 300          | ASME/ANSI B16.5-1988 |
|             | JPI 150, 300           | JPI-7S-15-1993       |

Option: Socket weld, butt weld

### 3-4 Bonnet style

We manufacture bonnets that can be used at fluid temperatures ranging from -196°C to +400°C.

The standard of plain bonnet is integral structure. (In case of with PSA6R actuator, plain bonnet is welded structure.)

The standards of Extension type I and II bonnet are welded structure.

**Table 1. Selection of bonnet**

[Unit: °C]

| Bonnet \ Body material                                        | SCPH 2       | SCS13A/SCS14A              |
|---------------------------------------------------------------|--------------|----------------------------|
| Plain                                                         | -5 to +230   | -17 to +230                |
| Extension type I<br>(High•Low temperature)                    | +230 to +400 | -45 to -17<br>+230 to +400 |
| Extension type II<br>(Liquid O <sub>2</sub> •N <sub>2</sub> ) | -            | -196 to -45                |

### 3-5 Body, plug and seat ring materials

For combinations of body, plug and seat ring materials and their applicable temperature ranges, see Table 7. In some ranges the plug seat ring material needs hardening treatment. See Figure 10. When you select a soft seat, refer to Figure 11.

### 3-6 Valve seat leakage

For the seat leak performance when the valve is fully closed, select from among the following four classifications, which conform to IEC 60534-4:2006 and JIS B 2005-4:2008 :

|              |                                                                             |
|--------------|-----------------------------------------------------------------------------|
| Class IV:    | $10^{-4} \times \text{rated Cv value}$ (0.01% of rated Cv value)            |
| Class IV-S1: | $5 \times 10^{-6} \times \text{rated Cv value}$ (0.0005% of rated Cv value) |
| Class V:     | $1.8 \times 10^{-4} \times \Delta P$ (MPa) $\times$ Port size (L/h)         |
| Class VI:    | $3 \times \Delta P$ (MPa) $\times$ leakage coefficient (mL/min) (Table2)    |

**Table 2. Leakage coefficient value**

| Nominal size<br>inch (mm) | 1<br>(25) | 1-1/4<br>(32) | 1-1/2<br>(40) | 2<br>(50) | 2-1/2<br>(65) | 3<br>(80) | 4<br>(100) |
|---------------------------|-----------|---------------|---------------|-----------|---------------|-----------|------------|
| Leakage<br>coefficient    | 0.15      | 0.17          | 0.23          | 0.36      | 0.51          | 0.62      | 1.20       |

### 3-7 Inherent range ability:

**Table 3. Inherent range ability Vs rated Cv value**

| Rated Cv             | Inherent Range ability |
|----------------------|------------------------|
| 0.1, 0.16, 0.25, 0.4 | 20:1                   |
| 0.63                 | 30:1                   |
| 1.0 or more than 1.0 | 50:1(75:1*)            |

\*Optional, metal seat and equal percentage only.

### 3-8 Gland packing

According to your application, select appropriate type of gland packing from among the following:

**Table 4. Selection of gland packing**

| Application                                                                                         | Packing Type                                                                                               | Fluid temperature range       |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                                                                                     |                                                                                                            | Maximum working pressure      |
| General use<br>(Oil, Various chemical, Acid and Alkali, etc.)                                       | PTFE fiber yarn packing with carbon fiber core packing<br>[P4519]                                          | -17 to +230 °C<br>10MPa Max.  |
| General use or oil free<br>(Various chemical, acid and alkali)                                      | V shaped pure PTFE packing [Pure PTFE]                                                                     | -196 to +230 °C<br>10MPa Max. |
| Vacuum and General use or oil free<br>(Various chemical, acid and alkali)                           | V shaped pure PTFE packing (Dir. + Rev.)<br>[Pure PTFE (Dir. + Rev.)]                                      | -196 to +230 °C<br>10MPa Max. |
| Low or standard temperature<br>(Various chemical, acid and alkali, LNG, etc.)                       | V shaped pure PTFE packing +<br>PTFE fiber yarn packing or PTFE braided packing<br>[Pure PTFE +PTFE fiber] | Up to -196 °C<br>10MPa Max.   |
| High temperature                                                                                    | Expanded graphite packing + Aramid fiber reinforced expanded<br>graphite yarn packing *1                   | +400 °C Max<br>43MPa Max.     |
| Measures against VOC *2 exhaust regulation<br>[ISO15848-1 certified low emission packing<br>system] | Packing with Live Load structure *3                                                                        | *3                            |

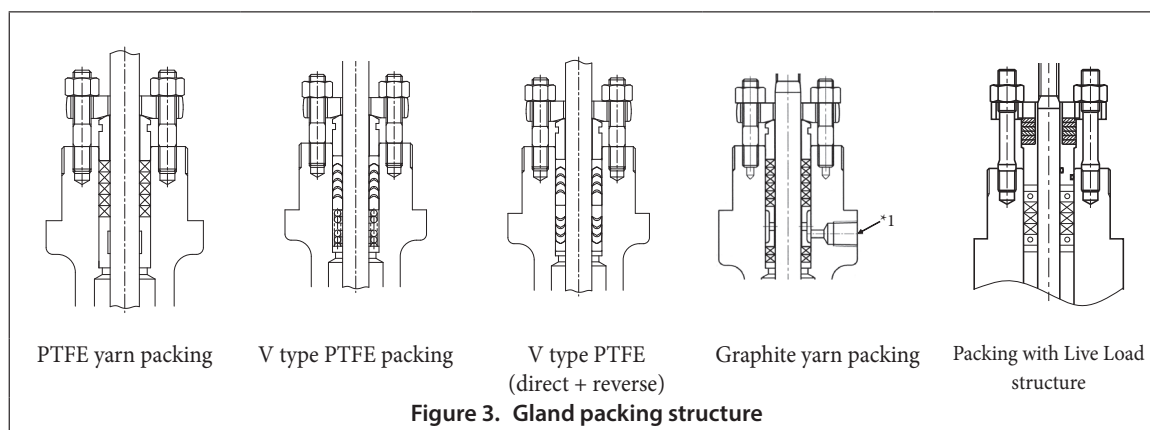
Note) PTFE: polytetrafluoroethylene resin

\*1 Grease provided

It cannot be applied to PSA1 actuator (spring range 20 to 98 kPa).

\*2 Volatile Organic Compound

\*3 Refer to special spec sheet No.SS2-SSL100-0100 about detail of Low emission gland packing.



Note) \*1 Grease provided by lubricator

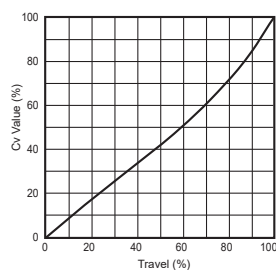
### 3-9 Gasket

**Table 5. Selection of gasket**

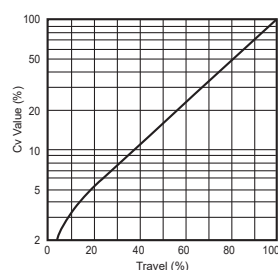
|                               | Cryogenic temperature<br>/ Oil-free<br>(Liquid O <sub>2</sub> -N <sub>2</sub> ) | General / Low temp.                          | High temperature                   | Oil-free treatment                            |
|-------------------------------|---------------------------------------------------------------------------------|----------------------------------------------|------------------------------------|-----------------------------------------------|
| Between bonnet<br>and body    | Spiral-shaped gasket<br>Hoop material: SUS316<br>Filler material: PTFE          | Metal gasket<br>(PTFE coating)<br>V543(PTFE) | Metal gasket V543                  | Metal gasket<br>(PTFE coating)<br>V543 (PTFE) |
| Between seat ring<br>and body | Metal gasket                                                                    | Not necessary                                | Metal gasket V564<br>(Ni-Cu Alloy) | Metal gasket<br>(PTFE coating)<br>V563 (PTFE) |

**Table 6. Model AGVB/AGVM Cv values and travel**

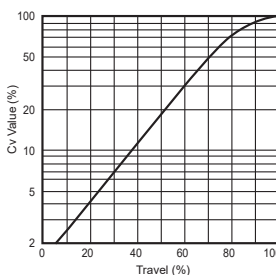
| Nominal size<br>inches (mm) | 1 (25)              |        |     |     |     |    | 1-1/2 (40)   |       |       | 2(50) |       |    | 2-1/2(65) |    |       | 3(80) |       |     | 4(100) |     |     |  |
|-----------------------------|---------------------|--------|-----|-----|-----|----|--------------|-------|-------|-------|-------|----|-----------|----|-------|-------|-------|-----|--------|-----|-----|--|
|                             | 3/4 (20)            |        |     |     |     |    |              |       |       |       |       |    |           |    |       |       |       |     |        |     |     |  |
|                             | 1/2 (15)            |        |     |     |     |    |              |       |       |       |       |    |           |    |       |       |       |     |        |     |     |  |
| Port size (inch)            | 0.1<br>0.16<br>0.25 | 0.4    | 1.0 | 2.5 | 8.0 | 10 | 1            | 1-1/4 | 1-1/2 | 1-1/4 | 1-1/2 | 2  | 1-1/2     | 2  | 2-1/2 | 2     | 2-1/2 | 3   | 2-1/2  | 3   | 4   |  |
| Rated Cv value              | 0.25                | 0.63   | 1.6 | 4.0 | 6.3 | 14 | 14           | 21    | 30    | 21    | 30    | 50 | 30        | 50 | 85    | 50    | 85    | 115 | 85     | 115 | 200 |  |
| Rated travel<br>(mm)        | 20                  |        |     |     |     |    | 20           |       |       | 20    |       |    | 38        |    |       | 38    |       |     | 38     |     |     |  |
| Flow character-<br>istics   | Fig. 4              | Fig. 5 |     |     |     |    | Fig. 6, 7, 8 |       |       |       |       |    |           |    |       |       |       |     |        |     |     |  |



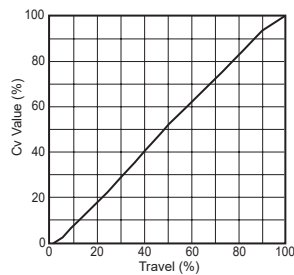
**Figure 4. Cv values 0.1, 0.16, and 0.25 for 1 inch port size or less (linear model)**



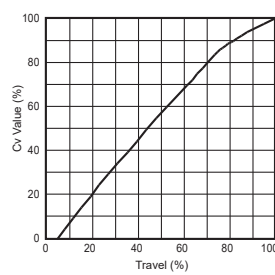
**Figure 5. Cv values 0.4 to 14 for 1 inch port size or less (equal percentage model)**



**Figure 6. Port size 1-1/2 to 4 inches (equal percentage model)**



**Figure 7. Cv values 0.4 to 14 (linear model)**



**Figure 8. Port size 1-1/2 to 4 inches (linear model)**

### 3-10 Body and trim material combinations

#### 3-10-1 Selecting the materials of the body, plug, and seat ring

Depending on the material of the body, the operating temperature range of the trim material varies. Select the body and trim material according to the operating temperature of the control valve. In addition, refer to Figure 10 to determine whether hardening treatment is necessary for the trim.

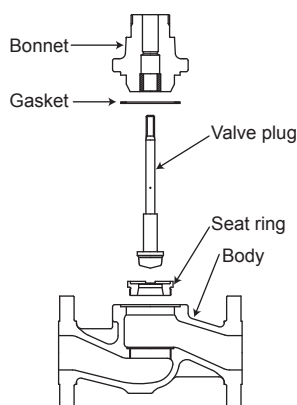


Figure 9. Development view of Model AGVB/AGVM

Table 7. Combinations of body, plug, and seat ring materials

| Material combination |      | Fluid temperature ranges (°C) |              |              |
|----------------------|------|-------------------------------|--------------|--------------|
| SUS 316              |      | -5 to +300                    | -45 to +300  | -45 to +300  |
| SUS 316 CoCr-A       |      | -5 to +400                    | -196 to +400 | -196 to +400 |
| SUS440C              |      | -5 to +400                    | -45 to +400  | ---          |
| SUS 316 soft seat    |      | -5 to +230                    | -45 to +230  | -45 to +230  |
| SUS 316 CoCr-A face  |      | -5 to +400                    | -196 to +400 | -196 to +400 |
| SUS 316L             |      | ---                           | -45 to +300  | -45 to +300  |
| SUS 316L CoCr-A      |      | ---                           | -196 to +400 | -196 to +400 |
| Body material        | JIS  | SCPH2                         | SCS13A       | SCS14A       |
|                      | ASTM | A216WCB                       | A351CF8      | A351CF8M     |

Note) \*1: Parts that adjust flow (such as a plug and a seat ring) are referred to as the valve trim.

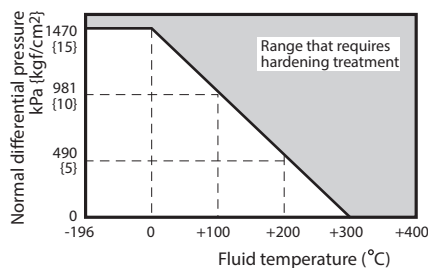


Figure 10. Temperature and normal differential pressure ranges requiring hardening treatment

- Note) 1. Depending on the methods of hardening treatment, CoCr-A welding or SUS440C is available.
2. For valves for cavitation/flashing service, oil-proof service, or tight shutoff service, a CoCr-A is recommended regardless of process fluid temperatures or differential pressures.
3. For cold water or for hot water exceeding 100 °C (fluids that do not require consideration of corrosiveness), SUS440C is recommended.

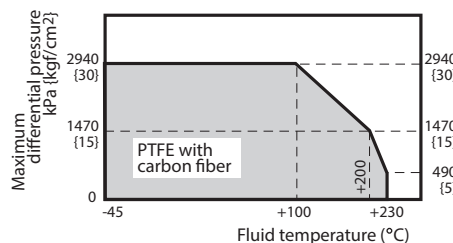


Figure 11. Temperature and maximum differential pressure ranges for soft seat

- Note) 1. When there is a possibility of erosion by such fluids as saturated steam and heated water please use metal seats.
2. With the fluid connecting parts (inside the body) the material of the seat which oil-proof washing treatment had been completed is PTFE entered with glass.

#### 3-10-2 Combination of body component materials

Following table shows typical body and trim material combinations.

Based on the trim material selected in the above section, select the material of body components such as gaskets.

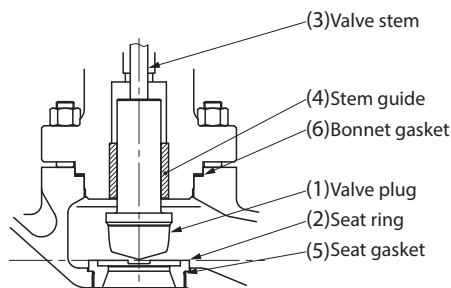


Figure 12. Trim structure (with guide bushing)

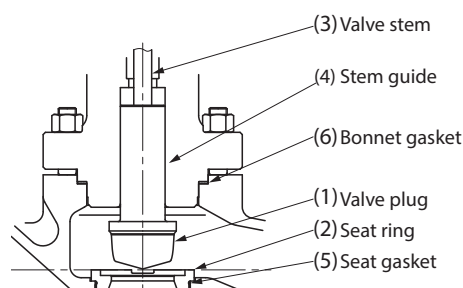


Figure 13. Trim structure (without guide bushing)

**Table 8. The valve body material is carbon steel (SCPH2/A216WCB).**

| (1)Valve plug<br>(2)Seat ring | SUS316                                                         |                          | SUS440C                                                      | SUS316 CoCr-A<br>SUS316 CoCr-A face                            |                             | SUS316 soft seat         |                          |
|-------------------------------|----------------------------------------------------------------|--------------------------|--------------------------------------------------------------|----------------------------------------------------------------|-----------------------------|--------------------------|--------------------------|
|                               | General                                                        | Oil-free                 | General                                                      | General                                                        | Oil-free                    | General                  | Oil-free                 |
| (3)Valve stem                 | SUS316                                                         |                          |                                                              |                                                                |                             |                          |                          |
| (4)Stem guide                 | SUS440C                                                        | SUS316<br>CoCr-A face    | SUS440C                                                      | SUS316 CoCr-A                                                  | SUS316<br>CoCr-A            | SUS440C                  | SUS316<br>CoCr-A face    |
| (5)Seat gasket                | Without<br>(Design temperature:<br>-17 to +230°C)              | SUS316<br>(PTFE coating) | Without<br>(Design temperature:<br>-17 to +230°C)            | Without<br>(Design temperature:<br>-17 to +230°C)              | SUS316<br>(PTFE<br>coating) | Without                  | SUS316<br>(PTFE coating) |
|                               | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)           |                          | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)         | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)           |                             |                          |                          |
| (6)Bonnet gasket              | SUS316(PTFE coating)<br>(Design temperature:<br>-17 to +230°C) | SUS316<br>(PTFE coating) | SUS316(PTFE coating)<br>(Design temperature:<br>-17 to +230) | SUS316(PTFE coating)<br>(Design temperature:<br>-17 to +230°C) | SUS316<br>(PTFE<br>coating) | SUS316<br>(PTFE coating) | SUS316<br>(PTFE coating) |
|                               | SUS316<br>(Design temperature:<br>above +230°C)                |                          | SUS316<br>(Design temperature:<br>above +230)                | SUS316<br>(Design temperature:<br>above +230°C)                |                             |                          |                          |

| (1)Valve plug<br>(2)Seat ring | SUS316L                                                     |                          | SUS316L CoCr-A                                              |                          | SUS316L soft seat        |                          |
|-------------------------------|-------------------------------------------------------------|--------------------------|-------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
|                               | General                                                     | Oil-free                 | General                                                     | Oil-free                 | General                  | Oil-free                 |
| (3)Valve stem                 | SUS316L                                                     |                          |                                                             |                          |                          |                          |
| (4)Stem guide                 | SUS316L                                                     | SUS316L<br>CoCr-A face   | SUS316L CoCr-A                                              | SUS316L CoCr-A           | SUS316L                  | SUS316L<br>CoCr-A face   |
| (5)Seat gasket                | Without<br>(Design temperature: -17 to +230°C)              | SUS316<br>(PTFE coating) | Without<br>(Design temperature: -17 to +230°C)              | SUS316<br>(PTFE coating) | Without                  | SUS316<br>(PTFE coating) |
|                               | Ni-Cu Alloy<br>(Design temperature: above +230°C)           |                          | Ni-Cu Alloy<br>(Design temperature: above +230°C)           |                          |                          |                          |
| (6)Bonnet gasket              | SUS316(PTFE coating)<br>(Design temperature: -17 to +230°C) | SUS316<br>(PTFE coating) | SUS316(PTFE coating)<br>(Design temperature: -17 to +230°C) | SUS316<br>(PTFE coating) | SUS316<br>(PTFE coating) | SUS316<br>(PTFE coating) |
|                               | SUS316<br>(Design temperature: above +230°C)                |                          | SUS316<br>(Design temperature: above +230°C)                |                          |                          |                          |

**Table 9. The valve body material is stainless steel (SCS13A/A351CF8 or SCS14A/A351CF8M)**

| (1)Valve plug<br>(2)Seat ring | SUS316                                                                         |                             | SUS440C *1                                                                     | SUS316 CoCr-A<br>SUS316 CoCr-A face                                            |                             | SUS316 soft seat                                                 |                          |
|-------------------------------|--------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------|--------------------------|
|                               | General                                                                        | Oil-free                    | General                                                                        | General                                                                        | Oil-free                    | General                                                          | Oil-free                 |
| (3)Valve stem                 | SUS316                                                                         |                             |                                                                                |                                                                                |                             |                                                                  |                          |
| (4)Stem guide                 | Without: bonnet guide<br>(Design temperature:<br>-17 to +230°C)                | SUS316<br>CoCr-A<br>face    | SUS440C                                                                        | SUS316 CoCr-A                                                                  | SUS316<br>CoCr-A            | Without (bonnet guide)<br>(Design temperature:<br>-17 to +230°C) | SUS316<br>CoCr-A face    |
|                               | SUS316<br>(Design temperature: above<br>+230°C and below -17°C )               |                             |                                                                                |                                                                                |                             | SUS316<br>(Design temperature: above<br>+230°C and below -17°C ) |                          |
| (5)Seat gasket                | Without<br>(Design temperature: -17 to<br>+230°C and below -17°C)              | SUS316<br>(PTFE<br>coating) | Without<br>(Design temperature: -17 to<br>+230°C and below -17°C)              | Without<br>(Design temperature: -17 to<br>+230°C and below -17°C)              | SUS316<br>(PTFE<br>coating) | Without                                                          | SUS316<br>(PTFE coating) |
|                               | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)                           |                             | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)                           | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)                           |                             |                                                                  |                          |
| (6)Bonnet gasket              | SUS316(PTFE coating)<br>(Design temperature: -17 to<br>+230°C and below -17°C) | SUS316<br>(PTFE<br>coating) | SUS316(PTFE coating)<br>(Design temperature: -17 to<br>+230°C and below -17°C) | SUS316(PTFE coating)<br>(Design temperature: -17 to<br>+230°C and below -17°C) | SUS316<br>(PTFE<br>coating) | SUS316<br>(PTFE coating)                                         | SUS316<br>(PTFE coating) |
|                               | SUS316<br>(Design temperature:<br>above +230°C)                                |                             | SUS316<br>(Design temperature:<br>above +230°C)                                | SUS316<br>(Design temperature:<br>above +230°C)                                |                             |                                                                  |                          |

| (1)Valve plug<br>(2)Seat ring | SUS316L                                                                        |                          | SUS316L CoCr-A                                                                 |                          | SUS316L soft seat                                               |                             |
|-------------------------------|--------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------|-----------------------------|
|                               | General                                                                        | Oil-free                 | General                                                                        | Oil-free                 | General                                                         | Oil-free                    |
| (3)Valve stem                 | SUS316L                                                                        |                          |                                                                                |                          |                                                                 |                             |
| (4)Stem guide                 | Without: bonnet guide<br>(Design temperature:<br>-17 to +230°C)                | SUS316L<br>CoCr-A face   | SUS316L CoCr-A                                                                 | SUS316L<br>CoCr-A        | Without: bonnet guide<br>(Design temperature:<br>-17 to +230°C) | SUS316L<br>CoCr-A face      |
|                               | SUS316L<br>(Design temperature: above +230°C<br>and below -17°C )              |                          |                                                                                |                          | SUS316L<br>(Design temperature:<br>below -17°C )                |                             |
| (5)Seat gasket                | Without<br>(Design temperature: -17 to +230°C<br>and below -17°C)              | SUS316<br>(PTFE coating) | Without<br>(Design temperature: -17 to +230°C<br>and below -17°C)              | SUS316<br>(PTFE coating) | Without                                                         | SUS316<br>(PTFE<br>coating) |
|                               | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)                           |                          | Ni-Cu Alloy<br>(Design temperature:<br>above +230°C)                           |                          |                                                                 |                             |
| (6)Bonnet gasket              | SUS316(PTFE coating)<br>(Design temperature: -17 to +230°C<br>and below -17°C) | SUS316<br>(PTFE coating) | SUS316(PTFE coating)<br>(Design temperature: -17 to +230°C<br>and below -17°C) | SUS316<br>(PTFE coating) | SUS316<br>(PTFE coating)                                        | SUS316<br>(PTFE<br>coating) |
|                               | SUS316<br>(Design temperature:<br>above +230°C)                                |                          | SUS316<br>(Design temperature:<br>above +230°C)                                |                          |                                                                 |                             |

Note) \*1 SUS440C is applicable to body material SCS14A/A351CF8M.

## 4. Actuator

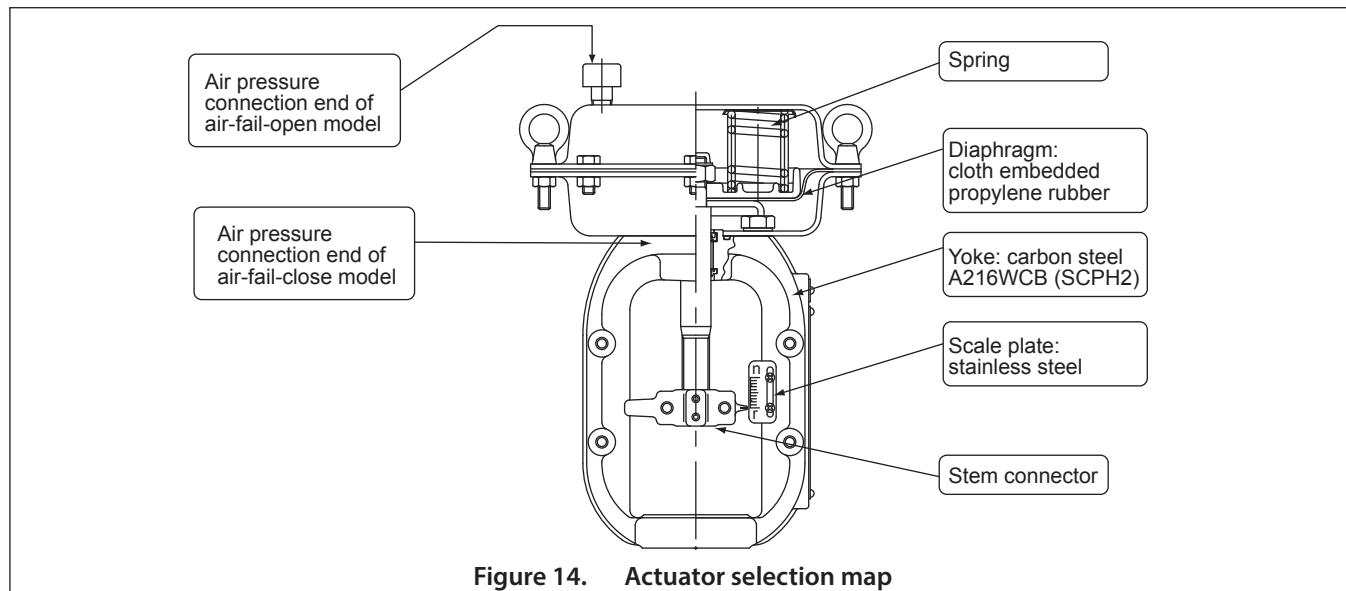


Figure 14. Actuator selection map

### 4-1 Actuator and valve actions

Selection of actuator actions determines valve actions (in response to input signals).

**Air-to-open:** actuator action where the valve opens as the input signal increases

**Air-to-close:** actuator action where the valve closes as the input signal increases

With the model AGVB/AGVM, the valve closes as the plug lowers. The valve action depends, in turn, on whether an air-to-open or air-to-close actuator is chosen. The material of bolt and nut are SUS304.

### 4-2 Tables of allowable differential pressures

Ensure the required shutoff differential pressure specified in the equipment design is satisfied by selecting an actuator with an allowable differential pressure equal to or higher than the shutoff pressure, according to the seat leakage class.

#### Leakage, specification Class IV (0.01% of rated Cv value)

- Model AGVB

Air-to-open: Table 10 and Table 11

Air-to-close: Table 12 and Table 13

- Model AGVM

Air-to-open: Table 14 and Table 15

Air-to-close: Table 16 and Table 17

#### Leakage, specification Class V (high shutoff model: metal seat) or Class IV-S1 (0.0005% of rated Cv value)

- Model AGVB

Air-to-open: Table 18 and Table 19

Air-to-close: Table 20 and Table 21

- Model AGVM

Air-to-open: Table 22 and Table 23

Air-to-close: Table 24 and Table 25

#### Leakage, specification Class VI (high shutoff model: soft seat)

- Model AGVB

Air-to-open: Table 26 and Table 27

Air-to-close: Table 28 and Table 29

- Model AGVM

Air-to-open: Table 30 and Table 31

Air-to-close: Table 32 and Table 33

At your request, we can manufacture control valves with normal pressures exceeding 1.96 MPa.

### 4-3 Supply pressure and spring ranges

Select the actuator using the table of allowable differential pressures. The table also assists in determining the actuator's required supply pressure and required spring range.

If the applicable value in the table of allowable differential pressures is not large enough for the shutoff pressure you need, we will, at your request, consider a larger actuator size.

### 4-4 Performance (with positioner)

| Actuator         |          | PSA1_    | PSA2_ to 4 | PSA6     |
|------------------|----------|----------|------------|----------|
| Linearity        | VPE_ _   | ±3% F.S. | -          | -        |
|                  | AVP_ _ _ | ±2% F.S. | ±1% F.S.   | ±2% F.S. |
|                  | HTP- _ _ |          |            |          |
| Hysteresis error |          | 1% F.S.  | 1% F.S.    | 2% F.S.  |

Note) \* This table shows PTFE-based packing.

### 4-6 Ambient temperature

-30 to 70 °C

## 5. Finish

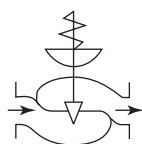
The normal standard coating color for Azbil Corporation's control valves is blue (Munsell color 10B 5/10). Silver is also available as standard.

You can specify any other color using the number code of the Japan Paint Industry Assignment or the Munsell color system.

Standard colors are also used for such optional accessories as positioners, pressure regulator with filter, and solenoid valves.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 10. Model AGVB nominal size 1/2, 3/4, and 1 inch**

Air-to-open

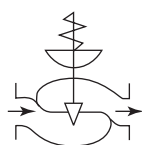


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa {kgf/cm <sup>2</sup> } |             |                |                |                |              |
|---------------------|----------|--------------------------------------------|-----------------------------------------|----------------------------------------------------------------|-------------|----------------|----------------|----------------|--------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                            | 0.4<br>0.63 | 1.0<br>1.6     | 2.5<br>4.0     | 6.3<br>8.0     | 10<br>14     |
| 1/2                 | PSA1R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                |                                                                |             | 1650<br>{16.8} | 1020<br>{10.4} | 550<br>{5.6}   | 410<br>{4.2} |
| 3/4                 |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               |                                                                |             | 1960<br>{20.0} |                |                |              |
| 1                   | PSA2R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | --                                                             | --          |                |                | 1070<br>{10.9} | 800<br>{8.2} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 11. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

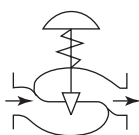


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa {kgf/cm <sup>2</sup> } |                |                |                |                |                |                |
|---------------------|----------|--------------------------------------------|-----------------------------------------|------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                     |          |                                            |                                         | 1                                                                      | 1-1/4          | 1-1/2          | 2              | 2-1/2          | 3              | 4              |
| 1-1/2<br>2          | PSA1R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 410<br>{4.2}                                                           | 250<br>{2.6}   | 170<br>{1.8}   | 100<br>{1.1}   | --             | --             | --             |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | 1960<br>{20.0}                                                         | 1780<br>{18.2} | 1210<br>{12.3} | 720<br>{7.4}   | --             | --             | --             |
|                     | PSA2R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 800<br>{8.2}                                                           | 490<br>{5.0}   | 330<br>{3.4}   | 200<br>{2.0}   | --             | --             | --             |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                     | 1960<br>{20.0} |                | 1400<br>{14.3} | --             | --             | --             |
|                     | PSA3R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 1420<br>{14.5}                                                         | 880<br>{8.9}   | 590<br>{6.0}   | 350<br>{3.6}   | --             | --             | --             |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                     | --             | --             | 1960<br>{20.0} | --             | --             | --             |
|                     | PSA4R    | 140<br>{2.8}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                         | 1510<br>{15.4} | 1030<br>{10.5} | 610<br>{6.2}   | --             | --             | --             |
|                     |          |                                            |                                         |                                                                        |                |                |                |                |                |                |
| 2-1/2<br>3<br>4     | PSA3R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | --                                                                     | --             | 590<br>{6.1}   | 350<br>{3.6}   | 220<br>{2.2}   | 160<br>{1.6}   | --             |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                     | --             | 1960<br>{20.0} |                | 1530<br>{15.6} | 1100<br>{11.3} | 620<br>{6.3}   |
|                     | PSA4R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | --                                                                     | --             | 1030<br>{10.5} | 610<br>{6.2}   | 380<br>{3.9}   | 270<br>{2.8}   | 150<br>{1.16}  |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                     | --             | --             | --             | 1960<br>{20.0} | 1910<br>{19.4} | 1070<br>{10.9} |
|                     | PSA6R    | 260<br>{2.6}                               | 100 to 180<br>{1.0 to 1.8}              | --                                                                     | --             | --             | --             | --             | 1960<br>{20.0} | 1450<br>{14.8} |
|                     |          | 400<br>{4.0}                               | 200 to 340<br>{2.0 to 3.5}              | --                                                                     | --             | --             | --             | --             | --             | 1960<br>{20.0} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 12. Model AGVB nominal size 1/2, 3/4 and 1 inch**

Air-to-close

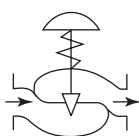


| Nominal size<br>inch | Actuator | Supply pressure<br>kPa {kgf/cm <sup>2</sup> } | Spring range<br>kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa {kgf/cm <sup>2</sup> } |             |            |            |                |                |
|----------------------|----------|-----------------------------------------------|--------------------------------------------|----------------------------------------------------------------|-------------|------------|------------|----------------|----------------|
|                      |          |                                               |                                            | 0.1<br>0.16<br>0.25                                            | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0 | 6.3<br>8.0     | 10<br>14       |
| 1/2<br>3/4<br>1      | PSA1D    | 140{1.4}                                      | 20 to 98<br>{0.2 to 1.0}                   | 1960<br>{20.0}                                                 |             |            |            | 1380<br>{14.1} | 1030<br>{10.5} |
|                      |          | 160{1.6}                                      | 20 to 98<br>{0.2 to 1.0}                   |                                                                |             |            |            | 1860<br>{18.9} | 1860<br>{18.9} |
|                      |          | 390{4.0}                                      | 80 to 240<br>{0.8 to 2.4}                  |                                                                |             |            |            |                |                |
|                      | PSA2D    | 140{1.4}                                      | 20 to 98<br>{0.2 to 1.0}                   | --                                                             | --          | --         | --         | --             |                |
|                      |          | 160{1.6}                                      | 20 to 98<br>{0.2 to 1.0}                   | --                                                             | --          | --         | --         |                |                |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 13. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-close

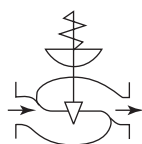


| Nominal size<br>(inch) | Actuator | Supply pressure<br>kPa {kgf/cm <sup>2</sup> } | Spring range<br>kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |                |                |                |                |                |                |
|------------------------|----------|-----------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                        |          |                                               |                                            | 1                                                                     | 1-1/4          | 1-1/2          | 2              | 2-1/2          | 3              | 4              |
| 1-1/2<br>2             | PSA1D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | 1030<br>{10.5}                                                        | 640<br>{6.5}   | 430<br>{4.4}   | 260<br>{2.6}   | --             | --             | --             |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   | 1860<br>{18.9}                                                        | 1150<br>{11.7} | 780<br>{7.9}   | 460<br>{4.7}   | --             | --             | --             |
|                        |          | 390<br>{4.0}                                  | 80 to 240<br>{0.8 to 2.4}                  | 1500<br>{15.3}                                                        |                |                |                | --             | --             | --             |
|                        | PSA2D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | 1960<br>{20.0}                                                        | 1230<br>{12.6} | 840<br>{8.5}   | 500<br>{5.1}   | --             | --             | --             |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   |                                                                       | 1510<br>{15.4} |                | 900<br>{9.2}   | --             | --             | --             |
|                        |          | 390<br>{4.0}                                  | 80 to 240<br>{0.2 to 1.0}                  | --                                                                    | --             | --             | 1960<br>{20.0} | --             | --             | --             |
|                        | PSA3D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | 1960<br>{20.0} | 1490<br>{15.1} | 890<br>{9.0}   | --             | --             | --             |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             | 1960<br>{20.0} | 1600<br>{16.3} | --             | --             | --             |
|                        | PSA4D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             |                | 1530<br>{15.6} | --             | --             | --             |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             | --             | 1960<br>{20.0} | --             | --             | --             |
| 2-1/2<br>3<br>4        | PSA3D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             | 1490<br>{15.1} | 890<br>{9.0}   | 550<br>{5.6}   | 390<br>{4.0}   | 220<br>{2.3}   |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             | 1960<br>{20.0} | 1600<br>{16.3} | 990<br>{10.0}  | 710<br>{7.2}   | 400<br>{4.1}   |
|                        |          | 390<br>{4.0}                                  | 80 to 240<br>{0.8 to 2.4}                  | --                                                                    | --             |                | 1290<br>{13.1} |                |                |                |
|                        | PSA4D    | 140<br>{1.4}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             | 1960<br>{20.0} | 1530<br>{15.6} | 950<br>{9.6}   | 680<br>{6.9}   | 380<br>{3.9}   |
|                        |          | 160<br>{1.6}                                  | 20 to 98<br>{0.2 to 1.0}                   | --                                                                    | --             |                | 1960<br>{20.0} | 1700<br>{17.4} | 1230<br>{12.5} | 700<br>{7.0}   |
|                        |          | 390<br>{4.0}                                  | 80 to 240<br>{0.8 to 2.4}                  | --                                                                    | --             | --             | --             | --             | --             | 1960<br>{20.0} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 14. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-open

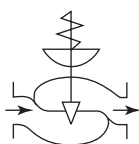


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa {kgf/cm <sup>2</sup> } |                |                |                |                |                |
|---------------------|----------|--------------------------------------------|-----------------------------------------|----------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                            | 0.4<br>0.63    | 1.0<br>1.6     | 2.5<br>4.0     | 6.3<br>8.0     | 10<br>14       |
| 1/2<br>3/4<br>1     | PSA1R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                 |                | 1650<br>{16.8} | 1020<br>{10.4} | 550<br>{5.6}   | 410<br>{4.2}   |
|                     |          |                                            |                                         | 5100<br>{52.0}                                                 | 3120<br>{31.8} |                |                |                |                |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | 1960<br>{20.0}                                                 |                |                |                |                |                |
|                     |          |                                            |                                         | 5100<br>{52.0}                                                 |                |                |                |                | 3870<br>{39.5} |
|                     | PSA2R    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | --                                                             | 1960<br>{20.0} |                |                | 1070<br>{10.9} | 800<br>{8.2}   |
|                     |          |                                            |                                         |                                                                | 5100<br>{52.0} | 3200<br>{32.6} | 1970<br>{20.1} |                |                |
|                     |          | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                             | --             | --             | --             | 1960<br>{20.0} |                |
|                     |          |                                            |                                         |                                                                |                |                |                | 5100<br>{52.0} |                |

- Note)
1. In the case of using positioners, please the setting of supply pressure with pressure regulator.
  2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.
  3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 15. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

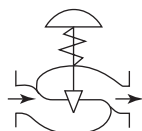


| Nominal size (inch) | Actuator    | Supply pressure kPa {kgf/cm²} | Spring range kPa {kgf/cm²} | Differential pressure (by port size (inch)) kPa{kgf/cm²} |             |             |             |             |             |             |
|---------------------|-------------|-------------------------------|----------------------------|----------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                     |             |                               |                            | 1                                                        | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4           |
| 1-1/2<br>2          | PSA1R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | 410 {4.2}                                                | 250 {2.6}   | 170 {1.8}   | 100 {1.1}   | --          | --          | --          |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | 1960 {20.0}                                              | 1780 {18.2} | 1210 {12.3} | 720 {7.4}   | --          | --          | --          |
|                     |             |                               |                            | 2890 {29.5}                                              |             |             |             |             |             |             |
|                     | PSA2R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | 800 {8.2}                                                | 490 {5.0}   | 330 {3.4}   | 200 {2.0}   | --          | --          | --          |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | 1960 {20.0}                                              |             |             | 1400 {14.3} | --          | --          | --          |
|                     |             |                               |                            | 5100 {52.0}                                              | 3460 {35.2} | 2340 {23.9} |             |             |             |             |
|                     | PSA3R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | 1420 {14.5}                                              | 880 {8.9}   | 590 {6.1}   | 350 {3.6}   | --          | --          | --          |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | --                                                       | 1960 {20.0} |             |             | --          | --          | --          |
|                     |             |                               |                            |                                                          | 5100 {52.0} | 4160 {42.4} | 2480 {25.3} |             |             |             |
|                     | PSA4R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | 1960 {20.0}                                              | 1510 {15.4} | 1030 {10.5} | 610 {6.2}   | --          | --          | --          |
|                     |             | 2450 {25.0}                   |                            |                                                          |             |             |             |             |             |             |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | --                                                       | --          | 1960 {20.0} |             | --          | --          | --          |
| 5100 {52.0}         | 4290 {43.6} |                               |                            |                                                          |             |             |             |             |             |             |
| 2-1/2<br>3<br>4     | PSA3R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | --                                                       | --          | 590 {6.1}   | 350 {3.6}   | 220 {2.2}   | 160 {1.6}   | --          |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | --                                                       | --          | 1960 {20.0} |             | 1530 {15.6} | 1100 {11.3} | 620 {6.3}   |
|                     |             |                               |                            |                                                          |             | 4160 {42.4} | 2480 {25.3} |             |             |             |
|                     | PSA4R       | 140 {1.4}                     | 20 to 98 {0.2 to 1.0}      | --                                                       | --          | 1030 {10.5} | 610 {6.2}   | 380 {3.9}   | 270 {2.8}   | 150 {1.6}   |
|                     |             | 270 {2.8}                     | 80 to 240 {0.8 to 2.4}     | --                                                       | --          | 1960 {20.0} |             |             | 1910 {19.4} | 1070 {10.9} |
|                     |             |                               |                            |                                                          |             | 5100 {52.0} | 4290 {43.6} | 2650 {27.0} |             |             |
|                     | PSA6R       | 260 {2.6}                     | 100 to 180 {1.0 to 1.8}    | --                                                       | --          | --          | 1960 {20.0} |             |             | 1450 {14.8} |
|                     |             | 400 {4.0}                     | 200 to 340 {2.0 to 3.5}    | --                                                       | --          | --          | 5100 {52.0} | 3570 {36.4} | 2570 {26.2} |             |
|                     |             |                               |                            |                                                          |             |             | 1960 {20.0} |             |             | 5100 {52.0} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 16. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-close

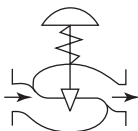


| Nominal<br>size<br>(inch) | Actuator | Supply<br>pressure<br>kPa {kgf/cm <sup>2</sup> } | Spring<br>range<br>kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |                |                |                |                |
|---------------------------|----------|--------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------|-------------|----------------|----------------|----------------|----------------|
|                           |          |                                                  |                                               | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6     | 2.5<br>4.0     | 8.0<br>6.3     | 10<br>14       |
| 1/2<br>3/4<br>1           | PSA1D    | 140<br>{1.4}                                     | 20 to 98<br>{0.2 to 1.0}                      | 1960<br>{20.0}                                                |             |                |                | 1380<br>{14.1} | 1030<br>{10.5} |
|                           |          |                                                  |                                               | 5100<br>{52.0}                                                |             | 4130<br>{42.1} | 2550<br>{26.0} |                |                |
|                           |          | 160<br>{1.6}                                     | 20 to 98<br>{0.2 to 1.0}                      | 1960<br>{20.0}                                                |             |                |                | 1860<br>{18.9} |                |
|                           |          |                                                  |                                               | 5100<br>{52.0}                                                |             |                | 4590<br>{46.8} |                | 2490<br>{25.4} |
|                           |          | 390<br>{4.0}                                     | 80 to 240<br>{0.8 to 2.4}                     | 1960<br>{20.0}                                                |             |                |                |                |                |
|                           |          |                                                  |                                               | 5100<br>{52.0}                                                |             |                |                |                |                |
|                           | PSA2D    | 140<br>{1.4}                                     | 20 to 98<br>{0.2 to 1.0}                      | --                                                            | --          | 1960<br>{20.0} |                |                |                |
|                           |          |                                                  |                                               |                                                               |             | 5100<br>{52.0} | 4940<br>{50.3} | 2680<br>{27.3} | 2000<br>{20.4} |
|                           |          | 160<br>{1.6}                                     | 20 to 98<br>{0.2 to 1.0}                      | --                                                            | --          | --             | 1960<br>{20.0} |                |                |
|                           |          |                                                  |                                               |                                                               |             |                | 5100<br>{52.0} | 4830<br>{49.2} | 3600<br>{36.7} |

- Note)
1. In the case of using positioners, please the setting of supply pressure with pressure regulator.
  2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.
  3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class IV: 0.01% of the rated Cv value****Table 17. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-close

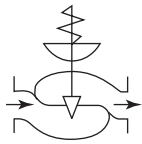


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |             |             |             |             |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                     |          |                                            |                                         | 1                                                                     | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4           |
| 1-1/2<br>2          | PSA1D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1030 {10.5}                                                           | 640 {6.5}   | 430 {4.4}   | 260 {2.6}   | --          | --          | --          |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1860 {18.9}                                                           | 1150 {11.7} | 780 {7.9}   | 460 {4.7}   | --          | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           |             |             | 1500 {15.3} | --          | --          | --          |
|                     | PSA2D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 2000 {20.0}                                                           | 1230 {12.6} | 840 {8.5}   | 500 {5.1}   | --          | --          | --          |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |             | 1510 {15.4} | 900 {9.2}   | --          | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | 1960 {20.0} |             | 5100 {52.0} | --          | --          | --          |
|                     | PSA3D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |             | 1490 {15.1} | 890 {9.0}   | --          | --          | --          |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |             | 1600 {16.3} | --          | --          | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} | --          | --          | --          | --          |
|                     | PSA4D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |             |             | 1530 {15.6} | --          | --          | --          |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1960 {20.0} |             | --          | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} |             | --          | --          | --          |
| 2-1/2<br>3<br>4     | PSA3D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1490 {15.1} | 890 {9.0}   | 550 {5.6}   | 390 {4.0}   | 220 {2.3}   |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1960 {20.0} | 1600 {16.3} | 990 {10.0}  | 710 {7.2}   | 400 {4.1}   |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} |             |             |             | 1290 {13.1} |
|                     | PSA4D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1960 {20.0} | 1530 {15.6} | 950 {9.6}   | 680 {6.9}   | 380 {3.9}   |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1960 {20.0} |             | 1700 {17.4} | 1230 {12.5} | 690 {7.0}   |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | --          | --          | 1960 {20.0} |             |             |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class V and Class IV-S1: high shutoff model: metal seat****Table 18. Model AGVB nominal size 1/2, 3/4 and 1 inch**

Air-to-open

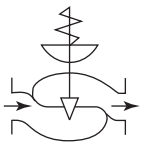


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |            |            |            |          |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|------------|------------|------------|----------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0 | 6.3<br>8.0 | 10<br>14 |
| 1/2<br>3/4<br>1     | PSA1R    | 270{2.8}                                   | 80 to 240<br>{0.8 to 2.4}               | 1960<br>{20.0}                                                |             |            |            |            |          |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 19. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

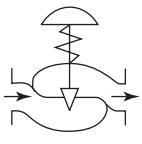


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |                |                |                |                |                |              |
|---------------------|----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|--------------|
|                     |          |                                            |                                         | 1                                                                     | 1-1/4          | 1-1/2          | 2              | 2-1/2          | 3              | 4            |
| 1-1/2<br>2          | PSA1R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | 1960<br>{20.0}                                                        | 1110<br>{11.3} | 660<br>{6.7}   | 270<br>{2.8}   | --             | --             | --           |
|                     | PSA2R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                    | 1960<br>{20.0} | 1550<br>{15.8} | 810<br>{8.2}   | --             | --             | --           |
|                     | PSA3R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                    | --             | 1960<br>{20.0} | 1660<br>{16.9} | --             | --             | --           |
|                     | PSA4R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                    | --             | --             | 1960<br>{20.0} | --             | --             | --           |
| 2-1/2<br>3<br>4     | PSA3R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                    | --             | 1960<br>{20.0} | 1660<br>{16.9} | 910<br>{9.3}   | 570<br>{5.8}   | 190<br>{2.0} |
|                     | PSA4R    | 270<br>{2.8}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                                    | --             | --             | 1960<br>{20.0} | 1790<br>{18.2} | 1200<br>{12.3} | 550<br>{5.6} |
|                     | PSA6R    | 260<br>{2.6}                               | 100 to 180<br>{1.0 to 1.8}              | --                                                                    | --             | --             | --             | 1960<br>{20.0} | 1850<br>{18.9} | 910<br>{9.3} |
|                     |          | 400<br>{4.0}                               | 200 to 340<br>{2.0 to 3.5}              | --                                                                    | --             | --             | --             | --             | 1960<br>{20.0} |              |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 20. Model AGVB nominal size 1/2, 3/4 and 1 inch**

Air-to-close

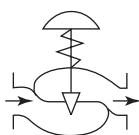


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |            |            |                |                |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|------------|------------|----------------|----------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0 | 6.3<br>8.0     | 10<br>14       |
| 1/2<br>3/4<br>1     | PSA1D    | 160<br>{1.6}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                |             |            |            | 1640<br>{16.8} | 1150<br>{11.7} |
|                     |          | 390<br>{4.0}                               | 80 to 240<br>{0.8 to 2.4}               |                                                               |             |            |            |                |                |
|                     | PSA2D    | 160<br>{1.6}                               | 20 to 98<br>{0.2 to 1.0}                | --                                                            | --          | --         | --         |                |                |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Valve seat leakage, Class V and Class IV-S1: high shutoff model: metal seat****Table 21. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3, and 4 inches**

Air-to-close

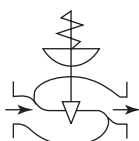


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |           |             |             |             |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-----------|-------------|-------------|-------------|-------------|-------------|
|                     |          |                                            |                                         | 1                                                                     | 1-1/4     | 1-1/2       | 2           | 2-1/2       | 3           | 4           |
| 1-1/2<br>2          | PSA1D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1150 {11.7}                                                           | 600 {6.1} | 310 {3.2}   | --          | --          | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           |           |             | 1100 {11.2} | --          | --          | --          |
|                     | PSA2D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1430 {14.6}                                                           |           |             | 880 {9.0}   | 410 {4.1}   | --          | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --        | --          | 1960 {20.0} | --          | --          | --          |
|                     | PSA3D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1790 {18.3}                                                           |           |             | 950 {9.7}   | --          | --          | --          |
|                     | PSA4D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |           |             | 1850 {18.9} | --          | --          | --          |
| 2-1/2<br>3<br>4     | PSA3D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --        | 1790 {18.2} | 950 {9.7}   | 470 {4.8}   | 260 {2.6}   | --          |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --        | 1960 {20.0} |             |             | 1830 {18.7} | 900 {9.2}   |
|                     | PSA4D    | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --        | 1850 {18.9} |             | 1030 {10.5} | 660 {6.7}   | 240 {2.5}   |
|                     |          | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --        | --          | --          | --          | 1960 {20.0} | 1780 {18.1} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 22. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-open

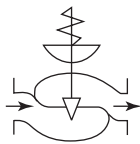


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |            |            |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|------------|------------|-------------|-------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0 | 6.3<br>8.0  | 10<br>14    |
| 1/2<br>3/4          | PSA1R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                   |             |            |            |             |             |
|                     |          |                                            |                                         | 5100 {52.0}                                                   |             |            |            | 2750 {28.0} | 1980 {20.2} |
| 1                   | PSA2R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                            | --          | --         | --         | 1960 {20.0} | 4100 {41.8} |
|                     |          |                                            |                                         |                                                               |             |            |            | 5100 {52.0} |             |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class V and Class IV-S1: high shutoff model: metal seat****Table 23. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

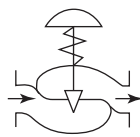


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |             |             |             |             |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                     |          |                                            |                                         | 1                                                                     | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4           |
| 1-1/2<br>2          | PSA1R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           | 1110 {11.3} | 660 {6.7}   | 270 {2.8}   | --          | --          | --          |
|                     |          |                                            |                                         | 1980 {20.2}                                                           |             |             |             | --          | --          | --          |
|                     | PSA2R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | 1960{20.0}                                                            |             | 1550 {15.8} | 810 {8.2}   | --          | --          | --          |
|                     |          |                                            |                                         | 4110 {41.9}                                                           | 2420 {24.7} |             |             |             |             |             |
|                     | PSA3R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           |             |             | 1660 {16.9} | --          | --          | --          |
|                     |          |                                            |                                         | 5100 {52.0}                                                           | 4520 {46.1} | 2970 {30.3} |             |             |             |             |
|                     | PSA4R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | 1960{20.0}  |             | 3080 {31.4} | --          | --          | --          |
|                     |          |                                            |                                         |                                                                       | 5100 {52.0} |             |             |             |             |             |
| 2-1/2<br>3<br>4     | PSA3R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} | 1660 {16.9} | 910 {9.3}   | 570 {5.8}   | 190 {2.0}   |
|                     |          |                                            |                                         |                                                                       |             | 2970 {30.3} |             |             |             |             |
|                     | PSA4R    | 270 {2.8}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960{20.0}  |             | 1790 {18.2} | 1200 {12.3} | 550 {5.6}   |
|                     |          |                                            |                                         |                                                                       |             | 5100 {52.0} | 3080 {31.4} |             |             |             |
|                     | PSA6R    | 260 {2.6}                                  | 100 to 180 {1.0 to 1.8}                 | --                                                                    | --          | --          | --          | 1960 {20.0} | 1850 {18.9} | 910 {9.3}   |
|                     |          |                                            |                                         |                                                                       |             |             |             | 2680 {27.3} |             |             |
|                     |          | 400 {4.0}                                  | 200 to 340 {2.0 to 3.5}                 | --                                                                    | --          | --          | 1960 {20.0} |             |             |             |
|                     |          |                                            |                                         |                                                                       |             |             |             | 5100 {52.0} | 4710 {48.0} | 2520 {25.7} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Table 24. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-close

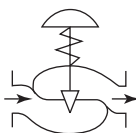


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm²} | Spring range kPa {kgf/cm²} | Differential pressure (by Cv value) kPa{kgf/cm²} |             |                |                |                |                |
|---------------------|----------|-------------------------------|----------------------------|--------------------------------------------------|-------------|----------------|----------------|----------------|----------------|
|                     |          |                               |                            | 0.1<br>0.16<br>0.25                              | 0.4<br>0.63 | 1.0<br>1.6     | 2.5<br>4.0     | 6.3<br>8.0     | 10<br>14       |
| 1/2<br>3/4<br>1     | PSA1D    | 160<br>{1.6}                  | 20 to 98<br>{0.2 to 1.0}   | 1960{20.0}                                       |             |                |                | 1640<br>{16.8} | 1150<br>{11.7} |
|                     |          |                               |                            | 5100<br>{52.0}                                   |             | 3270<br>{33.3} |                |                |                |
|                     |          | 390<br>{4.0}                  | 80 to 240<br>{0.8 to 2.4}  | 1960<br>{20.0}                                   |             |                |                |                |                |
|                     |          |                               |                            | 5100<br>{52.0}                                   |             |                |                |                |                |
|                     | PSA2D    | 160<br>{1.6}                  | 20 to 98<br>{0.2 to 1.0}   | --                                               | --          | --             | 1960{20.0}     |                |                |
|                     |          |                               |                            |                                                  |             |                | 5100<br>{52.0} | 3460<br>{35.3} | 2500<br>{25.5} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class V and Class IV-S1: high shutoff model: metal seat****Table 25. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-close

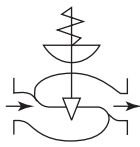


| Nominal<br>size<br>(inch) | Actuator | Supply<br>pressure<br>kPa {kgf/cm²} | Spring<br>range<br>kPa {kgf/cm²} | Differential pressure (by port size (inch)) kPa{kgf/cm²} |                |                |                |                |                |                |
|---------------------------|----------|-------------------------------------|----------------------------------|----------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                           |          |                                     |                                  | 1                                                        | 1-1/4          | 1-1/2          | 2              | 2-1/2          | 3              | 4              |
| 1-1/2<br>2                | PSA1D    | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | 1150<br>{11.7}                                           | 600<br>{6.1}   | 310<br>{3.2}   | --             | --             | --             | --             |
|                           |          | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | 1960<br>{20.0}                                           |                |                | 1100<br>{11.2} | --             | --             | --             |
|                           |          |                                     |                                  | 5100<br>{52.0}                                           | 3150<br>{32.1} | 2040<br>{20.8} |                |                |                |                |
|                           | PSA2D    | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | 1960<br>{20.0}                                           | 1430<br>{14.6} | 880<br>{9.0}   | 410<br>{4.1}   | --             | --             | --             |
|                           |          | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | 1960<br>{20.0} |                | --             | --             | --             | --             |
|                           |          |                                     |                                  |                                                          | 5100<br>{52.0} | 4230<br>{18.2} |                |                |                |                |
|                           | PSA3D    | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | 1960<br>{20.0}                                           |                | 1790<br>{18.3} | 950<br>{9.7}   | --             | --             | --             |
|                           |          | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | 1960<br>{20.0} |                | --             | --             | --             |
|                           |          |                                     |                                  |                                                          |                | 5100<br>{52.0} | 4490<br>{45.8} |                |                |                |
|                           | PSA4D    | 160{1.6}                            | 20 to 98<br>{0.2 to 1.0}         | 1960<br>{20.0}                                           |                |                | 1850<br>{18.9} | --             | --             | --             |
|                           |          | 390{4.0}                            | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | --             | 1960<br>{20.0} | --             | --             | --             |
|                           |          |                                     |                                  |                                                          |                |                | 5100<br>{52.0} |                |                |                |
| 2-1/2<br>3<br>4           | PSA3D    | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             | 1790<br>{18.2} | 950<br>{9.7}   | 470<br>{4.8}   | 260<br>{2.6}   | --             |
|                           |          | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | 1960<br>{20.0} |                |                | 1830<br>{18.7} | 900<br>{9.2}   |
|                           |          |                                     |                                  |                                                          |                | 5100<br>{52.0} | 4490<br>{45.8} | 2660<br>{27.1} |                |                |
|                           | PSA4D    | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             | 1960<br>{20.0} | 1850<br>{18.9} | 1030<br>{10.5} | 660<br>{6.7}   | 240<br>{2.5}   |
|                           |          | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | --             | 1960<br>{20.0} |                |                | 1770<br>{18.0} |
|                           |          |                                     |                                  |                                                          |                |                | 5100<br>{52.0} | 4810<br>{49.1} | 3380<br>{34.4} |                |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class VI: high shutoff model: soft seat****Table 26. Model AGVB nominal size 1/2, 3/4 and 1 inch**

Air-to-open

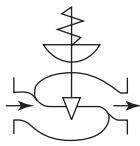


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |            |            |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|------------|------------|-------------|-------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0 | 6.3<br>8.0  | 10<br>14    |
| 1/2                 | PSA1R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                   |             |            |            | 1440 {14.7} | 1030 {10.5} |
| 3/4                 | PSA2R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                            | --          | --         | --         | 1960 {20.0} |             |
| 1                   |          |                                            |                                         |                                                               |             |            |            |             |             |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 27. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

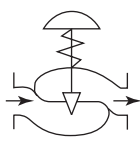


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |             |             |             |             |             |           |
|---------------------|----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-----------|
|                     |          |                                            |                                         | 1                                                                     | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4         |
| 1-1/2<br>2          | PSA1R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1030 {10.5}                                                           | 460 {4.7}   | 190 {1.9}   | --          | --          | --          | --        |
|                     | PSA2R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           | 1740 {17.7} | 1270 {13.0} | 640 {6.5}   | --          | --          | --        |
|                     | PSA3R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                    | 1960 {20.0} |             | 1580 {16.1} | --          | --          | --        |
|                     | PSA4R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | --          | 1960 {20.0} | --          | --          | --        |
| 2-1/2<br>3<br>4     | PSA3R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} | 1580 {16.1} | 960 {9.8}   | 640 {6.5}   | 280 {2.9} |
|                     | PSA4R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | --          | 1960 {20.0} | 1920 {19.6} | 1450 {14.8} | 770 {7.9} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 28. Model AGVB nominal size 1/2, 3/4 and 1 inch**

Air-to-close

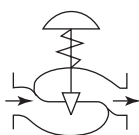


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |            |             |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|------------|-------------|-------------|-------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6 | 2.5<br>4.0  | 6.3<br>8.0  | 10<br>14    |
| 1/2<br>3/4<br>1     | PSA1D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1240 {12.6}                                                   | 1240 {12.6} | 690 {7.0}  | 110 {1.1}   | --          | --          |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                   |             |            | 1480 {15.1} | 640 {6.5}   | 330 {3.4}   |
|                     |          | 390 {1.4}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                            | --          | --         | 1960 {20.0} |             |             |
|                     | PSA2D    | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                   |             |            | 1910 {19.5} | 1230 {12.5} | 790 {8.1}   |
|                     |          | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                            | --          | --         | 1960 {20.0} |             | 1750 {17.8} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Valve seat leakage, Class VI: high shutoff model: soft seat****Table 29. Model AGVB nominal size 1-1/2, 2, 2-1/2, 3, and 4 inches**

Air-to-close

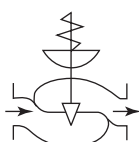


| Nominal<br>size<br>(inch) | Actuator        | Supply<br>pressure<br>kPa {kgf/cm²} | Spring<br>range<br>kPa {kgf/cm²} | Differential pressure (by port size (inch)) kPa{kgf/cm²} |                |                |                |                |                |                |
|---------------------------|-----------------|-------------------------------------|----------------------------------|----------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                           |                 |                                     |                                  | 1                                                        | 1-1/4          | 1-1/2          | 2              | 2-1/2          | 3              | 4              |
| 1-1/2<br>2                | PSA1D           | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | 1960<br>{20.0}                                           | 1860<br>{19.0} | 1390<br>{14.2} | 730<br>{7.4}   | --             | --             | --             |
|                           | PSA2D           | 140<br>{1.4}                        | 20 to 98<br>{0.2 to 1.0}         | 790<br>{8.1}                                             | 310<br>{3.2}   | --             | --             | --             | --             | --             |
|                           |                 | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | 1750<br>{17.8}                                           | 1170<br>{11.9} | 680<br>{6.9}   | 280<br>{2.9}   | --             | --             | --             |
|                           |                 | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | 1960<br>{20.0} |                | 1860<br>{18.0} | --             | --             | --             |
|                           | PSA3D           | 140<br>{1.4}                        | 20 to 98<br>{0.2 to 1.0}         | 1960<br>{20.0}                                           | 1410<br>{14.1} | 880<br>{9.0}   | 400<br>{4.1}   | --             | --             | --             |
|                           |                 | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         |                                                          | 1710<br>{17.4} |                | 1050<br>{10.7} | --             | --             | --             |
|                           |                 | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | --             | 1960<br>{20.0} | --             | --             | --             |
|                           | PSA4D           | 140<br>{1.4}                        | 20 to 98<br>{0.2 to 1.0}         | 1960<br>{20.0}                                           |                |                | 1320<br>{13.5} | --             | --             | --             |
|                           |                 | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             |                |                | --             | --             | --             |
|                           | 2-1/2<br>3<br>4 | PSA3D                               | 140<br>{1.4}                     | 20 to 98<br>{0.2 to 1.0}                                 | --             | --             | 880<br>{9.0}   | 400<br>{4.1}   | 150<br>{1.5}   | --             |
| 160<br>{1.6}              |                 |                                     | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             | 1710<br>{17.4} | 1050<br>{10.7} | 550<br>{5.6}   | 340<br>{3.5}   | 110<br>{1.1}   |
| 390<br>{4.0}              |                 |                                     | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             |                |                |                | 1710<br>{17.4} | 960<br>{9.8}   |
| PSA4D                     |                 | 140<br>{1.4}                        | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             | 1960<br>{20.0} | 1320<br>{13.5} | 730<br>{7.4}   | 470<br>{4.8}   | 190<br>{1.9}   |
|                           |                 | 160<br>{1.6}                        | 20 to 98<br>{0.2 to 1.0}         | --                                                       | --             |                |                |                | 1410<br>{14.4} | 980<br>{10.0}  |
|                           |                 | 390<br>{4.0}                        | 80 to 240<br>{0.8 to 2.4}        | --                                                       | --             | --             | --             | 1960<br>{20.0} |                | 1820<br>{18.6} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.

**Table 30. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-open

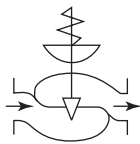


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa{kgf/cm <sup>2</sup> } |             |             |             |             |             |
|---------------------|----------|--------------------------------------------|-----------------------------------------|---------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                           | 0.4<br>0.63 | 1.0<br>1.6  | 2.5<br>4.0  | 6.3<br>8.0  | 10<br>14    |
| 1/2<br><br>3/4      | PSA1R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                   |             |             |             | 1440 {14.7} | 1030 {10.5} |
|                     |          |                                            |                                         | 2940 {30.0}                                                   |             | 2850 {29.1} | 2140 {21.8} |             |             |
| 1                   | PSA2R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                            | --          | 1960 {20.0} |             |             |             |
|                     |          |                                            |                                         |                                                               |             | 2940 {30.0} |             |             | 2450 {25.0} |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class VI: high shutoff model: soft seat****Table 31. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-open

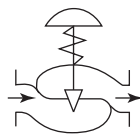


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa {kgf/cm <sup>2</sup> } |             |             |             |             |             |           |
|---------------------|----------|--------------------------------------------|-----------------------------------------|------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-----------|
|                     |          |                                            |                                         | 1                                                                      | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4         |
| 1-1/2<br>2          | PSA1R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1030 {10.5}                                                            | 460 {4.7}   | 180 {0.17}  | --          | --          | --          | --        |
|                     | PSA2R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                            | 1740 {17.7} | 1270 {13.0} | 640 {6.5}   | --          | --          | --        |
|                     |          |                                            |                                         | 2450 {25.0}                                                            |             |             |             |             |             |           |
|                     | PSA3R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                            |             |             | 1580 {16.1} | --          | --          | --        |
|                     |          |                                            |                                         | 2940 {30.0}                                                            |             | 2370 {24.2} |             |             |             |           |
|                     | PSA4R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                     | --          | 1960 {20.0} |             | --          | --          | --        |
| 2940 {30.0}         |          |                                            |                                         |                                                                        |             | 2840 {29.0} |             |             |             |           |
| 2-1/2<br>3<br>4     | PSA3R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                     | --          | 1960 {20.0} | 1580 {16.1} | 960 {9.8}   | 640 {6.5}   | 280 {2.9} |
|                     |          |                                            |                                         |                                                                        |             | 2370 {24.2} |             |             |             |           |
|                     | PSA4R    | 270{2.8}                                   | 80 to 240 {0.8 to 2.4}                  | --                                                                     | --          | 1960 {20.0} |             | 1920 {19.6} | 1450 {14.8} | 770 {7.9} |
|                     |          |                                            |                                         |                                                                        |             | 2940 {30.0} | 2.84 {29.0} |             |             |           |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Table 32. Model AGVM nominal size 1/2, 3/4 and 1 inch**

Air-to-close

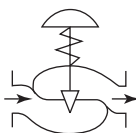


| Nominal size (inch) | Actuator | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by Cv value) kPa {kgf/cm <sup>2</sup> } |                |                |                |                |                |
|---------------------|----------|--------------------------------------------|-----------------------------------------|----------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
|                     |          |                                            |                                         | 0.1<br>0.16<br>0.25                                            | 0.4<br>0.63    | 1.0<br>1.6     | 2.5<br>4.0     | 6.3<br>8.0     | 10<br>14       |
| 1/2<br>3/4<br>1     | PSA1D    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 1240<br>{12.6}                                                 | 1240<br>{12.6} | 690<br>{7.0}   | 110<br>{1.1}   | --             | --             |
|                     |          | 160<br>{1.6}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                 |                |                | 1480<br>{15.1} | 640<br>{6.5}   | 330<br>{3.4}   |
|                     |          |                                            |                                         | 2310<br>{23.6}                                                 |                | 1980<br>{20.2} |                |                |                |
|                     |          | 390<br>{4.0}                               | 80 to 240<br>{0.8 to 2.4}               | 1960<br>{20.0}                                                 |                |                |                |                |                |
|                     |          |                                            |                                         | 2940<br>{30.0}                                                 |                |                |                |                |                |
|                     | PSA2D    | 140<br>{1.4}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                 |                |                | 1900<br>{19.3} | 1230<br>{12.6} | 790<br>{8.1}   |
|                     |          |                                            |                                         | 2940<br>{30.0}                                                 |                | 2550<br>{26.0} |                |                |                |
|                     |          | 160<br>{1.6}                               | 20 to 98<br>{0.2 to 1.0}                | 1960<br>{20.0}                                                 |                |                |                |                | 1750<br>{17.9} |
|                     |          |                                            |                                         | 2940<br>{30.0}                                                 |                |                | 2140<br>{21.8} |                |                |
|                     |          | 390<br>{4.0}                               | 80 to 240<br>{0.8 to 2.4}               | --                                                             | --             | --             | --             | --             | 1960<br>{20.0} |
| 2940<br>{30.0}      |          |                                            |                                         |                                                                |                |                |                |                |                |

- Note) 1. In the case of using positioners, please the setting of supply pressure with pressure regulator.  
 2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.  
 3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

**Valve seat leakage, Class VI: high shutoff model: soft seat****Table 33. Model AGVM nominal size 1-1/2, 2, 2-1/2, 3 and 4 inches**

Air-to-close



| Nominal size (inch) | Actuator  | Supply pressure kPa {kgf/cm <sup>2</sup> } | Spring range kPa {kgf/cm <sup>2</sup> } | Differential pressure (by port size (inch)) kPa{kgf/cm <sup>2</sup> } |             |             |             |             |             |             |
|---------------------|-----------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                     |           |                                            |                                         | 1                                                                     | 1-1/4       | 1-1/2       | 2           | 2-1/2       | 3           | 4           |
| 1-1/2<br>2          | PSA1D     | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 330 {3.4}                                                             | --          | --          | --          | --          | --          | --          |
|                     |           | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           | 1860 {18.9} | 1390 {14.2} | 730 {7.4}   | --          | --          | --          |
|                     |           |                                            |                                         | 2620 {26.7}                                                           |             |             |             |             |             |             |
|                     | PSA2D     | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 790 {8.1}                                                             | 310 {3.2}   | --          | --          | --          | --          | --          |
|                     |           | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1750 {17.8}                                                           | 1170 {11.9} | 680 {6.9}   | 280 {2.9}   | --          | --          | --          |
|                     |           | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | 1960 {20.0}                                                           |             |             | 1860 {19.0} | --          | --          | --          |
|                     |           |                                            |                                         | 2940 {30.0}                                                           |             | 2780 {28.4} |             |             |             |             |
|                     | PSA3D     | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | 1990 {20.3}                                                           | 1410 {14.4} | 880 {9.0}   | 400 {4.1}   | --          | --          | --          |
|                     |           | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | 1960 {20.0}                                                           |             | 1710 {17.4} | 1050 {10.7} | --          | --          | --          |
|                     |           |                                            |                                         | 2940 {30.0}                                                           | 2290 {23.4} |             |             |             |             |             |
|                     |           | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} |             | --          | --          | --          |
|                     |           |                                            |                                         |                                                                       |             | 2940 {30.0} |             | --          |             |             |
| PSA4D               | 140 {1.4} | 20 to 98 {0.2 to 1.0}                      | 1960 {20.0}                             |                                                                       |             | 1320 {13.5} | --          | --          | --          |             |
|                     |           |                                            | 2940 {30.0}                             | 2660 {27.1}                                                           | 1990 {20.3} |             |             |             |             |             |
|                     | 160 {1.6} | 20 to 98 {0.2 to 1.0}                      | --                                      | 1960 {20.0}                                                           |             |             | --          | --          | --          |             |
|                     |           |                                            |                                         | 2940 {30.0}                                                           |             | 1990 {21.3} |             |             |             |             |
| 2-1/2<br>3<br>4     | PSA3D     | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 880 {9.0}   | 400 {4.1}   | 150 {1.5}   | --          | --          |
|                     |           | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1710 {17.4} | 1050 {10.7} | 550 {5.6}   | 340 {3.5}   | 110 {1.1}   |
|                     |           | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | 1960 {20.0} |             |             | 1710 {17.4} | 960 {9.8}   |
|                     |           |                                            |                                         |                                                                       |             | 2940 {30.0} |             | 2250 {22.9} |             |             |
|                     | PSA4D     | 140 {1.4}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1990 {20.3} | 1320 {13.5} | 730 {7.4}   | 470 {4.8}   | 190 {1.9}   |
|                     |           | 160 {1.6}                                  | 20 to 98 {0.2 to 1.0}                   | --                                                                    | --          | 1960 {20.0} |             | 1410 {14.4} | 980 {10.0}  | 480 {4.9}   |
|                     |           |                                            |                                         |                                                                       |             | 2940 {30.0} | 2090 {21.3} |             |             |             |
|                     |           | 390 {4.0}                                  | 80 to 240 {0.8 to 2.4}                  | --                                                                    | --          | --          | --          | 1960 {20.0} |             | 1820 {18.6} |
|                     |           |                                            |                                         |                                                                       |             |             |             | 2940 {30.0} |             |             |

- Note)
1. In the case of using positioners, please the setting of supply pressure with pressure regulator.
  2. The maximum allowable differential pressures must not exceed the maximum working pressures specified by JISB2201-1984, ANSIB16.34-1981, and JPI-7S-65-831.
  3. In the differential pressure column, upper figures show normal differential pressures and lower figures differential pressures when the valve is fully closed.

## 6. Accessories

### 6-1 Hand wheel

Use: The manual hand wheel enables you to open and close the valve manually.

Orientation: Side hand wheel, which is mounted to the yoke of the actuator.

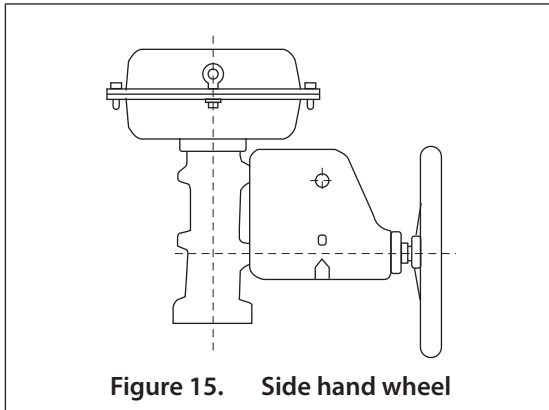


Figure 15. Side hand wheel

### 6-2 Positioner

Use: In response to input signals from the controller, the positioner controls the valve accurately and swiftly, switches between direct and reverse operation, and changes valve characteristics.

Models: According to input signals and applications, select one of the models shown below.

| Input/Output signal | Type                   | Model                                       |
|---------------------|------------------------|---------------------------------------------|
| I/P                 | Smart valve positioner | AVP7_ _ _<br>AVP3_ _ _<br>AVP2_ _ _         |
| P/P                 | Mechanical             | HTP_ _ _<br>VPE_ _ _<br>(Applied PSA1 only) |

### 6-3 Pressure regulator with filter

Function: The Pressure regulator with filter reduce the pressure of application air, drains application air, and removes foreign substances.

Model: The model KZ03 is the standard

### 6-4 Booster relay

Function: The booster relay improves the working speed of the control valve.

Use a booster relay that amplifies the output signals of the positioner.

Model: OEM products

### 6-5 Solenoid valve

Function: Electric signals make the solenoid valve to open and close the control valve.

Model: OEM products

### 6-6 Limit switch

Function: The limit switch converts the open and closed positions of the control valve into electric signals.

Model: The roller lever actuator is standard.

### 6-7 Lock-up valve

Function: In response to air pressure signals or in anticipations of fluctuations in the supply

Model: OEM products

## 7. Dimensions and weight

Table 34 and Table 35 show the dimensions and weight of the control valves. Note that the addition of any optional specifications will change their installed dimensions and weights.

**Table 34. Main dimensions**

| Connection<br>diameter<br>(inch) | Actuator | Dimensions (mm)               |        |                                    |                                                      |     |                 |                               |                                |     |
|----------------------------------|----------|-------------------------------|--------|------------------------------------|------------------------------------------------------|-----|-----------------|-------------------------------|--------------------------------|-----|
|                                  |          | A                             |        |                                    |                                                      |     | H               |                               |                                | φB  |
|                                  |          | JIS10K<br>ANSI150<br>JPI150*1 | JIS16K | JIS20K, 30K<br>ANSI300<br>JPI300*1 | JIS10K, 16K, 20K, 30K<br>ANSI150, 300<br>JPI150, 300 |     | Plain<br>bonnet | Extension<br>type I<br>bonnet | Extension<br>type II<br>bonnet |     |
|                                  |          |                               |        |                                    | SW                                                   | BW  |                 |                               |                                |     |
| 1/2, 3/4                         | PSA1D, R | 184                           | 190    | 194                                | 206                                                  | --  | 420             | 545                           | 945                            | 218 |
|                                  | PSA2D, R |                               |        |                                    |                                                      |     | 450             | 575                           | 975                            | 267 |
| 1                                | PSA1D, R | 184                           | 193    | 197                                | 210                                                  | --  | 420             | 545                           | 945                            | 218 |
|                                  | PSA2D, R |                               |        |                                    |                                                      |     | 450             | 575                           | 975                            | 267 |
| 1-1/2                            | PSA1D, R | 222                           | 231    | 235                                | 251                                                  | --  | 420             | 605                           | 945                            | 218 |
|                                  | PSA2D, R |                               |        |                                    |                                                      |     | 450             | 635                           | 975                            | 267 |
|                                  | PSA3D, R |                               |        |                                    |                                                      |     | 630             | 760                           | 1160                           | 350 |
|                                  | PSA4D, R |                               |        |                                    |                                                      |     | 680             | 815                           | 1215                           | 470 |
| 2                                | PSA1D, R | 254                           | 263    | 267                                | 286                                                  | --  | 420             | 605                           | 945                            | 218 |
|                                  | PSA2D, R |                               |        |                                    |                                                      |     | 450             | 635                           | 975                            | 267 |
|                                  | PSA3D, R |                               |        |                                    |                                                      |     | 630             | 760                           | 1160                           | 350 |
|                                  | PSA4D, R |                               |        |                                    |                                                      |     | 680             | 815                           | 1215                           | 470 |
| 2-1/2                            | PSA3D, R | 276                           | 288    | 292                                | --                                                   | 311 | 675             | 800                           | 1155                           | 350 |
|                                  | PSA4D, R |                               |        |                                    |                                                      |     | 725             | 855                           | 1210                           | 470 |
|                                  | PSA6R    |                               |        |                                    |                                                      |     | 1145            | 1275                          | --                             | 470 |
| 3                                | PSA3D, R | 298                           | 313    | 317                                | --                                                   | 337 | 675             | 800                           | 1155                           | 350 |
|                                  | PSA4D, R |                               |        |                                    |                                                      |     | 725             | 855                           | 1210                           | 470 |
|                                  | PSA6R    |                               |        |                                    |                                                      |     | 1145            | 1275                          | 1710                           | 470 |
| 4                                | PSA3D, R | 352                           | 364    | 368                                | --                                                   | 394 | 680             | 800                           | 1155                           | 350 |
|                                  | PSA4D, R |                               |        |                                    |                                                      |     | 730             | 860                           | 1210                           | 470 |
|                                  | PSA6R    |                               |        |                                    |                                                      |     | 1150            | 1275                          | 1710                           | 470 |

Note) \*1 : Face-to-face dimensions conform to following standards.

- IEC 60534-3-1:2001

- JIS B 2005-3-1:2005

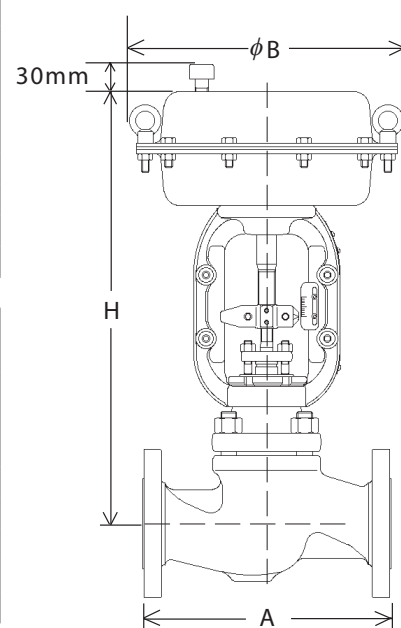
\*2 : H +135 mm for PSA6 with hand wheel.

**Table 35. Product weight (kg)**

| Actuator | Body size (inch) | 1/2                            |                                | 3/4                            |                                | 1                              |                                | 1-1/2                          |                                |
|----------|------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|          | Pressure rating  | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 |
|          |                  |                                |                                |                                |                                |                                |                                |                                |                                |
| Actuator | PSA 1            | 15                             | 16                             | 16                             | 19                             | 17                             | 19                             | 27                             | 32                             |
|          | PSA 2            | 18                             | 19                             | 19                             | 22                             | 20                             | 22                             | 30                             | 35                             |
|          | PSA 3            | --                             | --                             | --                             | --                             | --                             | --                             | 50                             | 55                             |
|          | PSA 4            | --                             | --                             | --                             | --                             | --                             | --                             | 68                             | 73                             |
|          | PSA 6            | --                             | --                             | --                             | --                             | --                             | --                             | --                             | --                             |
|          | PSA 6            | --                             | --                             | --                             | --                             | --                             | --                             | --                             | --                             |

| Actuator | Body size (inch) | 2                              |                                | 2-1/2                          |                                | 3                              |                                | 4                              |                                |
|----------|------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|          | Pressure rating  | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 | JIS 10K<br>ANSI 150<br>JPI 150 | JIS 20K<br>ANSI 300<br>JPI 300 |
|          |                  |                                |                                |                                |                                |                                |                                |                                |                                |
| Actuator | PSA 1            | 30                             | 33                             | --                             | --                             | --                             | --                             | --                             | --                             |
|          | PSA 2            | 33                             | 36                             | --                             | --                             | --                             | --                             | --                             | --                             |
|          | PSA 3            | 53                             | 56                             | 71                             | 77                             | 73                             | 81                             | 89                             | 106                            |
|          | PSA 4            | 71                             | 74                             | 89                             | 95                             | 91                             | 99                             | 107                            | 124                            |
|          | PSA 6            | --                             | --                             | 190                            | 197                            | 192                            | 201                            | 208                            | 225                            |
|          | PSA 6            | --                             | --                             | 190                            | 197                            | 192                            | 201                            | 208                            | 225                            |

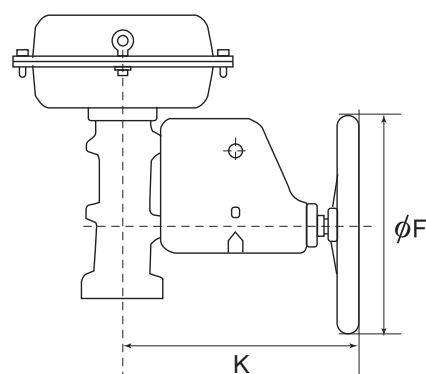


**Figure 16. Face-to-face dimensions and overall dimensions**

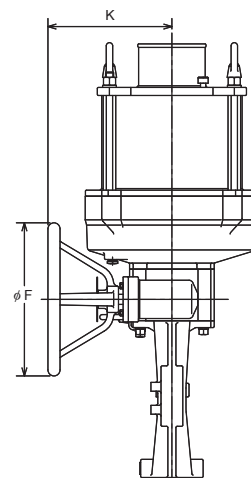
The overall dimensions and the valve weight will change when a manual hand wheel is mounted. In standard mounting, the position of operation of the side hand wheel is at the back of the actuator (on the side opposite that the valve positioner is mounted).

**Table 36. Hand wheel dimensions**

| Type of hand wheel | Actuator | Dimension (mm) |     | Maximum driving force of hand wheel<br>N (kgf) | Weight (kg) |
|--------------------|----------|----------------|-----|------------------------------------------------|-------------|
|                    |          | $\phi F$       | K   |                                                |             |
| Side hand wheel    | PSA1D, R | 200            | 215 | 190 (19)                                       | 7           |
|                    | PSA2D, R | 200            |     | 320 (32)                                       |             |
|                    | PSA3D, R | 355            | 345 | 650 (65)                                       | 27          |
|                    | PSA4D, R | 355            |     | 850 (85)                                       |             |
|                    | PSA6R    | 380            | 307 | 127 (13)                                       | 35          |



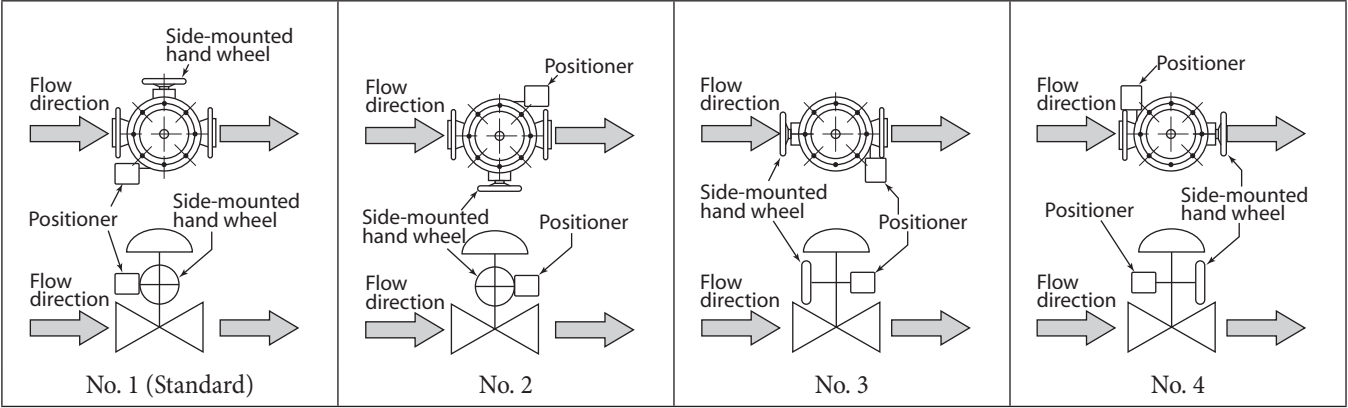
**Figure 17. Side hand wheel (PSA1~4)**



**Figure 18. Side hand wheel (PSA6R)**

8. Actuator Orientation

(Model PSA\_ \_ Actuator)



(Model PSA6R Actuator)

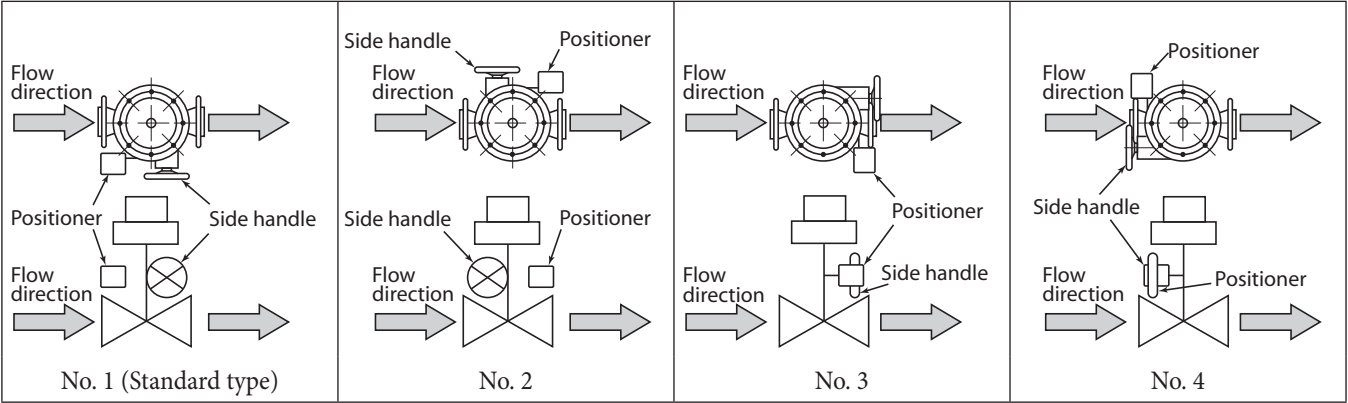


Figure 19. Actuator orientation

Note) Indicate by position number when installation other than the standard type is required.





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