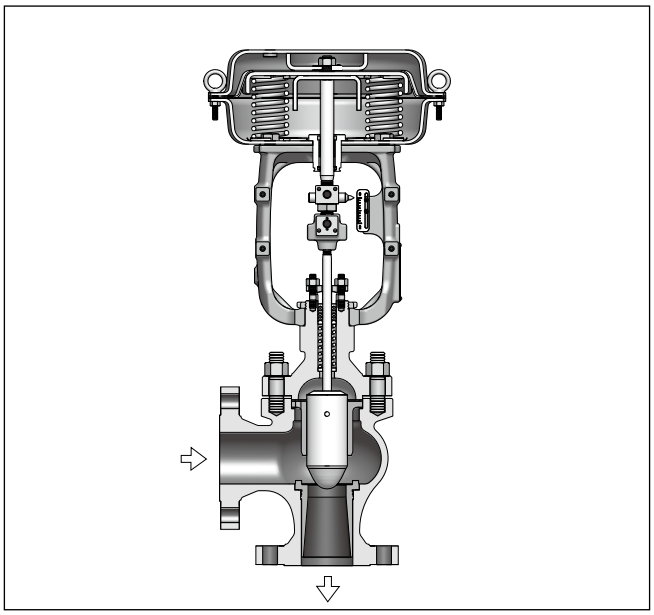
# Venturi Throat Type Angle Control Valves

## Model HAV

## OVERVIEW

Model HAV venturi throat type angle control valves are compact, high-performance control valves designed for heavyduty service.

The valve plug is highly vibration-resistant as it is held by a top guide section which has a large sliding area. The flow shut-off performance complies with the IEC/JIS Standards. The acturator, integrated with simplest mechanisms, utilizes a compact yet powerful diaphragm actuator loaded with multiple springs.



## SPECIFICATIONS

### Body

#### Type

Cast angle valve

#### Nominal size

1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 inches

#### Pressure rating

- JIS 10K, 16K, 20K, 30K, 40K
- ANSI Class 125, 150, 300, 600
- JPI Class 125, 150, 300, 600

#### End connection

Flanged end:

| Flanged end | Pressure rating | Standard |
|---|---|---|
| FF | JIS 10K | JIS B2212-1972 |
| | ANSI Class 125 | ANSI B16.5-1968 |
| | JPI Class 125 | JPI-7S-15-1993 |
| RF | JIS10K | JIS B2212-1972 |
| | JIS16K | JIS B2213-1967 |
| | JIS20K | JIS B2214-1967 |
| | JIS30K | JIS B2215-1967 |
| | JIS40K | JIS B2216-1967 |
| | ANSI Class 150, 300, 600 | ANSI B16.5-1968 |
| | JPI Class 150, 300, 600 | JPI-7S-15-1993 |
| RJ, LG | ANSI Class 150, 300, 600 | ANSI B16.5-1968 |
| | JPI Class 150, 300, 600 | JPI-7S-15-1993 |

#### Material

For body/trim material combinations and operating temperature ranges, refer to Table 1.

### Bonnet

- Plain bonnet (0 to 200 °C)
- Extension bonnet (-50 to 0 °C and 200 to 425 °C)
- Bellows type (for operating temperature and pressure range, refer to Figure.2)

*Note) take care not to exceed the operating temperature ranges specified for respective materials.*

### Gland type

Bolted gland

### Packing/Grease

- Grease not provided
  When V shaped PTFE packing or PTFE yarn packing is used.
- Grease provided
  When graphite packing is used.

*Note) PTFE: Polytetrafluoroethylene*

### Gasket

Type
Flat type, serrated type

### Material

Carbon steel, stainless steel (SUS316, SUS316L, SUS329J1), copper, aluminum

## Trim

### Valve plug

Single seated, contoured-type plug
Metal seat: Equal percentage (%C), Linear (LC)
(For flow characteristics, refer to Figure.1)

### Material

For body/trim material combinations and operating temperature ranges, refer to Table 1.

*Note) For fluid conditions requiring Stellite, refer to Figure.3.*

## Actuator

### Type

- Single acting diaphragm actuator (Type PSA1, HA, and VA5)
- Spring type piston actuator (Type PSA6)

### Action

Direct or reverse action

### Diaphragm

Type PSA1, HA: Cloth embedded ethylene propylene rubber
Type VA5: Cloth embedded chloroprene rubber

### Spring range

- Type PSA1, HA
  20 to 98 kPa {0.2 to 1.0 kgf/cm$^2$}
  80 to 240 kPa {0.8 to 2.4 kgf/cm$^2$}
- Type VA5
  20 to 98 kPa {0.2 to 1.0 kgf/cm$^2$}
  40 to 200 kPa {0.4 to 2.0 kgf/cm$^2$}
- Type PSA6
  200 to 390 kPa {2.0 to 4.0 kgf/cm$^2$}

### Supply pressure

- Diaphragm actuator
  Type PSA1, HA, VA5: 140 to 270 kPa {1.4 to 2.8 kgf/cm$^2$}
- Spring type piston actuator
  Type PSA6: 500kPa {5.0 kgf/cm$^2$}

### Air connection

Rc1/4 or 1/4NPT internal thread

*Note) With type VA5, Rc 1/4 adapter or 1/4 NPT adapter is provided on Rc1/2 internal thread. Also, Rc3/8 adapter is possible.*

### Ambient temperature

-30 to +70 °C

### Valve action

Air-to-close (Direct action actuator is combined.)
Air-to-open (Reverse action actuator is combined.)

## Optional accessories

Positioner*, pressure regulator with filter, hand wheel*, limit switch, solenoid valve, motion transmitter, booster relay, lock-up valve, and others.

*Note) 1. For the optional items, refer to the specification sheets and installation drawing of respective accessories.*
*2. Accessories with the asterisk mark (*) are selected from the following types depending on the actuators to be combined.*

| Actuator | Positioner | | Hand wheel | |
|---|---|---|---|---|
| | P/P | I/P | Top | Side |
| PSA1 | VPE/HTP | AVP | THM | SHM |
| HA2 to 4 | HTP | AVP | THM | SHM |
| VA5 | HTP | AVP | THM | SHM |
| PSA6 | HTP/VPP | AVP | - | SHM |

## Additional specifications (by special order)

- Special inspection
  Flow characteristic inspection, material inspection (material certificate), non-destructive inspection, steam inspection, low-temperature inspection.
- Double gland
- Steam jacket
- Oil/Water free treatment
- Copper free treatment
- Stainless steel (SUS304) atmosphere exposed nuts and bolts
- Special air piping and joint
- Sand-/dust-preventive measures
- Saline damage countermeasures
- Tropical-area use specifications
- Cold-area use specifications
- Vacuum service

## Performance

### Rated Cv value

Refer to Table 2.

### Flow characteristic

Refer to Figure 1.

### Inherent rangeability

30:1

### Allowable differential pressure

Refer to Table 3.

### Leakage specification

IEC 60534-4:2006 or JIS B2005-4:2008
Standard…..Class IV: Leakage less than 0.01% of maximum valve capacity

Option…….0.001% of maximum valve capacity

### Hysteresis error

Without positioner: Within 3%F.S. (Within 5%F.S.) ((Within 9%F.S.))

With positioner: Within 1%F.S. ((Within 2%F.S.))

### Linearity

Without positioner: Within ±5%F.S. ((±9%F.S.))
With positioner: Within ±1%F.S. ((±2%F.S.))
(±3%F.S. with model VPE positioner, ±2%F.S. with model AVP positioner)

*Note) 1. Parenthesized figures are applicable to Type PSA1.*
*2. Double parenthesized figures are applicable to Type PSA6*

### Dimensions

Refer to Figure 4 and Table 5 and 6.

### Weight

Refer to Table 7.

### Actuator orientation

Refer to Figure 5.

### Finish

Blue or silver, or other specified colors.

**Table 1. Body / trim material combinations and operating temperature ranges (°C)**

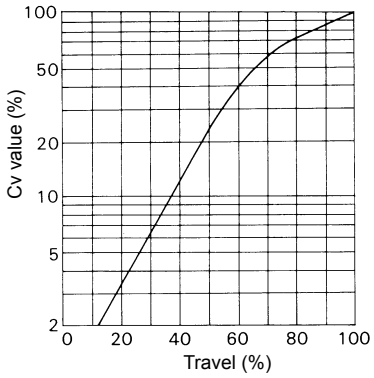
| Trim material \ Body material | | JIS | SCPH2 | SCPH21 | SCS13 | SCS14 |
|---|---|---|---|---|---|---|
| | | ASTM | A216WCB | A217WC6 | A351CF8 | A351CF8M |
| JIS | SUS316 | | -5 to +300 | —— | -50 to +300 | -50 to +300 |
| JIS | SUS316L | | —— | —— | -50 to +300 | -50 to +300 |
| JIS | SUS440C | | -5 to +425 | -5 to +425 | —— | —— |
| JIS | SUS316 CoCr-A | | -5 to +425 | -5 to +425 | -50 to +425 | -50 to +425 |
| JIS | SUS316 CoCr-A face | | -5 to +425 | -50 to +425 | -50 to +425 | -50 to +425 |
| JIS | SUS316L CoCr-A | | —— | —— | -50 to +425 | -50 to +425 |

*Note) Column bordered with solid line (“▭”) denote values applicable to standard body/trim combination.*

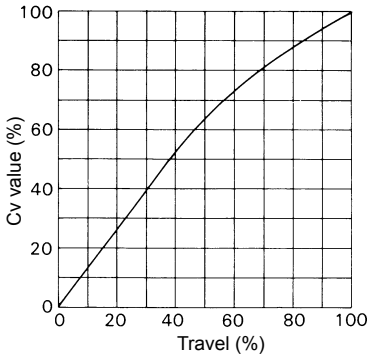
## Cv value and travel

**Table 2. Cv value and travel**

| Nominal size (inches) | 1 | | | | | | 1-1/2 | | | 2 | | | 2-1/2 | | | 3 | | | 4 | | | 5 | | | 6 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Port size (inches) | - | - | - | - | - | - | 3/4 | 1 | 1-1/4 | 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 | 3 | 4 | 5 |
| Rated Cv value (%C, LC) | 1.0 | 1.6 | 2.5 | 4.0 | 6.3 | 11 | 11 | 17 | 24 | 17 | 24 | 44 | 24 | 44 | 68 | 44 | 68 | 99 | 68 | 99 | 175 | 99 | 175 | 275 | 175 | 275 | 395 |
| Rated travel (mm) | 14.3 | | | | | | 25 | | | 25 | | | 38 | | | 38 | | | 38 | | | 50 | | | 50 | | |




a. Equal percentage characteristics (%C: Metal seat)




b. Linear characteristics (LC: Metal seat)

**Figure 1. Flow characteristics**

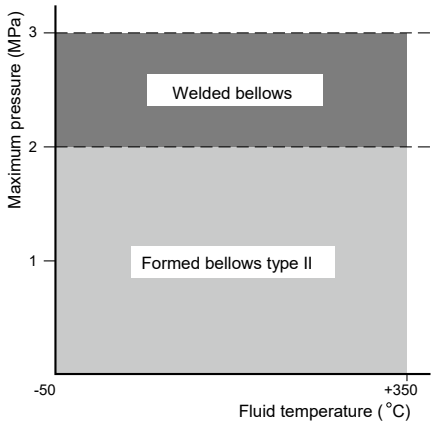



**Figure 2. Bellows Type by Temperature and Pressure Ranges**

*Note) Bellows type are classified into Formed bellows type II and welded bellows by temperature and pressure ranges. Please refer to No. SS2-BSL100-0100 about detail of bellows specification.*

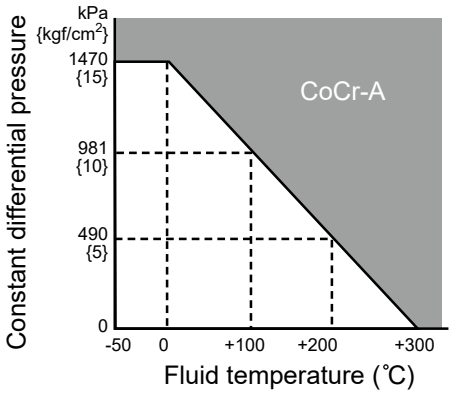


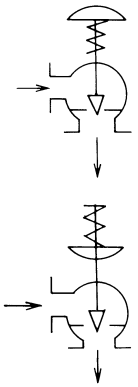

**Figure 3. Temperature/normal differential pressure ranges requiring Stellite**

*Note) 1. When cavitation/flushing service, oil prohibitive service, or retention of valve-close performance is required, use of CoCr-A is recommended regardless of temperature or differential pressure.*
*2. 440C stainless steel is recommended for valves for cavitation/flashing service of water or for superheated service of water higher than 100 °C.*

# Allowable differential pressure

## Contoured-type metal seat (%C, LC) : PTFE packing

**Table 3. Valves with type PSA, HA or VA actuator**

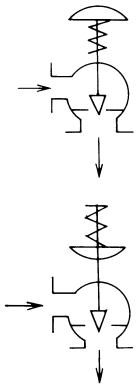


| Actuator model No. | Supply pressure kPa {kgf/cm²} | Spring range kPa {kgf/cm²} | Differential pressure (by Cv value or port size (inches) kPa {kgf/cm²}) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cv1.0 Cv1.6 | Cv2.5 | Cv4.0 Cv6.3 | 3/4 Cv11 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 | 5 |
| PSA1D, R | 140 {1.4} | 20 to 98 {0.2 to 1.0} | 3920 {40.0} | 3300 {33.7} | 2040 {20.8} | 2040 {20.8} | 1110 {11.3} | 510 {5.2} | 340 {3.5} | — | — | — | — | — |
| | 270 {2.8} | 80 to 240 {0.8 to 2.4} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 2220 {22.6} | 1020 {10.4} | 690 {7.0} | — | — | — | — | — |
| HA2D, R | 140 {1.4} | 20 to 98 {0.2 to 1.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 2150 {21.9} | 990 {10.1} | 670 {6.8} | 400 {4.1} | 240 {2.5} | 180 {1.8} | — | — |
| | 270 {2.8} | 80 to 240 {0.8 to 2.4} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 1970 {20.1} | 1340 {13.7} | 800 {8.2} | 490 {5.0} | 350 {3.6} | — | — |
| HA3D, R | 140 {1.4} | 20 to 98 {0.2 to 1.0} | — | — | — | — | — | 1760 {17.9} | 1190 {12.1} | 710 {7.2} | 440 {4.5} | 310 {3.2} | 180 {1.8} | 120 {1.2} |
| | 270 {2.8} | 80 to 240 {0.8 to 2.4} | — | — | — | — | — | 3500 {35.7} | 2370 {24.2} | 1420 {14.5} | 870 {8.9} | 630 {6.4} | 350 {3.6} | 220 {2.3} |
| HA4D, R | 140 {1.4} | 20 to 98 {0.2 to 1.0} | — | — | — | — | — | 3030 {30.9} | 2050 {20.9} | 1220 {12.5} | 760 {7.7} | 550 {5.6} | 300 {3.1} | 200 {2.0} |
| | 270 {2.8} | 80 to 240 {0.8 to 2.4} | — | — | — | — | — | 3920 {40.0} | 3920 {40.0} | 2450 {25.0} | 1420 {15.4} | 1090 {11.1} | 660 {6.2} | 390 {4.0} |
| VA5D, R | 140 {1.4} | 20 to 98 {0.2 to 1.0} | — | — | — | — | — | — | — | 1570 {16.0} | 981 {10.0} | 740 {7.5} | 410 {4.2} | 260 {2.7} |
| | 270 {2.8} | 80 to 240 {0.8 to 2.4} | — | — | — | — | — | — | — | 3140 {32.0} | 2060 {21.0} | 1470 {15.0} | 830 {8.5} | 530 {5.4} |
| PSA6R * | 500 {5.0} | 200 to 390 {1.9 to 4.0} | — | — | — | — | — | — | — | — | — | — | 890 {9.1} | 570 {5.8} |

*Note) 1. Columns bordered with solid lines (“ ▭ ”) denote types with standard-type actuators.*
*2. Take care not to cause the maximum allowable differential pressure to exceed the maximum operating pressure designated by ANSI B16.34-1981 or JIS B2201-1984.*
*3. * Only reverse action is available for PSA6R actuator.*

## Contoured-type metal seat (%C, LC) : Graphite packing P6610CH + P6528 (200 to 425 °C)

**Table 4. Valves with type PSA, HA or VA actuator**



| Actuator model No. | Supply air pressure kPa {kgf/cm²} | Spring range kPa {kgf/cm²} | Differential pressure (by Cv value or port size (inches) kPa {kgf/cm²}) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cv1.0 Cv1.6 | Cv2.5 | Cv4.0 Cv6.3 | 3/4 Cv11 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 | 5 |
| HA2D, R | 270 | 80 to 240 | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 3920 {40.0} | 2930 {29.9} | 1810 {18.5} | 1220 {12.4} | 730 {7.4} | 450 {4.6} | 320 {3.3} | — | — |
| HA3D, R | | | — | — | — | — | — | 3210 {32.7} | 2180 {22.2} | 1300 {13.3} | 800 {8.2} | 570 {5.8} | 320 {3.3} | 200 {2.0} |
| HA4D, R | | | — | — | — | — | — | 3920 {40.0} | 3840 {39.2} | 2290 {23.4} | 1410 {14.4} | 1020 {10.4} | 570 {5.8} | 360 {3.7} |
| VA5D, R | 270 | 40 to 200 | — | — | — | — | — | — | — | 3070 {31.3} | 1900 {19.4} | 1360 {13.9} | 760 {7.7} | 490 {5.0} |
| PSA6R * | 500 | 200 to 390 | — | — | — | — | — | — | — | — | — | — | 780 {8.0} | 500 {5.1} |

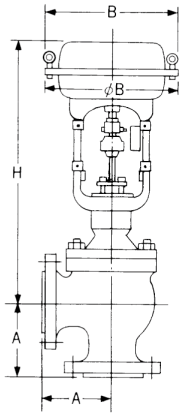
*Note) 1.Take care not to cause the maximum allowable differential pressure to exceed the maximum operating pressure designated by ANSI B16.34-1981 or JIS B2201-1984.*
*2. * Only reverse action is available for PSA6R actuator.*

# DIMENSIONS

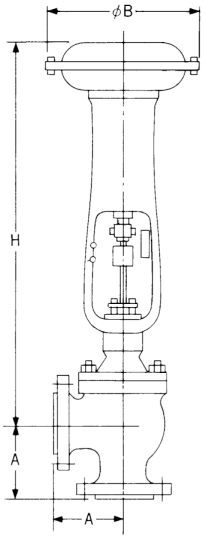
**Table 5. Face-to-face dimensions**

[Unit: mm]

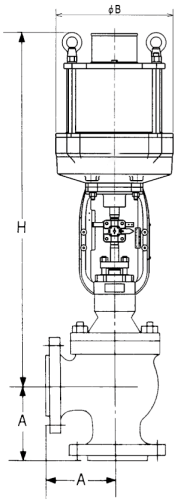
| Nominal size (inches) | A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | JIS 10KFF, RF<br>ANSI 125FF<br>JPI 125FF<br>ANSI 150RF<br>JPI 150RF | JIS 16KRF | JIS 20KRF<br>JIS 30KRF<br>ANSI 300RF<br>JPI 300RF | JIS 40KFF,<br>RF<br>ANSI 600RF<br>JPI 600RF | ANSI 150RJ<br>JPI 150RJ | ANSI 300RJ<br>JPI 300RJ | ANSI 600RJ<br>JPI 600RJ | ANSI 300LG<br>JPI 300LG | ANSI 600LG<br>JPI 600LG |
| 1 | 92 | 98 | 98 | 105 | 98 | 105 | 105 | 105 | 105 |
| 1-1/2 | 111 | 117 | 117 | 125 | 117 | 124 | 125 | 124 | 125 |
| 2 | 127 | 133 | 133 | 143 | 133 | 141 | 144 | 141 | 144 |
| 2-1/2 | 138 | 146 | 146 | 156 | 144 | 154 | 157 | 154 | 157 |
| 3 | 149 | 159 | 159 | 168 | 156 | 167 | 170 | 167 | 170 |
| 4 | 176 | 184 | 184 | 197 | 183 | 192 | 198 | 192 | 198 |
| 5 | 202 | 213 | 213 | 229 | 208 | 221 | 230 | 221 | 230 |
| 6 | 225 | 237 | 237 | 254 | 232 | 244 | 256 | 244 | 256 |




a. When Type PSA1 and HA actuator is provided




b. When Type VA5 actuator is provided




c. When Type PSA6 actuator is provided

**Figure 4. Face-to-face and external dimensions**

**Table 6. External dimensions** [Unit: mm]

| Nominal size (inches) | Actuator model No. | H | | | B | ϕ B |
|---|---|---|---|---|---|---|
| | | Plain bonnet | Extension bonnet | Bellow type bonnet | | |
| 1 | PSA1D, R | 431 | 586 | 586 | 230 | 218 |
| | HA2D, R | 465 | 620 | - | 281 | 267 |
| 1½ | PSA1D, R | 441 | 591 | 601 | 230 | 218 |
| | HA2D, R | 475 | 625 | - | 281 | 267 |
| | HA3D, R | 580 | 730 | - | 363 | 350 |
| | HA4D, R | 830 | 975 | - | 520 | 470 |
| 2 | PSA1D, R | 441 | 591 | 601 | 230 | 218 |
| | HA2D, R | 475 | 625 | - | 281 | 267 |
| | HA3D, R | 580 | 730 | - | 363 | 350 |
| | HA4D, R | 835 | 980 | - | 520 | 470 |
| 2-1/2 | HA2D, R | 545 | 695 | 765 | 281 | 267 |
| | HA3D, R | 600 | 750 | - | 363 | 350 |
| | HA4D, R | 840 | 990 | - | 520 | 470 |
| | VA5D | 1225 | 1375 | - | - | 620 |
| | VA5R | 1335 | 1485 | - | - | 620 |
| 3 | HA2D, R | 555 | 705 | 775 | 281 | 267 |
| | HA3D, R | 610 | 760 | - | 363 | 350 |
| | HA4D, R | 840 | 990 | - | 520 | 470 |
| | VA5D | 1225 | 1375 | - | - | 620 |
| | VA5R | 1335 | 1485 | - | - | 620 |
| 4 | HA2D, R | 555 | 710 | 775 | 281 | 267 |
| | HA3D, R | 610 | 765 | - | 363 | 350 |
| | HA4D, R | 845 | 995 | - | 520 | 470 |
| | VA5D | 1230 | 1380 | - | - | 620 |
| | VA5R | 1340 | 1490 | - | - | 620 |
| 5 | HA3D, R | 700 | 850 | 990 | 363 | 350 |
| | HA4D, R | 865 | 1015 | - | 520 | 470 |
| | VA5D | 1255 | 1405 | - | - | 620 |
| | VA5R | 1365 | 1515 | - | - | 620 |
| | PSA6R | 1205 | 1355 | - | - | 476 |
| 6 | HA3D, R | 720 | 870 | 1005 | 363 | 350 |
| | HA4D, R | 885 | 1035 | - | 520 | 470 |
| | VA5D | 1275 | 1425 | - | - | 620 |
| | VA5R | 1385 | 1535 | - | - | 620 |
| | PSA6R | 1225 | 1375 | - | - | 476 |

*Note) "H" dimensions are applicable when a hand wheel is not provided. When top-mounted hand wheel HA or PSA1 actuators or side-mounted hand wheel PSA6R are used, add the hand wheel dimentsions designated in respective specification sheets (No.SS2-8213-0500 for Type HA, No.SS2-8210-0100 for Type VA5, No.SS2-PSA100-0100 for Type PSA6.).*

**Table 7. Weight**

[Unit: kg]

| Nominal size (inches) | Actuator model No. | FF, RF, RTJ, LG | | | | | | SW, BW | |
|---|---|---|---|---|---|---|---|---|---|
| | | JIS10K ANSI 125, 150 JPI 125, 150 | | JIS16K, 20K, 30K ANSI 300 JPI300 | | JIS40K ANSI 600 JPI600 | | JIS 10 to 40K ANSI 150 to 600 JPI 150 to 600 | |
| | | Plain bonnet | Extension type bonnet | Plain bonnet | Extension type bonnet | Plain bonnet | Extension type bonnet | Plain bonnet | Extension type bonnet |
| 1 | PSA1D, R | 22 | 27 | 23 | 26 | 24 | 27 | 22 | 25 |
| | HA2D, R | 29 | 34 | 30 | 33 | 31 | 34 | 29 | 32 |
| 1-1/2 | PSA1D, R | 24 | 27 | 29 | 32 | 37 | 40 | 29 | 32 |
| | HA2D, R | 31 | 34 | 36 | 39 | 44 | 47 | 36 | 39 |
| | HA3D, R | 47 | 50 | 52 | 55 | 60 | 63 | 54 | 57 |
| | HA4D, R | 84 | 87 | 89 | 92 | 97 | 100 | 91 | 94 |
| 2 | PSA1D, R | 30 | 33 | 35 | 38 | 40 | 43 | 35 | 38 |
| | HA2D, R | 37 | 40 | 42 | 45 | 47 | 50 | 42 | 45 |
| | HA3D, R | 53 | 56 | 58 | 61 | 63 | 66 | 58 | 61 |
| | HA4D, R | 90 | 93 | 95 | 98 | 100 | 103 | 95 | 98 |
| 2-1/2 | HA2D, R | 44 | 48 | 49 | 53 | 66 | 70 | 49 | 53 |
| | HA3D, R | 59 | 63 | 64 | 68 | 81 | 85 | 64 | 68 |
| | HA4D, R | 96 | 100 | 101 | 105 | 118 | 122 | 101 | 105 |
| | VA5D | 188 | 192 | 193 | 197 | 210 | 214 | 193 | 198 |
| | VA5R | 213 | 217 | 218 | 222 | 235 | 239 | 222 | 226 |
| 3 | HA2D, R | 64 | 70 | 74 | 80 | 96 | 102 | 74 | 80 |
| | HA3D, R | 79 | 85 | 89 | 95 | 111 | 127 | 89 | 95 |
| | HA4D, R | 116 | 122 | 126 | 132 | 148 | 154 | 126 | 132 |
| | VA5D | 208 | 214 | 218 | 224 | 240 | 246 | 218 | 224 |
| | VA5R | 233 | 239 | 243 | 249 | 265 | 271 | 243 | 249 |
| 4 | HA2D, R | 79 | 89 | 92 | 102 | 127 | 137 | 89 | 99 |
| | HA3D, R | 94 | 104 | 109 | 119 | 144 | 154 | 106 | 116 |
| | HA4D, R | 131 | 141 | 146 | 156 | 181 | 191 | 143 | 153 |
| | VA5D | 223 | 233 | 238 | 248 | 273 | 283 | 235 | 245 |
| | VA5R | 248 | 258 | 263 | 273 | 298 | 308 | 260 | 270 |
| 5 | HA3D, R | 132 | 145 | 157 | 170 | 237 | 250 | 187 | 200 |
| | HA4D, R | 168 | 181 | 193 | 206 | 273 | 286 | 223 | 236 |
| | VA5D | 260 | 273 | 285 | 298 | 365 | 378 | 315 | 328 |
| | VA5R | 285 | 298 | 310 | 323 | 390 | 403 | 340 | 353 |
| | PSA6R | 265 | 278 | 290 | 303 | 370 | 383 | 320 | 333 |
| 6 | HA3D, R | 202 | 217 | 232 | 247 | 352 | 367 | 292 | 307 |
| | HA4D, R | 238 | 253 | 268 | 283 | 388 | 403 | 328 | 343 |
| | VA5D | 330 | 345 | 360 | 375 | 480 | 495 | 420 | 435 |
| | VA5R | 355 | 370 | 385 | 400 | 505 | 520 | 445 | 460 |
| | PSA6R | 335 | 350 | 365 | 380 | 485 | 500 | 425 | 440 |

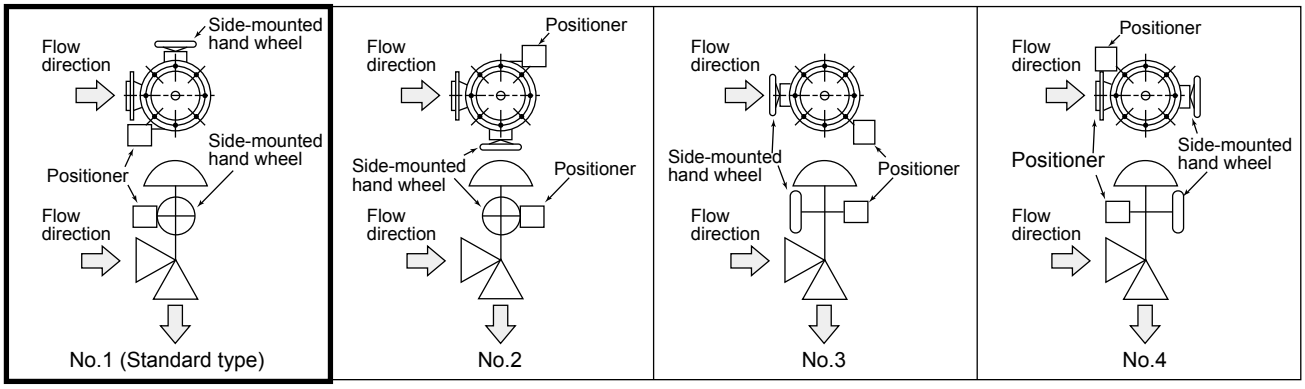



**Figure 5. Actuator orientation**

*Note) 1. Indicate position number when installation other than the standard type is required.*
*2. With type PSA6R actuator, the side-mounted hand wheel is mounted on the same side as the positioner.*

## Ordering Information

When ordering, please specify;

1) Model number: HAV
2) Nominal size × Port size
3) Type and rating of end connections
4) Body and trim material, necessity of hardening
5) Type of bonnet
6) Valve and plug characteristics
7) Type of actuator, air pressure to diaphragm
8) Valve action (direct or reverse)
9) Accessories (positioner, hand wheel, pressure regulator with filter and etc.)
10) Special requirement of degreasing, copper free treatment, and etc.
11) Name of flow medium
12) Normal flow and maximum required flow
13) Pressure of flow medium, upstream and downstream pressure at maximum and minimum, required flow
14) Temperature and specific gravity of flow medium
15) Viscosity of flow medium, inclusive or exclusive of slurry

Please read “Terms and Conditions” from the following URL before ordering and use.
**https://www.azbil.com/products/factory/order.html**

*Specifications are subject to change without notice.*

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