



Globe Valve

MODEL SELECTION GUIDE

GLOBE VALVE ASSEMBLY DIMENSION

KS/JIS 10K RF, ANSI CL 150lb RF

GLOBE VALVE IS BONNET TYPE DIMENSION

KS/JIS 10K RF, ANSI CL 150lb RF

GLOBE VALVE ASSEMBLY DIMENSION

KS/JIS 20K RF, ANSI CL 300lb RF

GLOBE VALVE IS BONNET TYPE DIMENSION

KS/JIS 20K RF, ANSI CL 300lb RF

ACTUATOR (PNEUMATIC DIAPHRAGM) DIMENSION CHART

STANDARD SPECIFICATION

Cv TABLE

GLOBE VALVE Cv FLOW CHARACTERISTICS

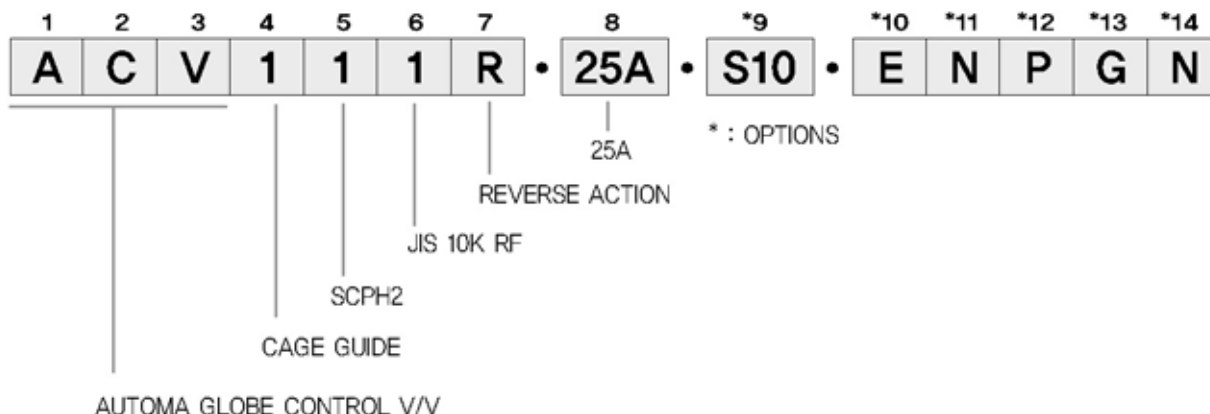
THE COMBINATION OF TRIM MATERIALS

BODY MATERIAL & OPERATING PRESSURE-TEMPERATURE RATING

ALLOWABLE SEAT LEAKAGE

CONTROL VALVE RELATED STANDARDS

MODEL SELECTION GUIDE



4 VALVE TYPE
1 1 : CAGE GUIDE
 2 : TOP GUIDE

5 VALVE MATERIAL
1 1 : KS D4107 SCPH2 (A216 WCB, DIN GS-52)
 2 : KS D4103 SCS13, A351 CF8, 1.4308
 3 : KS D4103 SCS14, A351 CF8M, 1.4408
 4 : KS D4103 SCS16, A351 CF3M, 1.4404

6 VALVE CONNECTION RATING
1 1 : KS(JIS) 10K RF
 2 : KS(JIS) 20K RF
 3 : ANSI CL150Ibf RF
 4 : ANSI CL300Ibf RF
 5 : PN 10 RF
 6 : PN 16 RF
 7 : PN 40 RF
 8 : KS(JIS)40K RF
 9 : ANSI CL600 RF

7 ACTUATOR ACTION
R R : REVERSE ACTION
 D : DIRECT ACTION

8 VALVE SIZE
25A 15A(1/2B)
 20A(3/8B)
 25A(1B)
 32A(1-1/4B)
 40A(1-1/2B)
 50A(2B)
 65A(2-1/2B)
 80A(3B)
 100A(4B)
 125A(5B)
 150A(6B)
 200A(8B)
 250A(10B)

***9 Cv TRIM NO**
S10 Cv TABLE

***10 PLUG OPTION**
E E : EQ%
 L : LINEAR
 M : MODIFIED PARABOLIC
 C : MICRO

***11 SEATING MATERIAL OPTION**
N N : METAL SEAT(316+316)
 H : METAL SEAT(316+STL + 316+STL)
 S1 : SOFT SEAT(316+PTFE)
 S2 : SOFT SEAT(316+PEEK)
 E : METAL SEAT(304+304)

***12 BONNET OPTION**
P P : PLANE BONNET
 B : BELLOWES BONNET
 F : FIN BONNET
 S : INSULATION FIN BONNET
 E : EXTENTION BONNET

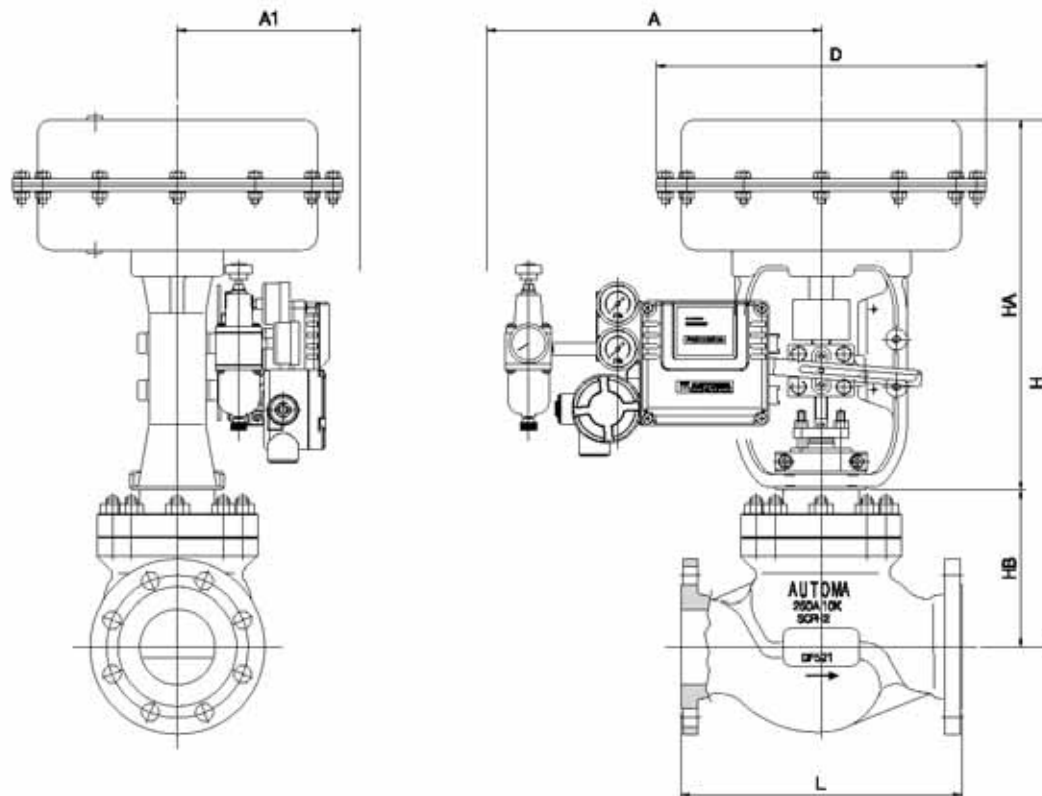
***13 PACKING OPTION**
G G : GRAFOIL (FILLER 6710+6610)
 V : V-PACKING(PTFE)
 P : PTFE PACKING

***14 HANDLE POSITION**
N N : NONE
 T : TOP
 S : SIDE

GLOBE VALVE ASSEMBLY DIMENSIONS

KS/JIS 10K RF, ANSI CL150lb RF

MODEL : ACV



Actuator Acting : Reverse, Direct
 Operating Media : Compressed Dry Air
 IN-PUT Signal : DC 4 ~ 20mA

Fluid Temp : -20°C ~ 210°C
 End Connection : KS 10K(JIS 10K) ANSI CL 150lb
 Accessories : E/P Positioner, Air Set

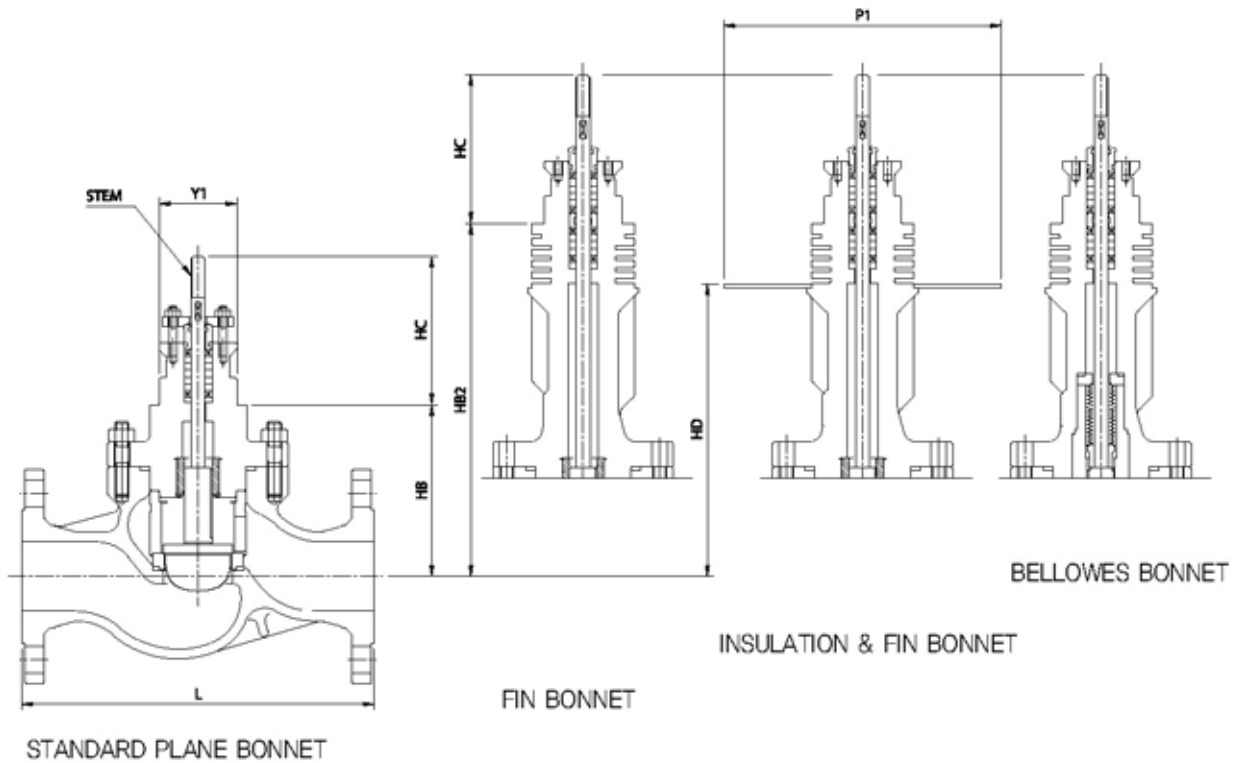
GLOBE VALVE ASSEMBLY DIMENSIONS

FACE TO FACE : ISA S75.03-1992,(mm)

| Size | Stroke | L | H | HA | HB | D | A | A1 | Weight |
|------|--------|-----|-----|-----|-----|-----|-----|-----|--------|
| 15A | 1/2" | 184 | 377 | 276 | 100 | 220 | 250 | 140 | 13 |
| 20A | 3/4" | 184 | 377 | 276 | 100 | 220 | 250 | 140 | 13 |
| 25A | 1" | 184 | 382 | 276 | 106 | 220 | 250 | 140 | 16 |
| 32A | 1-1/4" | 222 | 431 | 320 | 111 | 270 | 260 | 140 | 22 |
| 40A | 1-1/2" | 222 | 431 | 320 | 111 | 270 | 260 | 140 | 22 |
| 50A | 2" | 254 | 444 | 320 | 111 | 270 | 260 | 140 | 28 |
| 65A | 2-1/2" | 276 | 529 | 394 | 155 | 350 | 270 | 190 | 48 |
| 80A | 3" | 298 | 561 | 394 | 165 | 350 | 270 | 190 | 61 |
| 100A | 4" | 352 | 581 | 394 | 185 | 350 | 270 | 190 | 176 |
| 125A | 5" | 403 | 805 | 525 | 280 | 350 | 270 | 190 | 155 |
| 150A | 6" | 451 | 815 | 525 | 290 | 470 | 300 | 250 | 175 |
| 200A | 8" | 543 | 935 | 585 | 350 | 470 | 300 | 250 | 280 |
| 250A | 10" | 673 | 935 | 585 | 430 | 470 | 300 | 250 | 350 |

GLOBE VALVE IS BONNET TYPE

DIMENSIONS(KS/JIS 10K RF, ANSI CL150Ibf RF)



GLOBE VALVE DIMENSIONS

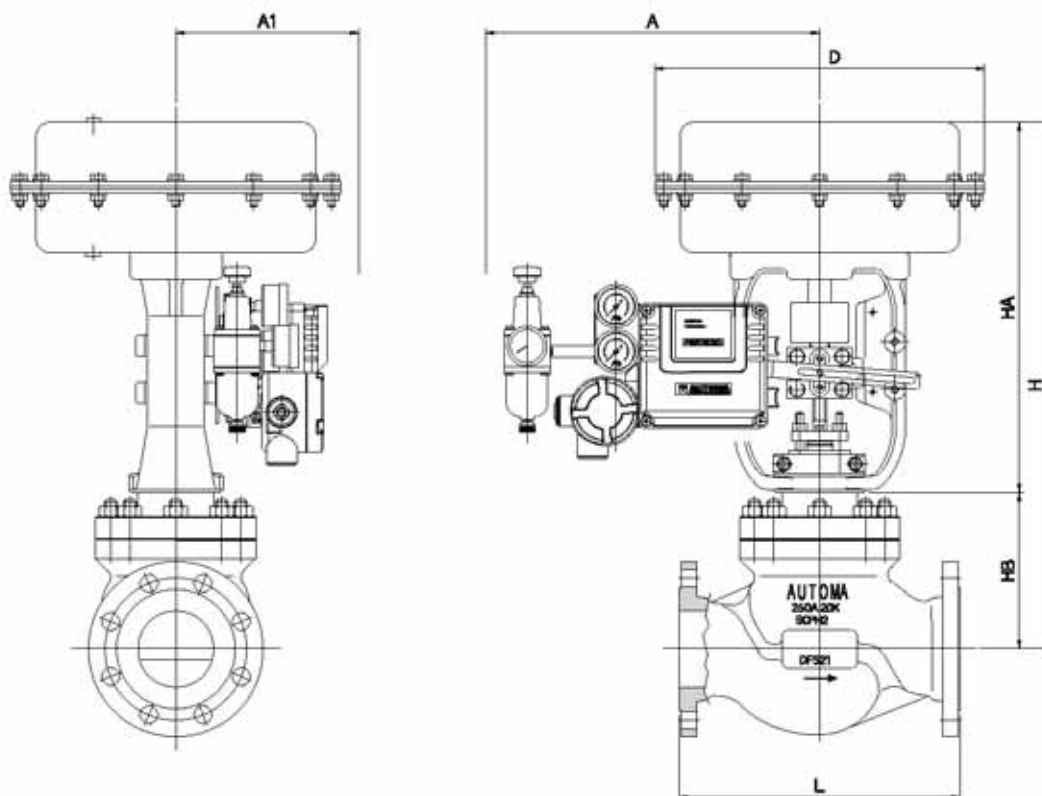
FACE TO FACE : ISA S75.03-1992, (mm)

| SIZE | STROKE | L | HB | HB2 | Y1 _{-0.1} | HC | HD | P1 | STEM | |
|------|--------|----|-----|-----|--------------------|------|-----|-----|------|----------|
| 15A | 1/2" | 20 | 184 | 100 | 216 | 50 | 105 | 175 | 150 | M10×1.5P |
| 20A | 3/4" | 20 | 184 | 100 | 216 | 50 | 105 | 175 | 150 | M10×1.5P |
| 25A | 1" | 20 | 184 | 106 | 223 | 50 | 105 | 180 | 150 | M10×1.5P |
| 32A | 1-1/4" | 25 | 222 | 111 | 237 | 50 | 105 | 195 | 170 | M10×1.5P |
| 40A | 1-1/2" | 25 | 222 | 111 | 237 | 50 | 105 | 195 | 170 | M10×1.5P |
| 50A | 2" | 25 | 254 | 111 | 255 | 50 | 105 | 215 | 200 | M10×1.5P |
| 65A | 2-1/2" | 30 | 276 | 155 | 270 | 65.5 | 125 | 227 | 220 | M14×1.5P |
| 80A | 3" | 40 | 298 | 165 | 351 | 65.5 | 125 | 310 | 220 | M14×1.5P |
| 100A | 4" | 40 | 352 | 185 | 403 | 65.5 | 125 | 365 | 240 | M14×1.5P |
| 125A | 5" | 50 | 403 | 280 | 470 | 82 | 145 | 440 | 300 | M16×1.5P |
| 150A | 6" | 50 | 451 | 290 | 480 | 82 | 140 | 450 | 300 | M16×1.5P |
| 200A | 8" | 75 | 543 | 350 | 580 | 82 | 138 | 510 | 400 | M18×1.5P |
| 250A | 10" | 75 | 673 | 430 | 620 | 82 | 145 | 660 | 480 | M18×1.5P |

GLOBE VALVE ASSEMBLY DIMENSIONS

KS/JIS 20K RF, ANSI CL300lb f RF

MODEL : ACV



Actuator Acting : Reverse, Direct
 Operating Media : Compressed Dry Air
 IN-PUT Signal : DC 4 ~ 20mA

Fluid Temp : -20°C ~ 210°C
 End Connection : KS 20K(JIS 20K) ANSI CL 300lb f
 Accessories : E/P Positioner, Air Set

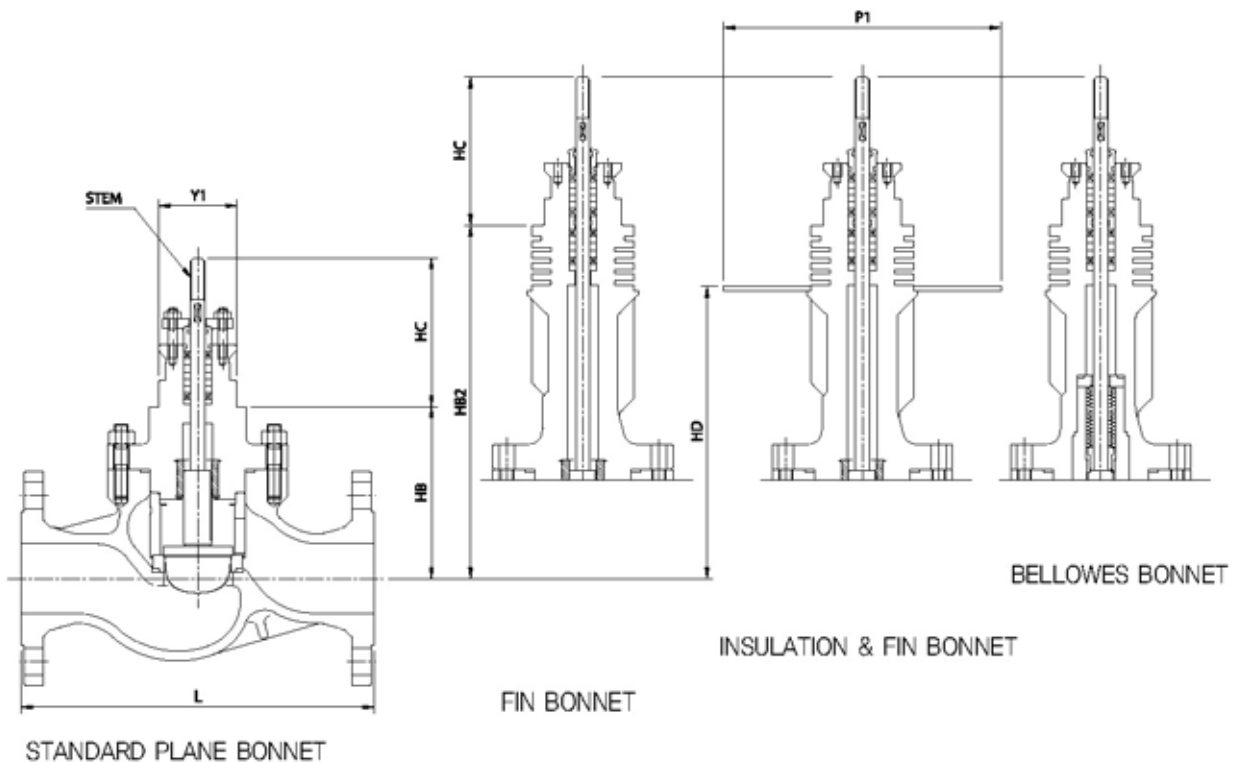
GLOBE VALVE ASSEMBLY DIMENSIONS

FACE TO FACE : ISA S75.03-1992, (mm)

| Size | Stroke | L | H | HA | HB | D | A | A1 | Weight |
|------|--------|-----|-----|-----|-----|-----|-----|-----|--------|
| 15A | 1/2" | 194 | 377 | 276 | 100 | 220 | 250 | 140 | 13 |
| 20A | 3/4" | 194 | 377 | 276 | 100 | 220 | 250 | 140 | 13 |
| 25A | 1" | 194 | 382 | 276 | 106 | 220 | 250 | 140 | 16 |
| 32A | 1-1/4" | 235 | 431 | 320 | 111 | 270 | 260 | 140 | 25 |
| 40A | 1-1/2" | 235 | 431 | 320 | 111 | 270 | 260 | 140 | 25 |
| 50A | 2" | 267 | 444 | 320 | 111 | 270 | 260 | 140 | 31 |
| 65A | 2-1/2" | 292 | 529 | 394 | 155 | 350 | 270 | 190 | 51 |
| 80A | 3" | 318 | 561 | 394 | 165 | 350 | 270 | 190 | 62 |
| 100A | 4" | 368 | 581 | 394 | 185 | 350 | 270 | 190 | 75 |
| 150A | 6" | 473 | 815 | 525 | 290 | 470 | 300 | 250 | 180 |
| 200A | 8" | 568 | 935 | 585 | 350 | 470 | 300 | 250 | 290 |
| 250A | 10" | 708 | 935 | 585 | 430 | 470 | 300 | 250 | 360 |

GLOBE VALVE IS BONNET TYPE

DIMENSIONS(KS/JIS 20K RF, ANSI CL300lb RF)



GLOBE VALVE DIMENSIONS

FACE TO FACE : ISA S75.03-1992,(mm)

| SIZE | STROKE | L | HB | HB2 | Y1 $_{-0.1}^{\circ}$ | HC | HD | P1 | STEM | |
|------|--------|----|-----|-----|----------------------|------|-----|-----|------|----------|
| 15A | 1/2" | 20 | 194 | 100 | 216 | 50 | 105 | 175 | 150 | M10×1.5P |
| 20A | 3/4" | 20 | 194 | 100 | 216 | 50 | 105 | 175 | 150 | M10×1.5P |
| 25A | 1" | 20 | 197 | 106 | 223 | 50 | 105 | 180 | 150 | M10×1.5P |
| 32A | 1-1/4" | 25 | 235 | 111 | 237 | 50 | 105 | 195 | 170 | M10×1.5P |
| 40A | 1-1/2" | 25 | 235 | 111 | 237 | 50 | 105 | 195 | 170 | M10×1.5P |
| 50A | 2" | 25 | 267 | 111 | 255 | 50 | 105 | 215 | 200 | M10×1.5P |
| 65A | 2-1/2" | 30 | 292 | 155 | 270 | 65.5 | 125 | 227 | 220 | M14×1.5P |
| 80A | 3" | 40 | 318 | 165 | 351 | 65.5 | 125 | 310 | 220 | M14×1.5P |
| 100A | 4" | 40 | 368 | 185 | 403 | 65.5 | 125 | 365 | 240 | M14×1.5P |
| 150A | 6" | 50 | 473 | 290 | 480 | 82 | 145 | 450 | 300 | M16×1.5P |
| 200A | 8" | 75 | 568 | 350 | 580 | 82 | 145 | 510 | 400 | M18×1.5P |
| 250A | 10" | 75 | 708 | 430 | 620 | 82 | 145 | 660 | 480 | M18×1.5P |

STANDARD SPECIFICATION

| | | | | | | | | | | | | | | | | |
|--------------------|--|--|---|------|-----|--------|--------|-----|--------|-----|------|------|------|------|------|--|
| Actuator Model No. | | For See "Actuator (Pneumatic Diaphragm Linear) Dimensions Chart" | | | | | | | | | | | | | | |
| Valve Type | | Diaphragm or Cylinder Actuator operated globe control valve. MODEL : ACV | | | | | | | | | | | | | | |
| Body | Valve Size | (mm) | 15A | 20A | 25A | 32A | 40A | 50A | 65A | 80A | 100A | 125A | 150A | 200A | 250A | |
| | | (inch) | 1/2B | 3/4B | 1B | 1 1/4B | 1 1/2B | 2B | 2 1/2B | 3B | 4B | 5B | 6B | 8B | 10B | |
| | Stroke | mm | 20 | 20 | 20 | 25 | 25 | 25 | 30 | 40 | 40 | 50 | 50 | 75 | 75 | |
| | Cv | For see "Cv TABLE" | | | | | | | | | | | | | | |
| | Pressure Rating | KS(JIS) 10K / ANSI CL150Ibf, KS(JIS) 20K / ANSI CL300Ibf / DIN PN16 | | | | | | | | | | | | | | |
| | End Connections | RF, FF | | | | | | | | | | | | | | |
| | Body Materials | For see "Body material & operating pressure-temperature rating." | | | | | | | | | | | | | | |
| | Operating Temperature | Standard Type: -20°C ~ 210°C | | | | | | | | | | | | | | |
| | Guide | Top guide & Cage Guide (Unbalance, Balance) | | | | | | | | | | | | | | |
| | Gland Packing | V-PTFE, PTFE yarn, Graphite yarn | | | | | | | | | | | | | | |
| | Gasket | SUS316 + Graphite spiral wound, Other alloy steels | | | | | | | | | | | | | | |
| | Painting Color | Standard is silver. In the case of stainless steel, flange is not painted. | | | | | | | | | | | | | | |
| | Plug Characteristics | Equal percentage, Linear, Modified Parabolic | | | | | | | | | | | | | | |
| | Trim Materials | SUS304, SUS316, SUS316L+ (STL), SUS410 | | | | | | | | | | | | | | |
| Treatment of Trim | For see page the combination of trim materials. Body material & operating pressure-temperature ratings. | | | | | | | | | | | | | | | |
| Performance | Control Mode | For see page "Globe Valve Assembly dimensions" | | | | | | | | | | | | | | |
| | Valve Action | Reverse action, Direct action | | | | | | | | | | | | | | |
| | Rangeability | 30:1, 50:1 | | | | | | | | | | | | | | |
| | Action Accuracy | Hysteresis | (Without positioner) max. 4% F.S., (With positioner) max. 1% F.S. | | | | | | | | | | | | | |
| | | Linearity | (Without positioner) max. ±5% F.S., (With positioner) max. ±1% F.S. | | | | | | | | | | | | | |
| Leakage | Allowable Seat Leakage | | | | | | | | | | | | | | | |

Cv TABLE

GLOBE VALVE MICRO TRIM RATED Cv (UNBALANCE TYPE, CAGE WINDOWS) *EQ & LINEAR

| VALVE SIZE | TRAVEL (mm) | PORT | TRIM NO. | | | | | | | | | | | | |
|------------|-------------|--------|----------|------|------|-----|------|------|------|------|------|------|------|------|------|
| | | | A19 | A17 | A16 | A15 | A14 | A13 | S2.7 | S3.3 | S3.6 | S4.1 | S4.5 | S5.3 | S6.3 |
| 15A | 20 | SINGLE | 0.04 | 0.06 | 0.08 | 0.1 | 0.12 | 0.15 | 0.20 | 0.25 | 0.30 | 0.4 | 0.5 | 0.7 | 1.0 |
| 20A | 20 | SINGLE | | | | | | | 0.20 | 0.25 | 0.30 | 0.4 | 0.5 | 0.7 | 1.0 |
| 25A | 20 | SINGLE | | | | | | | | | | | | | |
| 32A | 25 | SINGLE | | | | | | | | | | | | | |
| 40A | 25 | SINGLE | | | | | | | | | | | | | |
| 50A | 25 | SINGLE | | | | | | | | | | | | | |
| 65A | 30 | SINGLE | | | | | | | | | | | | | |

GLOBE VALVE FLOW COEFFICIENTS RATED Cv CHART 1 (UNBALANCE TYPE, CAGE WINDOWS) *EQ & LINEAR

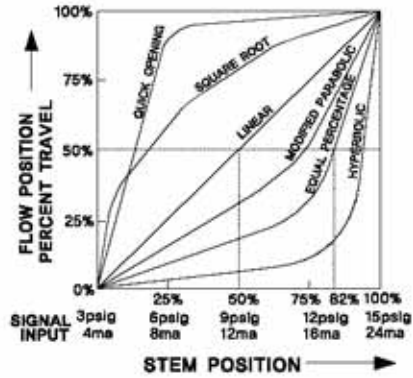
| VALVE SIZE | TRAVEL (mm) | PORT | TRIM NO. | | | | | | | | | | | | | |
|------------|-------------|--------|----------|------|-----|-----|-------|-------|-----|-----|-----|------|------|------|------|------|
| | | | S7.5 | S8.6 | S10 | S11 | S11.5 | S12.5 | S14 | S15 | S20 | S25 | S32 | S40 | S50 | S65 |
| 15A | 20 | SINGLE | 1.5 | 2.0 | 2.7 | 3.0 | 3.6 | 4.0 | 5.0 | 6.0 | | | | | | |
| 20A | 20 | SINGLE | 1.5 | 2.0 | 2.7 | 3.0 | 3.6 | 4.0 | 5.0 | 6.0 | 9.0 | | | | | |
| 25A | 20 | SINGLE | | | | | | | 5.0 | 6.0 | 9.0 | 14.0 | | | | |
| 32A | 25 | SINGLE | | | | | | | | 6.0 | 9.0 | 14.0 | 25.0 | | | |
| 40A | 25 | SINGLE | | | | | | | | | 9.0 | 14.0 | 25.0 | 33.0 | | |
| 50A | 25 | SINGLE | | | | | | | | | | 14.0 | 25.0 | 33.0 | 50.0 | |
| 65A | 30 | SINGLE | | | | | | | | | | | 25.0 | 37.0 | 50.0 | 85.0 |

GLOBE VALVE FLOW COEFFICIENTS RATED Cv CHART 2 (BALANCE TYPE, CAGE P-PORT) *EQ & LINEAR

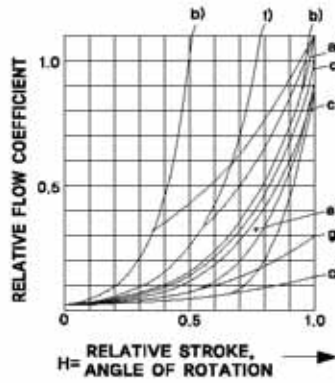
| VALVE SIZE | TRAVEL (mm) | PORT | TRIM NO. | | | | | | | | | | | | |
|------------|-------------|-------|----------|-----|-----|------|------|------|------|------|------|------|------|------|--|
| | | | S50 | S65 | S80 | S100 | S125 | S150 | S200 | S250 | S300 | S350 | S400 | S500 | |
| 80A | 40 | 4PORT | | | 106 | | | | | | | | | | |
| | | 3PORT | | | 90 | | | | | | | | | | |
| 100A | 40 | 4PORT | | | | 175 | | | | | | | | | |
| | | 3PORT | | | | 149 | | | | | | | | | |
| 125A | 50 | 6PORT | | | | | 266 | | | | | | | | |
| 150A | 50 | 5PORT | | | | | | 335 | | | | | | | |
| | | 4PORT | | | | | | 284 | | | | | | | |
| | | 3PORT | | | | | | 212 | | | | | | | |
| 200A | 75 | 8PORT | | | | | | | 660 | | | | | | |
| | | 6PORT | | | | | | | 580 | | | | | | |
| | | 4PORT | | | | | | | 388 | | | | | | |
| 250A | 75 | 8PORT | | | | | | | | 945 | | | | | |
| | | 6PORT | | | | | | | | 945 | | | | | |

GLOBE VALVE FLOW CHARACTERISTICS

INHERENT FLOW CHARACTERISTICS FOR COMMON VALVE TRIM DESIGNS

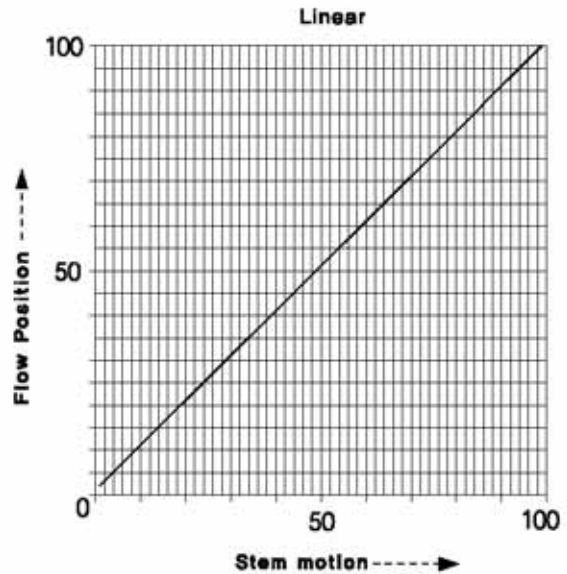
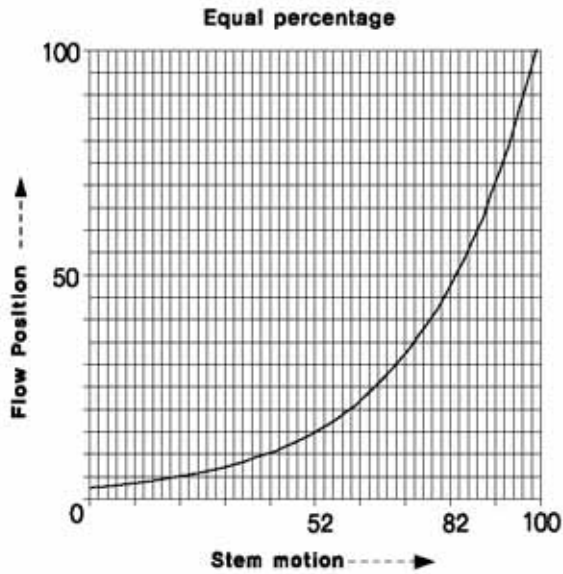


Cv FLOW COEFFICIENTS BY IEC S34-24-4



- DIN/IEC 534-2-4
- a) Tolerance zone of flow coefficients $\pm 10(\frac{1}{3})^{0.22}\%$
- b) Max. slope tolerance 2b
- c) Min. slope tolerance 0.5b
- VDI/VDE 2173
- e) Tolerance zone
- f) Max. slope tolerance 1.3b
- g) Min. slope tolerance 0.7b
- $b = \tan \alpha = \frac{\Delta \mu}{\Delta h}$
- d) Ideal equal-percentage Inherent flow characteristic

FLOW CHARACTERISTICS



THE COMBINATION OF TRIM MATERIALS

| PART No. | PART NAME | CARBON STEEL | | ALLOY STEEL | | STAINLESS STEEL | |
|----------|---------------|--|--------------|------------------|------------------|-----------------|--------------|
| | | | | | | | |
| 101,111 | Body, Bonnet | A216 Gr WCB | A352 Gr LCB | A217 Gr WC6 | A217 Gr WC9 | A351 CF8 | A351 CF8M |
| 244 | Plug | 316L SS/CF8M | 316L/CF8M | 410SS/A217 CA15 | 410SS/A217 CA15 | 316L/CF8M | 316L/CF8M |
| 344 | | 316L SS+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE |
| 444 | | 316L SS+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 |
| 221 | Seat Ring | 316L SS/CF8M | 316L/CF8M | 410SS /A217 CA15 | 410SS /A217 CA15 | 316L /CF8M | 316L /CF8M |
| 321 | | 316L SS+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE | 316L+RTFE |
| 421 | | 316L SS+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 | 316L+STL#6 |
| 231 | Stem | A276 Gr 316L | A276 Gr 316L | A479 Gr 410 | A479 Gr 410 | A276 Gr 316L | A276 Gr 316L |
| 211 | Cage | 316L/CF8M | 316L/CF8M | 410SS/A217 CA15 | 410SS/A217 CA15 | 316L/CF8M | 316L/CF8M |
| 131 | Bonnet Bolt | A193 Gr B7 | A193 Gr B7 | A193 Gr B7 | A193 Gr B7 | A320 Gr B8 | A320 Gr B8M |
| 132 | Bonnet Nut | A194 Gr 2H | A194 Gr 2H | A194 Gr 2H | A194 Gr 2H | A194 Gr 8 | A194 Gr B8 |
| 917 | Packing Gland | 304SS | 304SS | 304SS | 304SS | 304SS | 304SS |
| 910 | Gland Flange | 304SS | 304SS | 304SS | 304SS | 304SS | 304SS |
| 919 | Gland Bolt | 304SS | 304SS | 304SS | 304SS | 304SS | 304SS |
| 920 | Gland Nut | 304SS | 304SS | 304SS | 304SS | 304SS | 304SS |
| 30 | Spring Pin | 304SS | 304SS | 304SS | 304SS | 304SS | 304SS |
| 911 | Packing | Graphite (Center Rings) + Carbon Fiber (Top & Bottom Rings), PTFE V-Ring | | | | | |
| 32 | Gasket | Graphite With S.S Spiral Wound or Metal Ring | | | | | |
| D93 | Name Plate | Requirement | | | | | |

Trim Part materials can be changed by the combination.

CAVITATION, QUALITY AND DURABILITY OF METAL

| MATERIAL | DEAD TIME | INDEX | HARDNESS |
|-----------------------------|-----------|-------|----------|
| stellite #6(316SS+#6) | 120 | 20 | HB 400 |
| 17-4PH HRC45 | 12 | 2 | HB 375 |
| 316SS | 6 | 1 | HB 187 |
| Chrome Moly Steel (ASTM c5) | 4 | 0.67 | HB 200 |
| Carbon Steel (ASTM WCB) | 2.25 | 0.38 | HB 150 |
| Brass (ASTM B16) | 0.5 | 0.08 | HB 90 |

BODY MATERIAL & OPERATING PRESSURE-TEMPERATURE RATING

| ANSI | | | | | | | KS(JIS) | | | |
|---------------|----------|----------|-----------|----------|----------|-----------|---------------|-------|------|------|
| [Unit : MPa] | | | | | | | [Unit : MPa] | | | |
| TEMP. (°C) | 150# | | | 300# | | | TEMP. (°C) | SCPH2 | | |
| | A216-WCB | A351-CF8 | A351-CF8M | A216-WCB | A351-CF8 | A351-CF8M | | 10K | 20K | 30K |
| -45~38 | | 1.95 | 1.95 | | 5.00 | 5.00 | -5~120 | 1.42 | 3.38 | 5.04 |
| -5~38 | 2.01 | 1.95 | 1.95 | 5.15 | 5.00 | 5.00 | ~220 | 1.32 | 3.08 | 4.55 |
| 50 | 1.97 | 1.85 | 1.89 | 5.15 | 5.00 | 5.00 | ~300 | 1.03 | 2.89 | 4.26 |
| 100 | 1.81 | 1.61 | 1.66 | 4.68 | 4.13 | 4.26 | ~350 | | 2.59 | 3.87 |
| 150 | 1.62 | 1.44 | 1.52 | 4.56 | 3.67 | 3.90 | ~400 | | 2.30 | 3.38 |
| 200 | 1.45 | 1.30 | 1.42 | 4.43 | 3.32 | 3.61 | ~425 | | 2.01 | 2.99 |
| 250 | 1.25 | 1.21 | 1.25 | 4.21 | 3.09 | 3.39 | ~450 | | | |
| 300 | 1.06 | 1.06 | 1.06 | 3.92 | 2.96 | 3.20 | ~475 | | | |
| 350 | 0.89 | 0.89 | 0.89 | 3.74 | 2.86 | 3.08 | ~490 | | | |
| 375 | 0.78 | 0.78 | 0.78 | 3.69 | 2.82 | 3.01 | ~500 | | | |
| 400 | 0.69 | 0.69 | 0.69 | 3.49 | 2.79 | 2.96 | ~510 | | | |
| 425 | 0.60 | 0.60 | 0.60 | 2.93 | 2.76 | 2.92 | | | | |
| 450 | 0.52 | 0.52 | 0.52 | 2.04 | 2.73 | 2.86 | | | | |
| 475 | 0.42 | 0.42 | 0.42 | 1.40 | 2.70 | 2.78 | | | | |
| 500 | 0.33 | 0.33 | 0.33 | 0.93 | 2.65 | 2.72 | | | | |
| 525 | 0.23 | 0.23 | 0.23 | 0.56 | 2.24 | 2.62 | | | | |
| 538 | 0.18 | 0.29 | 0.20 | 0.36 | 2.23 | 2.58 | | | | |

MAXIMUM OPERATING TEMPERATURE ACCORDING TO MATERIAL

| MATERIAL GROUP | MATERIALS | NOTE |
|----------------|---|--|
| 1.1 | (a) (b) A105, A216-WCB (d), A350-LF2, GS-52 | (a) It is available up to 427°C but not to used. |
| 1.5 | (b) (h) A182-F1, A271-WC1 (d), A352-LC1 | (b) It is available up to 454°C but not to used. |
| 1.9 | (c) A182-F11, A182-F12 (j), A217-WC6 | (c) it is available up to 593°C but not to used. |
| 1.13 | A182-F5A, A217-C5, A181-F5 | (d) Max operating temperature <343°C |
| 2.1 | A182-F304, A182-F304H, A351-CF8 (f), A351-CF3, 1.4408 | (f) Max operating temperature <425°C |
| 2.2 | A182-F316, A182-F316H, A351-CF8M (g), A351-CF3M, 1.1308 | (g) Max operating temperature <455°C |
| | | (h) Max operating temperature <540°C |
| | | (j) Max operating temperature <593°C |

ALLOWABLE SEAT LEAKAGE

Series Number : ACV
 Series Name : Cage Guide Single Seated Type Globe Valve Pneumatic Diaphragm Actuator
 Allow.Leakage : ANSI B 16.104 – 1976
 Test Fluid : Air (Test Pressure : 4 Kg/cm² G)
 Air Test : Bubble Titing Table

| PORT SIZE | | ALLOWANCE LEAKAGE(AIR-LITER/min) | | | | ALLOWANCE LEAKAGE(WATER-LITER/min) | | | |
|-----------|------|----------------------------------|---------|--------|-------|------------------------------------|--------|-------|-------|
| INCH | mm | II | III | IV | V | II | III | IV | V |
| 1/2 | 12.7 | 36.500 | 7.300 | 0.730 | 0.073 | 0.855 | 0.171 | 0.017 | 0.002 |
| 3/4 | 19.1 | 54.750 | 10.950 | 1.095 | 0.110 | 1.282 | 0.256 | 0.026 | 0.003 |
| 1 | 25 | 85.167 | 17.033 | 1.703 | 0.170 | 1.994 | 0.399 | 0.040 | 0.004 |
| 1 1/4 | 32 | 152.083 | 30.417 | 3.042 | 0.304 | 3.561 | 0.712 | 0.071 | 0.007 |
| 1 1/2 | 40 | 200.750 | 40.150 | 4.015 | 0.402 | 4.701 | 0.940 | 0.094 | 0.009 |
| 2 | 50 | 304.167 | 60.833 | 6.083 | 0.608 | 7.123 | 1.425 | 0.142 | 0.014 |
| 2 1/2 | 65 | 517.083 | 103.417 | 10.342 | 1.034 | 12.108 | 2.422 | 0.242 | 0.024 |
| 3 | 80 | 669.167 | 133.833 | 13.383 | 1.338 | 15.670 | 3.134 | 0.313 | 0.031 |
| 4 | 100 | 1034.167 | 206.833 | 20.683 | 2.068 | 24.217 | 4.843 | 0.484 | 0.048 |
| 6 | 150 | 2555.000 | 511.000 | 51.100 | 5.110 | 59.829 | 11.966 | 1.197 | 0.120 |
| 8 | 200 | 4988.333 | 997.667 | 99.767 | 9.977 | 116.809 | 23.362 | 2.336 | 0.234 |

- Table Items when Calculate the Ansi Class II, III, IV, V
 - If the port doesn't provide a nominal outer diameter, operating test is performed by determining valve stroke based on valve size. Leakage is calculated using the formula allows.
 - When testing the gauge pressure (G) must be used.
 - When the amount of leakage is calculated by formula, it must be calculated by absolute pressure (abs.).
 - Marking ④ is ANSI Class V provisions. Only for our product, standard of Maximum Seat Leakage is conducted by us.
- Allowed leakage calculation Ansi Class V

| | |
|---|---|
| $Q2 = 14.6 \times P1 \times \sqrt{Cv} \times G2 \times 1000/60 \times 0.0001$ | Q2 = Volumetric Flow (liter/min) G2 = Gas Weight (Air 1) P1 = Valve Inlet Pressure (Absolute Pressure : abs.) |
|---|---|

Class VI Maximum Seat leakage Allowable (In accordance with ANSI/FCI 70-2)

| NOMINAL PORT DIAMETER | | BUBBLES PER MINUTE | |
|-----------------------|-----|--------------------|--------------------|
| in | mm | ml per minute | Bubbles per minute |
| 1 | 25 | 0.15 | 1 |
| 1-1/2 | 38 | 0.3 | 2 |
| 2 | 51 | 0.45 | 3 |
| 2-1/2 | 64 | 0.6 | 4 |
| 3 | 76 | 0.9 | 6 |
| 4 | 102 | 1.7 | 11 |

WATER TEST PRESSURE TABLE

 Kg/cm² (Psig)

| BODY MATERIALA | 150LB | | 300LB | | MATERIAL |
|----------------|----------|-------------|-----------|-------------|--------------------------|
| | SHELL | SEAT/B.SEAT | SHELL | SEAT/B.SEAT | |
| A216-WCB | 32 (450) | 22 (315) | 79 (1125) | 57 (815) | C-Steel Casting |
| A352-LCB | 28 (400) | 21 (295) | 74 (1050) | 54 (765) | Ferritic Steel Casting |
| A352-LCC | 32 (450) | 22 (320) | 79 (1125) | 58 (825) | |
| A217-WC1 | 28 (400) | 21 (295) | 74 (1050) | 54 (765) | Alloy Steel Casting |
| A217-WC6 | 32 (450) | 22 (320) | 79 (1125) | 58 (825) | |
| A217-WC9 | | | | | |
| A217-C5 | | | | | |
| A217-C12 | | | | | |
| A351-CF8 | 30 (425) | 21 (305) | 77 (1100) | 56 (795) | Austenitic Steel Casting |
| A351-CF8M | | | | | |
| A351-CF3 | | | | | |
| A351-CF3M | | | | | |
| A351-CN7M | | | | | |
| A351-CK20 | 28 (400) | 20 (295) | 72 (1025) | 52 (740) | |

CONTROL VALVE RELATED STANDARDS

1. CONTROL VALVE SELECTION FOR THE TERMS & CONDITIONS

| | |
|--------------------|--|
| ANSI B 16.104-1976 | AMERICAN NATIONAL STANDARD FOR CONTROL VALVE SEAT LEAKAGE FIC 70-2 |
| IEC PUB 534-1 | INDUSTRIAL PROCESS VALVE PART 1 : GENERAL CONSIDERATIONS |
| JPI-7B-56-77 | INSTRUMENTATION DESIGN DATA FOR AIR SYSTEM |
| PART 1: PROCESS | INSTRUMENTATION AND CONTROL SECTION 6 : CONTROL VALVE AND PORT |

2. SIZING

| | |
|-----------------|--|
| FCI 62-1 | RECOMMEND VOLUM TRAY STANDARD FORMULAS FOR SIZING CONTROL VALVES |
| ANSI/ISA S75.01 | CONTROL VALVE SIZING EQUATIONS |
| ISA | HAND BOOK OF CONTROL VALVES, 2ND EDITION |

3. VALVE BODY

| | |
|-------------|---|
| ANSI B16.34 | STEEL VALVE |
| ISA | HANDBOOK OF CONTROL VALVES, 2ND EDITION |

4. TRIM

| | |
|------------|---|
| JIS B 2003 | GENERAL OF VALVE INSPECTION |
| ISA | HANDBOOK OF CONTROL VALVES, 2ND EDITION |

5. MATERIAL

| | |
|--------------|---|
| JPI-7S-15-81 | STEEL FLANGE FOR PETROLEUM INDUSTRY |
| ANSI B16.34 | STEEL VALVE |
| JIS G 4303 | STAINLESS STEEL BAR |
| JIS G 5101 | CARBON STEEL, CAST STEEL |
| JIS G 5121 | STAINLESS CAST STEEL |
| JIS G 5151 | HIGH TEMPERATURE HIGH PRESSURE CAST STEEL |
| JIS G 5152 | LOW TEMPERATURE HIGH PRESSURE CAST STEEL |
| JIS G 5501 | GRAY CAST IRON |
| JIS G 5502 | DUCTILE CAST IRON |
| JIS B 8243 | STRUCTURE OF PRESSURE VESSEL |

6. NOISE

| | |
|--------------|--|
| ISA RP 59.2 | FIELD MEASUREMENTS OF AIR BORNE SOUND LEVEL GENERATED BY CONTROL VALVE |
| OSHA 1910 95 | OCCUPATIONAL NOISE EXPOSURE, 1971 |
| VDMA 24422 | CONTROL AND SHUT-OFF VALVES GUIDELINES FOR COMPUTATION |

7. SECURITY

| | |
|-----------|------------------------------|
| JIS 7S-39 | VALVE INSPECTION REGULATIONS |
|-----------|------------------------------|

8. OTHERS

| | |
|-------------------|--|
| JPI-7B-60-79 | INTERLOCK & EMERGENCY SHUT-DOWN SYSTEM INSTRUMENTATION DESIGN DATA |
| ASME ST'D NO. 112 | DIAPHRAGM ACTUATOR CONTROL VALVE TERMINOLOGY |
| JIS B 0100 | VALVE TERMINOLOGY |