# KTM V-port Control Ball Valves

**Full bore and Reduced bore**

tyco Flow Control

KTM

## A rugged, long-life V-notch control ball valve with excellent flow characteristics for various fluids including slurries and fibers.

### Features

- Rotary-valve design provides shearing action between the V-notch ball and the seat, promoting a smooth, non-clogging operation.
- Straight-through flow design provides high capacity for fibrous slurries, steam, liquids and gases.
- With a single-seat design, torque is lower than typical trunnion design valves, for ease of operation and reduced actuator cost.
- Two seat designs:
  - Laminated seat provides tight shut-off and withstands tough operating conditions.
  - Thick (solid) seat for high-velocity and abrasive or erosive service
- Segmented, V-notched ball features high rangeability and smooth throttling action
- Choice of full and reduced port, providing the right flow capacity for every application at low cost
- Heavy-duty, stainless steel stem for high strength and rigidity
- Multiple, adjustable ring packing allows easy adjustment without valve disassembly or actuator removal.
- Stem bearings assure a durability, smooth and easy valve operation.
- Positive alignment of split body
- The spline connection minimize the backlash of stem and disk. It results excellent control performance.

### General applications

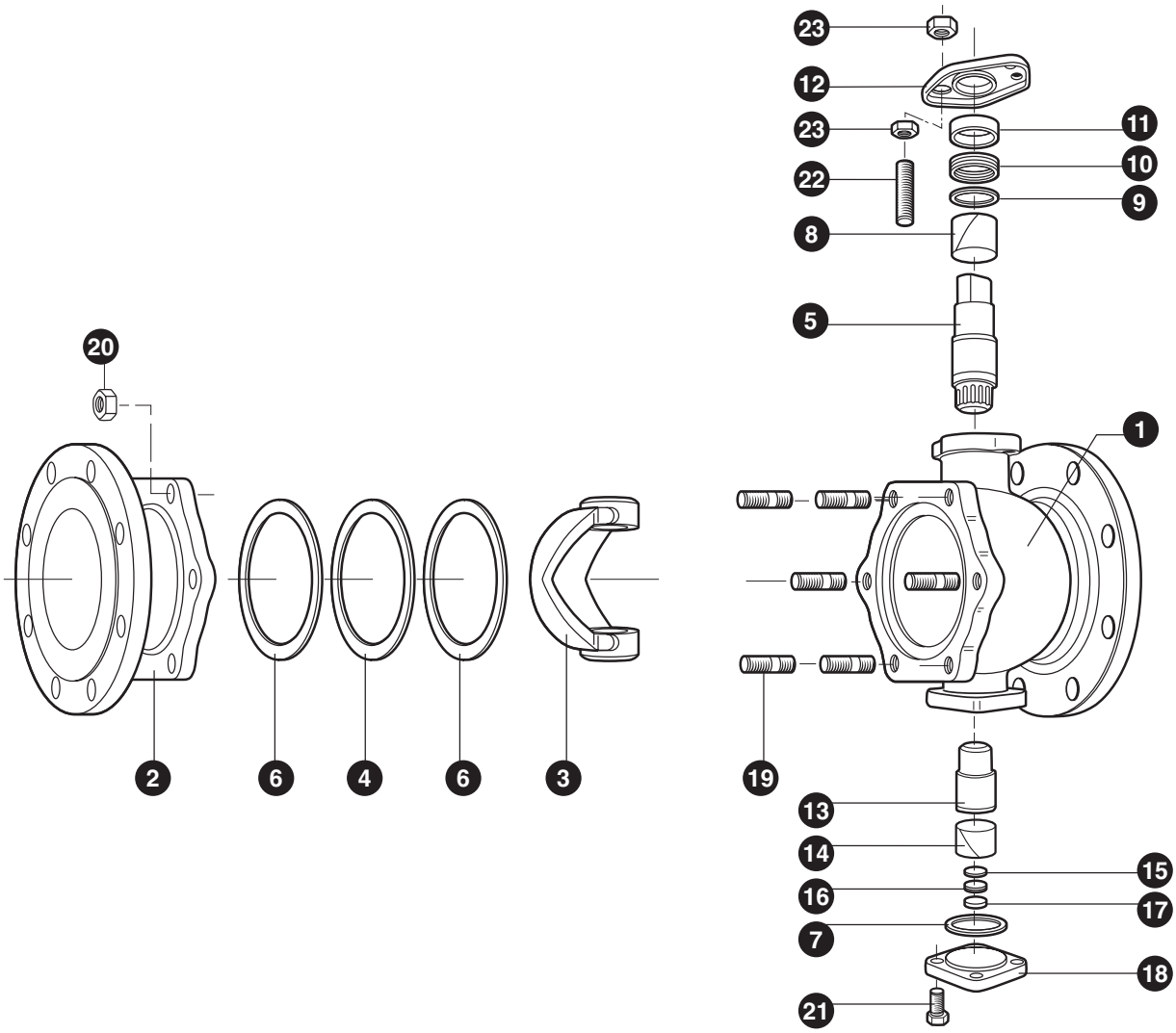
Critical services in pulp and paper industry, fibrous materials, pellet slurry, high viscous solutions and other fluids having special characteristics

### Option

- Special tests
  - X-ray (RT)
  - Liquid penetrant (PT)
  - Positive Material Identification

### Technical data

| | |
|---|---|
| Models / Sizes | : Full bore W0600 |
| | 25mm to 300mm (1” to 12”) |
| | : Reduced bore W0400 |
| | 40mm to 500mm (1½” to 20”) |
| Pressure rating | : ASME Class 150, 300 |
| | JIS10K, 20K (JPI available) |
| Face to face | : Full bore |
| | ASME B16.10 (long pattern) |
| | : Reduced bore |
| | ASME B16.10 (short pattern) |
| Temperature | : -29°C to 350°C |
| Seat leakage | : ANSI / FCI 70-2 |
| | - Class IV (Laminated seat) |
| | - Class II (Thick seat) |




## Parts List and Materials of Construction

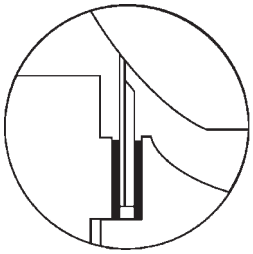
| No. | Parts Name | Material | Qty |
|---|---|---|---|
| 1 | Body | WCB (SCPH2) or CF8 / CF8M (SCS13A / 14A) | 1 |
| 2 | Body cap | WCB (SCPH2) or CF8 / CF8M (SCC13A / 14A) | 1 |
| 3 | Disc | CF8M (SCS14A) HCr or CF8M (SCS14A) Stellited | 1 |
| 4 | Seat | Laminated 316SS or Thick (solid) 316SS Stellited | 1 |
| 5 | Stem | 316SS | 1 |
| 6 | Gasket | Non Asbestos Joint Sheet (Standard) or R-PTFE (Optional) | 1 |
| 7 | Gasket | Non Asbestos Joint Sheet (Standard) or R-PTFE (Optional) | 1 |
| 8 | Stem Bearing | R-PTFE | 1 |
| 9 | Thrust Washer | 316SS | 1 |
| 10 | Gland Packing | PTFE V-Ring (Standard) Expanded Graphite (Optional) | 1 set |
| 11 | Gland | 304SS | 1 |
| 12 | Gland Flange | 304SS | 1 |
| 13 | Lower Stem | 316SS | 1 |
| 14 | Stem Bearing | R-PTFE | 1 |
| 15 | Thrust Bearing | R-PTFE | 1 |
| 16 | Shim | 316SS | 0-4 |
| 17 | Pivot | 316SS | 1 |
| 18 | Lower Cover | A105 (S25C) or 304SS / 316SS | 1 |
| 19 | Stud | A193 G B7 (S45C) or A194 G B8 (304SS) | 6 |
| 20 | Nut | A193 G 2H (S45C) or A194 G B8 (304SS) | 6 |
| 21 | Bolt | A193 G B7 (S45C) or A193 G B8 (304SS) | 4 |
| 22 | Gland Bolt | 304SS | 2 |
| 23 | Nut | 304SS | 4 |

This illustration shows body construction of V-port ball valve Model W0401 series in size 100mm. Construction of other sizes differs slightly.

1. Stem and disc are connected by spline in Model W0400 size 40mm to 300mm and in Model W0600 size 25mm to 250mm. Connections in larger sizes are by key.
2. A throttle lever, not shown here, is required for manual operation.
3. For details of the trim, please refer to trim table on page.7.

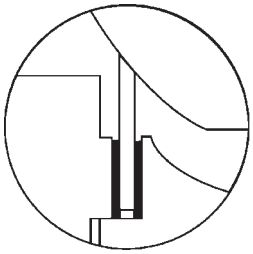
## Seat Selection

The KTM Single-V is a single-seat design. Torque is lower than typical trunnion design valves resulting in easier operation and reduced actuator cost. Choose from two unique seat designs:



**Laminated Seat**

Provides tight shut-off and withstands tough operating conditions.
FCI 70-2 Class IV shut-off.



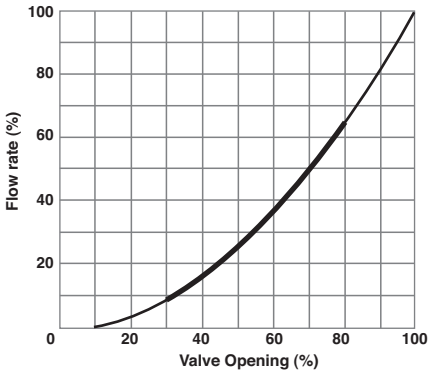
**Thick (Solod) Seat**

For high-velocity, abrasive and erosive service
FCI 70-2 Class II shut-off.

- Seat leakage for Laminated seat is equivalent to Class IV, however the actual test pressure seat leakage is 1.5ml/inch* and smaller (Hydro)
  *inch is nominal port size

## Inherent Flow Characteristics

Single-V valves maintain an inherent flow characteristic, which is approximately midway between linear and equal percent.




*Bold line shows a range of control.

## Materials Selection

| Temperature*1 | Gland Packing | Thrust bearing | Stem bearing | Seat |
|---|---|---|---|---|
| up to 200℃ | PTFE | R-PTFE | R-PTFE | Laminated / Thick Seat |
| 200℃ to 250℃ | R-PTFE | | | |
| over 250℃*2 | Graphite | Graphite | Stellite | |

*1 Laminated Seat (Max. temp 300℃), Thick Seat (Max.temp 350℃)
*2 Please consult us for the details of temperature range above 250℃

## Test Pressure

| Rating | Body (MPa) | | Seat (MPa) |
|---|---|---|---|
| | Carbon Steel | Stainless Steel | |
| ASME Class 150 | 3.10 | 2.93 | Thick Seat: 0.5MPa<br>Laminated Seat: Lower value out of comparison between A (Fluid pressure x 1.1) and B (MASP* for V-port valve).<br>(0.5MPa unless otherwise stated.) |
| ASME Class 300 | 7.76 | 7.58 | |
| JIS 10K | 2.10 | | |
| JIS 20K | 5.10 | | |

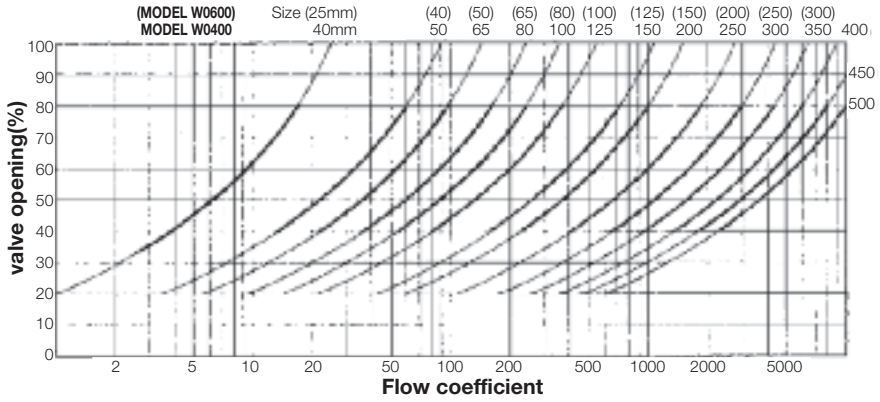
*MASP : Maximam Allowable Shut off Pressure (Please refer to page.4 for the details)

## Max. Shut-off Pressure

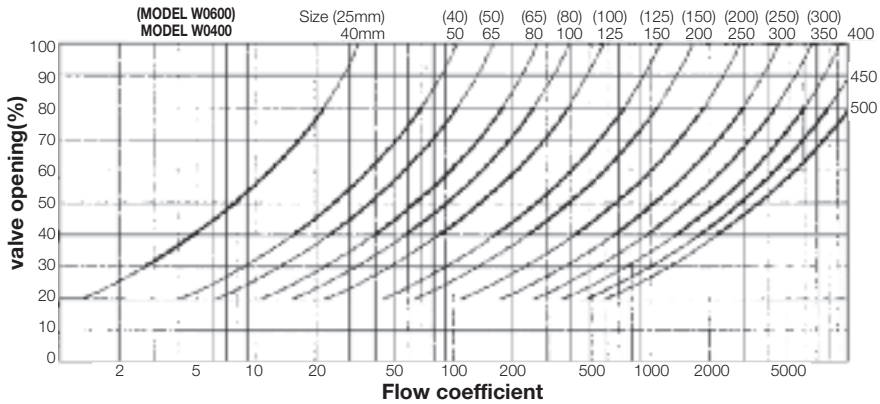
| Valve Size (mm) | | Max. Shut-off Pressure (Mpa) | |
|---|---|---|---|
| W0601, W0602 Full bore | W0401, W0402 Reduced bore | Laminated Seat | Thick Seat |
| 25 | 40 | 2.2 | 5 |
| 40 | 50 | 2.2 | 5 |
| 50 | 65 | 2.2 | 5 |
| 65 | 80 | 2.2 | 5 |
| 80 | 100 | 2.1 | 5 |
| 100 | 125 | 2.0 | 5 |
| 125 | 150 | 1.9 | 5 |
| 150 | 200 | 1.7 | 5 |
| 200 | 250 | 1.5 | 2 |
| 250 | 300 | 1.3 | 2 |
| 300 | 350 | 1.2 | 2 |
| - | 400 | 1.0 | 2 |
| - | 450 | 0.8 | 2 |
| - | 500 | 0.6 | 2 |

## Valve opening vs. Flow Coefficient Cv (Pipe size is same as valve size)

### Laminated Seat




### Thick Seat




• Please choose the valve in the range of bold lines when you select the valve size.

## Effective Flow Coefficient Cv (Full bore: Model W0600)

| Valve Size (mm) | Pipe Size = Valve Size | | Pipe Size = 1.5 X Valve size | | Pipe Size = 2 X Valve size | |
|---|---|---|---|---|---|---|
| | Thick Seat | Laminated Seat | Thick Seat | Laminated Seat | Thick Seat | Laminated Seat |
| 25 | 33 | 25 | 26 | 22 | 23 | 20 |
| 40 | 105 | 90 | 72 | 66 | 60 | 57 |
| 50 | 160 | 145 | 118 | 112 | 101 | 97 |
| 65 | 270 | 245 | 190 | 180 | 160 | 155 |
| 80 | 390 | 360 | 280 | 270 | 235 | 230 |
| 100 | 580 | 550 | 450 | 430 | 387 | 378 |
| 125 | 1,130 | 1,070 | 790 | 770 | 660 | 650 |
| 150 | 1,650 | 1,500 | 1,140 | 1,090 | 950 | 920 |
| 200 | 2,850 | 2,750 | 2,000 | 1,960 | 1,680 | 1,660 |
| 250 | 4,500 | 4,400 | 3,140 | 3,110 | 2,630 | 2,610 |
| 300 | 6,600 | 6,450 | 4,560 | 4,510 | 3,820 | 3,790 |

## Effective Flow Coefficient Cv (Reduced bore: Model W0400)

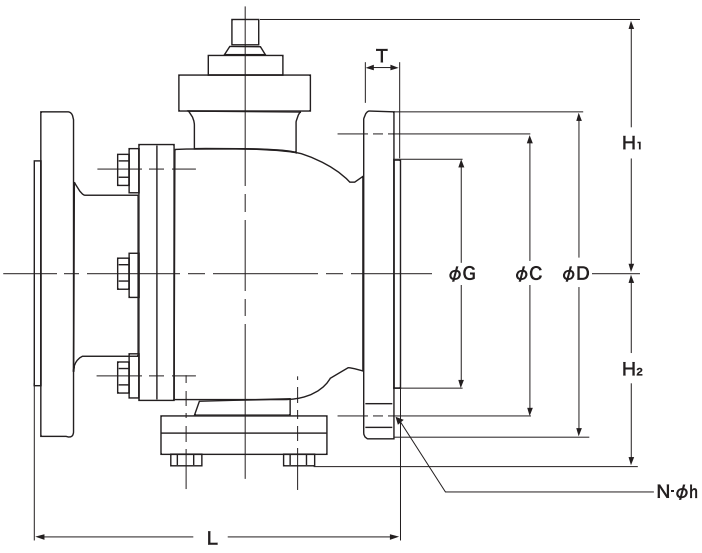
| Valve Size (mm) | Pipe Size = Valve Size | | Pipe Size = 1.5 X Valve size | | Pipe Size = 2 X Valve size | |
|---|---|---|---|---|---|---|
| | Thick Seat | Laminated Seat | Thick Seat | Laminated Seat | Thick Seat | Laminated Seat |
| 40 | 33 | 25 | 31 | 24 | 30 | 24 |
| 50 | 105 | 90 | 90 | 80 | 82 | 74 |
| 65 | 160 | 145 | 140 | 130 | 130 | 120 |
| 80 | 270 | 245 | 220 | 210 | 200 | 190 |
| 100 | 390 | 360 | 340 | 320 | 310 | 300 |
| 125 | 580 | 550 | 510 | 490 | 470 | 460 |
| 150 | 1,130 | 1,070 | 920 | 890 | 810 | 790 |
| 200 | 1,650 | 1,500 | 1,420 | 1,320 | 1,290 | 1,220 |
| 250 | 2,850 | 2,750 | 2,390 | 2,330 | 2,140 | 2,100 |
| 300 | 4,500 | 4,400 | 3,660 | 3,610 | 3,240 | 3,210 |
| 350 | 6,600 | 6,450 | 5,230 | 5,140 | 4,580 | 4,530 |
| 400 | 9,250 | 9,000 | 7,140 | 7,020 | 6,180 | 6,110 |
| 450 | 12,300 | 12,000 | 9,300 | 9,170 | 8,000 | 7,910 |
| 500 | 15,500 | 15,200 | 11,610 | 11,490 | 9,960 | 9,880 |

## Sizing Equation

| Fluid | Remarks | Equation |
|---|---|---|
| Liquid | $\triangle P < F_L^2(P_1 - P_v)$ | $Fp \cdot Cv = \frac{Q}{0.0865}\sqrt{\frac{G}{\triangle P}}$ |
| | $\triangle P \geqq F_L^2(P_1 - P_v)$ | $Fp \cdot Cv = \frac{Q}{0.0865 \cdot F_L}\sqrt{\frac{G}{P_1 - P_v}}$ |
| Gas | $X < F_k \cdot X_T$ | $Fp \cdot Cv = \frac{Q}{41.31 \cdot P_1 \cdot Y}\sqrt{\frac{Gg \cdot T_1 \cdot Z}{X}}$<br>$Fp \cdot Cv = \frac{W}{2.73 \cdot Y \cdot \sqrt{X \cdot P_1 \cdot \gamma_1}}$ |
| | $X \geqq F_k \cdot X_T$ | $Fp \cdot Cv = \frac{Q}{41.31 \cdot 0.667 \cdot P_1}\sqrt{\frac{Gg \cdot T_1 \cdot Z}{F_k \cdot X_T}}$<br>$Fp \cdot Cv = \frac{W}{2.73 \cdot 0.667 \cdot \sqrt{F_k \cdot X_T \cdot P_1 \cdot \gamma_1}}$ |
| Steam | $\triangle P < F_L^2 \cdot (P_1/2)$ | $Cv = \frac{W}{0.136\sqrt{\triangle P(P_1 + P_2)}}$ |
| | $\triangle P \geqq F_L^2 \cdot (P_1/2)$ | $Cv = \frac{W}{0.118 \cdot F_L \cdot P_1}$ |
| Steam Super heated | $\triangle P < F_L^2 \cdot (P_1/2)$ | $Cv = \frac{W(1 + 0.00126 \cdot Tsh)}{0.136\sqrt{\triangle P(P_1 + P_2)}}$ |
| | $\triangle P \geqq F_L^2 \cdot (P_1/2)$ | $Cv = \frac{W(1 + 0.00126 \cdot Tsh)}{0.118 \cdot F_L \cdot P_1}$ |

**Nomenclature**

- Cv : Flow coefficient
- $F_k$ : Specific heat ratio factor
- $F_P$ : Piping geometry factor
- $F_L$ : Liquid pressure recovery factor of a control valve without attached fittings
- G : Relative density for liquid
- $G_g$ : Relative density for gas
- $P_1$ : Inlet absolute pressure (KPa.A)
- $P_2$ : Outlet absolute pressure (KPa.A)
- $\Delta P$ : Differential pressure ($P_1$-$P_2$) (KPa.A)
- $P_v$ : Vapour pressure of liquid (KPa.A)
- Q : Volumetric flow rate ($m^3/h$)
- $T_1$ : Inlet absolute temperature (°k) (273+°C)
- $T_{sh}$ : Degree of superheat (°C)
- Y : Expansion factor
- Z : Compressibility factor
- $\gamma_1$ : Density of fluid at $T_1$ ($kg/m^3$)
- X : Ratio of pressure differential to inlet absolute pressure ($\Delta P/P_1$)
- $X_T$ : Pressure differential ratio factor of a control valve without attached fittings at choked flow
- $X_{TP}$ : Pressure differential ratio factor of a control valve without attached fittings at choked flow
- W : Mass flow rate (kg/h)




**D : Outside diameter**
**C : Bolt circle diameter**
**G : Raised face diameter**
**T : Flange thickness**
**N : Number of bolts**
**h : Bolt hole size**

## ASME Class 150 / JIS 10K Dimensions (mm)

| Valve Size (mm) | W0601 Full Bore | | | W0401 Reduced Bore | | | ASME Flange Dimensions | | | | | | JIS Flange Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L | $H_1$ | $H_2$ | L | $H_1$ | $H_2$ | D | C | G | T | N | h | D | C | G | T | N | h |
| 25 | 127 | 88 | 62 | - | - | - | 108 | 79.5 | 51 | 11.2 | 4 | 16 | 125 | 90 | 67 | 14 | 4 | 19 |
| 40 | 165 | 118 | 87 | 165 | 88 | 62 | 127 | 98.5 | 73 | 14.3 | 4 | 16 | 140 | 105 | 81 | 16 | 4 | 16 |
| 50 | 178 | 123 | 92 | 178 | 118 | 87 | 152 | 120.5 | 92 | 15.9 | 4 | 19 | 155 | 120 | 96 | 16 | 4 | 19 |
| 65 | 190 | 157 | 105 | 190 | 123 | 92 | 178 | 139.5 | 105 | 17.5 | 4 | 19 | 175 | 140 | 116 | 18 | 4 | 19 |
| 80 | 203 | 163 | 111 | 203 | 157 | 105 | 190 | 152.2 | 127 | 19.1 | 4 | 19 | 185 | 150 | 126 | 18 | 8 | 19 |
| 100 | 229 | 184 | 131 | 229 | 163 | 111 | 229 | 190.5 | 157 | 23.9 | 8 | 19 | 210 | 175 | 151 | 18 | 8 | 19 |
| 125 | 356 | 250 | 177 | 254 | 184 | 131 | 254 | 216.0 | 186 | 23.9 | 8 | 22 | 250 | 210 | 182 | 20 | 8 | 23 |
| 150 | 394 | 263 | 180 | 267 | 250 | 177 | 279 | 241.5 | 216 | 25.4 | 8 | 22 | 280 | 240 | 212 | 22 | 8 | 23 |
| 200 | 457 | 336 | 246 | 292 | 263 | 180 | 343 | 298.5 | 270 | 28.6 | 8 | 22 | 330 | 290 | 262 | 22 | 12 | 23 |
| 250 | 533 | 361 | 271 | 330 | 336 | 246 | 406 | 362.0 | 324 | 30.2 | 12 | 25 | 400 | 355 | 324 | 24 | 12 | 25 |
| 300 | 610 | 453 | 333 | 502 | 361 | 271 | 483 | 432.0 | 381 | 31.8 | 12 | 25 | 445 | 400 | 368 | 24 | 16 | 25 |
| 350 | - | - | - | 572 | 453 | 333 | 533 | 476.0 | 413 | 35.0 | 12 | 29 | 490 | 445 | 413 | 26 | 16 | 25 |
| 400 | - | - | - | 610 | 478 | 358 | 597 | 539.5 | 470 | 36.6 | 16 | 29 | 560 | 510 | 475 | 28 | 16 | 27 |
| 450 | - | - | - | 660 | 538 | 412 | 635 | 578.0 | 533 | 39.7 | 16 | 32 | 620 | 565 | 530 | 30 | 20 | 27 |
| 500 | - | - | - | 711 | 580 | 433 | 698 | 635.0 | 584 | 42.9 | 20 | 32 | 675 | 620 | 585 | 30 | 20 | 27 |

## ASME Class 300 / JIS 20K Dimensions (mm)

| Valve Size (mm) | W0602 Full Bore | | | W0402 Reduced Bore | | | ASME Flange Dimensions | | | | | | JIS Flange Dimensions | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L | $H_1$ | $H_2$ | L | $H_1$ | $H_2$ | D | C | G | T | N | h | D | C | G | T | N | h |
| 25 | 165 | 88 | 67 | - | - | - | 124 | 89.0 | 51 | 17.5 | 4 | 19 | 125 | 90 | 67 | 16 | 4 | 19 |
| 40 | 190 | 118 | 94 | 190 | 88 | 67 | 156 | 114.5 | 73 | 20.7 | 4 | 22 | 140 | 105 | 81 | 18 | 4 | 19 |
| 50 | 216 | 123 | 99 | 216 | 118 | 94 | 165 | 127.0 | 92 | 22.3 | 8 | 19 | 155 | 120 | 96 | 18 | 8 | 19 |
| 65 | 241 | 157 | 110 | 241 | 123 | 99 | 190 | 149.0 | 105 | 25.4 | 8 | 22 | 175 | 140 | 116 | 20 | 8 | 19 |
| 80 | 283 | 163 | 116 | 283 | 157 | 110 | 210 | 168.0 | 127 | 28.6 | 8 | 22 | 200 | 160 | 132 | 22 | 8 | 23 |
| 100 | 305 | 184 | 136 | 305 | 163 | 116 | 254 | 200.0 | 157 | 31.8 | 8 | 22 | 225 | 185 | 160 | 24 | 8 | 23 |
| 125 | 381 | 250 | 185 | 381 | 184 | 136 | 279 | 235.0 | 186 | 35.0 | 8 | 22 | 270 | 225 | 195 | 26 | 8 | 25 |
| 150 | 403 | 263 | 187 | 403 | 250 | 185 | 318 | 270.0 | 216 | 36.6 | 12 | 22 | 305 | 260 | 230 | 28 | 12 | 25 |
| 200 | 502 | 336 | 246 | 419 | 263 | 187 | 381 | 330.0 | 270 | 41.3 | 12 | 25 | 350 | 305 | 275 | 30 | 12 | 25 |
| 250 | 568 | 361 | 270 | 457 | 336 | 246 | 444 | 387.5 | 324 | 47.7 | 16 | 29 | 430 | 380 | 345 | 34 | 12 | 27 |
| 300 | - | - | - | 502 | 361 | 280 | 521 | 451.0 | 381 | 50.8 | 16 | 32 | 480 | 430 | 395 | 36 | 16 | 27 |

## Pulp consistency correction

| Pulp consistency | Consistency correction factor Ks | | Calculation method |
|---|---|---|---|
| | Chemical stock | Mechanical stock | |
| 1 | 1.00 | 1.00 | $Q\ell = KsQ$<br>Q : Actual flow rate<br>Ks: Correction factor<br>$Q\ell$ is calculated from this equation and required Cv is determined by substituring this $Q\ell$ in above sizing equation |
| 2 | 1.03 | 1.01 | |
| 3 | 1.11 | 1.05 | |
| 4 | 1.20 | 1.09 | |
| 5 | 1.25 | 1.11 | |

## Trim Table (Full bore: Model W0600)

| Trim Code | 3L | | 3S | | 4L | | 4S | |
|---|---|---|---|---|---|---|---|---|
| **Size** | **25 to 250mm (1" to 10")*1** | **300mm (12")*2** | **25 to 250mm (1" to 10")*1** | **300mm (12")*2** | **25 to 250mm (1" to 10")*1** | **300mm (12")*2** | **25 to 250mm (1" to 10")*1** | **300mm (12")*2** |
| **Disc** | CF8M (SCS14A) HCr | CF8 (SCS13A) HCr | CF8M (SCS14A) Stellite | CF8 (SCS13A) Stellite | CF8M (SCS14A) HCr | CF8 (SCS13A) HCr | CF8M (SCS14A) Stellite | CF8 (SCS13A) Stellite |
| **Stem** | 316SS (SUS316) | 304SS (SUS304) | 316SS (SUS316) | 304SS (SUS304) | 316SS (SUS316) Stellite | 304SS (SUS304) Stellite | 316SS (SUS316) Stellite | 304SS (SUS304) Stellite |
| **Seat** | Laminate*3 | | 316SS Stellite | 304SS Stellite | Laminate*3 | | 316SS Stellite | 304SS Stellite |

## Trim Table (Reduced bore: Model W0400)

| Trim Code | 3L | | 3S | | 4L | | 4S | |
|---|---|---|---|---|---|---|---|---|
| **Size** | **40 to 300mm (1 1/2" to 12")** | **350 to 500mm (14" to 20")*4** | **40 to 300mm (1 1/2" to 12")** | **350 to 500mm (14" to 20")*4** | **40 to 300mm (1 1/2" to 12")** | **350 to 500mm (14" to 20")*4** | **40 to 300mm (1 1/2" to 12")** | **350 to 500mm (14" to 20")*4** |
| **Disc** | CF8M (SCS14A) HCr | CF8 (SCS13A) HCr | CF8M (SCS14A) Stellite | CF8 (SCS13A) Stellite | CF8M (SCS14A) HCr | CF8 (SCS13A) HCr | CF8M (SCS14A) Stellite | CF8 (SCS13A) Stellite |
| **Stem** | 316SS (SUS316) | 304SS (SUS304) | 316SS (SUS316) | 304SS (SUS304) | 316SS (SUS316) Stellite | 304SS (SUS304) Stellite | 316SS (SUS316) Stellite | 304SS (SUS304) Stellite |
| **Seat** | Laminate*5 | | 316SS Stellite | 304SS Stellite | Laminate*5 | | 316SS Stellite | 304SS Stellite |

*1 40mm to 250mm for WCB (SCPH2) body
*2 250mm and smaller for ASME Class 300 / JIS 20K
*3 SUS316 for 300mm and smaller, SUS304 for 350mm and larger
*4 300mm and smaller for ASME Class 300 / JIS 20K
*5 SUS316 for 350mm and smaller, SUS304 for 400mm and larger

- HCr.: Hard chromium plating
- Materials in parentheses indicate equivalent JIS material

## KTM Model Coding System

| 1 | 2 | 3 | | 4 | | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| W0401 | – | K | — | 62 | · | 3L | A15 | SF | 25 | – |
| Valve Code | Sub Code | Special Feature | | Body Code | | Trim Code | Flange Code | Connection Code | Size Code | Option Code |

Example. **W0401 K– 62 · 3L A15 SF 25**

### 1

| Valve Code | ASME | JIS | Description |
|---|---|---|---|
| **W0601** | 150 | 10K | Full bore, 25mm to 300mm |
| **W0602** | 300 | 20K | Full bore, 25mm to 250mm |
| **W0401** | 150 | 10K | Reduced bore, 40mm to 500mm |
| **W0402** | 300 | 20K | Reduced bore, 40mm to 300mm |

### 2

| Sub Code | Description |
|---|---|
| **Blank** | Metal Seat |

### 3

| Special Feature | Description |
|---|---|
| **Blank** | Not applicable |
| **K** | Powder Service (Please consult us for the details) |

### 4

| Body Code | JIS | ASTM |
|---|---|---|
| **31** | SCS13A (304) | CF8 (304) |
| **32** | SCS14A (316) | CF8M (316) |
| **62** | SCPH2 or S25C | WCB |

### 5

| Trim Code | Ball | Seat | Packing | Stem |
|---|---|---|---|---|
| **3L** | St.St. with HCr | Laminate | PTFE | St.St. |
| **3S** | St.St. with Stellited | Stellited | PTFE | St.St. |
| **4L** | St.St. with HCr | Laminate | PTFE | St.St. with Stellited |
| **4S** | St.St. with Stellited | Stellited | PTFE | St.St. with Stellited |

For details of the Trim, please refer to trim table on Page.7.
St.St. : Stainless Steel
HCr : Hard Chromium Plating

### 6

| Flange Code | Description |
|---|---|
| **ASME** | |
| **A15** | ASME Class 150 |
| **A30** | ASME Class 300 |
| **JIS** | |
| **J10** | JIS 10K |
| **J20** | JIS 20K |
| (JPI also available) | |

### 7

| Connection Code | Description |
|---|---|
| **Blank** | Raised Face |
| **SF** | Smooth Finish 125 to 250 AARH |

### 8

| Size Code | mm | Inch |
|---|---|---|
| 25 | 25 | 1 |
| 40 | 40 | 1½ |
| 50 | 50 | 2 |
| 65 | 65 | 2½ |
| 80 | 80 | 3 |
| 100 | 100 | 4 |
| 125 | 125 | 5 |
| 150 | 150 | 6 |
| 200 | 200 | 8 |
| 250 | 250 | 10 |
| 300 | 300 | 12 |
| 350 | 350 | 14 |
| 400 | 400 | 16 |
| 450 | 450 | 18 |
| 500 | 500 | 20 |

### 9

| Option Code | Description |
|---|---|
| **Blank** | No additional option |