

since 2000



V100 Series

Single Seated Type
Globe Control Valves



INNOBIZ
사단법인 중소기업기술혁신협회

UNICON

Unicon Flow Control System Group
Control Valve Division



For applications involving extreme environments,
especially hostile fluids,
or pressure classes greater than ANSI 600,
specify Unicon V-100 Control Valves.

Customer Benefits

Trouble Free Operation

Heavy top-guiding ensures stable and optimized operation of the Unicon V-100 Series throughout the entire stroking range.

The effects of unexpected system upsets or heavy vibration are minimized with this construction.

Reduced Noise Levels

The optional multi-hole low-noise trim designs provide single-stage and double-stage noise attenuation benefits. Potential noise reduction levels of up to 25dBA are possible, depending on the specific operating conditions.

Long Life-Cycle

Optional Anti-Cavitation trim is also available in single-stage and double-stage configurations. Proper control of dynamic cavitating conditions is extremely important for continuous high performance and operation of control valves.

Lower Costs

Dependable tight shutoff of a control valve minimizes loss of process fluids, and can potentially eliminate the need for separate isolation valves. The optional soft-seat design, provides bubble-tight shutoff capabilities in accordance with ANSI/FCI and IEC requirements.

| | | |
|--------------------|--|------------------|
| V100 SERIES | 2WAY GLOBE(ANGLE)CONTROL VALVE-UNBALANCED TYPE QUICK CHANGE TRIM | V100-2011 |
| V011 | P-PORT | |
| V102 | MULTI - STEP (CASCADE) | |
| V103 | MICRO FLOW SPLIT PLUG | |
| V110 | CAGE WINDOWS | |
| V111 | 1-STAGE DRILLED HOLE CAGE | |
| V121 | 2-STAGE DRILLED HOLE CAGE (LOW-NOISE) | |
| V122 | 2-STAGE DRILLED HOLE CAGE (ANTI CAVITATION) | |
| V131 | 3-STAGE DRILLED HOLE CAGE (LOW-NOISE) | |
| V132 | 3-STAGE DRILLED HOLE CAGE (ANTI CAVITATION) | |
| V180 | DISC STACK | |
| V184 | HYBRID DISC STACK | |
| V200 SERIES | 2WAY GLOBE(ANGLE) CONTROL VALVE - BALANCED TYPE QUICK CHAGE TRIM | V200-2111 |
| V201 | P-PORT | |
| V202 | MULTI - STEP (CASCADE) | |
| V210 | CAGE WINDOWS | |
| V211 | 1-STAGE DRILLED HOLE CAGE | |
| V221 | 2-STAGE DRILLED HOLE CAGE (LOW-NOISE) | |
| V222 | 2-STAGE DRILLED HOLE CAGE (ANTI CAVITATION) | |
| V231 | 3-STAGE DRILLED HOLE CAGE (LOW-NOISE) | |
| V232 | 3-STAGE DRILLED HOLE CAGE (ANTI CAVITATION) | |
| V280 | DISC STACK | |
| V284 | HYBRID DISC STACK | |
| V300 SERIES | 3WAY GLOBE CONTROL VALVES-MIXING & DIVERTING TYPE QUICK CHANGE TRIM | V300-XXXX |
| V310 | UNBALANCED TRIM-BOTTOM FLANGE TYPE | |
| V320 | BALANCED TRIM BOTTOMFLANGE TYPE | |
| V330 | UNBALANCED TRIM TOP FLANGE TYPE | |
| V400 SERIES | PROV-PRESSURE REDUCING DESUPERHEATER VALVE | V400-XXXX |
| V600 SERIES | TRIPLE OFFEST BUTTERFLY VALVE | V600-XXXX |
| V800 SERIES | TRUNNION TYPE BALL VALVE | V800-XXXX |
| D400 SERIES | DESUPERHEATER | D400-XXXX |
| D410 | DAO | |
| D440 | DAM | |
| A100 SERIES | LINEAR TYPE PNEUMATIC DIAPHRAGM ACTUATOR | A100-XXXX |
| A120 | RA TYPE | |
| A140 | DA TYPE | |
| A200 SERIES | ROTARY TYPE PNEUMATIC DIAPHRAGM ACTUATOR | A200-XXXX |
| A300 SERIES | LINEAR TYPE PNEUMATIC CYLINDER ACTUATOR | A300-XXXX |
| A310 | DOUBLE ACTING TYPE | |
| A320 | SPRING RETURN RA TYPE | |
| A340 | SPRING RETURN DA TYPE | |
| A400 SERIES | ROTARY TYPE HEAVY-DUTY PNEUMATIC CYLINDER ACTUATOR | A400-XXXX |
| A410 | DOUBLE ACTING TYPE | |
| A420 | SPRING RETURN TA TYPE | |
| A440 | SPRING RETURN DA TYPE | |

UNICON model numbering system

V 000 0 0 0 000 - 0 0 0 0 0 0 - 0 0 0 - 00

1 2 3 4 5 6 7 8 9 10 11 12 13 14

| 1. TRIM STYLE | | 2. END CONNECTION | | 3. RATING | | | | 4. BODY SIZE(mm) | | | |
|---------------|----------------|-------------------|----------------|-----------|-------------|---|-------------|------------------|-----------|-------------|-----------|
| 1 | Unbalanced | P | PT THREAD | 1 | KS(JIS) 10K | A | ANSI 125Lb | CODE | mm | CODE | mm |
| 2 | Balanced | R | RF FLANGED | 7 | KS(JIS) 16K | B | ANSI 150Lb | 032 | 32 | 200 | 200 |
| 3 | Auxiliary Poit | U | UNION | 2 | KS(JIS) 20K | D | ANSI 250Lb | 040 | 40 | 250 | 250 |
| | | F | FF FLANGED | 3 | KS(JIS) 30K | E | ANSI 300Lb | 050 | 50 | 300 | 300 |
| | | B | BULT WELDING | 4 | KS(JIS) 40K | F | ANSI 400Lb | 065 | 65 | 350 | 350 |
| | | C | TRY CLAMP | 6 | KS(JIS) 63K | H | ANSI 600Lb | 080 | 80 | 400 | 400 |
| | | S | SOCKET WELDING | N | DIN PN16 | K | ANSI 900Lb | 100 | 100 | 450 | 450 |
| | | T | RING JOINT | P | DIN PN25 | L | ANSI 1500Lb | 125 | 125 | 500 | 500 |
| | | N | NPT THREAD | Q | DIN PN40 | M | ANSI 2500Lb | 150 | 150 | 600 | 600 |
| | | L | LARGE GROOVE | R | DIN PN63 | Z | ANSI 4500Lb | | | | |
| | | M | MALE&FEMALE | S | DIN PN100 | | | | | | |
| | | W | WAFER(BOLTED) | T | DIN PN250 | | | | | | |

| 5. FLOW CHARACTERISTIC | | 6. BODY MATERIAL | | 7. DISC MATERIAL | | 8. SEAT MATERIAL | |
|------------------------|--------------------|------------------|---------------------|------------------|-----------------------|------------------|-----------------------|
| E | EQUAL PERCENTAGE | 1 | CAST IRON (GC 200) | 3 | SSC 13 (SUS 304) | 3 | SSC 13 (SUS 304) |
| L | LINEAR | 2 | CAST STEEL (SCPH 2) | 4 | SSC 14 (SUS 316) | 4 | SSC 14 (SUS 316) |
| Q | ON-OFF[QUICK-OPEN] | 3 | SSC 13 (SUS 304) | 9 | SSC 13 (SUS 304) + HF | 9 | SSC 13 (SUS 304) + HF |
| M | MODIFIED EQ % | 4 | SSC 14 (SUS 316) | A | SSC 14 (SUS 316) + HF | A | SSC 14 (SUS 316) + HF |
| D | MODIFIED LINEAR | A | CHROME MOLY (WC 6) | B | SUS 316 + STELLITE | B | SUS 316 + STELLITE |
| | | B | CHROME MOLY (WC 9) | F | 17-4PH (630 SS) | F | 17-4PH (630 SS) |
| | | F | CHROME MOLY (F11) | K | 410 SS | K | 410 SS |
| | | K | CHROME MLY (F22) | L | 420 J2 SS | L | 420 J2 SS |
| | | | | M | CHROME MOLY (F11) | M | CHROME MOLY (F11) |
| | | | | N | CHROME MOLY (F12) | N | CHROME MOLY (F12) |

| 9. BALANCE SEAL MATERIAL | | 10. BONNET TYPE | | 11. ACTUATOR | | 14. ACCESSORIES | |
|--------------------------|----------------|-----------------|--------------|--------------|--|-----------------|----------------------|
| A | EPDM | P | PLAIN | B | BEAR STEM | N | NONE |
| B | VITON | C | CRYOGENIC | G | GEAR BOX | A | AIR FILTER REGULATOR |
| D | 316SS + TFE | E | EXTENSION | D | DIAPHRAGM ACTUATOR (MULTI S/P) | E | E/P POSITIONER |
| E | CARBON | F | FORM BELLOWS | P | PNEUMATIC CYLINDER | P | P/P POSITIONER |
| F | GRAPHITE | W | WELD BELLOWS | M | ELECTRO MOTOR | S | SOLENOID VALVE |
| H | 410SS + CARBON | | | H | HYDRO CYLINDER | L | LIMIT S/W |
| K | 718 INCONEL | | | | 12. FAIL POSITION | B | BOOSTER RELAY |
| N | N/A | | | O | FAIL OPEN POSITION | U | LOCK-UP VALVE |
| | | | | S | FAIL CLOSE POSITION | Q | QUICK EXHAUST V/V |
| | | | | L | FAIL LAST POSITION | C | SPEED CONTROLLER |
| | | | | | 13. ELECT HOUSING STD | M | MANUAL HANDLE |
| | | | | W | WATER PROOF | T | TRANSMITTER |
| | | | | E | EXPLOSION PROOF(Ex...) | R | MASTER VALVE |
| | | | | H | EXPLOSION PROOF(Ex.. IIC(H ₂)) | F | POSITON TRANSMITTEER |



V100 Series Single Seated Globe Valves

The UNICON V100 series control valve is a robust, heavy section single seated globe/angle valve with a contoured plug to accurately control the flow through the valve.

The trim has a high rangeability and gives Class V shutoff capability through metal to metal seating. For bubble tight shut off, Class VI, the plug can be PTFE faced.

Scope of Design

End Connection Sizes

- 1/2" to 8" (15mm to 200mm) as standard

End Connection Styles :

- Flanged • Socket Weld • Threaded • Butt Weld

Valve Body Ratings :

- ANSI 150 to ANSI 600 • Higher on request

Design Standard :

- ANSI B16.34 / PED Certified

Inherent Characteristic :

- Linear • Equal Percentage • Quick Open

Seat Leakage :

- Class IV as standard • V special lapped
- Soft Face Seat for Class VI shut off

Materials of Construction :

- Available in most cast materials

Features :

- Top guided with no bottom guide to obstruct the seat bore and potentially trap debris
- All trim components are removable from the top
- Large range of trim Cv' s per valve size

Performance :

- High flow capacity
- Tight shut off
- Excellent flow control rangeability
- Cast body proportioned to withstand high pipe stresses without distortion

Trim Designs

Contoured Trim - as shown

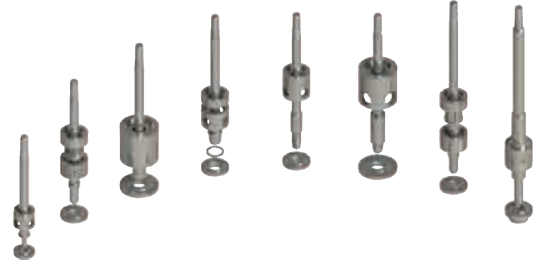
The contoured plug is designed with a specially profiled valve plug head. The plug head profile determines the flow characteristic through the valve, and offers a smooth profile to the flow leading to a high pressure recovery. The trim is most suited to low pressure drop application and is used in the majority of control applications.

- Single & Double-Stage Low Noise and Anti-Cavitation Trim
- Hardened Trim Standard (Stellited Trim)
- Quick Change or Threaded Seat Rings
- Reduced Capacities & Micro flow Trim
- Equal Percentage & Linear Contours
- Soft Seat Design



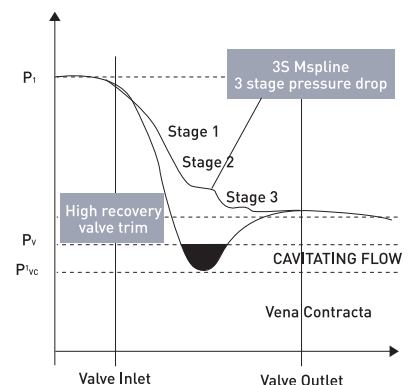
Contoured Trim Soft Faced

A variation of the standard contoured plug is the soft faced option. The plug head is manufactured with a clamped on shroud which locks the soft faced ring in position. When the soft face contacts the seating point it deforms the softer ring ensuring a high degree of closure. The soft faced plug is used on applications where bubble tight shut off is required.



Multi-step Trim

The trim design presented below is a Multi-Step trim. There are 2 Stage, 3 Stage and 5 Stage designs available depending on pressure drop and potential for cavitation. The fluid passes through the flow path generated by incorporating angled flats onto the surface of the plug, together with a cut out on the internal diameter of the seat. The pressure drop is apportioned across the stages of letdown so that the pressure drop progressively reduces as it passes through the stages of the trim. This gives excellent resistance to cavitation on high pressure drop applications. For very high pressure drop applications the plug and seat insert would be manufactured from tungsten carbide or Advanced Ceramic material. The T-cut section is used to counter any misalignment between the valve stem and actuator.



Velocity Limitations

In selecting a valve for either a liquid or gas/vapour application one of the major considerations is the effect of fluid velocity. High velocity could lead to operational problems including erosion, excessive vibration and instability. The following tables indicate the maximum recommended velocity values for liquid and gas/vapour services.

Recommended Maximum Velocities for Liquid Flow

| Trim Design | Valve Size | | Carbon Steel | | Alloy Steel | | Bronze | |
|-------------|------------|------------|--------------|----------|-------------|----------|---------|----------|
| | Size | in | mm | ft / sec | m / sec | ft / sec | m / sec | ft / sec |
| Microflow | 0.5 to 1 | 15 to 25 | 43 | 13.1 | 52 | 15.8 | 26 | 7.6 |
| | 0.5 to 2 | 12 to 50 | 41 | 12.5 | 46 | 14 | 25 | 7.6 |
| | 2.5 to 6 | 65 to 150 | 34 | 10.4 | 34 | 10.4 | 20 | 6.2 |
| Contoured | 8 to 14 | 200 to 350 | 29 | 8.9 | 29 | 8.9 | 17 | 5.2 |
| | 16 to 18 | 400 to 450 | 22 | 6.7 | 22 | 6.7 | 13 | 14 |
| | 20 | 500 | 18 | 5.5 | 18 | 5.5 | 11 | 3.4 |
| | 24 | 600 | 12 | 3.7 | 12 | 3.7 | 7 | 2.1 |
| Hard Facing | 0.5 to 12 | 15 to 300 | 43 | 13.1 | 52 | 15.8 | 26 | 7.6 |
| | 14 to 500 | 350 to 500 | 35 | 10.7 | 43 | 13.1 | 21 | 6.4 |
| | 24 | 600 | 25 | 7.6 | 35 | 10.7 | 15 | 4.6 |

Recommended Maximum Velocities for Gas/Vapours Flows

| Trim Design | Valve Size | | Maximum Inlet | | Maximum Outlet | | Maximum Out Mach. No. for Required Noise Level | | |
|-------------|------------|------------|---------------|----------|----------------|----------|--|--------|--------|
| | Size | in | mm | ft / sec | m / sec | ft / sec | m / sec | >95dBA | <95dBA |
| Microflow | 0.5 to 1 | 15 to 25 | 475 | 144 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| | 0.5 to 2 | 12 to 50 | 340 | 104 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| Contoured | 2.5 to 6 | 65 to 150 | 295 | 90 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| | 8 to 14 | 200 to 350 | 265 | 81 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| | 16 to 18 | 400 to 450 | 190 | 58 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| | 20 | 500 | 150 | 46 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| | 24 | 600 | 115 | 35 | 830 | 253 | 0.65 | 0.5 | 0.3 |
| Hard Facing | 0.5 to 24 | 15 to 600 | 475 | 144 | 830 | 253 | 0.65 | 0.5 | 0.3 |

2

Temperature Range / Seat Leakage

Contoured Trim

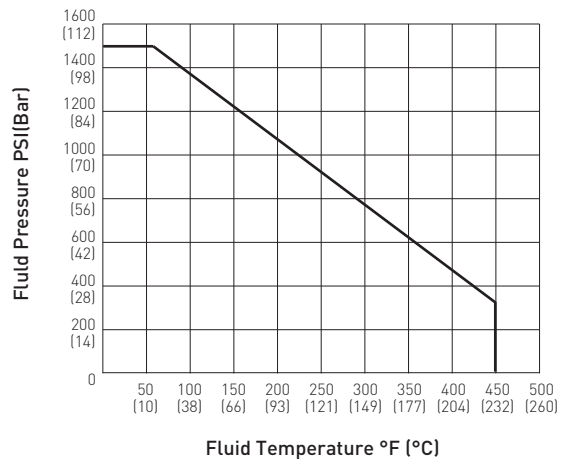
| Valve Size | | Body Rating | Seat Type | Packing Material | Temperature Range | | | | | | Seat Leakage IEC 60534-4 and FCI 70-2 Class | | |
|------------|-----------|--|-----------|------------------|-------------------|-----------------|------------------|-----------------|------------------|-----------------|---|--------|---|
| | | | | | Standard Bonnet | | Extension Bonnet | | Cryogenic Bonnet | | Standard | Option | |
| in | mm | | | | min. | max. | min. | max. | min. | max. | | | |
| 0.5 to 8 | 15 to 200 | ANSI 150 to 600 LBs and Equivalent JIS, PN | Metal | PTFE | -20°F (-29°C) | +450°F (+232°C) | -100°F (-73°C) | +800°F (+427°C) | | | | IV | V |
| | | | | Aramid | | | | | | | | | |
| | | | | Graphite | | | | | | | | | |
| | | | Soft | V-PTFE | | | | | -320°F (-196°C) | +450°F (+232°C) | | | |
| | | | | PTFE | -20°F (-29°C) | +450°F (+232°C) | -100°F (-73°C) | +450°F (+232°C) | | | | VI | |

Low-Noise / Anti-Cavitation Trim

| Valve Size | | Body Rating | Seat Type | Packing Material | Temperature Range | | | | | | Seat Leakage IEC 60534-4 and FCI 70-2 Class | | |
|------------|-----------|---------------------------------|-----------|------------------|-------------------|-----------------|------------------|-----------------|------------------|-----------------|---|--------|---|
| | | | | | Standard Bonnet | | Extension Bonnet | | Cryogenic Bonnet | | Standard | Option | |
| in | mm | | | | min. | max. | min. | max. | min. | max. | | | |
| 0.5 to 8 | 15 to 200 | ANSI 150 to 600 LBs and JIS, PN | Metal | PTFE | -20°F (-29°C) | +450°F (+232°C) | -100°F (-73°C) | +800°F (+427°C) | | | | IV | V |
| | | | | Aramid | | | | | | | | | |
| | | | | Graphite | | | | | | | | | |
| | | | | V-PTFE | | | | | -320°F (-196°C) | +450°F (+232°C) | | | |

- ANSI 900-1500LBs available only in 0.5 to 4 inch (15 to 100 mm) sizes. ANSI 2500LBs available only in 0.5 to 2 inch (15 to 50 mm) sizes.
- See Materials of Construction Tables for other temperature limitations.
- 2-Stage design only available with Quick Change seat rings.
- 2-Stage Anti-Cavitation Trim not available in 6 inch (150 mm) and 8 inch (200 mm) size.
- PTFE Aramid Inorganic Coil Packing for low emissions applications is limited to maximum pressure and temperature as shown in the chart below.
- Soft seat is limited to a maximum of 1000 psi (70 bar) pressure drop and a maximum of 450°F (232°C).

Pressure and Temperature Rating of LE Packing



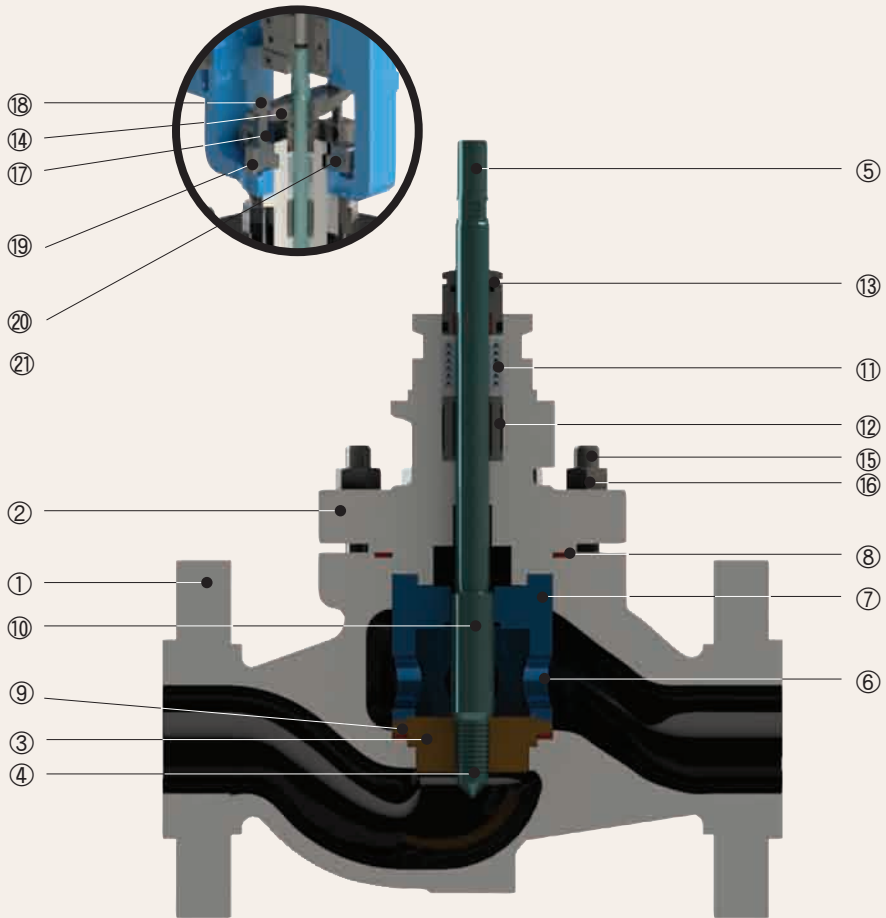
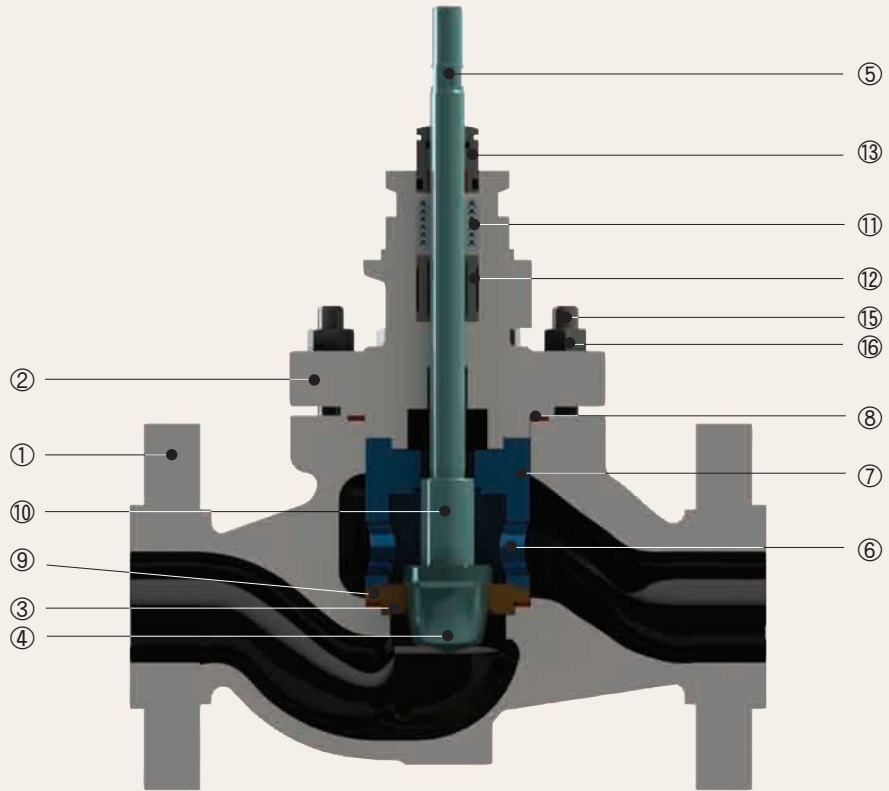
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Ratings / Connections

| Valve Size | | ANSI Class 150 (PN 20) | | | | | ANSI Class 300 (PN 50) | | | | | ANSI Class 600 (PN 100) | | | | |
|------------|-----|------------------------|----|-----|-----|----|------------------------|----|-----|-----|----|-------------------------|----|-----|-----|----|
| Inch | mm | RF | SW | THD | RTJ | BW | RF | SW | THD | RTJ | BW | RF | SW | THD | RTJ | BW |
| 0.5 | 15 | o | o | o | x | x | o | o | o | o | x | o | o | o | o | x |
| 0.75 | 20 | o | o | o | x | x | o | o | o | o | x | o | o | o | o | x |
| 1 | 25 | o | o | o | x | x | o | o | o | o | x | o | o | o | o | x |
| 1.5 | 40 | o | o | o | x | x | o | o | o | o | x | o | o | o | o | x |
| 2 | 50 | o | o | o | x | x | o | o | o | o | x | o | o | o | o | x |
| 2.5 | 65 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 3 | 80 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 4 | 100 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 5 | 125 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 6 | 150 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 8 | 200 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |
| 10 | 250 | o | x | x | x | o | o | x | x | o | o | o | x | x | o | o |

| Valve Size | | ANSI Class 900 (PN 150) | | | | | ANSI Class 1500 (PN 250) | | | | | ANSI Class 2500 (PN 420) | | | | |
|------------|-----|-------------------------|----|-----|-----|----|--------------------------|----|-----|-----|----|--------------------------|----|-----|-----|----|
| Inch | mm | RF | SW | THD | RTJ | BW | RF | SW | THD | RTJ | BW | RF | SW | THD | RTJ | BW |
| 0.5 | 15 | o | o | o | o | x | o | o | o | o | x | o | o | o | o | x |
| 0.75 | 20 | o | o | o | o | x | o | o | o | o | x | o | o | o | o | x |
| 1 | 25 | o | o | o | o | x | o | o | o | o | x | o | o | o | o | x |
| 1.5 | 40 | o | o | o | o | x | o | o | o | o | x | o | o | o | o | x |
| 2 | 50 | o | o | o | o | x | o | o | o | o | x | o | o | o | o | x |
| 2.5 | 65 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| 3 | 80 | o | x | x | o | o | o | x | x | o | o | o | x | x | o | o |
| 4 | 100 | o | x | x | o | o | o | x | x | o | o | o | x | x | o | o |

1. Standard flange of Ra 125-250. Other flange facings and surface finishes available.



4

Materials of Construction

Standard Carbon Steel Version

| Part No. | Temperature Range | -20°F | 450°F | 650°F | 800°F |
|----------|-------------------|---|---------|----------|---------|
| | | (-29°C) | (232°C) | (343°C) | (427°C) |
| | Description | Standard Materials | | | |
| 1 | Body | A216 Gr. WCB | | | |
| 2 | Bonnet | A216 Gr. WCB | | | |
| 3 | Seat Ring | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| 4 | Plug/Disc | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| 5 | Valve Stem | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 17-4PH(630) Stainless Steel | | | |
| 6 | Cage | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| 7 | Guide Bushing | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| | | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| 8 | Body Gasket | 316 S.S. +Teflon -Spiral Wound | | | |
| | | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| 9 | Seat Gasket | 316 S.S. +Teflon -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| 10 | Paug Pin | 316 Stainless Steel | | | |
| 11 | Packing | V-PTFE | | Graphite | |
| | | PTFE Aramid Inorganic Coil | | | |
| 12 | Lantern Ring | 304 Stainless Steel | | | |
| 13 | Packing Gland | 304 Stainless Steel | | | |
| 14 | Packing Flange | 304 Stainless Steel | | | |
| 15 | Body Stud Bolt | A193 Grade B7 | | | |
| 16 | Body Stud Nut | A194 Grade 2H | | | |
| 17 | Packing Stud Bolt | A193 Grade B8 | | | |
| 18 | Packing Stud Nut | A194 Grade 8 | | | |
| 19 | Yoke Half Clamp | 304 Stainless Steel | | | |
| 20 | Clamp Hex. Bolt | A193 Grade B8 | | | |
| 21 | Clamp Hex. Nut | A194 Grade 8 | | | |

- 17-4 PH ST.ST will be substituted when required due to the differential pressure.
- 410 SS bushing not used in combination with 316 SS trim.
- Standard material for two stage lo-db (drilled hole) cages.
- Required for Quick Change trim only.
- Use Solid Stellite plug for Cv smaller than 1.7.
- Guide bushings not used with close clearance trim.
- Solid Stellite is not available for Low-Noise/Anti-Cavitation plugs.

Standard Stainless Steel Version

| Part No. | Temperature Range | -20°F | 450°F | 650°F | 800°F |
|-------------|-------------------|---|---------|-----------|---------|
| | | (-29°C) | (232°C) | (343°C) | (427°C) |
| Description | | Standard Materials | | | |
| 1 | Body | A351 Gr. CF8M | | | |
| 2 | Bonnet | A351 Gr. CF8M | | | |
| 3 | Seat Ring | 316 Stainless Steel | | | |
| | | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 4 | Plug/Disc | 316 Stainless Steel | | | |
| | | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 5 | Valve Stem | 316 Stainless Steel | | | |
| | | 17-4PH(630) Stainless Steel | | | |
| 6 | Cage | 316 Stainless Steel | | | |
| 7 | Guide Bushing | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 8 | Body Gasket | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| | | 316 S.S. + Teflon -Spiral Wound | | | |
| 9 | Seat Gasket | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| 10 | Paug Pin | 316 Stainless Steel | | | |
| 11 | Packing | V-PTFE | | Graphpite | |
| | | PTFE Aramid Inorganic Coil | | | |
| 12 | Lantern Ring | 316 Stainless Steel | | | |
| 13 | Packing Gland | 316 Stainless Steel | | | |
| 14 | Packing Flange | 316 Stainless Steel | | | |
| 15 | Body Stud Bolt | A193 Grade B8 | | | |
| 16 | Body Stud Nut | A194 Grade 8 | | | |
| 17 | Packing Stud Bolt | A193 Grade B8 | | | |
| 18 | Packing Stud Nut | A194 Grade 8 | | | |
| 19 | Yoke Half Clamp | 304 Stainless Steel | | | |
| 20 | Clamp Hex. Bolt | A193 Grade B8 | | | |
| 21 | Clamp Hex. N | A194 Grade 8 | | | |

1. Required for Quick Change trim only.
2. Standard material for two stage lo-db (drilled hole) cages.
3. Use Solid Stellite plug for Cv smaller than 1.7.
4. Guide bushings not used with close clearance trim.
5. Solid Stellite is not available for Low-Noise/Anti-Cavitation plugs.

5

Materials of Construction

Standard Chrome Moly Version

| Part No. | Temperature Range | -20°F (-29°C) | 450°F (232°C) | 650°F (343°C) | 800°F (427°C) |
|----------|-------------------|---|------------------|------------------|------------------|
| | | Standard Materials | | | |
| 1 | Body | A217 Gr. WC9 | | | |
| 2 | Bonnet | A217 Gr. WC9 | | | |
| 3 | Seat Ring | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| 4 | Plug/Disc | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| 5 | Valve Stem | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 17-4PH(630) Stainless Steel | | | |
| 6 | Cage | 304 Stainless Steel | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| | | 410 Stainless Steel + Heat Treatment | | | |
| 7 | Guide Bushing | 304 Stainless Steel + Stellite #6 Hard Facing | | | |
| | | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| 8 | Body Gasket | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| 9 | Seat Gasket | 316 Stainless Steel+Graphite -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| | | 316 S.S. +Teflon -Spiral Wound | | | |
| 10 | Paug Pin | 316 Stainless Steel | | | |
| | | V-PTFE | | | |
| 11 | Packing | Grahpite | | | |
| | | PTFE Aramid Inorganic Coil | | | |
| 12 | Lantern Ring | 304 Stainless Steel | | | |
| 13 | Packing Gland | 304 Stainless Steel | | | |
| 14 | Packing Flange | 304 Stainless Steel | | | |
| 15 | Body Stud Bolt | A193 Grade B7 | | | |
| 16 | Body Stud Nut | A194 Grade 2H | | | |
| 17 | Packing Stud Bolt | A193 Grade B8 | | | |
| 18 | Packing Stud Nut | A194 Grade 8 | | | |
| 19 | Yoke Half Clamp | 304 Stainless Steel | | | |
| 20 | Clamp Hex. Bolt | A193 Grade B8 | | | |
| 21 | Clamp Hex. Nut | A194 Grade 8 | | | |

1. 17-4 PH ST.ST will be substituted when required due to the differential pressure.
2. Required for Quick Change trim only.
3. Standard material for two stage lo-db (drilled hole) cages.
4. Use Solid Stellite plug for Cv smaller than 1.7.
5. Guide bushings not used with close clearance trim.
6. Solid Stellite is not available for Low-Noise/Anti-Cavitation plugs.

NACE Materials Construction

| Part No. | Temperature Range | -20°F (-29°C) | 450°F (232°C) | 650°F (343°C) | 800°F (427°C) |
|----------|-------------------|---|------------------|------------------|------------------|
| | | Standard Materials | | | |
| | Description | | | | |
| 1 | Body | A351 Gr. CF8M | | | |
| 2 | Bonnet | A351 Gr. CF8M | | | |
| 3 | Seat Ring | 316 Stainless Steel | | | |
| | | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 4 | Plug/Disc | 316 Stainless Steel | | | |
| | | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 5 | Valve Stem | 316 Stainless Steel | | | |
| 6 | Cage | 316 Stainless Steel | | | |
| 7 | Guide Bushing | 316 Stainless Steel + Stellite #6 Hard Facing | | | |
| 8 | Body Gasket | 316 Stainless Steel + Graphite -Sprial Wound | | | |
| | | 316 S.S. + Teflon -Sprial Wound | | | |
| 9 | Seat Gasket | 316 Stainless Steel+Graphite -Sprial Wound | | | |
| | | 316 S.S. + Teflon -Sprial Wound | | | |
| 10 | Paug Pin | 316 Stainless Steel | | | |
| 11 | Packing | V-PTFE | | Grahpite | |
| | | PTFE Aramid Inorganic Coil | | | |
| 12 | Lantern Ring | 316 Stainless Steel | | | |
| 13 | Packing Gland | 316 Stainless Steel | | | |
| 14 | Packing Flange | 316 Stainless Steel | | | |
| 15 | Body Stud Bolt | A193 Grade B8 | | | |
| 16 | Body Stud Nut | A194 Grade 8 | | | |
| 17 | Packing Stud Bolt | A193 Grade B8 | | | |
| 18 | Packing Stud Nut | A194 Grade 8 | | | |
| 19 | Yoke Half Clamp | 304 Stainless Steel | | | |
| 20 | Clamp Hex. Bolt | A193 Grade B8 | | | |
| 21 | Clamp Hex. Nut | A194 Grade 8 | | | |

1. Materials and processes in accordance with the requirements of NACE specification MR 0103 Applications requiring compliance to MR 0175, 2003 Rev. or ISO 15156 would require engineering review.
2. Inconel 718 will be substituted in applications when required due to the differential pressure.
3. Materials designated for these parts conform to NACE Class III (unexposed) bolting requirements.
4. Materials designated for these parts conform to NACE Class I or Class II (exposed) bolting requirements.
5. Consult UNICON for NACE Applications above ANSI Class 600 (PN 100) rating or above 450° F (232° C).
6. Optional component and materials for Close Clearance low flow trim option.
7. To be used with stainless steel body and bonnet.
8. Guide bushing not used with close clearance trim.
9. Solid Stellite is not available for Low-Noise/Anti-Cavitation plugs.

6

Flow Coefficient

Cv Values for Series V100 Trims

| Valve Size | | Trim Size | Contoured Trim | | |
|------------|-----|-----------|----------------|--------|------------|
| in | mm | in | Equal % | Linear | Quick Open |
| 1 1/2 | 40 | 1 1/2 | 28 | 28 | 33 |
| | | 1 1/4 | 20 | 20 | 25 |
| | | 1 | 12 | 12 | 16 |
| | | 3/4 | 7 | 7 | 9 |
| 2 | 50 | 2 | 50 | 50 | 60 |
| | | 1 1/2 | 28 | 28 | 33 |
| | | 1 1/4 | 20 | 20 | 25 |
| 3 | 80 | 1 | 7 | 7 | 9 |
| | | 3 | 110 | 110 | 132 |
| | | 2 1/2 | 70 | 70 | 80 |
| 4 | 100 | 2 | 50 | 50 | 60 |
| | | 1 1/2 | 28 | 28 | 33 |
| | | 4 | 160 | 180 | 210 |
| 6 | 150 | 3 | 110 | 110 | 132 |
| | | 2 1/2 | 70 | 70 | 80 |
| | | 2 | 50 | 50 | 60 |
| 8 | 200 | 6 | 360 | 400 | 430 |
| | | 5 | 280 | 300 | 320 |
| | | 4 | 160 | 180 | 210 |
| | | 3 | 110 | 110 | 132 |
| 10 | 250 | 8 | 640 | 720 | 860 |
| | | 7 | 520 | 580 | 660 |
| | | 6 | 360 | 400 | 430 |
| | | 5 | 280 | 300 | 320 |
| 12 | 350 | 4 | 160 | 180 | 210 |
| | | 10 | 1100 | 1200 | 1400 |
| | | 9 | 800 | 900 | 1000 |
| | | 8 | 640 | 720 | 860 |
| | | 7 | 520 | 580 | 660 |
| 12 | 350 | 6 | 360 | 400 | 430 |
| | | 5 | 280 | 300 | 320 |
| | | 12 | 1400 | 1600 | 1900 |
| | | 10 | 1100 | 1200 | 1400 |
| | | 7 | 800 | 900 | 1000 |
| 12 | 350 | 8 | 640 | 720 | 860 |
| | | 9 | 520 | 580 | 660 |
| | | 6 | 360 | 400 | 430 |

Contoured Cv Values for 1/2" -1" (25 mm) Valve Size

| Valve Size | | Trim Size | Contoured Trim | | |
|------------|----|-----------|----------------|--------|------------|
| in | mm | in | Equal % | Linear | Quick Open |
| 1/2 | 15 | 5/32 | 0.3 | 0.3 | 0.4 |
| | | 1/4 | 0.8 | 0.8 | 1.0 |
| | | 3/8 | 1.8 | 1.8 | 2.3 |
| | | 1/2 | 3.2 | 3.2 | 4.0 |
| | | 5/8 | 5.2 | 5.2 | 6.0 |
| | | 3/4 | 7.0 | 7.0 | 9.0 |
| 1 | 25 | 1 | 12.0 | 12.0 | 16.0 |

Microflow Trim

instability problems. This trim design has an inherent flow characteristic of Mod. EQ%, and has excellent rangeability. It is an ideal selection for the control of very low flow rates. For very high pressure drop applications, or flows which would potentially cavitate there are multi-stage options of this design(5 stages maximum), and there are also tungsten carbide and advanced ceramic options for pressure drops greater than 100 bar (1400 psi).The illustration below represents a single stage design. The flow is controlled by one or more flutes machined into a parallel plug nose. In order to achieve the very low flow control and high rangeability, the plug and seat are manufactured as matched pairs to give a 'gravity slide fit'.

Microflow Cv Values

| Valve Size | | Trim Size | Characteristic |
|------------|--------|-----------|----------------|
| in | mm | ref | Mod. Equal% |
| 1/2 | 15 | NO. 00 | 3.0 |
| | | NO. 0 | 1.5 |
| | | NO. 1 | 0.75 |
| | | NO. 2 | 0.45 |
| | | NO. 3 | 0.3 |
| | | NO. 4 | 0.2 |
| | | NO. 5 | 0.13 |
| | | NO. 6 | 0.075 |
| | | NO. 7 | 0.045 |
| | | NO. 8 | 0.03 |
| | | NO. 9 | 0.02 |
| | | NO. 10 | 0.13 |
| | | NO. 11 | 0.075 |
| | | NO. 12 | 0.045 |
| | | NO. 13 | 0.003 |
| NO. 14 | 0.002 | | |
| NO. 15 | 0.0013 | | |

1. On Multi-Stage Trim Designs the No. 00 and No. 0 trims require a 1.1/2" body. Multi-spline trims only available in sizes No.00 to No.6.



1.1 Metal Seated, Leakage Class IV, Teflon Packing

1.1.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | (kg/cm ²) | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 47 | 47 | 47 | 30 | 15 | 9 | 7 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 36 | 29 | 3 | 1 | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 30 | 17 | 7 | 3 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 45 | 20 | 16 | 1 | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 33 | 25 | 9 | 6 | 1 | × |

1.1.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | (kg/cm ²) | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 46 | 27 | 14 | 11 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 30 | 17 | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 34 | 14 | 7 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 45 | 28 | 8 | 5 | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 38 | 14 | 10 | 4 | 3 |

1.1.3 Air Fail Close, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | (kg/cm ²) | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 10 | 4 | 2 | 1 | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 10 | 4 | 2 | 1 | 1 | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 20 | 7 | 3 | 2 | 2 | 1 | 1 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | 2 | 1 | 1 | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 7 | 4 | 3 | 1 | 1 | × | × | × | × |

1.1.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | (kg/cm ²) | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | 1 | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 3 | 2 | 2 | 1 | × | × | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | 2 | 1 | × | × | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 4 | 3 | 1 | × | × | × | × | × | × |

1.2 Metal Seated, Leakage Class V, Teflon Packing

1.2.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 10 | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 25 | 2 | x | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 45 | x | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 25 | 52 | 52 | 52 | 44 | 20 | 7 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 43 | 21 | 9 | x | x | x | x |

1.2.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 7 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 25 | 31 | 6 | 1 | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 25 | 52 | 52 | 52 | 9 | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 25 | 52 | 52 | 52 | 40 | 26 | 12 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 42 | 22 | x | x | x | x |

1.2.3 Air Fail Close, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 42 | 13 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | x | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 9 | 4 | 3 | x | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | x | x | x | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 8 | 4 | x | x | x | x | x | x | x | x |

1.2.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 13 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 2 | 2 | 1 | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | 2 | 1 | 1 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 4 | 3 | 1 | 1 | x | x | x | x | x |

1.3 Metal Seated, Leakage Class IV, Graphite Packing

1.3.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 41 | 41 | 41 | 26 | 14 | 7 | 5 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 33 | 27 | 2 | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 29 | 16 | 6 | 3 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 19 | 16 | 1 | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 40 | 24 | 8 | 6 | × | × |

1.3.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 40 | 23 | 12 | 9 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 33 | 52 | 29 | 16 | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 33 | 13 | 7 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 27 | 8 | 5 | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 37 | 14 | 9 | 4 | 3 |

1.3.3 Air Fail Close, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 5 | 2 | 1 | × | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 5 | 2 | 1 | × | × | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 14 | 5 | 2 | 2 | 2 | 1 | × | × | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 3 | 2 | 2 | 1 | 1 | × | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 4 | 3 | 2 | 1 | 1 | × | × | × | × | × |

1.3.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|---|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 5 | 2 | 1 | × | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 5 | 2 | 1 | × | × | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 14 | 5 | 2 | 2 | 2 | 1 | × | × | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 3 | 2 | 2 | 1 | 1 | × | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 4 | 3 | 2 | 1 | 1 | × | × | × | × | × |

1.4 Metal Seated, Leakage Class V, Graphite Packing

1.4.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 19 | x | x | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 42 | x | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 42 | 19 | 6 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 42 | 20 | 9 | x | x | x | x |

1.4.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 40 | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 27 | 4 | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 24 | 8 | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 25 | 12 | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 41 | 22 | x | x | x | x |

1.4.3 Air Fail Close, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 5 | x | x | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 14 | 5 | 3 | 2 | x | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 3 | 2 | 2 | 1 | 1 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 4 | 3 | 2 | 1 | 1 | x | x | x | x | x |

1.4.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure | 1/2", 3/4", 1" | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|-----|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 26 | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| A100-290 | 2.8 | 52 | 52 | 52 | 5 | 2 | 1 | x | x | x | x | x | x | x | x | x |
| A100-370 | 3.6 | 52 | 52 | 52 | 14 | 5 | 2 | 2 | x | x | x | x | x | x | x | x |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 3 | 2 | 2 | 1 | 1 | x | x | x | x | x |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 4 | 3 | 2 | 1 | 1 | x | x | x | x | x |

1.5 Soft Seated, Leakage Class V, Teflon Packing

1.5.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | | |
|----------------|---|----------------|----|----|----|--------|----|--------|--------|--------|----|--------|-----|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | | |
| A100-250 | 2.8 | 47 | 47 | 47 | 29 | 15 | 7 | 5 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 33 | 27 | 2 | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 28 | 16 | 6 | 3 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 26 | 15 | 3 | 2 | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 39 | 24 | 10 | 7 | 2 | 1 |

1.5.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | | |
|----------------|---|----------------|----|----|----|--------|----|--------|--------|--------|----|--------|-----|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 43 | 24 | 12 | 9 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 51 | 42 | 28 | 16 | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 12 | 7 | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 27 | 10 | 7 | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 37 | 15 | 11 | 6 | 4 |

1.5.3 Air Fail Close, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | | |
|----------------|---|----------------|----|----|----|--------|----|--------|--------|--------|----|--------|-----|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | 1 | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 3 | 2 | 2 | 1 | 1 | × | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 3 | 2 | 1 | 1 | × | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 3 | 3 | 1 | 1 | × | × | × | × | × |

1.5.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply pressure (kg/cm ²) | 1/2", 3/4", 1" | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | | |
|----------------|---|----------------|----|----|----|--------|----|--------|--------|--------|----|--------|-----|-----|-----|-----|
| Seat Size(mm) | | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | × | × | × | × | × | × | × | × |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | 1 | × | × | × | × | × | × | × |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 3 | 2 | 2 | 1 | 1 | × | × | × | × | × |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 3 | 2 | 1 | 1 | × | × | × | × | × |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 3 | 3 | 1 | 1 | × | × | × | × | × |

1.6 Soft Seated, Leakage Class VI, Teflon Packing

1.6.1 Air Fail Close, Flow Direction (UP)

| Valve Size(in) | Air Supply | 1/2", 3/4", 1" | | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|--|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 | |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 47 | 47 | 47 | 32 | 15 | 9 | 7 | x | x | x | x | x | x | x | x | |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 36 | 29 | 3 | 1 | x | x | x | x | x | x | |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 30 | 17 | 7 | 3 | x | x | x | x | |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 46 | 26 | 16 | 2 | x | x | x | |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 40 | 25 | 9 | 4 | 1 | x | |

1.6.2 Air Fail Open, Flow Direction (UP)

| Valve Size(in) | Air Supply | 1/2", 3/4", 1" | | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|--|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 | |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 46 | 27 | 14 | 11 | x | x | x | x | x | x | x | x | |
| A100-290 | 2.8 | 52 | 52 | 52 | 52 | 52 | 52 | 44 | 30 | 17 | x | x | x | x | x | x | |
| A100-370 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 34 | 13 | 7 | x | x | x | x | |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 45 | 28 | 9 | 6 | x | x | |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 38 | 14 | 10 | 5 | 4 | |

1.6.3 Air Fail Close, Flow Direction (DOWN)

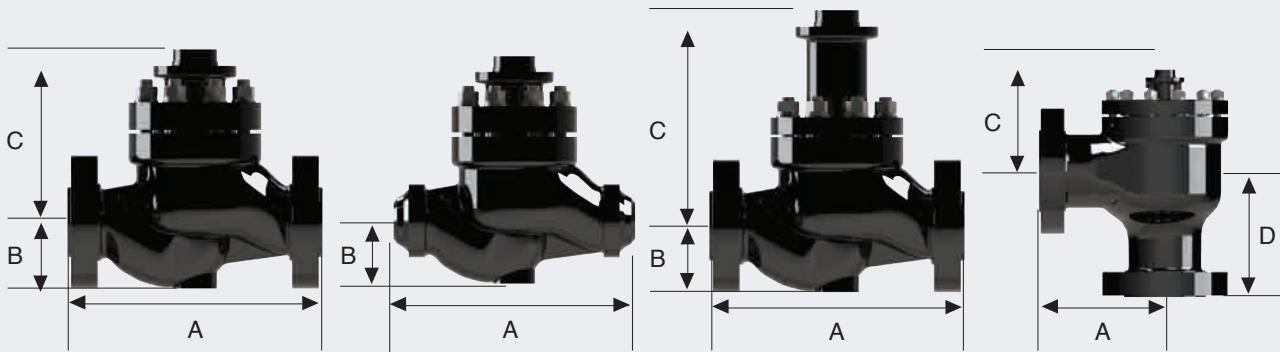
| Valve Size(in) | Air Supply | 1/2", 3/4", 1" | | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|--|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 | |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | x | x | x | x | x | x | x | x | |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | 1 | x | x | x | x | x | x | x | |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 3 | 2 | 2 | 1 | 1 | x | x | x | x | x | |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | 2 | 1 | 1 | x | x | x | x | x | |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 4 | 3 | 1 | 1 | x | x | x | x | x | |

1.6.4 Air Fail Open, Flow Direction (DOWN)

| Valve Size(in) | Air Supply | 1/2", 3/4", 1" | | | | | | 1-1/2" | | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" | |
|----------------|-----------------------|----------------|----|----|----|----|----|--------|----|--------|--------|--------|-----|--------|-----|-----|--|
| Seat Size(mm) | pressure | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 175 | 200 | |
| Valve Stroke | (kg/cm ²) | 20(mm) | | | | | | 30(mm) | | 40(mm) | | 60(mm) | | 80(mm) | | | |
| A100-250 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | x | x | x | x | x | x | x | x | |
| A100-290 | 2.8 | 52 | 52 | 52 | 10 | 4 | 2 | 1 | 1 | x | x | x | x | x | x | x | |
| A100-370 | 3.6 | 52 | 52 | 52 | 20 | 7 | 3 | 2 | 2 | 1 | 1 | x | x | x | x | x | |
| A100-480 | 3.6 | 52 | 52 | 52 | 52 | 52 | 6 | 4 | 2 | 1 | 1 | x | x | x | x | x | |
| A100-550 | 3.6 | 52 | 52 | 52 | 52 | 52 | 7 | 4 | 3 | 1 | 1 | x | x | x | x | x | |

10

Dimensions



V100 Series Dimensions (mm)

ANSI Class 150 through 2500 and equivalent PN

| Valve Size (inch) | A | | | | | | | | | | | | | | | |
|----------------------|-----------------------|--------|------------------------|-----|--------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|------------------------|-----|--------------------|------|
| | ANSI Class 150-600 | | ANSI Class 900-1500 | | ANSI Class 2500 | | ANSI Class 150 | | ANSI Class 300 | | ANSI Class 600 | | ANSI Class 900-1500 | | ANSI Class 2500 | |
| | BW | SW&THD | SW | BW | SW | BW | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ |
| 0.5 | × | | × | × | × | × | 184 | × | 190 | × | 203 | 203 | 273 | 273 | 278 | 278 |
| 0.75 | × | 210 | 216 | × | 318 | × | 184 | × | 194 | 206 | 206 | 206 | 273 | 273 | 308 | 308 |
| 1 | × | 210 | 216 | × | 318 | × | 184 | 197 | 197 | 210 | 210 | 210 | 292 | 292 | 318 | 318 |
| 1.5 | × | 251 | 235 | × | 330 | × | 222 | 235 | 235 | 248 | 251 | 251 | 333 | 333 | 359 | 362 |
| 2 | 286 | 286 | 292 | 292 | 375 | 286 | 254 | 267 | 267 | 282 | 286 | 289 | 375 | 378 | 413 | 416 |
| 3 | 336 | × | × | 460 | × | | 298 | 311 | 318 | 333 | 337 | 340 | 440 | 463 | 498 | 504 |
| 4 | 394 | × | × | 530 | × | | 353 | 365 | 368 | 384 | 394 | 397 | 510 | 533 | 575 | 585 |
| 6 | 508 | × | × | 768 | × | | 451 | 460 | 473 | 489 | 508 | 511 | 715 | 776 | 820 | 833 |
| 8 | 610 | × | × | 832 | × | | 543 | 556 | 568 | 584 | 610 | 610 | 915 | 982 | 1020 | 1036 |

| Valve Size (inch) | B | | | | | | | | | | | | | | | | | | | |
|----------------------|-----------------------|-----|-------------------|-----|-----------------------|----|------------------------|-----|--------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|------------------------|--------|--------------------|--|
| | ANSI Class 150-300 | | ANSI Class 600 | | ANSI Class 150-600 | | ANSI Class 900-1500 | | ANSI Class 2500 | | ANSI Class 150 | | ANSI Class 300 | | ANSI Class 600 | | ANSI Class 900-1500 | | ANSI Class 2500 | |
| | BW | BW | SW&THD | BW | SW | BW | SW | RF | RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | RF&RTJ | |
| 0.5 | 40 | 40 | 40 | × | 40 | × | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | |
| 0.75 | 40 | 40 | 46 | × | 45 | × | 47 | 49 | 49 | 59 | 59 | 59 | 59 | 65 | 70 | | | | | |
| 1 | 44 | 44 | 46 | × | 52 | × | 56 | 54 | 62 | 62 | 62 | 62 | 75 | 80 | | | | | | |
| 1.5 | 61 | 61 | 64 | × | 68 | × | 74 | 64 | 78 | 78 | 78 | 78 | 89 | 102 | | | | | | |
| 2 | 76 | 76 | 76 | 86 | 86 | 94 | 94 | 76 | 83 | 83 | 83 | 83 | 108 | 118 | | | | | | |
| 3 | 94 | 94 | 94 | 120 | 120 | | | 95 | 105 | 105 | 105 | 105 | 150 | 165 | | | | | | |
| 4 | 118 | 140 | 140 | 142 | 142 | | | 114 | 127 | 127 | 137 | 137 | 170 | 195 | | | | | | |
| 6 | 159 | 187 | 187 | 207 | 207 | | | 140 | 159 | 159 | 178 | 178 | 207 | 260 | | | | | | |
| 8 | 190 | 197 | 197 | 250 | 250 | | | 190 | 190 | 190 | 197 | 197 | 250 | 330 | | | | | | |

| Valve Size (inch) | C | | | | | | | | |
|----------------------|-----------------------|-------------------|------------------------|--------------------|-----------------------|-------------------|------------------------|--------------------|-----------------------|
| | Standard Bonnet | | | | Extension Bonnet | | | | Bellows Bonnet |
| | ANSI Class 150-300 | ANSI Class 600 | ANSI Class 900-1500 | ANSI Class 2500 | ANSI Class 150-300 | ANSI Class 600 | ANSI Class 900-1500 | ANSI Class 2500 | ANSI Class 150-300 |
| 0.5 | 86 | 86 | 90 | 96 | | | | 280 | 225 |
| 0.75 | 142 | 142 | 193 | 193 | 249 | 249 | 272 | 272 | 427 |
| 1 | 142 | 142 | 193 | 193 | 249 | 249 | 272 | 272 | 427 |
| 1.5 | 140 | 140 | 220 | 229 | 254 | 254 | 297 | 297 | 387 |
| 2 | 140 | 140 | 229 | 272 | 254 | 254 | 297 | 312 | 387 |
| 3 | 203 | 203 | 284 | 365 | 318 | 318 | 352 | 385 | 603 |
| 4 | 206 | 239 | 334 | 452 | 320 | 320 | 450 | 490 | 606 |
| 6 | 284 | 282 | 455 | 680 | 424 | 424 | 555 | 578 | 756 |
| 8 | 380 | 380 | 515 | 720 | 450 | 450 | 555 | 605 | 846 |

| Valve Size (inch) | D | | | | | | | | | | | | | | | |
|----------------------|-----------------------|-----------------|------------------------|-----|--------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|------------------------|----|--------------------|--|
| | ANSI Class 150-300 | | ANSI Class 900-1500 | | ANSI Class 2500 | | ANSI Class 150 | | ANSI Class 300 | | ANSI Class 600 | | ANSI Class 900-1500 | | ANSI Class 2500 | |
| | BW, SW & THD | BW, SW & THD | BW, SW & THD | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | RF | RTJ | |
| 0.5 | 105 | 108 | 159 | 92 | 92 | 79 | 105 | 105 | 105 | 137 | 137 | 154 | 154 | | | |
| 0.75 | 105 | 108 | 159 | 92 | 92 | 99 | 105 | 105 | 105 | 137 | 137 | 154 | 154 | | | |
| 1 | 105 | 108 | 159 | 92 | 92 | 98 | 105 | 105 | 105 | 146 | 146 | 159 | 159 | | | |
| 1.5 | 125 | 118 | 165 | 111 | 111 | 118 | 124 | 126 | 125 | 167 | 167 | 179 | 181 | | | |
| 2 | 143 | 141 | 187 | 127 | 127 | 133 | 141 | 143 | 145 | 187 | 189 | 207 | 208 | | | |
| 3 | 168 | | | 149 | 149 | 159 | 167 | 168 | 170 | | | | | | | |
| 4 | 197 | | | 176 | 170 | 184 | 192 | 197 | 198 | | | | | | | |
| 6 | 254 | | | 226 | 226 | 236 | 245 | 254 | 256 | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |

Weights

V100 Series

ANSI Class 150 through 2500 and equivalent PN

| Valve Size (mm) | ANSI Class 150-300 | | ANSI Class 600 | | ANSI Class 900-1500 | | ANSI Class 2500 | |
|--------------------|-----------------------|--------------|-------------------|--------------|------------------------|--------------|--------------------|--------------|
| | FLG | BW, SW & THD | FLG | BW, SW & THD | FLG | BW, SW & THD | FLG | BW, SW & THD |
| 0.5 | 10 | | | | | | | |
| 0.75 | 16 | 12 | 17 | 12 | 26 | 20 | 32 | 20 |
| 1 | 16 | 12 | 17 | 12 | 34 | 20 | 41 | 20 |
| 1.5 | 22 | 16 | 24 | 16 | 45 | 26 | 53 | 26 |
| 2 | 26 | 20 | 29 | 20 | 65 | 37 | 116 | 70 |
| 3 | 58 | 33 | 58 | 45 | 120 | 78 | 193 | 138 |
| 4 | 89 | 55 | 98 | 61 | 200 | 123 | 283 | 198 |
| 6 | 161 | 108 | 204 | 123 | 460 | 403 | 818 | 628 |
| 8 | 245 | 240 | 330 | 250 | 259 | 512 | 1,432 | 1,125 |

A100 & A300 Series

Pneumatic Diaphragm & Cylinder type

Unicon's pneumatic diaphragm actuator and double acting type cylinder actuator are the source of driving force operate control valves, Unicon's has developed and designed model V-100 multi-spring diaphragm actuator and model A300 double acting or spring return cylinder actuators for all the reciprocating valves we manufacture.

The Unicon's range of multi-spring diaphragm actuator is designed to suit the majority of control applications and offer an economical solution to valve control. The unit features a high integrity steel casing which houses the spring return mechanism. The design height of the actuator is reduced when compared to conventional single spring actuators.

The multi-spring diaphragm actuator is available in either reverse acting or direct acting type. Both range are suitable for modulating applications when used in conjunction with a suitable control device.

Alternatively they can be used for On/Off applications. A number of optional features can also be specified such as manual hand-wheels or travel limit stops.

The simplicity of design of the actuator enables routine maintenance in the field without the need for removal of the actuator to the workshop.

Air Fail Close

- Economical design
- Simply top and top side mounted hand-wheels
- Compact design with reduced height
- Height strength actuators case with rugged design
- Low volume between diaphragm and actuator case
- High stability
- Low hysteresis

Pneumatic Multi-Spring Diaphragm Actuator for Performance Data

Air Fail Close

Air Supply Pressure : kg/cm²

| Actuator Size | Effective Area cm ² | Air Supply Pressure (kg/cm ²) | Travel(mm) | | | | | | | | | | | | |
|---------------|--------------------------------|---|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 120 | | |
| 250 | 270 | 2.8 | 1.32-2.20 | 0.63-2.02 | | | | | | | | | | | |
| 290 | 390 | 2.8 | | 0.98-1.95 | 0.49-1.95 | | | | | | | | | | |
| 370 | 650 | 3.6 | | 1.44-2.34 | 0.99-2.34 | 0.54-2.34 | | | | | | | | | |
| 370L | 650 | 3.6 | | | | 0.81-2.84 | | | | | | | | | |
| 480 | 1130 | 3.6 | | | | 1.28-2.37 | 1.01-2.37 | 0.73-2.37 | 0.46-2.37 | | | | | | |
| 480H | 1130 | 3.6 | | | | | 0.62-2.83 | | | | | | | | |
| 550 | 1520 | 3.6 | | | | | 1.38-2.48 | 1.15-2.48 | 0.93-2.48 | 0.71-2.48 | 0.49-2.48 | 1.13-2.80 | 0.80-2.80 | | |
| 550S | 1520 | 3.6 | | | | | | | 0.64-2.69 | | | | | | |

Air Fail Open

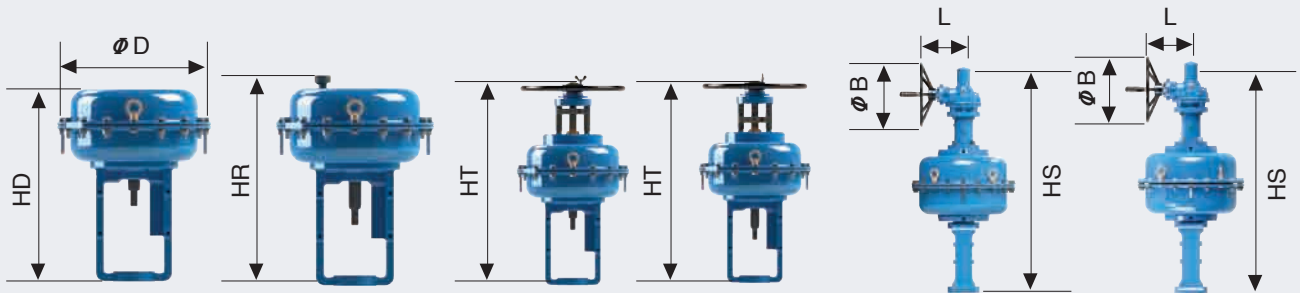
Air Supply Pressure : kg/cm²

| Actuator Size | Effective Area cm ² | Air Supply Pressure (kg/cm ²) | Travel(mm) | | | | | | | | | | | | |
|---------------|--------------------------------|---|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 120 | | |
| 250 | 270 | 2.8 | 0.63-1.32 | 0.63-2.02 | | | | | | | | | | | |
| 290 | 390 | 2.8 | | 0.49-1.46 | 0.49-1.95 | | | | | | | | | | |
| 370 | 650 | 3.6 | | 0.54-1.44 | 0.54-1.89 | 0.54-2.34 | | | | | | | | | |
| 480 | 1130 | 3.6 | | | | 0.46-1.56 | 0.46-1.83 | 0.46-2.10 | 0.46-2.37 | | | | | | |
| 550 | 1520 | 3.6 | | | | | 0.49-1.60 | 0.49-1.82 | 0.49-2.04 | 0.49-2.26 | 0.49-2.48 | 0.80-2.47 | 0.80-2.80 | | |

12

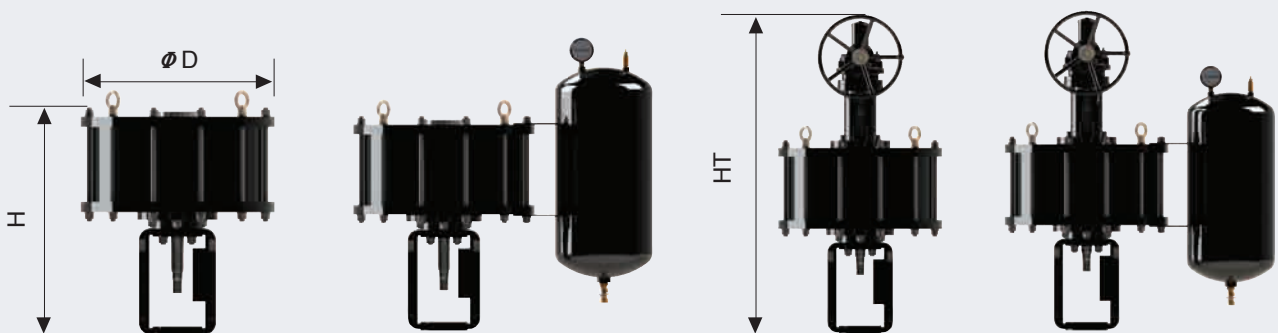
Dimensions

A-100 Valve Actuator for Diaphragm



| Actuator Size | D | Without Handwheel | | | | Side Handwheel | | | |
|---------------|-----|-------------------|-----|-----|-----|----------------|------|-----|---|
| | | DA | RA | DA | RA | DA | RA | L | B |
| | | HD | HR | HT | HT | HS | HS | | |
| 250 | 250 | 330 | 360 | 475 | 475 | | | | |
| 290 | 290 | 370 | 400 | 535 | 535 | | | | |
| 370 | 370 | 410 | 440 | 570 | 570 | | | | |
| 370L | 370 | 460 | 490 | 655 | 655 | | | | |
| 480 | 480 | 630 | 670 | | | 1080 | 1080 | 265 | |
| 550 | 550 | 705 | 745 | | | 1120 | 1120 | 265 | |

A-300 Valve Actuator for Cylinder



| Actuator Size | D | Without Handwheel | | | With Handwheel | | A | B |
|---------------|-----|-------------------|-------------|-------------|----------------|--|---|---|
| | | H | Min. Stroke | Max. Stroke | HT | | | |
| 12 | 370 | 645 | | 100 | 1080 | | | |
| 16 | 472 | 665 | | 120 | 1100 | | | |
| 20 | 578 | 685 | | 120 | 1120 | | | |

13

Useful Equivalents

U.S. CUSTOMARY UNITS

Specific gravity of air $G = 1$ (reference for gases)

U.S.gallon of water = 8.33 lbs @ std.cond
 1 cubic foot of water = 7.48 gallons
 Air specific volume = $1/\text{density} = 13.1$ cubic feet/lb
 G of any gas = density of gas/0.076

Specific gravity of water = 1 (reference for liquids)

1 cubic foot of water = 62.34 lbs @ std.cond(=density)
 1 cubic foot of air = 0.176 lbs @ std.cond(=air density)
 Air molecular weight $M = 29$
 G of any gas = molecular wt.of gas/29

$$G \text{ of gas at flowing temp} = \frac{G \times 520}{T + 460}$$

Standard conditions (U.S customary) are at 14.69 psia and 60°F

Flow conversion of gas

$$\text{SCFH} = \frac{\text{Lbs / hr}}{\text{density}} \quad \text{SCFH} = \frac{\text{Lbs / hr} \times 379}{M} \quad \text{SCFH} = \frac{\text{Lbs / hr} \times 13.1}{G}$$

Flow conversion of liquid

$$\text{GPM} = \frac{\text{Lbs / hr}}{500 \times G}$$

Temperature Conversion

$$F \text{ (Fahrenheit)} = C(9/5) + 32 \quad C \text{ (Celsius)} = (F-32)5/9$$

METRIC CONVERSION TABLES

| Multiply | By | To Obtain |
|------------------------|----------|----------------------|
| LENGTH | | |
| millimeters | 0.039 | inches |
| centimetre | 0.394 | inches |
| inches | 2.54 | centimeters |
| feet | 30.48 | centimeters |
| feet | 0.304 | meters |
| AREA | | |
| sq.centimeters | 0.155 | sq.inches |
| sq.centimeters | 0.001076 | sq.feet |
| sq.inches | 6.452 | sq.centimeters |
| sq.inches | 0.00694 | sq.feet |
| sq.feet | 929 | sq.centimeters |
| FLOW RATES | | |
| gallons US/minute(GPM) | 3.785 | liters/min |
| gallons US/minute | 0.133 | ft ³ /min |
| gallons US/minute | 0.227 | m ³ /hr |
| cubic feet/minute | 7.481 | GPM |
| cubic feet/hour | 0.1247 | GPM |
| cubic feet/hour | 0.01667 | ft ³ /min |
| cubic meters/hour | 4.403 | GPM |
| cubic meters/hour | 35.31 | ft ³ /hr |
| VELOCITY | | |
| feet per second | 0.3048 | meters/second |
| feet per second | 1.097 | km/hr |
| feet per second | 0.6818 | miles/hr |

| Multiply | By | To Obtain |
|----------------------------|---------|-----------------------------|
| VOLUME AND CAPACITY | | |
| cubic feet | 28.32 | liters |
| cubic feet | 7.4805 | gallons |
| liters | 61.02 | cubic inches |
| liters | 0.03531 | cubic feet |
| liters | 0.264 | gallons |
| gallons | 3785.0 | cubic cm |
| gallons | 231.0 | cubic inches |
| gallons | 0.1337 | cubic feet |
| WEIGHT | | |
| pounds | 0.453 | kilogram |
| kilogram | 2.205 | pounds |
| PRESSURE AND HEAD | | |
| pounds/sq. inch | 0.06895 | bar |
| pounds/sq. inch | 0.06804 | atmosphere |
| pounds/sq. inch | 0.0703 | kg/cm ² |
| pounds/sq. inch | 2.307 | ft of H ₂ O(4°C) |
| pounds/sq. inch | 0.703 | m of H ₂ O(4°C) |
| pounds/sq. inch | 5.171 | cm of Hg(0°C) |
| pounds/sq. inch | 2.036 | in of Hg(0°C) |
| atmosphere | 14.69 | psi |
| atmosphere | 1.013 | bar |
| atmosphere | 1.033 | kg/cm ² |
| atmosphere | 101.3 | kPa |
| bar | 14.50 | psi |
| kilogram/sq. cm | 14.22 | psi |
| kiloPascal | 0.145 | psi |

Cv (Valve coefficient) calculation

Liquid Pressure condition

$$1) \Delta P < F_L^2 (P_1 - P_{vc}) \quad C_v = \frac{1.167 \times Q \times \sqrt{G}}{\sqrt{\Delta P}}$$

$$2) \Delta P \geq F_L^2 (P_1 - P_{vc}) \quad C_v = 1.167 \times \frac{Q}{F_L} \times \sqrt{\left(\frac{G}{P_1 - P_{vc}} \right)}$$

Steam Pressure condition

$$1) \Delta P < 0.5 \times F_L^2 \times P_1 \quad C_v = \frac{W \times (1 + 0.00126 T_{sh})}{13.5 \times \sqrt{(\Delta P \times (P_1 + P_2))}}$$

$$2) \Delta P \geq 0.5 \times F_L^2 \times P_1 \quad C_v = \frac{W \times (1 + 0.00126 T_{sh})}{11.7 \times P_1 \times F_L}$$

Gas Pressure condition

$$1) \Delta P < 0.5 \times F_L^2 \times P_1 \quad C_v = \frac{Q \times \sqrt{(G \times T)}}{289 \times \sqrt{(\Delta P \times (P_1 + P_2))}}$$

$$2) \Delta P \geq 0.5 \times F_L^2 \times P_1 \quad C_v = \frac{Q \times \sqrt{(G \times T)}}{250 \times P_1 \times F_L}$$

Where :

| | |
|-----------------------------|--|
| Inlet pressure | P_1 ; (kg ^f /cm ² A) |
| Outlet pressure | P_2 ; (kg ^f /cm ² A) |
| Differential pressure | (kg ^f /cm ²) |
| Specific gravity | G ; |
| Flow rate of liquid | Q ; (m ³ /h) |
| Flow rate of gas | Q ; (m ³ /h) ; (at 15°C, 1.013 mbar) = Nm ³ /h × (288/273) |
| Flow rate of steam | W ; (kg ^f /h) |
| Flow temperature | T ; (°K) |
| - at valve inlet | = 273 + °C |
| Degree of superheat | T _{sh} ; (°C) |
| Pressure recovery | F _L ; |
| - factor | |
| Vena contracta pressure | P _{vc} ; (kg ^f /cm ² A) |
| Saturated vapour pressure | P _v ; (kg ^f /cm ² A) |
| - of liquid at upstream | |
| - temperature | |
| Critical pressure of liquid | P _c ; (kg ^f /cm ² A) |
| Valve Coefficient Cv | |

ISA S75.01-1985(R1995), Flow Equations for Sizing Control Valves, Reserch Triangle Park, NC : ISA, 1995

Severe Service
High-Temperature



Single Seated Type Globe Control Valve



General Service
Single Seated Type



Severe Service
Cage Guided Type



Severe Service
Angle Type



Severe Service
Multi Stage Type



Desuperheater
Mechanical Nozzle

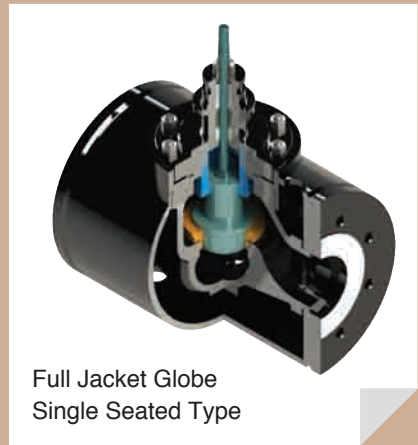
Product Gallery



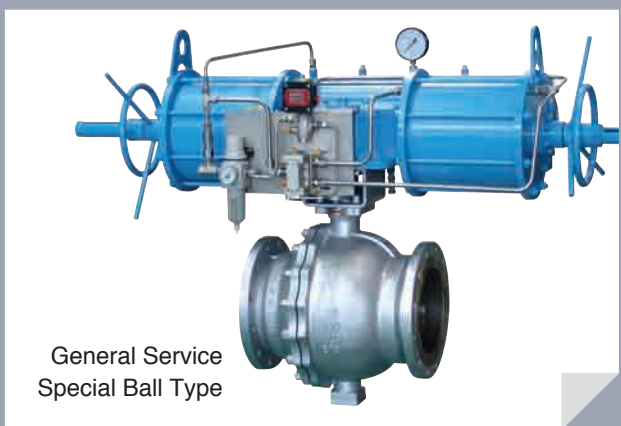
Sever Service
Motor Actuated Type



Desuperheater
Nozzle Spray Control



Full Jacket Globe
Single Seated Type



General Service
Special Ball Type



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