

SOURCE VERSA GATE VALVE GENERAL CATALOG



API 6A LICENSE  
LICENSE NO. 6A-0541



SV-00 R00



API 6D LICENSE  
LICENSE NO. 6D-0477

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**SOURCE** versa gate valves are manufactured from selected high grade materials. Advanced machine tools and technological process ensure dimensional accuracy, precision machining and consistent high quality. Each valve is inspected and tested in conformance to applicable API specifications and ISO 9001 quality system to ensure it meets the exacting standards mandated by its end user.

SOURCE versa valves are designed to API 6A and API 6D specifications as well as other applicable industrial standards.

SOURCE has verified the performance of its valves through mandatory testing which are witnessed and certified by third parties.

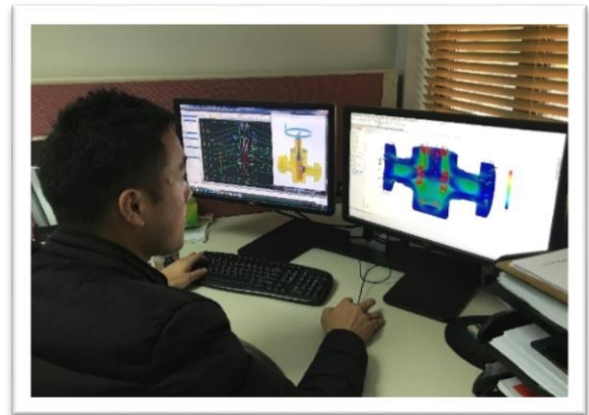
SOURCE is licensed to apply the API monogram on all of its valve products.

SOURCE is committed to consistently providing its customers with high-quality and reliable valve products through applying overall management system and pursuing scientific and technical innovation

## SOURCE ENGINEERING CONTROL

SOURCE valve products are designed and manufactured strictly in compliance to recognized international standards such as API, ANSI, ASME, ASTM, NACE and others.

Source engineered products feature ease of operation which afford low operating torque with high level of safety.



## SOURCE QUALITY SYSTEM

SOURCE is committed to maintain an effective quality management to comply with all customers, industrial and applicable regulatory requirements, continually improving the quality program to stay relevant, to devote much attention to the employees' training and development, investment in engineering & manufacturing technology, and investment in health, safety & environment program.



**Certificate No: 6A-0541**

License Scope includes:

- Valves & Cokes at PLS-1, PSL-2, PSL-3, PSL-3G, PSL-4
- Adapter and Spacer Spools
- Blind and Test Flanges
- Tees and Crosses
- Valve Removal Plugs
- Threaded Connectors
- Ring Gaskets
- Bull Plugs



**Certificate No: 6D-0477**

License Scope includes:

- Gate Valves



## QUALITY CONTROL EQUIPMENT

In order to assure SOURCE products comply with international quality standards and customer specified requirements, in-house equipments are kept for monitoring control, some of this equipment includes:



### UT

SOURCE has ASNT Level III Certified personnel to perform UT examination on incoming raw materials, in-process welds and overlay.

### MT

SOURCE has bench type, movable and yoke-type MT equipments for examination of different profiles of ferromagnetic material, the NDT personnel are ISO9712 Level II certified.



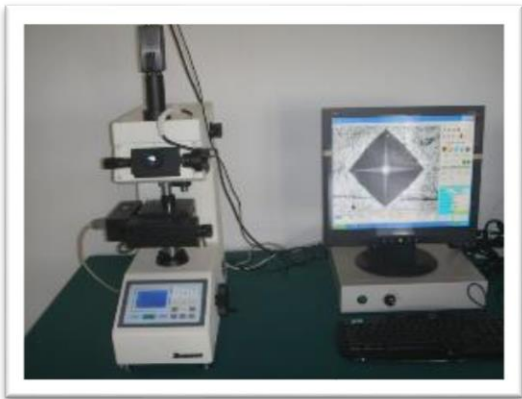
### PT

SOURCE has the certified personnel and materials to perform PT examination by solvent removable or water washable techniques.

### Brinell and Rockwell Hardness Test

Hardness test on valve part such as valve body, bonnet, stem and seat.





**Vickers Hardness Test**

Tungsten Carbide coating of gate and seat will be conducted Vickers hardness test.

**Flatness Examination**

SOURCE has light band equipment for flatness examination of gate and seat.

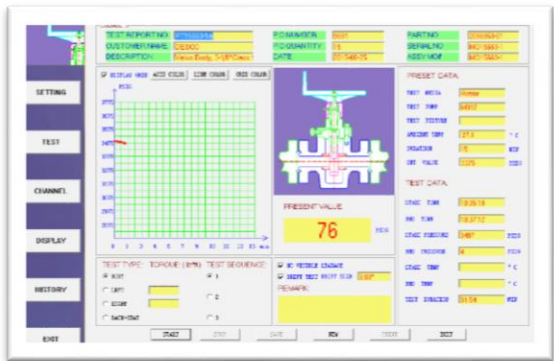


**Ball Gage**

SOURCE has Gagemaker and Miller ball gage for in-process and final inspection on valve groove dimension.

**Pressure Test System**

SOURCE has advanced pressure test and computerized test data acquisition system for hydrostatic and gas testing of valves.

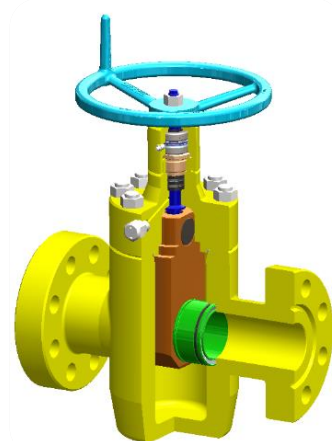


**SLAB GATE VALVES****Gate Valve (General, up to 5000psi)**

The Versa Gate Valve is designed for oil and natural gas wellhead, manifold or other critical service applications. Available up to 5000psi (Special type can be up to 6500psi) work pressure with flanged or thread end connections. Valve PSL ranges from PSL-1, PSL-2, PSL-3, PSL-3G and PSL-4. The Valve is designed, manufactured and test according to the latest requirements of API 6A.

**FEATURES:**

- Bi-directional Flow and Seal
- Metal to Metal Sealing (Gate-to-Seat & Seat-to-Body)
- Non-rising Stem Design
- Floating Gate and Seat Design
- Stem Backseat
- Full Through Conduit Bore Design
- Thrust Bearing, Low Operating Torque
- Forged Body and Bonnet
- Test to Requirements of API 6A

**Gate Valve (High-Pressure, up to 10000psi)**

The Versa Gate Valve is designed for oil and natural gas wellhead, manifold or other critical service applications. Available for 10000 and 15000psi work pressure with flanged end connections. Valve PSL ranges from PSL-1, PSL-2, PSL-3, PSL-3G and PSL-4.

The Valve is designed, manufactured and test according to the latest requirements of API 6A.

**FEATURES:**

- Bi-directional Flow and Seal
- Metal to Metal Sealing (Gate-to-Seat & Seat-to-Body)
- Special Seat Seal Design
- Gate and Seat Sealing surface with Special hard-facing
- Non-rising Stem Design
- Floating Gate and Seat Design
- Stem Backseat
- Full Through Conduit Bore Design
- Thrust Bearing, Low Operating Torque
- Forged Body and Bonnet
- Test to Requirements of API 6A



## SLAB GATE VALVES

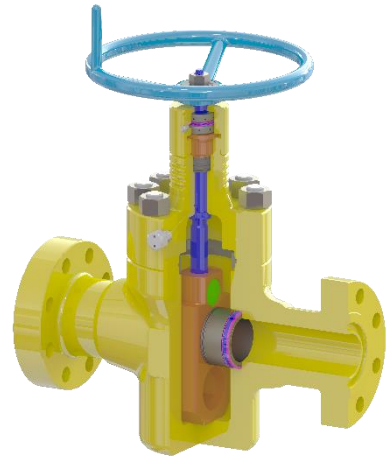
### Gate Valve (High-Temp)

The Versa Gate Valve is designed for steam injection on x-trees and wellheads or other critical service applications with extreme heat up to 350°C (660°F). Available with flanged or threaded end connections for working pressures up to 10000 psi. Valve PSL ranges from PSL-1, PSL-2, PSL-3, PSL-3G and PSL-4.

The Valve is designed, manufactured and test according to the latest requirements of API 6A.

#### FEATURES:

- Bi-directional Flow and Seal
- Metal to Metal Sealing (Gate-to-Seat & Seat-to-Body)
- Special Seat Seal Design
- Gate and Seat Sealing surface with Special hard-facing
- Non-rising Stem Design
- Floating Gate and Seat Design
- Stem Backseat
- Full Through Conduit Bore Design
- Thrust Bearing, Low Operating Torque
- Forged Body and Bonnet
- Test to Requirements of API 6A



### Gate Valve (Mud Line)

The Versa Gate Valve is designed for mud line service applications. Available with flanged or threaded end connections for working pressures up to 10000 psi. Valve PSL ranges from PSL-1, PSL-2, PSL-3, PSL-3G and PSL-4.

The Valve is designed, manufactured and test according to the latest requirements of API 6A.

#### FEATURES:

- Bi-directional Flow and Seal
- Metal to Metal Sealing (Gate-to-Seat & Seat-to-Body)
- Special Seat Seal Design
- Gate and Seat Sealing surface with Special hard-facing
- Special Seat Seal Design
- Non-rising Stem Design
- Floating Gate and Seat Design
- Stem Backseat
- Full Through Conduit Bore Design
- Thrust Bearing, Low Operating Torque
- Forged Body and Bonnet
- Test to Requirements of API 6A





## CHOKE VALVES

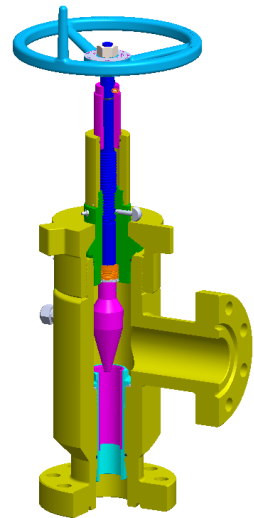
### Adjustable Choke

The Positive Choke Valve is intended to control production rate of the oil well and the valve maintains a constant flow restriction based on the installed bean size, application on X-tmas trees and manifolds. Available with flanged or threaded end connections for working pressures of up to 5000 psi

The Positive Choke Valve is designed, manufactured according to the latest requirements of API 6A.

#### FEATURES:

- 2000 to 5000 psi WP
- 2-1/16" to 3-1/8"
- Metal to Metal Sealing (Bonnet-to-Body)
- Closed Die Forged Valve Body
- Stainless Steel Bean with Tungsten Carbide Wear Sleeve
- Orifice Sizes 2" Max.
- Non elastomeric stem packing
- Low operating torque
- Test to Requirements of API 6A
- Easy Operation and Maintenance



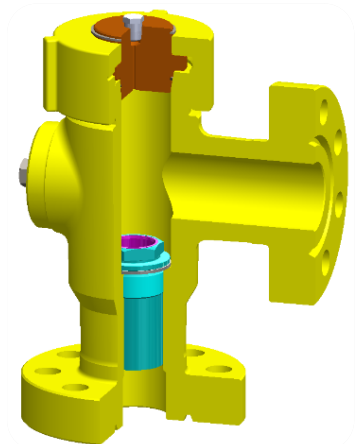
### Positive Choke

The Positive Choke Valve is intended to control production rate of the oil well and the valve maintains a constant flow restriction based on the installed bean size, application on X-tmas trees and manifolds. Available with flanged or threaded end connections for working pressures of up to 5000 psi

The Positive Choke Valve is designed, manufactured according to the latest requirements of API 6A.

#### FEATURES:

- 2000 to 5000 psi WP
- 2-1/16" to 3-1/8"
- Metal to Metal Sealing (Bonnet-to-Body)
- Closed Die Forged Valve Body
- Stainless Steel Bean with Tungsten Carbide Wear Sleeve
- Orifice Sizes 2" Max.
- Test to Requirements of API 6A
- Easy Operation and Maintenance





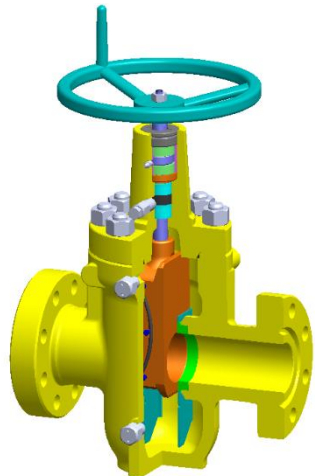
**EXPANDING GATE VALVES (GEOTHERMAL GATE VALVE)****Expanding Gate Valve, Non-rising Stem**

GEOTHERMAL EXPANDING GATE VALVE is full bore through conduit valve with rising stem and parallel expanding gate and segment for tight mechanical seal which is normally unaffected by pressure variation.

The expanding gate valve is designed, manufactured according to the latest requirements of API 6A or API 6D upon request.

**FEATURES:**

- NPS Size 2"~ 3" (2-1/16" ~3-1/8")
- Pressure Class:600 to 900 (2000psi ~3000psi)
- QSL 1 to 4 or PSL-1 to PSL-4
- High temperature (up to 650 °F) Low temperature (up to -20 °F)
- Directional sealing
- Expanding wedge gate and seats design
- Option of full gate/seats/body metal to metal seals
- Reinforced PTFE packing and injectable packing
- Low operating torque
- Tested to requirement of API 6A or 6D

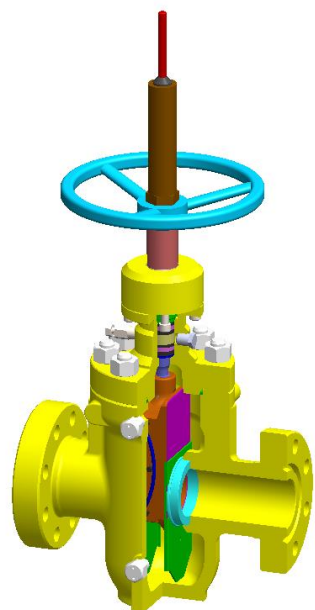
**Expanding Gate Valve, Rising Stem**

GEOTHERMAL EXPANDING GATE VALVE is full bore through conduit valve with rising stem and parallel expanding gate and segment for tight mechanical seal which is normally unaffected by pressure variation.

The expanding gate valve is designed, manufactured according to the latest requirements of API 6A or API 6D upon request.

**FEATURES:**

- QSL 1 to 4 or PSL-1 to PSL-4
- Pressure Class:600 to 900 (2000psi ~3000psi)
- NPS Size 2"~ 3" (2-1/16" ~3-1/8")
- High temperature (up to 650 °F) Low temperature (up to -20 °F)
- Directional sealing
- Expanding wedge gate and seats design
- Option of full gate/seats/body metal to metal seals
- Reinforced PTFE packing and injectable packing
- Low operating torque
- Tested to requirement of API 6A or 6D



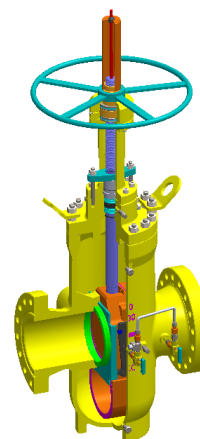
**EXPANDING GATE VALVES (GEOTHERMAL GATE VALVE)****Expanding Gate Valve, Without Bevel Gear**

GEOTHERMAL EXPANDING GATE VALVE is full bore through conduit valve with rising stem and parallel expanding gate and segment for tight mechanical seal which is normally unaffected by pressure variation. As request, relief valve or relief system (not supplied as default) will be furnished to protect the valve when over pressure is inside the body cavity.

The expanding gate valve is designed, manufactured according to the latest requirements of API 6A or API 6D upon request.

**FEATURES:**

- NPS Size 10", 12" QSL 1 to 4
- Pressure Class: 600 to 900
- High temperature up to 650 °F
- Directional sealing
- Expanding wedge gate and seats design
- Option of full gate/seats/body metal to metal seals
- Reinforced PTFE packing and injectable packing
- Low operating torque
- Tested to requirement of API 6D

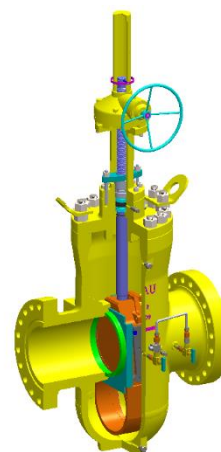
**Expanding Gate Valve, With Bevel Gear**

GEOTHERMAL EXPANDING GATE VALVE is full bore through conduit valve with rising stem and parallel expanding gate and segment for tight mechanical seal which is normally unaffected by pressure variation. As request, relief valve or relief system (not supplied as default) will be furnished to protect the valve when over pressure is inside the body cavity.

The expanding gate valve is designed, manufactured according to the latest requirements of API 6A or API 6D upon request.

**FEATURES:**

- QSL 1 to 4
- Pressure Class: 600 to 900
- NPS Size 10", 12"
- High temperature up to 650 °F
- Directional sealing
- Expanding wedge gate and seats design
- Option of full gate/seats/body metal to metal seals
- Reinforced PTFE packing and injectable packing
- Low operating torque
- Tested to requirement of API 6D



**NEEDLE VALVES****FEATURES:**

- 1/2" NPT Male x 1/2" NPT Female or 3/8" NPT Male x 3/8" NPT Female are available, other Inlet & Outlet Connections as request.
- Max. Work Pressure 10000psi
- 4130LA or 316SS forging Body, 17-4PH Stem, 316SS Bonnet & Gland
- PTFE packing or Reinforced Graphite
- According with NACE MR0175

**VERSA SLAB GATE VALVE**

| Working pressure | Nominal Size (inch) |          |          |         |          |         |
|------------------|---------------------|----------|----------|---------|----------|---------|
| 2000 psi         | 2 - 1/16            | 2 - 9/16 |          |         | 4 - 1/16 |         |
| 3000 psi         | 2 - 1/16            | 2 - 9/16 |          | 3 - 1/8 | 4 - 1/16 |         |
| 5000 psi         | 2 - 1/16            | 2 - 9/16 |          | 3 - 1/8 | 4 - 1/16 | 5 - 1/8 |
| 10000 psi        | 2 - 1/16            | 2 - 9/16 | 3 - 1/16 |         | 4 - 1/16 | 5 - 1/8 |

**VERSA WEDGE GATE VALVE**

| Working pressure | Nominal Size (inch) |          |         |  |  |  |
|------------------|---------------------|----------|---------|--|--|--|
| 2000 psi         | 2 - 1/16            | 2 - 9/16 | 3 - 1/8 |  |  |  |
| 3000 psi         | 2 - 1/16            | 2 - 9/16 | 3 - 1/8 |  |  |  |
| 5000 psi         | 2 - 1/16            | 2 - 9/16 | 3 - 1/8 |  |  |  |

**VERSA CHOKE VALVE**

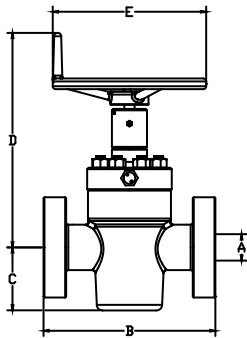
| Working pressure | Nominal Size (inch) |         |  |  |  |  |
|------------------|---------------------|---------|--|--|--|--|
| 2000 psi         | 2 - 1/16            | 3 - 1/8 |  |  |  |  |
| 3000 psi         | 2 - 1/16            | 3 - 1/8 |  |  |  |  |
| 5000 psi         | 2 - 1/16            | 3 - 1/8 |  |  |  |  |

**VERSA EXPANDING GATE VALVE (CAST BODY)**

| Pressure Class | Nominal Pipe Size (inch) |   |    |    |  |  |
|----------------|--------------------------|---|----|----|--|--|
| CL 600         | 2                        | 3 | 10 | 12 |  |  |
| CL 900         | 2                        | 3 | 10 | 12 |  |  |



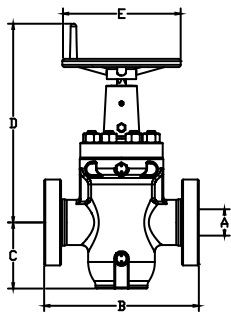
SLAB GATE VALVE REFERENCE DIMENSIONS AND WEIGHTS



- A Valve Bore
- B Flange Face to Face
- C Bore Centerline to Bottom of Valve
- D Bore Centerline to Handwheel Top
- E Handwheel Diameter
- N Number of Turns to Open/Close
- WT Estimated Weight

| Nominal Size | Working Pressure (psi) | A    |       | B     |     | C     |     | D     |     | E  |     | WT   |     | N      | API Ring |
|--------------|------------------------|------|-------|-------|-----|-------|-----|-------|-----|----|-----|------|-----|--------|----------|
|              |                        | in   | mm    | in    | mm  | in    | mm  | in    | mm  | in | mm  | lbs  | kg  |        |          |
| 2 1/16       | 2000                   | 2.06 | 52.3  | 11.62 | 295 | 4.95  | 126 | 18.07 | 459 | 13 | 330 | 158  | 72  | 13 1/2 | R-23     |
|              | 3000-5000              | 2.06 | 52.3  | 14.62 | 371 | 5.38  | 137 | 18.87 | 479 | 13 | 330 | 180  | 82  |        | R-24     |
|              | 10000                  | 2.06 | 52.3  | 20.50 | 521 | 5.5   | 140 | 19.7  | 500 | 16 | 406 | 286  | 130 | 13     | BX-152   |
| 2 9/16       | 2000                   | 2.56 | 65.0  | 13.12 | 333 | 6.18  | 157 | 19.65 | 499 | 13 | 330 | 275  | 125 | 20     | R-26     |
|              | 3000-5000              | 2.56 | 65.0  | 16.62 | 422 | 6.28  | 160 | 19.95 | 507 | 13 | 330 | 297  | 135 |        | R-27     |
| 3 1/8        | 2000                   | 3.12 | 79.2  | 14.12 | 359 | 6.93  | 176 | 21.35 | 542 | 13 | 330 | 218  | 99  | 20     | R-31     |
|              | 3000                   | 3.12 | 79.2  | 17.12 | 435 | 7.15  | 182 | 21.35 | 542 | 16 | 406 | 299  | 136 |        | R-31     |
|              | 5000                   | 3.12 | 79.2  | 18.62 | 473 | 7.15  | 182 | 21.35 | 542 | 16 | 406 | 339  | 154 |        | R-35     |
| 3 1/16       | 10000                  | 3.12 | 79.2  | 24.38 | 619 | 8.22  | 209 | 22.02 | 559 | 16 | 406 | 528  | 240 | 19     | BX-154   |
| 4 1/16       | 2000                   | 4.06 | 103.1 | 17.12 | 435 | 8.62  | 219 | 23.41 | 595 | 16 | 406 | 517  | 235 | 24     | R-37     |
|              | 3000                   | 4.06 | 103.1 | 20.12 | 511 | 8.8   | 224 | 23.41 | 595 | 16 | 406 | 559  | 254 |        | R-37     |
|              | 5000                   | 4.06 | 103.1 | 21.62 | 549 | 8.8   | 224 | 23.95 | 608 | 20 | 508 | 605  | 275 |        | R-39     |
|              | 10000                  | 4.06 | 103.1 | 26.38 | 670 | 9.5   | 241 | 26.1  | 663 | 24 | 610 | 924  | 420 | 24-1/2 | BX-155   |
| 5 1/8        | 5000                   | 5.12 | 130.0 | 28.62 | 727 | 11.69 | 297 | 27.3  | 693 | 20 | 508 | 1225 | 557 | 23     | R-44     |
|              | 10000                  | 5.12 | 130.0 | 29.00 | 737 | 12.71 | 323 | 32.5  | 826 | 24 | 610 | 1364 | 620 | 23 1/2 | BX-169   |

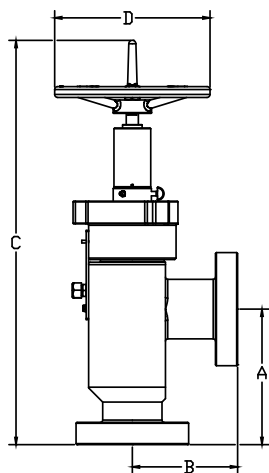
WEDGE GATE VALVE REFERENCE DIMENSIONS AND WEIGHTS



- A Valve Bore
- B Flange Face to Face
- C Bore Centerline to Bottom of Valve
- D Bore Centerline to Handwheel Top
- E Handwheel Diameter
- N Number of Turns to Open/Close
- WT Estimated Weight

| Nominal Size | Working Pressure (psi) | A    |      | B     |     | C    |     | D     |     | E  |     | WT  |     | N      | API Ring |
|--------------|------------------------|------|------|-------|-----|------|-----|-------|-----|----|-----|-----|-----|--------|----------|
|              |                        | in   | mm   | in    | mm  | in   | mm  | in    | mm  | in | mm  | lbs | kg  |        |          |
| 2 1/16       | 2000                   | 2.06 | 52.3 | 11.62 | 295 | 4.81 | 122 | 19.25 | 489 | 13 | 330 | 119 | 54  | 13     | R-23     |
|              | 3000-5000              | 2.06 | 52.3 | 14.62 | 371 | 5.06 | 129 | 19.43 | 494 | 13 | 330 | 123 | 56  |        | R-24     |
| 2 9/16       | 2000                   | 2.56 | 65.0 | 13.12 | 333 | 5.62 | 143 | 20.18 | 513 | 13 | 330 | 178 | 81  | 15-1/2 | R-26     |
|              | 3000-5000              | 2.56 | 65.0 | 16.62 | 422 | 5.93 | 151 | 20.43 | 519 | 13 | 330 | 218 | 99  |        | R-27     |
| 3 1/8        | 2000                   | 3.12 | 79.2 | 14.12 | 359 | 7.18 | 182 | 22.5  | 572 | 13 | 330 | 218 | 99  | 20     | R-31     |
|              | 3000                   | 3.12 | 79.2 | 17.12 | 435 | 7.31 | 186 | 21.88 | 556 | 13 | 330 | 299 | 136 |        | R-31     |
|              | 5000                   | 3.12 | 79.2 | 18.62 | 473 | 7.31 | 186 | 21.88 | 556 | 16 | 406 | 339 | 154 |        | R-35     |

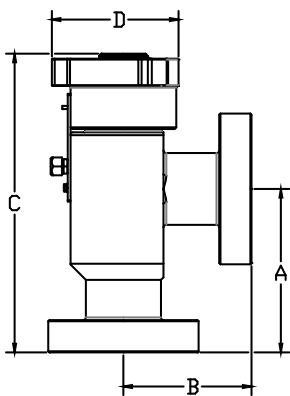
ADJUSTABLE CHOKE VALVE REFERENCE DIMENSIONS AND WEIGHTS



- A Inlet Bore Centerline to outlet Flange
- B Outlet Bore Centerline to Inlet Flange
- C Overall Length of Choke
- D Handwheel Diameter
- WT Estimated Weight

| Nominal Size | Working Pressure (psi) | A     |     | B    |     | C-Closed |     | C-Open |     | D  |     | WT  |     | Max. Orifice (in) | API Ring |
|--------------|------------------------|-------|-----|------|-----|----------|-----|--------|-----|----|-----|-----|-----|-------------------|----------|
|              |                        | in    | mm  | in   | mm  | in       | mm  | in     | mm  | in | mm  | lbs | kg  |                   |          |
| 2 1/16       | 2000                   | 7.31  | 186 | 7.31 | 186 | 25.8     | 655 | 27.5   | 699 | 11 | 279 | 132 | 60  | 1                 | R-23     |
|              | 3000-5000              | 9.38  | 238 | 7.5  | 191 | 27.03    | 687 | 28.26  | 718 | 13 | 330 | 154 | 70  |                   | R-24     |
| 3 1/8        | 2000                   | 11.38 | 289 | 8.88 | 226 | 33.5     | 851 | 36.5   | 927 | 13 | 330 | 265 | 120 | 2                 | R-31     |
|              | 3000                   | 11.38 | 289 | 8.88 | 226 | 33.5     | 851 | 37.44  | 951 | 16 | 406 | 298 | 135 |                   | R-31     |
|              | 5000                   | 11.38 | 289 | 8.88 | 226 | 34.39    | 874 | 37.44  | 951 | 16 | 406 | 320 | 145 |                   | R-35     |

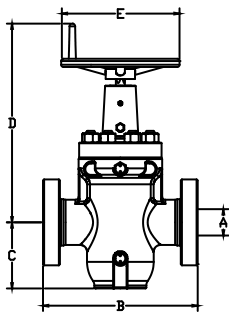
POSITIVE CHOKE VALVE REFERENCE DIMENSIONS AND WEIGHTS



- A Inlet Bore Centerline to outlet Flange
- B Outlet Bore Centerline to Inlet Flange
- C Overall Length of Choke
- D Wing Nut Profile Dimension
- WT Estimated Weight

| Nominal Size | Working Pressure (psi) | A     |     | B    |     | C     |     | D    |     | WT  |     | Bean (in) | API Ring |
|--------------|------------------------|-------|-----|------|-----|-------|-----|------|-----|-----|-----|-----------|----------|
|              |                        | in    | mm  | in   | mm  | in    | mm  | in   | mm  | lbs | kg  |           |          |
| 2 1/16       | 3000-5000              | 9.38  | 238 | 7.5  | 191 | 15.59 | 396 | 7.57 | 192 | 132 | 60  | 1         | R-24     |
| 3 1/8        | 3000                   | 11.38 | 289 | 8.88 | 226 | 20.5  | 521 | 8.85 | 225 | 256 | 116 | 2         | R-31     |
|              | 5000                   | 11.38 | 289 | 8.88 | 226 | 20.5  | 521 | 8.85 | 225 | 278 | 126 |           | R-35     |

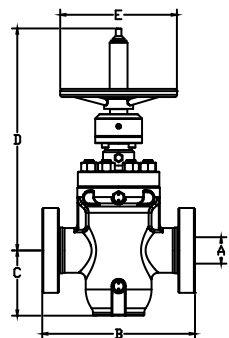
EXPANDING GATE VALVE REFERENCE DIMENSIONS AND WEIGHTS (NON-RISING STEM)



- A Valve Bore
- B Flange Face to Face
- C Bore Centerline to Bottom of Valve
- D Bore Centerline to Handwheel Top
- E Handwheel Diameter
- N Number of Turns to Open/Close
- WT Estimated Weight

| NPS<br>in | Pressure<br>Class | A      |    | B     |     | C    |     | D  |     | E  |     | WT  |     | N  | API  |
|-----------|-------------------|--------|----|-------|-----|------|-----|----|-----|----|-----|-----|-----|----|------|
|           |                   | in     | mm | in    | mm  | in   | mm  | in | mm  | in | mm  | lbs | kg  |    | Ring |
| 2         | 600               | 2 1/16 | 52 | 11.63 | 295 | 4.81 | 122 | 19 | 489 | 13 | 330 | 119 | 54  | 13 | R-23 |
|           | 900               | 2 1/16 | 52 | 14.63 | 372 | 5.02 | 128 | 19 | 494 | 13 | 330 | 123 | 56  |    | R-24 |
| 3         | 600               | 3 1/8  | 79 | 14.13 | 359 | 7.07 | 180 | 22 | 556 | 13 | 330 | 218 | 99  | 20 | R-31 |
|           | 900               | 3 1/8  | 79 | 15.13 | 384 | 7.13 | 181 | 22 | 556 | 13 | 330 | 299 | 136 |    | R-31 |

EXPANDING GATE VALVE REFERENCE DIMENSIONS AND WEIGHTS (RISING STEM)



- A Valve Bore
- B Flange Face to Face
- C Bore Centerline to Bottom of Valve
- D Bore Centerline to Handwheel Top
- E Handwheel Diameter
- N Number of Turns to Open/Close
- WT Estimated Weight

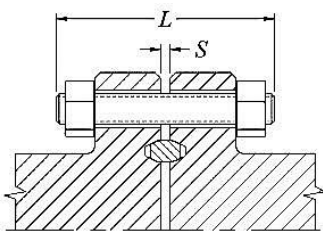
| NPS<br>in          | Pressure<br>Class | A      |     | B     |     | C     |     | D     | Closed<br>Open | E  |     | WT   |      | N  | API<br>Ring |      |
|--------------------|-------------------|--------|-----|-------|-----|-------|-----|-------|----------------|----|-----|------|------|----|-------------|------|
|                    |                   | in     | mm  | in    | mm  | in    | mm  |       |                | in | mm  | lbs  | kg   |    |             |      |
| 2                  | 600               | 2 1/16 | 52  | 11.63 | 295 | 4.81  | 122 | 23.15 | 588            | 13 | 330 | 119  | 54   | 13 | R-23        |      |
|                    |                   |        |     |       |     |       |     | 25.90 | 658            |    |     |      |      |    | R-24        |      |
|                    | 900               | 2 1/16 | 52  | 14.63 | 372 | 5.02  | 128 | 23.57 | 599            | 13 | 330 | 123  | 56   |    |             |      |
|                    |                   |        |     |       |     |       |     | 26.27 | 667            |    |     |      |      |    |             |      |
| 3                  | 600               | 3 1/8  | 79  | 14.13 | 359 | 7.07  | 180 | 24.15 | 613            | 13 | 330 | 218  | 99   | 20 | R-31        |      |
|                    |                   |        |     |       |     |       |     | 28.15 | 715            |    |     |      |      |    | R-31        |      |
|                    | 900               | 3 1/8  | 79  | 15.13 | 384 | 7.13  | 181 | 24.85 | 631            | 13 | 330 | 299  | 136  |    |             |      |
|                    |                   |        |     |       |     |       |     | 28.85 | 733            |    |     |      |      |    |             |      |
| 10                 | 600               | 10     | 254 | 31.13 | 791 | 19.75 | 502 | 66.29 | 1684           | 30 | 762 | 2204 | 1002 | 34 | R-53        |      |
|                    |                   |        |     |       |     |       |     | 77.10 | 1958           |    |     |      |      |    | R-53        |      |
|                    | 900               | 10     | 254 | 33.13 | 842 | 20.15 | 512 | 66.29 | 1684           | 30 | 762 | 2721 | 1237 |    |             |      |
|                    |                   |        |     |       |     |       |     | 77.10 | 1958           |    |     |      |      |    |             |      |
| 12 <sup>Note</sup> | 600               | 12 3/8 | 314 | 33.13 | 842 | 23.00 | 584 | 71.00 | 1803           | 30 | 762 | 2673 | 1215 | 44 | R-57        |      |
|                    |                   |        |     |       |     |       |     | 85.75 | 2178           |    |     |      |      |    | R-57        |      |
|                    | 900               | 12 3/8 | 314 | 38.13 | 969 | 23.50 | 597 | 73.51 | 1867           | 24 | 610 | 3362 | 1528 |    | 176         | R-57 |
|                    |                   |        |     |       |     |       |     | 88.35 | 2244           |    |     |      |      |    |             |      |

Note: All the valves are handwheel operated, except 12" Class900 valve is bevel gear operated.

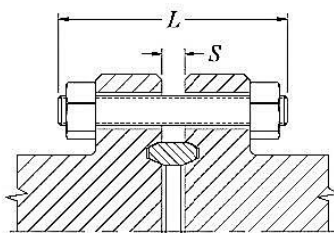


RECOMMENDED FLANGE BOLT LENGTHS & RING GASKET TYPE

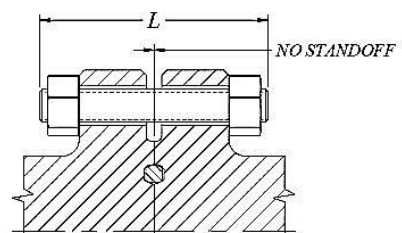
| Recommended Bolt Lengths |                        |                      |                  |     |     |             |
|--------------------------|------------------------|----------------------|------------------|-----|-----|-------------|
| Nominal Size             | Working Pressure (psi) | Stud                 |                  |     | Nut | Ring Gasket |
|                          |                        | Bolt Size and Thread | Length +0.125/-0 | Qty | Qty |             |
| 2 1/16                   | 2000                   | 5/8-11 UNC           | 5                | 8   | 16  | R23         |
|                          | 3000-5000              | 7/8-9 UNC            | 6.5              | 8   | 16  | R24         |
|                          | 10000                  | 3/4-10 UNC           | 5.5              | 8   | 16  | BX-152      |
| 2 9/16                   | 2000                   | 3/4-10 UNC           | 5.5              | 8   | 16  | R26         |
|                          | 3000-5000              | 1-8 UNC              | 7                | 8   | 16  | R27         |
| 3 1/8                    | 2000                   | 3/4-10 UNC           | 5.75             | 8   | 16  | R31         |
|                          | 3000                   | 7/8-9 UNC            | 6.5              | 8   | 16  | R31         |
|                          | 5000                   | 1-1/8-8 UNC          | 7.75             | 8   | 16  | R35         |
| 3 1/16                   | 10000                  | 1-8 UNC              | 7.25             | 8   | 16  | BX-154      |
| 4 1/16                   | 2000                   | 7/8-9 UNC            | 6.5              | 8   | 16  | R37         |
|                          | 3000                   | 1-1/8-8 UN           | 7.5              | 8   | 16  | R37         |
|                          | 5000                   | 1-1/4-8 UN           | 8.5              | 8   | 16  | R39         |
|                          | 10000                  | 1-1/8-8 UN           | 8.5              | 8   | 16  | BX-155      |
| 5 1/8                    | 5000                   | 1-1/2-8 UN           | 10.5             | 8   | 16  | R44         |
|                          | 10000                  | 1-1/8-8 UN           | 9.25             | 12  | 24  | BX-169      |



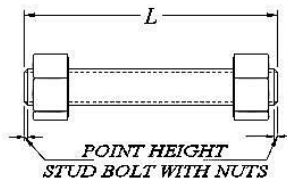
API TYPE 6B FLANGE  
WITH R GASKET



API TYPE 6B FLANGE  
WITH RX GASKET



API TYPE 6BX FLANGE



POINT HEIGHT  
STUD BOLT WITH NUTS

$$\text{LENGTH} = 2(T + t + d) + S + 2(P)$$

T is total flange thickness;

t is plus tolerance for flange thickness;

d is heavy hex nut thickness;

S is flange face standoff (with "RX" gasket), S=0 for BX connection which has no standoff height;

P is point max. (1.5 x pitch).

6A GATE VALVE TRIM CHART

| TRIM   |                  | SERVICE CONDITION                         | BODY                           | BONNET                         | GATE                      | SEAT                      | STEM <sup>*3</sup>        |      |
|--|------------------|---|--------------------------------|--------------------------------|---------------------------|---------------------------|---------------------------|------|
| AA   | Non-sour Service | Standard Trim, Non Corrosive              | A487 4C /4130LA                | 4130LA                         | 4130LA                    | 4130LA                    | 17-4PH                    |      |
| BB   |                  | Stainless Trim, Slightly Corrosive        | A487 4C /4130LA                | 4130LA                         | 410SS                     | 410SS                     | 17-4PH                    |      |
| CC   |                  | Full Stainless Trim, Moderately Corrosive | 410SS                          | 410SS                          | 410SS                     | 410SS                     | 17-4PH                    |      |
| DD-0.5   | Sour Service     | Standard Trim, Non Corrosive              | A487 4C /4130LA                | 4130LA                         | 4130LA                    | 4130LA                    | 17-4PH                    |      |
| DD-NL  |                  | Standard Trim, Non Corrosive              | A487 4C /4130LA                | 4130LA                         | 4130LA                    | 4130LA                    | 4130LA                    |      |
| EE-0.5   |                  | Stainless Trim, Slightly Corrosive        | 4130LA                         | 4130LA                         | 410SS                     | 410SS                     | 17-4PH                    |      |
| EE-1.5   |                  | Stainless Trim, Highly Corrosive          | 4130LA                         | 4130LA                         | 410SS                     | 410SS                     | 410SS                     |      |
| EE-NL  |                  | Stainless Trim, Highly Corrosive          | 4130LA                         | 4130LA                         | 410SS                     | 410SS                     | Inconel 718 <sup>*4</sup> |      |
| FF-0.5   |                  | Full Stainless Trim Highly Corrosive      | 410SS                          | 410SS                          | 410SS                     | 410SS                     | 17-4PH                    |      |
| FF-1.5   |                  | Full Stainless Trim Highly Corrosive      | 410SS                          | 410SS                          | 410SS                     | 410SS                     | 410SS                     |      |
| FF-NL  |                  | Full Stainless Trim Highly Corrosive      | 410SS                          | 410SS                          | 410SS <sup>*3</sup>       | 410SS <sup>*3</sup>       | Inconel 718 <sup>*4</sup> |      |
| HH-NL <sup>*5</sup>  |                  | Highly Corrosive Extreme Service          | 4130 W/625 Inlay <sup>*5</sup> | 4130 W/625 Inlay <sup>*5</sup> | Inconel 718 <sup>*4</sup> | Inconel 718 <sup>*4</sup> | Inconel 718 <sup>*4</sup> |      |
| <div>NOTES:</div> <div>1.This trim chart provides information on materials included in standard valves offered by Array. Special materials, trims and configurations are available upon customer request.</div> <div>2.Standard trim parts are QPQ nitrided. Tungsten Carbide HVOF, Hardfaced gates and seats are available for any TRIM upon request.</div> <div>3.Materials for sour service trims conform to latest edition of NACE MR0175/ISO15156. Explanation for suffixes used for sour trims:<br/>a) 0.5 = 0.5 psi maximum partial pressure of hydrogen sulfide(H2S)<br/>b) 1.5 = 1.5 psi maximum partial pressure of hydrogen sulfide(H2S)<br/>c) NL = No limit to hydrogen sulfide (H2S) exposure.</div> <div>4.Inconel 718 is an alternative material for upgrade.</div> <div>5.Inconel 718 is only "NL" for temperatures K thru U. Inconel 725 can be used up to temp. X.</div> <div>6.CRA material is not available for temp. Y service.</div> <div>7.Source reserves the right to use material class ZZ when customers request materials of construction that do not comply with current NACE MR0175/ISO standards</div> |                  |   |                                |                                |                           |                           |                           |      |
|  |                  |   |                                | Temp. Class                    | Temperature Range         |                           |                           |      |
|  |                  |   |                                |                                | °C                        |                           | °F                        |      |
|  |                  |   |                                |                                | min.                      | max.                      | min.                      | max. |
|  |                  |   |                                |                                | K                         | −60                       | 82                        | −75  |
|  |                  |   |                                | L                              | −46                       | 82                        | −50                       | 180  |
|  |                  |   |                                | N                              | −46                       | 60                        | −50                       | 140  |
|  |                  |   |                                | P                              | −29                       | 82                        | −20                       | 180  |
|  |                  |   |                                | S                              | −18                       | 60                        | 0                         | 140  |
|  |                  |   |                                | T                              | −18                       | 82                        | 0                         | 180  |
|  |                  |   |                                | U                              | −18                       | 121                       | 0                         | 250  |
|  |                  |   |                                | V                              | 2                         | 121                       | 35                        | 250  |
|  |                  |   |                                | X                              | −18                       | 180                       | 0                         | 350  |
|  |                  |   |                                | Y                              | -18                       | 350                       | 0                         | 650  |
|  |                  |   |                                | NOTE                           |                           |                           |                           |      |
| Minimum temperature is the lowest ambient temperature to which the equipment can be subjected. Maximum temperature is the highest temperature of the fluid that can directly contact the equipment.  |                  |   |                                |                                |                           |                           |                           |      |



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