

Sure Flow
Equipment Inc.

KNIFE GATE VALVES



www.sureflowequipment.com

Knife Gate Valve Options



Pneumatic Actuators

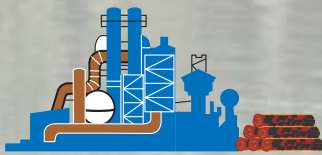


O-Port Knife Gate Valves



30 inch to 48 inch Knife Gate Valves

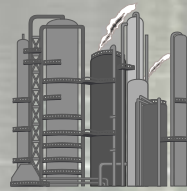
Service Applications



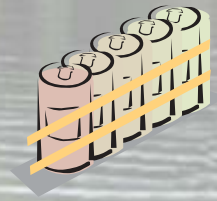
Pulp and Paper



Sewage Treatment Industry



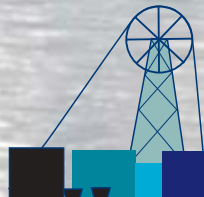
Chemical Plants



Food Processing Facilities



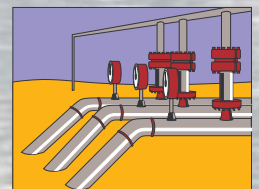
Steel Mills



Mining Operations



Cement Manufacturing



Petrochemical



Sureflow
Equipment Inc.

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Sure Flow Knife Gate

Cast Stainless Steel Full Port

Knife Gate, ANSI 150 lbs, Full Lug Type, Full Port,
Resilient Seat or Metal, Pressure 1050 K.P.A.

Features - Model KG150 MIR (Metal)
Model KG150 VIR (Viton Seat)

- ▲ Solid one piece all cast 316 SS body and top works
- ▲ Machine ground ultra thick gate jambs
- ▲ Beveled knife on metal seats
- ▲ Blow out proof knife
- ▲ Inline field actuation landing flange
- ▲ Adjustable packing pusher
- ▲ Each valve tested MSS-SP81
- ▲ Full port — conforms to TAPPI
- ▲ Full lug pattern
- ▲ All valves assembled Silicone Free
- ▲ Bonnetless design
- ▲ Seats — Hycar, Viton, EPDM — Metal ring behind seat
- ▲ Handwheel — cast iron with lock nut washer to endure high vibration
- ▲ Thrust bearing to assist handwheel closure
- ▲ Bi-directional resilient seat

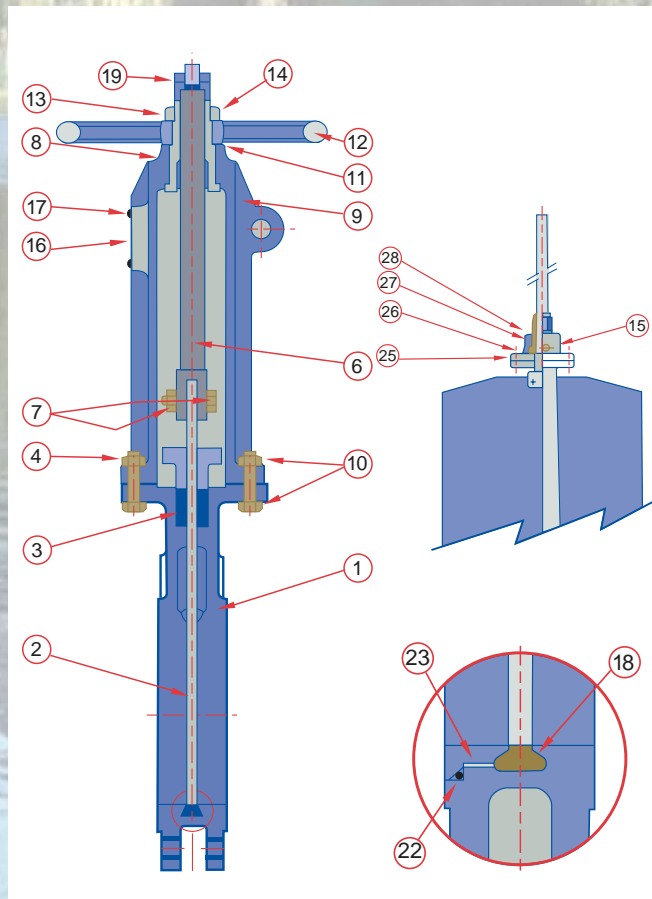


Sure Flow Knife Gate

Cast Stainless Steel Full Port

Features and Benefits

- ▲ Sure Flow Knife Gate conforms to TAPPI TIS 405.8 face to face
- ▲ Flanged ends meet ASME B16.5 and design test to MSS - SP81
- ▲ Full lug pattern. Drilled and tapped to suit ANSI Class 150 Flanges (1050 KPA)
- ▲ Solid, all one-piece cast stainless steel valve body, yoke and packing gland. The one piece design eliminates twisting/deflection that is encountered on a multiple post design.
- ▲ Easy bolt-on conversion to Actuator or Bevel Gear Operator
- ▲ PTFE impregnated packing suitable for temperatures up to 450° F / 232°C and a PH of 2 - 12
- ▲ Machine ground gate and lapped integral metal seat are designed to handle dense mixture of stock and slurries. The pure shearing action of the Knife cuts through solids and the venturi effect cleans the seat close



Materials of Construction

| No. | Part Name | |
|-----|-----------------------|---|
| 1 | Body | ASTM A351 Gr. CF8M (316) Stainless |
| 2 | Disc (Gate) | (316) Stainless Steel |
| 3 | Packing | PTFE Impregnated Syntax Yarn (non-asbestos) |
| 4 | Packing Gland | CF8M (316) Stainless Steel |
| 5 | Gland Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 6 | Stem | ASTM A276 TP 304 Stainless Steel |
| 7 | Disc Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 8 | Yoke Sleeve | Brass or Bronze |
| 9 | Yoke | ASTM A351 Gr. CF8 (304) Stainless Steel |
| 10 | Yoke Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 11 | Thrust Bearing Washer | Brass |
| 12 | Handwheel | Cast Ductile Iron |
| 13 | Wheel Nut | Brass |
| 14 | Set Screw | ASTM A193 Br. B7 |
| 15 | Grease Nipple | Assembly |
| 16 | Name Plate | ASTM A240 TP 304 Stainless Steel |
| 17 | Rivet | Aluminium |
| 18 | Body Seat | Hycar-Viton-EDPM-Rubber-Metal |
| 19 | Stopper and Nut | ASTM A276 Ty. 304 / ASTM A194 Gr. 8 (Nyloc) |
| 22 | O-Ring | Hycar Rubber |
| 23 | Seat Retainer | CF8M (316) Stainless Steel |
| 25 | Bearing Housing | ASTM A351 Gr. CF8 (304) Stainless Steel |
| 26 | Housing Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 27 | Thrust Ball Bearing | Assembly |
| 28 | Sleeve Gland | ASTM A351 Gr. CF8 (304) Stainless Steel |

Sure Flow Knife Gate

Cast Stainless Steel Full Port

- ▲ The uni-directional metal seated valve has fully guided gate at 180 degrees and jams at the bottom for the correct position on the gate against the seat. Fluid pressure assists sealing capacity.
- ▲ The two-way resilient seated valve provides bubble tight shut-off in both directions
- ▲ The Resilient Seated Valve is supplied standard with viton resilient seat good for temperatures up to 300°F / 150°C with PTFE adjustable packing pusher
- ▲ The standard resilient seat, "viton", is excellent for aging, sunlight resistance, water resistance, oil resistance, medium acid, and PH from 2 - 12 @ Universal Seat
- ▲ Resilient Seat is a positive retained seat that will not pull or roll over. No grooves or pockets to collect product, plus a backup secondary metal seat between the disc and body seat. True 100% full bore design.
- ▲ The edge on the resilient seat maintains the same shearing action as the metal seat to handle dense pulp stock and other slurries with a self-cleaning action to maintain bubble-tight shut-off.
- ▲ Multiple packing with true leveling stainless steel gland bolts and self-locking nuts
- ▲ One-piece stainless steel stem and thrust bearing to assist closure of handwheel — low torque, reduces rim pull
- ▲ Bonnetless design—O.S.Y. non-rising handwheel with a handwheel lockwasher which endures high vibration

Dimensional Data

| NOM. SIZE (IN.) | 2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Inside Diameter | 2.00 | 3.00 | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 | 13.25 | 15.25 | 17.25 | 19.25 | 23.25 |
| Face to Face | 1.88 | 2.00 | 2.00 | 2.25 | 2.75 | 2.75 | 3.00 | 3.00 | 3.50 | 3.50 | 4.50 | 4.50 |
| Handwheel Diameter | 8.00 | 8.00 | 8.00 | 12.00 | 12.00 | 16.00 | 16.00 | 18.00 | 18.00 | 20.00 | 24.00 | 24.00 |
| Bolt Circle | 4.75 | 6.00 | 7.50 | 9.50 | 11.75 | 14.25 | 17.00 | 18.75 | 21.25 | 22.75 | 25.00 | 29.50 |
| Bolt Number | 4 | 4 | 8 | 8 | 8 | 12 | 12 | 12 | 16 | 16 | 20 | 20 |
| Thread Size | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | 7/8 | 7/8 | 1 | 1 | 1-1/8 | 1-1/8 | 1-1/4 |
| Threads per inch | 8 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 3.5 | 3.5 | 3.5 |
| Open Height Model MIR | 13.78 | 17.13 | 20.35 | 25.75 | 32.76 | 40.08 | 46.18 | 52.36 | 60.24 | 67.32 | 75.20 | 85.43 |
| Open Height VIR | 15.35 | 19.29 | 21.26 | 28.15 | 33.86 | 42.32 | 49.02 | 53.94 | 62.20 | 68.90 | 75.98 | 88.58 |
| Stem Diameter | 0.63 | 0.79 | 0.79 | 1.00 | 1.00 | 1.00 | 1.00 | 1.25 | 1.25 | 1.50 | 1.50 | 1.50 |
| Shipping Weight (lbs) | 30 | 42 | 52 | 80 | 101 | 161 | 230 | 261 | 392 | 490 | 790 | 850 |

Sure Flow Knife Gate

Cast Stainless Steel Full Port

Operating Thrust Force for Knife Gate Valves

Torques for working pressure (lb/in)

(1) Metal Seated Valve

| Size | 0 psig | 30 psig | 60 psig | 85 psig | 115 psig | 150 psig |
|------|--------|---------|---------|---------|----------|----------|
| 2" | 157 | 331 | 661 | 944 | 1,275 | 1,574 |
| 3" | 225 | 472 | 944 | 1,349 | 1,821 | 2,248 |
| 4" | 337 | 708 | 1,417 | 2,024 | 2,732 | 3,373 |
| 6" | 472 | 992 | 1,983 | 2,734 | 3,825 | 4,722 |
| 8" | 610 | 1,281 | 2,562 | 3,659 | 4,940 | 6,099 |
| 10" | 1,003 | 2,107 | 4,214 | 6,020 | 8,127 | 10,034 |
| 12" | 1,188 | 2,494 | 4,989 | 7,127 | 9,624 | 11,878 |
| 14" | 2,461 | 5,169 | 10,337 | 14,768 | 19,936 | 24,612 |
| 16" | 2,817 | 5,915 | 11,830 | 16,901 | 22,816 | 28,168 |
| 18" | 3,703 | 7,777 | 15,553 | 22,219 | 29,996 | 37,032 |
| 20" | 4,466 | 9,379 | 18,758 | 26,796 | 36,175 | 44,661 |
| 24" | 5,321 | 11,174 | 22,348 | 31,928 | 43,099 | 53,209 |

(2) Resilient Seated Valve

| Size | 0 psig | 30 psig | 60 psig | 85 psig | 115 psig | 150 psig |
|------|--------|---------|---------|---------|----------|----------|
| 2" | 173 | 376 | 770 | 1,126 | 1,553 | 1,948 |
| 3" | 237 | 527 | 1,104 | 1,632 | 2,284 | 2,906 |
| 4" | 380 | 844 | 1,804 | 2,692 | 3,765 | 5,645 |
| 6" | 540 | 1,114 | 2,416 | 3,556 | 5,238 | 6,727 |
| 8" | 700 | 1,488 | 3,269 | 4,996 | 7,106 | 9,141 |
| 10" | 1,146 | 2,770 | 5,454 | 8,469 | 13,050 | 16,679 |
| 12" | 1,358 | 3,330 | 7,314 | 11,127 | 15,712 | 20,064 |
| 14" | 2,877 | 7,050 | 15,469 | 23,479 | 33,140 | 42,280 |
| 16" | 3,328 | 8,252 | 18,125 | 25,512 | 38,766 | 49,384 |
| 18" | 4,321 | 10,827 | 23,884 | 36,302 | 51,196 | 65,253 |
| 20" | 5,212 | 13,412 | 29,738 | 45,215 | 63,657 | 81,000 |
| 24" | 6,140 | 16,341 | 36,372 | 55,251 | 77,628 | 98,567 |

Sure Flow Knife Gate

Cast Stainless Steel Full Port

The Cv (flow coefficient) of a valve is defined as the flow of water at 60°F, in gallons per minute, at a pressure drop of one pound per square inch across the valve.

Flow Coefficient

| Valve Size | Cv |
|------------|----------|
| 2" | 306.8 |
| 3" | 709.3 |
| 4" | 1,297.2 |
| 6" | 3,107.3 |
| 8" | 5,718.0 |
| 10" | 8,934.0 |
| 12" | 13,351.1 |
| 14" | 16,277.4 |
| 16" | 21,562.3 |
| 18" | 29,019.2 |
| 20" | 36,138.4 |
| 24" | 52,717.3 |

$$Cv = \frac{29.9 d^2}{\sqrt{K}}$$

Cv = Flow Coefficient
 K = Resistance Coefficient
 d = Bore
 K = 8 fr
 fr = Friction Factor



Sure Flow Equipment Inc. - Limited Warranty

All products are warranted to be free of defects in material and workmanship for a period of one year from the date of shipment, subject to below. All custom products are not subject to return, credit or refund.

If the purchaser believes a product to be defective, the purchaser shall:

- Notify the manufacturer, state the alleged defect and request permission to return the product. Merchandise will not be accepted for return without a "Return Code" clearly marked on the outside of the package. Contact the office to obtain a return code.
- If permission is given, return the product with the transportation prepaid. Collect shipments will not be accepted. Goods must be returned prepaid.

If the product is accepted for return and found to be defective, the manufacturer will, at its discretion, either repair or replace the product, f.o.b. factory, within 60 days of receipt, or issue credit for the purchase price.

Other than to repair, replace or credit as described above, purchaser agrees that manufacturer shall not be liable for any loss, costs, expenses or damages of any kind arising out of the product, its use, installation or replacement, labeling, instructions, information or technical data of any kind, description of product or use, sample or model, warnings or lack of any of the foregoing.

NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED. NO AFFIRMATION OF ACT, PROMISE, DESCRIPTION OF PRODUCT OR USE OR SAMPLE OR MODEL SHALL CREATE ANY WARRANTY FROM MANUFACTURER, UNLESS SIGNED BY THE PRESIDENT OF MANUFACTURER.



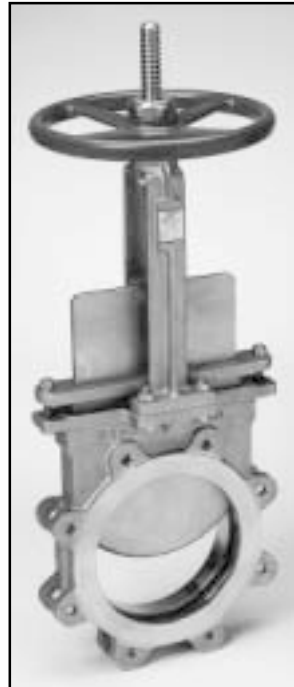
Knife Gate

Cast Stainless Steel Full Port

Knife Gate, ANSI 150 lbs, Full Lug Type, Full Port,
Resilient Seat or Metal, Pressure 1050 K.P.A.

Features - Model KG15OSSMIR (Metal)
Model KG15OSSVIR (Viton Seat)

- ▲ Solid one piece all cast 316 SS body and top works
- ▲ Machine ground ultra thick gate jambs
- ▲ Beveled knife on metal seats
- ▲ Blow out proof knife
- ▲ Inline field actuation landing flange
- ▲ Adjustable packing pusher
- ▲ Each valve tested MSS-SP81
- ▲ Full port — conforms to TAPPI
- ▲ Full lug pattern
- ▲ All valves assembled Silicone Free
- ▲ Bonnetless design
- ▲ Seats — Hycar, Viton, EPDM — Metal ring behind seat
- ▲ Handwheel — cast iron with lock nut washer to endure high vibration
- ▲ Thrust bearing to assist handwheel closure
- ▲ Bi-directional resilient seat
- ▲ Rising stem



Service Applications

- ▲ Pulp and Paper
- ▲ Sewage Treatment Industry
- ▲ Chemical Plants
- ▲ Food Processing Facilities
- ▲ Steel Mills
- ▲ Mining Operations
- ▲ Cement Manufacturing
- ▲ Petrochemical

Cv VALUES - Resilient Seat

(Flow in GPM of water at 1 psi pressure drop)

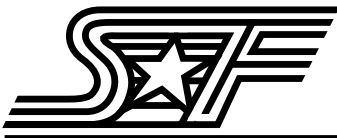
| Valve Size | Cv |
|------------|-------|
| 2" | 160 |
| 3" | 390 |
| 4" | 650 |
| 6" | 1780 |
| 8" | 2590 |
| 10" | 4090 |
| 12" | 5700 |
| 14" | 7100 |
| 16" | 9415 |
| 18" | 12150 |
| 20" | 15240 |
| 24" | 21640 |

Cv VALUES -Metal Seat

(Flow in GPM of water at 1 psi pressure drop)

| Valve Size | Cv |
|------------|-------|
| 2" | 150 |
| 3" | 280 |
| 4" | 524 |
| 6" | 1350 |
| 8" | 2320 |
| 10" | 3620 |
| 12" | 5680 |
| 14" | 6720 |
| 16" | 8795 |
| 18" | 11950 |
| 20" | 13250 |
| 24" | 19840 |

Knife Gate Valves



Features and Benefits

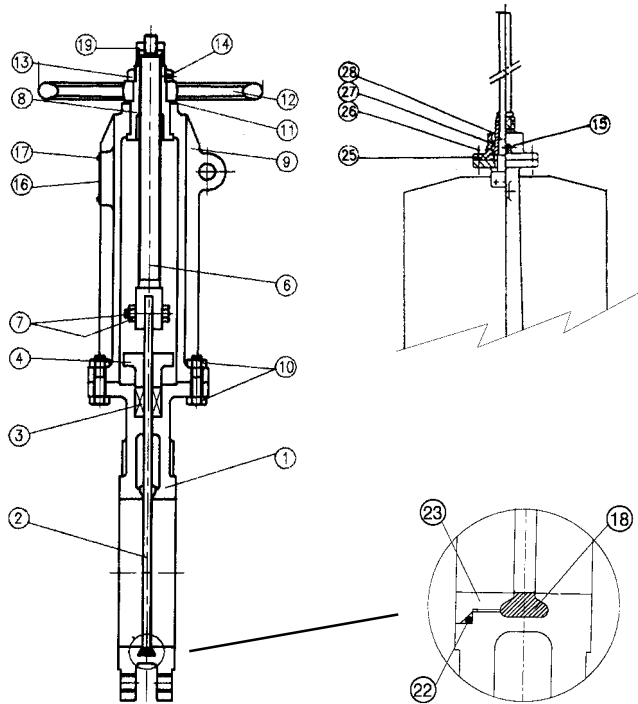
- ▲ S.F. Knife Gate conforms to TAPPI TIS 405.8 face to face
- ▲ S.F. flanged ends meet ASME B16.5 and design test to MSS - SP81
- ▲ Full lug pattern. Drilled and tapped to suit ANSI Class 150 Flanges (1050 KPA)
- ▲ Solid, all one-piece cast stainless steel valve body, yoke and packing gland. The one-piece design eliminates twisting/deflection that is encountered on a multiple post design.
- ▲ Easy bolt-on conversion to Actuator or Bevel Gear Operator
- ▲ PTFE impregnated packing suitable for temperatures up to 450°F / 232°C and a PH of 2 - 12
- ▲ Machine ground gate and lapped integral metal seat are designed to handle dense mixture of stock and slurries. The pure shearing action of the S.F. Knife cuts through solids and the venturi effect cleans the seat close
- ▲ The uni-directional metal seated valve has fully guided gate at 180 degrees and jams at the bottom for the correct position on the gate against the seat. Fluid pressure assists sealing capacity.
- ▲ The two-way resilient seated valve provides bubble-tight shut off in both directions
- ▲ The S.F. Resilient Seated Valve is supplied standard with viton resilient seat good for temperatures up to 300°F / 150°C with PTFE adjustable packing pusher
- ▲ The standard resilient seat "viton" is excellent for aging, sunlight resistance, water resistance, oil resistance, medium acid, and PH from 2 - 12 @ Universal Seat
- ▲ Resilient Seat is a positive retained seat that will not pull or roll over. No grooves or pockets to collect product, plus a backup secondary metal seat between the disc and body seat. True 100% full bore design.
- ▲ The edge on the resilient seat maintains the same shearing action as the metal seat to handle dense pulp stock and other slurries with a self-cleaning action to maintain bubble tight shut-off.
- ▲ Multiple packing with true leveling stainless steel gland bolts and self-locking nuts
- ▲ One-piece stainless steel stem and thrust bearing to assist closure of handwheel — low torque, reduces rim pull
- ▲ Bonnetless design—O.S.Y. non-rising handwheel with a handwheel lockwasher which endures high vibration





Knife Gate

Cast Stainless Steel Full Port



| No. | Part Name | |
|-----|-----------------------|---|
| 1 | Body | ASTM A351 Gr. CF8M (316) Stainless |
| 2 | Disc (Gate) | CF8M (316) Stainless Steel |
| 3 | Packing | PTFE Impregnated |
| 4 | Packing Gland | CF8M (316) Stainless Steel |
| 5 | Gland Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 6 | Stem | ASTM A276 TP 304 Stainless Steel |
| 7 | Disc Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 8 | Yoke Sleeve | Brass |
| 9 | Yoke | ASTM A351 Gr. CF8 (304) Stainless Steel |
| 10 | Yoke Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 11 | Thrust Bearing Washer | Brass |
| 12 | Hand Wheel | Cast Ductile Iron |
| 13 | Wheel Nut | Brass |
| 14 | Set Screw | ASTM A193 Br. B7 |
| 15 | Grease Nipple | Assembly |
| 16 | Name Plate | ASTM A240 TP 304 Stainless Steel |
| 17 | Rivet | Aluminum |
| 18 | Body Seat | Hycar-Viton-EDPM-Rubber-Metal |
| 19 | Stopper and Nut | ASTM A276 Ty. 304 / ASTM A194 Gr. 8 (Nyloc) |
| 22 | O-Ring | Hycar Rubber |
| 23 | Seat Retainer | CF8M (316) Stainless Steel |
| 25 | Bearing Housing | ASTM A351 Gr. CF8 (304) Stainless Steel |
| 26 | Housing Bolt and Nut | ASTM A193 Gr. B8 / ASTM A194 Gr. 8 (Nyloc) |
| 27 | Thrust Ball Bearing | Assembly |
| 28 | Sleeve Gland | ASTM A351 Gr. CF8 (304) Stainless Steel |

Dimensional Data

| NOM. (IN.) SIZE (MM) | 2 50 | 3 80 | 4 100 | 6 150 | 8 200 | 10 250 | 12 300 | 14 350 | 16 400 | 18 450 | 20 500 | 24 600 |
|-------------------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Inside Diameter | 2.00 51 | 3.00 76 | 4.00 102 | 6.00 152 | 8.00 203 | 10.00 254 | 12.00 305 | 13.25 337 | 15.25 387 | 17.25 438 | 19.25 489 | 23.25 591 |
| Face to Face | 1.87 48 | 2.00 51 | 2.00 51 | 2.25 57 | 2.75 70 | 2.75 70 | 3.00 76 | 3.00 76 | 3.50 89 | 3.50 89 | 4.50 114 | 4.50 114 |
| Handwheel Diameter | 7.00 180 | 8.38 215 | 8.38 215 | 10.00 240 | 12.00 300 | 16.00 400 | 16.00 400 | 16.00 400 | 18.00 450 | 18.00 450 | 20.00 500 | 20.00 500 |
| Flange Diameter | 6.00 152.4 | 7.50 190.5 | 9.00 228.6 | 11.00 279.4 | 13.50 343.0 | 16.00 406.4 | 19.00 483.0 | 21.00 553.4 | 23.50 597.0 | 25.0 635.0 | 27.50 699.0 | 32.00 813.0 |
| Bolt Circle | 4.75 120.7 | 6.00 152.4 | 7.50 190.5 | 9.50 241.3 | 11.75 298.5 | 14.25 362.0 | 17.00 431.8 | 18.75 476.3 | 21.25 539.8 | 22.75 577.9 | 25.00 635.0 | 29.50 749.3 |
| Bolt Number | 4 | 4 | 8 | 8 | 8 | 12 | 12 | 12 | 16 | 16 | 20 | 20 |
| Thread Size | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | 7/8 | 7/8 | 1 | 1 | 1-1/8 | 1-1/8 | 1-1/4 |
| Open Height Model MIR | 13.75 350 | 17.09 435 | 19.25 517 | 25.70 654 | 32.70 832 | 40.00 1018 | 46.00 1173 | 52.26 1330 | 60.12 1530 | 67.20 1710 | 75.06 1910 | 82.30 2170 |
| Open Height VTR | 15.32 390 | 19.25 490 | 21.22 540 | 28.10 715 | 33.80 860 | 42.25 1075 | 48.93 1245 | 53.84 1370 | 62.10 1580 | 68.77 1750 | 75.90 1930 | 88.50 2250 |
| Shipping Weight (lbs) | 30 | 42 | 52 | 80 | 101 | 161 | 230 | 261 | 392 | 490 | 790 | 850 |

Knife Gate Valves