

Technequip™

Knife Gate Valve

INSTALLATION, OPERATION and MAINTENANCE MANUAL

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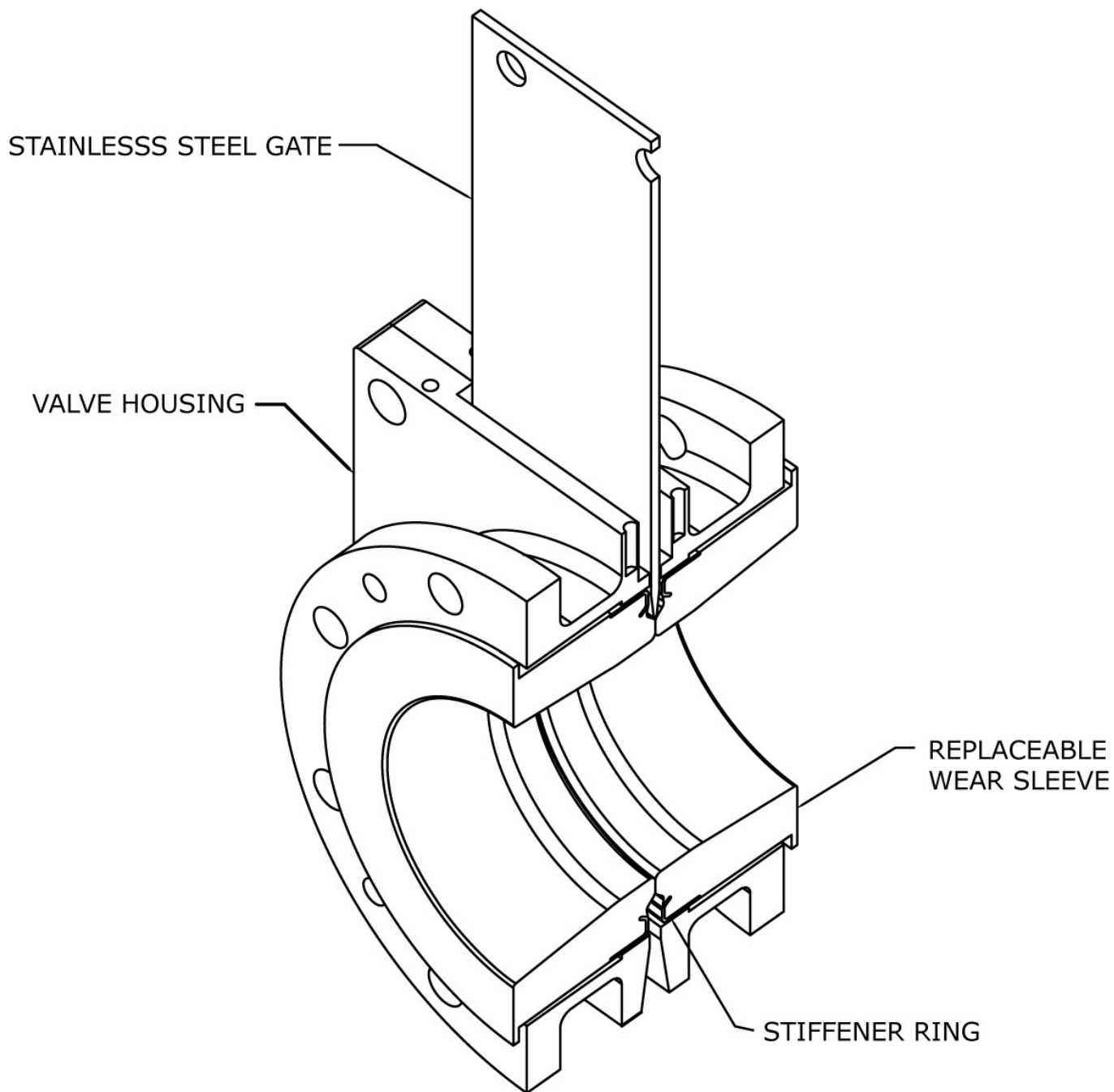
Options

- Standard 4-Way Solenoid Valves
- Standard LSC Reed Switches
- Standard Micro Switches
- Standard Leverless Proximity Switches
- Standard Inductive Proximity Switches

Contact Information

TECHNEQUIP™ KNIFE GATE VALVE GENERAL DESCRIPTION

The Technequip™ Knife Gate Valve is a true bi-directional packingless slurry knife gate valve intended for on-off operation of pipe lines. When the valve is actuated, a stainless steel gate slides between two compressed replaceable wear sleeves. These sleeves, available in a number of elastomer types, were designed to seal and withstand the harsh abrasive duty primarily inherent in mining and milling facilities. The diagram below illustrates the integral components of this design.



TECHNEQUIP™ KNIFE GATE VALVE INSTALLATION

VALVE CONNECTION

The pipe line companion flanges should be raised or flat faced to ensure full sleeve support. The following table outlines the standard flange connection and associated hardware details.

IMPERIAL Technequip™ Knife Gate Valves have flanged connections with ANSI B16.5 Class 150 bolt drillings up to the 24" valve and as per MSS SP-41 class 150 for 26" valve and above.

(all dimensions are in inches)

| Valve Size | Bolt Circle Diameter | Bolt Diameter x Pitch | No. of Bolts per Valve | Stud or Bolt Useable Length With Retainer Flange | Recommended Tightening Torque Ft-lbs |
|------------|----------------------|-----------------------|------------------------|--|--------------------------------------|
| 2" | 4 3/4 | 5/8-11 UNC | 8 | 2 1/4 | 40 |
| 3" | 6 | 5/8-11 UNC | 8 | 2 1/2 | 40 |
| 4" | 7 1/2 | 5/8-11 UNC | 16 | 2 1/2 | 40 |
| 6" | 9 1/2 | 3/4-10 UNC | 16 | 2 3/4 | 70 |
| 8" | 11 3/4 | 3/4-10 UNC | 16 | 2 3/4 | 70 |
| 10" | 14 1/4 | 7/8-9 UNC | 24 | 3 | 110 |
| 12" | 17 | 7/8-9 UNC | 24 | 4 | 110 |
| 14" | 18 3/4 | 1-8 UNC | 24 | 4 1/4 | 170 |
| 16" | 21 1/4 | 1-8 UNC | 32 | 4 3/4 | 170 |
| 18" | 22 3/4 | 1 1/8-7 UNC | 32 | 5 1/2 | 240 |
| 20" | 25 | 1 1/8-7 UNC | 40 | 5 1/2 | 240 |
| 24" | 29 1/2 | 1 1/4-7 UNC | 40 | 6 | 240 |
| 26" | 31 3/4 | 1 1/4-7 UNC | 48 | 6 1/2 | 345 |
| 30" | 36 | 1 1/4-7 UNC | 56 | 7 | 345 |
| 32" | 38 1/2 | 1 1/2-6 UNC | 56 | 7 1/2 | 610 |
| 36" | 42 3/4 | 1 1/2-6 UNC | 64 | 8 1/2 | 610 |
| 42" | 49 1/2 | 1 1/2-6 UNC | 72 | 9 | 610 |
| 48" | 56 | 1 1/2-6 UNC | 88 | 10 | 610 |

Note: Bolt Usable Length is determined using common companion flanges.

METRIC Technequip™ Knife Gate Valves have flanged connections with DIN PN10 and AS 2129 TABLE D OR E
 (all dimensions are in mm)

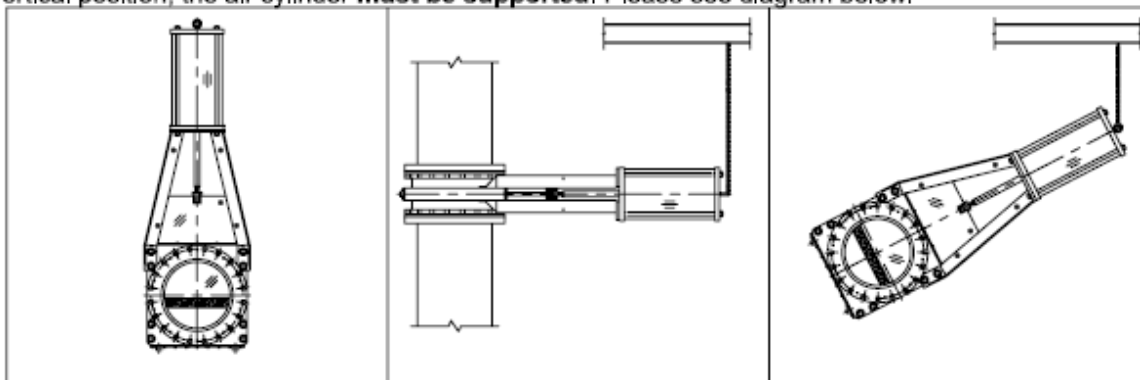
| Valve Size | Bolt Circle Diameter | | Bolt Diameter x Pitch | | Number of Bolts per Valve | | Stud or Bolt Useable Length With Retainer Flange | | Recommended Tightening Torque [N-m] |
|------------|----------------------|------------------|-----------------------|---------------------|---------------------------|------------------|--|------------------|-------------------------------------|
| | * DIN PN10 | AS2129 TABLE D/E | * DIN PN10 | AS2129 TABLE D/E | * DIN PN10 | AS2129 Table D/E | * DIN PN10 | AS2129 TABLE D/E | |
| 50mm | 125 | 114 | M16x2.0 | M16x2.0 | 8 | 8 | 55 | 45 | 50 |
| 75mm | 160 | 145 | M16x2.0 | M16x2.0 | 16 | 8 | 60 | 50 | 50 |
| 100mm | 180 | 178 | M16x2.0 | M16x2.0 | 16 | 8 / 16 | 60 | 50 | 50 |
| 150mm | 240 | 235 | M20x2.5 | M16x2.0 / M20x2.5 | 16 | 16 | 65 | 55 / 60 | 95 |
| 200mm | 295 | 292 | M20x2.5 | M16x2.0 / M20x2.5 | 16 | 16 | 65 | 55 / 60 | 95 |
| 250mm | 350 | 356 | M20x2.5 | M20x2.5 | 24 | 16 / 24 | 70 | 60 / 65 | 155 |
| 300mm | 400 | 406 | M20x2.5 | M20x2.5 / M24x3.0 | 24 | 24 | 80 | 70 / 80 | 155 |
| 350mm | 460 | 470 | M20x2.5 | M24x3.0 | 32 | 24 | 80 | 80 / 90 | 230 |
| 400mm | 515 | 521 | M24x3.0 | M24x3.0 | 32 | 24 | 90 | 80 / 90 | 230 |
| 450mm | 565 | 584 | M24x3.0 | M24x3.0 | 40 | 24 / 32 | 110 | 100 / 110 | 325 |
| 500mm | 620 | 641 | M24x3.0 | M24x3.0 | 40 | 32 | 110 | 100 / 110 | 325 |
| 600mm | 725 | 756 | M27x3.0 | M27x3.0 / M30x3.5 | 40 | 32 | 110 | 100 / 120 | 325 |
| * 650mm | 780 | --- | M30x3.5 | --- | 48 | --- | 110 | --- | 465 |
| * 750mm | 900 | 927 | M30x3.5 | M30x3.5 / M33 x 3.5 | 48 | 40 | 120 | 120 / 130 | 465 |
| 800mm | 950 | 984 | M30x3.5 | M33 x 3.5 | 48 | 40 | 130 | 120 / 130 | 465 |
| 900mm | 1050 | 1092 | M30x3.5 | M33x3.5 | 56 | 48 | 140 | 140 / 150 | 465 |
| 1200mm | 1380 | 1410 | M36x4.0 | M33x3.5 / M36x4.0 | 64 | 64 | 170 | 170 / 190 | 600 |

Note: Bolt Usable Length is determined using common companion flanges.

*650mm and 750mm valve sizes call out SABS1123:1000/3 drilling as DIN PN10 does not exist.

VALVE ORIENTATION

When installing 10" and larger Air Cylinder Actuated Technequip™ Knife Gate Valves other than in a vertical position, the air cylinder **must be supported**. Please see diagram below.



TECHNEQUIP™ KNIFE GATE VALVE OPERATING SPECIFICATIONS

OPERATING WARNINGS

Ensure that the stainless steel gate is always **fully opened** or **fully closed**. **DO NOT** use the valve to **“throttle”** the flow, as premature wear of the gate and sleeves will result which can render the valve inoperable. It is normal during valve actuation for a small amount of slurry/liquid to be discharged. If slurry/liquid is harmful in any way or slurry containment is necessary please inquire about a splash guard option. If using the splash guard **do not** block both splashguards ports. For proper operation of valve please see table below to ensure your conditions are within the operating specifications.

| IMPERIAL | | | AIR ACTUATED | | | HYDRAULIC ACTUATED | | | MANUALLY ACTUATED | |
|------------|--|----------------------------------|------------------------------------|----------------------------|---|-------------------------------------|------------------------------|----------------------------------|--|---|
| Valve Size | Maximum Valve Operating Pressure (psi) | Nominal Cylinder Stroke (inches) | Nominal Air Cylinder Bore (inches) | Air Min/Max Pressure (psi) | Continuous Cycling Free Air Consumption at 80psi (SCFM) | Nominal Hyd. Cylinder Bore (inches) | Hyd. Min /Max Pressure (psi) | Hyd. Cylinder Displacement (gal) | Handwheel # of Rotations to Stroke Valve | Bevel Gear # of Rotations to Stroke Valve |
| 2" | 100 | 2.8125 | 4.0 | 80/150 | 2.8 | 1.5 | 800/1200 | 0.022 | 7 | --- |
| 3" | 100 | 3.625 | 5.0 | 80/150 | 4.4 | 2.0 | 800/1200 | 0.049 | 9 | --- |
| 4" | 100 | 4.75 | 6.0 | 80/150 | 6.2 | 2.5 | 800/1200 | 0.101 | 12 | --- |
| 6" | 100 | 7.25 | 8.0 | 80/150 | 11.1 | 2.5 | 800/1200 | 0.154 | 18 | 87 |
| 8" | 100 | 9.0 | 8.0 | 80/150 | 11.1 | 2.5 | 800/1200 | 0.191 | 23 | 108 |
| 10" | 100 | 11.125 | 8.0 | 80/150 | 11.1 | 3.25 | 800/1200 | 0.399 | 28 | 134 |
| 12" | 100 | 13.1875 | 12.0 | 80/150 | 25.2 | 4.0 | 800/1200 | 0.717 | --- | 158 |
| 14" | 100 | 15.0 | 12.0 | 80/150 | 25.2 | 4.0 | 800/1200 | 0.816 | --- | 180 |
| 16" | 100 | 17.375 | 14.0 | 80/150 | 34.3 | 4.0 | 800/1200 | 0.945 | --- | 209 |
| 18" | 100 | 19.25 | 14.0 | 80/150 | 34.3 | 5.0 | 800/1200 | 1.635 | --- | 308 |
| 20" | 100 | 21.75 | 16.0 | 80/150 | 44.7 | 5.0 | 800/1200 | 1.848 | --- | 432 |
| 24" | 100 | 27.0 | 16.0 | 80/150 | 44.7 | 6.0 | 800/1200 | 3.303 | --- | --- |
| 26" | 75 | 29.0 | 18.0 | 80/150 | 56.7 | 4.0 | 1800/3000 | 1.577 | --- | --- |
| 30" | 75 | 33.0 | 22.0 | 80/150 | 69.3 | 5.0 | 1800/3000 | 2.804 | --- | --- |
| 32" | 75 | 35.0 | 24.0 | 80/150 | 75.6 | 5.0 | 1800/3000 | 2.978 | --- | --- |
| 36" | 75 | 39.0 | --- | --- | --- | 6.0 | 1800/3000 | 4.771 | --- | --- |
| 42" | 75 | 46.25 | --- | --- | --- | 6.0 | 1800/3000 | 5.662 | --- | --- |
| 48" | 75 | 53.0 | --- | --- | --- | 6.0 | 1800/3000 | 6.489 | --- | --- |

| METRIC | | | AIR ACTUATED | | | HYDRAULIC ACTUATED | | | MANUALLY ACTUATED | |
|------------|--|------------------------------|--------------------------------|----------------------------|--|---------------------------------|-----------------------------|--------------------------------|--|---|
| Valve Size | Maximum Valve Operating Pressure (kPa) | Nominal Cylinder Stroke (mm) | Nominal Air Cylinder Bore (mm) | Air Min/Max Pressure (kPa) | Continuous Cycling Free Air Consumption at 550kPa (m ³ /hr) | Nominal Hyd. Cylinder Bore (mm) | Hyd. Min/Max Pressure (kPa) | Hyd. Cylinder Displacement (L) | Handwheel # of Rotations to Stroke Valve | Bevel Gear # of Rotations to Stroke Valve |
| 50mm | 690 | 71.44 | 100 | 550/1030 | 4.8 | 38 | 5520/8270 | 0.083 | 7 | --- |
| 75mm | 690 | 92 | 127 | 550/1030 | 7.5 | 50 | 5520/8270 | 0.185 | 9 | --- |
| 100mm | 690 | 121 | 150 | 550/1030 | 10.5 | 65 | 5520/8270 | 0.382 | 12 | --- |
| 150mm | 690 | 184 | 200 | 550/1030 | 18.9 | 65 | 5520/8270 | 0.583 | 18 | 87 |
| 200mm | 690 | 229 | 200 | 550/1030 | 18.9 | 65 | 5520/8270 | 0.723 | 23 | 108 |
| 250mm | 690 | 283 | 200 | 550/1030 | 18.9 | 83 | 5520/8270 | 1.51 | 28 | 134 |
| 300mm | 690 | 335 | 300 | 550/1030 | 42.8 | 100 | 5520/8270 | 2.714 | --- | 158 |
| 350mm | 690 | 381 | 300 | 550/1030 | 42.8 | 100 | 5520/8270 | 3.088 | --- | 180 |
| 400mm | 690 | 441 | 350 | 550/1030 | 58.3 | 100 | 5520/8270 | 3.577 | --- | 209 |
| 450mm | 690 | 489 | 350 | 550/1030 | 58.3 | 127 | 5520/8270 | 6.189 | --- | 308 |
| 500mm | 690 | 552 | 400 | 550/1030 | 75.9 | 127 | 5520/8270 | 6.995 | --- | 348 |
| 600mm | 690 | 686 | 400 | 550/1030 | 75.9 | 150 | 5520/8270 | 12.503 | --- | 432 |
| 650mm | 515 | 737 | 460 | 550/1030 | 96.3 | 100 | 12420/20700 | 5.969 | --- | --- |
| 750mm | 515 | 838 | 560 | 550/1030 | 117.2 | 127 | 12420/20700 | 10.613 | --- | --- |
| 800mm | 515 | 889 | 610 | 550/1030 | 127.7 | 127 | 12420/20700 | 11.273 | --- | --- |
| 900mm | 515 | 991 | --- | --- | --- | 150 | 12420/20700 | 18.058 | --- | --- |
| 1200mm | 515 | 1346 | --- | --- | --- | 150 | 12420/20700 | 24.564 | --- | --- |

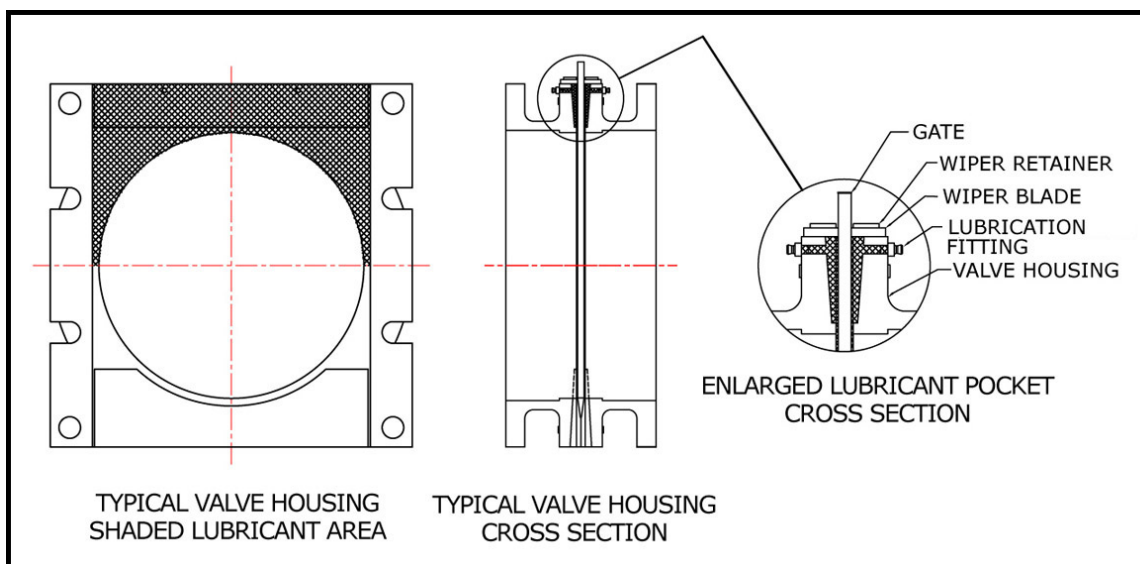
TECHNEQUIP™ KNIFE GATE VALVE MAINTENANCE & STORAGE

REQUIRED LUBRICATING PROCEDURE

The Technequip™ Knife Gate Valves requires regular lubrication using a silicone based lubricant (see below for acceptable lubricants). **DO NOT USE HYDROCARBON BASED LUBRICANTS** as they may damage the replaceable wear sleeves. Lubricate both sides of valve approximately every 50 cycles or after long periods of infrequent cycling. Lubrication fittings are located on the top of the valve housing (see schematic below). The table below outlines the approximate volume of lubricant needed per valve. Please note that all valves are lubricated when assembled and do not require initial lubrication.

RECOMMENDED LUBRICANT DOW#111

APPROVED ALTERNATIVES RHONE-POULENE RHODORSIL III, GENERAL ELECTRIC COMPOUND G661, DOW 4, DOW 44, MOLYTEC M813 (FOR APPLICATIONS WHEN TEMPERATURE IS FROM -50°C TO 200°C)



| VOLUME OF LUBRICANT REQUIRED PER VALVE SIZE | | | | | | | | | | |
|---|-----------------|------|------|------|------|------|------|------|------|-------|
| Valve Size in inches | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | |
| Valve Size in mm | 50 | 75 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | |
| Lubricant Volume Per Valve Side | in ³ | 0.4 | 0.9 | 1.5 | 1.6 | 2.9 | 6.9 | 13.4 | 13.5 | 16.3 |
| | cm ³ | 6.5 | 15 | 25 | 26 | 47 | 113 | 220 | 221 | 267 |
| VOLUME OF LUBRICANT REQUIRED PER VALVE SIZE | | | | | | | | | | |
| Valve Size in inches | 18" | 20" | 24" | 26" | 30" | 32" | 36" | 42" | 48" | |
| Valve Size in mm | 450 | 500 | 600 | 650 | 750 | 800 | 900 | 1050 | 1200 | |
| Lubricant Volume Per Valve Side | in ³ | 15.2 | 30.8 | 43.9 | 29.3 | 31.5 | 46.2 | 53.8 | 99.2 | 148.5 |
| | cm ³ | 249 | 505 | 719 | 481 | 516 | 757 | 882 | 1626 | 2433 |

STORAGE

The Technequip™ Knife Gate Valves should always be stored with the gate in the open position. The valve must be stored away from direct sunlight, heat and any sources of ozone because these cause premature deterioration of all rubber valve components.

If below freezing conditions are involved, care should be taken when handling rubber components as they become brittle at very low temperatures.

TECHNEQUIP™ KNIFE GATE VALVE SLEEVE REPLACEMENT & DISASSEMBLY INSTRUCTIONS

Replaceable Wear Sleeve Removal & Installation

Removal

1. Use valve actuator to bring the valve to the open position if not done so already.
2. Remove valve from pipe line.
3. Remove all countersunk socket head retainer flange screws from both sides of flange face and remove retainer flanges.
4. Remove sleeves from valve housing.

Installation

5. Inspect the replacement sleeves for surface damage that may have been caused by shipping. The nose (sealing surface) of the sleeves should be free from depressions, slits or gouges.
6. Lay valve down horizontally so one flange face is facing up and the other down.
7. Lightly grease nose (sealing surface) of both replacement sleeves using the suggested lubricant.
8. Place one replacement sleeve into the valve bore.
9. Center the sleeve in the bore.
10. Place the retainer flange on top of the sleeve flange face aligning the holes on the valve housing.
11. Tighten the retainer flange screws using a cross torque technique. Leave a 1/8" gap between the retainer flange and the valve housing flange.
12. Turn the valve over so that the newly installed retainer flange is facing down.
13. Place other replacement sleeve into the valve bore ensuring the inside diameter is concentric with first sleeve.
14. Place the retainer flange on top of the sleeve flange face aligning the holes on the valve housing.
15. Tighten the retainer flange screws approximately half the length of the bolt using a cross torque technique.
16. Proceed to completely tighten the retainer flange bolts again using a cross torque technique.
17. If possible, actuate valve to ensure smooth operation.
18. The valve is now ready for installation. Keep the valve in the open position until installed.

Valve Disassembly

Actuator & Gate

19. See Replaceable Wear Sleeve Removal Instructions
20. Clean and inspect the inside bore of both valve housing halves. Ensure that the valve housing halves' inside bores are aligned.
21. Remove bolts that are securing the frames and the actuator. If actuator is mounted on an adapter plate remove bolts that are securing the frames and adapter plate.
22. At this point the gate is attached to the actuator. Lift (using overhead crane if valve is 10" [250mm] and larger) the actuator and gate assembly off the frames and place on the ground.
23. Remove cotter pin from gate clevis pin.
24. Tap out gate clevis pin from the gate clevis and remove gate.

Frames & Valve Housings

25. Actuator and Gate must be disassembled before proceeding.
26. Secure frames using overhead crane 10" [250mm] and larger valves.
27. Remove all bolts that are securing frame and valve housings.
28. Remove frames.
29. Remove bottom bolts securing the two valve housing halves.

TECHNEQUIP™ KNIFE GATE VALVE ASSEMBLY INSTRUCTIONS

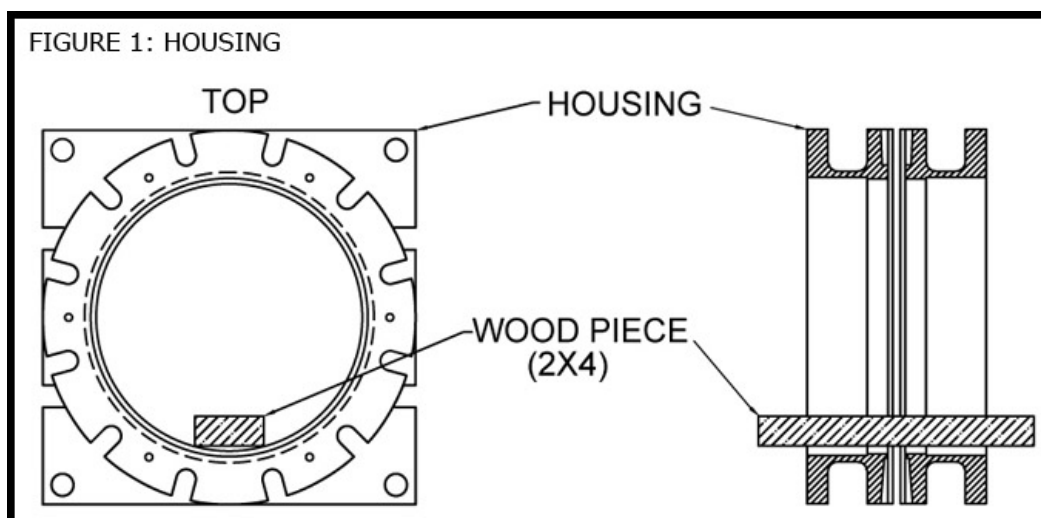
Valve Assembly

Valve Housings & Frames

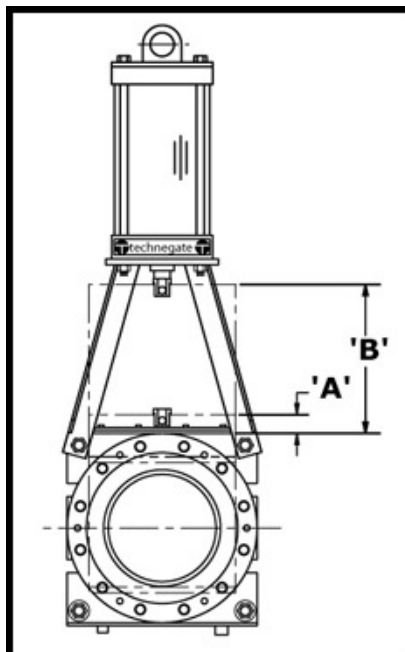
30. Place valve housing half on flat work surface with round flange facing down.
31. Place mating valve housing half on top of square flange of first housing aligning the square flange bolt holes.
32. Using the appropriate bolts and washers tightly secure the two valve housing halves together using only the bottom bolt holes. **DO NOT** put bolts through frame/valve housing holes.
33. Lift frames and align frame holes with upper valve housing holes and loosely secure frames to valve housings using appropriate bolts, washers and nuts.

Gate & Actuator

34. Place a piece of wood (preferably a 2" x 4") through the valve housing to prevent the gate from passing through the valve housing (*see Figure 1*).
35. Lift the gate (use a crane for 10" [250mm] and larger valves)
36. Place the gate between the frames and through the opening at the top of the valve housings until it rests on the piece of wood placed in *step 34*.
37. Remove the crane support if used.
38. For ease of actuator installation, ensure the bolts securing the frame and valve housings are loose.
DO NOT loosen the bolts on the bottom of the housing.
39. Make sure the actuator is in the open position.
40. Lift (use an overhead crane for 10" [250mm] and larger valves) the actuator and place it on the frames.
41. Secure the actuator to the frames.
42. Tighten the bolts to secure the frames and valve housings.
43. Attach the supplied gate clevis to the stem/rod of the actuator.
44. Slowly bring the stem/rod of the actuator down towards the gate.
45. Align the holes of the gate and gate clevis.
46. Once aligned, feed the gate clevis pin through the hole of the gate and gate clevis.
47. To secure this joint, feed the cotter pin through the small hole of the gate clevis pin.
48. Bring the stem/rod and gate up using the actuator. Leave in this position.
49. Measure the distance between the top of the gate and the top of the housing.
50. Compare this distance to the guideline dimension 'B' outlined in *Table 1 below*. Note the difference.
51. If the difference is less than a 1/8" [3mm] proceed to *step 58*. Otherwise proceed to the next step.



| Valve Size | Dimension 'A' | | Dimension 'B' | |
|--------------|---------------|------|---------------|------|
| | (in) | (mm) | (in) | (mm) |
| 2" [50mm] | 1-1/2 | 38 | 4-5/16 | 110 |
| 3" [80mm] | 1-5/8 | 40 | 5-1/4 | 133 |
| 4" [100mm] | 1-1/2 | 38 | 6-1/4 | 159 |
| 6" [150mm] | 1-1/2 | 38 | 8-7/8 | 225 |
| 8" [200mm] | 1-5/8 | 40 | 10-5/8 | 270 |
| 10" [250mm] | 1-1/2 | 38 | 12-5/8 | 321 |
| 12" [300mm] | 2-1/8 | 54 | 15-5/16 | 389 |
| 14" [350mm] | 2-3/16 | 55 | 17-3/16 | 437 |
| 16" [400mm] | 2-7/16 | 62 | 19-13/16 | 503 |
| 18" [450mm] | 5-1/16 | 128 | 24-5/16 | 618 |
| 20" [500mm] | 4-1/4 | 108 | 26 | 660 |
| 24" [600mm] | 5-5/16 | 135 | 32-5/16 | 821 |
| 26" [650mm] | 3-7/8 | 99 | 32-7/8 | 835 |
| 30" [750mm] | 4-3/8 | 111 | 37-3/8 | 949 |
| 32" [800mm] | 5-13/16 | 148 | 40-13/16 | 1037 |
| 36" [900mm] | 4-5/8 | 118 | 43-5/8 | 1108 |
| 42" [1050mm] | 6-7/8 | 175 | 53-1/8 | 1349 |
| 48" [1200mm] | 6-1/2 | 165 | 59-1/2 | 1151 |



TECHNEQUIP™ KNIFE GATE VALVE ASSEMBLY INSTRUCTIONS – CONT'D

Adjusting the Stroke

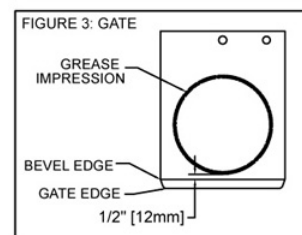
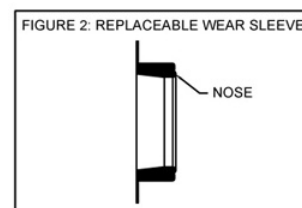
52. Bring the gate down using the actuator until it hits the piece of wood.
53. Remove the cotter pin from the gate clevis pin.
54. Remove the gate clevis pin from the gate clevis and gate joint.
55. Bring the gate clevis/stem to the up position using the actuator.
56. Adjust the stroke by turning the threaded gate clevis the difference noted in step 50.
57. Return to *step 44*.

Lower Stroke Test

58. Remove the piece of wood placed in step 34.
59. Bring the gate down using the actuator. Leave it in the down position.
60. Lightly grease the nose of one of the replaceable wear sleeves (*see Figure 2*) with Dow Corning #111 Silicone.
61. Place the replaceable wear sleeve into the valve housing until the nose touches the gate.
62. Rotate the sleeve 15 degrees against the gate. This will leave a grease impression on the gate.
63. Remove the replaceable wear sleeve.
64. Look at the gate and check to see that the grease impression left by the replaceable wear sleeve is approximately between 1/4" [6mm] to 1/2" [12mm] above the bottom bevel edge of the gate. (*see Figure 3*)
65. If the impression is above the bevel edge between 1/4" [6mm] to 1/2" [12mm], proceed to *step 80*.
If not proceed to *step 66*.

Adjusting the Lower Stroke

66. Note the distance needed to clear the bevel edge between 1/4" [6mm] to 1/2" [12mm].
67. Bring the gate up using the actuator.
68. Place the piece of wood back through the valve housing.
69. Bring the gate down using the actuator until the gate rests against the piece of wood.
70. Remove the cotter pin from the gate clevis pin.
71. Remove the gate clevis pin from the gate clevis and gate joint.
72. Bring the gate clevis/stem/rod to the up position using the actuator.
73. Adjust the stroke by turning the threaded gate clevis the difference noted in *step 66*.
74. Slowly bring the stem/rod of the actuator down towards the gate.
75. Align the holes of the gate and gate clevis.
76. Once aligned, feed the gate clevis pin through the holes of the gate and gate clevis.
77. To secure this joint, feed the gate clevis pin through the small hole of the gate clevis pin.
78. Bring the stem/rod and gate up using the actuator. Leave in this position.
79. Return to *step 58*.



Upper Stroke Test

80. Bring the gate to the open position using the actuator.
81. Place the replaceable wear sleeve into the valve until it touches the gate.
82. Look inside the replaceable wear sleeve bore. If you can't see the gate edge as shown (*see Figure 3*), proceed to *step 95*. Otherwise proceed to *step 83*.

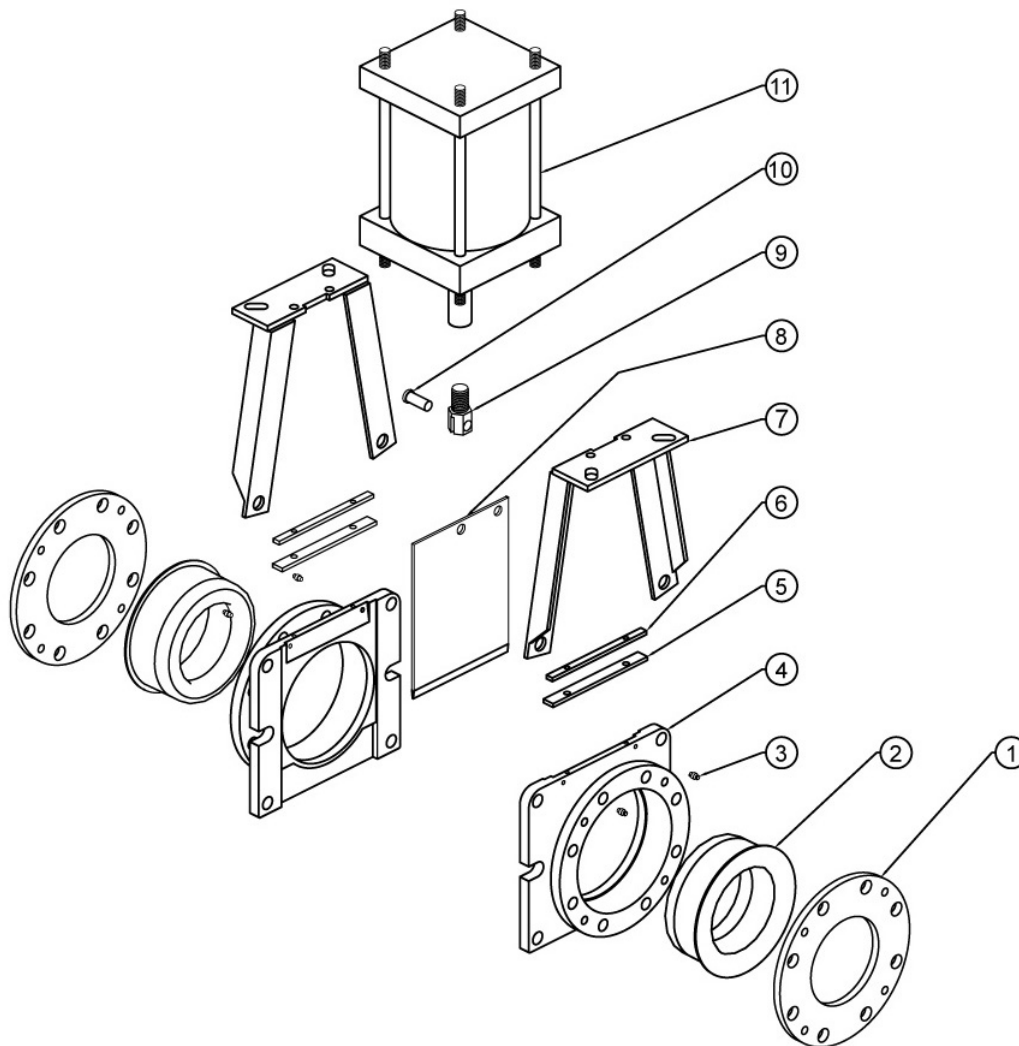
Adjusting the Upper Stroke

83. Note the distance between the edge of the gate and the inside diameter of the replaceable wear sleeve.
84. Place the piece of wood back through the valve housing.
85. Bring the gate down using the actuator until the gate rests against the piece of wood.
86. Remove the cotter pin from the gate clevis pin.
87. Remove the gate clevis pin from the gate clevis and gate joint.
88. Bring the gate clevis/stem/rod to the up position using the actuator.
89. Adjust the stroke by turning the threaded gate clevis the difference noted in step 83. DO NOT over adjust as the upper stroke affects the lower stroke.
90. Slowly bring the stem/rod of the actuator down towards the gate.
91. Align the holes of the gate and gate clevis.
92. Once aligned, feed the gate clevis pin through the holes of the gate and gate clevis.
93. To secure this joint, feed the supplied cotter pin through the small hole of the gate clevis pin.
94. Return to Step 80.

Adjusting the Upper Stroke

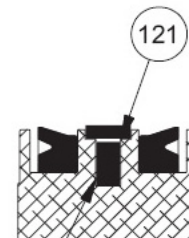
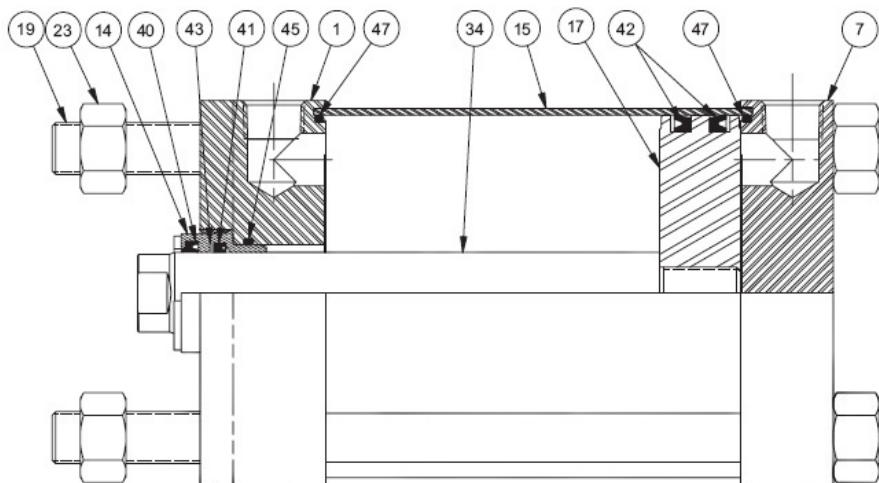
95. Using the actuator bring the gate to the full open and close positions to verify smooth operation. Visually check the gate positions.
96. See Sleeve & Retainer Flange Installation.

TECHNEQUIP™ KNIFE GATE VALVE AIR ACTUATED PARTS LIST



| ITEM | QTY. REQ'D | DESCRIPTION | MATERIAL |
|------|------------|-------------------------|-------------------------------------|
| 1 | 2 | RETAINER FLANGE | ELASTOMER / STEEL ENCAPSULATED |
| 2 | 2 | REPLACEABLE WEAR SLEEVE | ELASTOMER / STAINLESS STEEL RING |
| 3 | 4 | THREADED GREASE FITTING | STEEL |
| 4 | 2 | VALVE HOUSING | DUCTILE IRON |
| 5 | 2 | WIPER BLADE | URETHANE |
| 6 | 2 | WIPER RETAINER | ZINC COATED STEEL |
| 7 | 2 | FRAME | STRUCTURAL STEEL |
| 8 | 1 | GATE | STAINLESS STEEL FLUOROCARBON COATED |
| 9 | 1 | GATE CLEVIS PIECE | STEEL |
| 10 | 1 | GATE CLEVIS PIN | STEEL |
| 11 | 1 | AIR CYLINDER | SEE AIR CYLINDER PARTS LIST |

TECHNEQUIP™ KNIFE GATE VALVE AIR CYLINDER PARTS LIST



8
**MAGNETIC
PISTON**

| ITEM | QTY | DESCRIPTION | ITEM | QTY | DESCRIPTION |
|------|-----|---|------|-----|------------------------------|
| 1 | 1 | Head | 34 | 1 | Piston Rod |
| 7 | 1 | Cap | 40 | 1 | Rod (Wiper / Lipseal) |
| 8 | 1 | Magnet | 41 | 1 | Rod (Primary Lipseal) |
| 14 | 1 | Gland Assembly (contains items 40, 41 & 45) | 42 | 2 | Lipseal (Piston) |
| 15 | 1 | Cylinder Body | 43 | 1 | Backup Washer, Gland Lipseal |
| 17 | 1 | Piston | 45 | 1 | O-Ring (Gland to Head) |
| 19 | 4 | Tie Rod | 47 | 2 | O-Ring (Body Endseal) |
| 23 | 8 | Tie Rod Nut | 121 | 1 | Wearband |



| VALVE ACTUATED CYLINDER TIE ROD TORQUE | | |
|--|--------------------------------------|-----|
| VALVE SIZE | TIE ROD NUT TORQUE COMPOSITE TUBE | |
| | ft. lbs. | N-m |
| 2" [50mm] | 13 | 17 |
| 3" [75mm] & 4" [100mm] | 30 | 41 |
| 6", 8" & 10" [150mm, 200mm & 250mm] | 55 | 75 |
| 12" & 14" [300mm & 350mm] | 78 | 106 |
| 16" & 18" [400mm & 450mm] | 118 | 160 |
| 20" & 24" [500mm & 600mm] | 250 | 339 |
| 26" [650mm] | 350 | 475 |
| 30" [750mm] & 32" [800mm] | 500 | 678 |

TECHNEQUIP™ KNIFE GATE VALVE AIR CYLINDER ASSEMBLY/DISASSEMBLY INSTRUCTIONS

REPLACING PISTON ROD SEALS AND BEARING (GLAND) ONLY

1. Remove the cylinder from the valve to which it is attached by following the equipment manufacturer's suggested procedure.
2. Inspect the piston rod to make sure it is free of burrs or other displaced metal which would prevent sliding the gland off the rod.
3. Using Gland Wrench (symbol 63) and Spanner Wrench (Symbol 63-A), unthread the gland from the cylinder head. See Figure 1.
4. The new gland assembly will come assembled, with an o-ring (Symbol 45). In most cases when replacing the gland only, the original o-ring in the cylinder head (Symbol 45) does not need to be replaced. See Figure 1.
5. Before installing the new gland inspect the surface of the piston rod for scratches, burrs, dents or other damage. A damaged piston will lead to premature rod seal failure.
6. Lubricate the ID of the rod gland assembly with a seal grease such as Lube-A-Cyl. Slide the gland assembly over the piston rod, and thread the gland into the cylinder head until it is seated against the shoulder in the cylinder head.
7. Using Gland Wrench (Symbol 63) and Spanner Wrench (Symbol 63-A) seat the gland firmly in place.

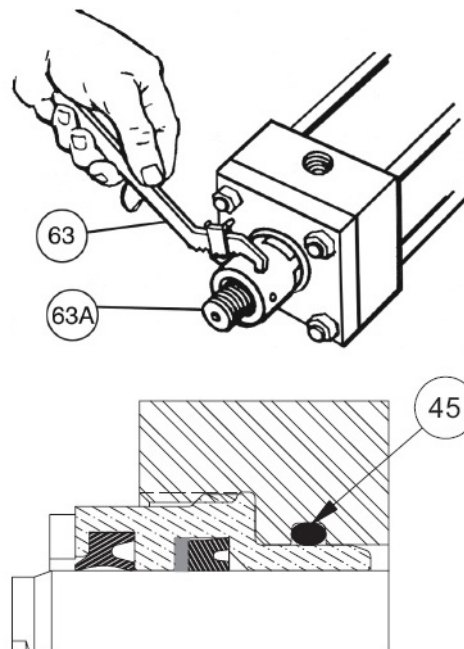


Figure 1

REPLACING PISTON and PISTON ROD SEALS

Note: If only replacing piston seals, skip step #3.

1. Remove the cylinder for the machine to which it is attached per the equipment manufacturer's procedure.
2. Inspect the piston rod to make sure it is free of burrs or other displaced metal which would prevent the gland from sliding off the rod.
Skip step 3 if only replacing the piston seal.
3. Using the Gland Wrench (Symbol 63) and the Spanner Wrench (Symbol 63-A), unthread the gland from the cylinder head.
4. If the cylinder has extended tie rods, record the length of these extensions.
5. Disassemble the cylinder on a bench by removing the flour tie rod nuts from the cap side of the cylinder.
6. Remove the cylinder head.

7. Remove the piston and rod assembly from the cylinder body.
8. Remove the cylinder body from the cap end of the cylinder.
9. Remove piston seals. (Symbol #42), cylinder body and seals (Symbol #47), and gland to head o-ring (Symbol#45).
10. Clean all parts thoroughly.
11. Inspect all parts, paying particular attention to the cylinder body, piston, piston rod, and piston rod for excessive wear or damage. Any component exhibiting signs of excessive wear or damage should be replaced immediately.

Note: All cylinders will have a wear band (Symbol#121) mounted on the piston. When replacing seals on these cylinders, DO NOT remove the Magnet (symbol#8) from the piston.

TECHNEQUIP™ KNIFE GATE VALVE AIR CYLINDER ASSEMBLY / DISASSEMBLY INSTRUCTIONS

RE-ASSEMBLY OF CYLINDER

Lubricate all seals, o-rings, with grease such as Lube-A-Cyl before assembly.

1. All parts should be clean and free of contamination.
2. Install body end seal o-rings (Symbol #47) into head and cap.
3. Install the gland to head o-ring (Symbol#45)
4. Lubricate the ID of the rod gland assembly with seal grease such as Lub-A-Cyl. Thread the gland into the cylinder head until it is seated against the shoulder in the cylinder head.
5. Lubricate the inside of the cylinder body.
6. Install one piston seal in the groove nearest to the rod end (the two lips of the Lipseal should face the rod end of the piston). All piston seals kits come with a wear band. If the piston had a wear band, lubricate and reinstall the wear band.
7. Lay the cylinder body on its side, and push the piston and rod assembly through the barrel just far enough to expose the piston groove for the second seal.
8. Place cap on bench and on top of a spacer block to allow the tie rods to go through the cap.
9. Place the piston rod assembly and cylinder body onto the cap of the cylinder. With a mallet, tap the top of the cylinder body (carefully) to seat the body into the cap.
10. Install the head onto the cylinder body. Use caution when passing the piston rod assembly through the head to avoid damage to the gland and gland seals. While performing this process, slip the tie rods through the cylinder cap.
11. With a mallet, seat the cylinder head on to the cylinder body.
12. Lay the cylinder assembly on its side. Be careful not to allow the cylinder assembly to come apart.
13. If the cylinder had extended tie rods, adjust the thread extension of each tie rod to the value recorded during disassembly.
14. If the cylinder has a front flange mount, thread each tie rod flush with the cylinder head, then back off 1/4 turn.
15. Apply a thread lubricant to the tie rods and the cap face where the tie rod nuts make contact and install the tie rod nuts hand tight.
16. For cylinders having a head mount, hold each tie rod vice grips so that the tie rod will not turn when torque is applied.
17. Determine the bore size and cylinder body of the cylinder being repaired. Then, determine the proper tie rod torque to be applied. Refer to the tables on the following page.
18. Torque each tie rod its proper value using a diagonal pattern (across corners). The torque applied should be stepped to achieve the final torque.
19. Using the Gland Wrench (Symbol 63) and the Spanner Wrench (Symbol 63-A), seat the gland firmly in place.

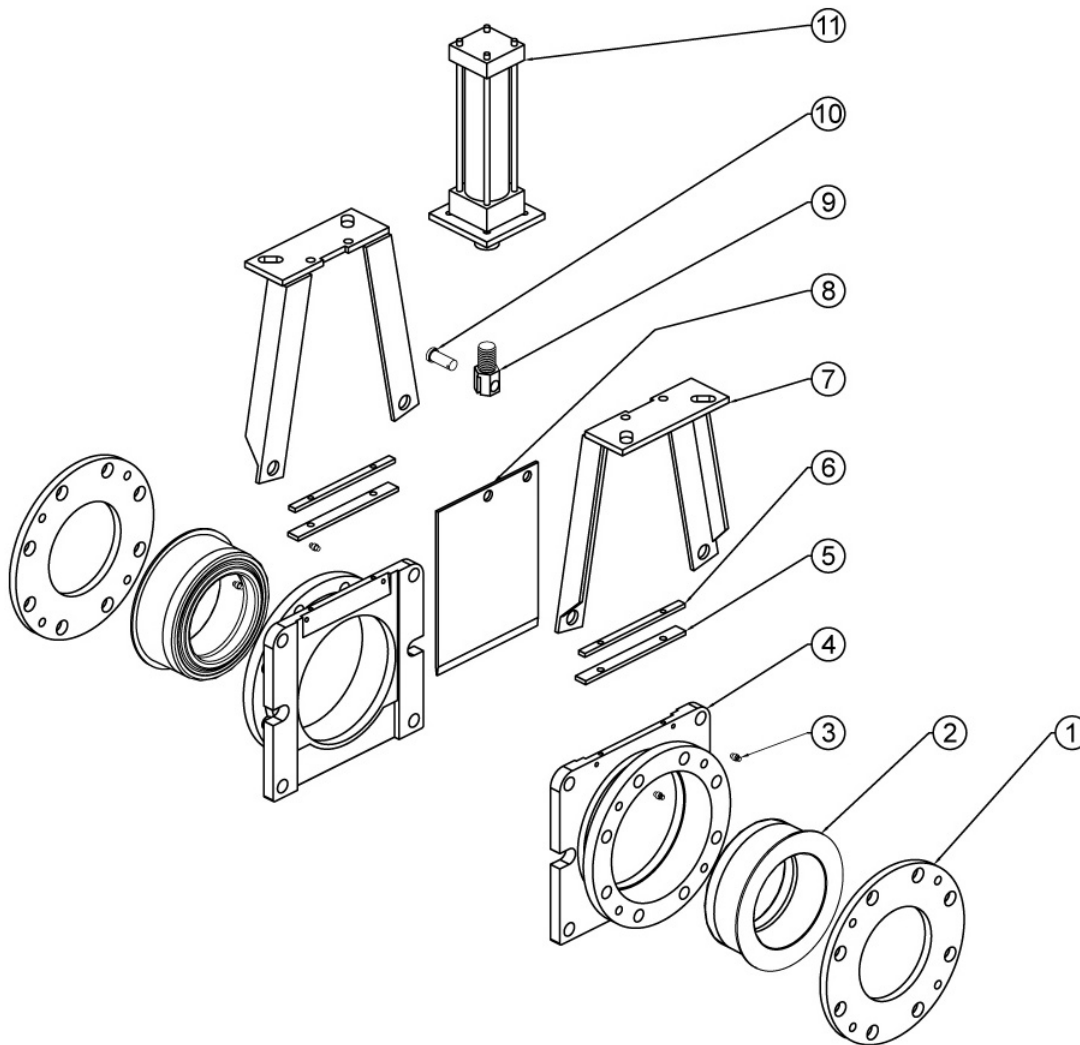
Service Kits of expendable parts for fluid power cylinders are stocked in principal industrial locations across the USA and other countries. For prompt delivery and complete information, contact your nearest Cylinder Division distributor office.

Standard Seals: Class 1 Service Kits are standard and contain Buna N seals for standard fluid service. These seals are suitable for use in air service with a recommended operating temperature range of -10°F (-23°C) to +165°F (+74°C).

HI Temperature Seals: Class 5 service kits are available, and contain Fluorocarbon seals for standard fluid service. These seals are suitable for use in air service. The recommended operating temperature range for Class 5 Seals is -10°F (-23°C) to +250°F (+121°C).

Low Temperature Seals: Class 4 Service kits are available, and contain Nitrile Seals for standard fluid service. These seals are suitable for use in air service. The recommended operating temperature range for Class 4 Seals is: -50°F (-46°C) to +150°F (+66°C).

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC ACTUATED PARTS LIST



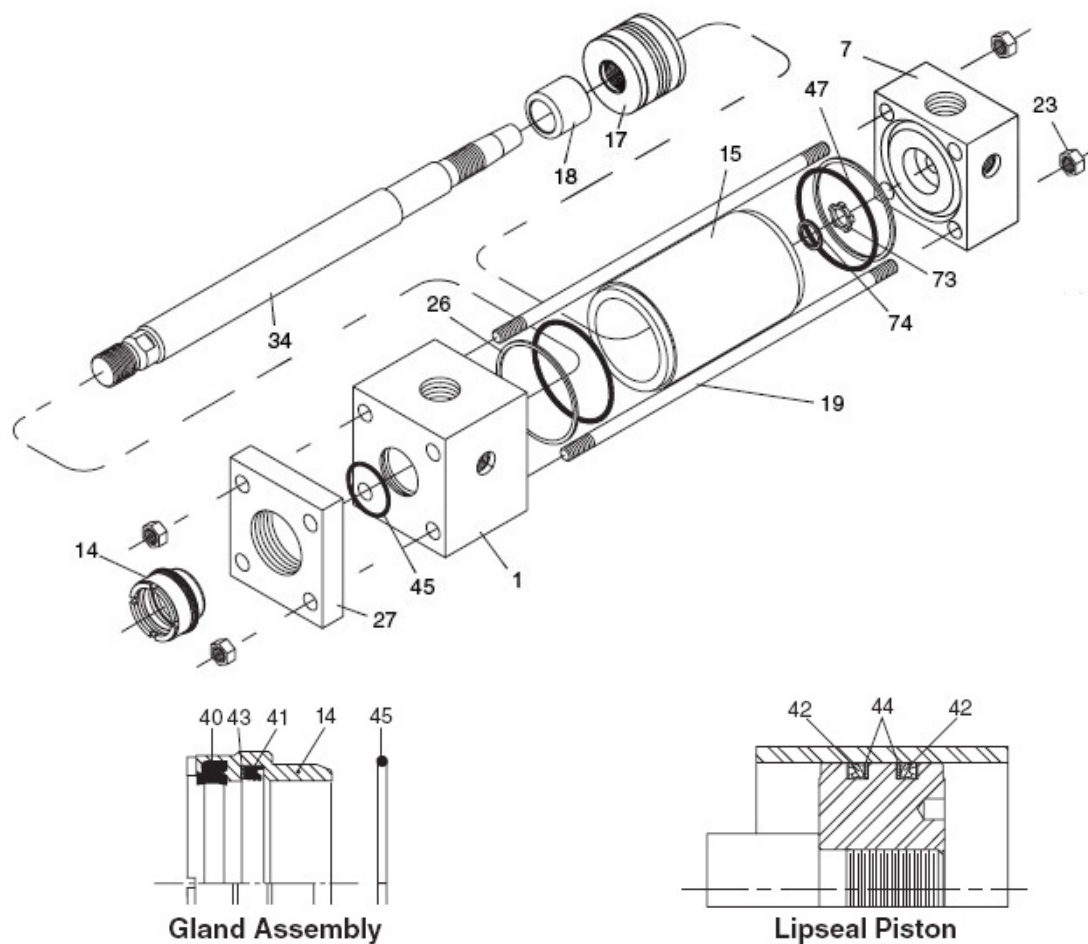
| ITEM | QTY. REQ'D | DESCRIPTION | MATERIAL |
|------|------------|---|-------------------------------------|
| 1 | 2 | RETAINER FLANGE | ELASTOMER / STEEL ENCAPSULATED |
| 2 | 2 | REPLACEABLE WEAR SLEEVE | ELASTOMER / STAINLESS STEEL RING |
| 3 | 4 | THREADED GREASE FITTING 2" [50mm] to 26" [600mm] VALVES | STEEL |
| | 8 | THREADED GREASE FITTING 30" [650mm] to 36" [900mm] VALVES | STEEL |
| 4 | 2 | VALVE HOUSING | DUCTILE IRON |
| 5 | 2 | WIPER BLADE | URETHANE |
| 6 | 2 | WIPER RETAINER | ZINC COATED STEEL |
| 7 | 2 | FRAME | STRUCTURAL STEEL |
| 8 | 1 | GATE | STAINLESS STEEL FLUOROCARBON COATED |
| 9 | 1 | GATE CLEVIS PIECE | STEEL |
| 10 | 1 | GATE CLEVIS PIN | STEEL |
| 11 | 1 | HYDRAULIC CYLINDER | SEE HYDRAULIC CYLINDER PARTS LIST |

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC CYLINDER PARTS LIST

Service Assemblies and Seal Kits

Service Assemblies and Seal Kits for Parker hydraulic and pneumatic cylinders simplify the ordering processes. They contain sub-assemblies which are ready for installation, and are supplied with full instructions. When ordering Service Assemblies and Seal Kits, please refer to the identification plate on the cylinder body, and supply the following information.

Serial Number – Bore – Stroke – Model Number - Fluid Type



| ITEM NO. | DESCRIPTION |
|----------|----------------|
| 1 | Head |
| 7 | Cap |
| 14 | Gland |
| 15 | Cylinder Body |
| 17 | Piston |
| 18 | Cushion Sleeve |
| 19 | Tie Rod |
| 23 | Tie Rod nut |
| 27 | Retainer |

| ITEM NO. | DESCRIPTION |
|----------|--|
| 34 | Piston Rod |
| 40 | Wiperseal – for 14 |
| 41 | Lipseal – for 14 |
| 42 | Lipseal, Piston |
| 43 | Back-up washer, gland Lipseal 41 (not hydraulic Class 1 seals) |
| 44 | Back-up washer, Lipseal |
| 45 | O-ring – gland / head |
| 47 | O-ring – cylinder body |

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC CYLINDER ASSEMBLY / DISASSEMBLY INSTRUCTIONS

Operating Fluids and Temperature Ranges

The table shows the main types of fluid used with hydraulic cylinders. If the operating conditions of the particular application cannot be met by the seal classes described, please consult the factory and supply complete application details.

| Class No. | Typical Fluids | Temperature Range |
|--|---|--|
| 1. Nitrile & Polyurethane | Air, Nitrogen Hydraulic oil, Mil-H-5606 Oil | -10°F (-23°C) to +165°F to (+74°C) |
| 2. Nitrile, Nitroxile and Fluorocarbon | Water. Water Glycol, H. W. C. F. – Water-in-Oil Emulsion – Houghto-Safe 271, 620, 5040 Mobil Pyrogard D, Shell IruS 905 Ucon Hydrolube J-4 | -10°F (-23°C) to +165°F to (+74°C) |
| 3. Fluorocarbon | High Temperature Houghto-Safe 1010,10551 1120 Fryquel 150, 220, 300, 550 Mobil Pyrogard 42. 43, 53, 55 Note: Fluorocarbon seals are not suitable for use with Skydrol fluid, but can be used with hydraulic oil if desired. | -10°F (-23°C) to +250°F to (+121°C) |
| 4. Nitroxile, Fluorocarbon and Nitrile | H.W.C.F. – Houghton Hydrolubric 120B Sonsol Lubrizol, for other H.W.C.F. consult factory | +40°F (+4°C) to +120°F to (+49°C) |

Cylinder Modifications or Repairs

Cylinders as shipped from the factory are not to be disassembled and or modified. If cylinders require modifications, these modifications must be done at company locations or by The Company's certified facilities. The Cylinder Division Engineering Department must be notified in the event of a mechanical fracture or permanent deformation of any cylinder component (excluding seals). This includes a broken piston rod, tie rod, mounting accessory or any other cylinder component. The notification should include all operation and application details. This information will be used to provide an engineered repair that will prevent recurrence of the failure.

It is allowed to disassemble cylinders for the purpose of replacing seals or seal assemblies. However, this work must be done by strictly following all the instructions provided in this bulletin.

Although Parker Hydraulic Cylinders are designed to make on-site maintenance or repairs as easy as possible, some operations can only be carried out in our factory. It is standard policy to fit a cylinder returned to the factory for repair with those replacement parts, which are necessary to return it to 'as good as new' condition. Should the condition of the returned cylinder be such that repair would be uneconomical, you will be notified.

The piston is sealed and securely locked to the piston rod with anaerobic adhesive. This threaded connection is ONLY to be disassembled or reassembled by factory trained personnel.

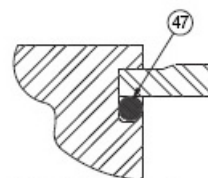
WARNING: Some cylinders contain heavily loaded springs. Improper disassembly of these cylinders can cause severe bodily injury or death. Always disassemble a cylinder containing a spring by following the instructions in Bulletin 0805-G-TSD-1.

After the cylinder has been disassembled, carefully remove the seals that will be replaced to avoid damaging groove surfaces. Carefully clean all parts. Seals will be easier to install if they are lubricated. Always lubricate seals and other components of a hydraulic cylinder with the operating fluid. Pneumatically operated cylinders should be lubricated with Lub-A-Cyl. Neither hydraulic nor pneumatic cylinders fitted with Class 3 seals (EPR) can be lubricated or operated with petroleum based products.

Servicing Piston Seals

The cylinder bore and piston must be closely examined for signs of scoring. If either the cylinder body or piston is damaged they must be replaced. When a cylinder is overhauled, a new set of piston seals is required. It is also recommended that the cylinder be reassembled with new cylinder body O-rings. All piston seal kits contain piston seals as well as two cylinder body O-rings (47).

Body O-Rings

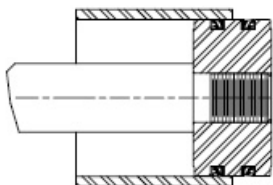


All Other Series & Bore Sizes

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC CYLINDER ASSEMBLY / DISASSEMBLY INSTRUCTIONS

Lipseal Piston

PK kits for Lipseal pistons contain two lipseals (42) and two back-up washers (44). Apply lubricant to the piston OD and all grooves. Install one piston seal in the groove nearest the rod. The two 'lips' of this Lipseal should face toward the rod end of the piston. Install the back-up washer in the same groove opposite the 'lips' of the seal. Lubricate the cylinder body ID and insert the piston – cap end first – into the cylinder body as shown. Next, turn the cylinder body on its side and push the piston through the tube just far enough to expose the groove for the second seal. Now, install the second Lipseal and backup washer in the exposed groove with the two 'lips' facing away from the rod. If the piston has a groove for a wear ring, install the wear ring in the groove and lubricate the wear ring OD. Then pull the piston into the cylinder body.



Cast Iron Piston Rings

Kits for cast iron piston rings contain four rings (48). Most 3L Series cylinders use only three rings and in some larger sizes, only two. All other series cylinders use four rings.

Iron piston rings seldom need replacement. If the rings show no signs of damage or abnormal wear, they may be reused. To install piston rings, collapse the rings one at a time while inserting the piston into the cylinder body, using a light oil to aid this process.

Cylinder Assembly

The cylinder should be re-assembled as follows:

1. The back-up washers, where fitted, and then the body O-rings should be lightly lubricated and pressed into the grooves in the head and cap, without twisting. The cylinder body, with the piston and rod already fitted, can then be assembled to the cap by 'rocking' it down over the O-ring until the cylinder body is in contact with the cap. The head is then fitted over the piston rod and assembled to the cylinder body. Rock gently until the body and head are in metal-to-metal contact.
2. Lightly lubricate the gland seals.

3. Screw the gland into the retainer about one thread short of the retainer face that contacts the cylinder head. Slide the gland/retainer assembly over the piston rod end, taking care not to damage the seal lips. Orient holes in full square retainers over the tie rod holes in the head or line up holes in smaller retainers with threaded mounting holes. Assemble bolts that secure bolt-on retainers finger tight.
4. Ensuring that the head and cap are kept in alignment, refit the cylinder tie rods.

Note: Some cylinder configurations have tie rods threaded into a component other than tie rod nuts (e.g. head, cap, flange plate, etc). Before torquing the tie rods, use paint on the tie rods as an indicator that adequate thread engagement is achieved. Ensure that no unpainted thread is exposed at the connection to the mating component.

For both style retainers, torque tie rod nuts to values listed in Table 1 – Tie Rod Torque. **Torque tie rods gradually starting at one corner and work in a diagonal pattern to ensure evenness of tightening. DO NOT TORQUE ONE TIE ROD COMPLETELY AND THEN THE OTHERS.** Then, on cylinders with bolt-on retainers, torque bolts to the values listed in Table 1 – Tie Rod Torque.

Servicing Cylinder Gland Seals

Fluid leakage from the piston rod at the gland normally indicates worn gland seals. The cylinder should, if possible, be removed for overhaul, or the piston rod disconnected.

Removal

1. Inspect the piston rod to make sure it is free from burrs or damage which would prevent the gland sliding off the rod.

The Parker gland is a cartridge design consisting of a bronze gland (14), primary rod seal (41), back-up washer (43) for all hydraulic cylinder seal classes, and a double lip wiperseal (40). The gland is threaded into a gland retainer plate. These glands are usually removable without disturbing the tie rod torque. In some cases, where a large diameter rod gland is threaded into a large square retainer, it may be necessary to loosen the tie rods to remove the gland.

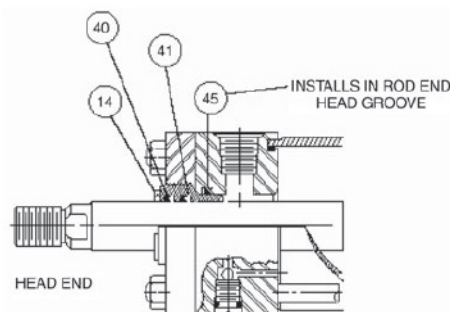
2. Where the gland is screwed into a square retainer, unscrew the gland using a Gland Wrench and Spanner, and slide the gland off the piston rod.

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC CYLINDER ASSEMBLY / DISASSEMBLY INSTRUCTIONS

Continued - Removal

Where the gland is screwed into a circular retainer, undo the socket head cap screws and slide the gland/retainer assembly off the piston rod. Unscrew and withdraw the gland from the inner face of the retainer.

3. Remove the seals using a sharp pointed instrument, taking care not to damage the gland. Clean and inspect the gland bore and seal grooves. If any wear is present replace with a Gland Cartridge Kit containing seals of the correct type for the conditions.

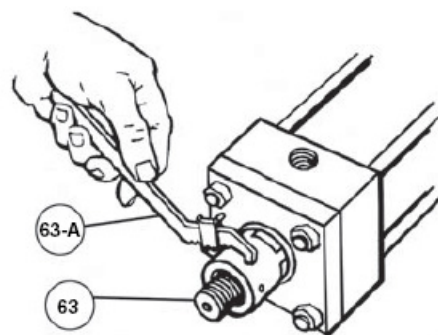


Installation

Inspect the surface of the piston rod for damage which could cause early seal failure. When fitting the gland over the rod thread, a slight rotary motion will help prevent damage to the seals. In addition, shim stock or other thin, tough material can be wrapped around the threads to protect the seal lips.

1. Ensure that the kit contains seals of the correct type. Lubricate the gland and seals, and fit the wiper (40) into the groove closest to the outside face of the gland.
2. If a Class 1 material rod seal, for a hydraulic cylinder, is being fitted to a standard gland, no back-up washer is necessary. A back-up washer (43) is included in seal kits for all other service classes. Install this in the rod seal groove, against the wall closest to the wiper. Install the lipseal (41) in the groove, with the lips facing the pressure (cylinder) side of the gland. See illustrations on top right of this page.
3. Each kit with a threaded type gland contains an O-ring (45) which seals the gland to the cylinder head. This O-ring is a static seal, and the original must be left in place unless it is faulty.

Note: Some seal kits contain more than one O-ring. In this case, fit the one which is identical in size and thickness to the existing O-ring. Any extra O-rings should be discarded.



4. Slide the gland cartridge over the piston rod and thread it into the retainer. Tighten the gland firmly against the cylinder head using a Gland Wrench and Spanner. In some cases (especially large piston rod diameters) it may be necessary to loosen the tie rod nuts or retainer bolts, and remove the retainer, in order to thread the gland back into place.
5. In those cases, thread the gland into the retainer about one thread short of the retainer face that contacts the cylinder head. Slide the gland assembly over the piston rod and orient holes in large retainers with tie rod holes and holes in bolt-on retainers with threaded mounting holes. Seat the retainer against the cylinder head. Assemble bolts that secure bolt-on retainers finger tight. For both style retainers, torque tie rod nuts to values listed in Table 1 - Tie Rod Torque.

TECHNEQUIP™ KNIFE GATE VALVE HYDRAULIC CYLINDER OPERATING INSTRUCTIONS

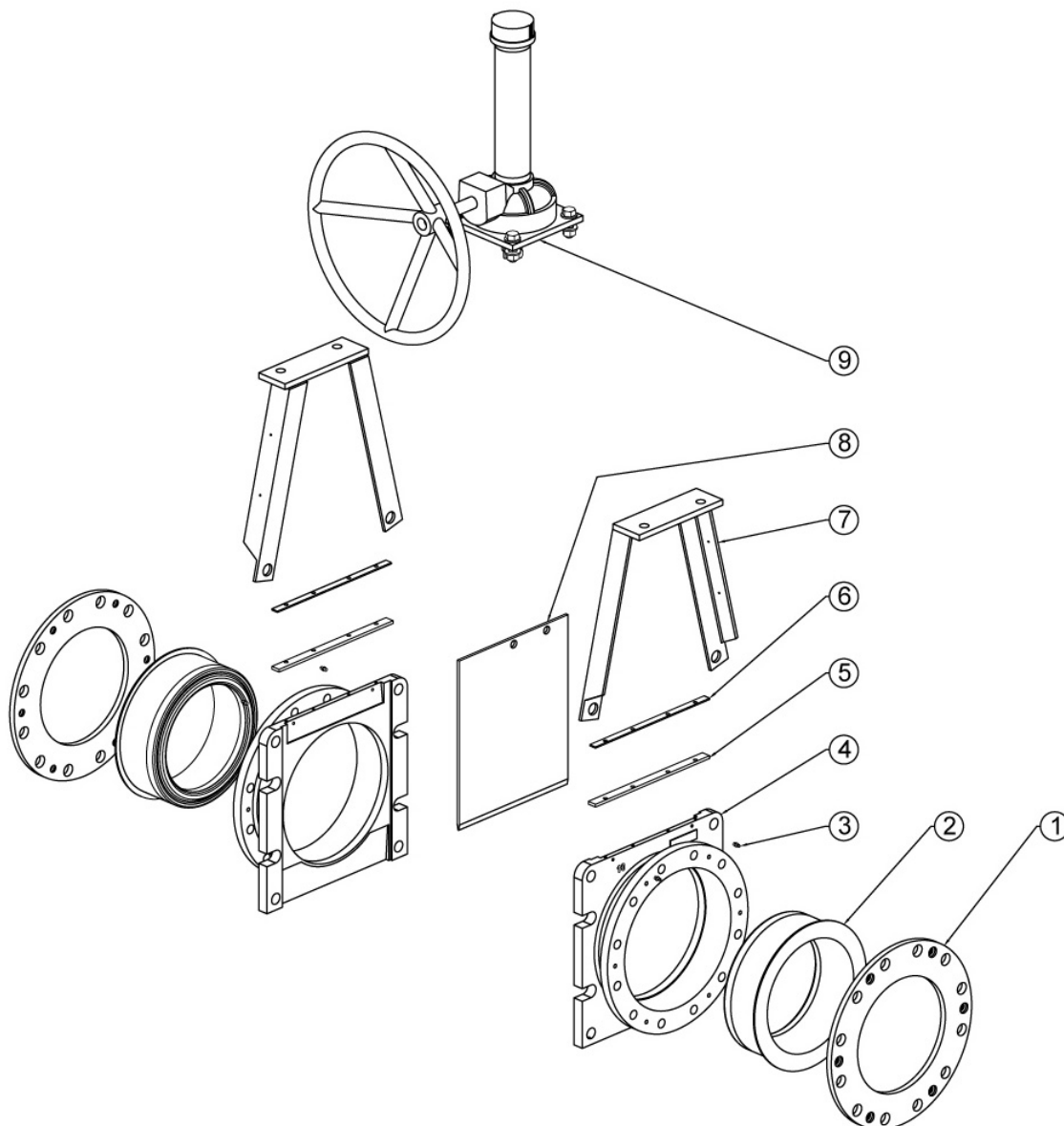
Torque ties rods gradually starting at one corner and work in a diagonal pattern to ensure evenness of tightening. **DO NOT TORQUE ONE TIE ROD COMPLETELY AND THE OTHERS.** Then, on cylinders with bolt-on retainers, torque bolts to the values listed in Table 1 – Tie Rod Torque (below). To complete the assembly, in all cases, tighten the gland cartridge firmly against the cylinder head using a Gland Wrench and Spanner.

Gland seals are pressure activated and do not need adjustment.

Table 1 – Tie Rod Torque

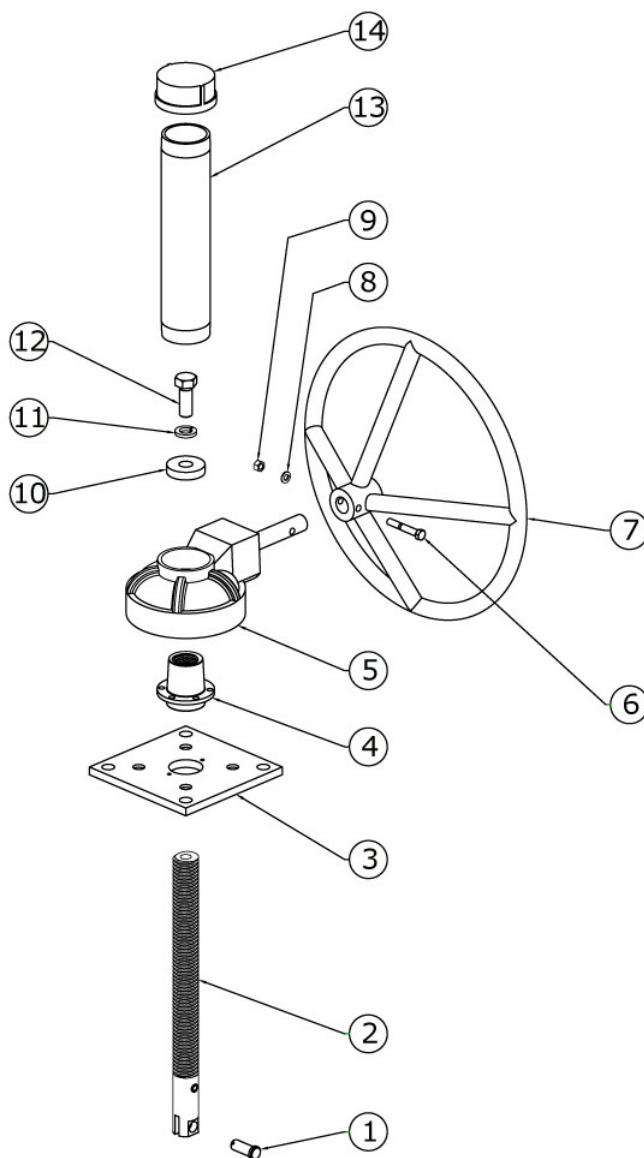
| Valve Size | Tie Rod Torque | |
|-------------------------------|-------------------|---------------|
| | | |
| 2" [50mm] | 60 - 70 in lbs. | 69 – 81 cm-kg |
| 3" [75mm] to 8" [200mm] | 11 - 12 - ft lbs. | 15 - 16 N-m |
| 10" [250mm] to 16" [400mm] | 25 - 26 ft-lbs. | 34 - 35 N-m |
| 18" [450mm] & 24" [600mm] | 60 - 64 ft-lbs. | 81 - 87 N-m |
| 26" [650mm] | 131 – 135 ft-lbs. | 178 – 184 N-m |
| 30" [750mm] & 32" [800mm] | 312 – 316 ft-lbs. | 423 – 429 N-m |
| 36" [900mm] thru 48" [1200mm] | 528 – 544 ft-lbs. | 716 – 738 N-m |

TECHNEQUIP™ KNIFE GATE VALVE BEVEL GEAR ACTUATED PARTS LIST



| ITEM | QTY. REQ'D | DESCRIPTION | MATERIAL |
|------|------------|------------------------------|-------------------------------------|
| 1 | 2 | RETAINER FLANGE | ELASTOMER / STEEL ENCAPSULATED |
| 2 | 2 | REPLACEABLE WEAR SLEEVE | ELASTOMER / STAINLESS STEEL RING |
| 3 | 4 | THREADED GREASE FITTING | STEEL |
| 4 | 2 | VALVE HOUSING | DUCTILE IRON |
| 5 | 2 | WIPER BLADE | URETHANE |
| 6 | 2 | WIPER RETAINER | ZINC COATED STEEL |
| 7 | 2 | FRAME | STRUCTURAL STEEL |
| 8 | 1 | GATE | STAINLESS STEEL FLUOROCARBON COATED |
| 9 | 1 | BEVEL GEAR ACTUATOR ASSEMBLY | SEE BEVEL GEAR PARTS LIST |

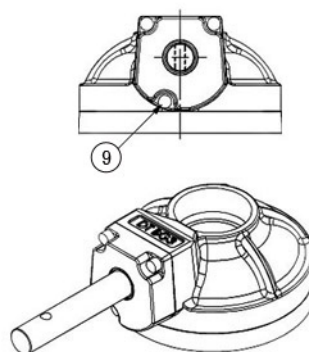
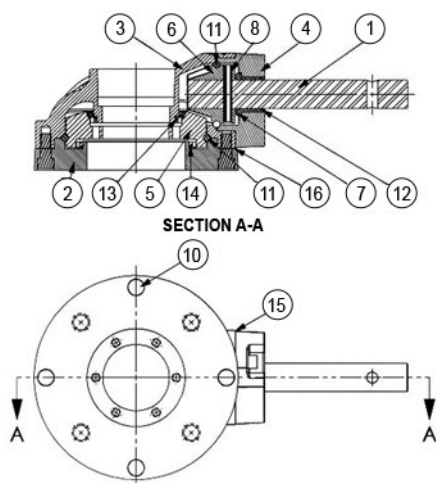
TECHNEQUIP™ KNIFE GATE VALVE BEVEL GEAR ASSEMBLY PARTS LIST



| ITEM | DESCRIPTION | MATERIAL |
|------|-----------------------|------------------------------------|
| 1 | GATE CLEVIS PIN | MILD STEEL |
| 2 | STEM ASSEMBLY | 304 STAINLESS STEEL |
| 3 | ADAPTER PLATE | MILD STEEL |
| 4 | YOKE SLEEVE | 660 BRONZE |
| 5 | DYNATORQUE BEVEL GEAR | SEE BEVEL GEAR ACTUATOR PARTS LIST |
| 6 | HEX BOLT | GRADE 5 or CLASS 8.8 |
| 7 | HANDWHEEL | MILD STEEL |
| 8 | LOCK WASHER | GRADE 5 or CLASS 8.8 |
| 9 | HEX NUT | GRADE 5 or CLASS 8.8 |
| 10 | TRAVEL STOP | 316 STAINLESS STEEL |
| 11 | LOCKWASHER | GRADE 5 or CLASS 8.8 |
| 12 | HEX BOLT | GRADE 5 or CLASS 8.8 |
| 13 | STEM COVER | ASTM A53 STEEL |
| 14 | STEM COVER CAP | BLACK MALLEABLE IRON 150lb |

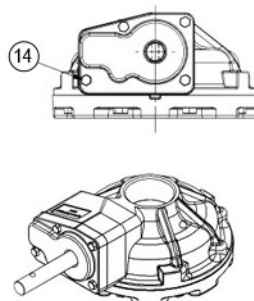
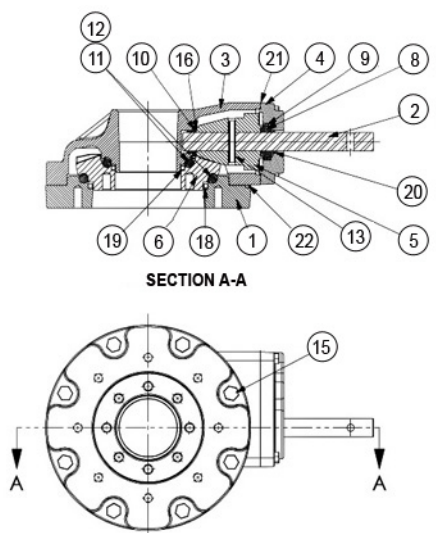
TECHNEQUIP™ KNIFE GATE VALVE BEVEL GEAR PARTS LIST

| SPECIFICATION | DYNATORQUE BG3 6"-16" [150mm-400mm] VALVES | DYNATORQUE BG4 18"-24" [450mm-600mm] VALVES |
|---------------|--|---|
| Ratio | 3:1 | 4:1 |
| Thrust | 22,000 lbs [90kN] | 30,000 lbs [133kN] |
| Torque | 625 ft-lb [848 N-m] | 1600 ft-lb [848 N-m] |
| Temperature | -20 to 150°F [-29 to 66°C] | -20 to 150°F [-29 to 66°C] |
| Weight | 38 lbs [17kg] | 60 lbs [27kg] |



BG3

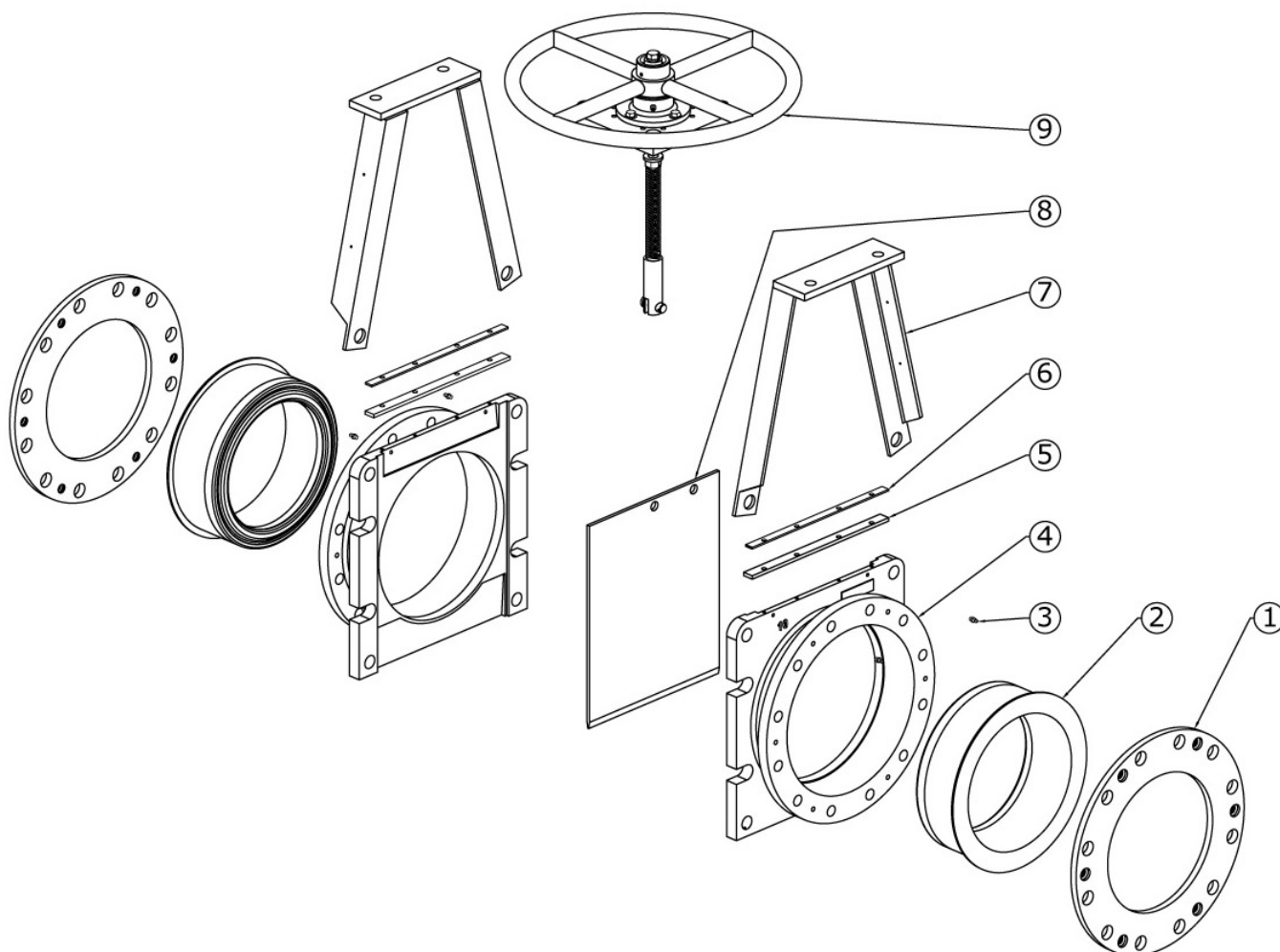
| ITEM | QTY | DESCRIPTION | MATERIAL |
|------|-----|-----------------------|----------------------|
| 1 | 1 | Shaft | Stress proof Steel |
| 2 | 1 | Retainer | Ductile Iron |
| 3 | 1 | Housing | Ductile Iron |
| 4 | 1 | Bearing Housing | Ductile Iron |
| 5 | 1 | Bevel Gear | Ductile Iron |
| 6 | 1 | Bevel Pinion | Ductile Iron |
| 7 | 1 | Flange Bearing | Powdered Metal |
| 8 | 1 | Coil Pin | Heat Treated Steel |
| 9 | 3 | SHCS, 5/16"-18 x 7/8" | Grade 8 |
| 10 | 4 | SHCS, 3/8"-16 x 7/8" | Grade 8 |
| 11 | 89 | Ball Bearing | Chrome |
| 12 | 1 | Lip Seal | BUNA-N |
| 13 | 1 | Lip Seal | BUNA-N |
| 14 | 1 | Lip Seal | BUNA-N |
| 15 | 1 | Gasket, BRG HSG | Vellutherm 650 Paper |
| 16 | 1 | Gasket, BRG RET | Vellutherm 650 Paper |
| 17 | 1 | Paint (Not Shown) | Black Oxide |
| 18 | 1 | Grease (Not Shown) | Commercial Grade |



BG4

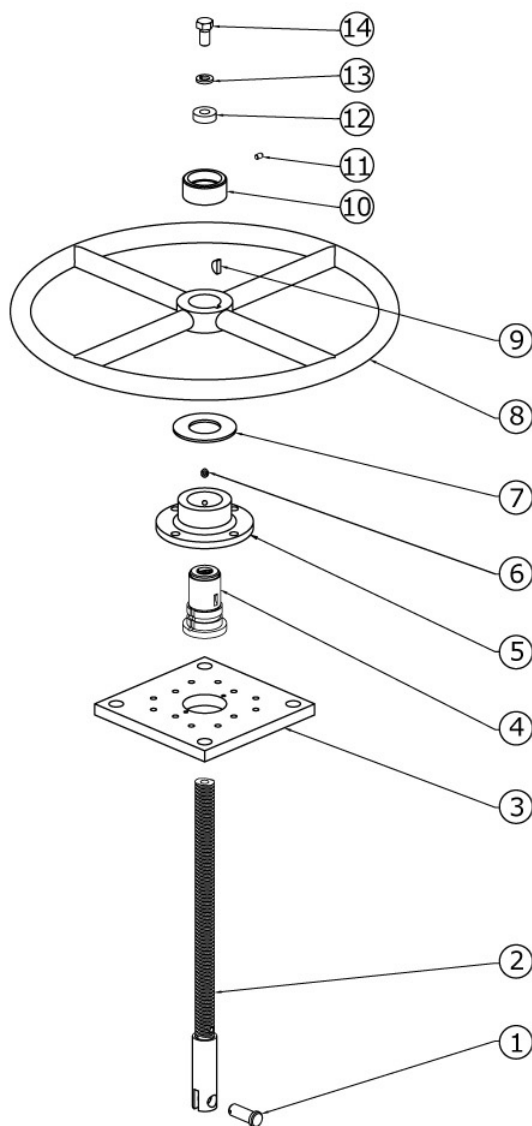
| ITEM | QTY | DESCRIPTION | MATERIAL |
|------|-----|-------------------------|----------------------|
| 1 | 1 | Bearing retainer | Cast Iron |
| 2 | 1 | Shaft | Hardened Steel |
| 3 | 1 | Housing | Cast Iron |
| 4 | 1 | Bearing Housing | Cast Iron |
| 5 | 1 | Bevel Pinion | Ductile Iron |
| 6 | 1 | Bevel Gear | Ductile Iron |
| 7 | 1 | Paint (not shown) | Black Oxide |
| 8 | 1 | Roller Bearing, Cone | Hardened Steel |
| 9 | 1 | Roller Bearing, Cup | Hardened Steel |
| 10 | 1 | Flanged Retainer | Cast Iron |
| 11 | 36 | Ball Bearing 0.5 Dia. | Chrome |
| 12 | 36 | Ball Bearing 1.469 Dia. | Chrome |
| 13 | 1 | Coil Pin | Heat Treated Steel |
| 14 | 4 | HHCS, 3/8" x 1 1/4" | Grade 5 |
| 15 | 8 | HHCS, 1/2"-13 x 1 1/4" | Grade 5 |
| 16 | 1 | Wave Washer | Standard |
| 17 | 1 | Grease (not shown) | Commercial |
| 18 | 1 | Lip Seal 6.0 | BUNA-N |
| 19 | 1 | Lip Seal 3.5 | BUNA-N |
| 20 | 1 | Lip Seal 1.0 | BUNA-N |
| 21 | 1 | Gasket, Housing | Vellutherm 650 Paper |
| 22 | 1 | Gasket, retainer | Vellutherm 650 Paper |

TECHNEQUIP™ KNIFE GATE VALVE HANDWHEEL ACTUATED PARTS LIST



| ITEM | QTY. REQ'D | DESCRIPTION | MATERIAL |
|------|------------|-----------------------------|-------------------------------------|
| 1 | 2 | RETAINER FLANGE | ELASTOMER / STEEL ENCAPSULATED |
| 2 | 2 | REPLACEABLE WEAR SLEEVE | ELASTOMER / STAINLESS STEEL RING |
| 3 | 4 | THREADED GREASE FITTING | STEEL |
| 4 | 2 | VALVE HOUSING | DUCTILE IRON |
| 5 | 2 | WIPER BLADE | URETHANE |
| 6 | 2 | WIPER RETAINER | ZINC COATED STEEL |
| 7 | 2 | FRAME | STRUCTURAL STEEL |
| 8 | 1 | GATE | STAINLESS STEEL FLUOROCARBON COATED |
| 9 | 1 | HANDWHEEL ACTUATOR ASSEMBLY | SEE HANDWHEEL ACTUATOR PARTS LIST |

TECHNEQUIP™ KNIFE GATE VALVE HANDWHEEL ASSEMBLY PARTS LIST



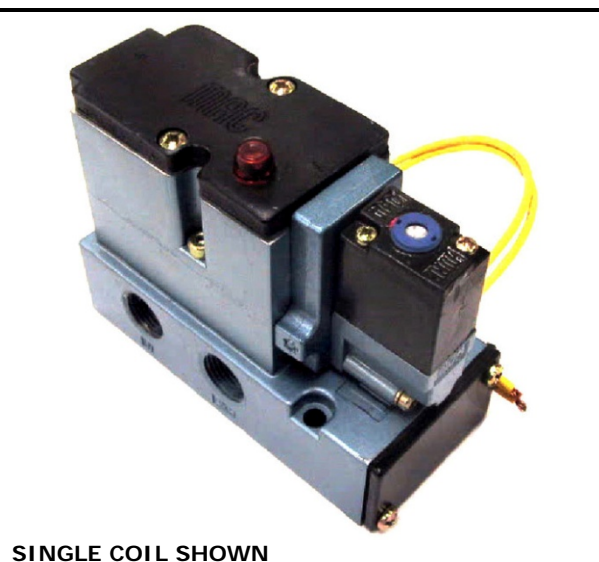
| ITEM | DESCRIPTION | MATERIAL |
|------|---|--------------------------------|
| 1 | GATE CLEVIS PIN | MILD STEEL |
| 2 | STEM ASSEMBLY | 304 STAINLESS STEEL |
| 3 | ADAPTER PLATE (10" [250mm] VALVE ONLY) | MILD STEEL |
| 4 | YOKE SLEEVE | 660 BRONZE |
| 5 | HAND WHEEL BASE | AISI 1045 MILD STEEL |
| 6 | DRIVE TYPE GREASE FITTING | MILD STEEL |
| 7 | THRUST WASHER | 304 STAINLESS STEEL |
| 8 | HAND WHEEL | ASTM A53, AISI 1045 MILD STEEL |
| 9 | WOODRUFF KEY | AISI 1045 MILD STEEL |
| 10 | YOKE COLLAR | 660 BRONZE |
| 11 | SOCKET SET SCREW | GRADE 5 or CLASS 8.8 |
| 12 | TRAVEL STOP | 316 STAINLESS STEEL |
| 13 | LOCK WASHER | GRADE 5 or CLASS 8.8 |
| 14 | HEX BOLT | GRADE 5 or CLASS 8.8 |

TECHNEQUIP™ KNIFE GATE VALVE

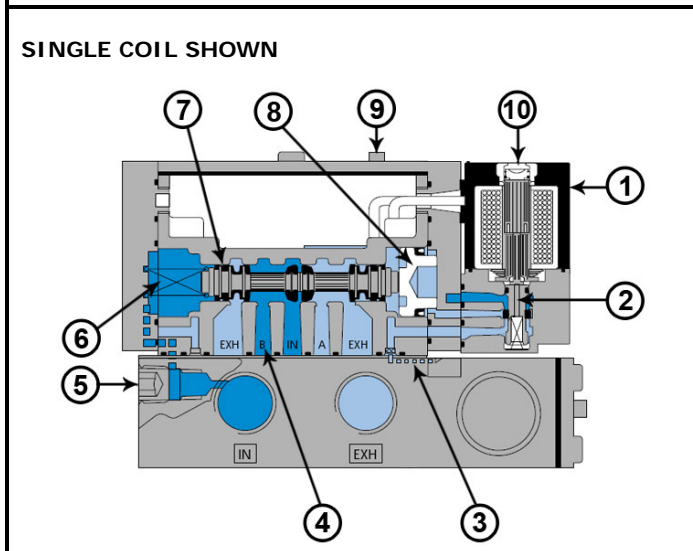
OPTIONS: MAC 82 SERIES 4-WAY SOLENOID

2" [50mm] TO 18" [450mm] VALVES

| SPECIFICATION DESCRIPTION | SPECIFICATION | | |
|-----------------------------|--|------------------------|------------------------|
| Spool Type | Single (Coil) Operator – Single Pressure Spring Return or Dual Coil Operator | | |
| Port Size | 3/8" NPTF or 3/8" BSPP | | |
| Flow: Cv | 1.35 | | |
| Pilot Style | Universal Pilot, Pilot Exhaust Out Main Exhaust | | |
| Voltage | 24VDC | 120V/60Hz 110V/50Hz | 240V/60Hz 220V/50Hz |
| Power Rating | 5.4W | 5.4W | 5.9W |
| Lead Wire Length | 36" [900mm] | | |
| Manual Operator | Non-Locking Operator | | |
| Operating Temperature Range | -18°C to 50°C 0°F to 120°F | | |
| Operating Pressure Range | 20-150 psi 138kPa to 1035 kPa | | |

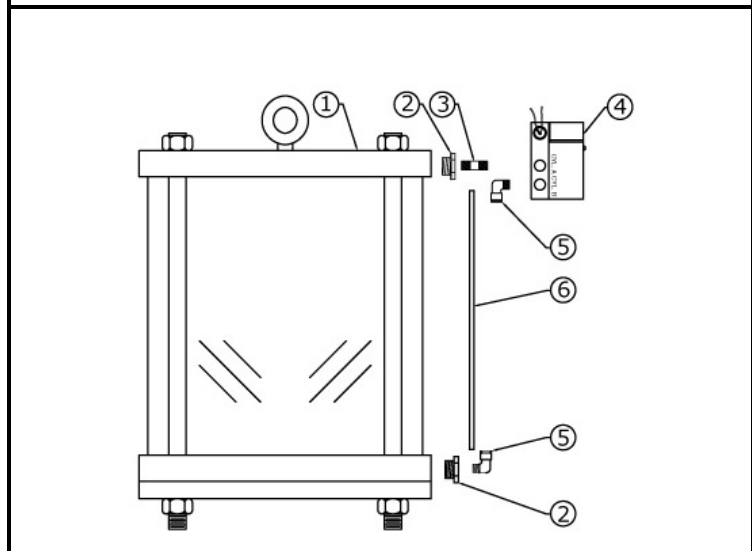


SOLENOID VALVE CROSS-SECTION

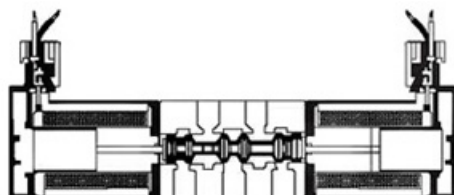


| ITEM | ITEM DESCRIPTION |
|------|--------------------------------|
| 1 | MACSOLENOID® |
| 2 | Poppet Pilot Valve |
| 3 | Plug In Design |
| 4 | High Flow Ports |
| 5 | Optional Common External Pilot |
| 6 | Spring Return |
| 7 | Mac Spool & Bore |
| 8 | Piston |
| 9 | Power Indicator Light |
| 10 | Non-Locking Manual Operator |

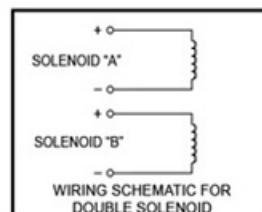
SOLENOID VALVE MOUNTING ASSEMBLY



| ITEM | ITEM DESCRIPTION |
|------|--|
| 1 | Air Cylinder Actuator |
| 2 | 1/2" X 3/8" Threaded Bushing (12" [300mm] & 14" [350mm] Valves) 3/4" X 3/8" Threaded Bushing (16" [400mm] and 18" [450mm] Valves) |
| 3 | 3/8" X 2 1/2" [65mm] Threaded Nipple |
| 4 | 4-Way Solenoid Valve |
| 5 | 3/8" CAMOZZI Swivel Joint Push Fit Below |
| 6 | 3/8" or 10mm Polyurethane Tube |



CONVENTIONAL DOUBLE SOLENOID

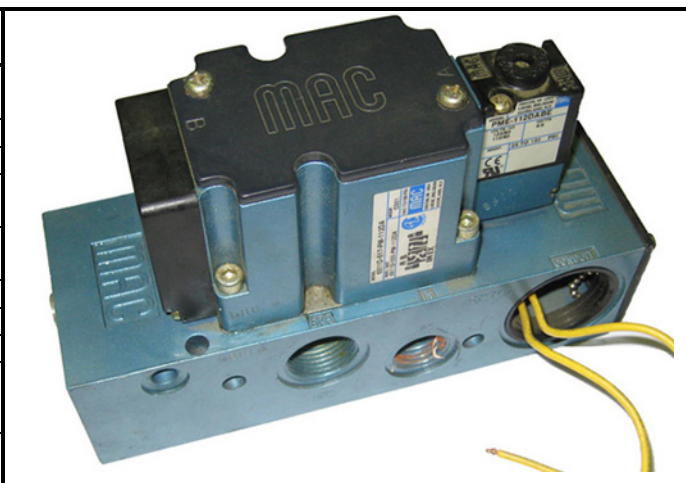


TECHNEQUIP™ KNIFE GATE VALVE

OPTIONS: MAC 6300 SERIES 4-WAY SOLENOID

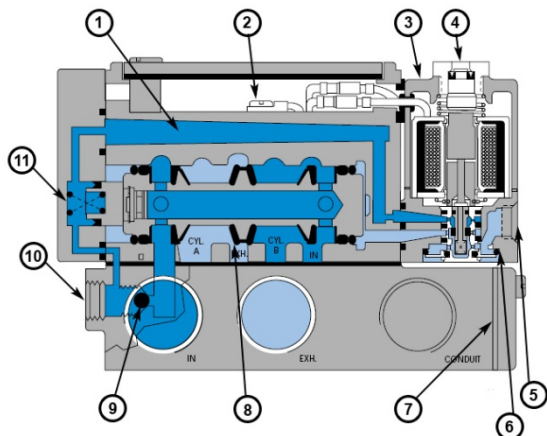
20" [500mm] TO 26" [650mm] VALVES

| SPECIFICATION DESCRIPTION | SPECIFICATION | | |
|-----------------------------|--|------------------------|------------------------|
| Spool Type | Single (Coil) Operator – Single Pressure Spring Return or Dual Coil Operator | | |
| Port Size | 1/2" NPTF or 1/2" BSPP | | |
| Flow: Cv | 3.0 | | |
| Pilot Style | Universal Pilot, Pilot Exhaust Out Main Exhaust | | |
| Voltage | 24VDC | 120V/60Hz 110V/50Hz | 240V/60Hz 220V/50Hz |
| Power Rating | 8.5W | 6.8W | 6.5W |
| Lead Wire Length | 36" [900mm] | | |
| Manual Operator | Non-Locking Operator | | |
| Operating Temperature Range | -18 °C to 50 °C 0 °F to 120 °F | | |
| Operating Pressure Range | 20-150 psi 138kPa to 1035 kPa | | |

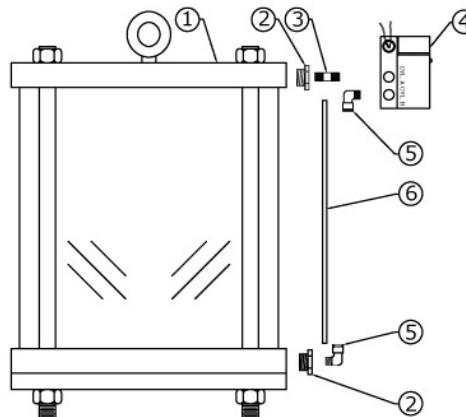


4 WAY SOLENOID VALVE CROSS-SECTION (SERIES 6300)

SINGLE COIL SHOWN

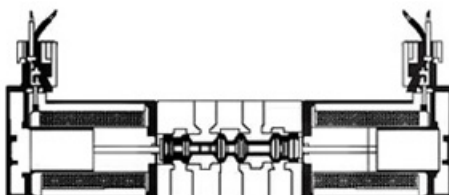


SOLENOID VALVE MOUNTING ASSEMBLY

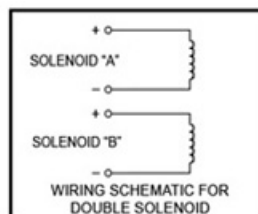


| ITEM | ITEM DESCRIPTION |
|------|------------------------------------|
| 1 | Pilot Air Accumulator |
| 2 | Integral Ground Wire |
| 3 | Sealed Solenoid Enclosure |
| 4 | Manual Operator |
| 5 | Optional Pilot Exhaust Tapped Port |
| 6 | Integral Muffler |
| 7 | Sealed Wiring Tuck Space |
| 8 | Bonded Flow Seal Spool |
| 9 | Internal Pilot Supply Ball Check |
| 10 | External Pilot Supply Port |
| 11 | Air / Spring Return |

| ITEM | ITEM DESCRIPTION |
|------|--|
| 1 | Air Cylinder Actuator |
| 2 | 3/4" X 1/2" Threaded Bushing |
| 3 | 1/2" X 2 1/2" [65mm] Threaded Nipple |
| 4 | 4-Way Solenoid Valve |
| 5 | 1/2" CAMOZZI Swivel Joint Push Fit Below |
| 6 | 1/2" or 12mm Polyurethane Tube |



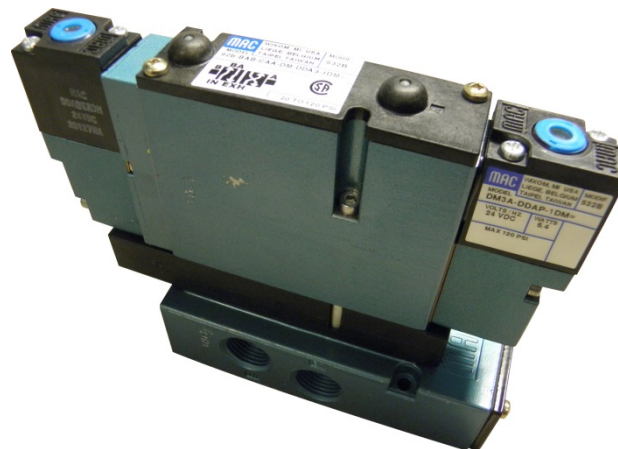
CONVENTIONAL DOUBLE SOLENOID



TECHNEQUIP™ KNIFE GATE VALVE OPTIONS: MAC 92 SERIES 4-WAY SOLENOID 2" [50mm] TO 18" [450mm] VALVES

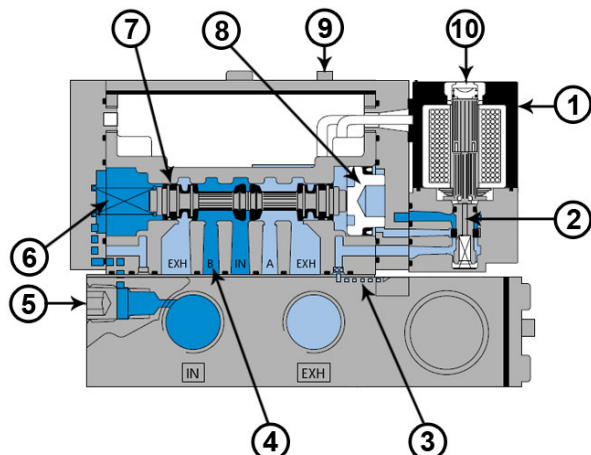
| SPECIFICATION DESCRIPTION | SPECIFICATION | | |
|-----------------------------|--|-------------------------------|-------------------------------|
| Approvals | CSA, CE(110, 220 VAC ONLY) | | |
| Spool Type | Single (Coil) Operator – Single Pressure Spring Return or Dual Coil Operator | | |
| Port Size | 3/8" NPTF or 3/8" BSPP | | |
| Flow: Cv | 1.2 | | |
| Pilot Style | Universal Pilot, Pilot Exhaust Out Main Body | | |
| Voltage | 24VDC | 120V/60Hz 110V/50Hz | 240V/60Hz 220V/50Hz |
| Power Rating | 5.4W | 2.9W | 2.9W |
| Model No. | 92B-ACB-CAA-DU-DDA3-1DM=0532B | 92B-ACB-CAA-DU-DJA3-1DM=0532B | 92B-ACB-CAA-DU-DJB3-1DM=0532B |
| Lead Wire Length | 36" [900mm] | | |
| Manual Operator | Non-Locking Operator | | |
| Operating Temperature Range | -18°C to 50°C 0°F to 120°F | | |
| Operating Pressure Range | 20-120 psi 138kPa to 827 kPa | | |

DUAL COIL SHOWN

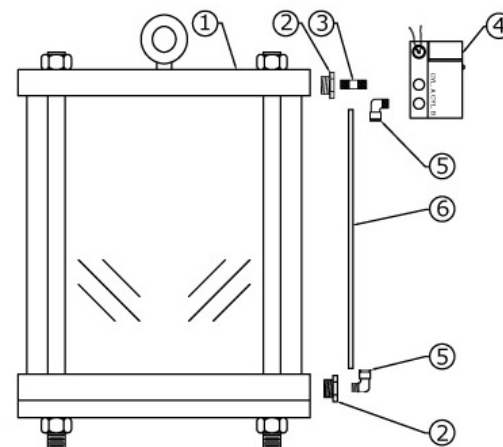


SOLENOID VALVE CROSS-SECTION

SINGLE COIL SHOWN

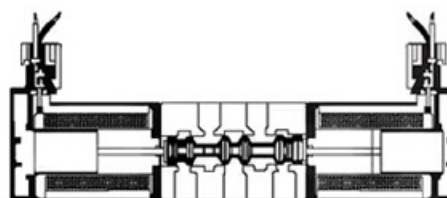


SOLENOID VALVE MOUNTING ASSEMBLY

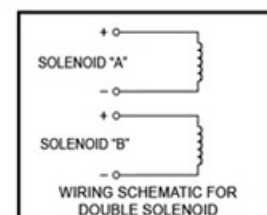


| ITEM | ITEM DESCRIPTION |
|------|--------------------------------|
| 1 | MACSOLENOID® |
| 2 | Poppet Pilot Valve |
| 3 | Plug In Design |
| 4 | High Flow Ports |
| 5 | Optional Common External Pilot |
| 6 | Spring Return |
| 7 | Mac Spool & Bore |
| 8 | Piston |
| 9 | Power Indicator Light |
| 10 | Non-Locking Manual Operator |

| ITEM | ITEM DESCRIPTION |
|------|---|
| 1 | Air Cylinder Actuator |
| 2 | 1/2" X 3/8" Threaded Bushing (12" [300mm] & 14" [350mm] Valves) |
| 3 | 3/4" X 3/8" Threaded Bushing (16" [400mm] and 18" [450mm] Valves) |
| 4 | 3/8" X 2 1/2" [65mm] Threaded Nipple |
| 5 | 4-Way Solenoid Valve |
| 6 | 3/8" CAMOZZI Swivel Joint Push Fit Below |
| 6 | 3/8" or 10mm Polyurethane Tube |



CONVENTIONAL DOUBLE SOLENOID

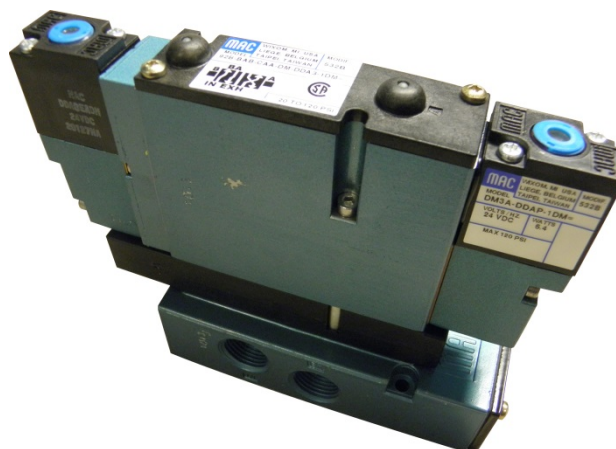


TECHNEQUIP™ KNIFE GATE VALVE

OPTIONS: MAC 93 SERIES 4-WAY SOLENOID

20" [500mm] TO 26" [650mm] VALVES

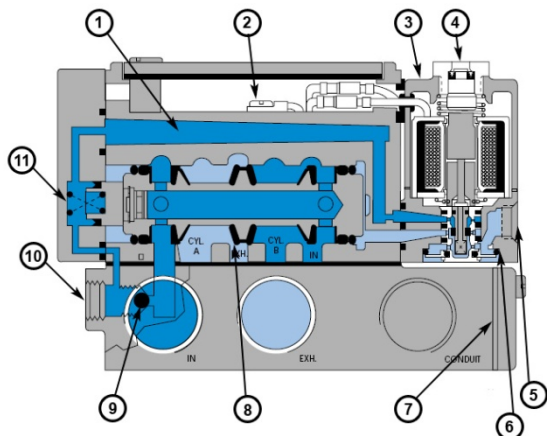
| SPECIFICATION DESCRIPTION | SPECIFICATION | | |
|-----------------------------|--|-------------------------------|-------------------------------|
| Approvals | CSA, CE(110, 220 VAC ONLY) | | |
| Spool Type | Single (Coil) Operator – Single Pressure Spring Return or Dual Coil Operator | | |
| Port Size | 1/2" NPTF or 1/2" BSPP | | |
| Flow: Cv | 3.4 | | |
| Pilot Style | Universal Pilot, Pilot Exhaust Out Main Exhaust | | |
| Voltage | 24VDC | 120V/60Hz 110V/50Hz | 240V/60Hz 220V/50Hz |
| Power Rating | 5.4W | 2.9W | 2.9W |
| Model # | 93A-ACB-CAA-DU-DDA3-1DM=0532B | 93A-ACB-CAA-DU-DJA3-1DM=0532B | 93A-ACB-CAA-DU-DJB3-1DM=0532B |
| Lead Wire Length | 36" [900mm] | | |
| Manual Operator | Non-Locking Operator | | |
| Operating Temperature Range | -18°C to 50°C 0°F to 120°F | | |
| Operating Pressure Range | 20-120 psi 138kPa to 827 kPa | | |



MAC 92 SERIES SHOWN

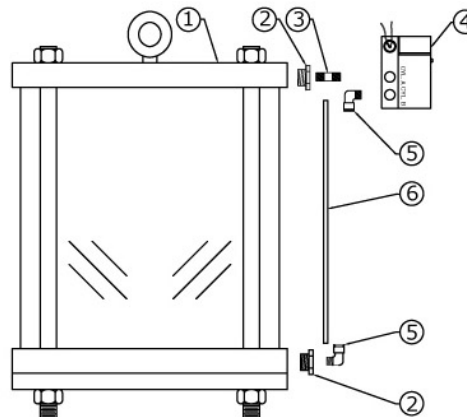
4 WAY SOLENOID VALVE CROSS-SECTION

SINGLE COIL SHOWN

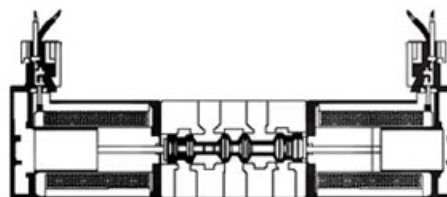


| ITEM | ITEM DESCRIPTION |
|------|------------------------------------|
| 1 | Pilot Air Accumulator |
| 2 | Integral Ground Wire |
| 3 | Sealed Solenoid Enclosure |
| 4 | Manual Operator |
| 5 | Optional Pilot Exhaust Tapped Port |
| 6 | Integral Muffler |
| 7 | Sealed Wiring Tuck Space |
| 8 | Bonded Flow Seal Spool |
| 9 | Internal Pilot Supply Ball Check |
| 10 | External Pilot Supply Port |
| 11 | Air / Spring Return |

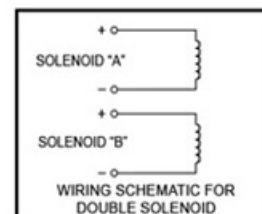
SOLENOID VALVE MOUNTING ASSEMBLY



| ITEM | ITEM DESCRIPTION |
|------|--|
| 1 | Air Cylinder Actuator |
| 2 | 3/4" X 1/2" Threaded Bushing |
| 3 | 1/2" X 2 1/2" [65mm] Threaded Nipple |
| 4 | 4-Way Solenoid Valve |
| 5 | 1/2" CAMOZZI Swivel Joint Push Fit Below |
| 6 | 1/2" or 12mm Polyurethane Tube |



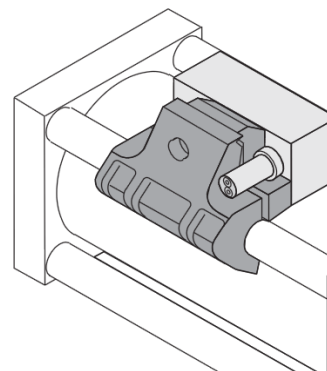
CONVENTIONAL DOUBLE SOLENOID



TECHNEQUIP™ KNIFE GATE VALVE OPTIONS: LSC REED SWITCH

Switch Specifications

| | |
|-----------------------------|-------------------------------|
| Manufacturer: Part # | Canfield: 710-000-004 |
| Type | 2-Wire Reed |
| Output Function | Normally Open |
| Operating Voltage | 5-240V AC/DC, 50/60 Hz |
| Switching Power | 30 Watts max. |
| Continuous Current | 1 Amp max., .005 Amps min. |
| Response Sensitivity | 85 Gauss min. |
| Max. Operating Frequency | 500 Hz |
| Voltage Drop | 3 V |
| Hysteresis | 6 AT min., 10 AT max. |
| Enclosure Rating | Nema 6, IP67 |
| Shock and Vibration Stress | 30g, 11ms, 20g, (10 - 55 Hz) |
| Operating Temperature Range | -20°C to 80°C (-4°F to 176°F) |
| Housing Material | Ultem and Nylon |
| Supplied Lead Length | 2.7m (9ft.) |
| Approvals | CSA, CE |
| Indicator Lamp | LED w/ closed contact |



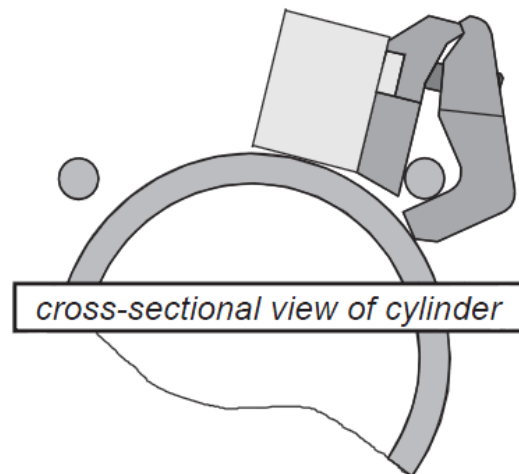
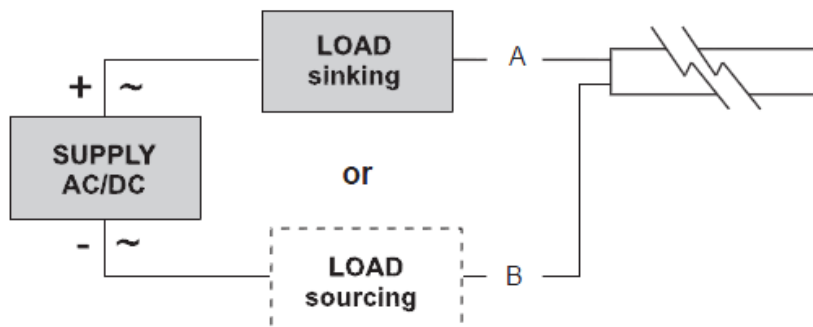
Wiring Diagram:

Installation Instructions

1. Connect Reed Switch to the cylinder as shown below, according to proper clamp style.
Hand tighten clamp only, allowing adjustment of sensor position on cylinder.
2. Connect wiring as per enclosed diagram.
3. While operating cylinder, adjust sensor to desired position. Firmly secure clamp assembly, once desired results are achieved.

Installation Tips

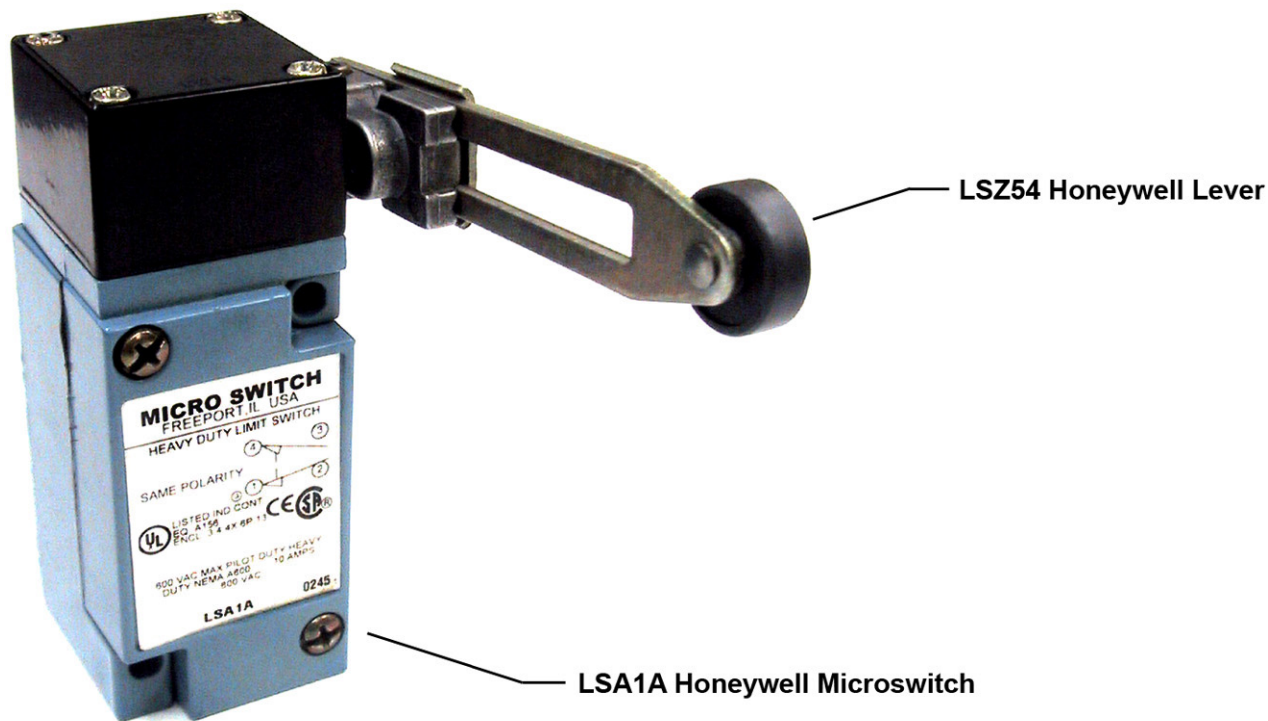
1. Current & voltage demands of the load must NOT exceed the current & voltage ratings of the selected switch (shown on the enclosed wiring diagram). Failure to use proper load will ruin the switch. For DC voltages, always observe polarity.
2. Two wire versions can NOT be connected directly across the power supply without a series load. Failure to use a series load will damage the switch and possibly the power supply.
3. Never test switch with a filament light bulb as a load. Severe inrush currents will impair the switch or cause premature failure.
4. There are three types of loads: Resistive (PC or PLC), Capacitive (long wire runs), Inductive (solenoids)
5. The shorter the wire runs, the lower the capacitive load and the longer the switch life.
6. Always keep the area around the switch clean and free from potentially magnetic field-carrying debris. The switches actuate on magnetic fields produced from the cylinder position. Stray magnetism can give unwanted switch actuation or change the switch point.
7. When using the switch to actuate a solenoid, always use a surge suppression version and/or Canfield MPC solenoid valve surge suppression connector. Without surge suppression, large inductive spikes can severely limit switch life expectancy.
8. Use the switch to indicate end of physical stroke. Do not rely on switch alone to stop cylinder travel.
9. Be sure the sensing area of the switch is installed completely against the cylinder wall.
10. Some Reed and Electronic switches are equipped with indicator lights. Their light always depicts the on state of the switch. On these versions, the two wire hook-up necessitates a minimum load current rating which must be enough to light the LED (@ 0.005 Amps). Three wire versions take no minimum load current rating to light the LED.



Switching Mounting

The one-piece switch bracket mounts directly on the cylinders' tie rods. Start with the limit switches at bottom and top of tie rod. Move switches towards center of cylinder until switch is activated and desired output is achieved.

TECHNEQUIP™ KNIFE GATE VALVE OPTIONS: LSB MICRO SWITCHES



| SPECIFICATIONS | |
|-----------------------------|---|
| Operating Force | 0.45 Nm [4in.lb] max. |
| Pre-travel (P.T.) | 15° max. |
| Over-travel (O.T.) | 60° min. |
| Differential Travel (D.T.) | 5° max. |
| Actuator | Side Rotary |
| Circuitry | 1NC 1NO Single-Pole Double-Throw, Snap-Action, Double Break |
| Ampere Rating | 10 A (Thermal) |
| Supply Voltage | 600 VAC and 250 VDC max. |
| Housing Material | Zinc Die-Cast |
| Terminal Type | 1/2"-14 NPT conduit |
| Housing Type | HDLS Plug-in |
| Sealing | NEMA 3, 4, 4X, 6P, 13 |
| Operating Temperature Range | -12°C to 121°C [10°F to 250°F] |
| Approvals | UL Listed, CSA certified, CE certified |

TECHNEQUIP™ KNIFE GATE VALVE

OPTIONS: GO LEVERLESS PROXIMITY SWITCHES



TOPWORX MODEL #:73-13528-A2

| SPECIFICATIONS | |
|-----------------------|---|
| Thread Size | 5/8" - 18 UNF |
| Approvals | UL General Purpose (standard) CSA (must be specified at time of order) |
| Enclosure Rating | Nema 4, 4X, 6, 6P, 7 & 9 IP65, 67 & 68 |
| Repeatability | 0.002" [0.05mm] |
| Response Time | 8 milliseconds |
| Differential | Approx. 0.02" [0.51mm] |
| Operating Temperature | -40°F to 221°F [-40°C to 105°C] |
| Contact Material | Palladium silver w/ saw tooth surface |
| Contact Form | Single Pole Double Throw (Form C) |
| Ratings | 4A @ 120 VAC 2A @ 240 VAC 3A @ 24 VDC |
| Target Material | Ferrous Steel |
| Sensing Range | 0.100" [3mm] 0.20" [5mm] w/AMP3 magnet |
| Conduit Outlet | 1/2" NPT |
| Enclosure Material | 303 Stainless Steel |
| Lead Connection | Black – Common Blue – Normally Open Red – Normally Closed |
| Lead Dimensions | Insulated 18 gauge 36" [914mm] length |

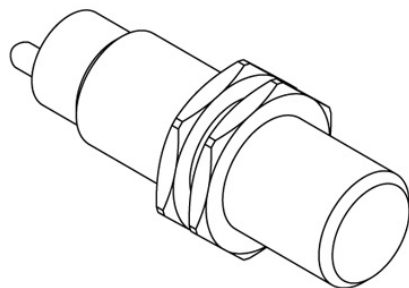
TECHNEQUIP™ KNIFE GATE VALVE OPTIONS: GO1 LEVERLESS PROXIMITY SWITCHES



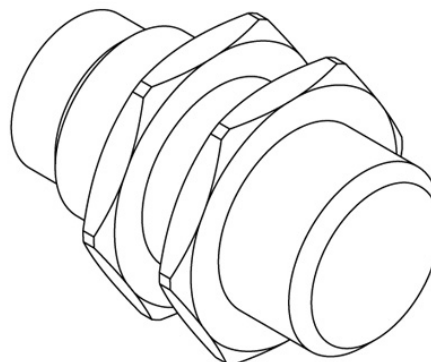
TOPWORX MODEL #: 81-20528-A3

| SPECIFICATIONS | |
|-----------------------|--|
| Mounting Hole Size | (2) 0.21" [5.2mm] |
| Dimensions | 1-1/2" [38mm] Square x 4-9/16 |
| Approvals | UL General Purpose (standard) CSA (must be specified at time of order) |
| Enclosure Rating | Nema 4, 4X, 6, 6P, 7 & 9 IP65, 67 & 68 |
| Repeatability | 0.002" [0.05mm] |
| Response Time | 8 milliseconds |
| Differential | Approx. 0.25" [6mm] |
| Operating Temperature | -58°F to 221°F [-50°C to 105°C] |
| Contact Material | Silver Cadmium Oxide, Gold Flashed |
| Contact Form | Double Pole Double Throw (DPDT) |
| Ratings | 5A @ 240VAC 10A @ 120 VAC 3A @ 24 VDC |
| Target Material | Ferrous Steel |
| Sensing Range | 0.25" [6mm] |
| Conduit Outlet | 1/2" NPT |
| Enclosure Material | Stainless Steel |
| Lead Connection | Black & Orange – Common 1 & 2 Blue & Black/White– Normally Open 1 & 2 Red & White – Normally Closed 1 & 2 Green - GND |
| Lead Dimensions | Insulated 18 gauge 72" [1829mm] length |

TECHNEQUIP™ KNIFE GATE VALVE OPTIONS: LST INDUCTIVE PROXIMITY SWITCHES



2" to 16" [50mm to 400mm]



18" to 36" [450mm to 900mm]

| Valve Size | 2" to 16" [50mm to 400mm] | 18" to 36" [450mm to 900mm] |
|-----------------------------|---|---|
| Manufacturer | Telemecanique | Telemecanique |
| Model Number | XS618B1MAL2 | XS630B1MAL2 |
| Switch Type | Inductive | Inductive |
| Thread Type | M18 x 1 | M30 x 1.5 |
| Repeatability | 0.008 [0.20mm] | 0.014" [0.36mm] |
| Response Time | 0.5 milliseconds | 0.5 milliseconds |
| Differential | 0.04" [1mm] | 0.07" [1.78mm] |
| Operating Temperature | -13°F to 158°F [-25°C to 70°C] | -13°F to 158°F [-25°C to 70°C] |
| Contact Material | Silicon | Silicon |
| Contact Form | Single Pole Single Throw (SPST), Normally Open | Single Pole Single Throw (SPST), Normally Open |
| Voltage Range | 24-240 VAC 24-210 VDC | 24-240 VAC 24-210 VDC |
| Current Limit | AC: 5 to 300mA DC: 5 to 200mA | AC: 5 to 300mA DC: 5 to 200mA |
| Voltage Drop | 5.5 V | 5.5 V |
| Leakage Current | 0.8mA | 0.8mA |
| Maximum Operating Frequency | AC: 25 Hz DC: 1000 Hz | AC: 25 Hz DC: 500 Hz |
| Target Material | Ferrous | Ferrous |
| Sensing Range | 0.25" [6.4mm] | 0.47" [12mm] |
| Conduit Outlet | None | None |
| Enclosure Material | Nickel Plate Brass | Nickel Plate Brass |
| Lead Connection | Blue – NO Brown - Common | Blue – NO Brown - Common |
| Lead Dimensions | 79" [2000mm] | 79" [2000mm] |
| Enclosure Rating | Nema 3, 4X, 6P, 12, 13 IP68 | Nema 3, 4X, 6P, 12, 13 IP68 |
| Agency Certification | UL, CSA, CE | UL, CSA, CE |

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