

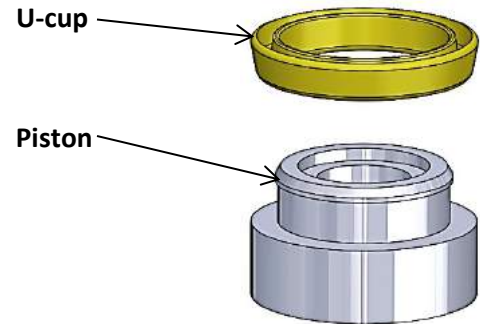
Dome-Loaded Pressure Reducing | BD-Series

**Parts will differ for high pressure valves.*

Load Piston

- Piston
- U-cup

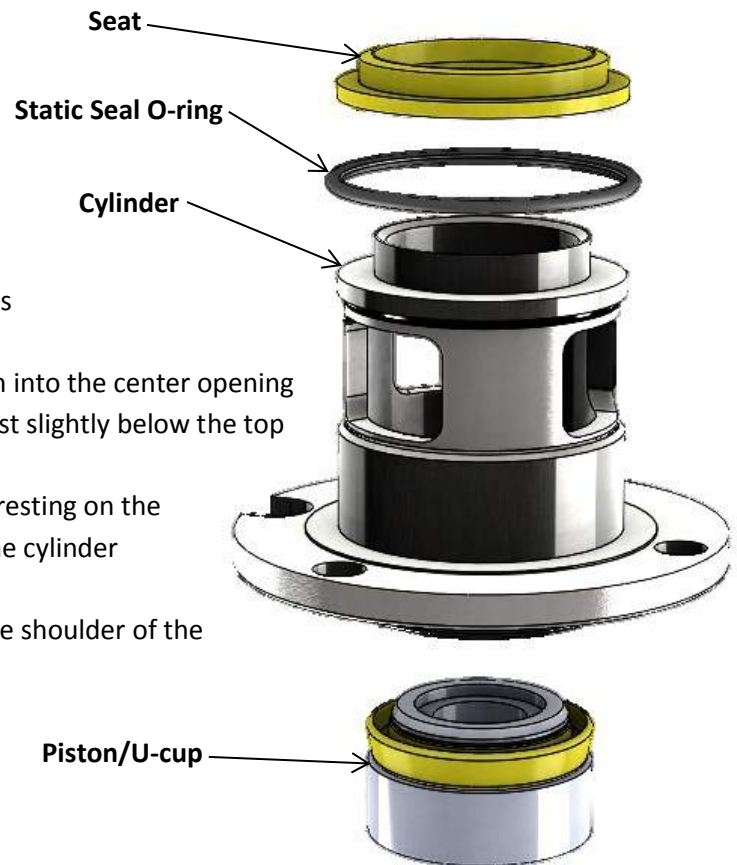
1. Carefully place the u-cup over the neck of the piston.



Load Cylinder

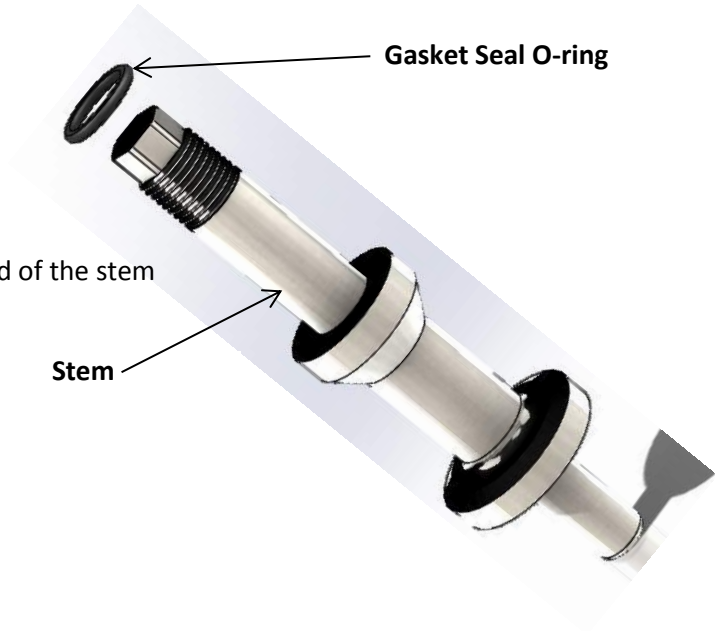
- Cylinder
- Static Seal O-ring
- Seat

1. Place the cylinder on the tabletop with the mounting flange facing up.
2. Apply a thin layer of grease to the internal walls of the cylinder as well as the external walls of the piston.
3. Carefully press the U-cup attached to the piston into the center opening of the cylinder. (The top of the piston should rest slightly below the top surface of the cylinder.)
4. Flip the cylinder so that the mounting flange is resting on the tabletop and place the static seal O-ring over the cylinder allowing it to rest on the mounting flange.
5. Place the seat over the cylinder so it rests on the shoulder of the cylinder.



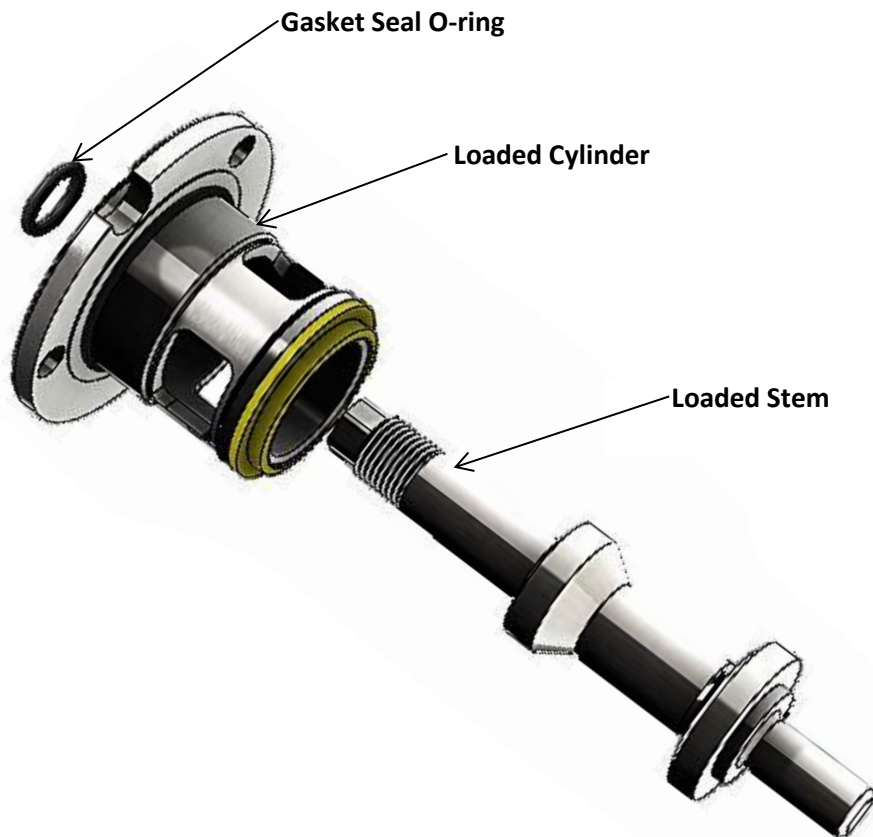
Load Stem

- Gasket Seal O-ring
 - Stem
1. Place (1) gasket seal O-ring over the threaded end of the stem and move it down until it rests on the top shoulder of the stem.



Internal Assembly

- Gasket Seal O-ring
1. Insert the stem into the center opening of the cylinder allowing the hex and threaded portion to pass through the center of the piston.
 2. Place (1) gasket seal O-ring over the threaded end of the stem to rest on the top face of the piston.



Load Valve Body

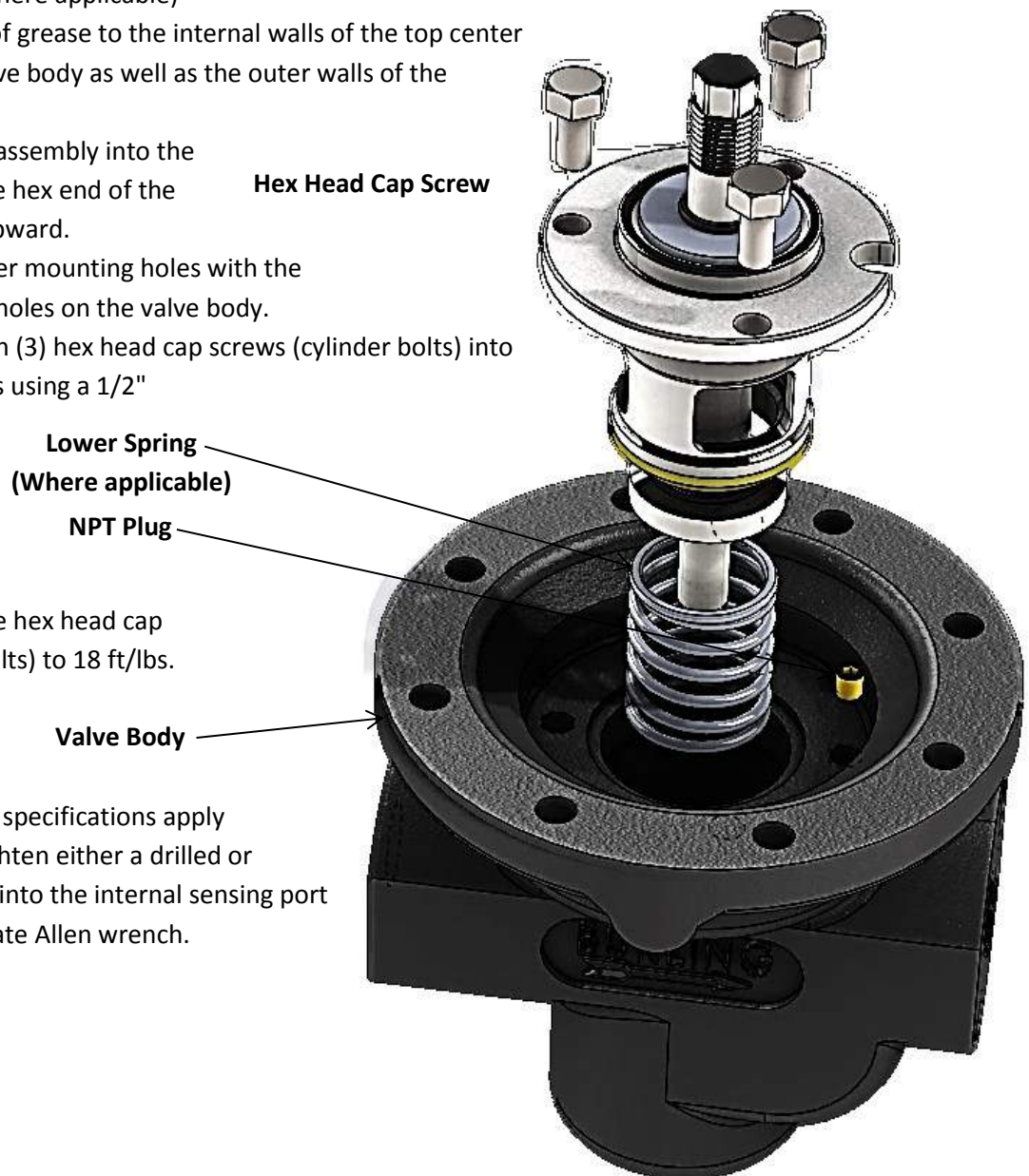
- Lower Spring (Where applicable)
- Valve Body
- Internal Assembly
- 1/16" NPT Brass Plug
- Hex Head Cap Screws (Cylinder Bolts)

NOTE: Refer to page 6 and 7 for the necessary tools list for each unit.

Torque Values Chart

Valve Body Size	Cylinder Bolts
1/2" - 1"	18 ft/lbs
1-1/2"	18 ft/lbs
2"	18 ft/lbs
3" - 4"	18 ft/lbs

1. Place the lower spring into the valve body concentric with the casted stem guide in the bottom portion of the valve body. (Where applicable)
2. Apply a thin layer of grease to the internal walls of the top center opening on the valve body as well as the outer walls of the cylinder.
3. Insert the internal assembly into the valve body with the hex end of the stem stud facing upward.
4. Align the (3) cylinder mounting holes with the internal mounting holes on the valve body.
5. Grease then tighten (3) hex head cap screws (cylinder bolts) into the mounting holes using a 1/2" drive tool.
6. Using a 1/2" heavy socket head and a torque wrench, tighten the hex head cap screws (cylinder bolts) to 18 ft/lbs.
7. Tighten until torque wrench clicks.
8. Based on the valve specifications apply Teflon tape and tighten either a drilled or undrilled NPT plug into the internal sensing port using the appropriate Allen wrench.



Diaphragm Assembly

- Lower Membrane Plate
- Gasket Seal O-ring
- Membrane
- Upper Membrane Plate
- SS Jam Nut (Stem Nut)
- Dome
- Hex Head G5 Cap Screws (Body Bolts)
- Hex G5 Nuts (Body Nuts)
- 1/4" NPT SS Plug
- NOTE: Refer to page 6 and 7 for the necessary tools list for each unit.

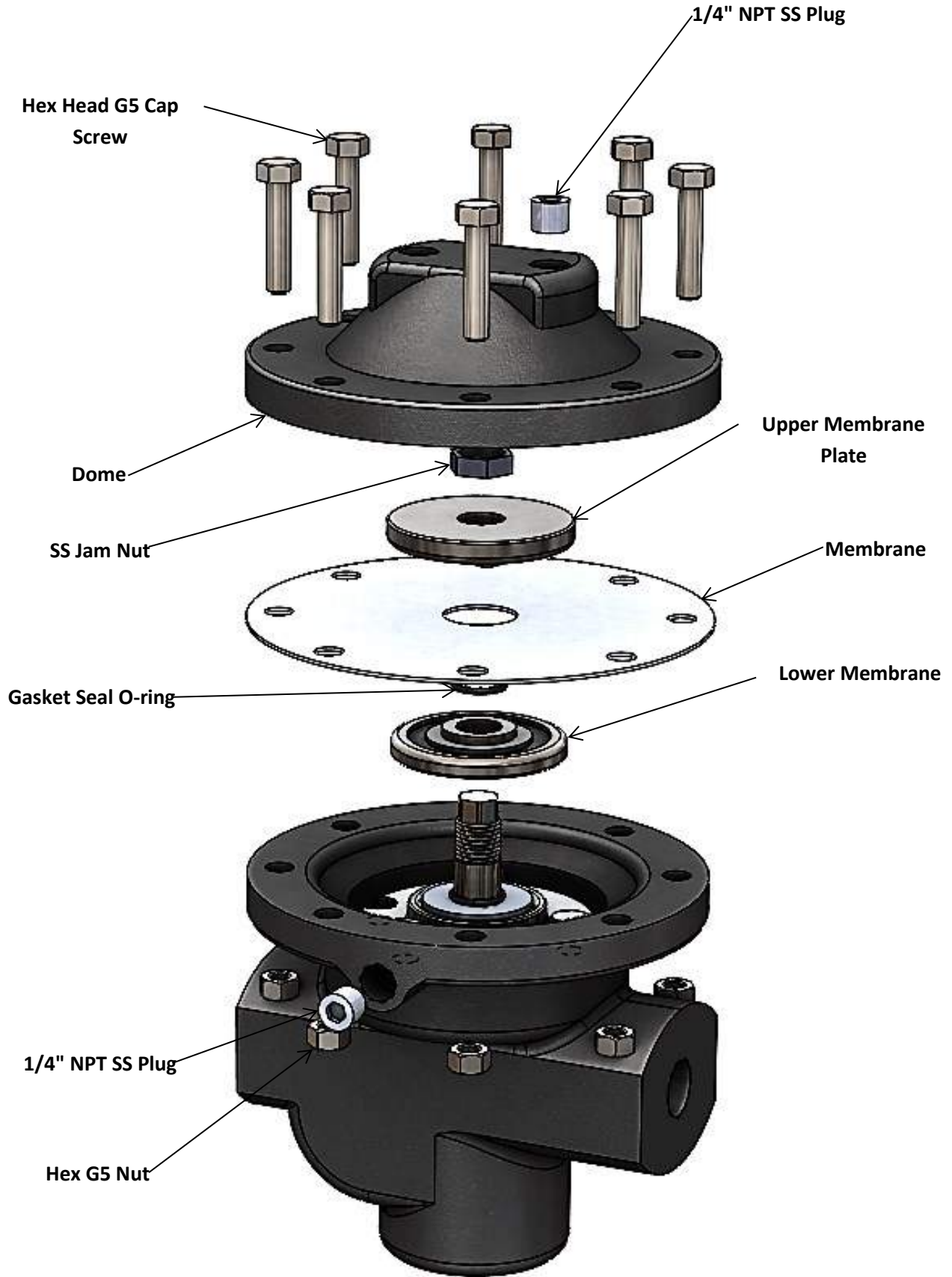
Torque Values Chart

*Grade 8 bolts, increase torque value by 15%

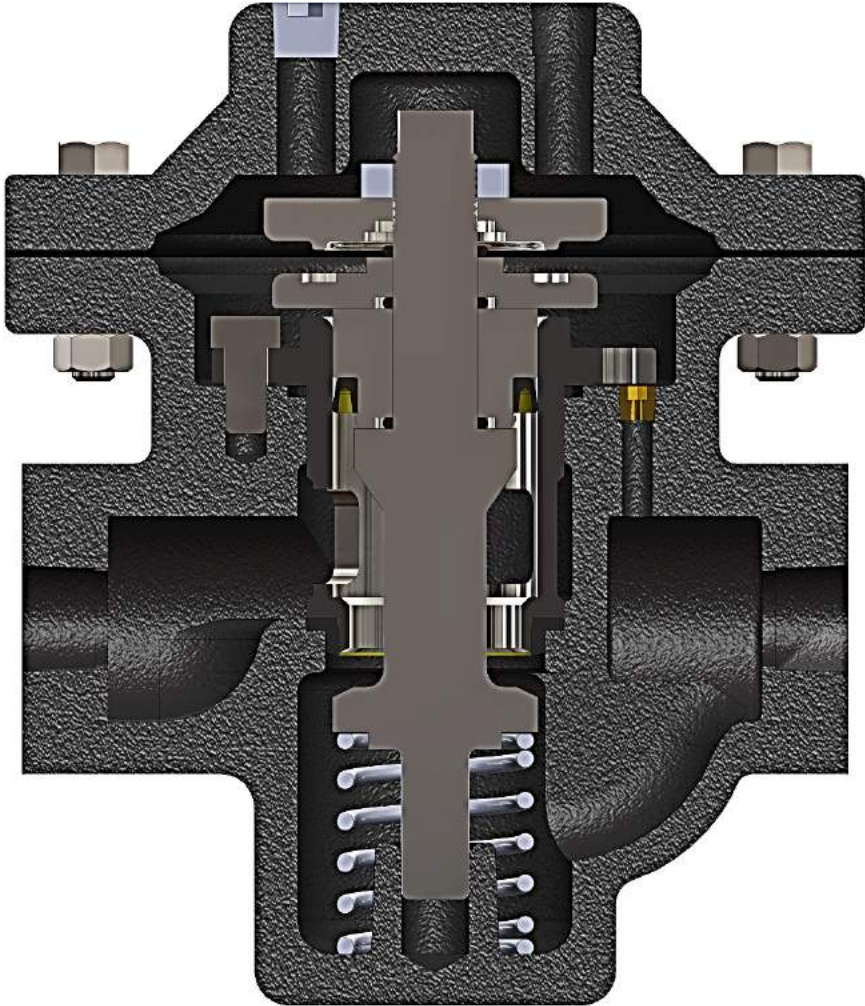
Valve Body Size	Cylinder Bolts	Stem Nut	Body Bolts
1/2" - 1"	18 ft/lbs	85 ft/lbs	35 ft/lbs
1-1/2"	18 ft/lbs	130 ft/lbs	35 ft/lbs
2"	18 ft/lbs	130 ft/lbs	40 ft/lbs
3" - 4"	18 ft/lbs	160 ft/lbs	40 ft/lbs

Image on page 5 for this procedure

1. Place the lower membrane plate over the stem with the machined grooves face up.
2. Place (1) gasket seal O-ring over the stem to rest on the lower membrane plate.
3. Die cut the membrane using the membrane steel rule die.
4. Place the center hole of the membrane over the stem allowing it to rest on the gasket seal O-ring and the lower membrane plate.
5. Place the upper membrane plate over the stem with the interlock face resting on the membrane.
6. Hand-tighten the SS jam nut (stem nut) down onto the top face of the upper membrane plate.
7. Use the appropriate wrench to hold the SS jam nut (stem nut) in place while using the appropriate heavy socket head on a torque wrench set to the appropriate torque value.
8. Tighten until torque wrench clicks.
9. The valve can now undergo a seat test to insure the unit is functioning properly.
10. Align the mounting holes on the dome with the mounting holes on the valve body; orient the dome with the part number facing to the front of the unit and with the pilot ports in line with the inlet and outlet ports.
11. Grease then hand-tighten (8) hex head G5 cap screws (body bolts) into the mounting hole on the valve body with (8) hex G5 nuts (body nuts) on the bottom of the mounting flange.
12. Tighten the hex head G5 cap screws (body bolts) using the appropriate socket head holding the hex G5 nuts (body nuts) in place and the appropriate heavy socket head on a torque wrench set to the appropriate torque value.
13. Tighten until torque wrench clicks.
14. Apply Teflon tape and then thread (1) 1/4" SS NPT plug into the right-hand side pilot port on the top face of the dome using a 1/4" Allen wrench.
15. Based on the valve specifications apply Teflon tape and then thread (1) 1/4" SS NPT plug into the external sensing port on the back side of the valve body.
16. The valve is now ready to be tested with a piloting regulator (Fairchild).



BD Valve Assembly Section View



Master Tools List

Tools List (1/2 to 1 inch Bodies)

5/32 Allen Wrench (Internal Plug)
1/4 Allen Wrench (External Plug)
1/2 Drive
1/2 Socket Head (Cylinder Bolts)
1/2 Heavy Socket Head (Stem Stud)
9/16 Socket Head (Body Bolts)
9/16 Wrench (Body Nuts)
15/16 Wrench (Stem Nuts)
Torque Wrench (Set to 18 ft/lbs) (Cylinder Bolts)
Torque Wrench (Set to 35 ft/lbs) (Body Bolts)
Torque Wrench (Set to 85 ft/lbs) (Stem Nut)
Teflon Tape
Christo-lube

Tools List (1-1/2 inch Body)

5/32 Allen Wrench (Internal Plug)
1/4 Allen Wrench (External Plug)
1/2 Drive
1/2 Socket Head (Cylinder Bolts)
9/16 Socket Head (Body Bolts)
9/16 Heavy Socket Head (Stem Stud)
9/16 Wrench (Body Nuts)
1-1/8 Wrench (Stem Nut)
Torque Wrench (Set to 18 ft/lbs) (Cylinder Bolts)
Torque Wrench (Set to 35 ft/lbs) (Body Bolts)
Torque Wrench (Set to 130 ft/lbs) (Stem Nut)
Teflon Tape
Christo-lube

Tools List (2 inch Body)

5/32 Allen Wrench (Internal Plug)
1/4 Allen Wrench (External Plug)
1/2 Drive
1/2 Socket Head (Cylinder Bolts)
5/8 Socket Head (Body Bolts)
9/16 Heavy Socket Head (Stem Stud)
11/16 Wrench (Body Nuts)
1-1/8 Wrench (Stem Nut)
Torque Wrench (Set to 18 ft/lbs) (Cylinder Bolts)

Torque Wrench (Set to 40 ft/lbs) (Body Bolts)
Continue to next page
Torque Wrench (Set to 130 ft/lbs) (Stem Nut)
Teflon Tape
Christo-lube

Tools List (3 inch Body)

3/16 Allen Wrench (Internal Plug)
1/4 Allen Wrench (External Plug)
1/2 Drive
1/2 Socket Head (Cylinder Bolts)
5/8 Socket Head (Body Bolts)
11/16 Wrench
3/4 Heavy Socket Head
1-1/2 Wrench
Torque Wrench (Set to 18 ft/lbs)
Torque Wrench (Set to 40 ft/lbs)
Torque Wrench (Set to 160 ft/lbs)
Teflon Tape
Christo-lube

Tools List (4 inch Body)

3/16 Allen Wrench
1/4 Allen Wrench
1/2 Drive
1/2 Socket Head
5/8 Socket Head
11/16 Wrench
3/4 Heavy Socket Head
1-1/2 Wrench
Torque Wrench (Set to 18 ft/lbs)
Torque Wrench (Set to 40 ft/lbs)
Torque Wrench (Set to 160 ft/lbs)
Teflon Tape
Christo-lube



BURLING VALVE, LLC.

Safety Precautions

Please read all of the following Safety Precautions before installing or operating any Burling Valve, LLC equipment or accessories. To confirm safety, be sure to observe 'ISO 4414: Pneumatic Fluid Power - General rules relating to systems' and other safety practices.



Warning

Improper operation could result in serious injury to persons or loss of life!

1. PRODUCT COMPATIBILITY

Burling Valve, LLC products and accessories are for use in industrial pneumatic applications with compressed air media. The compatibility of the equipment is the responsibility of the end user. Product performance and safety are the responsibility of the person who determined the compatibility of the system. Also, this person is responsible for continuously reviewing the suitability of the products specified for the system, referencing the latest catalog, installation manual, Safety Precautions and all materials related to the product.

2. EMERGENCY SHUTOFF

Burling Valve, LLC products cannot be used as an emergency shutoff. A redundant safety system should be installed in the system to prevent serious injury or loss of life.

3. EXPLOSIVE ATMOSPHERES

Products and equipment should not be used where harmful, corrosive or explosive materials or gases are present. Unless certified, Burling Valve, LLC products cannot be used with flammable gases or in hazardous environments.

4. AIR QUALITY

Clean, dry air is not required for Burling Valve, LLC products. However, a 40 micron particulate filter is recommended to prevent solid contamination from entering the product.

5. TEMPERATURE

Products should be used with a media and ambient environment inside of the specified temperature range of 32°F to 158°F. Consult factory for expanded temperature ranges.

6. OPERATION

Only trained and certified personnel should operate electronic and pneumatic machinery and equipment. Electronics and pneumatics are very dangerous when handled incorrectly. All industry standard safety guidelines should be observed.

7. SERVICE AND MAINTENANCE

Service and maintenance of machinery and equipment should only be handled by trained and experienced operators. Inspection should only be performed after safety has been confirmed. Ensure all supply pressure has been exhausted and residual energy (compressed gas, springs, gravity, etc.) has been released in the entire system prior to removing equipment for service or maintenance.



Caution

Improper operation could result in serious injury to persons or damages to equipment!

1. PNEUMATIC CONNECTION

All pipes, pneumatic hose and tubing should be free of all contamination, debris and chips prior to installation. Flush pipes with compressed air to remove any loose particles.

2. THREAD SEALANT

To prevent product contamination, thread tape is not recommended. Instead, a non-migrating thread sealant is recommended for installation. Apply sealant a couple threads from the end of the pipe thread to prevent contamination.

3. ELECTRICAL CONNECTION

To prevent electronic damage, all electrical specifications should be reviewed and all electrical connections should be verified prior to operation.

Exemption from Liability

- Burling Valve, LLC** is exempted from any damages resulting from any operations not contained within the catalogs and/or instruction manuals and operations outside the range of its product specifications.
- Burling Valve, LLC** is exempted from any damage or loss whatsoever caused by malfunctions of its products when combined with other devices or software.
- Burling Valve, LLC** and its employees shall be exempted from any damage or loss resulting from earthquakes, fire, third person actions, accidents, intentional or unintentional operator error, product misapplication or irregular operating conditions.
- Burling Valve, LLC** and its employees shall be exempted from any damage or loss, either direct or indirect, including consequential damage or loss, claims, proceedings, demands, costs, expenses, judgments, awards, loss of profits or loss of chance and any other liability whatsoever including legal expenses and costs, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

Warranty

Burling Valve, LLC products are warranted to the original purchaser only against defects in material or workmanship for one (1) year from the date of manufacture. The extent of Burling Valve's liability under this warranty is limited to repair or replacement of the defective unit at Burling Valve's option. Burling Valve shall have no liability under this warranty where improper installation or filtration occurred.

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