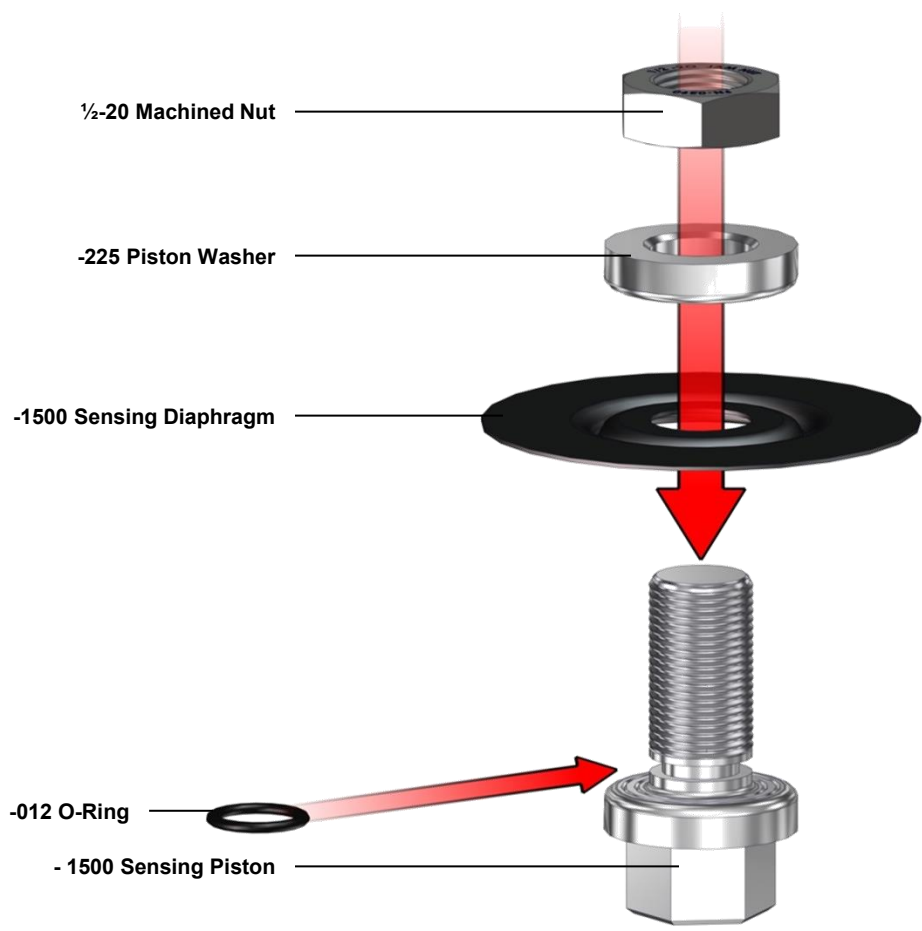




**VRG**  
CONTROLS

**VPC-1500-SA-BV**  
**Assembly**  
**Instructions**

# Assemble -1500 Sensing Diaphragm Assembly

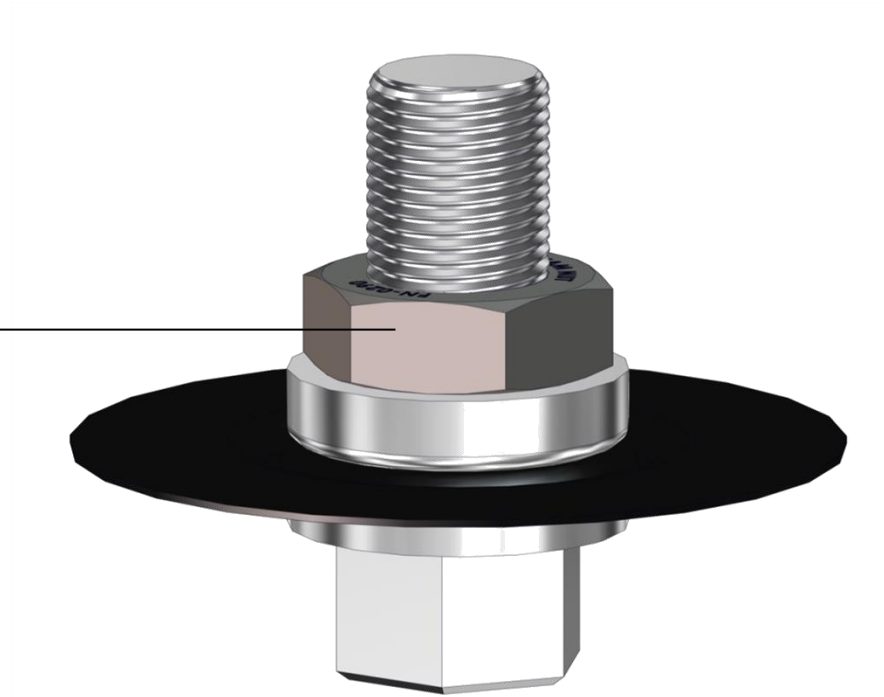


### Instructions:

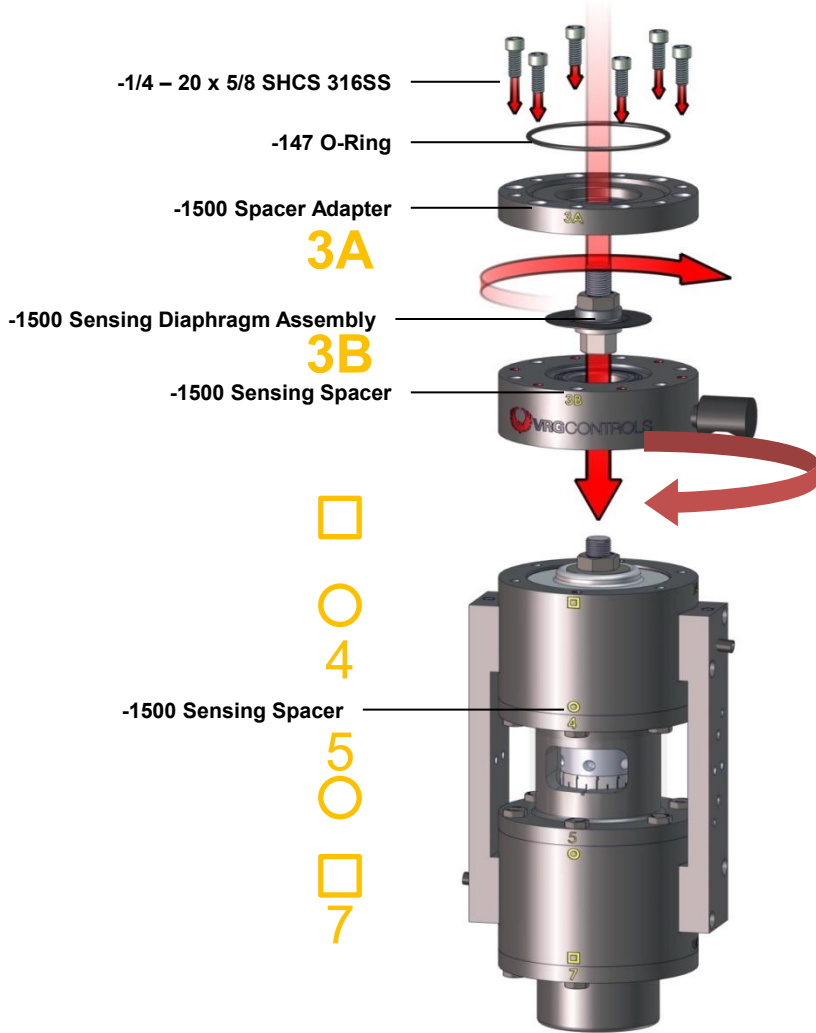
1. Lubricate -012 O-Ring and install onto -1500 Sensing Piston
2. Install -1500 Sensing Diaphragm onto -1500 Sensing Piston with Convolute facing DOWN
3. Install -1500 Piston Washer with Serrations facing downward toward -1500 Sensing Diaphragm
4. Thread 1/2 - 20 Machined Nut onto -1500 Sensing Piston and torque to 110 in-lbs.



-1500 Sensing Diaphragm Assembly



# -Install & Lock 1500 Sensing Diaphragm Assembly



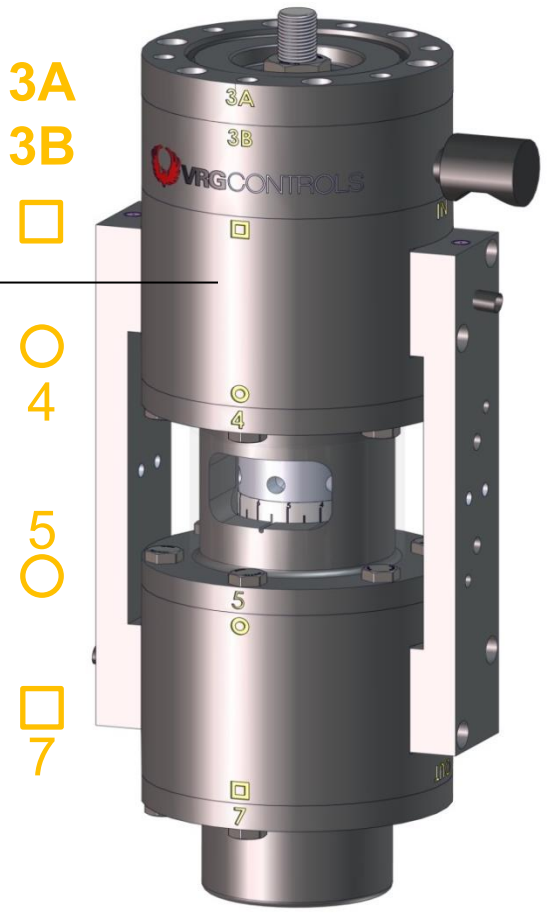
### Instructions:

1. Install 1/4 NPT Vent Breather into NPT port on vent port on -1500 Sensing Spacer
2. Align -1500 Sensing Spacer with logo facing front of assembly (in-line with Adjusting Drum Window)
3. Push -1500 Sensing Spacer onto Pilot Blank Assembly
4. Thread 1500 Sensing Diaphragm Assembly onto Seat & Nozzle Piston on top of Pilot Blank Assembly until it is fully engaged. **DO NOT TIGHTEN BEYOND FINGER TIGHT.**
5. Lubricate and install -147 O-Ring into top of -1500 Spacer Adapter.
6. Install -1500 Spacer Adapter. Tighten with 1/4 - 20 x 5/8 SHCS 316SS and tighten firmly in star pattern (QTY 6).
7. -1500 Sensing Diaphragm is now locked into -1500 Sensing Assembly.

# 1500 Sensing Diaphragm Assembly Installed on Pilot Blank



1500 Sensing Diaphragm Assembly  
Installed on Pilot Blank



# Remove 1500 Sensing Diaphragm Assembly



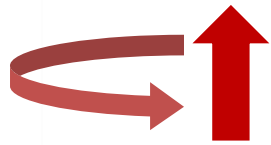
1500 Sensing Diaphragm Assembly

3A  
3B



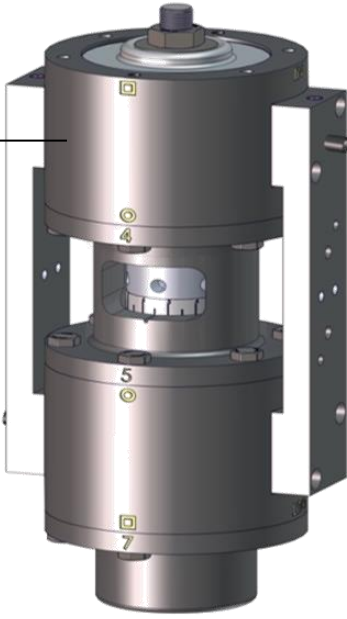
### Instructions:

1. Unscrew entire -1500 Sensing Diaphragm Assembly from Pilot Blank Assembly

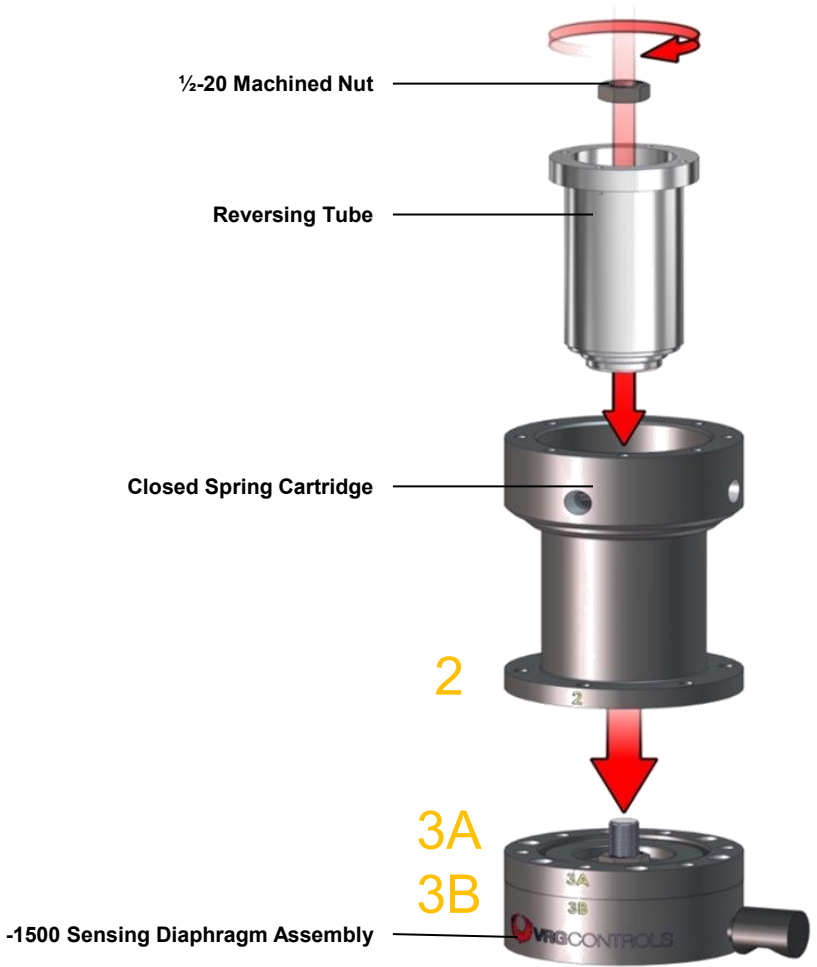


Pilot Blank Assembly

□  
○  
4  
5  
○  
□  
7



# Assemble -1500 Sensing Diaphragm Assembly onto Closed Spring Cartridge



### Instructions:

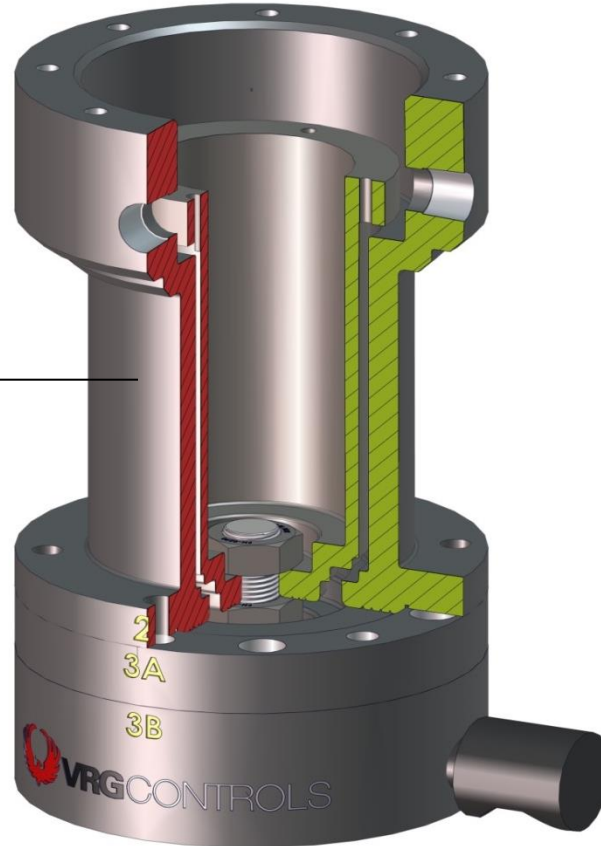
1. Install -1500 Sensing Diaphragm Assembly into Closed Spring Cartridge
2. Drop Reversing Tube through Closed Spring Cartridge and engage -1500 Sensing Diaphragm Assembly
3. Thread 1/2 - 20 Machined Nut onto -1500 Sensing Diaphragm Assembly and torque to 110 in-lbs. using 3/4 in Deep Well Socket wrench.

# 1500 Sensing Diaphragm Assembly onto Closed Spring Cartridge



1500 Sensing Diaphragm Assembly  
onto Closed Spring Cartridge

2  
3A  
3B



# 1500 Sensing Diaphragm Assembly onto Closed Spring Cartridge



1500 Sensing Diaphragm Assembly  
onto Closed Spring Cartridge

2

3A

3B



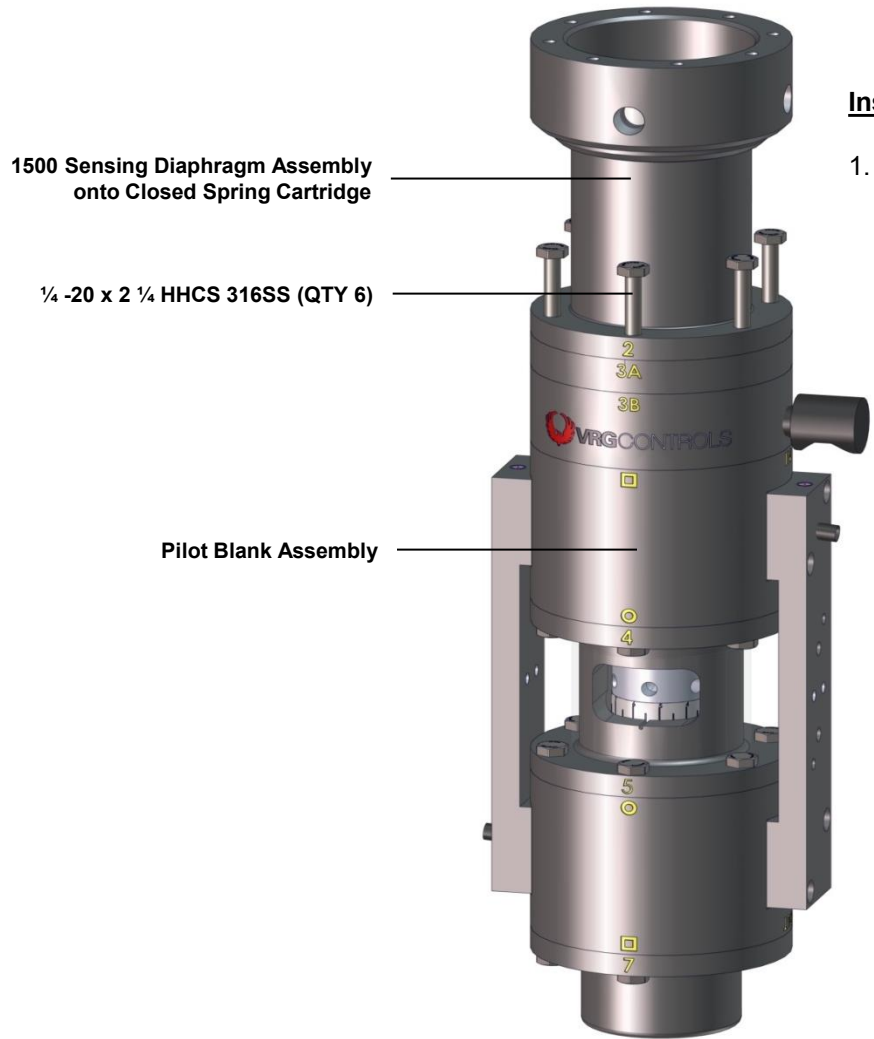
Pilot Blank Assembly



## Instructions:

1. Engage -1500 Sensing Diaphragm & Closed Spring Cartridge onto Seat & Nozzle Piston on top of Pilot Blank Assembly until hand tight. Do not over tighten.
2. Disengage by rotating CCW just enough to ensure proper alignment with Pilot Blank Assembly.
3. "2" & "3A" & "3B" & "Δ" should be aligned on front of Pilot Blank Assembly.

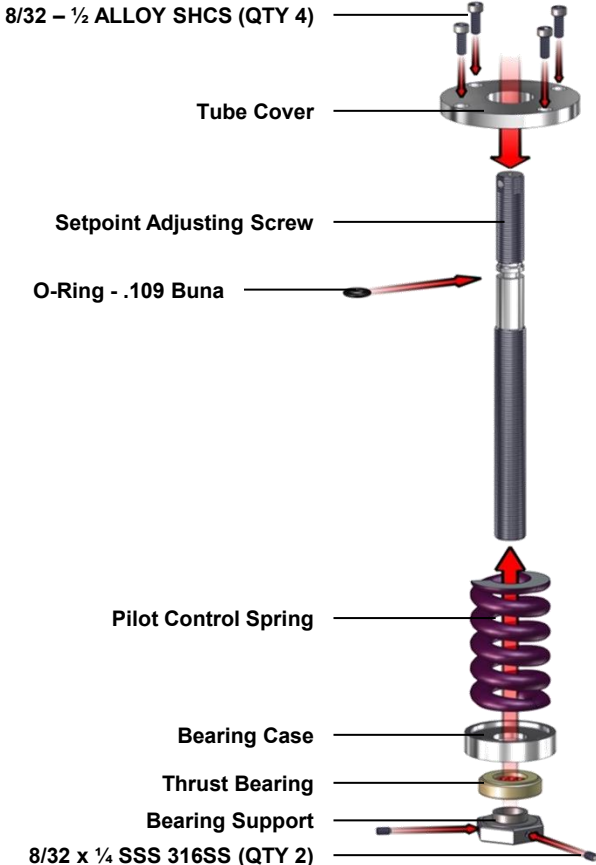
# 1500 Sensing Diaphragm Assembly onto Closed Spring Cartridge



## Instructions:

1. Insert and tighten  $\frac{1}{4}$  -20 x 2  $\frac{1}{4}$  HHCS 316SS in star pattern.

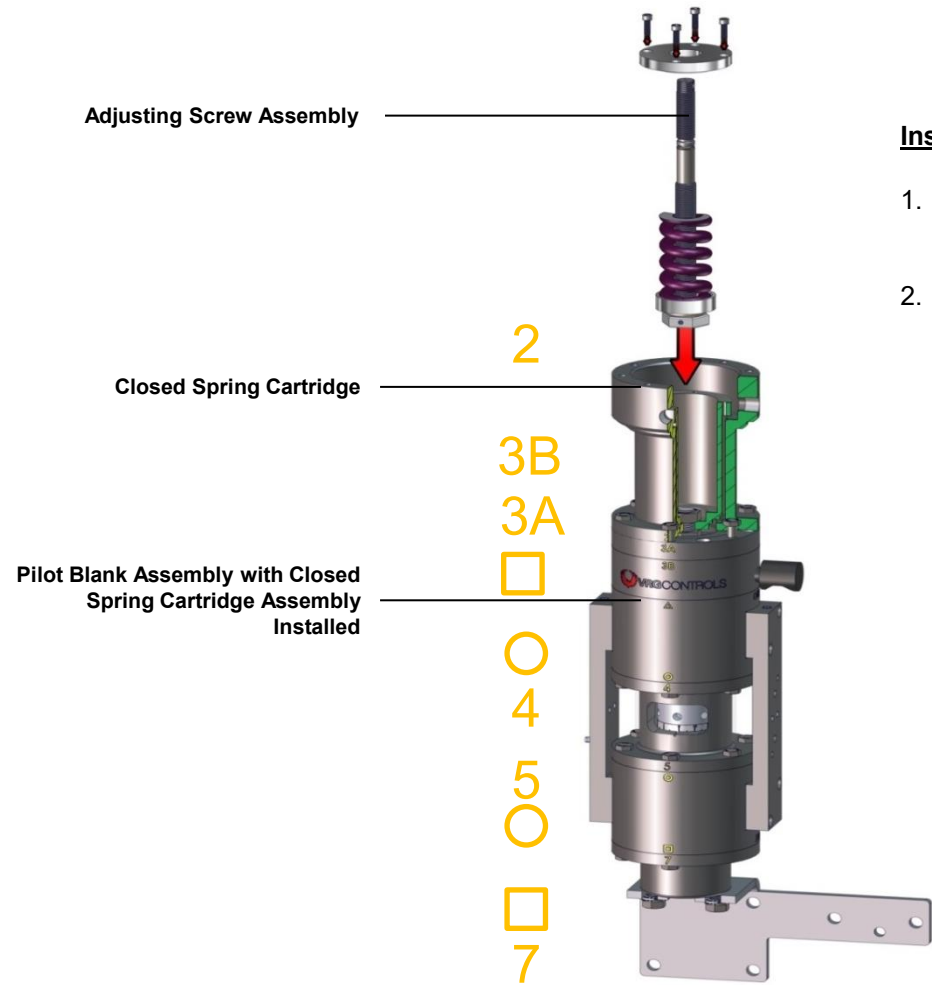
# Assemble Setpoint Screw Assembly



### Instructions:

1. Mount bearing support onto Setpoint Adjusting Screw with 8/32 x 1/4 SSS (Self-Locking).
2. Press Thrust Bearing into Bearing Support with stamped letters side first. Thrust Bearing should fit snugly inside Bearing Support and bearing surface should face outward and rotate freely.
3. Install Bearing Support/Bearing Assembly onto Setpoint Adjusting Screw
4. Thoroughly lubricate and Install Pilot Control Spring onto Adjusting Screw
5. Lubricate -109 O-Ring and install in groove at top end of Adjusting Screw
6. Place 8/32 - 1/2 ALLOY SHCS in through holes of Tube Cover and slip over top of Setpoint Adjusting Screw

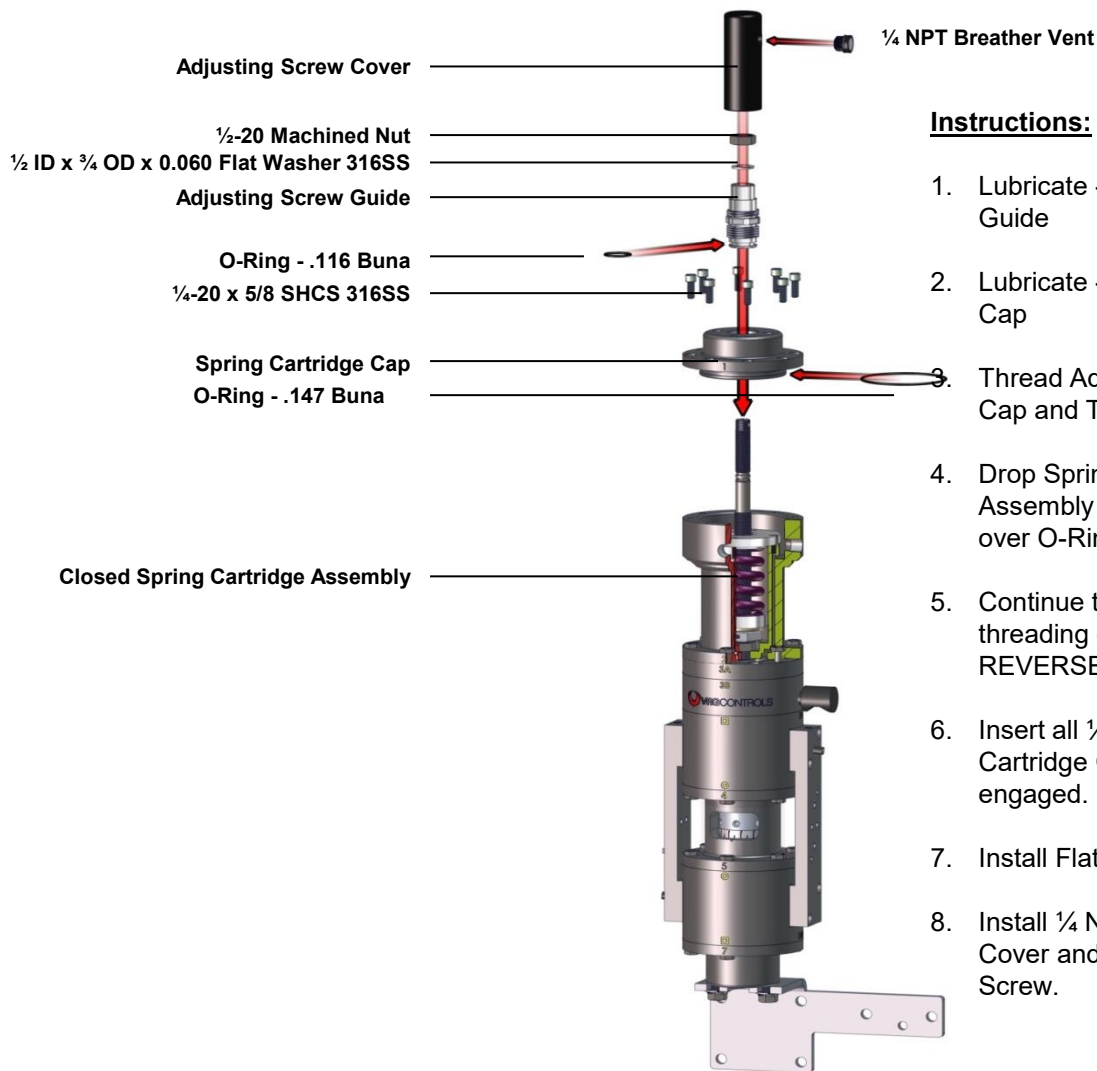
# Install Setpoint Adjusting Screw Assembly



### Instructions:

1. Slip entire Setpoint Adjusting Screw Assembly into Reversing Tube (inside Closed Spring Cartridge)
2. Tighten 8/32 – 1/2 ALLOY SHCS in star pattern. Hold opposing side of Tube Cover down when tightening first screw to ensure proper alignment when tightening

# Install Spring Cartridge Cap Assembly



## Instructions:

1. Lubricate -116 O-Ring and Install on Adjusting Screw Guide
2. Lubricate -147 O-Ring and Install on Spring Cartridge Cap
3. Thread Adjusting Screw Guide into Spring Cartridge Cap and Tighten
4. Drop Spring Cartridge Cap/Adjusting Screw Guide Assembly onto Setpoint Adjusting Screw and push over O-Ring.
5. Continue to install Spring Cartridge Cap Assembly by threading onto Setpoint Adjusting Screw. NOTE REVERSE THREADS.
6. Insert all 1/4-20 x 5/8 SHCS 316SS into Spring Cartridge Cap and tighten in star pattern until fully engaged. Tighten fully in star pattern.
7. Install Flat Washer and 1/2 - 20 Machined Nut.
8. Install 1/4 NPT Breather Vent into Adjusting Screw Cover and thread assembly onto Setpoint Adjusting Screw.



Pilot Blank Assembly with Spring Cartridge Cap Assembly Installed

- 1
- 2
- 3A
- 3B
- 
- 
- 4
- 5
- 
- 
- 7

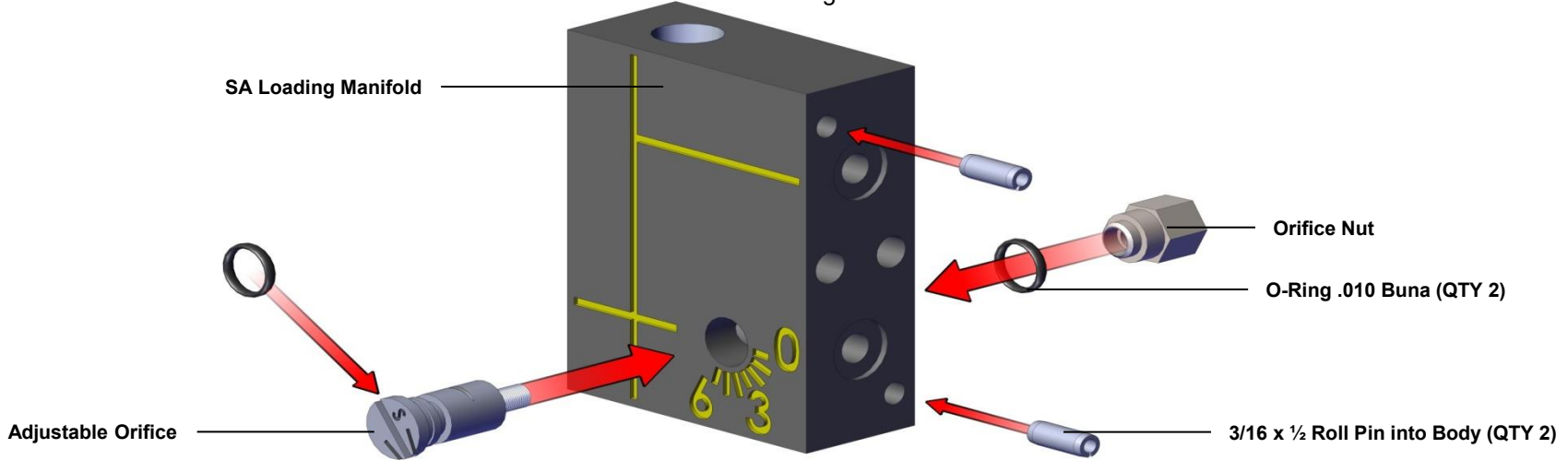


# Install Adjustable Orifice into SA Loading Manifold

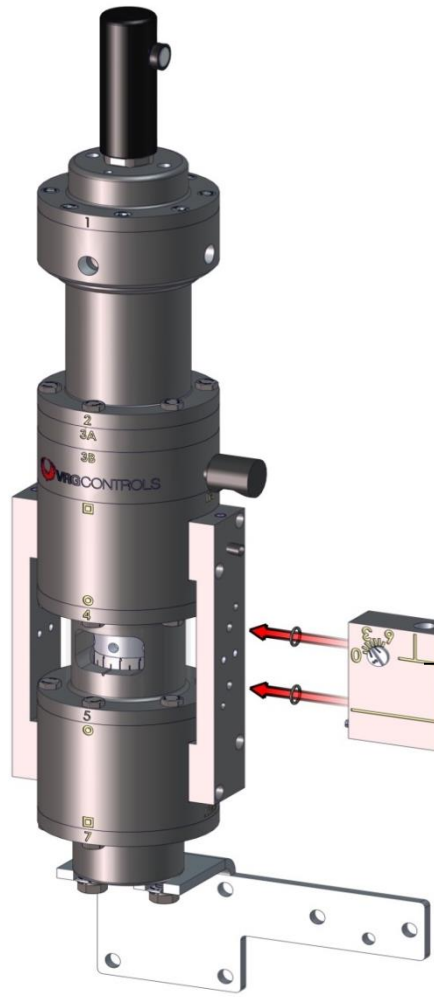


### Instructions:

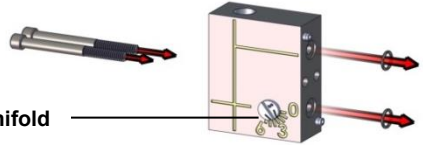
1. Install 3/16 x 1/2 Roll Pin into SA Loading Manifold
2. Apply thin film of lubricant to .010 O-Rings to facilitate assembly.
3. Install .010 O-Rings in cavities on SA Loading Manifold
4. Install .010 O-Rings on Adjustable Orifice and Orifice Nuts
5. Insert Adjustable Orifices into DA Orifice Manifold
6. Install Orifice Nuts and Tighten. Be careful to ensure proper installation of O-Rings.



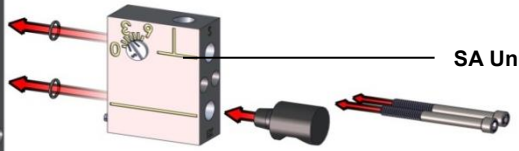
# Install SA Loading and Unloading Manifold Assemblies



SA Loading Manifold



SA Unloading Manifold



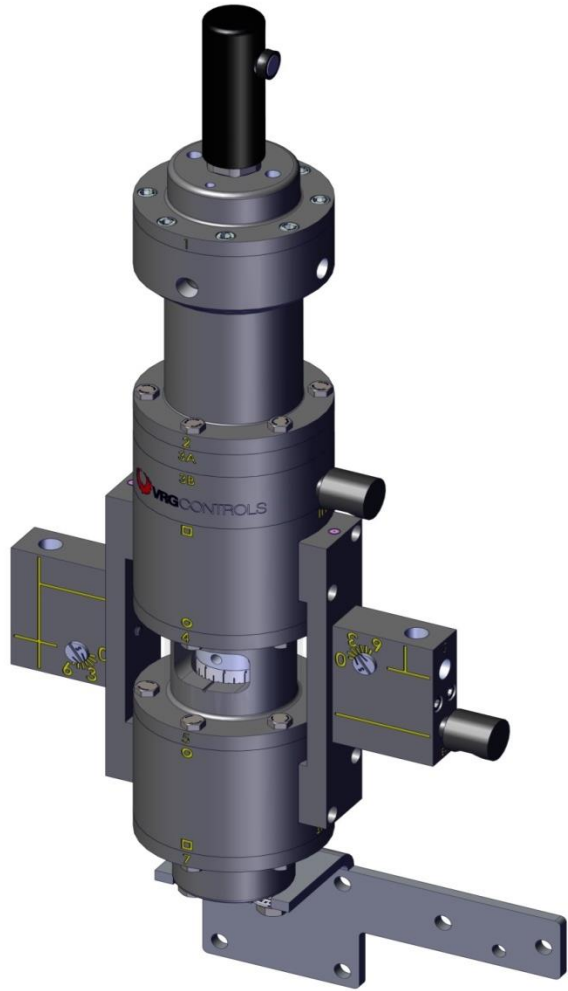
1/4 -20 x 2 3/4 SHCS 316SS (QTY 4)

1/4 NPT Vent Elbow

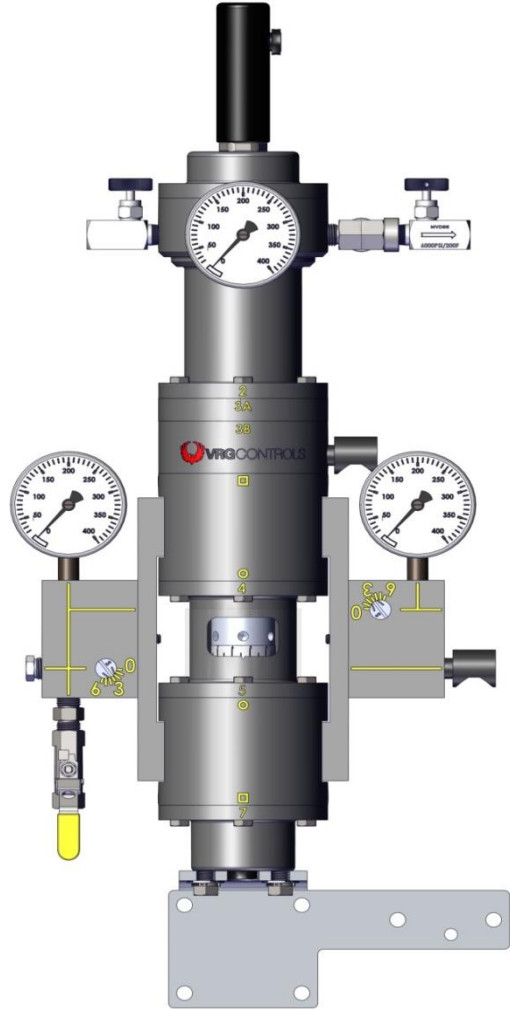
### Instructions:

1. Apply thin film of lubricant to .010 O-Rings to facilitate assembly.
2. Adhere .010 O-Rings to cavities on Loading and Unloading Manifolds
3. Install SA Loading and Unloading Assemblies on Connecting Manifolds using 1/4-20 2 3/4 SHCS 316SS.





# VPC-1500-SA-BV Completed Assembly with Fittings & Gages Installed



# VPC-1500-SA-BV Completed Assembly with Fittings & Gages Installed

