



MODEL SCV-30

SANITARY PNEUMATIC CONTROL VALVE BODY

SECTION I

I. DESCRIPTION AND SCOPE

Model SCV-30 is a pneumatically actuated, globe-style control valve for throttling sanitary or biotechnological applications. The globe body comes in two variations - straight-globe pattern and angle-globe pattern. The valve body assembly incorporates a formed internal composition diaphragm that is bonded to a characterized metal plug. The wetted metallic body portion is of forged 316L SST mechanically and electro-polished to a 10 micro-inch R_a finish.

The unit is available with standard Tri-Clover® sanitary end connections. Butt-weld end connections are available as the Opt-24 optional construction.

The unit is available with the following accessory choices: P/P or I/P positioner, airset, travel limit switches, 3-way solenoid, and manual handwheel operator.

The unit is supplied only with a non-field-reversible, spring-diaphragm actuator, Model 30. The actuator stem-to-valve stem connector is a quick disconnect design.

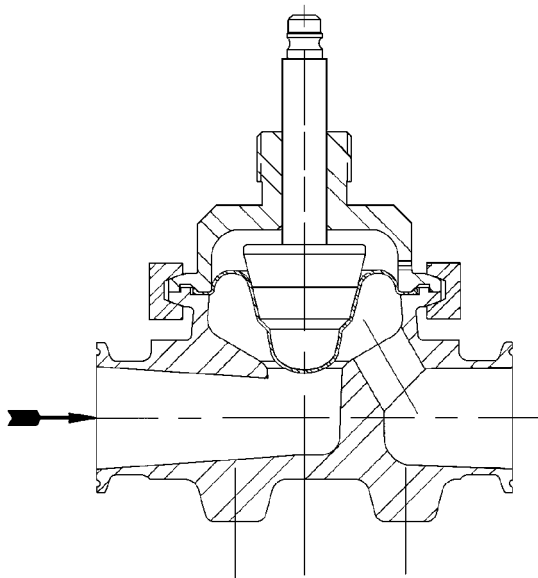


Figure 1: Model SCV-30, Straight-Globe Body

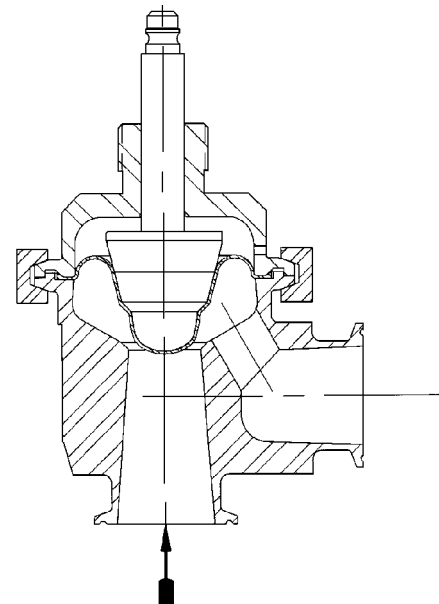


Figure 2: Model SCV-30, Angle-Globe Body

ATC-FO	-	Air to Close, Fail Open
ATO-FC	-	Air to Open, Fail to Close
CCW	-	Counter-Clockwise Rotation
CIP	-	Clean-in-Place
CW	-	Clockwise Rotation
DIR	-	Direct Acting
IAS	-	Instrument Air Supply
I/P	-	Electric Current Input/Pneumatic Output

P/P	-	Pneumatic Input/Pneumatic Output
REV	-	Reverse Acting
SIG	-	Controller Output Signal
SIP	-	Steam-in-Place
V	-	Vent
ZS	-	Position Switch

SECTION II

II. REFERENCES

Refer to Technical Bulletin SCV-30-TB for technical specifications of a Model SCV-30 coupled with Cashco Model- 30 actuator.

Refer to the following Installation, Operation and Maintenance Manuals (IOM's) for devices mounted to a Model SCV-30 or it's actuator:

P/P Positioner
IOM-9540L

I/P Positioner
IOM-9520L

Actuator
IOM-30
IOM-30 Addendum

SECTION III

III. OPERATION CONSIDERATIONS

A. Clean-in-Place (CIP):

1. Control valve unit must be properly oriented per Section IV.A. to assure self-draining of valve's internal passages.
2. Control valve unit comes in the direct action, ATC-FO arrangement or the reverse action, ATO-FC arrangement. Valve should be in the full open position before initiation of the CIP procedure. Control system must accommodate this capability.
3. Cleaning fluid may flow in either direction.
4. Cleaning fluid pressure must not exceed 75 psig (5.1 Barg).
5. Cleaning fluid temperature must not exceed 300°F (149°C).
6. Cleaning fluid must be compatible with wetted materials.

B. Steam-in-Place (SIP):

1. Orientation to be same as CIP, Section III.A.1.
2. Steam may flow from either direction.
3. Recommended 20 psig @ SAT (1.4 Barg @ SAT). Maximum 30 psig @ SAT (2.1 Barg @ SAT). Valve must be in the full open during the SIP procedure.

C. Hose-Down Cleaning:

1. Standard Model SCV-30 control valve units supplied with I/P positioners are NOT designed to allow hose-down washing of the unit's exterior.

D. Instrument Air Supply - IAS:

1. For Model SCV-30 with a positioner recommend using cryogenically produced nitrogen gas, or oil-free compressed air desiccant dried to -40°F (-40°C) dew point, filtered to 10 microns or less as the IAS source.
2. All exhaust/vent air utilized by the Model SCV-30 unit enters the ambient environment.

SECTION IV

IV. INSTALLATION

A. Orientation:

1. Standard orientation is with the yoke with position indicator plate and valve body outlet port in same plane. If an alternate arrangement is necessary, loosen yoke nut (8) securing yoke (1) to valve bonnet (2) approximately three revolutions. Rotate actuator assembly (AA) to desired position with respect to body assembly (BA). Re-tighten yoke nut (8). **NOTE:** This procedure can be done in-line.
2. Valve body must be installed in a horizontal or vertical plane where the outlet connection flow direction is downwards or horizontal (see

Figure 3). Failure to comply will cause the self-draining of the internal passages to be nullified, allowing CIP cleaning/flushing fluids to be ponded.

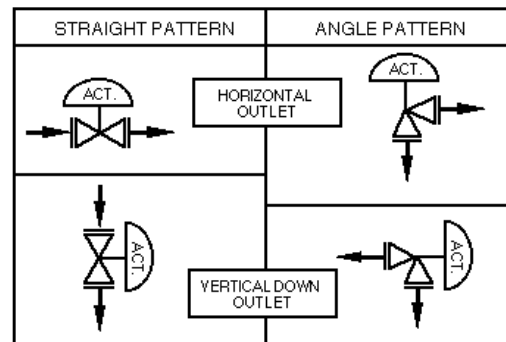


Figure 3: Installation Orientation

SECTION V

V. MAINTENANCE

A. General:



WARNING

SYSTEM UNDER PRESSURE. Prior to performing any maintenance, isolate the valve/actuator from the system and relieve all pressure. Failure to do so could result in personal injury.

1. Maintenance procedures hereinafter are based upon removal of the control valve unit from the piping system where installed. Any disassembly is assumed to be in a suitably equipped work shop.
2. Owner should refer to owner's procedures for removal, handling, cleaning and disposing of non-reusable parts, i.e. seals, diaphragm, sealant/adhesive, etc.
3. Valves supplied from the factory do not use any aid in gasket or diaphragm sealing such as oil, sealant, or pipe dope in the wetted portions of the valve body assembly. Such sealing aids should not be required and are not recommended.
4. Reference Figures 4 through 6 for identification of item numbers.
5. All item numbers that are with respect to the body assembly (BA) will be in parenthesis and not underscored; i.e. (1). All item numbers that are with respect to the actuator and positioner assemblies will be in parenthesis and underscored; i.e. (1).

B. Separation of Body/Actuator Assemblies:

1. Place body(1) into a vise with the actuator assembly (AA) in the upwards position.
2. Place matchmarks between the yoke (1), bonnet (2), Tri-Clamp® (4), and body (1).
3. Using an overhead hoist, rig the actuator assembly (AA) with sling or rope for overhead support. Remove slack from supports.
4. Using a blunt end tool, hammer rap the tool to loosen yoke nut (8), turning CCW (viewed from actuator end). Fully remove yoke nut (8).
5. **For ATO-FC (Reverse Action) Units with Model 30R Actuator**, raise the actuator as-

sembly (AA) approximately 1/2 inch (13 mm). (**NOTE:** This step is not required for **ATC-FO (Direct Action) Units with Model 30D Actuator**.)

6. The valve stem (3.1)-to-actuator stem assembly (23) is a quick disconnect joint. Grasp plug stem (3.1) between thumb and forefinger of one hand. Grasp the collar (80.2) between the thumb and forefinger of the other hand; slide/push collar (80.2) upwards. Stems (3.1) (23) should uncouple. Lower stem (3.1) until self supporting.
7. Continue lifting actuator assembly (AA) upwards until able to swing out of the way and set down onto work surface.
8. To reassemble the actuator assembly (AA) to the valve body assembly (BA), place body into a vise securely with the stem (3.1) directed upwards.
9. Using the overhead hoist, rig and lift the actuator assembly (AA) above the body assembly (BA). Lower the actuator assembly (AA) down and over the valve stem (3.1) so that the stem (3.1) upper end passes through yoke nut (8) and the lower opening of the yoke (1). Continue lowering actuator assembly (AA) until the valve stem (3.1) is within 1/4 inch (6mm) of the actuator's quick disconnect (80) end.
10. Grasp valve stem (3.1) between thumb and forefinger. Grasp collar (80.2) between thumb and forefinger of other hand. Lift stem's (3.1) end up and into the opening of the actuator stem assembly (23). Slide/push the collar (80.2) upwards while simultaneously lifting the stem (3.1) end into the actuator stem assembly (23). A "click" will be felt when the engagement is proper; release the collar (10.6), and the lower lips of the collar (80.2) and actuator stem assembly (23) should align. Release the stem (3.1) to ensure engagement.
11. Position actuator assembly (AA) until alignment is correct with matchmarks of V.B.2 previous. Hand-tighten yoke nut (8).
12. **For ATO-FC (Reverse Action) Units with Model 30R Actuator**; provide a temporary air supply to the actuator to allow pressurization to at least give 1/2 of the valve's full stroke.
13. Fully lower actuator assembly (AA) down until the yoke (1) is sitting directly on the bonnet (2).

14. Hand-tighten yoke nut (8) until tight by rotating yoke nut (8) CW (viewed from actuator end). Rotate yoke nut (8) 1/2 rev. CCW (loosen).
15. Release air pressure of Step 12. above; valve plug/diaphragm assembly (3) should come down to seat. Wiggle actuator assembly (AA) to help alignment of plug/diaphragm assembly (3), body (1), and bonnet (2).
16. Wrench tighten yoke nut (8) by rotating CW (viewed from actuator end) until tight. Impact tighten yoke nut (8) using a blunt end tool and hammer.
17. **For ATC-F0 (Direct Action) Units with Model 30D Actuator**, provide a temporary air supply to the actuator to allow pressurization to at least give the valve full stroke; valve plug/diaphragm assembly (3) should come down to seat. Wiggle actuator assembly (AA) to help alignment of plug/diaphragm assembly (3), body (1), and bonnet (2).
18. Wrench tighten yoke nut (8) by rotating CW (viewed from actuator end) until tight. Impact tighten yoke nut (8) using a blunt end tool and hammer.
19. Release air pressure to actuator if pressurized.
20. Loosen vise securing body (1). Using overhead hoist lift and swing unit to a laydown surface, taking care to not damage surfaces of end connections.
21. Recalibration of actuator-to-positioner should not be necessary unless a different body assembly (BA) was installed, or a different actuator assembly (AA) was installed. However, a calibration check is still recommended.

C. Body Disassembly:

1. Remove actuator assembly (AA) per Section V.B.1-7.
2. Observe position of wing nut (4.2) of "Tri-Clamp" assembly (4) while rotating CCW (facing wing nut) enough to swing the wing nut (4.2) away from the restraining slot of the main clamp (4.1) Remove "Tri-Clamp" assembly (4) and lay aside.
3. Holding stem (3.1) securely, pull stem (3.1) upwards, lifting bonnet (2) and plug/diaphragm sub-assembly (3) off of body (1). It is necessary to grasp the protruding "tab" on the diaphragm (3.2) and pull upwards simultaneously with the plug/diaphragm sub-assembly (3).

4. Slide bonnet (2) over end of stem (3.1) and set aside.
5. Place stem end (3.1) into a soft-jawed vise with plug head-end (3.1) oriented upwards.
6. If the diaphragm (3.2) leaked or seat leakage was high, examine the diaphragm (3.2) for a possible cause.
7. Pull diaphragm (3.2) away from plug/stem (3.1) adhered to. Discard used diaphragm (3.2).
8. Using palm of hand, rub away any adhesive (3.3) that remains "stuck" onto the plug (3.1).
9. Remove the plug/stem (3.1) and thoroughly clean the area where adhesive is to be reapplied (abraded surface) with a water soluble solvent. Rinse thoroughly with warm potable water. Allow to air dry.
10. Lightly roughen the inside surface of a new diaphragm (3.2), where the adhesive (3.3) will be applied, using a "Scotch-Brite" (TM of 3M), or equal polishing pad. Rinse thoroughly with warm water and allow to air dry.



CAUTION

DO NOT TEAR DIAPHRAGM FABRIC.

NOTE: Observe the contours of the diaphragm (3.2) to confirm that it will fit over the contour of the plug head-end end (3.1).

11. Clean body (1) similar to plug/stem (3.1) of Article 9. above. Place body (1) back into vise.
12. Place stem end of plug/stem (3.1) into a soft jawed vise with the plug head-end (3.1) oriented upwards. **DO NOT TOUCH PLUG-HEAD END (3.1).**
13. Open the small container of silicone sealant/adhesive (3.3). Place seven "dabs" of adhesive (3.3) on the plug head-end (3.1) at the locations indicated in Figure 4. **DO NOT ATTEMPT TO SPREAD THE DABS!** Place a new diaphragm (3.2) over the plug head-end (3.1). Press down on the tip of the diaphragm (3.2) to spread the silicone sealant (3.3). Twist the diaphragm (3.2) back and forth several times while ensuring at least one complete revolution of the diaphragm (3.2) occurs. Starting at the tip of the diaphragm (3.2), press the diaphragm (3.2) against the plug head-end (3.1) to remove any air pockets.

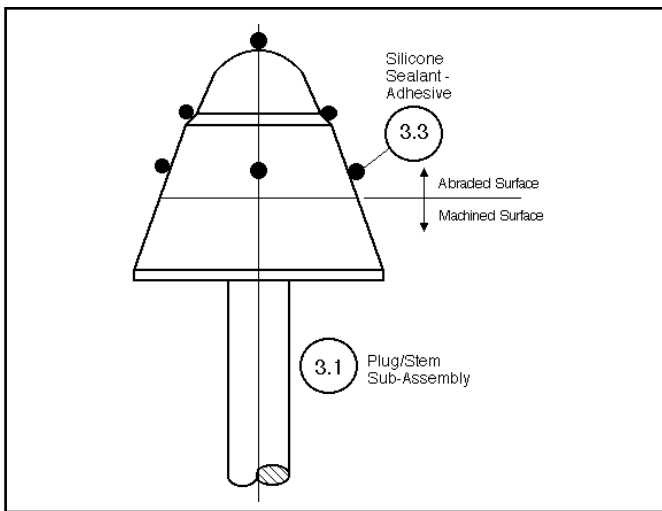


FIGURE 4: Adhesive Placement

14. Grasping the outer edge of the diaphragm (3.2), lift off the diaphragm (3.2).
15. Examine the plug head-end (3.1) to ensure that the adhesive (3.3) is evenly spread and that all surfaces are covered. **DO NOT TOUCH ADHESIVE (3.3)!**

NOTE: If there are surfaces missing adhesive (3.3), repeat the last half of Article 13. above, and Articles 14. and 15.

16. Place diaphragm (3.2) back over the plug head-end (3.1). Twist 1/4 revolution. Press the diaphragm (3.2) against the plug head-end (3.1) to remove any air pockets, starting from the tip of the diaphragm (3.2) and moving downwards.
17. Place plug/diaphragm sub-assembly (3) back into the body (1) with the stem (3.1) oriented upwards, and the plug head-end (3.1) resting on the seat portion of the body (1). Place a temporary 6# (3kg) weight (doughnut shaped) over the end of the stem (3.1) so that it can

rest on the “shelf” of the plug (3.1), pressing the diaphragm (3.2) against the plug (3.1) at the seating surfaces. Leave this apparatus in place for a 24 hour cure period. (Note: The silicone sealant/adhesive (3.3) cure period can not be shortened through the use of heat; minimum cure time is 24 hours.

18. After proper cure, remove temporary weight and plug/diaphragm sub-assembly (3) from the body (1). Remove body (1) from vise.
19. Reclean body (1), plug/diaphragm sub-assembly (3), bonnet (2), and “Tri-Clamp” sub-assembly (4) per owner’s procedures. A final rinse with ultra-clean water is recom-



CAUTION

Owner’s cleaning solution must be compatible with control valve’s trim materials.

- mended.
20. Place body (1) back into vise for vertical stem (3.1) orientation.
21. Set plug/diaphragm sub-assembly (3) back into body (1) cavity, aligning the tab of the diaphragm (3.2) to be located into the slot of the body (1) flange.
22. Place bonnet (2) over stem (3.1) and down onto flange of body (1) and diaphragm (3.2).
23. Place the “Tri-Clamp” sub-assembly (4) back around the lips of the body (1) and bonnet (2) flanges. Latch wing nut (4.2) back into it’s slot. Rotate the “Tri-Clamp” sub-assembly (4) around the flanges until the wing nut (4.2) is in it’s desired position. Tighten wing nut (4.2).
24. Reinstall actuator assembly (AA) per Section V.B. 8 through 20. herein.

SECTION VI

VI. CALIBRATION

A. General:

1. This section only covers calibration of the control valve unit - Actuator Model 30 plus a Model SCV-30 body.
2. Positioner, if installed, requires reference to the specific positioner model IOM for proper calibration procedure.
3. All indicated item numbers that are with respect to IOM-30 will be in parenthesis and underscored; i.e. (20); the same is true for positioner parts. All item numbers that are with respect to this IOM-SCV-30 are not underscored; i.e. (3).
4. There is no calibration of body-to-actuator with the quick disconnect stem connector.

SECTION VII

VII.TROUBLE SHOOTING GUIDE

1. Unit can not pass enough flow.

Possible Cause	Remedy
A. Sizing data not correct; valve undersized.	A1. Check actual pressures, temperature, and flow rates against the variables used for sizing. Recalculate Cv Required. A2. Replace unit with larger body size.
B. Obstruction at inlet.	B. Remove valve from line and inspect for something causing blockage.

2. Valve body leaking at clamped end or bonnet connection joints.

Possible Cause	Remedy
A. Excess pressure levels.	A. Check actual pressures against those indicated in technical bulletin. Reduce pressures as necessary.
B. Loose clamp.	B. Remove valve from service. Disassemble and clean. Reassemble and properly tighten all clamps at reinstallation.
C. Excessive piping stress.	C. Place hanger on control valve unit.
D. Improper pipe alignment.	D. Redo piping properly.

3. Fluid leakage at bonnet vent or at bonnet/stem guide zone.

Possible Cause	Remedy
A. Ruptured body diaphragm.	A. Remove body, disassemble, remove old diaphragm. Install new diaphragm, reassemble and reinstall.

SECTION VIII

VIII. PARTS ORDERING INFORMATION

To obtain parts ordering information/numbers, utilize one of the following methods. The least expensive method is to utilize parts in kits where possible.

METHOD A – USE OF BILL OF MATERIAL

Step 1. If available, obtain the 18 character product code number from the Bill of Materials sheet attached herein. (Confirm that it duplicates the 18-digit product code stamped on valve's metal name plate.)

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Step 2. Identify which parts are desired from the BOM sheet – reference the cross-sectional drawings.

Step 3. Contact your local Cashco, Inc., Sales Representative and specify the product code number, and any part number(s) desired. Cost required and parts can be given by the Sales Representative.

METHOD B – USE OF VALVE'S SST NAME PLATE

Step 1. Obtain all available information from valve's metal tag.

- a. 18-Character product code.
- b. Serial number.
- c. Line size and port size.
- d. Trim number
- e. Fail position
- f. Max. Work ΔP .
- g. Supply pressure.
- h. Bench Range

Step 2. With the information from Step 1, contact your local Cashco, Inc., Sales Representative who will confirm with the factory to determine the original internal construction.

Step 3. Factory will relay information to the Sales Representative who will advise you with correct part numbers and prices.

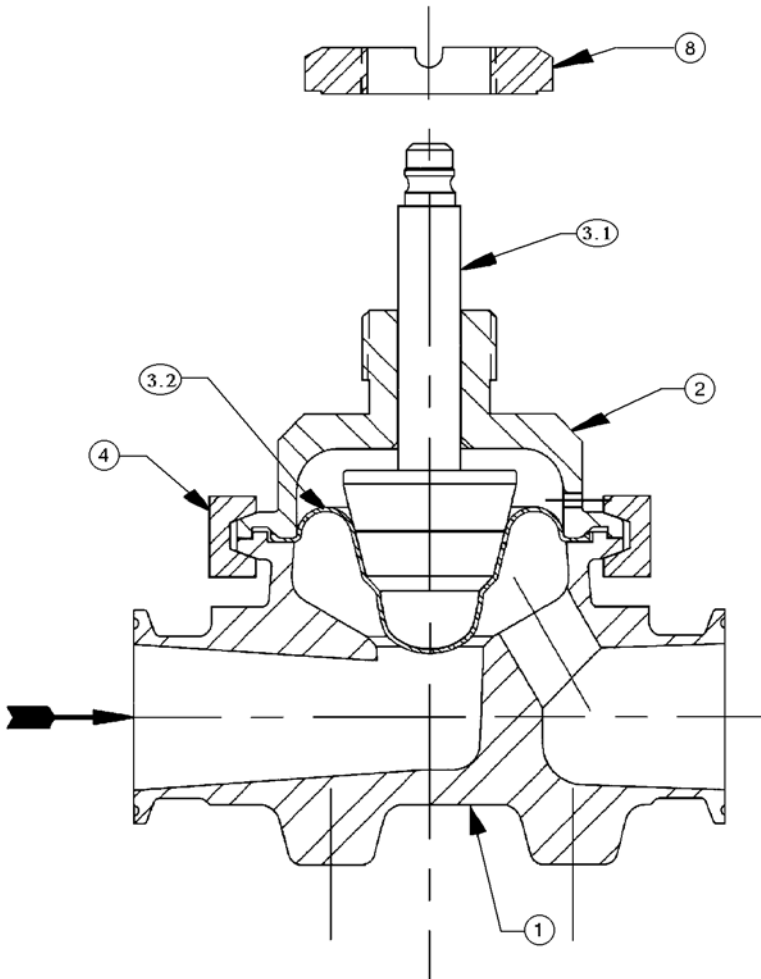


FIGURE 5:
Body Assembly (BA), Straight-Globe

ITEM NO.	DESCRIPTION
1	Body
2	Bonnet
3	Plug/Diaphragm Assy.
3.1	Plug
3.2	Plug Diaphragm
4	"Tri-Clover" Clamp
8	Yoke Nut

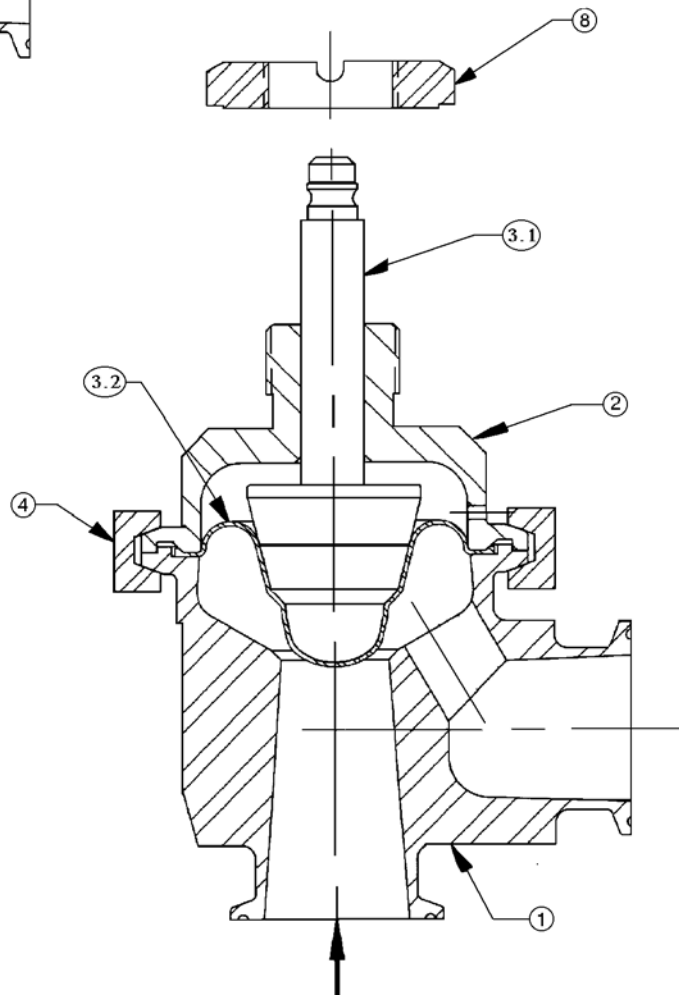


FIGURE 6:
Body Assembly (BA), Angle-Globe

ITEMS NOT SHOWN

ITEM NO.	DESCRIPTION
3.3	Adhesive
4.2	"Tri-Clover" Clamp Wing Nut
5	Flow Arrow Tag
6	Drive Screw