



IMPORTANT:
This manual contains important information.
READ AND KEEP FOR REFERENCE.

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Safety Precautions

Neither Badger Meter nor any Badger affiliated entities assumes responsibility for the selection, use, and maintenance of any products. Responsibility for the selection, use and maintenance remains with the purchaser and end-user.

WARNING

Personal Injury or property damage caused by sudden release of pressure or bursting of pressure retaining parts may result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide relief valve over pressure protection as required by government or accepted industry codes.

Always wear protective gloves, clothing, and eye wear when performing any installation operations to avoid personal injuries.

This valve is intended for a specific range of temperatures and pressures. Application of different temperatures than those specified could result in parts damage, valve malfunction, or loss of control of the process.

Do not remove the actuator from the valve while the valve is still pressurized.

Disconnect any operating lines providing air pressure, electric power, or control signal to the actuator or accessories.

Use bypass valves or completely shut-off the process line to isolate the valve from process pressure. Relieve process pressure and drain process media from both sides of the valve.

Consult a trained safety engineer for any additional measures that must be taken to protect against process media.

Installation Orientation

Standard orientation is with the valve stem and actuator in a vertical plane and the process fluid entering the valve from the bottom and discharging through the side in a horizontal plane.

The valve body must be installed such that the outlet connection flow is horizontal or slightly tilted down, away from the valve body. Failure to properly install the valve will result in improper draining.

Other orientations may be chosen if internal drainage is not critical.

Actuator Support

Due to the weight of the actuator, external support is required for the valve. The actuator must be supported with external brackets and must be mounted to a suitable surface for total valve weight support.

WARNING

Personal injury or property damage may occur if the valve is not properly mounted and supported.

Valve Installation

Badger Meter's Research Control® SCV-85, SCV-89 and SCV-95 are designed for simple mounting into processing lines using the appropriate sized end connections. The actuator uses standard NPT connections for the air lines making the installation process simple.

1. Shut off the process line flow. Remove the existing actuator if necessary.
2. Mount the actuator to the proper bracket and support surface and secure with the proper mechanism.
3. Align the inlet port to the process line and secure with the properly sized clamps.
4. Align the outlet port to the process line and secure with properly sized clamps.
5. If required and available, install an alarm or vent port system to the vent port on the bonnet of the valve.



To avoid personal injury or property damage, the valve should not be serviced while the system is in operation. All hazardous fluids must be drained properly before the valve is serviced.

Air Piping

A range of actuators exists which fit on the various sanitary valves. Badger Meter offers a 1/4", 1/2" and a 3/4" actuator for this product line in both Epoxy Coated Aluminum and 316 Stainless Steel. Refer to the appropriate actuator manual when working on your valve assembly.

The 3/4" is field-reversible. Please confirm mode of operation before piping air to the actuator.

1. For an air-to-open (air to retract) operation, the air pressure line should be connected to the 1/4" NPT opening on the lower shell, below the diaphragm. For air-to-close (air to extend) operation, the air line should be connected to the 1/4" NPT opening on the upper shell, above the diaphragm.
2. All Instrument and supply air should be clean, dry and free of oil and debris. Contaminates can greatly reduce the life of the actuator.

Valve Positioner

To maximize the accuracy of the valve, Badger Meter recommends the valve to be used with an external positioner. If pre-configured with a positioner, the positioner will be properly installed and tested on the valve before being shipped from the factory.

Connect the instrument signal and supply air line to the positioner input and supply port using a small amount of paste type thread sealant. DO NOT use TFE tape.

NOTE: 25-35 PSIG supply air pressure is appropriate. If the valve does not achieve the required travel, the supply pressure can be raised until full travel is achieved. The maximum recommend pressure is 60 PSIG.

If a positioner is selected after receiving the valve from Badger Meter, consult the operations manual from the positioner manufacturer.

Clean In Place (CIP) and Sanitize in Place (SIP)

Badger Meter's Research Control® SCV-85, SCV-89 and SCV-95 are designed to accommodate CIP and SIP processes. Use a site approved CIP and/or SIP process as directed by the Process Engineer.

- Control Valve must be in proper orientation to assure self-draining.
- Cleaning fluid may flow in either direction.
- Cleaning fluid must be compatible with wetted materials.
- Cleaning fluid pressure must not exceed 75 PSIG.
- Cleaning fluid temperature must not exceed 300° F.
- Class I elastomers used.

CIP Recommended Process

- Cycle the valve from full open to full closed a minimum of two times during the 60-second pre-rinse cycle; allow the valve to maintain full closed for two to four seconds before opening.
- Cycle the valve from full open to full closed a minimum 10 times during the 10 minute detergent cycle, again allow the valve to maintain full closed for two to four seconds before opening.
- Cycle the valve from full open to full closed a minimum of two times during the 60-second post-rinse cycle; allow the valve to maintain full closed for two to four seconds before opening.
- Apply 15 PSIG (the same compressed air pressure as was applied during the soiling process) to the actuator.
- Temperature of exposure to chemical solutions used in cleaning and bacterial treatment up to 180° F.

SIP Recommended Process

- The orientation is same as CIP recommendations.
- The Control Valve must be in the full open position during cleaning.
- Steam may flow in either direction.
- Suitable for sterilization temperatures up to 300° F.
- Maximum: 30 PSIG at SAT.

WARNING

- Valve maintenance and service should only be performed by qualified personnel.
- Personal injury and property damage may occur if specific procedures are not followed.
- The system must be shut off before any work is done on the valve.
- Relieve all pressure from valve and actuator

Removing the Valve from Service

1. Ensure the system has been shut off and the valve has been properly drained.
2. Bring the actuator to the rest position. Shut off air supply to the actuator or positioner.
3. Make sure the system pressure is fully relieved on both ends of the valve before proceeding to step 4.
4. Release the clamp from both the inlet and outlet lines to free the valve from the process lines.
5. While securely holding the valve, release the mounting brackets holding the valve to the mounting surface.

Separating the Valve from the Actuator

1. Loosen the upper stem nut.
2. Remove the pointer.
3. Loosen the union nut securing the innervalue and the upper Connector nuts.
4. Remove the union nut connecting the innervalue and the upper connector nuts.
5. Pull the innervalue out of the seat.
6. Unscrew the yoke locknut to free the valve from the actuator.
7. Remove the actuator assembly for valve maintenance.

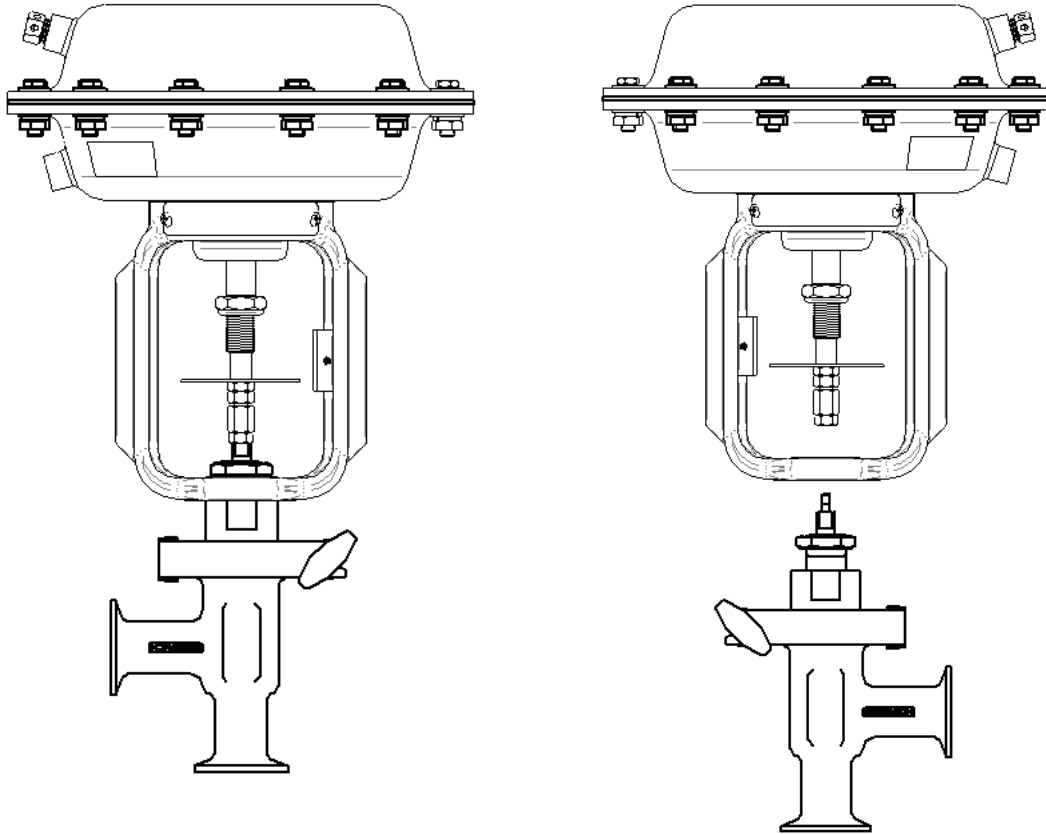


Figure 1: Valve-Actuator Separation

Valve Disassembly

Once the actuator has been separated from the valve, it is now possible to disassemble the valve.

1. Loosen the sanitary clamp holding the bonnet to the body by rotating the wing nut counterclockwise.
2. Remove the bonnet and trim subassembly from the body.
3. Remove the union nut from the innervalve.
4. Slide the valve stem and trim assembly out of the bonnet.
5. Remove trim through the bottom of the bonnet.

Once separated please inspect the following:

1. **Valve Body Bonnet Gasket:** Remove gasket and inspect for excessive wear, over tightening or other damage which could cause improper sealing.
2. **Valve Stem and Seat:** Examine for excessive wear on the trim and seat (scratches, residue or knicks could cause improper sealing).
3. **O-ring:** Inspect for abrasions or other damage that which could cause improper sealing.

Valve Reassembly

1. Inspect the O-ring on stem to ensure proper position and sealing.
2. Insert the trim through the bottom of the bonnet.
3. Attach the union nut to the innervalue.
4. Inspect the sanitary gasket to ensure proper position and sealing.
5. Install the bonnet and trim subassembly into the body.
6. Tighten the sanitary clamp, holding the bonnet to the body by rotating the wing nut clockwise.

Actuator Reattachment

1. Screw the yoke locknut onto the body securing the body and the actuator together.
2. Pull the innervalue out of seat.
3. Connect the union nut with the innervalue and the Upper Connector nuts
4. Tighten the upper stem nut so that the pointer can be slid in between the two nuts.
5. Tighten the union nut to actuator stem.

Spare Parts

This manual encompasses the SCV-85, the SCV-89 and the SCV-95. Each of these valves function similarly but are available in different sizes with various elastomers. The serial number tag on the actuator indicates a cross reference number. The serial number assists the RCV customer service representative in providing the proper factory authorized parts.

The parts which RCV recommends for spares are the following

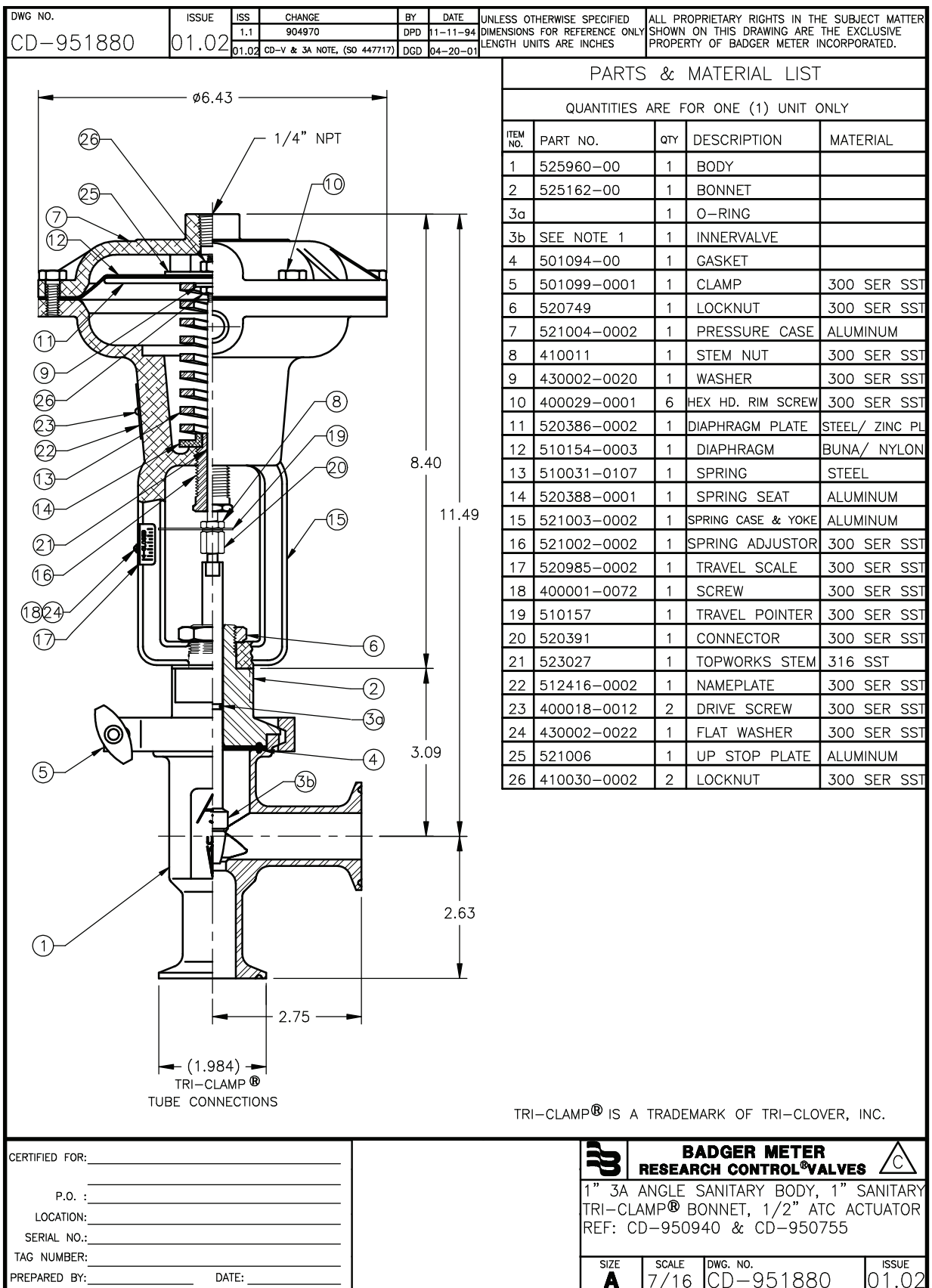
- O-ring on stem
- Body Bonnet Gasket
- For Actuator repair parts, please refer to the Actuator Manual or contact the factory.

	SCV-85				SCV-89		SCV-95	
	1/2"	3/4"	1"	1 1/2"	1"	1 1/2"	2"	3"
O-ring (Viton)	490001	490001	490001	490001	490001	490001	490001	490001
Gasket (Viton)	501094	501094	501094	501094	501094	501094	501475	501475
Trim	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV
Body	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV	Contact RCV

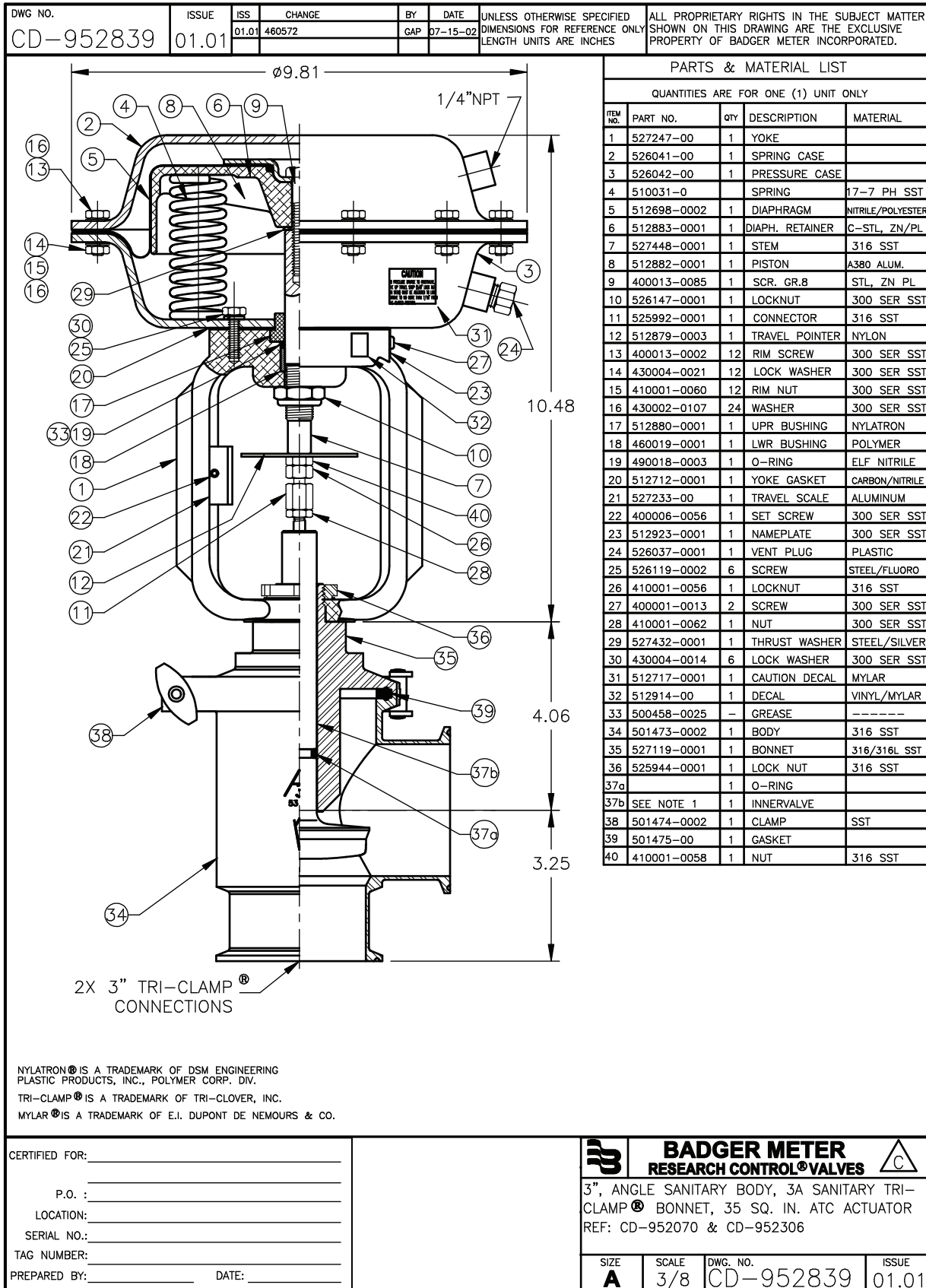
Trim and Seat Replacement:

The trim assembly has an integrated seat within the valve body. Replace the trim if excessive wear exists. Also change the body to provide a new seat for a positive sealing surface for the trim.

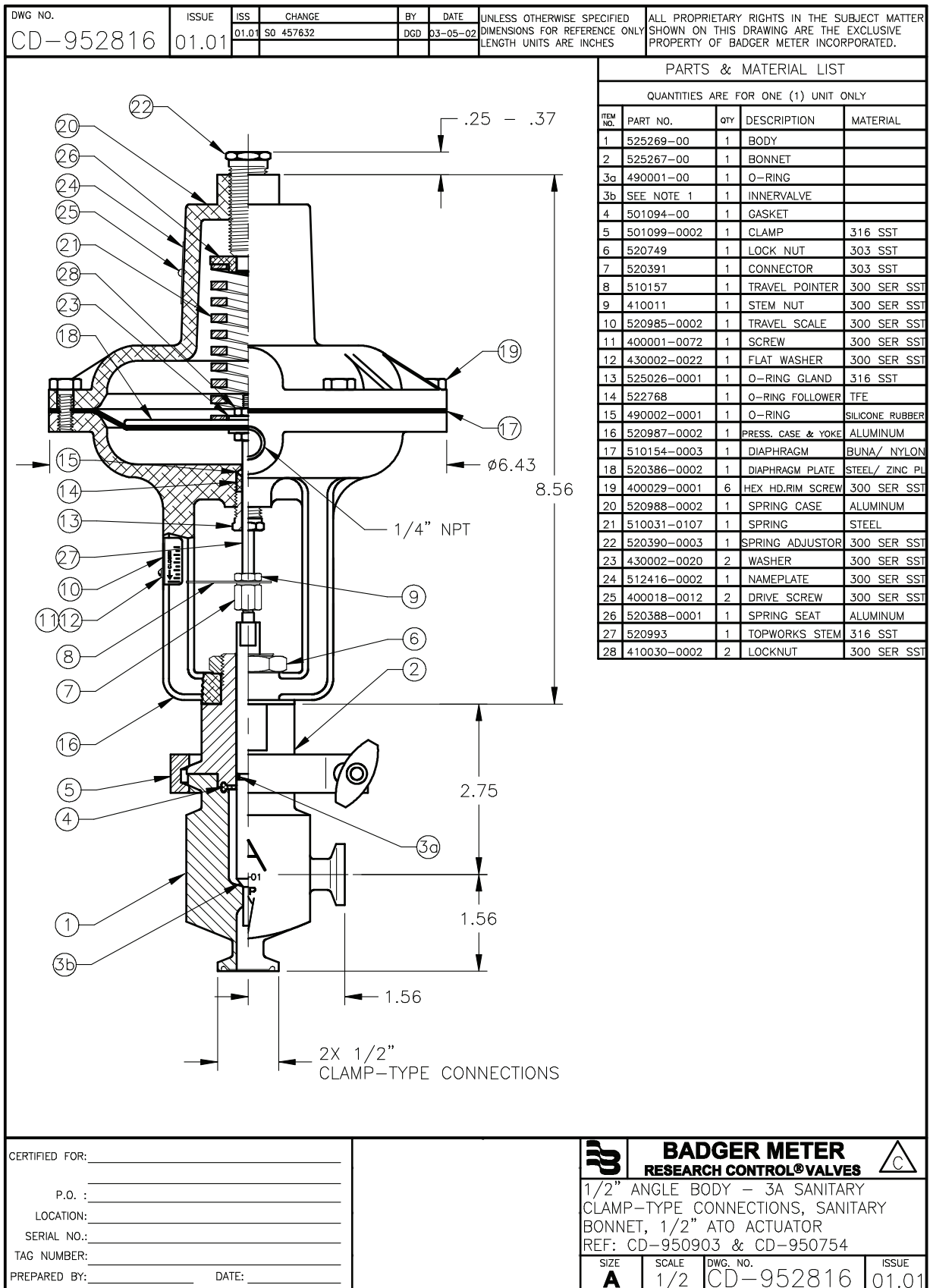
SCV-89



SCV-95



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