SR1
SHERWOOD SCUBA

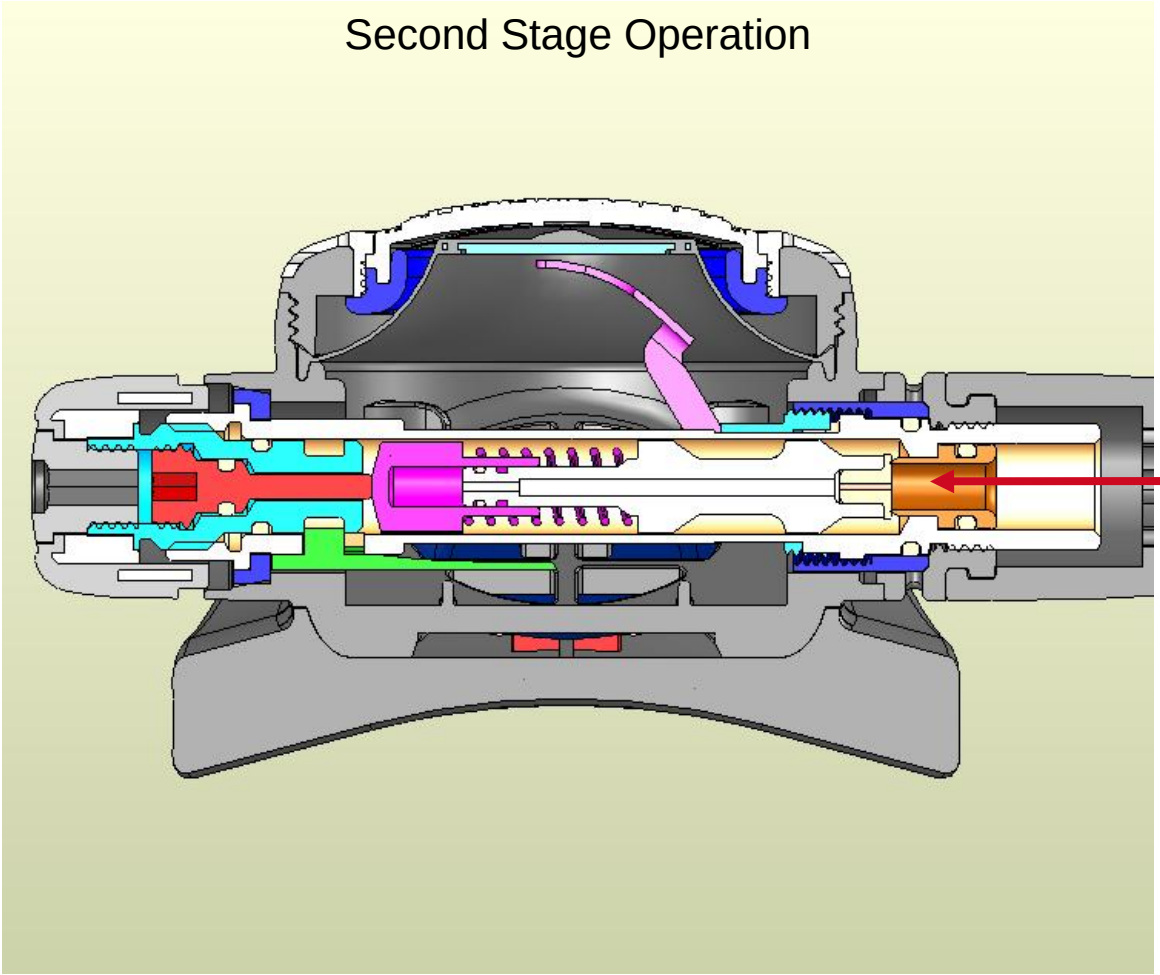
SRB1000

SR1
SHERWOOD SCUBA

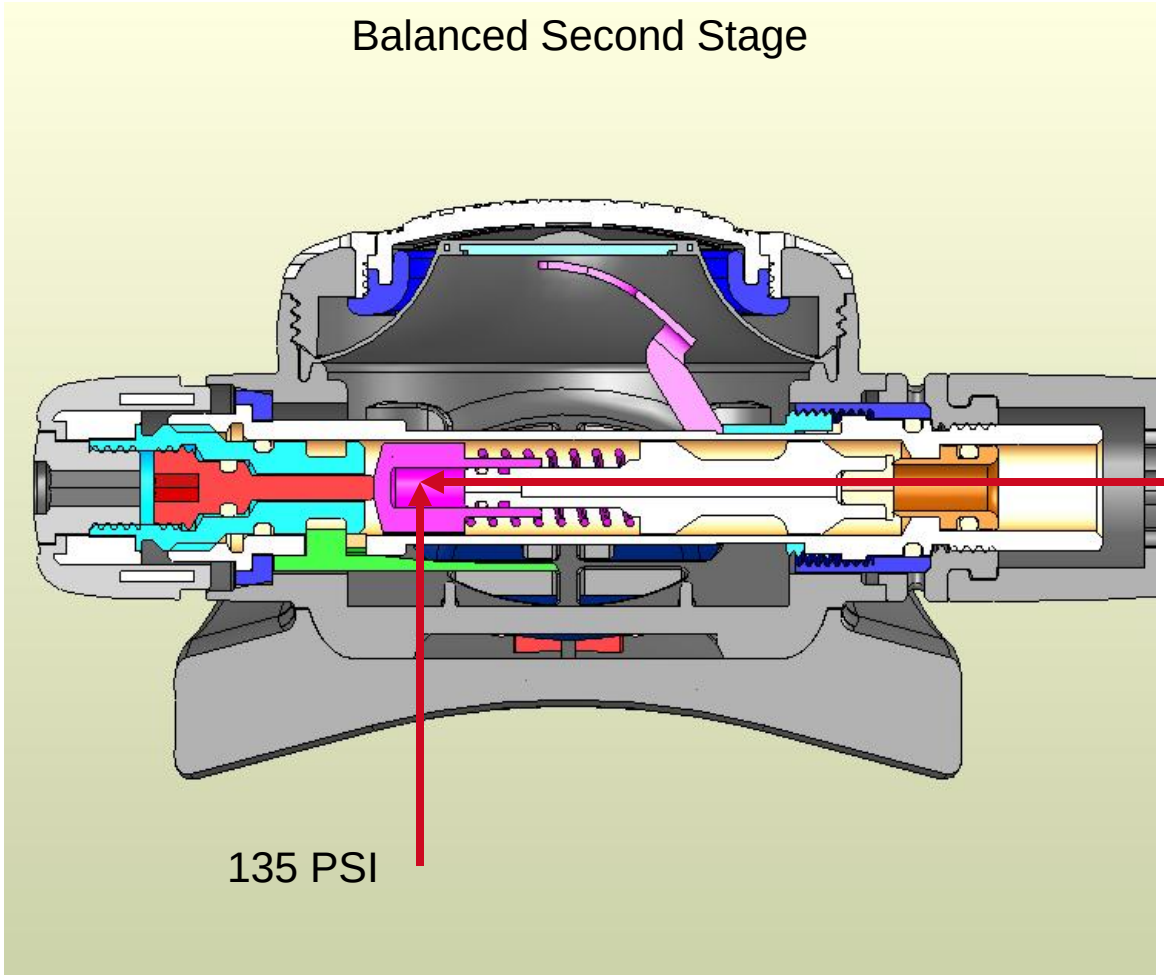
Regulator Design & Function

Design and Function

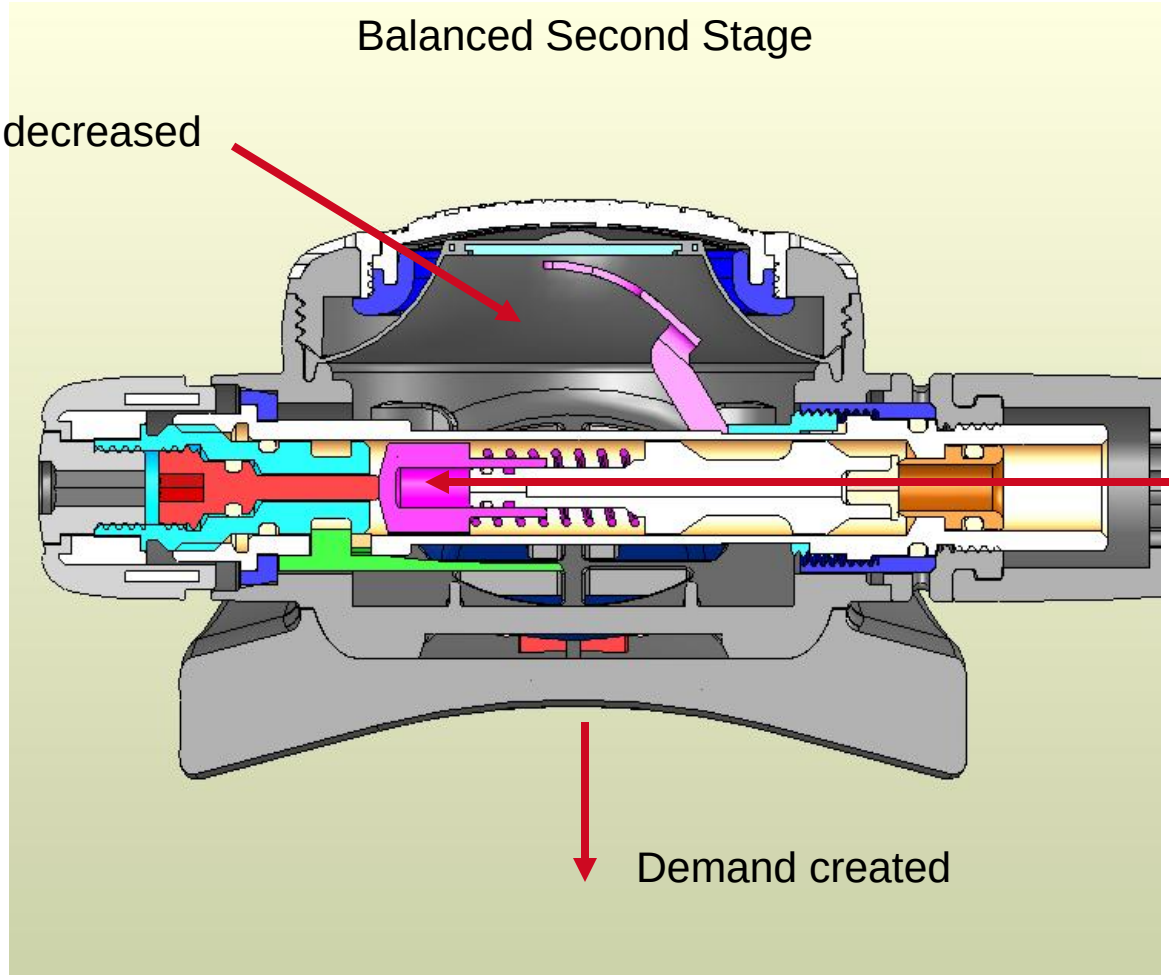
Second Stage Operation



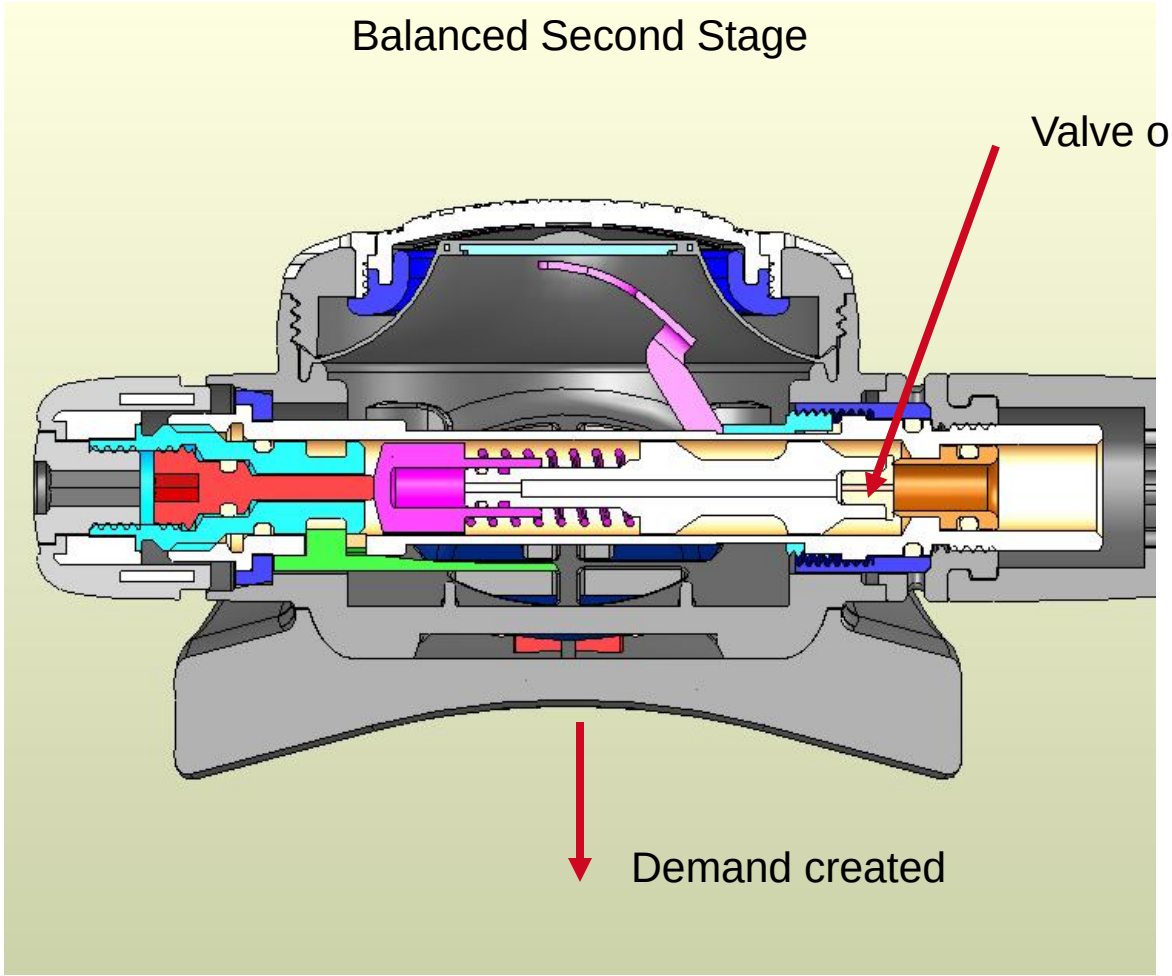
Design and Function



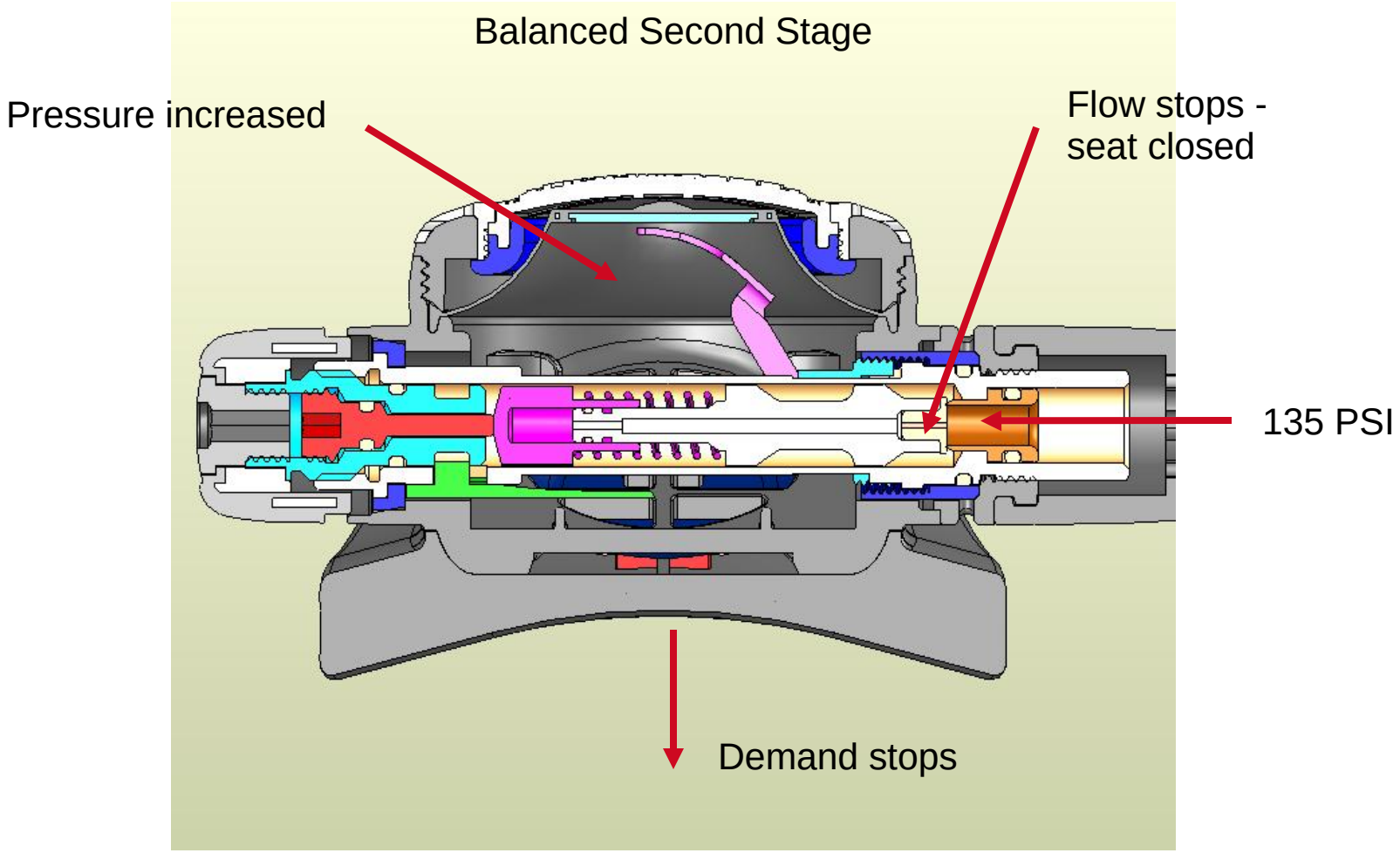
Design and Function



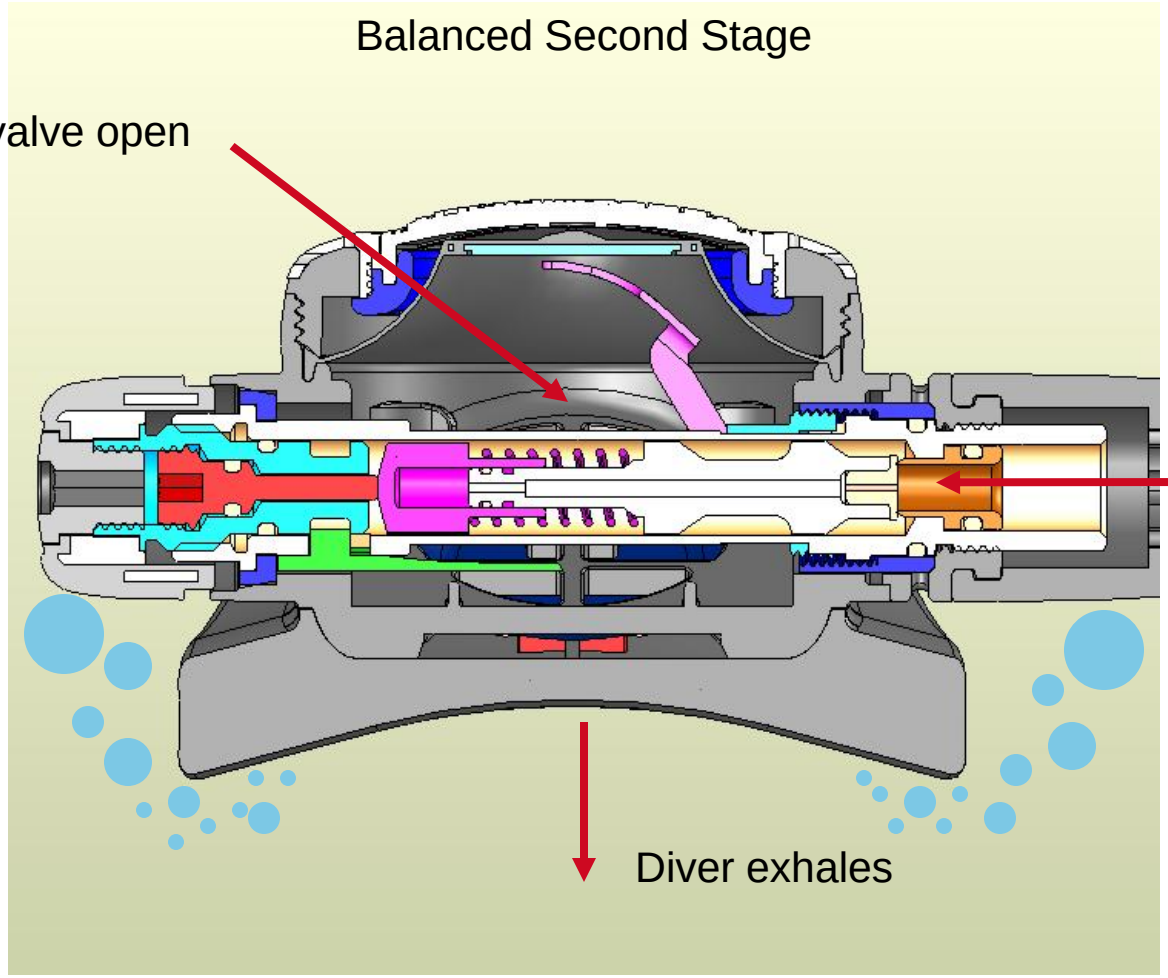
Design and Function



Design and Function



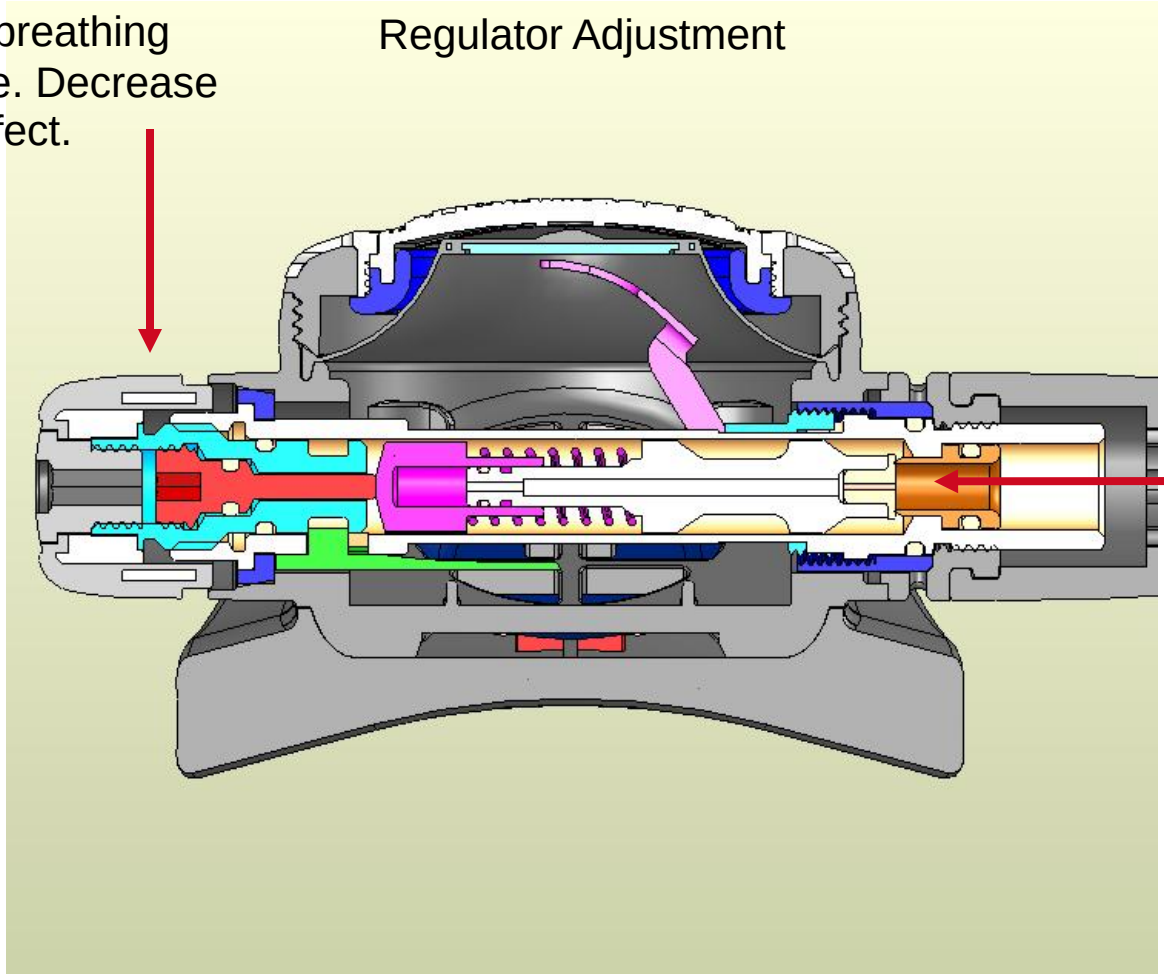
Design and Function



Design and Function

Turn knob clockwise. Increase breathing resistance. Decrease venturi effect.

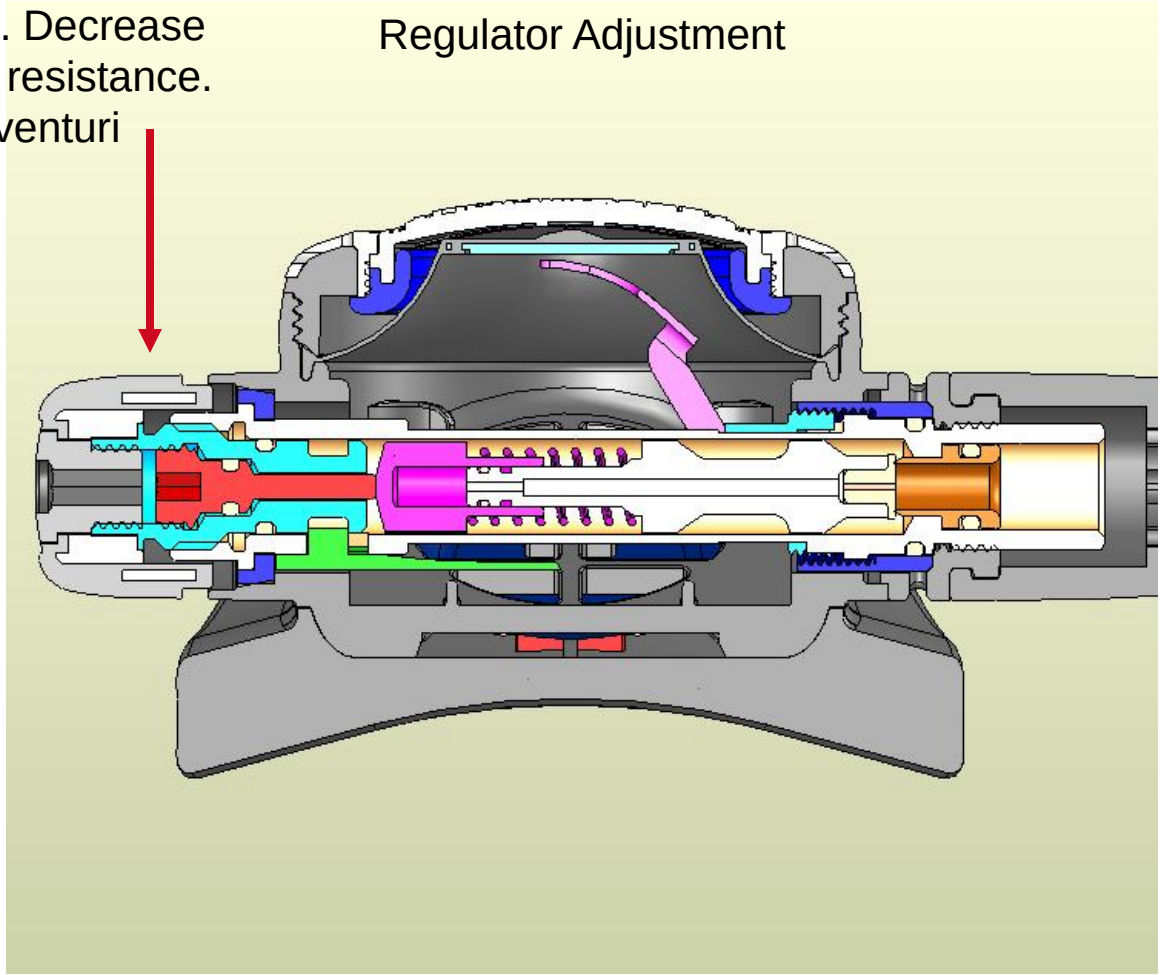
Regulator Adjustment



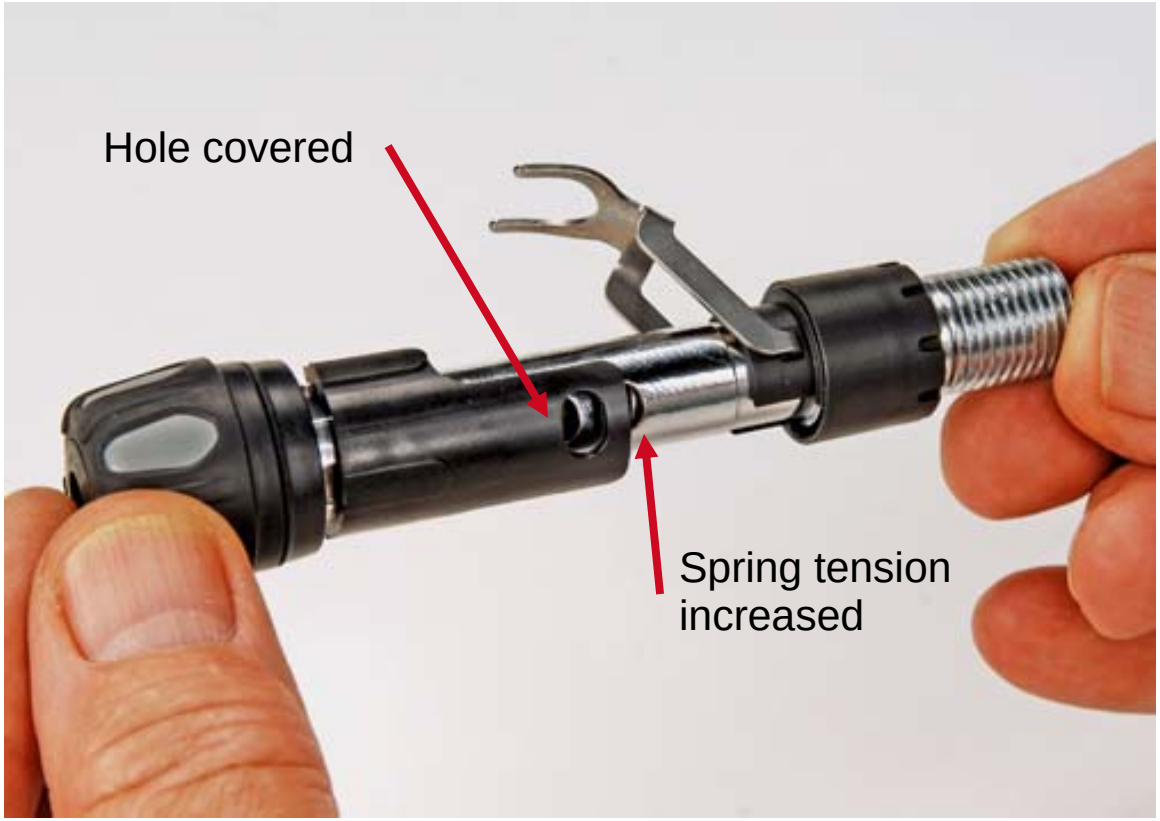
Design and Function

Turn knob counter clockwise. Decrease breathing resistance. Increase venturi effect.

Regulator Adjustment

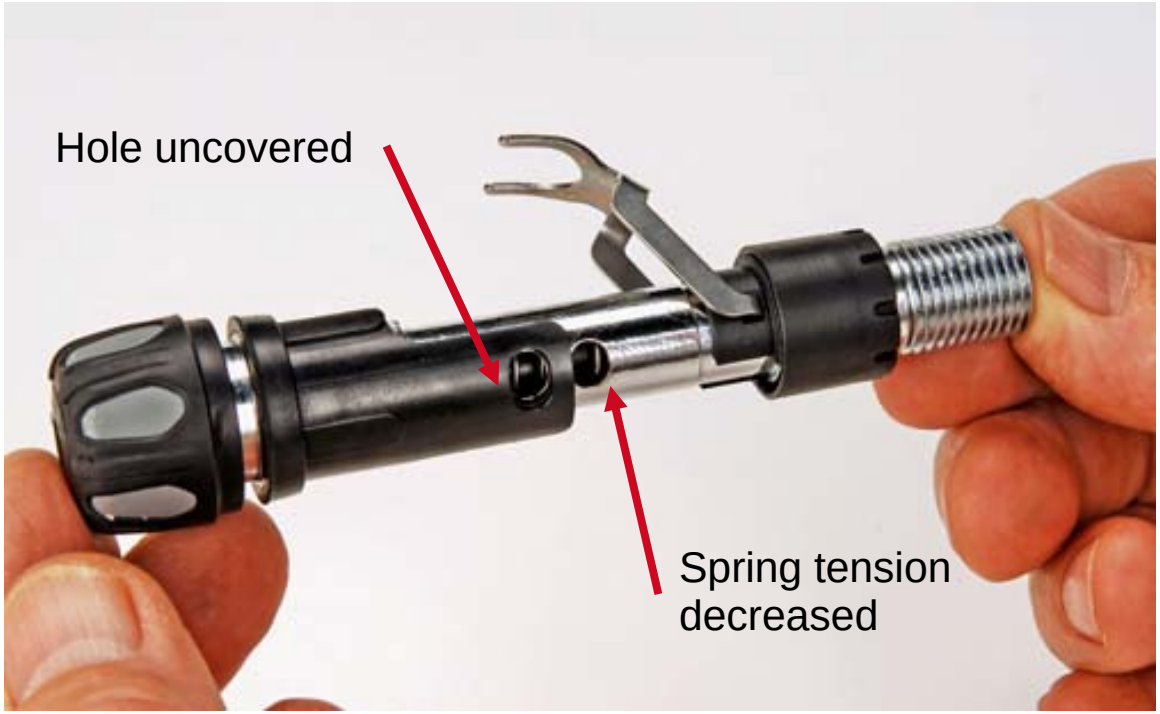


Regulator Design and Function



- Turn knob clockwise.
- Increase breathing resistance.
- Decrease venturi effect.

Regulator Design and Function

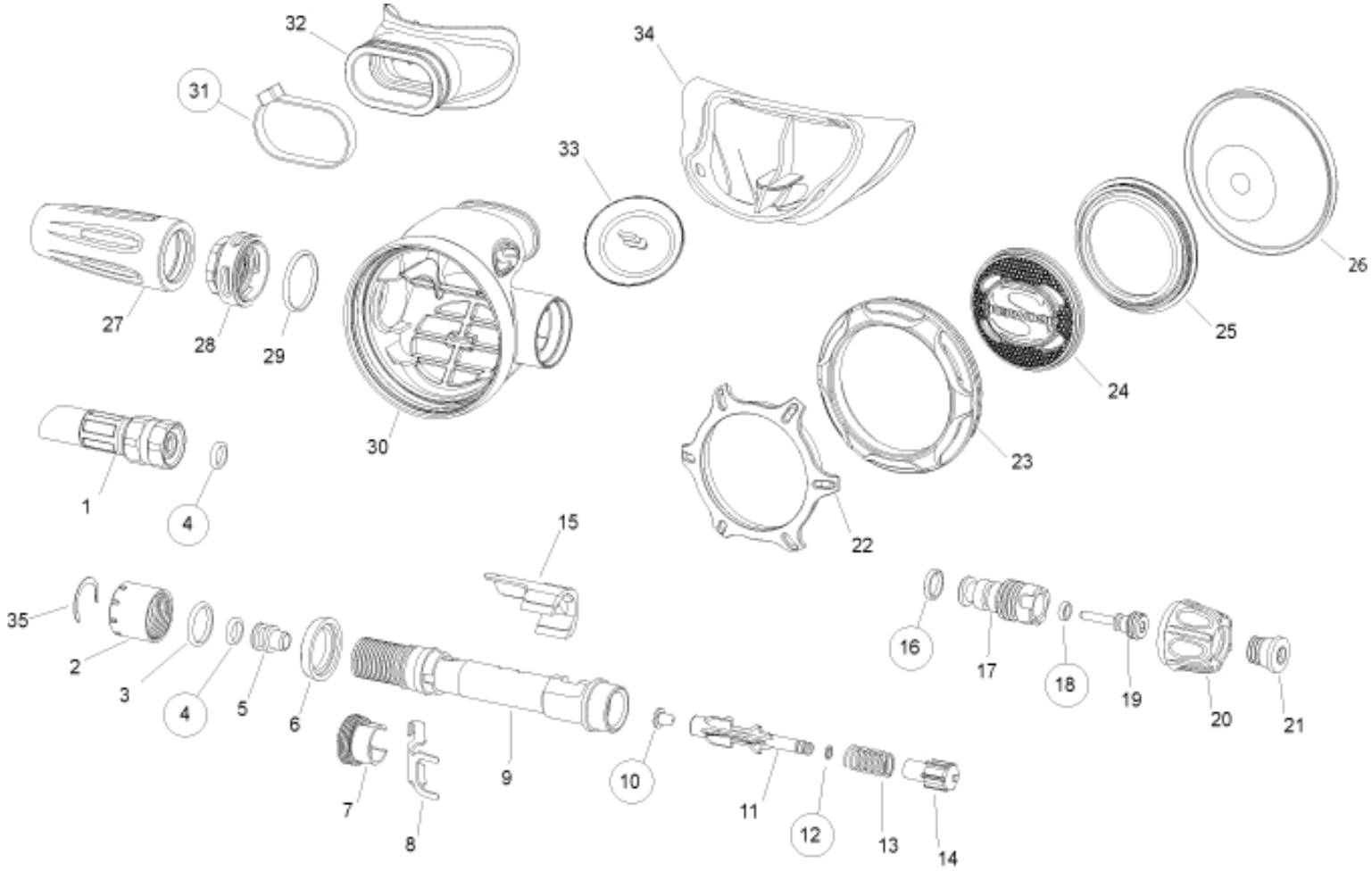


- Turn knob counter clockwise.
- Decrease breathing resistance.
- Increase venturi effect.

Disassembly Procedures

Disassembly Procedures

- Exploded view 2nd stage.



Disassembly Procedures

- Removal of hose.

  - Retract hose protector.

  - Use a 5/8” open end wrench.

Disassembly Procedures

- Removal and discard of hose swivel o-ring.

SR1
SHERWOOD SCUBA

Disassembly Procedures

- Disassembly of cover assembly.

  - Unscrew counter clockwise by hand.

Disassembly Procedures

- Note: generally it is unnecessary to disassemble the front cover assembly when performing standard service. Cleaning can be adequately accomplished by rinsing and scrubbing if necessary with a soft brush. However if damage to the cover is observed and it must be disassembled to replace parts, proceed as described.

Disassembly Procedures

- Disassembly of cover assembly.

  - Use cover retainer tool P/N 20-703-100.

  - Align tab with slots.

Disassembly Procedures

- Disassembly of cover assembly.

  - Turn cover retainer tool counter clockwise.

SR1
SHERWOOD SCUBA

Disassembly Procedures

- Separate cove retainer from cover ring.
- Separate cover and accent ring from cover ring.

Disassembly Procedures

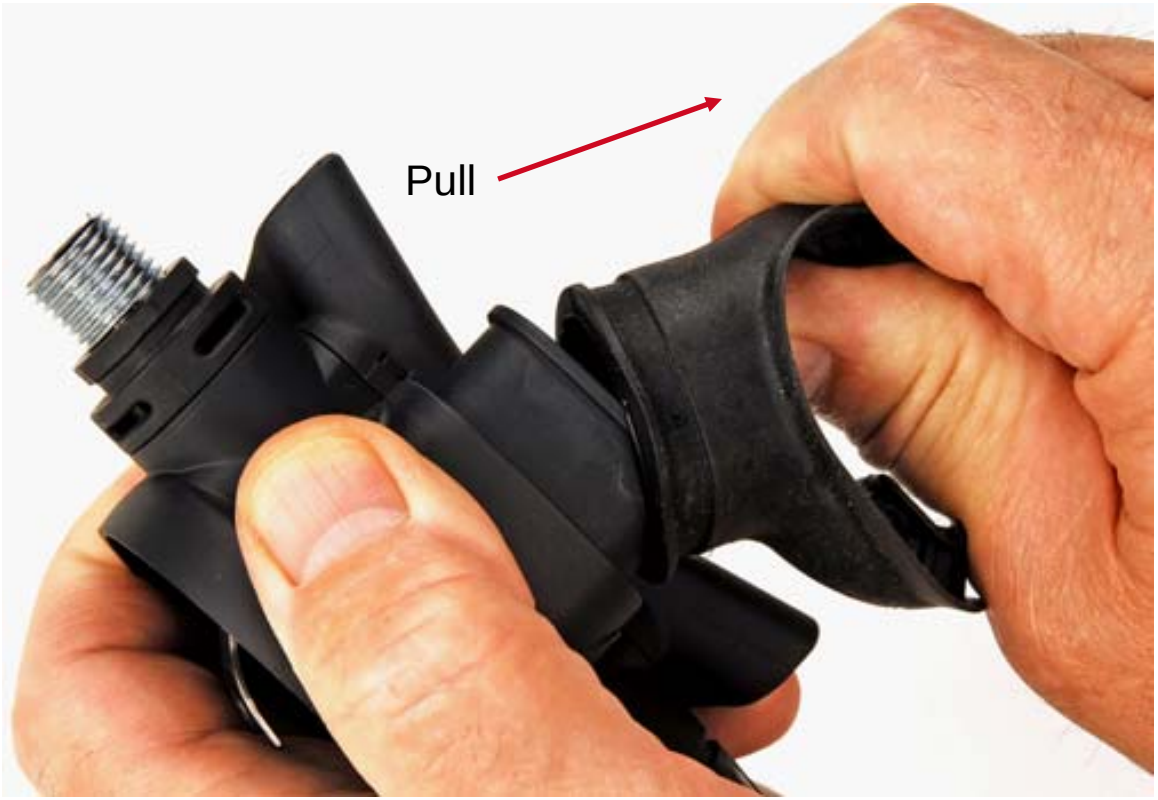
- Remove diaphragm.

Disassembly Procedures

- Remove and discard tie strap.

  - Carefully use wire pliers.

Disassembly Procedures

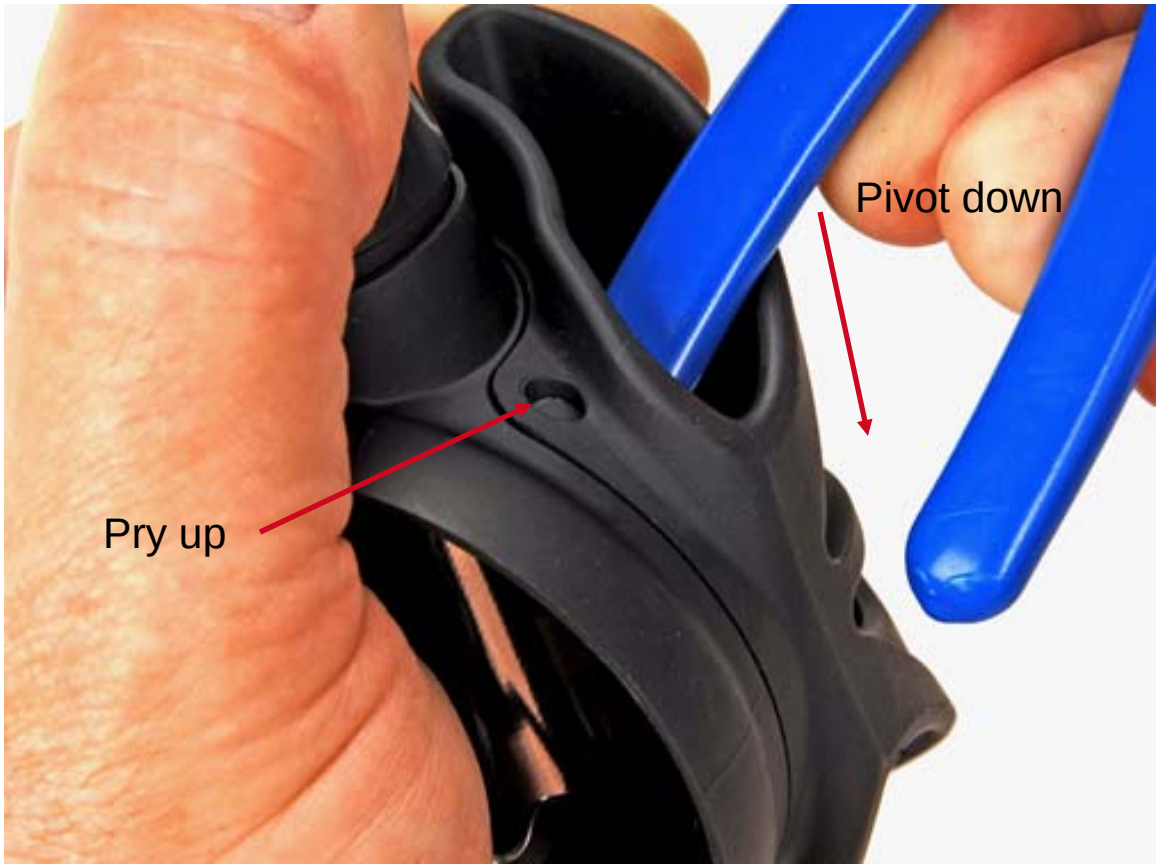


- Remove mouthpiece.

Disassembly Procedures

- Caution: Be sure to use a padded or protected tool to lift the exhaust cover from the tabs on the housing the exhaust cover and may require replacement of the part. use of an unprotected tool will damage

Disassembly Procedures



- Removal of exhaust cover.

  - Carefully insert padded bar shaped tool (snap ring pliers P/N 20-101-500).

  - Gently and carefully pry and lift edge up and away from tab on housing.

Disassembly Procedures

- Removal of exhaust cover.

  - Repeat procedure on opposite side of exhaust cover.

  - Hold first side with thumb.

Disassembly Procedures

- Removal of exhaust cover.

  - Lift up toward top of housing.

Disassembly Procedures

- Removal of retaining nut.

  - Use 3/4” box end wrench.

Disassembly Procedures

- Removal of retaining nut.

Disassembly Procedures

- Removal of clip.

  - Use small flat blade screwdriver.

Disassembly Procedures

- Removal of clip.

Disassembly Procedures

- Removal of valve body.

  - While lever is depressed.

  - Push threaded end.

Disassembly Procedures

- Removal of valve body.

  - As valve body thread pass through housing o-ring will release.

Disassembly Procedures

- Removal of valve body.

  - Set valve body aside.

Disassembly Procedures

- Removal of exhaust valve.

  - Fold in half and pull while gently pulling tab.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of adjustment nut.

  - Unthread counter clockwise.

Disassembly Procedures

- Disassembly of valve body.

  - Remove adjustment nut.

Disassembly Procedures

- Disassembly of valve body.

  - Remove o-ring.

  - Use floss tool and squeeze.

Disassembly Procedures

- Removal of o-ring.

SR1
SHERWOOD SCUBA

Disassembly Procedures

- Disassembly of valve body.

  - Removal of lever.

  - Gently pull one leg at a time.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of lever.

  - Gently pull opposite leg to release lever.

Disassembly Procedures

- Disassembly of valve body.

  - Disassembly of level saddle.

  - Push up on both sides to open diameter.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of lever saddle.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of diverter.

  - Lift and pull to separate.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of diverter.

Disassembly Procedures

- Disassembly of valve body.
  - Removal of ring seal.
  - Slide off body.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of ring seal.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of knob assembly.

  - Rotate counter clockwise.

Disassembly Procedures

- Disassembly of valve body.

  - Removal of knob assembly.

  - Set knob assembly aside.

Disassembly Procedures

- Disassembly of valve body.

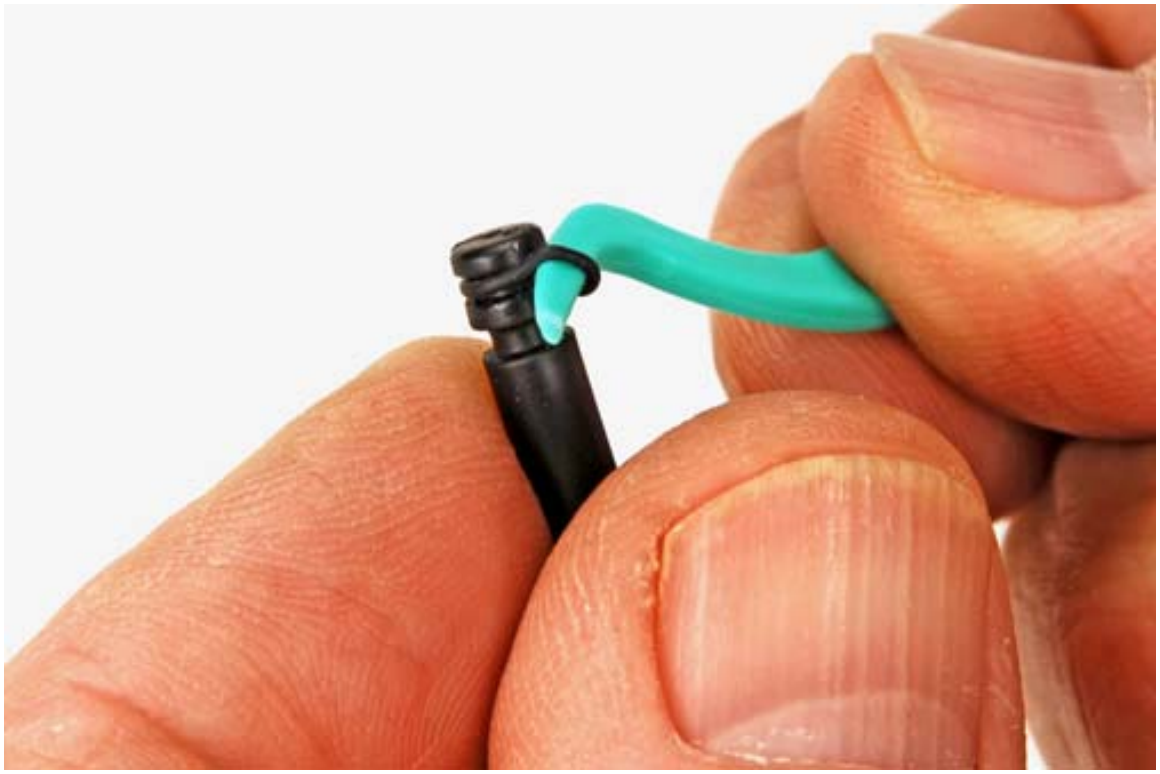
  - Dump out balance chamber, spring and poppet.

Disassembly Procedures

- Disassembly of poppet, spring and balance chamber.

  - Separate all components.

Disassembly Procedures



- Disassembly of poppet.

  - Remove and discard o-ring.

  - Use floss tool.

Disassembly Procedures

- Disassembly of poppet.

  - Remove seat from end of poppet.

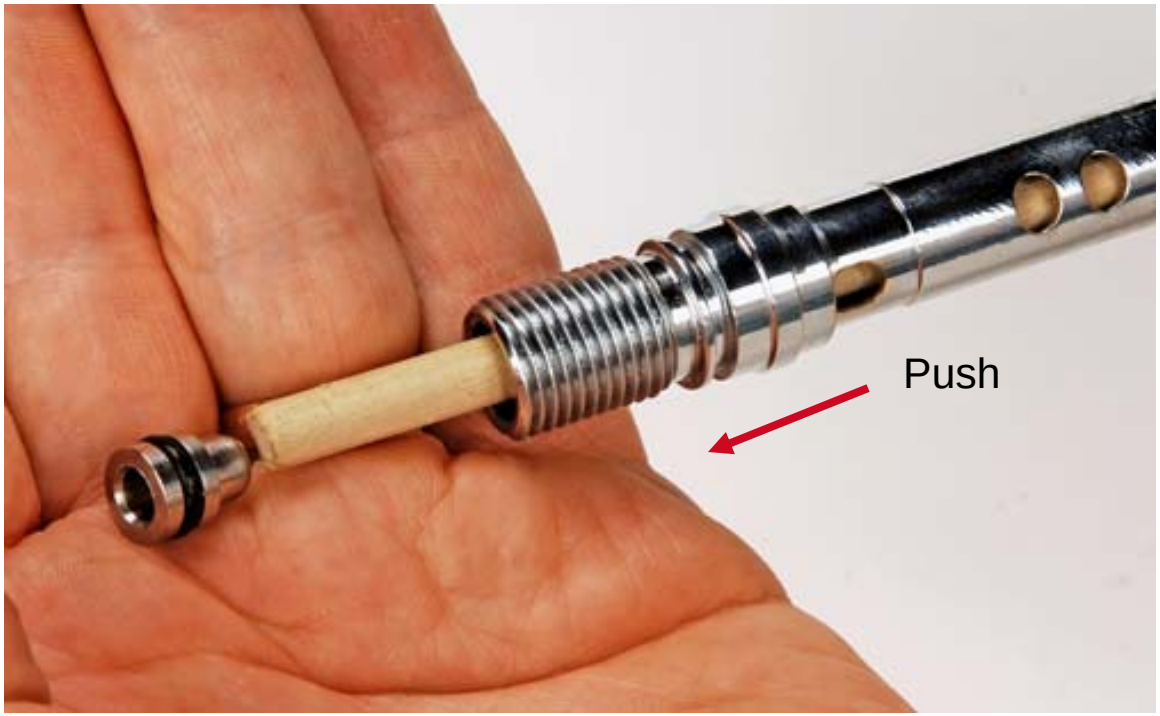
Disassembly Procedures

- Disassembly of poppet.
  - Discard used seat.

Disassembly Procedures

- Disassembly of valve body assembly.
  - Removal of orifice.
  - Use 1/4” wooden dowel.
  - Push orifice out.

Disassembly Procedures



- Disassembly of valve assembly.

  - Removal of orifice.

Disassembly Procedures

- Disassembly of orifice.

  - Removal and discard o-ring.

Disassembly Procedures

- Disassembly of knob assembly.

  - Remove o-ring.

Disassembly Procedures

- Disassembly of knob assembly.

  - Discard used o-ring.

Disassembly Procedures

- Disassembly of knob assembly.

  - Removal of knob retainer.

  - Use 5/32” hex key.

Disassembly Procedures

- Disassembly of knob assembly.

  - Removal of knob.

  - Pull knob off adjustment body.

Disassembly Procedures

- Disassembly of adjustment body.

  - Use 1/8” hex key remove adjustment stem.

Disassembly Procedures

- Disassembly of adjustment body.

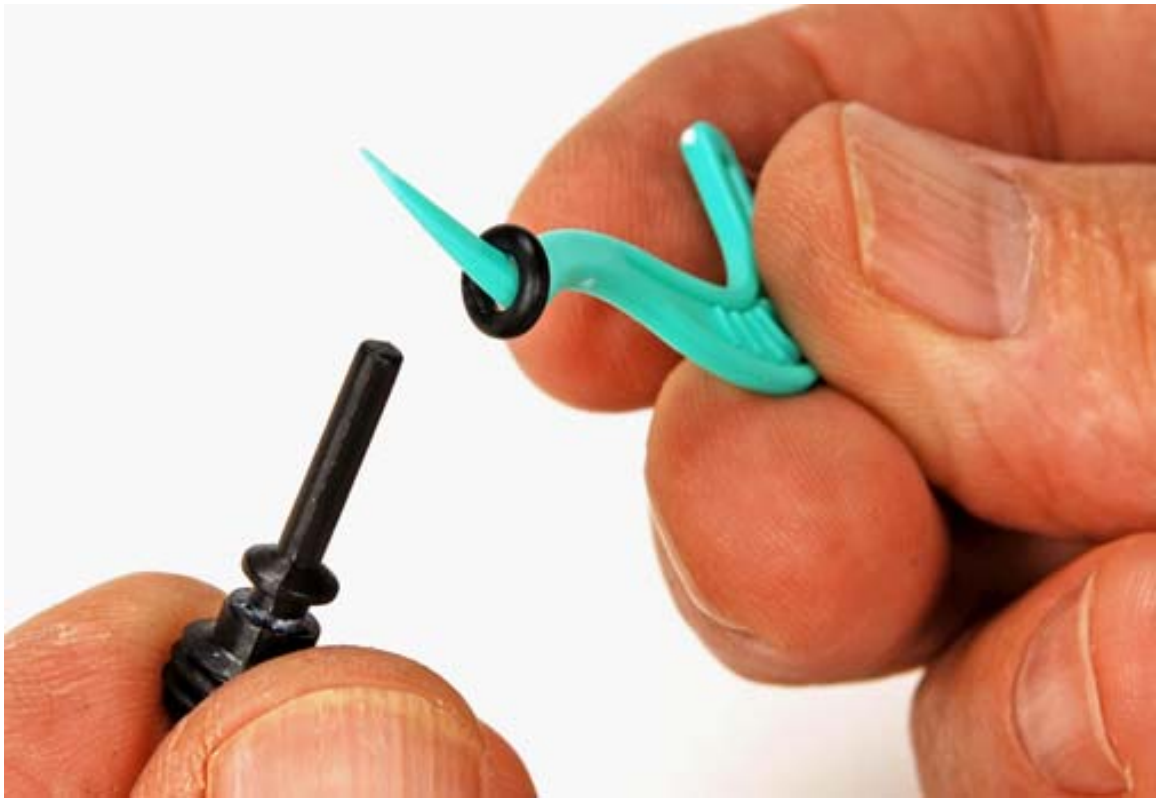
  - Back out adjustment stem until released from body.

Disassembly Procedures

- Disassembly of adjustment stem.

  - Remove o-ring.

Disassembly Procedures



- Disassembly of adjustment stem.

  - Discard used o-ring.

Cleaning Procedures

Cleaning Procedures

- Thermoplastic, silicone rubber, rubber and anodized aluminum parts. i.e. diaphragms, adj. knobs static o-rings 2nd stage housing.

  A. Soak - warm water and liquid dish detergent.

  B. Scrub - with soft nylon brush.

  C. Rinse - fresh water.

  D. Blow Dry - clean L.P. air.

Cleaning Procedures

- Chrome plated brass, stainless steel part and hoses.

  A. Degrease - warm water and liquid detergent.

  B. Rinse - fresh water.

  C. Soak - vinegar and water solution (50% water) for 30 minutes.

  D. Rinse - fresh water.

  E. Rinse - distilled water.

  F. Blow Dry - clean L.P. air.

Cleaning Procedures

- Cleaning procedures warm soapy water nylon brush.

Inspection Procedures

Inspection Procedures

- All reusable chrome plated brass and stainless steel parts.

Sealing Surfaces -

A. Scratches

B. Nicks

C. Cuts

D. Deformation

E. Debris

Sealing Surfaces -

A. Damage to threads

Inspection Procedures

- Inspection procedures
  - Use magnifier.

Lubrication Procedures

Lubrication Procedures

- O-ring lubrication
- Use only Christo-Lube 111.

A. General - o-rings in most instances should receive only enough lubrication to ensure they are supple. A light coating of lubrication should present a surface that glistens but without a defined layer of lubrication visible.

B. Ample - when an ample application of lubricant is specified. It generally applies to a dynamic o-ring subject to considerable motion or environmental conditions where a more generous application of lubricant might be beneficial. In this situation there should be a light film or layer of lubricant visible.

Lubrication Procedures

- Lubricating procedures.

  - Use only Christo-Lube P/N MCG-111.

Lubrication Procedures

- General (left) Ample (right).

Service Kit

SR1
SHERWOOD SCUBA

SR1 Service Kit

P/N 1000-PK

Kit includes:

972016	O-ring	980111	O-ring
1105-33	Filter	970010 (2)	O-ring
1105-16	HP seat	7206-1	Tie strap
980013	O-ring	7206-98N	Seat
98009	O-ring	970410	O-ring
105009	Backup ring	972005	O-ring
970008	O-ring	972010	O-ring
980020	O-ring		

Reassembly Procedures

Reassembly Procedures

- Install new amply lubricated o-ring on orifice.

Reassembly Procedures

- Insert orifice seating surface end first into threaded end of valve body.

Reassembly Procedures

- Installation of orifice in valve body using 1/4” wooden dowel.

  - Push orifice in valve body until it stops.

Reassembly Procedures

- Install ring seal taper side last over threaded end of valve body.

Reassembly Procedures

- Installation of ring seal.

  - Continue to slide ring seal along valve body until up against shoulder of valve body.

  - Taper surface smallest diameter.

Reassembly Procedures

- Install level saddle.

  - Align tab of saddle with notch in valve body.

Reassembly Procedures

- Installation of lever saddle.

  - Inspect - tab and notch aligned.

  - Threads of saddle against shoulder of valve body.

Reassembly Procedures

- Install lever one leg at a time.

  - Insert leg in hole in saddle.

Reassembly Procedures

- Installation of lever.

  - Inspect - both legs inserted in saddle/body holes.

Reassembly Procedures

- Install amply lubricated o-ring on thread end of valve body.

Reassembly Procedures

- Installation of o-ring on valve body.

  - Inspect - fully seated in groove.

Reassembly Procedures

- Additional lubricant is required in this application to minimize friction allowing the adjustment sleeve to move easily during adjustment procedures.

Reassembly Procedures

- Install adjustment sleeve thread in place over lever saddle notched end of sleeve facing away from lever.

Reassembly Procedures

- Installation of adjustment sleeve.

  - Continue to thread over lever saddle until only one thread is visible on lever saddle.

Reassembly Procedures

- Install new lubricated o-ring on stem.

Reassembly Procedures

- Installation of o-ring on stem.

  - Inspect - fully seated in groove.

Reassembly Procedures

- Install stem in adjustment body.
  - Use 1/8” hex key.

Reassembly Procedures

- installation of stem in adjustment body.

  - Thread until stem end is sticking out of body.

Reassembly Procedures

- Install new lubricated o-ring on adjustment body.

Reassembly Procedures

- Installation of o-ring on adjustment body.

  - Inspect - fully seated in groove.

Reassembly Procedures

- Install new seat in end of poppet.

Reassembly Procedures

- Installation of seat in poppet.

  - Inspect - properly seated.

Reassembly Procedures

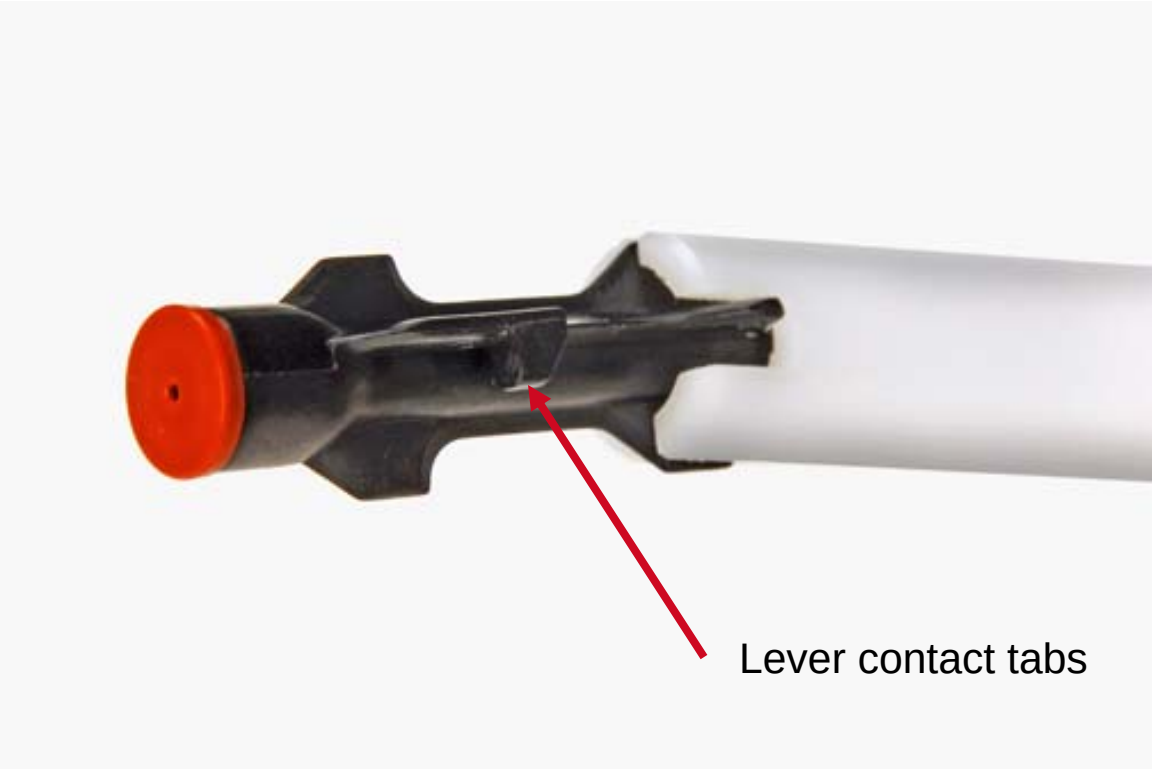
- Install new amply lubricated o-ring on poppet.

Reassembly Procedures

- installation of o-ring on poppet.

  - Inspect - fully seated in groove.

Reassembly Procedures

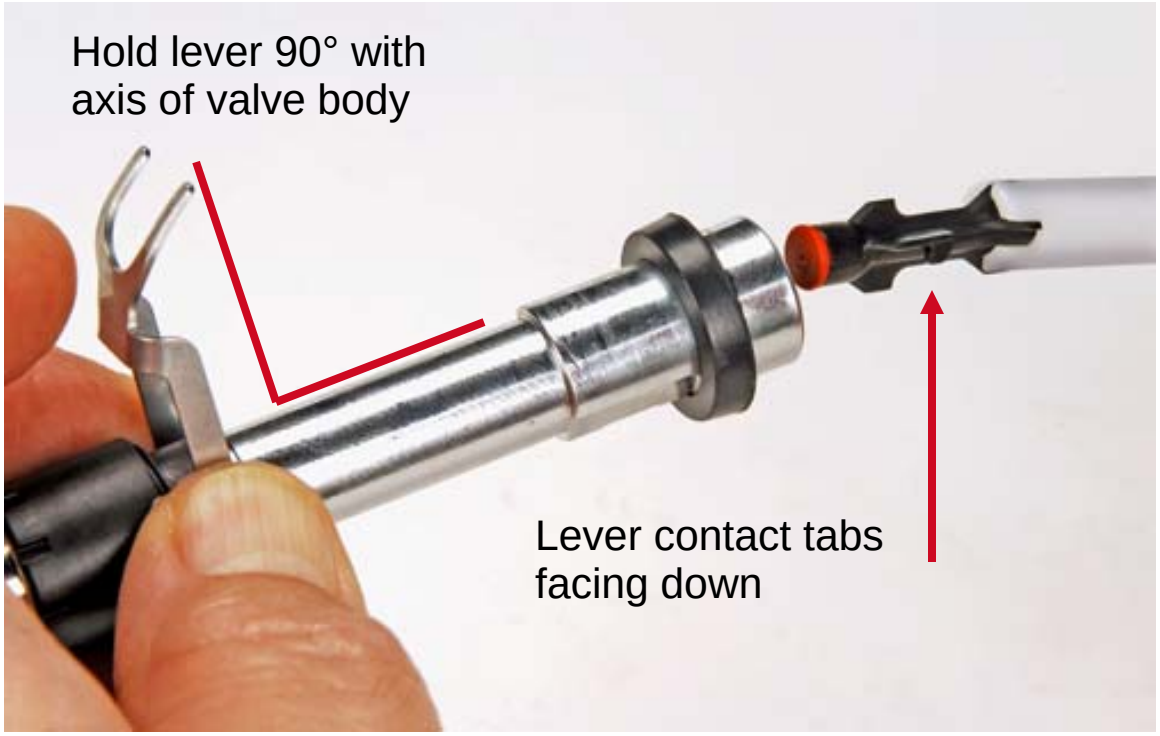


- Installation of poppet assembly in valve body.

  - Mount poppet in end of poppet installation tool P/N 20-706-100.

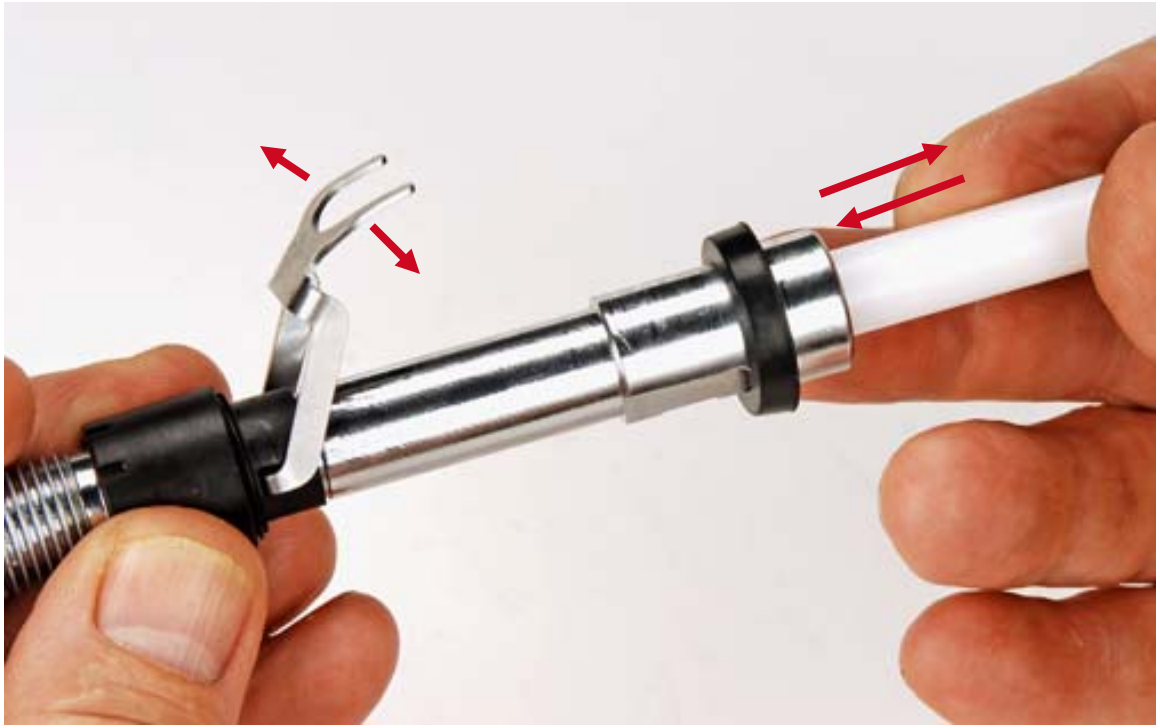
  - Note-position of lever contact tabs must be facing down.

Reassembly Procedures



- Installation of poppet assembly in valve body.

Reassembly Procedures



- Installation of poppet assembly in valve body.

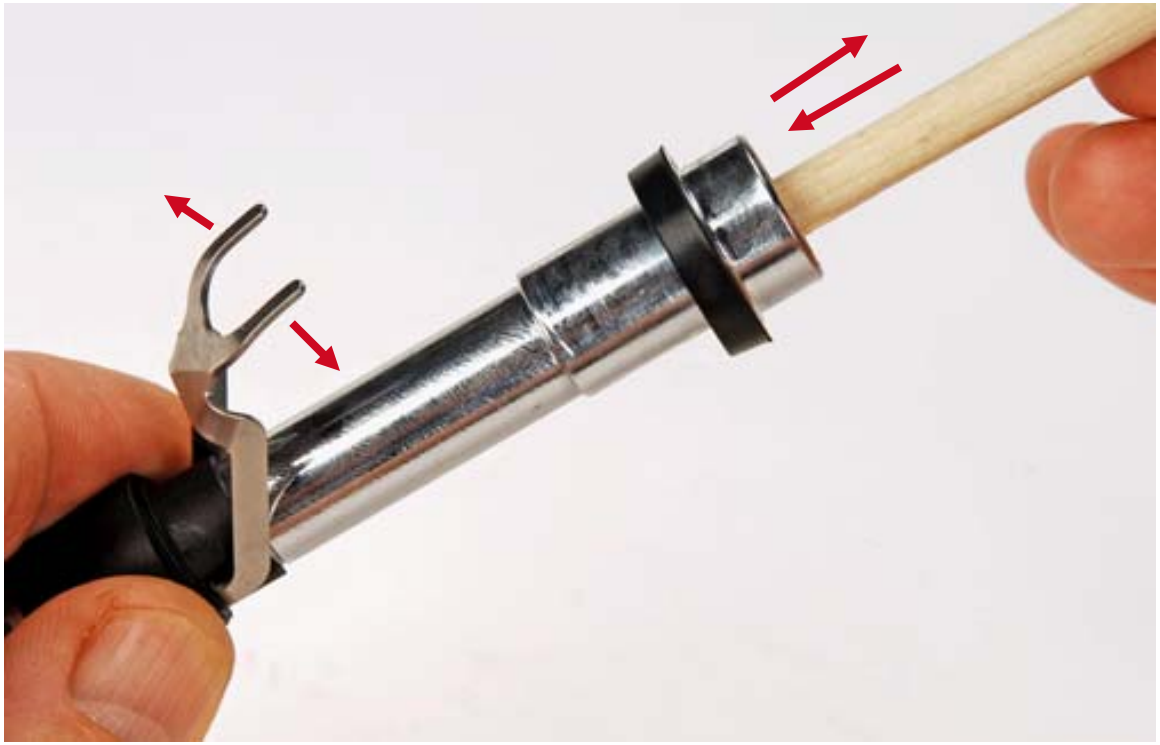
  - Continue to insert poppet installation tool until poppet contacts lever.

  - Lightly push on tool lever should move up and down.

Reassembly Procedures

- Install spring in valve body.

Reassembly Procedures

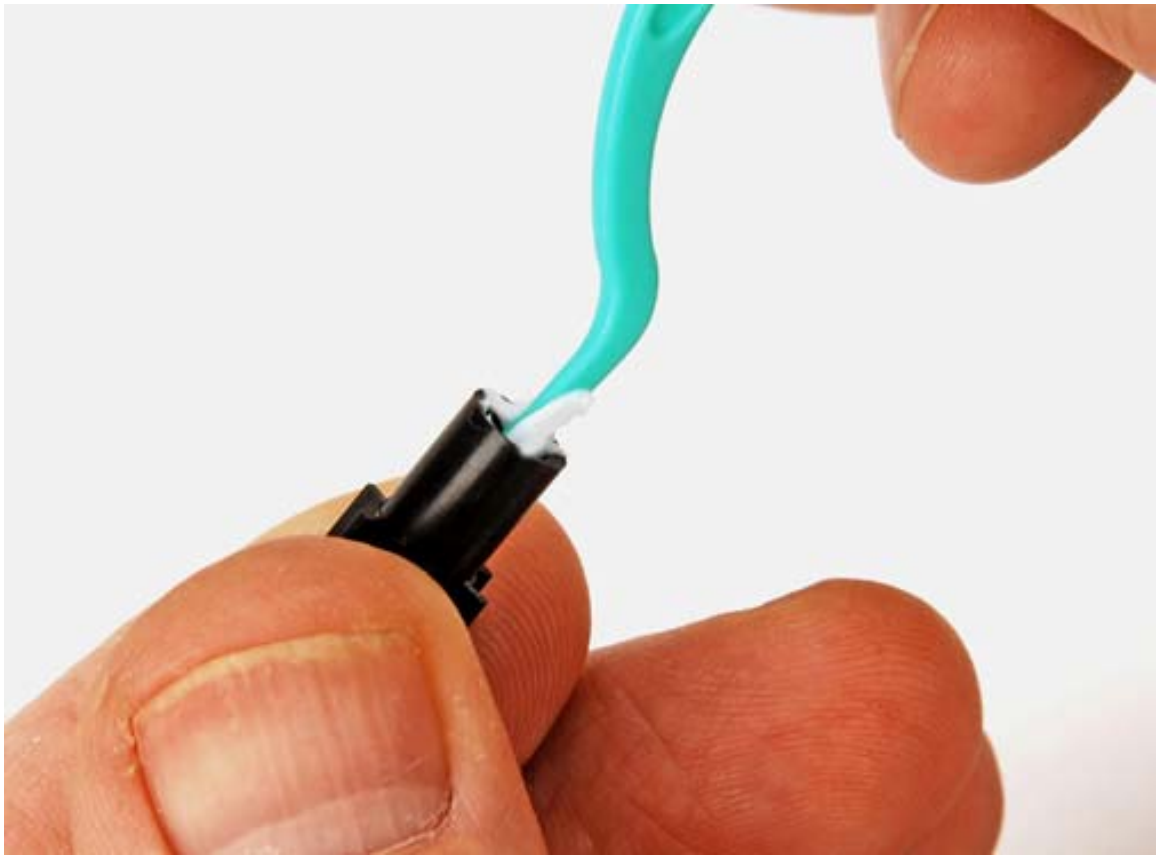


- Installation of spring in valve body.

  - Inspect - use 1/4” wooden dowel.

  - Lever still moves up and down.

Reassembly Procedures



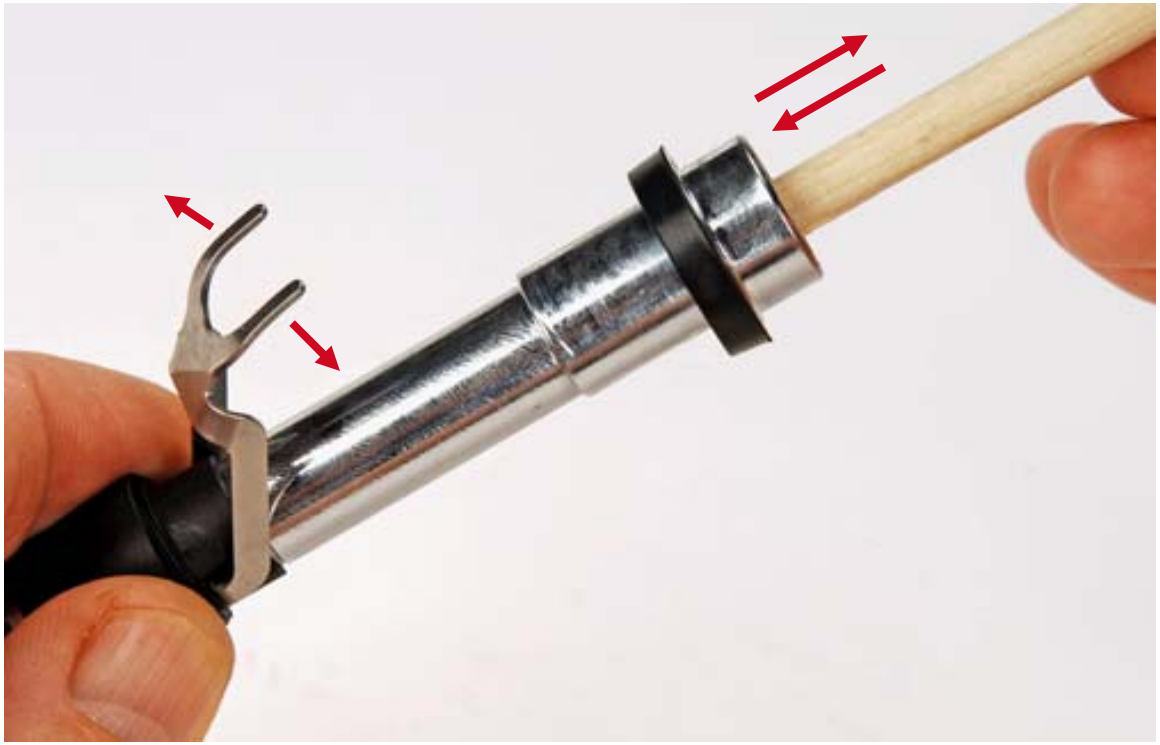
- Installation of balance chamber.

  - Place lubricant in open end of balance chamber.

Reassembly Procedures

- Install balance chamber in valve body.

Reassembly Procedures



- Installation of balance chamber in valve body.

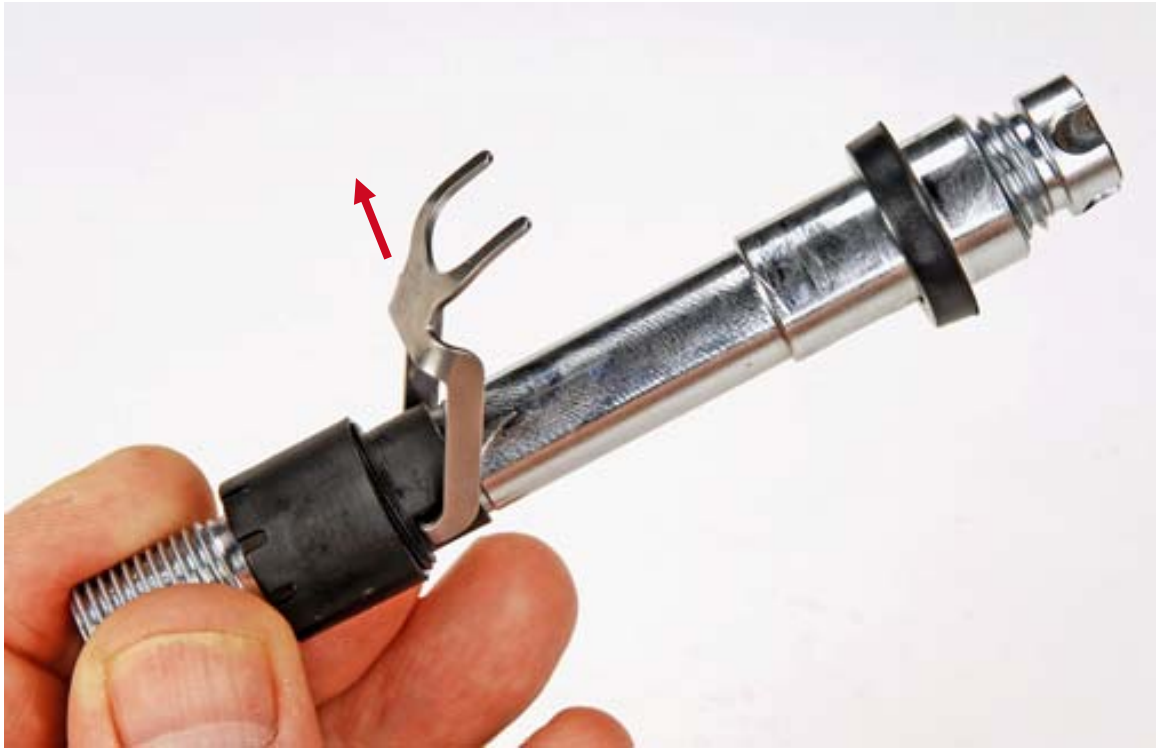
  - Inspect - use 1/4” wooden dowel push dowel lightly to versify lever action.

Reassembly Procedures

- Install adjustment body.

  - Thread clockwise just until thread engage.

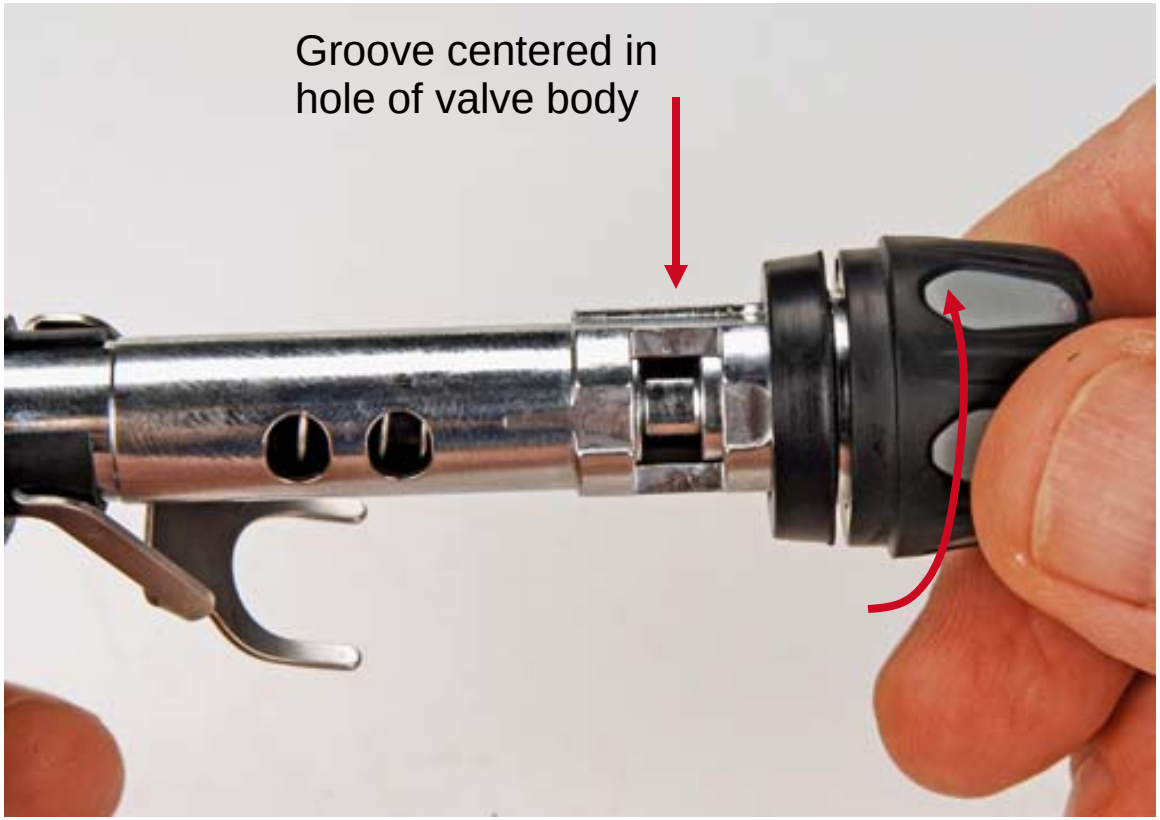
Reassembly Procedures



- Installation of adjustment body in valve body assembly.

  - When threads engage lever should move up.

Reassembly Procedures



- Installation of adjustment body in valve body assembly.

  - Use know to continue threading adjustment body just until the groove in adjustment body is centered in the hold of the valve body.

Reassembly Procedures

- Installation of adjustment body in valve body.

  - Remove knob and set aside for later installation.

Reassembly Procedures

- Install diverter on valve body.

  - Align rectangular tab in diverter with centered groove of adjustment body in valve body assembly.

Reassembly Procedures

- Installation of diverter on valve body.

Reassembly Procedures

- Install knob on valve body.

Reassembly Procedures

- Installation of knob retainer.

  - Secure knob to valve body by threading knob retainer in end of knob.

  - Use 5/32” hex key.

Reassembly Procedures

- Installation of knob retainer using 5/32” hex key.
  - Snug finger tight.
  - Set valve body aside.

Reassembly Procedures

- Install exhaust valve.

  - Insert valve tab in housing.

Reassembly Procedures

- Installation of exhaust valve.

  - Fold in half and pull tab through hole in housing.

Reassembly Procedures

- Install valve body in housing.

  - Depress lever.

Reassembly Procedures

- Installation of valve body in housing.

- Continue to depress lever until it passes into the housing.

Reassembly Procedures

- Installation of valve body in housing.

  - Once valve body is completely inserted in housing lever can be released.

Reassembly Procedures

- Installation of valve body in housing.

- Inspect - notched area of adjustment sleeve visable.

Reassembly Procedures

- Install lubricated o-ring over adjustment sleeve.

Reassembly Procedures

- Install clip on valve body.

Reassembly Procedures

- Install retaining nut.

Reassembly Procedures

- Installation of retaining nut.

  - Thread nut clockwise first by hand.

Reassembly Procedures

- Installation of retaining nut.

  - Snug with 3/4” box end wrench.

Reassembly Procedures

- Install exhaust cover.

  - Align slots on top of cover with tabs on shoulder of housing.

Reassembly Procedures

- Installation of exhaust cover.

  - Snap bottom slots of cover over bottom tab on housing.

Reassembly Procedures

- Install new lubricated o-ring on hose swivel.

Reassembly Procedures

- Thread hose swivel end to valve body first clockwise by hand.

Reassembly Procedures

- Installation of hose.

  - Torque hose to 40” lbs using a 5/8” crows foot and torque wrench.

SR1
SHERWOOD SCUBA

Second Stage Regulator Testing Procedures

Second Stage Regulator Testing Procedures

- 1. Attach partially assembled second stage to a properly functioning first stage regulator with an intermediate pressure set at 135 ±10 PSI.
- 2. Rotate the adjustment knob to the full counter clockwise position.
- 3. Pressurize the regulator to 2500 ±500 PSI.
- 4. Check for leaks.
  - Note: If air leaks by the poppet the orifice may not be in the correct position. It should automatically move to the proper position when the regulator is pressurized. Turn off the supply pressure and then quickly reopen the supply pressure valve to apply a purge of pressure to the second stage. This should properly position the orifice.
- 5. Insert small probe through one of the slots in the retainer nut to engage one of the linear slots in the adjustment sleeve.

Second Stage Regulator Testing Procedures

- 6. Rotate adjustment sleeve counter clockwise with the probe until a slight leak is detected.
- 7. Next, rotate the adjustment sleeve clockwise with the probe until the leak just stops.
- 8. From this position, rotate the adjustment sleeve clockwise through an arc equal in length to one of the slots in the retaining nut.

Second Stage Adjustment Procedures

- Insert a small probe in the slot of retaining nut to engage one of the linear slots in adjustment sleeve.
- Rotate sleeve counter clockwise to create slight leak.

Second Stage Adjustment Procedures

- Next, turn adjustment sleeve clockwise to just stop leak.
- Then, continue to turn clockwise in an arc equal in length to one slot in retaining nut.

Second Stage Regulator Fine Adjustment Procedures

- 1. Knob still fully rotated counter clockwise.
- 2. Use 1/8” hex key.
- 3. Rotate adjustment stem counter clockwise with 1/8” hex key to create a leak.
- 4. Rotate adjustment stem clockwise to stop leak.

  - Note: This procedure establishes the optimal adjustment of the second stage opening effort. If initial rotation in counter clockwise direction does not result in air leakage, the spring already provides sufficient force and the clockwise rotation of the hex key is not necessary.

Second Stage Regulator Fine Adjustment Procedures

- Rotate adjustment stem counter clockwise to create slight leak then turn clockwise to stop leak.

  - Use 1/8” hex key.

Second Stage Regulator Fine Adjustment Procedures

- Install diaphragm.

Second Stage Regulator Fine Adjustment Procedures

- Install cover assembly on housing.

  - Thread clockwise to align logo.

Second Stage Regulator Fine Adjustment Procedures

- Note: If installation of cover assembly causes the second stage to leak the lever height may be slightly out of adjustment. Repeat steps that cover adjustment of the adjustment sleeve. Do these steps with the cover in place.
- Purge test-rotate the knob fully clockwise. Press the purge cover to check the purge function. There should be a strong flow of air, if not the lever is not positioned properly. Repeat steps that cover adjustment of adjustment sleeve.

Second Stage Regulator Fine Adjustment Procedures

- Install mouth piece.

Second Stage Regulator Fine Adjustment Procedures

- Install tie strap.

  - Use tie strap pliers or needle nose pliers.

  - Trim excess strap.

Test Bench Specifications

- I.P. 135 ±10 PSI. Control knob turned fully counter clockwise.
- O.E. no greater than 1.5” water.
- Less than 4.0” water at 15 SCFM.

Trouble Shooting

PROBLEM	CAUSE	REMEDY
1. Second stage leaks when pressurized.	1. a. Orifice not seated on poppet seat. b. Orifice or orifice o-ring dirty, damaged or worn. c. Poppet seat or o-ring dirty, damaged or worn. d. Lever set too high. e. Intermediate pressure too high.	1. a. Turn air off and back on quickly. b. Clean or replace orifice or orifice o-ring. c. Clean or replace poppet seat or poppet o-ring. d. Adjust lever with adjustment sleeve. e. Refer to first stage regulator trouble shooting guide.
2. Hard to breath.	2. Lever set too low.	2. Adjust lever with adjustment sleeve.
3. Low purge flow.	3. Lever set too low.	3. Adjust lever with adjustment sleeve.

Note: see service manual for more complete list of troubleshooting.

Reassembly of Cover Assembly

Reassembly of Cover Assembly

- Alignment of cover ring.

Reassembly of Cover Assembly

- Install accent ring on cover ring.

Reassembly of Cover Assembly

- Place cover retainer in soapy water.

  - Makes reassembly easier.

Reassembly of Cover Assembly

- Place cover in soapy water.

  - Makes reassembly easier.

Reassembly of Cover Assembly

Reassembly of Cover Assembly

- Use cover retainer tool P/N 20-703-100.
- Align tabs on retainer tool with slots in cover retainer.

Reassembly of Cover Assembly

- Thread cover retainer with retainer tool into cover ring.

Reassembly of Cover Assembly

- Hand tight snug.

This Concludes the Servicing and Testing of the SR1 Second Stage Regulator