

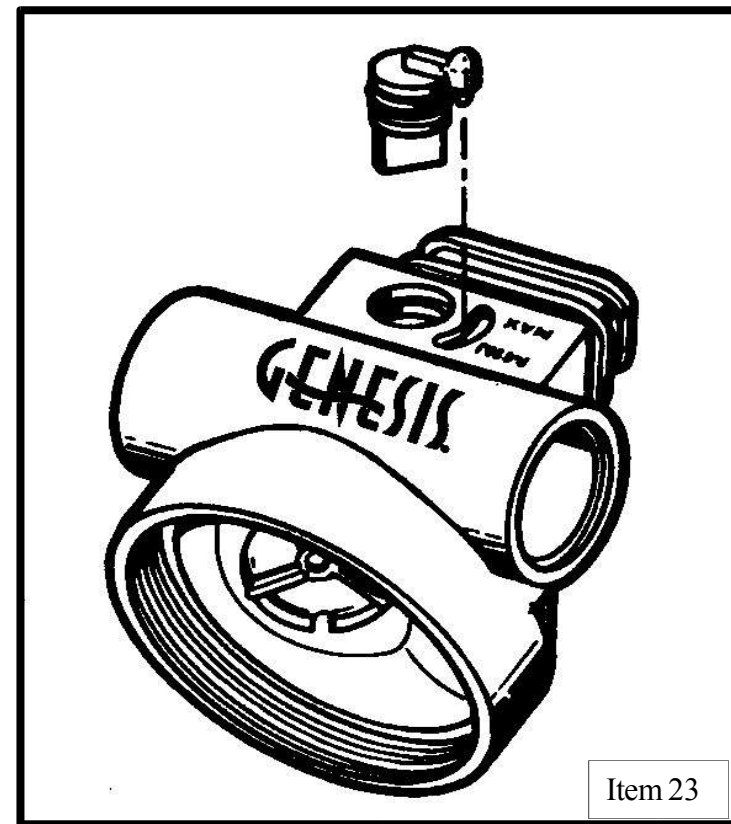
Genesis Valor 2nd Stage Regulator

Assembly



Assembly

- 1) Lubricate the o-ring (item 22) and install it in the o-ring groove in the vane adjustment switch (item 21)
- 2) Install the vane adjustment switch (item 21) into the hole on the top of the mouth tube of the case (item 23).

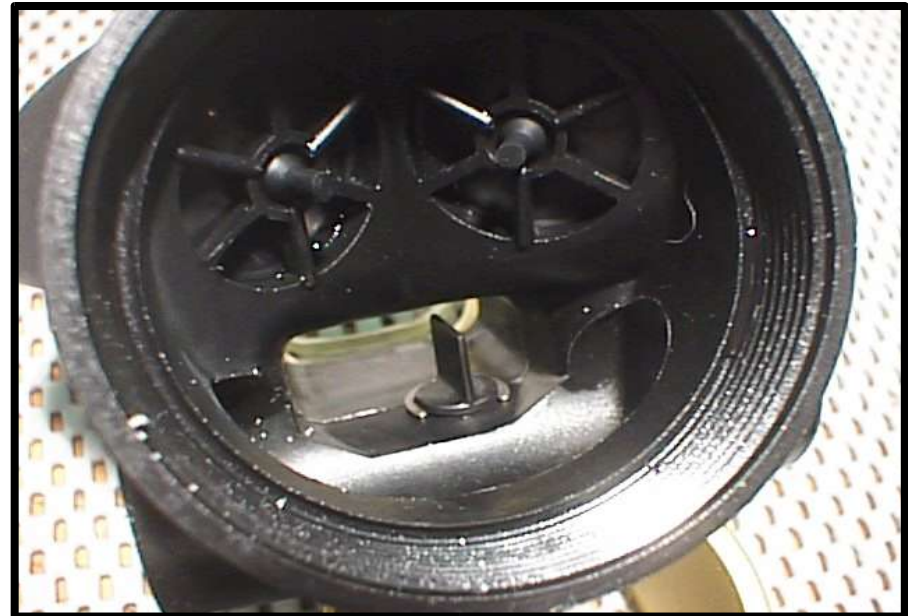


Assembly

3) Place the c-clip (item 18) with the flat side up, rounded side toward the case, into the groove below the vane. Using the c-clip tool, push on the c-clip until it snaps in place. Make sure the c-clip is fully seated in the groove.



Item 18



Assembly

4) Install a new LP seat into the poppet and set aside

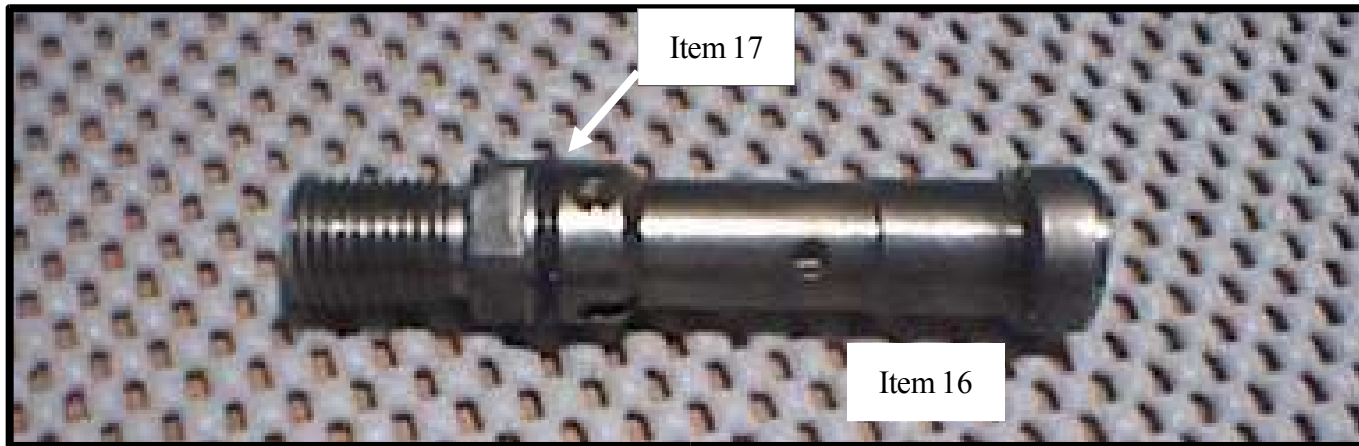


5) Lightly lubricate the orifice o-ring (item 26) and install it into the groove in the orifice (item 25).



Assembly

- 6) Lightly lubricate o-ring (item 17) and install into the groove on the valve body



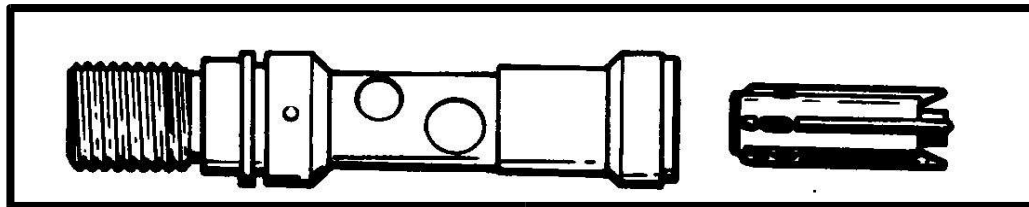
Assembly

- 7) Push the orifice (item 25) into the valve body with your finger tip, and then press it in with the blunt end of the seat extractor tool. Do not thread the orifice in place at this time



Assembly

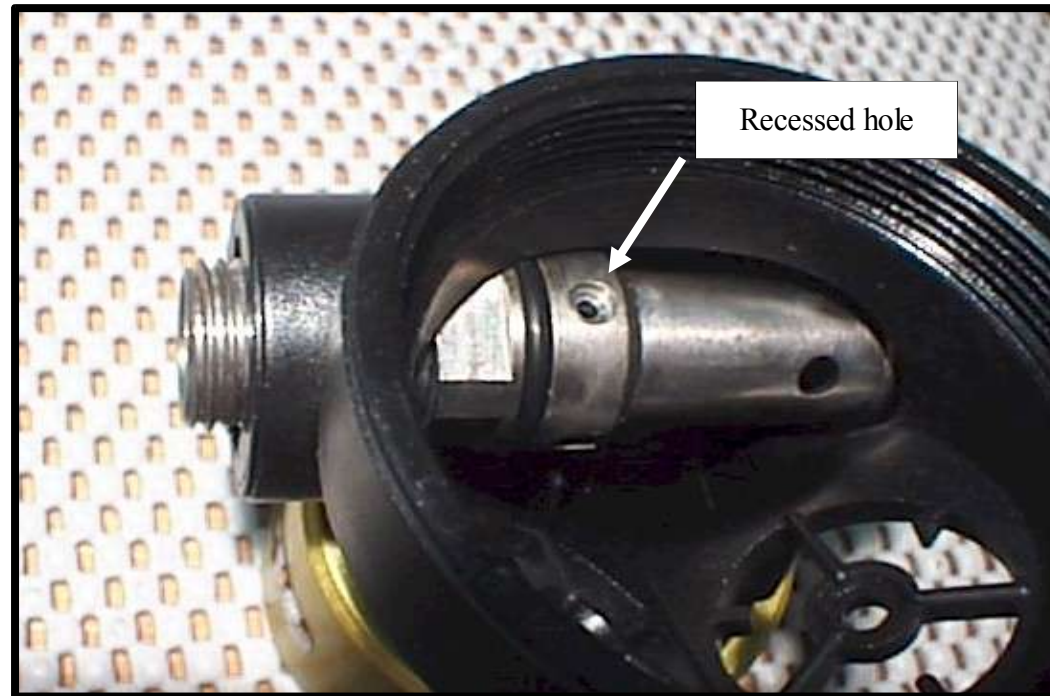
- 8) Hold the valve body (item 16) with the two large holes in the side facing up. Hold the poppet assembly (item 14) such that the rib with the hole in it is facing up. Slide the poppet into the valve body, seat end first.



Assembly

Installing the lever:

- 9) Rotate the valve body so that the recessed hole for the pin is facing up. Hold the case with the diaphragm opening up, and slide the valve body, male threaded end first, into the case until two male threads on the valve body are showing on the outside of the case.



Assembly

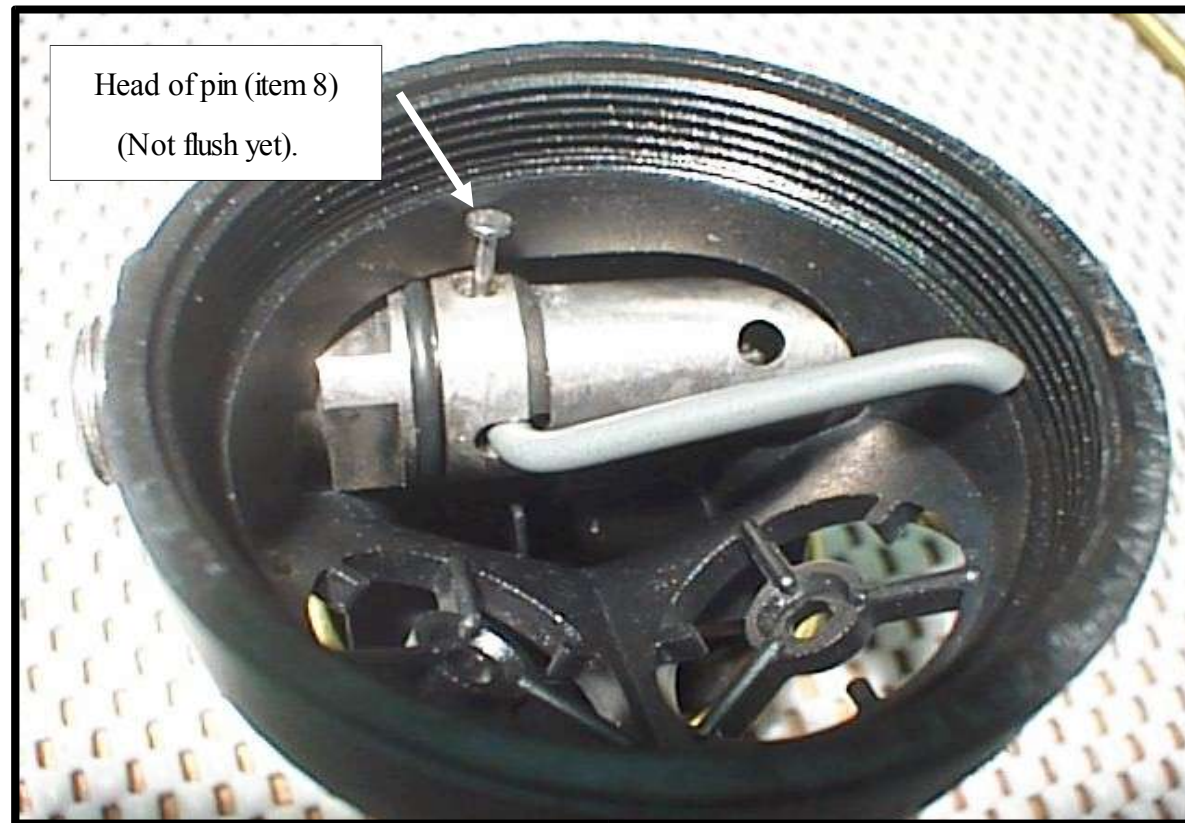
10) Insert the notched end of the lever (item 5) into the valve body with the lever up, and the flat of the notch toward the male threaded end.



✓ If necessary, use the seat extractor tool to help align the hole in the poppet with the hole in valve body.

Assembly

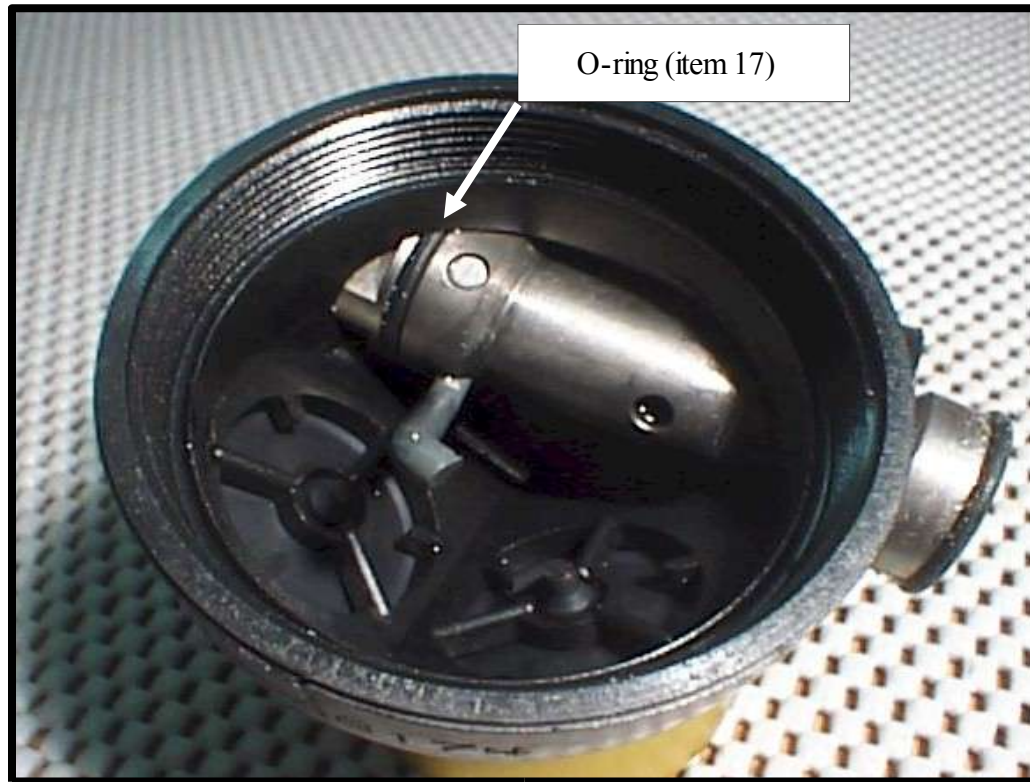
- 11) Hold the pin (item 8) by its head, and insert it into the hole until the head is flush with the valve body. Gently tug on the lever to ensure that it is locked in place.



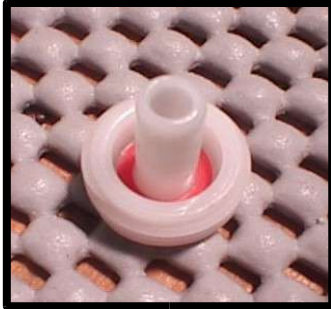
Assembly

12) Push the valve body the rest of the way into the case. The o-ring (item 17) may need to be compressed as the valve body is seated. To do this, gently push down on the o-ring with a flat screwdriver blade as you slide the valve body into place.

✓ The valve body has four flats on the threaded end that must be aligned properly in the case. To achieve proper orientation, ensure the large air supply holes are facing downward, toward the mouth tube, and the pin head is facing up.



Assembly



13) Place the the small red plastic washer (item 10) onto the stem of the plastic adjusting screw (item 11).

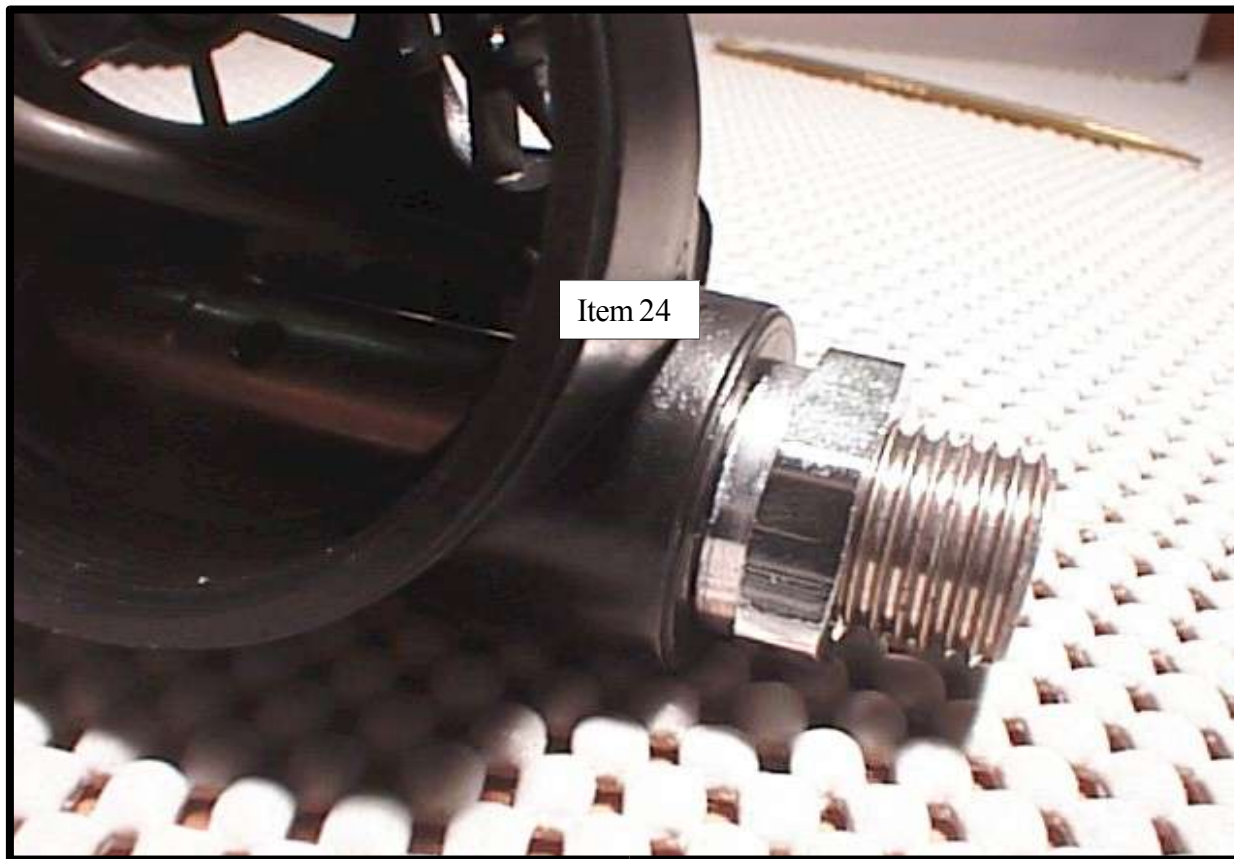
**14) Insert the spring (item 9) into the valve body.
Make sure the spring seats on the poppet
between the three ribs.**



**15) Thread the adjusting screw into the valve
body until it is flush with the end of the
valve body.**

Assembly

- 16) Thread the hex nut (item 24), shoulder side toward the case, clockwise onto the body assembly. Tighten to 45 to 55 in-lbs.



Assembly

17) Using the small screwdriver end of the Valor Pre-adjustment Tool, turn the adjusting screw (item 11) clockwise until the shoulder on the tool prevents further advancement. (The tool will still turn, but the screwdriver end no longer engages the slot in the adjusting screw).



Assembly

- ✓ **CAUTION:** FAILURE TO DEPRESS THE LEVER (item 5) WHILE TURNING THE ORIFICE (item 25) WILL CAUSE DAMAGE TO THE SEAT (item 15)



- 18) While depressing the lever (item 5), turn the orifice (item 25) clockwise, using the large screwdriver end of the Valor Pre-adjustment Tool until the shoulder on the tool prevents further advancement. (The tool will still turn, but the screwdriver end no longer engages the slot in the adjusting screw).

Assembly

19) Install the exhaust valves (item 7) into the case (item 23) from the outside. Be sure the stems are properly seated. Carefully snip off the stems from inside the case with scissors or wire cutters.



Assembly

20) Place the diaphragm (item 4) over the lever with the plate facing the lever, and seat it into the case. Place the purge cover over the diaphragm, ensuring the logo and waves are horizontal. Thread the retaining ring (item 2) clockwise over the purge cover.



Item 4



Item 3



Item 2

Assembly

21) Using the retaining ring and Ring Tool, snug the retaining ring hand tight.



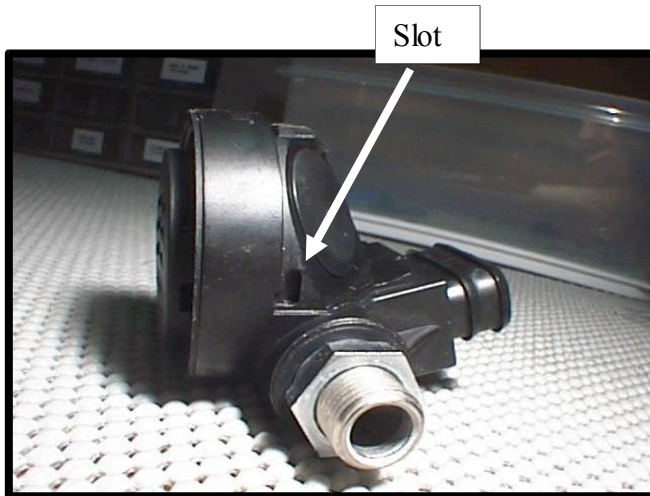
Assembly

22) Thread the color ring (item 1) clockwise into the case hand tight



Assembly

- 23) Install the exhaust tee (item 8) onto the boss of the case by placing the tab on one side of the tee into the slot in the case, then stretching the tee in place. Press the center tab and then the opposite corner tab into place.



Adjustment and Testing Procedures

- ✓ **CAUTION:** Prior to adjusting and testing of the Valor 2nd stage, you should first complete the adjusting and testing of the 1st stage regulator with which it will be used. Refer to the appropriate 1st stage manual, and complete all recommended tests before proceeding with this manual



Adjustment and Testing Procedures

Attachment of the 2nd stage hose to the 1st stage

- a) Lightly lubricate and install the two o-rings (item 29 and item 30) on to the intermediate pressure hose (item 28).
- b) Attach the hose to the primary low pressure port on the 1st stage body using a 9/16" wrench. Torque to 40 inch pounds. The primary port is identified by a *. stamp.
- c) Connect the 1st stage to a source of low pressure (500 psig) breathing air. While firmly holding the free end of the 2nd stage hose, carefully open the valve and flush out any dirt or debris with a small quantity of air flow.

Adjustment and Testing Procedures

Attachment of the 2nd stage to the In-line Tool

Thread the swivel end of the second stage hose on to the In-Line Adjustment Tool by turning the swivel nut clockwise, hand tight. Pull back the adjustment knob to retract the screwdriver end, and thread the second stage on to the adjustment tool hand tight.



Adjustment and Testing Procedures

✓ **CAUTION: ALWAYS DEPRESS THE PURGE COVER WHEN ADJUSTING THE ORIFICE. FAILURE TO DEPRESS THE PURGE COVER WHILE ADJUSTING THE ORIFICE WILL CAUSE DAMAGE TO THE LOW PRESSURE SEAT (ITEM 15), REQUIRING ITS REPLACEMENT.**

Adjust the Orifice

- a) Place the Vane Adjustment Switch (item 2) in the "MIN" position. Slowly pressurize the 1st Stage regulator to 3500 to 3000 psig. Verify a steady hose pressure of 135-150 psig.
- b) **Depress the purge cover** and adjust the orifice by pushing in on the adjustment knob of the In-Line Adjustment Tool and turning the knob 1/4 turn counter clockwise. Release the purge cover and listen for a slight leak from the 2nd stage. If no leak is detected, repeat the procedure, **pressing the cover** and turning 1/4 turn counter clockwise until a leak begins.
- c) Once the regulator 2nd stage is leaking as described above, **hold the purge cover down** and turn the adjusting knob clockwise in 1/8th turn increments until the leak stops when the purge cover is released.

Adjustment and Testing Procedures

Adjust the Spring Pressure

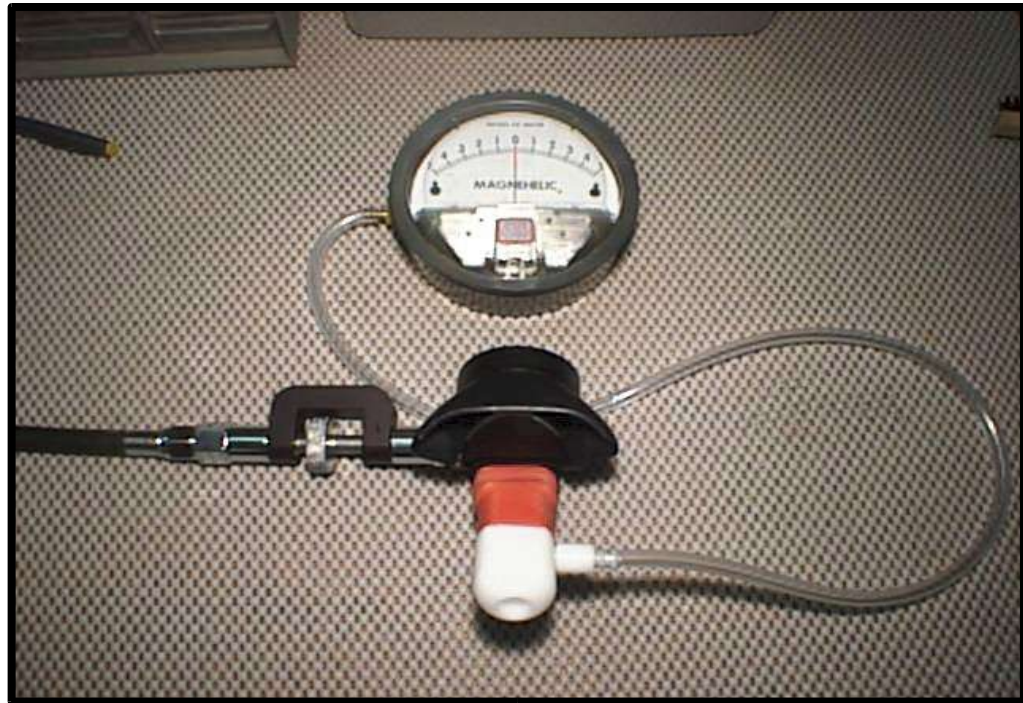
- d) With a 1/8" screwdriver, loosen the adjusting screw (item 11) by turning the screwdriver counter clockwise until there is barely a leak. Next, turn the adjustment screw clockwise until the leak just stops.
- e) Purge the regulator several times and listen for leaks. Adjust as necessary to eliminate leaks.

Adjustment and Testing Procedures

Second Stage Opening Effort Test

With the flow control knob turned off, gently inhale on the regulator. When the air starts to flow, the Magnahelic gauge should indicate an opening effort of +0.6" w.c., up to 1.5" w.c. for an octopus. If the opening effort is not within this range, refer to Table 1 Troubleshooting Guide, for corrective procedures.

- ✓ Place a finger over the adjustment screw opening to prevent air from entering around the valve body.



Final Assembly

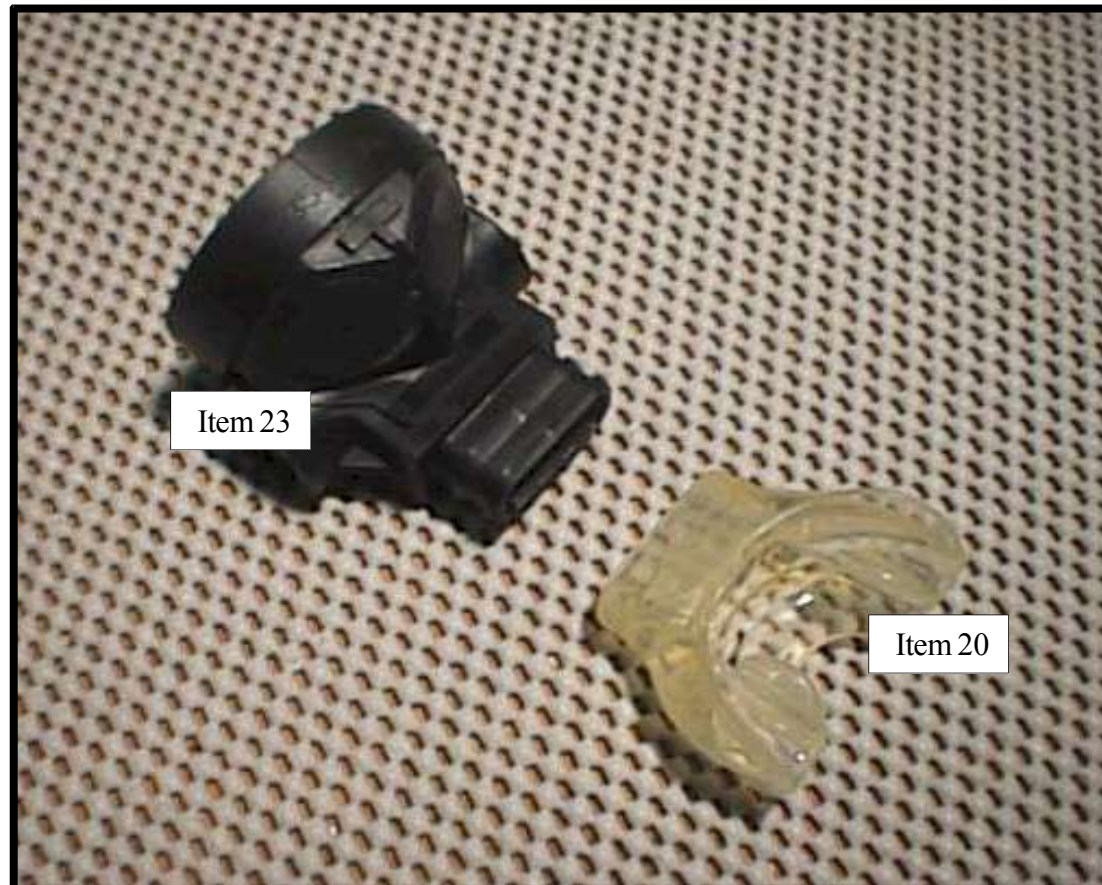
✓ NOTE: Once the regulator has been depressurized, the adjusting knob must be retracted prior to removal of the tool from the 2nd stage inlet. Failure to retract the knob will cause the screwdriver blade of the tool to remain in engagement with the orifice, and inadvertent adjustment to occur. This will require readjustment of the 2nd stage.

f) Turn off the air and depressurize the regulator.

g) With the adjustment knob fully retracted, turn the 2nd stage counter clockwise and remove it from the inline tool. Next, turn the swivel nut on the hose counter clockwise and remove it from the adjustment tool.

Final Assembly

24) Install the mouthpiece (item 20) onto the mouth tube of the case. The bridge should face up. Fasten the mouthpiece in place with a new mouthpiece clamp (wire tie) (item 19). The locking tab on the clamp should be closest to the hose fitting. Trim the excess length closely with a knife after tightening the clamp with pliers.



Final Assembly

25) Lightly lubricate the o-ring (item 12), and install it on to the valve body assembly (item 16). Thread the access cap (item 13) clockwise into the valve body. Snug the plug hand tight with the cap screwdriver.



Final Assembly

- 26) Thread the swivel nut on the hose on to the inlet of the valve body until hand tight. Using a 11/16" wrench, tighten the hose to 40-inch pounds of torque.
- 27) Slide the hose protector back into place over the hex retainer nut.



Final Testing Procedures

Second Stage Leak Test

After final reassembly and adjustment of the Valor regulator, the following simple tests for external leaks are recommended.

- a) With the air turned OFF, and the regulator still connected to the air source, inhale hard on the 2nd stage. If any air leaks into the regulator, inspect it for leaks. The seal of the diaphragm to the case, the exhaust valves and the condition of the mouthpiece should be suspect.
- b) With the regulator connected to an air source, (a small pony bottle is ideal), submerge the entire system. Turn on the air supply. Observe the regulator 1st and 2nd stages for one minute. The one minute period will allow small leaks, if present, to form observable bubbles. Bubbles indicate a leak that might worsen, which means the regulator must be disassembled to check sealing surfaces.
- c) Correct any problems and reassemble and readjust as required, following the procedures in this manual.

Subjective Breathing Test

Breathe on the regulator slowly and deeply 4 or 5 times. It should deliver air without excessive effort, free flow or fluttering of the diaphragm. When exhaling, there should be no fluttering or sticking of the exhalation valve. If you suspect problems, refer to Table 1 Troubleshooting Guide, for corrective procedures.

Troubleshooting Guide – Valor 2nd Stage Regulator

Leaking or hissing sound from second-stage (Vane in "MIN" position)	High intermediate-pressure	Set intermediate pressure to 135-150 psig.
	Lever (item 5) set too high	Adjust orifice (item 25) clockwise to lower lever
	Adjustment screw (item 11) improperly adjusted	Turn adjustment screw (item 11) clockwise
	Lever (item 5) bent	Replace lever (item 5)
	O-ring (item 26) dirty, damaged or worn	Replace o-ring (item 26)
	Orifice (item 25) seating surface or o-ring groove dirty, damaged or worn	Clean and inspect orifice (item 25).
	Seat (item 15) dirty, damaged or worn	Replace seat (item 15)
	Poppet (item 14) dirty, damaged or worn	Clean or replace poppet (item 14)
	Valve body (item 16) o-ring (item 17) sealing surface dirty, damaged or worn	Clean or replace valve body (item 16)
	Spring (item 9) worn or weak	Replace Spring (item 9)

Troubleshooting Guide – Valor 2nd Stage Regulator

Hard to Breathe	Intermediate pressure set too low	Set intermediate pressure to 135-150 psig.
	Lever (item 5) set too low	Orifice (item 25) too far in. Adjust orifice out counter-clockwise
	Adjustment screw (item 11) improperly adjusted	Adjustment screw (item 11) too far in. Adjust screw counter-clockwise
	Lever (item 5) bent	Replace lever (item 5)
	Spring (item 9) not properly seated on poppet (item 6)	Disassemble and reset spring (item 9) on poppet (item 14)
	First -stage sintered filter clogged	Inspect filter and replace if necessary
	Intermediate-pressure hose (item 28) clogged	Clean or replace hose (item 28)
Low purge flow	Lever (item 5) set too low	See adjusting procedures

Troubleshooting Guide – Valor 2nd Stage Regulator

Water entering second stage	Hole in mouthpiece (item 20)	Replace mouthpiece (item 20)
	Vane o-ring (item 22) dirty, damaged or worn	Examine and/or replace o-ring (item 22)
	Hole in diaphragm (item 4)	Replace diaphragm (item 4)
	Diaphragm (item 4) improperly seated between case and purge cover (Items 23 & 3)	Disassemble and properly reassemble
	Exhaust valve seating surface on case (item 23) dirty, damaged or worn	Clean and/or replace case (item 23)
	Damaged exhaust valve (item 7)	Replace exhaust valve (item 7)
	O-rings (items 17 & 12) dirty, or damaged	Replace O-rings
	Cracked or damaged case (item 23)	Replace case

Troubleshooting Guide – Valor 2nd Stage Regulator

External air leaks	Intermediate pressure hose (item 28) loose	Tighten intermediate pressure hose
NOTE: Immerse pressurized regulator in water to locate source of leak.	O-rings (items 29 and/or 30) dirty, damaged or worn	Examine and/or replace o-rings (items 29)
	First-stage fittings too loose	See the Genesis 1st Stage Service Manual

- ✓ Always depressurize system prior to tightening loose fittings, plugs or hoses