



# **SCUBA**

## ***SERVICE AND REPAIR MANUAL***

### **ALTAIR OCTO** PN RG300



Revised - 02/11

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SECTION 1

# Introduction

This manual provides factory prescribed procedures for the correct service and repair of the AltAir™ second stage regulator. It is not intended to be used as an instructional manual for untrained personnel. The procedures outlined within this manual are to be performed only by personnel who have received factory authorized training through a repair seminar that has been directly sponsored by XS Scuba.

If you do not completely understand all of the procedures outlined in this manual, contact **XS Scuba** to speak directly with a Technical Advisor before proceeding any further.

## Warnings, Cautions, & Notes

Pay special attention to information provided in Warnings, Cautions, and Notes that are accompanied by one of these symbols:



A **WARNING** indicates a procedure or situation that may result in serious injury or death if instructions are not followed correctly.



A **CAUTION** indicates any situation or technique that will result in potential damage to the product, or render the product unsafe if instructions are not followed correctly.



A **NOTE** is used to emphasize important points, tips, and reminders.

## Scheduled Service

Because the AltAir™ regulator is considered to be a life-supporting product, it is extremely critical that it receives service according to the procedures outlined in this manual on a regularly scheduled basis; at least once a year with normal or infrequent use.



**NOTE:** A unit that receives heavy or frequent use, such as in rental, instruction, or commercial applications, should be serviced at least twice each year - or more often - depending on the conditions of use and the manner in which it is maintained. (Refer to the care and maintenance procedures outlined in the AltAir User's Guide.)

When performing service, whether it is a routine overhaul or a repair of a specific problem, it is important to understand how the regulator is designed and how it operates. If you have any questions, please consult your XS Scuba representative.

## EAN/ Nitrox Service

Newly manufactured XS Scuba regulators are assembled and packaged to be compatible with oxygen enriched air (EAN/ Nitrox), not to exceed 40% oxygen content. If the regulator is going to be used for this application, however, it must be dedicated and clearly labeled as such, in order to prevent any crossover use with standard compressed air. **Refer to the instructions provided in the XS Scuba Authorized Service Document, titled - Regulator Parts Cleaning Procedures.**



**CAUTION:** It is important to avoid using, testing, or otherwise pressurizing a dedicated EAN regulator with standard compressed air, which contains hydrocarbon contaminants.

## Facility Requirements

As an Authorized XS Scuba Dealer, your customers expect you to provide top-notch overhaul service, both before and after the sale. Next to airfills and gas blending, it is the single most important commodity your store can provide.

The service department is therefore the most important part of your store. It should be clean and well lighted, and stocked with a complete inventory of parts and all the specialty tools you will need to get the job done right. As a minimum requirement, your service facility should be equipped with the following items:



Ultrasonic Cleaner

- ❑ **Ultrasonic Cleaner** – Select the right size model that can keep up with the volume of equipment that your store services. A built in timer and heater will help control the cleaning time and temperature of the solution, since most solutions work best when heated.

- ❑ **Bench Mounted Vise** – A vise is sometimes needed to hold the regulator secure – especially when removing the first stage yoke retainer. Special care must be taken, however, to avoid damage that can result from improper use of this tool. Be sure to follow the instructions provided in this manual.

**NOTE:** XS Scuba especially endorses and recommends the **Jaws Gripmaster Bench Vise**, available from Peter Built Co. It is designed specifically for the professional dive store service bench, and will prevent damage that can easily be caused by a conventional vise.



"Jaws" Gripmaster Vise

- ❑ **Magnification Lamp** – Strong lighting and magnification are essential requirements for performing a thorough parts inspection - especially when locating the source of a small leak.

- ❑ **Quality Wrenches & Sockets** – When working with brass parts, it is especially critical to use the correct size wrench and to ensure that it fits properly over the part. The use of an adjustable wrench is very likely to cause damage to your customer's equipment, and should be strictly avoided at all times.

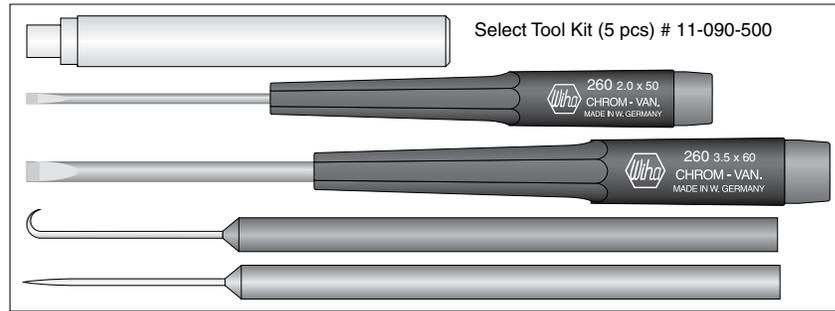
- ❑ **Calibrated Inch-Pound and Foot-Pound Torque Wrenches** – It is important to follow the manufacturer's torque values whenever they are specified, in order to avoid overtightening or undertightening a part. This is especially important for smaller parts and fittings, when overtightening can easily damage the part. Torque wrenches that can be set for both inch-pound and foot-pound measurements tend to be less accurate than wrenches that are designed to measure torque within a specific range.



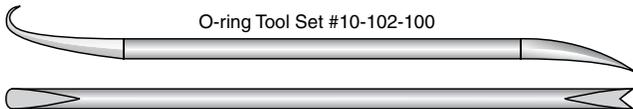
# Specialty Tools

For the finest tools, fixtures, and supplies that are designed and manufactured specifically for servicing SCUBA equipment, we recommend one source for all your service facility's needs.

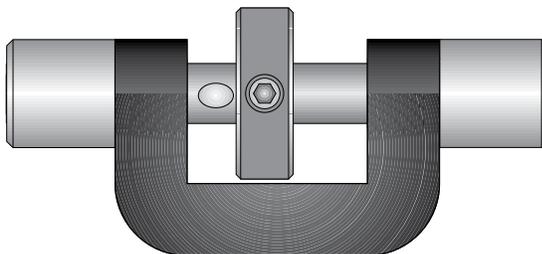
Peter Built Co., in Galion, Ohio, is dedicated to serving the diving industry, and offers a wide selection of the most innovative specialty tools found anywhere to help you get the job done efficiently - and done right.



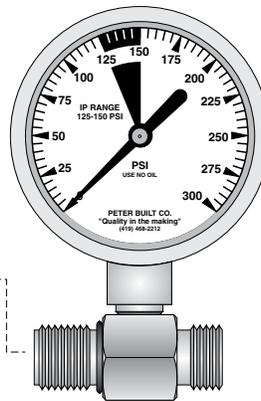
Select Tool Kit (5 pcs) # 11-090-500



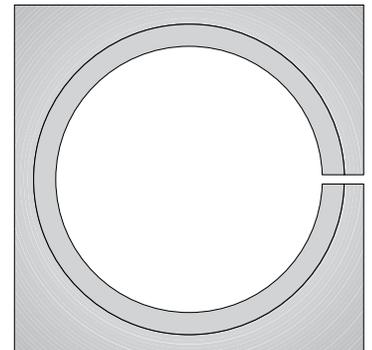
O-ring Tool Set #10-102-100



Dual Drive In-Line Adjusting Tool # 20-500-200



Intermediate Pressure Test Gauge, #20-510-100



All Air Retaining Ring Clamp # 20-795-200

*Illustrations courtesy of Peter Wolfinger.*

**Required Tools/ Lubricant**

- |                               |                |
|-------------------------------|----------------|
| Dual Drive Adjusting Tool     | PN #20-500-200 |
| Tech Driver IPG               | PN #20-165-111 |
| O-ring Tool Set               | PN#10-125-400  |
| 1/4" Slotted Screwdriver      | PN #11-465-500 |
| 1/4" Nut Driver               | PN #11-168-500 |
| Small (.02) Blade Screwdriver | PN #11-133-500 |
| Cristo Lube                   | PN #MS150      |
| Hakko Side Cuts, 5"           | PN #16-020-500 |
| 11/16" Open End Wrench        |                |
| 3/4" Open End Wrench          |                |



Galion, OH 44833  
 Phone: 419-468-2212  
 www.scubatools.com

**SECTION**  
**2**

## Preliminary Inspection

### External Inspection

1. Closely examine the conical filter inside the first stage yoke to check for any signs that contaminants have entered the system, including sea water, rust, or aluminum oxide.



**NOTE:** A green discoloration of the filter indicates that moisture has entered the regulator, and internal corrosion has possibly occurred. Other types of discoloration may indicate that the regulator has been used with a corroded cylinder. Advise the customer of this, and the possible need to obtain service for the cylinder.

2. Slide back the hose guards, if present, to visually inspect the condition of the hoses at their fittings.
3. Check the overall condition of the mouthpiece, exhaust grill, and other external parts to evaluate the type of use and maintenance the regulator has received.

### Immersion / Leak Test

1. Check to ensure that the regulator is fully assembled and connected to a first stage, and that there are no open ports or hoses. Connect the first stage to a cylinder that is filled with 3,000 psi, and open the cylinder valve to pressurize the regulator.
2. If leakage cannot be heard, or if the source of leakage detected audibly is not obvious, immerse the first stage in fresh water to check further for any signs of air leakage, especially at the fittings of hoses.
3. Note the source of any leakage found and refer to Troubleshooting Guide to determine its possible cause.
4. Close the cylinder valve and depress the second stage purge button to depressurize the regulator before performing the next procedure.

**SECTION  
3**

## Disassembly Procedures

### General Guidelines

- ▼ *Prior to performing any disassembly, check to ensure that the service facility is well equipped with all the tools and parts needed to perform a complete service from start to finish. DO NOT attempt to perform the service unless all of the required tools and parts are available.*
- ▼ *All o-rings are classified as being either dynamic or static. Dynamic o-rings are those which sustain friction and movement, as they are either mounted directly onto a moving part, or create a seal against a moving part. Static o-rings simply create a seal between two non-moving parts, and are therefore less subject to wear than dynamic o-rings. After passing close inspection, static O-rings may sometimes be reused, although this is not necessarily recommended. **Dynamic O-rings must be automatically discarded and replaced with every service, regardless of age or appearance.***
- ▼ *Refer to the schematic and parts list while performing these procedures. Each part is identified by its reference number shown on the drawing the first time it is referred to in the procedure.*
- ▼ *Do not attempt to reuse parts that are designated to be automatically discarded and replaced with the parts provided in the overhaul parts kit. These parts should be shown to the customer, however, to instill confidence that complete overhaul service has been performed.*
- ▼ *Inspect all reusable parts as directed, either during or immediately following the disassembly procedures. When in doubt, compare the part with one that is new to best determine its condition.*

## Second Stage Disassembly



**CAUTION:** Whenever possible, use only plastic or brass O-ring tools for removing O-rings in order to prevent damage to the sealing surface. Steel instruments, such as dental picks, can easily damage the sealing surface of a softer brass part, causing irreparable leakage and requiring the part to be replaced with new.

1. Slide back the hose guard(25) to expose the connection of the LP hose.
2. While holding the inlet fitting(22) secure with a w" open-end wrench, apply a n" open-end wrench to the fitting of the LP hose(26). Turn the fitting counter-clockwise to loosen and remove. (See Fig. 1.)
3. Using a plastic or brass O-ring tool, carefully remove the O-ring(27) from the post inside the hose fitting. (See Fig. 2.)



**CAUTION:** When performing the above step, be very careful to avoid scratching the O-ring sealing surface. Doing so may cause a permanent leak that will require the replacement of the LP hose.

4. Snip the plastic tie-strap(6) that holds the mouthpiece(7), and gently pull the mouthpiece off the second stage housing(5). Inspect the mouthpiece to ensure that it is supple and free of any tears or corrosion. If any damage is found that could result in discomfort or leakage, discard the mouthpiece and do not reuse.
5. Hold the diaphragm purge cover(2) lightly depressed, and apply a w" open end wrench to turn the inlet fitting counter-clockwise until loose. Then, unscrew it completely by hand to remove.
6. Squeeze the O-ring(21) between thumb and forefinger to remove it from the inlet fitting. Discard the O-ring and do not reuse.
7. While holding the inlet fitting secure, apply a medium blade screwdriver to the slotted head of the adjustable orifice(23), and turn it counter-clockwise to disengage its threads.



**NOTE:** The orifice is O-ring sealed, and it will remain inside the lever support after it has been unthreaded. The following step must be performed correctly in order to remove the orifice without damaging its polished sealing surface.



Fig. 1 – Removal of LP Hose



Fig. 2 – Removal of LP Hose O-ring



*Fig. 3 – Removal of Adjustable Orifice*



*Fig. 4 – Orifice Inspection*



*Fig. 5 – Disassembly of Valve Mechanism*

8. When the orifice has been unthreaded from the inlet fitting, carefully insert a small wooden or plastic dowel through the opposite end of the valve body, directly over the sealing edge of the orifice. Gently press out the orifice. (See Fig. 3.)
9. To avoid using a sharp tool that can damage the orifice, squeeze the O-ring(24) between thumb and forefinger to remove it from the orifice head. Discard the O-ring and do not reuse.
10. Closely examine the orifice with the use of a magnifier, checking for any scratches or other damage to the sealing edge and the groove that holds the O-ring (see Fig. 4). If any damage or wear is found, discard the orifice and do not attempt to reuse. If it is in reusable condition, set it aside on a soft surface to keep it isolated from other metal parts.
11. While holding the second stage secure in one hand with the purge facing up, firmly grasp the retaining ring(1) with the other, and turn the ring counter-clockwise to loosen and remove it.



**NOTE:** If the retaining ring is difficult to loosen, XS Scuba recommends using the Rim Clamp (P/N 20-795-200), available from Peter Built Co. Complete instructions are provided with the tool.

12. Lift off the diaphragm purge cover, and then gently pull out the diaphragm(4) with the thrust washer(3). Closely inspect these parts to ensure they are perfectly round and free of any distortion, tears, or other damage. If any part is found to be damaged, discard it and replace with new.



**NOTE:** Do not attempt to disassemble the anti-friction disc from the center of the diaphragm.

13. Through the inlet opening of the second stage housing, gently press the lever support(17) with the complete valve assembly into the second stage housing to remove.
14. Reassemble the inlet fitting with the lever support by hand until finger snug, in order to hold the shaft of the poppet(19) in place without turning, inside the keyed (square) hole of the lever support.
15. While holding the assembly secure, apply a 4" nut driver to turn the locknut(14) counterclockwise until it is completely unthreaded from the poppet (see Fig. 5).

Discard the locknut and do not reuse. Remove the spacer(15)

and lever(16), and examine the lever to ensure that it is not bent or damaged. Replace with new if any damage is found.

16. Disassemble the inlet fitting from the lever support, and remove the poppet and low pressure spring(18). Closely examine the spring under strong magnification to check for any signs of corrosion, and replace with new if any corrosion is found.
17. Using a sharp pick or straight pin, lightly pierce the center of the LP seat(20) and remove from the poppet. Discard the seat and do not reuse.
18. Examine the condition of the lever support and poppet to check for any signs of thread damage, corrosion or chrome loss. Replace with new if significant damage is found.
19. Remove the exhaust grill(9) from the second stage housing by inserting a small (.02mm) flat blade screwdriver into both slots on either side of the second stage housing. (See Fig. 6.) Gently pull the grill out of the housing, being careful to avoid bending.
20. Remove and discard both of the exhaust valves(8) by pulling each one straight out of the housing. Do not attempt to reuse.
21. If the male portion of the quick disconnect assembly(12) is undamaged, no further disassembly is required. To remove the QD clip from the second stage housing, follow these steps (see Fig. 7):
  - a. Remove the small C-clip(13) from the underside of the stainless steel post.
  - b. Tap out and remove the stainless steel post(11), and pull the male clip away from the housing.
  - c. Examine the housing to check for any damage that may impair a secure connection of the QD Clip. If found, it will be necessary to replace the housing.
  - d. Reassemble the QD Clip in reverse order.



Fig. 6 – Exhaust Grill Removal



Fig. 7 – Disassembly of QD Clip

- ▼ *After completing the disassembly of the second stage, refer to the instructions provided in the XS Scuba Authorized Service Document, titled - **Cleaning & Lubrication**.*

**SECTION 4**

## Reassembly Procedures

### General Guidelines

- ▼ *Refer to the schematic parts list, that highlights automatic replacement parts which should be discarded and replaced with new during reassembly. These parts are provided in the Annual Service Kit.*
- *Before performing any reassembly, it is important to individually inspect all parts, both new and those that are being reused, to ensure that each part and component is perfectly clean and free of any dust, decay, or blemishes.*
- *If the regulator has been serviced for use with EAN/Nitrox, it is important to don powderless latex gloves before handling any parts, including O-rings, in order to avoid contaminating the parts with skin oil.*
- *Prior to dressing, inspect all O-rings with magnification to ensure they are supple, clean, and completely free of any scoring or decay that would impair proper sealing.*
- *XS Scuba recommends Christo-Lube® MCG-11 (PN MS150) to be used exclusively for the lubrication and dressing of O-rings and other internal parts. Christo-Lube® provides superior lubrication to that of silicone grease, especially in high pressure (DIN) systems greater than 3,000 psi, and extreme temperature conditions. It is also non-reactive to oxygen, and is approved for use with EAN/Nitrox.*



**CAUTION:** Silicone grease is not compatible with oxygen enriched air, and must be strictly avoided when servicing a regulator that will be used with EAN/ Nitrox. The entire regulator will otherwise become contaminated, and rendered unsafe for use with any mixture of oxygen enriched air.

- ▼ *Dress all O-rings with a visible film of Christo-Lube, but avoid applying excessive amounts, as this may attract particulate matter that can cause accelerated wear or damage to the O-ring.*



**CAUTION:** The use of aerosol spray or petroleum based lubricants must be strictly avoided. The propellant gas or petroleum base may attack or weaken plastic or rubber parts.

- ▼ *Use all replacement parts provided in the XS Scuba Authorized Dealer parts kit.*

**WARNING:** DO NOT attempt to use any other manufacturer's part as a substitute for any XS Scuba part, regardless of any similarity in shape, size, or appearance. Doing so may render the product unsafe, and could result in serious injury or death.

1. Install both exhaust valves(8), if they were removed, into the second stage housing(5) by gently pulling the stem through the hole in the center of the sealing area, until the barb has passed through and is securely seated against the opposite side. Trim the excess stem material close to the barb.
2. Fit two tabs on one side of the exhaust grill(9) into the mating slots of the second stage housing, and then flex it inward slightly to engage the tabs on the opposite side. (See Fig. 8.)
3. Install a new LP seat(20) into the head of the poppet(19) with the smooth side facing out, and press it into place so that it is seated flush. DO NOT use adhesive.
4. Apply a light coat of lubricant to both ends of the LP spring(18), and place the spring over the threaded shaft of the poppet.
5. Mate the squared poppet shaft through the lever support(17), and then fit the inlet fitting(22) over the poppet head. Screw the inlet fitting clockwise into the lever support by hand, in order to hold the poppet shaft securely in place without turning.
6. Place the lever(16) over the poppet shaft inside the flange of the lever support as shown in Fig. 9, followed by the spacer(15).
7. Turn the locknut(14) clockwise by hand until the threads are engaged by at least two turns. Apply a 4" nut driver to turn the locknut clockwise until exactly two threads of the poppet shaft are visible outside the locknut. (See Fig. 10.)
8. Remove the inlet fitting from the lever support, and install the O-ring(21) onto the groove of the inlet fitting above the smaller section of threads.
9. Install the valve assembly into the second stage housing with the lever facing up (see Fig. 11). While holding it securely in place, mate the inlet fitting through the opposite side of the second stage housing, and turn clockwise by hand until finger snug.



Fig. 8 – Exhaust Grille Installation



Fig. 9 – Correct Lever Orientation



Fig. 10 – Valve Reassembly



Fig. 11 – Installation of Inlet Fitting



Fig. 12 – Preliminary Setting of Orifice

10. Apply an inch-lbs torque wrench with w" socket to tighten the inlet fitting to a torque measurement of 90(±5) inch-lbs.
11. Install the O-ring(24) onto the head of the orifice(23), and insert the orifice into the open end of the inlet fitting with the threaded end facing in. Apply a blunt probe, such as a pencil or wooden dowel, to seat the orifice against the threads inside the inlet coupling.
12. Apply a medium blade screwdriver to engage the slotted head of the orifice, and turn it clockwise approximately 5 full revolutions. Then, grasp the screwdriver by the shaft, rather than the handle, for best sensitivity of touch (see Fig. 12). Continue turning the orifice very slowly while closely observing the lever. STOP turning the orifice when the lever begins to drop. This will indicate that the orifice has made contact against the LP seat.



**CAUTION:** Do not continue to turn the orifice further beyond the point where it makes contact with the low pressure seat. Doing so may wear the LP seat or sealing surface of the orifice, and can also result in an incorrect adjustment of the second stage.

13. Lay the diaphragm(4) inside the second stage housing, directly over the lever, with its raised surface facing up.
14. Fit the thrust washer(3) over the diaphragm and press it into place so that it is seated at the base of the housing threads on all sides.
15. Place the diaphragm purge cover(2) over the the diaphragm and thrust washer, followed by the retaining ring(1). Turn the purge cover as needed to align the logo straight between the mouthpiece and inlet, and hold in place while tightening the retaining ring clockwise until snug.
16. Install the mouthpiece(7) onto the mouthpiece tube of the second stage housing. Fit a tie-strap(6) over the mouthpiece with the locking tab facing toward the retaining clip, and cinch it snug. Snip off the excess strap that extends outside the locking tab.

▼ *After completing the reassembly of the second stage, proceed to **Section 5 – Final Testing***

**SECTION 5**

## Final Testing Procedures



**CAUTION:** If the regulator will be used with EAN/ Nitrox, it is important to pressurize and flow test the regulator using only hydrocarbon-free gas. The regulator will otherwise become contaminated with hydrocarbons if normal compressed air is used. Industrial grade compressed Nitrogen is strongly recommended as a lower cost alternative to EAN/ Nitrox for the purposes of flow testing.

1. Connect the IP Test Gauge onto the inlet fitting of the In-line Adjusting Tool and mate the opposite fitting of the tool onto the inlet fitting of the second stage. Pull back the knurled knob to retract the slotted drive, and tighten the tool clockwise onto the inlet fitting only until finger snug. (See Fig. 13.)
2. Install the O-ring(27) onto the post inside the female fitting of the LP hose(26). Mate the female fitting of the LP hose onto the male fitting of the IP Test Gauge, and tighten the swivel nut clockwise until finger snug.
3. Install the O-ring(28) onto the male fitting of the LP hose, and install the hose into an intermediate pressure port of a first stage regulator that has been verified to be properly serviced, with a stable intermediate pressure of 140 ( $\pm 5$ ) psi . Apply a torque wrench with a crow-foot to tighten the fitting to 38 ( $\pm 2$ ) inch-lbs.



**CAUTION:** If the second stage has been cleaned and serviced for use with EAN/ Nitrox, it is important to connect it with a first stage that has also been cleaned and serviced accordingly, and to use only hydrocarbon-free gas while performing this procedure. Use of standard compressed air will otherwise contaminate the system.

4. Ensure that all the first stage ports are sealed, and connect the first stage with a filtered gas supply of 2,500-3,000 psi. Slowly pressurize the regulator. Listen to verify that a leak can be heard from the second stage valve, and proceed to step 5.

- a. If airflow cannot be heard, it will be necessary to initiate a slight leak between the orifice and poppet. Press the knurled knob inward to engage the slotted drive of the Inline Adjustment Tool with the head of the orifice inside the inlet fitting. Then, turn the orifice slightly counter-clockwise while lightly depressing the purge cover to prevent wear on the seat. Do not adjust any further than is needed to establish a slight leak.



**NOTE:** If more than a slight adjustment is required to initiate a leak, it is important to check the adjustment of the locknut on the poppet shaft to verify once again that it is set correctly to its preliminary setting, as specified in Step 8 of the Reassembly Procedure.

5. Hold the drive of the Inline Adjustment Tool engaged with the orifice. While lightly depressing the purge cover, turn the orifice slightly clockwise a very small fraction of a turn. Pause after each adjustment to listen, and be careful to avoid over-adjusting beyond the point that the leak has stopped. When the leak has stopped, purge the second stage several times to ensure that it does not return. Observe the IP Test Gauge while purging the second stage to verify that it indicates a stable intermediate pressure after each cycle, with no creep or fluctuation.



**CAUTION:** Over-adjustment of the orifice can cause excessive spring load in the second stage valve, and may impair the regulator's performance.

6. While holding the second stage with the mouthpiece facing down, gently shake it up and down. Listen closely to determine whether any movement of the lever can be heard inside, indicating that the lever has dropped. If lever movement cannot be detected, proceed to step 8. Otherwise, perform the following steps to raise the lever:
  - a. Remove the retaining ring, purge cover, thrust washer and diaphragm to expose the valve assembly.
  - b. Apply a 4" open-end wrench to turn the locknut clockwise a small fraction of a turn. Do not over-adjust, since it is important to tighten the nut onto the poppet only as far as necessary to remove lever slack.
  - c. Repeat the above step until lever slack is eliminated.
  - d. Reinstall the diaphragm, thrust washer, purge cover, and retaining ring.



*Fig. 13 – Inline Adjustment Tool w/ IP Gauge*



**CAUTION:** Over-adjustment of the locknut can cause excessive spring load in the second stage valve, and may impair the regulator's performance. If leakage returns after following the above steps, disassemble the second stage valve assembly and repeat the above procedure following a close inspection of the orifice and LP seat and reassembly.

7. When the second stage is properly adjusted with no leaks or lever slack, depressurize and purge the system to disconnect the LP hose.
8. If the inlet coupling was removed, apply a torque wrench with w" socket to tighten it to a torque measurement of 90 inch-lbs ( $\pm 5$ ).
9. Reconnect the LP hose to the inlet coupling, and apply a torque wrench with n" crow-foot to tighten the LP hose fitting to 55( $\pm 5$ ) inch-lbs.

### **Subjective Breathing Test**

1. Connect the regulator to a cylinder containing 2,500 – 3,000 psi, and open the valve to pressurize the system.
2. Fully depress the second stage purge to ensure that an adequate volume of air flows through the mouthpiece, sufficient to clear the second stage. Then, breathe several times from the second stage.



**NOTE:** A properly serviced and adjusted regulator should deliver air upon deep inhalation without excessive inhalation effort, freeflow, or vibration. When exhaling, there should be no resistance or sticking of the exhalation valve. If any of these problems occur, refer to *Table 2 - Troubleshooting*.

### **Flowbench Testing (optional)**

The Subjective Breathing Test, combined with the Intermediate Pressure Test, will sufficiently verify the regulator's performance in most circumstances. As an additional test, a Magnahelic flowbench can be used to verify the opening effort, which should not exceed 1.5 – 2.0 column inches H<sub>2</sub>O.

## External Leak Test

After first stage reassembly and final adjustment of the second stage has been completed, submerge the entire regulator in a test tank of clean water while pressurized with 2,500-3000 psi. Observe any bubbles arising from the submerged regulator over a one minute period. The recommended time is necessary due to slower bubble formation that occurs in smaller leaks. Disassemble the regulator at the source of the leak to check sealing surfaces, assembly sequence and component positioning in order to correct the problem(s).



**NOTE:** The location of extremely small leaks can best be detected by applying a soap solution to the leak area. Before disassembling to correct any leaks, rinse the entire regulator thoroughly with fresh water and blow out all residual moisture with filtered, low-pressure (25 psi) test gas. Refer to the Troubleshooting Guide.

- ▼ *When the second stage has been adjusted and tested according to the prescribed procedures, close the cylinder valve completely, and purge the second stage to depressurize the system. Loosen the yoke screw to remove the first stage from the cylinder, and seal the dust cap over the inlet fitting. Disinfect the mouthpiece, and dry the regulator completely with a clean towel. This completes the overhaul service procedures for the ALTAIR regulator.*

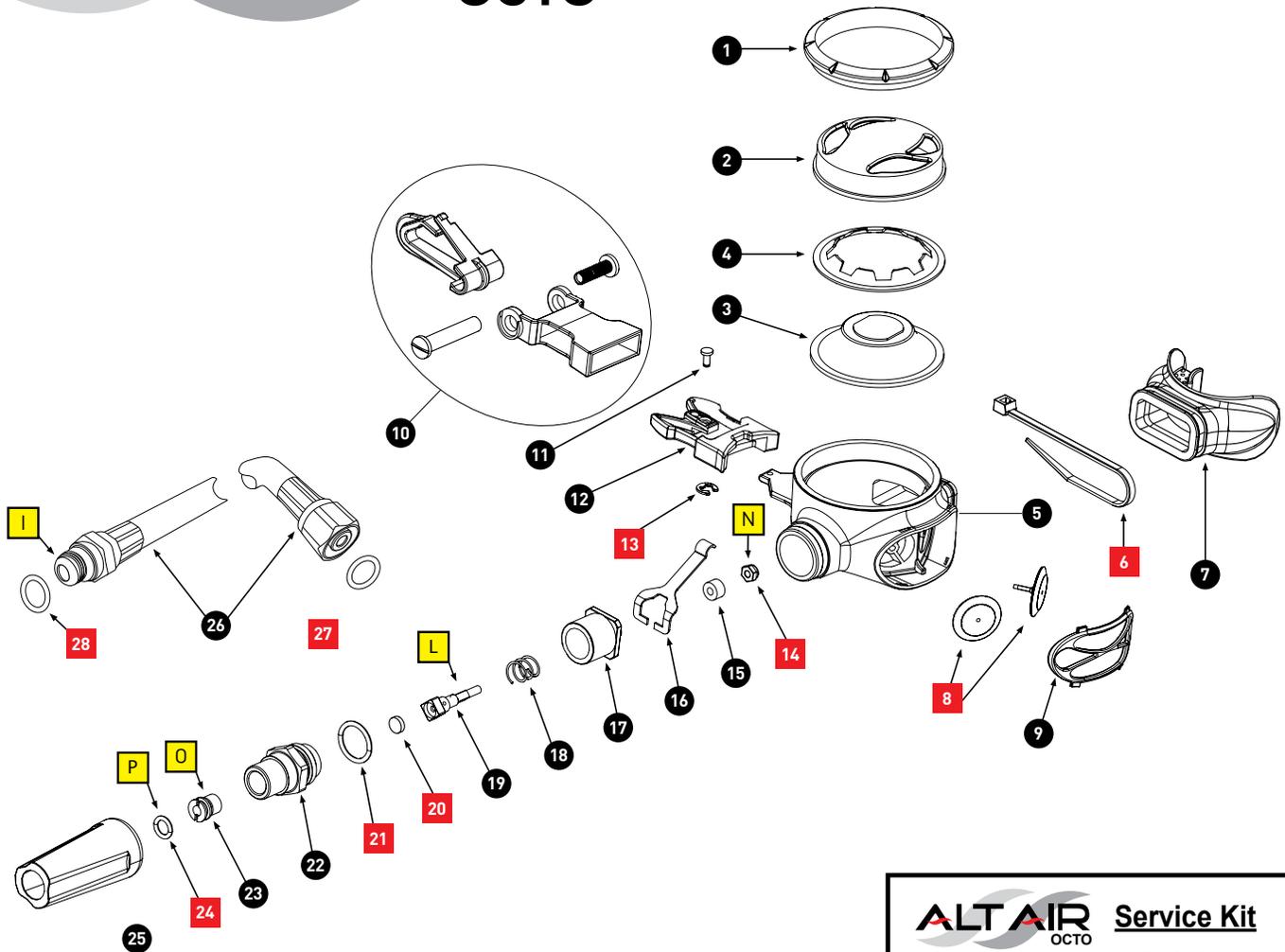
## Troubleshooting Guide

### Second Stage

SYMPTOM	POSSIBLE CAUSE	TREATMENT
<b>Freeflow or leakage</b>	<ol style="list-style-type: none"> <li>1. Excessive intermediate pressure.</li> <li>2. Damaged or worn LP seat.</li> <li>3. Damaged orifice sealing surface.</li> <li>4. Damaged orifice O-ring.</li> <li>5. Orifice incorrectly adjusted.</li> <li>6. Poppet spring damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to first stage troubleshooting</li> <li>2. Replace with new.</li> <li>3. Replace with new.</li> <li>4. Replace with new.</li> <li>5. Reset to preliminary setting and readjust.</li> <li>6. Replace with new.</li> </ol>
<b>Excessive Inhalation Resistance or Hesitation</b>	<ol style="list-style-type: none"> <li>1. Insufficient intermediate pressure.</li> <li>2. Orifice incorrectly adjusted.</li> <li>3. Lever is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to first stage troubleshooting</li> <li>2. Reset to preliminary setting and readjust.</li> <li>3. Replace with new.</li> </ol>
<b>Insufficient airflow when purge is depressed</b>	<ol style="list-style-type: none"> <li>1. Lever is slack, or orifice incorrectly adjusted.</li> <li>2. Lever is bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset to preliminary settings and readjust.</li> <li>2. Replace with new.</li> </ol>
<b>Water entering second stage</b>	<ol style="list-style-type: none"> <li>1. Exhaust valve diaphragm worn or damaged.</li> <li>2. Mouthpiece worn or damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new.</li> <li>2. Replace with new.</li> </ol>

# ALTAIR OCTO

## EXPLODED VIEW



<b>ALTAIR</b> OCTO		<b>Service Kit</b>				
		<b>Includes:</b>				
<b>Part #</b>	<b>RK4</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>13</b>	<b>14</b>
<b>Dealer</b>	<b>8.00</b>	<b>20</b>	<b>21</b>	<b>24</b>	<b>27</b>	<b>28</b>

#	Part #	Description	Dealer	#	Part #	Description	Dealer
1	RP300-01	Retaining Ring	3.00	15	RP300-15	Spacer	1.00
2	RP300-02	Purge Cover	4.00	16	RP300-16	Lever	2.00
3	RP300-03	Diaphragm	4.00	17	RP300-17	Lever Support	5.00
4	RP300-04	Thrust Washer	3.00	18	RP300-18	Spring	2.00
5	RP300-05	Housing	8.00	19	RP300-19	Poppet	3.00
6	RP250-11	"No Bump" Tie Strap	0.50	20	RP300-20	Seat	2.00
7	RP300-07	Mouthpiece	3.00	21	RP300-21	O-ring	1.00
8	RP300-08	Exhaust Valve	2.00	22	RP300-22	Inlet Fitting	4.00
9	RP300-09	Exhaust Grill	3.00	23	RP300-23	Adjustable Orifice	3.00
10	RP300-AH	Female Buckle Assembly	3.00	24	RP300-24	O-ring	1.00
11	RP300-11	Attachment Post	1.00	25	RP300-25	Hose Guard	2.00
12	RP300-12	Male Buckle	2.00	26	LP36YL	LP Hose - 36" Yellow	12.00
13	RP300-13	C-Clip	1.00	27	RP300-27	O-ring	1.00
14	RP300-14	Locknut	1.00	28	RP300-28	O-ring	1.00

### Service Notes:

- I** Adjust with intermediate pressure 125 to 140 psi
- L** Lightly lubricate with Christo-Lube MCG-111 part number TL108
- N** Tighten nut until two full threads show
- O** Protect the sealing edge of the orifice from damage
- P** Remove o-rings without damaging parts using brass pick part number TL111

\* Bold Indicates Overhaul Replacement Part - Provided In Parts Kit #RK4