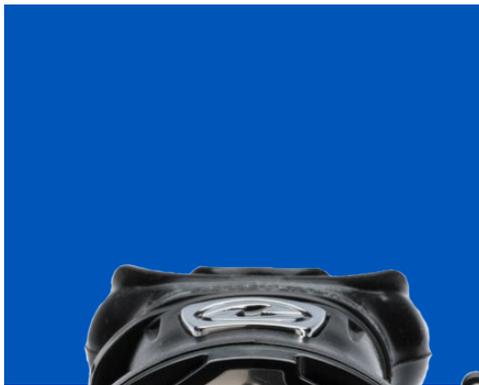




TECHNICAL MAINTENANCE MANUAL



LEGEND ELITE SECOND STAGE

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Leg3rd Elite Second Stage Technical Maintenance Manual

INTRODUCTION

This manual provides factory prescribed procedures for the correct service and repair of the Aqualung or Apeks regulator products described in this manual. 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 an Aqualung Service & Repair Seminar. If you do not completely understand all of the procedures outlined in this manual, contact Aqualung® 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:



WARNINGS indicate a procedure or situation that may result in serious injury or death if instructions are not followed correctly.



CAUTIONS indicate any situation or technique that will result in potential damage to the product, or render the product unsafe if instructions are not followed correctly.



NOTES are used to emphasize important points, tips and reminders.

SCHEDULED SERVICE

If the regulator is in good working order, it is permissible to overhaul it every other year with an inspection procedure being performed on the "off" years. For example:

Year #1 : Inspection

Year #2 : Overhaul

Year #3 : Inspection

Year #4 : Overhaul, and so on.

Both Inspections and Overhauls need to be documented in the Annual Service & Inspection Record located in the Owner's Manual to keep the Limited Lifetime Warranty in effect.



NOTE: A unit that receives heavy or frequent use, such as rental, instruction, or commercial applications, should be serviced at least twice a 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 Regulator Owner's Manual.)

An Official 2nd Stage Inspection consists of:

1. A pressurized immersion test of the entire unit to check for air leakage.
2. Checking for opening effort that is within the acceptable range.
3. A pressurized immersion test of the entire unit to check for air leakage.
4. Checking for smooth operation of the control knob and venturi switch.
5. A visual inspection of the exhaust valve to see that it is in good shape and that it's resting against a clean surface.
6. A visual inspection of the mouthpiece looking for tears or holes.
7. Follow Hose Inspection document for guidelines.

If a regulator fails item #1, 2, or 3, the entire regulator should be overhauled. If a regulator fails #4 or 5 it will be up to the technician's discretion whether or not a full overhaul is required. Failure of item #6 or 7 will require replacement of the part.

GENERAL GUIDELINES

1. In order to correctly perform the procedures outlined in this manual, it is important to follow each step exactly in the order given. Read over the entire manual to become familiar with all procedures before attempting to disassemble the product in this manual, and to learn which specialty tools and replacement parts will be required. Keep the manual open beside you for reference while performing each procedure. Do not rely on memory.
2. All service and repair should be carried out in a work area specifically set up and equipped for the task. Adequate lighting, cleanliness, and easy access to all required tools are essential for an efficient repair facility.
3. As the regulator is disassembled, reusable components should be segregated and not allowed to intermix with nonreusable parts or parts from other units. Delicate parts, including inlet fittings and crowns which contain critical sealing surfaces, must be protected and isolated from other parts to prevent damage during the cleaning procedure.
4. Use only genuine Aqualung parts provided in the overhaul parts kit for this product. DO NOT attempt to substitute an Aqualung part with another manufacturer's, regardless of any similarity in shape or size.
5. Do not attempt to reuse mandatory replacement parts under any circumstances, regardless of the amount of use the product has received since it was manufactured or last serviced.
6. When reassembling, it is important to follow every torque specification prescribed in this manual, using a calibrated torque wrench. Most parts are made of either marine brass or plastic, and can be permanently damaged by undue stress.
7. In order to make the regulator compatible with nitrox up to 40% O₂ (EAN40), the regulator must be properly cleaned, lubricated and assembled using genuine Aqualung® or Apeks replacement parts. In addition, assembly must be carried out in a clean environment using powderless, latex gloves or equivalent. For more detailed information, be sure to read **Procedure A: Cleaning and Lubrication** at the back of this manual.

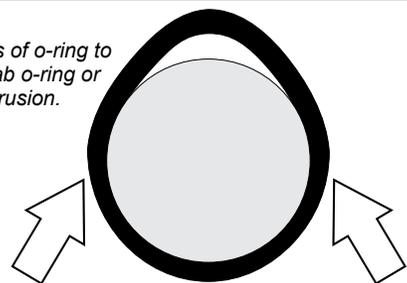
GENERAL CONVENTIONS

Unless otherwise instructed, the following terminology and techniques are assumed:

1. When instructed to **remove, unscrew, or loosen** a threaded part, turn the part counterclockwise.
2. When instructed to **install, screw in, or tighten** a threaded part, turn the part clockwise.
3. When instructed to **remove** an o-ring, use the pinch method (see illustration below) if possible, or use a brass or plastic o-ring removal tool. Avoid using hardened steel picks, as they may damage the o-ring sealing surface. All o-rings that are removed are discarded and replaced with brand new o-rings.

Pinch Method

Press upwards on sides of o-ring to create a protrusion. Grab o-ring or insert o-ring tool at protrusion.



4. The following acronyms are used throughout the manual: **MP** is Medium Pressure; **HP** is High Pressure; **LP** is Low Pressure.
5. Numbers in parentheses reference the key numbers on the exploded parts schematics. **For example**, in the statement, "...remove the o-ring (7) from the crown (8)...", the number 7 is the key number to the crown o-ring.

DISASSEMBLY PROCEDURE

NOTE: Before performing any disassembly, refer to the exploded parts drawing, which references all mandatory replacement parts. These parts should be replaced with new, and must not be reused under any circumstances - regardless of the age of the regulator or how much use it has received since it was last serviced.

CAUTION: Use only a plastic or brass o-ring removal tool when removing o-rings to prevent damage to the sealing surface. Even a small scratch across an o-ring sealing surface could result in leakage. Once an o-ring sealing surface has been damaged, the part must be replaced with new. **DO NOT** use a dental pick or any other steel instrument.

1 Pull back the hose protector (38). To remove the MP hose (37), use a 19mm (¾") wrench to hold the heat exchanger (12) stationary. Then take an 17mm (11/16") wrench and turn the hose swivel counter-clockwise to loosen and remove it.



2 Follow all guidelines from the Hose Inspection & Cleaning Technical Maintenance Manual.

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TECHNICAL MAINTENANCE MANUAL

HOSE INSPECTION & CLEANING

3 To remove the exhaust cover (34), use the seat extraction tool to push on the pin locker. Hold the pin locker all the way out with your fingers, pull the exhaust cover towards the adjustment knob (29) and lift off.



NOTE: The pin locker is a permanent part of the front cover. It will not eject when pushing on it to release the exhaust cover.

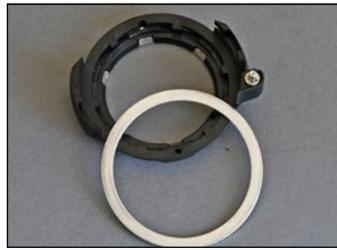
4 If equipped with a lip shield (11), pull it off. Using your finger, lift up on the buckle on the reusable clip (9). Remove the mouthpiece (10) from the case (8). Carefully inspect the mouthpiece for any holes, cuts or tears. Replace if needed.



5 Lift the pin locker all the way up, rotate the front cover (1) counter-clockwise until the pin is clear of the case (8). Remove the front cover.



6 Remove the ring (2) from the front cover (1).



7 Lift off the purge cover (3).



8 Using your finger, lift up on the tab to remove the diaphragm washer (4). Carefully remove the diaphragm (5).



9 Turn the adjustment knob (29) counter-clockwise until it stops. Using an 19mm (¾") wrench, turn the heat exchanger (12) counter-clockwise to loosen it. Once loose, unthread by hand and remove it from the valve body (19).



10 While keeping the lever (20) depressed, pull on the adjustment knob (29) and remove the valve body assembly (15-32) from the case (8).



11 From the left side of the case (8), remove the spacer (13) and oring (14).



12 While holding the lever (20) down, carefully slide the venturi (18) off of the valve body (19). Remove the oring (17) from the venturi.



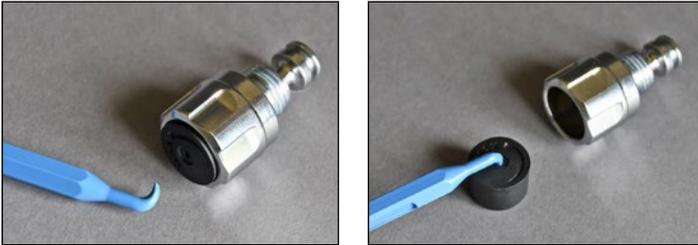
13 Turn the adjustment knob (29) ½ turn clockwise allowing the pin (21) to fall out. If the pin does not fall out, use an oring removal tool to carefully push it out. Turn the adjustment knob counter-clockwise and remove it from the valve body (19).



14 Remove the pin (27) from the adjustment knob (29) by tapping or shaking the knob. Remove the oring (28) from the knob.



15 Using a hooked oring tool, insert the point into the small hole in the center of the plug (32). Carefully pull the plug out of the adjustment knob (29).



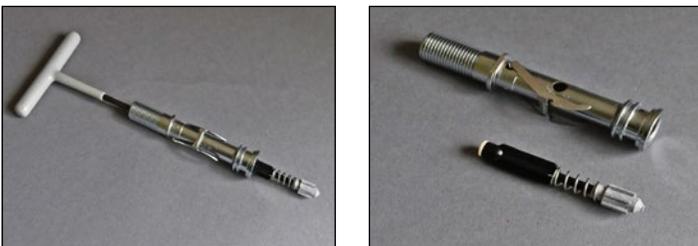
16 Using a 4mm hex key, turn the adjustment screw (31) counter-clockwise and remove it from the knob. Remove the oring (30) from the adjustment screw.



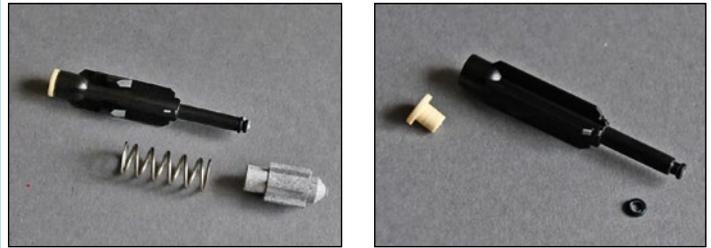
17 Remove the oring (14) from the valve body (19).



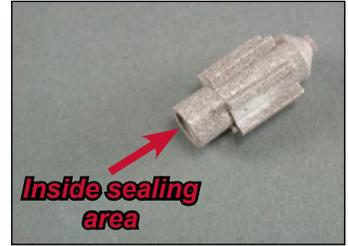
18 Using a 4mm hex key, insert it into the threaded end of the valve body (19) and carefully push out the shuttle valve assembly (22-26).



19 Separate the shuttle valve (23), spring (25) and counter-balance chamber (26). Using your fingernail, remove the MP seat (22) and oring (24) from the shuttle valve.



20 Inspect the inside sealing area of the counter-balance chamber (26).



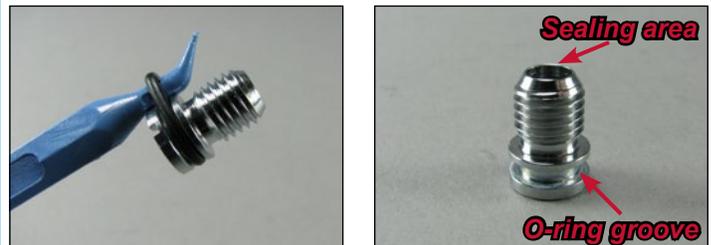
21 Using the crown adjustment tool (RG911137), turn the crown (16) six to seven full turns counter-clockwise to disengage it from the threads. Since the crown is o-ring sealed, it will not completely unthread from the valve body (19).



22 Using the seat extraction tool, carefully push the crown (16) out of the valve body (19).



23 Remove the crown oring (15). Critically inspect the crown (16), paying special attention to the sealing area as well as the oring groove.



24 Typically, there is no need to remove the lever (20). Visually inspect it to make sure it is not bent or damaged in any way. Should there be a need to remove the lever, grasp one of the legs at the base and disengage one of the lever feet. Swing the lever over the valve body (19) and disengage the other foot. Lay the lever on a flat surface and inspect it. Both of the legs should be parallel and the feet on the same plane. Replace if it looks damaged.



CAUTION: The lever legs should not be twisted. If necessary, gently squeeze legs together to straighten.

25 Fold back the edges of the exhaust valve (33) and inspect underneath. The seating surface should be clean and free of damage. Inspect the exhaust valve. It should be supple and have well defined edges. If the exhaust valve is in good condition, it does not need to be removed. If there is any sign of deterioration, the exhaust valve should be replaced.



THIS CONCLUDES DISASSEMBLY



NOTE: Before beginning reassembly, perform parts cleaning and lubrication in accordance with *Procedure A: Cleaning and Lubricating*.

REASSEMBLY PROCEDURE



NOTE: Before performing any reassembly, it is important to inspect all parts, both new and those that are being reused, to ensure that every part and component is perfectly clean and free of any dust, corrosion, or blemishes. Before dressing each o-ring with Christo-Lube®, check to ensure it is clean, supple, and free of any blemish.



WARNING: Use only genuine Aqualung® parts, subassemblies, and components whenever assembling any Aqualung® product. DO NOT attempt to substitute an Aqualung® part with another manufacturer's, 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 If the exhaust valve (33) was removed, thread the tail through the retaining hole on the outside of the case (8) until the barb engages on the inside. If the exhaust valve is new, cut the excess stem with side cutters, leaving approximately 5mm of the tail behind.



2 Carefully push a new MP seat (22) into the shuttle valve (23). Make sure the seat is flush against the valve. Install oring (24) onto the shuttle valve, put some extra Christo-Lube on the end of the shaft.



3 Fit the spring (25) onto the leading edge of the counter-balance chamber (26). Carefully guide the stem of the shuttle valve (23) through the spring and into the counter-balance chamber.



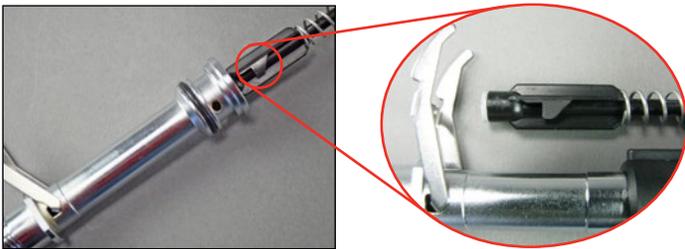
4 If you removed the lever (20), replace it on the valve body (19) so that the lever is on the side with the small dot as shown in this picture.



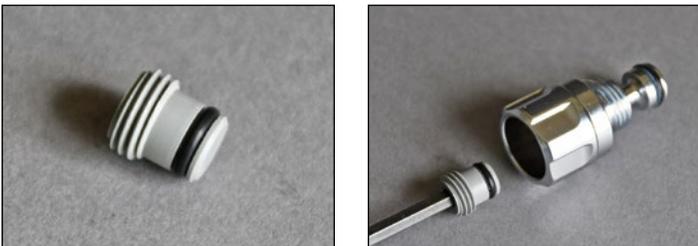
5 Install o-ring (14) onto the valve body (19). Install oring (28) onto the adjustment knob (29)



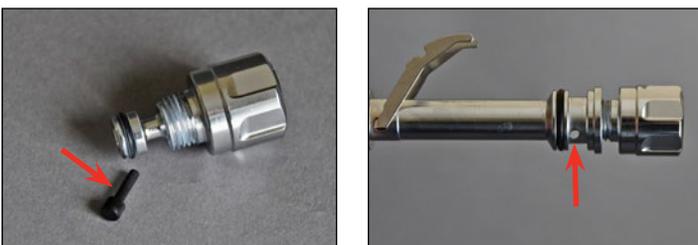
6 With the lever (20) perpendicular to the valve body (19), install the shuttle valve assembly (22-26) into the valve body. Make sure that the feet of the shuttle valve are facing 180 degrees opposite from the lever. Using your finger, press the shuttle valve assembly all the way into the valve insert, so that the head of the shuttle valve is past the lever feet. To make sure the shuttle valve assembly is installed correctly, hold the valve insert by the threaded end. The shuttle valve should stay in the valve body.



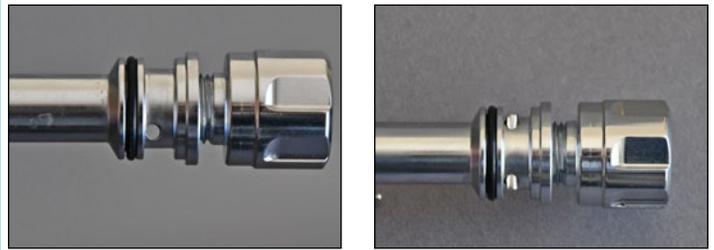
7 Install o-ring (30) onto the adjusting screw (31). Using a 4mm hex key, install the adjusting screw clockwise into the adjustment knob (29) until it bottoms out. Preset the adjusting screw by turning it out 3/4 turn counter-clockwise.



8 Install the pin (27) into the adjustment knob (29). Thread the adjustment knob clockwise into the valve body (19) until the hole for the spring pin (21) is exposed. The lever (20) should now be under spring tension.



9 Insert the spring pin (21) evenly into the hole in the valve body (19). Loosen the adjustment knob (29) counter-clockwise until it applies tension on the pin to keep it from falling out.



10 Install the oring (17) onto the venturi lever (18). While holding the lever (20) down, carefully slide the venturi lever over the threaded end of the valve body (19).

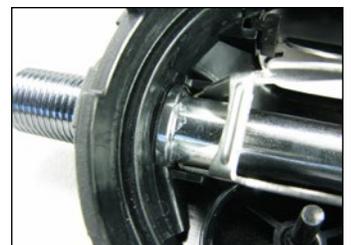


11 While depressing the lever (20), insert the valve body (19) through the right side of the case (8). Do not allow the lever to spring up forcefully as it passes into the case.



CAUTION: Do not allow the lever to spring up forcefully as it passes through the case. This could cause the lever to disengage from the shuttle valve, requiring disassembly of the valve body assembly.

12 Be sure that the two index flats and the two lever legs engage the tabs molded into the case (8).



13 Slide the o-ring (14) down the threaded end of the valve body (19). Slide the spacer (13), with the flat edge facing outward, down the valve body. Rotate the spacer so it fits into the cutouts in the case (8).



14 Thread the heat exchanger (12) onto the valve body (19) until finger tight. Using a torque wrench with a 19mm (3/4") crow-foot, tighten the heat exchanger to a torque of 45 in-lbs (5 Nm).



15 Fit the o-ring (15) onto the crown (16). Press the crown, threaded end first, into the valve body (19). Use the crown adjustment tool (RG911137) to push the crown into the valve spindle as far as it will go.



16 Confirm the adjusting knob (29) is all the way out. Hold the case (8) so that the rim is at eye level. Using the crown adjustment tool (RG911137), turn the crown (16) in (clockwise) until the lever (20) drops about 4mm below the case rim. Then, turn the crown counter-clockwise until the lever is just visible above the case rim. This is a preliminary setting only.



17 Add a new o-ring (15) to the swivel end of the hose (37).



ADJUSTING THE LEVER HEIGHT

18 Using the inline tool, confirm the handwheel is pulled back. Thread the tool onto the second stage. Attach the male end of the MP hose (37) to a properly adjusted first stage regulator or test bench. Thread the swivel end of the MP hose to the other end of the inline tool. Finally, attach the first stage to a fully charged cylinder 3000 psi (207 bar). Slowly open the cylinder valve to pressurize the regulator.



CAUTION: Prior to adjusting and testing this second stage regulator, the accompanying Leg3nd first stage must be correctly serviced, and adjusted to the proper medium pressure 116-130 psi (8-9 bar) and fully tested. Refer to the appropriate first stage service course for any needed adjustments to the first stage before attempting to perform the adjustment and testing of the second stage.

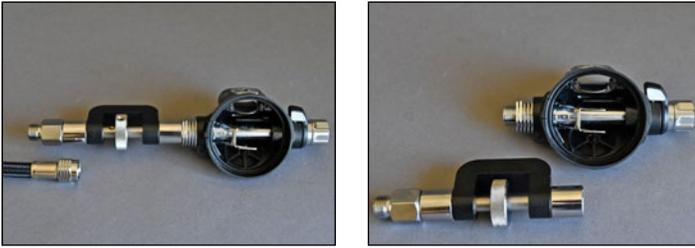
19 Confirm the adjustment knob (29) is all the way out. Slide the flat side of the seat/lever tool (RA122126) along the top edge of the case (8). The tool must contact the lever (20) without causing an airflow.



a If an airflow exists: The lever is set to high. Press inward on the adjustment wheel of the inline tool. Slowly rotate the adjustment wheel until the inline tool engages the crown (16). Turn the crown clockwise until the lever drops (20). Adjust until the lever is touching the bottom of the tool.

b If the lever is not touching the tool: The lever is set to low. Press inward on the adjustment wheel of the inline tool. Slowly rotate the adjustment wheel until the inline tool engages the crown (16). Turn the crown counter-clockwise until the lever (20) is touching the bottom of the tool.

20 Turn off the air supply and purge the second stage by pressing on the lever (20). Remove the hose (37) from the inline tool. Pull back on the adjustment wheel and unscrew the inline tool from the second stage.



CAUTION: When removing the inline adjustment tool from the second stage, remember to pull the handwheel back to disengage it from the crown. Failure to perform this step can cause changes to your adjustment.

FINAL ASSEMBLY

21 Position the diaphragm washer (4) onto the diaphragm (5). Set them both into the case (8) so that the tab on the diaphragm washer fits into the cutout on the case. Make sure it is seated evenly all the way around.



CAUTION: Make sure the diaphragm washer is completely flush with the edge of the case. Confirm the diaphragm is not pinched.

22 Position the purge cover (3) onto the case (8).



23 Test the pin locker by pushing it in several times. The pin should move back by itself. If the pin is not functioning properly, the front cover (1) will have to be replaced.



24 Press the metal ring (2) into place on the front cover (1).



25 Position the front cover (1) onto the case (8). Lift up the pin locker and rotate the front cover clockwise until the pin lines up with the hole in the case. Release the pin when lined up, it should move into the hole in the case.



NOTE: The following tests require a test bench with magnehelic, perform the tests before installing the mouthpiece. General instructions for performing bench tests are located in the next section: **Final Testing.**

26 If equipped with a Comfo-bite mouthpiece, make sure the “bridge” of the mouthpiece (10) is facing upward. Stretch the mouthpiece over the second stage mouthpiece boss. At the base of the mouthpiece is a groove for the reusable clamp (9). Wrap the clamp around the mouthpiece so that the cam buckle points toward the hose and the cam lever points downward. Mate the cam lever hook with the hook on the free end of the clamp. Press down on the cam lever until the buckle snaps closed.



27 If required, install the lip shield (11) by stretching it over the mouthpiece (10) and pressing it up against the reusable clamp (9).



28 Use the seat extraction tool to push the pin locker in. Slide the exhaust cover (34) onto the case (8).



29 Make sure the pin locker sets completely back into the hole in the case (8) and the exhaust cover (34).



THIS ENDS REASSEMBLY

FINAL TESTING PROCEDURES

SECOND STAGE OPENING EFFORT TEST

1 Attach the MP hose (37) to the second stage. While holding the heat exchanger (12) stationary with a 19mm (3/4") wrench. Use a torque wrench with an 17mm (11/16") crow-foot to tighten the hose swivel clockwise to a torque value of 40 in-lbs (4.5 Nm). Slide the hose sleeve (38) up against the heat exchanger.



2 Connect the male end of the hose (37) to a properly adjusted first stage. Attach the system to a calibrated test bench and pressurize the system to 3000 psi (207 bar).

3 Confirm the adjusting knob (29) is all the way out. Slowly open the flowmeter control knob (start vacuum) while watching both the Magnahelic gauge and the MP gauge.

4 When the medium pressure gauge begins to drop the second stage valve is open. The Magnahelic gauge should indicate an opening effort listed below. If the reading does not meet these specifications, go to the next step or refer to: **Table 1: Troubleshooting** for corrective guidelines and specific procedures.

Leg3nd Elite +1.3" to +1.7" of H₂O (3.3-4.3 mbar).

ADJUSTING THE OPENING EFFORT

5 To adjust the opening effort, use a 4mm hex key and turn the adjusting screw (31) clockwise to increase the opening effort or counter-clockwise to decrease it. After adjusting, confirm the opening effort is within specification. Reinstall the plug (32) when finished with the adjustments.



EXTERNAL LEAK TEST

6 After disconnecting the regulator from the test bench, connect it to a scuba cylinder filled to approximately 3,000 psi (207 bar). Open the cylinder valve to repressurize the regulator, and submerge the entire system in a test tank of clean fresh water.

7 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. Bubbles indicate a leak, which requires that the system must be disassembled at the source to check sealing surfaces, assembly sequence and component positioning in order to correct the problem(s).

NOTE: Extremely small leaks may be better detected by applying a soap solution or Snoop™ to the leak area. Bubble streams will indicate the source of the leak. Before disassembling to correct any leaks, rinse the entire regulator thoroughly with fresh water and blow out all residual moisture with filtered, low-pressure air. Disassemble and remedy the problem, referring to: **Table 1: Troubleshooting.**

SUBJECTIVE BREATHING TEST

8 Depress the purge cover fully to ensure that an adequate volume of air needed to clear the second stage flows through the mouthpiece. Then, inhale slowly but deeply from the mouthpiece. A properly serviced and adjusted regulator should deliver air upon deep inhalation without excessive inhalation effort, freeflow, or “fluttering” of the second stage diaphragm. When exhaling, there should be no fluttering or sticking of the exhalation valve. If any of these problems occur, refer to: **Table 1: Troubleshooting.**

**THIS CONCLUDES THE
SERVICE PROCEDURES**

TABLE 1: TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	TREATMENT
Leakage or free flow from second stage	1. High first stage MP	1. Refer to First Stage Troubleshooting Guide
	2. MP seat (22) is worn or damaged	2. Replace the MP seat
	3. The crown (16) is not correctly adjusted, lever is set too high	3. Reset the crown preliminary settings, then repeat Adjustment Procedures
	4. The crown (16) sealing surface is damaged	4. Replace crown
	5. The poppet spring (25) is damaged	5. Replace poppet spring
	6. The lever (20) is bent	6. Replace lever
Low purge or excessive work of breathing (full cylinder)	1. Low first stage MP	1. Refer to First Stage Troubleshooting Guide
	2. The crown (16) is not correctly adjusted, lever is set too low	2. Reset the crown preliminary settings, then repeat Adjustment Procedures
	3. The MP hose (37) is clogged or obstructed	3. Clean or replace hose
	4. The lever (20) is bent	4. Replace lever
Water enters second stage	1. Diaphragm (5) is damaged	1. Replace the diaphragm
	2. Diaphragm (5) is improperly seated between the case (8) and the washer (4)	2. Remove front cover and properly reassemble washer with diaphragm. Check for distortion
	3. The exhaust valve (33) is damaged	3. Replace the valve
	4. Valve body o-ring (14) is damaged	4. Disassemble and replace o-ring
	5. The case (8) is damaged (Check exhaust valve sealing surface)	5. Disassemble and replace case
	6. The mouthpiece (10) is cut or torn	6. Replace the mouthpiece
	7. The inlet o-ring (14) is damaged	7. Replace o-ring

 **NOTE:** This is a partial list of possible problems and recommended treatments. For more information, refer to the second-stage troubleshooting guide, or contact AquaLung Technical Service Department for assistance with problems not described here.

 **CAUTION:** Recommended treatments which require disassembly of the regulator must be performed during a complete overhaul, according to the prescribed procedures for scheduled, annual service. Do not attempt to perform partial service.

TABLE 2: TOOL LIST & SERVICE KITS

PART #	DESCRIPTION	APPLICATION
www.scubatools.com	In-line Adjustment Tool 	Final adjustment and tuning
www.scubatools.com	In-line Test Gauge 	MP testing
www.scubatools.com	Seat Extraction/ Installation Tool 	Crown (16) removal/installation
RG911137	Crown Tool 	Crown (16) removal and installation
www.scubatools.com	O-ring Tool Set 	Removal and installation of o-rings
www.scubatools.com	O-ring Tool (Plastic) 	
RA122126	Lever Height Tool 	Adjusting lever (20) height
N/A	0 - 120 inch-lbs Torque Wrench 	Apply torque to parts listed in Table 3: Torque Specifications
N/A	Side Cutters 	Trim excess barb from exhaust valve (33)
N/A	Magnifier with Illumination 	Sealing surface inspection
N/A	11/16" & 3/4" Crow-Foot 	Installation Heat Exchanger (12) and MP hose (37)
N/A	11/16" & 3/4" Wrench 	Removal Heat Exchanger (12) and MP hose (37)
N/A	4mm Hex Key 	Removal and installation of Adjusting Screw (31)
N/A	Ultrasonic Cleaner	Brass and stainless steel parts cleaning
N/A	Powderless Latex Gloves or Finger Cots	Keep finger oils off of parts
N/A	Magnehlic or Test Bench	
RA121136	Balanced 2nd Stage Service Kit	

TABLE 3: TORQUE SPECIFICATIONS

PART #	DESCRIPTION / KEY ITEM #	TORQUE
RH119117	MP Hose Male and Female Fitting (37)	40 in-lbs (4.5 Nm)
RG911942	Heat Exchanger (12)	45 in-lbs (5 Nm)

TABLE 4: TEST BENCH SPECIFICATIONS

TEST	CONDITION	SPECIFICATIONS
Leak Test	Inlet 3000 psig (207 bar)	No leaks allowed
MP	Inlet 3000 psig (207 bar)	116-130 psi (8-9 bar)
Opening Effort	Inlet 3000 psig (207 bar) MP 116-130 psi (8-9 bar)	+ 1.3 to + 1.7 in. H ₂ O (3.3-4.3 mbar)



PROCEDURE A: CLEANING & LUBRICATING

AQUALUNG AND APEKS REGULATORS AND NITROX

When it comes to issues of nitrox safety and compatibility, the concerns lie primarily with the regulator's first stage as it is subjected to high inlet pressures. High inlet pressures lead to adiabatic compression or heating of the gas. The Aqualung or Apeks regulator product described in this manual, when properly cleaned and assembled, is authorized for use with enriched air nitrox (EAN) that does not exceed 40% (EAN 40). It is authorized because it has undergone adiabatic compression testing and the authorized service kit components and lubricants are compatible in elevated oxygen environments. During cleaning, a mild detergent must be used to remove condensed hydrocarbons (compressor oils) from the inside passageways of the first stage. For the first stage to remain EAN40 compatible, only use hyperfiltered compressed gas (hydrocarbons < 0.1 mg/m³). Ordinary compressed breathing air (Grade E) usually does not meet this criterion. Once ordinary breathing air is used, the first stage is no longer EAN40 compatible until it is cleaned and serviced again.

Although regulator second stage components are not exposed to high pressure EAN, Aqualung and Apeks recommend that the same cleaning procedures be followed for the complete regulator. This prevents the possibility of cross contamination and guarantees the cleanliness of the entire regulator.

Cleaning Brass and Stainless Steel Parts

1. Preclean in warm, soapy water* using a soft nylon bristle brush.
2. Thoroughly clean parts in an ultrasonic cleaner filled with soapy water. If there are stubborn deposits, household white distilled vinegar (acetic acid) in an ultrasonic cleaner will work well. DO NOT place plastic, rubber, silicone or anodized aluminum parts in vinegar.
3. Remove parts from the ultrasonic cleaner and rinse with fresh water. If tap water is extremely "hard," place the parts in a bath of distilled water to prevent any mineral residue. Agitate lightly, and allow to soak for 5-10 minutes. Remove and blow dry with low pressure (25 psi) filtered air, and inspect closely to ensure proper cleaning and like-new condition.

Cleaning Anodized Aluminum, Plastic & Rubber Parts

Anodized aluminum parts and parts made of plastic or rubber, such as box bottoms, box tops, dust caps, etc., may be soaked and cleaned in a solution of warm water mixed with mild dish soap. Use only a soft nylon toothbrush to scrub away any deposits. Rinse in fresh water and thoroughly blow dry, using low pressure filtered air.

 **CAUTION: Do not place plastic and rubber parts in contact with acid solutions. This could alter their physical properties and cause degradation and premature breakdown.**

Cleaning MP Hoses (Air use Only)

Follow **Hose Inspection & Cleaning Guidelines** for more detailed information

1. Hose fittings: Ultrasonically clean with soapy water; Use soft nylon bristle brush. If corrosion is evident, use a brass bristle brush.
2. Run water through hose if needed
3. Thoroughly rinse with fresh water
4. Blow out hose before installing

 **CAUTION: Do not place complete hose length in contact with acid solutions. This could alter their physical properties and cause degradation and premature breakdown.**

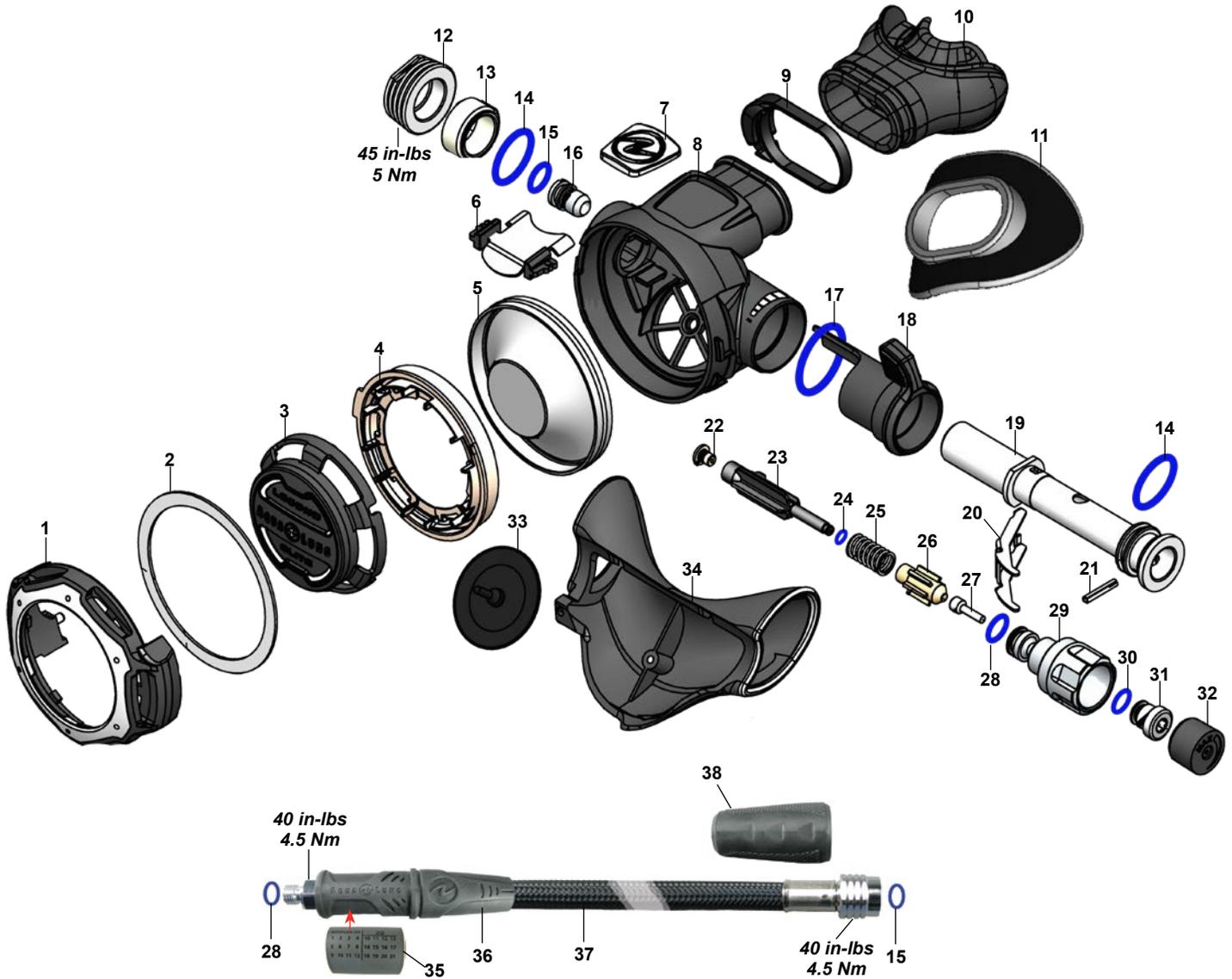
Lubrication and Dressing

Wear powderless, latex gloves when handling and lubricating o-rings. Keeping internal parts free from skin oils and other contaminants is important when running enriched air nitrox through a first stage. All o-rings should be lubricated with Christo-Lube® MCG-111. Dress the o-rings with a very light film of grease, and remove any visible excess by running the o-ring between thumb and forefinger. Avoid applying excessive amounts of Christo-Lube grease, as this will attract particulate matter that may cause damage to the o-ring.

*Soapy water is defined as "household" grade liquid dishwashing detergent diluted in warm water.

MAINTENANCE NOTES

LEG3ND ELITE



KEY# PART# DESCRIPTION

.....	RA121136	Overhaul Parts Kit
.....	RS119004	Leg3nd Elite, Second Stage Only
1	RG911280	Front Cover w/Locker, Steel
2	RG911272	Ring
3	RG911284	Purge Cover, Leg3nd Elite
4	RG911959	Diaphragm Washer
5	RG911960	Diaphragm
6	RG911954	Baffle
7	RG911266	Decal
8	RG911288	Case, Leg3nd
9	RG911254	Mouthpiece Clamp
10	RG911251	Mouthpiece, ComfoBite
11	RG911259	Lip Shield
12	RG911942	Heat Exchanger
13	RG911956	Spacer
14	RG911844	O-ring (20 pk)
15	RG911848	O-ring (20 pk)
16	RG912233	Crown
17	RG912232	O-ring (10 pk)
18	RG911274	Venturi Lever (Grey)

KEY# PART# DESCRIPTION

19	RG911645	Valve Body
20	RG912197	Lever
21	RG912025	Pin
22	RG912198	MP Seat
23	RG912090	Shuttle Valve
24	RG912234	O-ring (10 pk)
25	RG912080	Spring
26	RG912092	Counter-balance Chamber
27	RG911637	Adjustment Pin
28	RG911842	O-ring (20 pk)
29	RG911271	Adjustment Knob
30	RG912515	O-ring (20 pk)
31	RG911641	Adjustment Screw
32	RG911269	Plug
33	RG912196	Exhaust Valve
34	RG911276	Exhaust Cover
35	RG911617	Service Date Sleeve
36	RG911584	Hose Protector, Black (for Braided hose)
37	RH119117	MP Hose, Braided, 3/8"x29", Blk,w/Protect (2)
38	RG911258	Legend Short Hose Sleeve

Part numbers in **BOLD ITALICS** indicate standard overhaul replacement part.

LEG3ND ELITE

**AUTHORIZED TECHNICIAN
TECHNICAL MAINTENANCE MANUAL
LEG3ND ELITE SECOND STAGE**



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