MDB
Military Buoyancy Compensator

TECHNICAL MANUAL

Rev. 11/17
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MDB MILITARY BC TECHNICAL MANUAL, PN 18205

MDB BC w/o cylinder PN# 841345

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WARNINGS, CAUTIONS AND NOTES:
Pay special attention to information provided in warnings, cautions and notes, that is accompanied by these symbols:

⚠️ A WARNING indicates a procedure or situation that may result in serious injury or death to the user.

⚠️ A CAUTION indicates any situation or technique that will result in potential damage to the product.

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

This manual provides factory prescribed procedures for the correct service and repair of the Aqua Lung product 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 Aqua Lung Service & Repair Seminar. If you do not completely understand all of the procedures outlined in this manual, contact Aqua Lung to speak directly with a Technical Advisor before proceeding any further.

It is recommended that the BC be rinsed in fresh water after each use, and should be serviced on an annual basis.

However, if at all unsure about the correct functioning of the BC, then it must be officially inspected immediately.

An Official Inspection Consists of:

1. Testing instructions see Pre-Dive Inspection.
2. If the BC fails any of the Pre-Dive Inspection steps 1-7, it should be serviced by an Aqua Lung trained service technician.

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 valve/airway is disassembled, reusable components should be segregated and not allowed to intermix with non-reusable parts or parts from other units. Delicate parts, which contain critical sealing surfaces, must be protected and isolated from other parts to prevent damage during the cleaning procedure.
4. Use only genuine Aqua Lung® parts provided in the overhaul parts kit for this product. DO NOT attempt to substitute an Aqua Lung® 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 excessive stress.

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 counter-clockwise.
2. When instructed to install, screw, or tighten a threaded part, turn the part clockwise.
3. When instructed to “OPEN” the handwheel, turn the handwheel counter-clockwise. When instructed to “CLOSE” the handwheel, turn the handwheel clockwise.
4. When instructed to remove an o-ring, use the pinch method (see illustration below) if possible, or use 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 (53) from the valve body ...”, the number 53 is the key number to the o-ring.

**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.
GENERAL PRECAUTIONS & WARNINGS

WARNING: Before using the BC, you must have successfully received training and certification in the technique of SCUBA diving from a Military or government operated diving school (or any recognized certification agency). Use of this equipment by a person who is not certified by a recognized agency shall render all warranties, express or implied, null and void.

WARNING: Use of SCUBA equipment by uncertified or untrained persons is dangerous and can result in serious injury or death.

WARNING: In an emergency such as an out of air situation or uncontrolled rapid descent, it is important to remove and jettison weight immediately.

WARNING: In the event of an uncontrolled, rapid ascent, it is important to immediately begin venting air from the BC. Continue venting air to slow your ascent rate if neutral buoyancy cannot be reestablished.

WARNING: Your BC is not a lift bag. DO NOT rely on it to bring heavy objects to the surface. Doing so may permanently damage the BC and could result in serious injury or death.

WARNING: NEVER lubricate any part of the BC with any lubricant. Lubrication of certain parts and assemblies must only be performed by a factory trained service technician.

WARNING: Do not apply any type of aerosol spray to the BC. Doing so may damage certain plastic components, including important valve connections.

WARNING: Repair, service or disassembly must not be attempted by persons who are not factory trained and authorized by Aqua Lung International. Unauthorized service will render the warranty null and void.

WARNING: A BC is NOT a life jacket or rescue device! It is not designed to provide face-up flotation in all situations; therefore it does not meet U.S. Coast Guard regulations for a life preserver or personal flotation device (PFD). If you become unconscious in the water without a buddy present to immediately give assistance, you may suffer serious injury or death from drowning.

Your BC is primarily designed to help you maintain neutral buoyancy while in a comfortably balanced, face-down swimming position underwater. It is also designed to provide you with flotation so that you can rest on the surface, but it is not designed to function as a life preserver or personal flotation device (PFD). In order to meet U.S. Coast Guard regulations, a PFD must be designed so that it automatically rights you to a face-up position and holds your head out of the water on the surface.

The design characteristics of a personal flotation device are different from those of a buoyancy compensator. The ability of any flotation device to float you in a face-up position can also be affected by other diving equipment you wear, including a cylinder, weight or exposure suit and whether it can be inflated before you lose consciousness.

For this reason, it is important always to dive with a buddy and maintain close proximity with them at all times. Do not depend on any flotation device to hold your face above the surface in the event that you are rendered unconscious in the water while diving.

WARNING: Although this manual provides some basic guidelines for certain buoyancy control techniques, it is not a substitute for training from a professional diving instructor. Failure to weight yourself properly may create a hazardous condition that could lead to serious injury or death. If you are unsure how to weight yourself in order to achieve optimum buoyancy underwater and on the surface, do not dive until you have obtained the necessary instruction from your diving instructor.

If you have any questions regarding your Buoyancy Compensator or these instructions, contact Aqua Lung at (760) 597-5000
PRODUCT DESCRIPTION

The MDB is specifically designed for military use with all types of back or chest worn underwater breathing apparatus (UBA), semi-closed circuit or closed circuit rebreathers.

The MDB features a 90 degree cylinder connector that allows you to attach an auxiliary air cylinder and inflate the BC with compressed breathing air. The air cylinder comes equipped with a Groupe d'Etudes et de Recherches Sous-Marines (GERS M20) connection. A breathable inflator allows you to breathe from the bladder in an emergency situation.

The distribution of the buoyancy chambers provides excellent safety performance, either during buoyant ascent (vertical stability) or at the surface (natural support position with head and shoulders out of the water). The bladder is constructed of heavy duty urethane coated 1000 denier black fabric which resists cuts, tears and abrasion. Two drains with tethered caps on the lower lobes make draining fast and easy.

The bag is sewn throughout with high strength nylon. A crotch harness with split strap design provides greater comfort while maintaining ease of adjustment.

The MDB must be fitted with an inconel cylinder to be completely non-magnetic.

SYSTEM LAYOUT

BC Air Breathing

The oral inflator is equipped with a breathing valve that allows the diver to breathe air from the buoyancy compensator when inflated. This device is only to be used in case of an emergency. To breathe air from your BC, first slightly exhale through the oral inflator mouthpiece in order to remove excess water trapped in the mouthpiece’s body (Fig. 1). Inhale through the mouthpiece to activate the breathing valve and deliver air from the BC bladder. When done inhaling, exhale through the mouthpiece. A breathing valve permits both inhaling and exhaling without any manipulation of buttons.

![Oral Inflator Mouthpiece](PN 101239)

**WARNING:** Always keep in mind that breathing air from the BC also deflates the bladder and changes your buoyancy. Always be prepared to add air to the BC from the auxiliary air cylinder in order to maintain buoyancy and a breathable air supply.

Depending on the depth, the auxiliary air cylinder will only provide a few minutes of air, so you must immediately start a controlled ascent to the surface.

**CAUTION:** The inside of the bladder must be kept dry and clean of all contaminants. If not maintained properly, breathing from the BC in the case of an emergency could cause suffocation or asphyxiation due to contamination.
Padded Neck Collar & Pocket
The MDB features a padded neck collar to prevent chafing and one large utility pocket located on the left lobe of the BC.

Universal Connector Caps
The MDB is equipped with two universal connector caps located on the back of each BC lobe. The caps can be removed to rinse the inside of the bladder.

Auxiliary Air Cylinder
A cylinder is attached to the MDB by means of a threaded hand fitting. Air is added to the BC by opening the cylinder valve (Fig. 2). Required for closed circuit and semi-closed circuit diving.

General Filling Procedures

1. Before attempting to fill the auxiliary air cylinder, ensure that the fill adapter and valve are completely dry - especially in the area surrounding the valve outlet. Examine the cylinder markings to verify that it is rated for a fill pressure of 2900 PSI (200 BAR).

2. The MDB can be inflated with a 2900 PSI (200 BAR) aluminum cylinder. Examine the cylinder markings to determine the maximum fill pressure. Aluminum cylinders must have a current visual inspection and hydrostatic test date IAW local regulations.

WARNING: DO NOT attempt to fill if the cylinder markings indicate that it is assembled with a non standard cylinder rated for a different fill pressure. Doing so may result in rupture or explosion in the event of fire or overfilling. Instead, immediately return the cylinder to a factory trained service technician and do not use under any circumstances.
3. Closely inspect the opening of the valve seat adapter to ensure that no debris, residue or moisture is present.

**CAUTION:** If moisture is found to be present inside the valve seat adapter opening, this indicates that water may have entered the cylinder. **DO NOT** fill or attempt to use the auxiliary air cylinder until it has received complete inspection and any required service by a factory trained service technician.

### Filling the Auxiliary Air Cylinder with a Fill Adapter

**NOTE:** The MDB does not include a fill adapter. This adapter (PN 840817) may be purchased separately (Fig. 3).

**CAUTION:** Do not attempt to fill the auxiliary air cylinder directly from a supply cylinder unless you have received the necessary training and authorization to do so. If done incorrectly, this procedure poses certain hazards which may cause severe injury or death.

**WARNING:** DO **NOT** attempt to fill the auxiliary air cylinder from a supply cylinder where the regulated pressure exceeds 2900 PSI (200 BAR). Doing so could cause a dangerous malfunction to the fill adapter or weaken the cylinder, resulting in serious injury or death.

1. Using a calibrated pressure gauge, check that the supply cylinder is filled to 2900 PSI (200 BAR). It is very important to ensure that the auxiliary air cylinder is filled to its total capacity, but not overfilled.

2. Inspect the o-ring at the end of the fill adapter to make sure it is in good condition. Check that the threads on the fill adapter are clean and not damaged. Screw the fill adapter onto the cylinder valve fingertight (Fig. 4).

3. Loosen the fill adapter yoke screw as needed so that the dust cap can be removed from the inlet fitting.

4. Inspect the supply cylinder o-ring to make sure it is present, in good condition and seated evenly in the supply cylinder valve.
5. While supporting the auxiliary air cylinder with one hand, place the yoke of the fill adapter over the cylinder valve to align the inlet fitting flush against the valve o-ring. Screw the fill adapter yoke screw into the small dimple on the backside of the cylinder valve finger-tight (Fig. 5).

![Fig. 5]

6. The relief plug is fixed in the closed position on the GERS fill adapter when filling the auxiliary air cylinder from a supply cylinder.

NOTE: Always fill the cylinder as slowly as possible (do not exceed 300 PSI / 20.7 BAR per minute) by turning the handwheel of the supply valve slowly to control the rate of fill. Rapid filling will generate heat and will result in an incomplete fill after the cylinder cools. If the cylinder is warm to the touch afterward, the fill rate was too rapid.

7. Hold the auxiliary air cylinder securely and slowly open the handwheel.

8. While supporting the auxiliary air cylinder with one hand, very slowly open the handwheel on the supply cylinder to begin filling (do not exceed a fill rate of 300 PSI / 20.7 BAR per minute).

9. When air can no longer be heard flowing from the supply cylinder into the auxiliary air cylinder, completely open the supply cylinder valve. Verify the cylinder has been filled to its maximum capacity as marked.

10. While holding the auxiliary air cylinder and fill adapter secure, close the handwheel on the supply cylinder. Close the handwheel on the auxiliary air cylinder, then push down on the relief plug to relieve the line pressure.

11. While supporting the auxiliary air cylinder with one hand, loosen the yoke screw on the fill adapter and remove it from the supply cylinder valve.

12. Unscrew the fill adapter from the valve seat adapter. Replace the dust cap over the inlet fitting and tighten the yoke screw finger-tight.

13. Return the fill adapter to its storage location.
Attaching the Auxiliary Air Cylinder

1. Before attaching the cylinder, inspect the o-ring located at the tip of the cylinder valve connector (Fig. 6).

2. Insert the cylinder into the retaining sleeve and align the threaded valve outlet with the cylinder valve connector. Screw the knurled nut onto the threaded valve outlet until finger-tight (Fig. 7).

CAUTION: Failure to put the auxiliary air cylinder into the retaining sleeve may cause the cylinder valve connector to separate from the manifold.
INFLATION METHODS

Inflation Using the Oral Inflator

To orally inflate your BC (Fig. 8), place your lips on the oral inflator mouthpiece (A) and exhale a small amount of air into the mouthpiece to purge any water that may still be in the housing. While continuing to exhale into the mouthpiece, depress the oral inflator button (B) to inflate the BC. Immediately after exhaling, release the oral inflator button to prevent air from escaping.

Inflation Using the Auxiliary Air Cylinder

To inflate the BC using the auxiliary air cylinder, open the handwheel on the cylinder valve. Close the handwheel when the bladder is adequately filled, otherwise, air will escape from the over pressure relief valve (OPRV).

DEFLATION METHODS

Throughout the course of a dive, it will be necessary to release air from the BC using one of the two methods described in the following instructions. Each method uses a valve that is in a different location. The method you choose at any time may depend on whether you are making your initial descent feet-first, head-first or maintaining neutral buoyancy underwater. Always remember to utilize the valve that is at the highest point on the bladder (closest to the surface), depending on your position in the water.

Deflation Using the Oral Inflator

To deflate the BC using the oral inflator, lift the inflator body to its highest possible position (above the head). Press the oral inflator button (B) to start venting air. This method is most effective on the surface when starting the initial descent.

NOTE: Depressing the oral inflator button while the BC is empty may cause water to enter the bladder.
Deflation Using the Rapid Exhaust Valve (REV)

Inside the inflators spiral hose is a braided spectra cord that attaches the inflator to the dual valve at the top of the airway assembly. You can vent air from the BC by firmly pulling straight down on the lower inflator assembly (DO NOT use excessive force). The Rapid Exhaust Valve (REV) provides an effective and convenient way to vent air (Fig. 9) from the BC while in either an upright or face down swimming position. It also functions as an over pressure relief valve (OPRV) that will open automatically to relieve excess air pressure (Fig. 10). This feature is very critical for preventing stress or damage to the bladder.

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**CAUTION:** The proper function of the over pressure relief valve (OPRV) is vital to prevent damage to the bladder. Unauthorized service or tampering may render these valves inoperable, and could cause the bladder to leak or burst. This type of damage is not repairable and is not covered under warranty.

**WARNING:** Most training agencies recommend that you descend in an upright, feet-first position, in order to maintain a slower and more controlled descent. This is especially true if you experience difficulty equalizing your ears or if you are descending in low visibility conditions.
DONNING & ADJUSTMENT PROCEDURES

Donning and Adjustment *(Figs. 11 & 12)*

1. One end of the back strap has a male quick-release buckle *(A)*. Connect the male buckle to the female buckle at the top of the BC. Secure the excess webbing through the 3-bar slide *(B)*. Connect the back strap and crotch strap quick release buckles.

2. Connect the waist strap male buckle *(C)* to the female buckle located on the side lobe of the BC. Insert the free end of the back strap through the sewn-in loop *(D)* on the waist strap.

3. Insert your arm through the straps as if you were putting on a jacket. Reach back with one hand and grab the free end of the waist strap. Connect the second male buckle *(C)* to the female buckle on the side lobe of the BC.

4. Bring the free end of the crotch strap between your legs and connect the male buckles to the two lower female buckles at the front of the BC *(E)*.

5. Connect the male buckle *(F)* to the female buckle on the chest strap, this is located just above the crotch strap.

**NOTE:** When using front mount UBA, the chest strap will go around the outside, securing it close to the body.

6. The length of the straps may be adjusted by holding the strap and moving the 3-bar slide. After adjusting the position of the 3-bar slide, readjust the strap through the quick release buckle. Ensure any excess webbing is secured back thorough the 3-bar slide.

7. Once the straps are re-adjusted, don the BC to make sure the adjustments are correct.
PRE-DIVE INSPECTION CHECKLIST

Diver Name___________________________ Date________________

MDB Number________

WARNING: Before each use, the BC must be given a thorough visual inspection and functional test. NEVER dive with a BC that shows signs of damage to its bladder or valves until it has received a complete inspection and service.

Initials

_____ 1. Visually inspect the BC, all harness assemblies and buckles for damage.

_____ 2. Install a fully charged cylinder 200 BAR (2900 PSI) into the retaining sleeve on the BC and attach the cylinder to the valve connector. Ensure no leaks are detected between the cylinder and valve connector.

_____ 3. Use each of the inflation methods listed below to check the BC is functioning properly.

a) Slowly open the cylinder valve and fully inflate the BC until the over pressure relief valve (OPRV) opens to relieve excess pressure from the bladder (See Inflation Methods). Close cylinder valve and verify the OPRV re-seats, keeping the bladder fully inflated. Refill cylinder prior to diving.

b) Orally inflate the BC until the bladder is completely full (See Inflation Methods). Squeeze the BC to ensure the over pressure relief valve (OPRV) opens to relieve excess pressure from the bladder. Verify the OPRV re-seats, keeping the bladder fully inflated.

_____ 4. While the BC is still inflated, check the function of both the REV and the oral inflation valve (See Deflation Methods). Ensure rapid and unobstructed exhaust from each valve.

_____ 5. Check the airway, caps and cylinder valve connector, making sure they are sealed and no air is escaping.

_____ 6. Check the function of the breathable inflator. Inhale and exhale through the mouthpiece to make sure the breathing valve is functioning properly.

_____ 7. Fully inflate the BC once again and let it sit for ten minutes to check for leaks and firmness.

_____ 8. Verify that all harness straps are connected properly in the correct mission configuration. Verify all buckles operate correctly.

_____ 9. Ensure that the auxiliary air cylinder has been filled to its maximum capacity as marked.

WARNING: If any leakage can be heard or if the bladder begins to deflate within ten minutes, DO NOT attempt to use the BC until it has been repaired by a factory trained service technician.
POST-DIVE INSPECTION CHECKLIST

Diver Name __________________________ Date __________

MDB Number __________

NOTE: Following the post-dive maintenance procedures is essential to ensure the BC remains in proper working condition.

CAUTION:

• Avoid prolonged exposure to sunlight and extreme heat. Nylon fabric can quickly fade when exposed to the sun’s ultraviolet rays and extreme heat may damage the welded bladder seams.

• Avoid repeated or prolonged use in heavily chlorinated water, which can cause the BC fabric to discolor and decay prematurely.

• Do not allow the BC to chafe against any sharp objects or rough surfaces that could abrade or puncture the bladder. Do not set or drop heavy objects such as cylinders or block weights on the BC.

• Avoid any contact with oil, gasoline, aerosols or chemical solvents.

• To prevent premature damage from corrosion, salt crystals or chlorine attack, thoroughly rinse the BC and components inside and out with fresh water at the end of each diving day using the following procedure:

Initials

_____ 1. Submerge the entire BC in fresh water and soak thoroughly to remove salt and mineral deposits.

_____ 2. Remove the airway from the BC by unscrewing the collar at the base of the dual valve. Direct fresh water into the manifold opening on the BC until the bladder is 1/4 full. Reinstall the airway onto the BC.

_____ 3. Thoroughly shake the bladder so the water rinses the entire inside of the bladder.

_____ 4. Remove the airway, cylinder valve connector and caps to allow water to drain out of the bladder. Rinse the airway, cylinder valve connector and caps. Hang airway (dual valve end down) utilizing the inflator retainer to allow complete drainage and drying. Allow BC to dry completely.

_____ 5. Ensure no water remains inside the bladder. Reinstall cylinder valve connector, caps and airway. Inflate the BC, let it sit for ten minutes to check for leaks.

_____ 6. Store BC partially inflated in a clean, dry area away from extreme temperatures: no greater than 120° F/49°C and no less than 0° F/-18°C.
AIRWAY MAINTENANCE PROCEDURES

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 product 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.

Airway Disassembly

CAUTION: Protective eyewear must be worn when servicing the airway.

1. Unscrew the retaining collar from the manifold to remove the airway. Remove the gasket (13) from inside the manifold and inspect it for damage. If no damage is found, it may be reused.

2. Using diagonal pliers, carefully remove the three clamps (23) from the spiral hose (25) securing the inflator and dual valve assemblies.

CAUTION: Do not cut the spiral hose while removing the clamp.

3. Pull back the spiral hose (24) from the airway body (31). Press the pin (29) out from one side using a pin punch or similar tool to release the braided spectra cord (24). Remove the spiral hose from the dual valve body (14).

4. Using the spanner wrench to hold the push button (36), remove the locknut (26) from the stem (32) with a 5.5mm nut driver. Use needle nose pliers to remove the washer (27) and the rubber valve (28).

5. Using a flat blade screwdriver, carefully lift out the fingers of the cage (37) and remove it from the airway body (31).

CAUTION: Do not apply excessive force or pry against the airway body or cage with the tip of the screwdriver.

6. Remove the stem (32) through the front of the airway body (31). Remove the mouthpiece (30) from the airway body.
CAUTION: Do not attempt to disassemble individual parts of the airway body assembly. Attempting to do so will cause permanent damage and the airway body will have to be replaced.

7. Using the spanner wrench, remove the push button (36) from the stem (32). It may be necessary to secure the stem in a vise or a pair of soft jawed pliers to loosen the push button. A small amount of Loctite 425 or 480 is used to secure the button in place. Ensure the stem is protected from damage.

8. Remove the push button (36), washer (35) and the inflator diaphragm (34) from the stem (32). Next, remove the plastic valve (33) from the stem. It may be necessary to secure the stem in a vise or a pair of soft jawed pliers to remove the plastic valve. A small amount of Loctite 425 or 480 is used on the threads of the stem.

9. Clean any residual Loctite from the large threads of the stem (32).

10. Locate the seam that runs along the circumference between the dual valve body (14) and the outer cap (18), where the cap is fastened to the body. Using the plastic handle of a medium size screwdriver, or similar lightweight blunt instrument, rap sharply against all points of the seam on the cap to break the adhesive bond.

CAUTION: Do not apply excessive force or use a hammer, mallet or other heavy instrument.

11. Hold the dual valve body (14) secure and slightly press in on the cap (18) to counteract spring tension. Unscrew the cap and remove the spring from the dual valve body. Closely examine the cap to check for any signs of thread damage, distortion, cracking, or chemical attack that may indicate the use of excessive force or incorrect adhesive during previous service.

NOTE: If the cap cannot be turned, repeat step 10 to break the adhesive bond.

12. Remove the valve plate (16) and gasket (15) from the dual valve body (14). Remove the gasket from the valve plate.
13. Locate the two holes on opposite sides of the dual valve body (14) which hold the arms of the poppet guide (22). Remove the poppet guide from the dual valve body, by pressing the arms of the poppet guide inward simultaneously using two small probes.

14. When the arms of the poppet guide have disengaged from the body, firmly grasp the braided spectra cord (24) and pull the exhaust valve assembly straight out while holding the body secure. This will pull the poppet stem (20) out of the dump valve poppet (19). Remove the dump valve poppet from the body.

15. Remove the braided spectra cord (24) from the poppet stem (20). Pull the poppet stem and spring (21) straight out of the poppet guide (22).

NOTE: Before performing any assembly, 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 Aqua Lung® parts, sub-assemblies and components whenever assembling any Aqua Lung® product. DO NOT attempt to substitute an Aqua Lung® 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.

Airway Reassembly

1. Place one drop of Loctite 425 or 480 onto the base of the large diameter threads of the stem (32). Screw the plastic valve (33) onto the large diameter threads of the stem until seated handtight. The taper of the plastic valve must face towards the center of the stem.

2. Install the diaphragm (34) over the large threaded end of the stem (32) until it rests against the face of the plastic valve (33). Place the washer (35) on top of the diaphragm followed by one drop of Loctite 425 or 480 onto the tip of the stem (large threads) and screw the button (36) onto the stem until it bottoms out against the washer.

3. Pass the stem (32) into the airway body (31) and through the center of the spring. Ensure the stem is centred properly on the spring.

NOTE: Only replace spectra cord if damage is found.

Before starting reassembly, perform parts cleaning and lubrication in accordance with Procedure A: Cleaning and Lubricating in the back of the manual.
4. Set the cage (37) with the fingers facing out over the push button (36). Place the airway body (31) face down on a clean surface against the cage. Secure the cage to the airway body assembly using an arbor press or gently striking with a rubber mallet. Check to ensure all of the fingers on the cage are engaged in the internal groove of the airway body assembly.

**CAUTION: Do not use excessive force while installing the cage, doing so could cause damage to the airway body.**

5. Using needle nose pliers, place the rubber valve (28) flat end up over the small diameter threads of the stem (32). Install the washer (27) on top of the rubber valve. Place the locknut (26) into a 5.5mm nut driver and screw the locknut onto the stem.

6. Insert the pin spanner into the holes on the button (36). Using the 5.5mm nut driver, screw the locknut (26) onto the stem (32) until the threads are exposed 1/4 inch opposite the locknut.

7. Install mouthpiece (30) onto the airway body (31) with the curved end facing out. Ensure the mouthpiece fits into the groove on the airway body.

8. Dip the dump valve poppet (19) into soapy water and press securely onto the barbed tip of the poppet stem (20). Slide the spring (21) onto the stem.

9. Insert the poppet stem (20) through the flat end of the poppet guide (22).

10. The braided spectra cord (24) may be assembled to the poppet stem (20) in one of two ways depending on the equipment available at the time of service.

**NOTE: Braided spectra cord needs to be 56 inches in length and 3/64 inches in diameter.**

a. Place the poppet guide (22) on a flat (clean) surface with the forked end up. The hole in the poppet stem (20) should line up with the small notches on the poppet guide. Press down on the poppet guide enough to pass the braided spectra cord (24) through the hole in the poppet stem two times. Using a ruler, ensure the braided spectra cord measures 30.5 cm (12 inches) end to end.
b. Compress the poppet guide (22) with the forked end out onto the poppet holding fixture. The hole in the poppet stem (20) should be in-line with the small notches on the poppet guide. Using the inflator cord fixture, install the braided spectra cord (24) through the hole in the poppet stem and around the inflator cord post 2 times (Two loops around post and two passes through the stem).

(Fixtures can be locally manufactured).

11. Tie a 2.5 cm (1 inch) loop on one end of the braided spectra cord using a “Overhand Bow Knot”. Secure the cord by going through the open loop with the opposite cord end and tying three (3) “Half Hitches”. Trim the excess cord to 0.63 cm (1/4 inch) at both knots and seal the cord ends using a propane lighter.

12. Position the poppet guide (22) so that the larger rib faces toward the top side of the dual valve body (14), away from the swivel collar. Lubricate the dump valve poppet (19) with a small amount of soapy water, and align the arms of the poppet guide with the grooves inside the dual valve body. Insert the poppet guide into the dual valve body until the ears rest just above the rim.

13. Squeeze the arms of the poppet guide (22) so that the ears fit inside the dual valve body (14), and press the poppet guide completely inward until the ears snap into place inside their respective holes. Check to ensure that the dump valve poppet (19) has passed through the top of the dual valve body and remains properly seated over the end of the poppet guide.

14. Install the gasket (15) onto the valve plate (16), and set the valve plate inside the dual valve body (14) with the gasket facing down.

15. Place the over pressure spring (17) directly in the center of the valve plate (16).

16. Carefully apply one drop of Loctite brand 425 or 480 grade thread adhesive to the center thread of the outer cap (18). Place the cap directly over the spring (17) and valve plate (16). Press down to compress the spring and screw the cap onto the dual valve body. Continue turning the cap by hand until it bottoms out.
17. Ensure the inside line on the bottom vent slot of the cap (18) lines up with the seam on the dual valve body (14).

18. Place the cord hook through the large diameter end of the spiral hose (25). Compress the hose to expose the hook out the opposite end. Use the cord hook to pull the braided spectra cord (24) through the small diameter end of the hose.

19. Apply a small amount of Gasgacinch to the diameter of the dual valve body (14), allow 15 seconds to get tacky. Slide the spiral hose (25) onto the dual valve body.

20. Lightly fasten a clamp (23) over the spiral hose (25) so that it captures both the hose and dual valve body (14). Position the end of the clamp to either side and pull the end of the clamp sufficiently snug. Trim the excess length with a pair of diagonal pliers.

21. Insert retaining pin (29) half way into one hole of the airway body (31). Slide the spiral hose (25) back and capture both loop ends of the braided spectra cord (24) using your thumb and index finger facing up. Rotate your wrist pointing your thumb and index finger down to form a “Larks Head Knot” on both loop ends. Capture the knot onto the retaining pin.

22. Press the pin (29) into the airway body (31) by hand until it engages equally into both holes. Apply a small amount of Gasgacinch to the outer diameter of the airway body (where the spiral hose attaches), allow 15 seconds for the adhesive to get tacky. Slide the spiral hose (25) onto the airway body with the mouthpiece facing to the right hand side of the user as worn.

23. Secure each of the two clamps (23) to the spiral hose (25). The outside clamp head faces in-line with the mouthpiece. Clamp edge distance to the end of the hose is 3.18 mm (1/8 inch). The other clamp faces the opposite direction over the retaining pin (29).

Please Refer to Final Assembly and Testing section of this manual.
CYLINDER VALVE CONNECTOR MAINTENANCE PROCEDURES

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 valve 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.

Cylinder Valve Connector Disassembly

CAUTION: Protective eyewear must be worn when servicing the cylinder valve connector.

1. Unscrew the cylinder valve connector (58) from the BC manifold.

2. Remove the gasket (13) and closely inspect it for damage. This component may be reused if no damage is found. Examine the manifold for any damage. Clean any debris out of the manifold with a clean cloth.

3. Remove o-ring (1) from the valve reducing connector (2).

4. Locate the retaining ring (12) on the bottom side of the cylinder valve connector (58). Using circlip pliers, remove the retaining ring from the connector (7). Remove the connector assembly from the swivel collar (11) and o-ring (8) from the connector.

5. While holding the connector (7) with soft jaw pliers, use a 5mm hex key adapter and 3/8" flex handle drive to unscrew the valve reducing connector (2) from the connector base (4). Remove the knurled nut (3) from the valve reducing connector.

6. Reinstall the valve reducing connector (2) into the connector base (4). Using soft jaw pliers, hold the connector (7) above the o-ring groove. Insert the 5mm hex key adapter and 3/8" flex handle drive into the valve reducing connector so it is positioned horizontally and to the right. Unscrew the connector base from the connector, then remove the valve reducing connector from the connector base when finished.

NOTE: The valve reducing connector is attached to the connector base with Loctite 414 Superbonder adhesive. Remove excessive adhesive from both parts prior to reassembly.

NOTE: The connector base is attached to the connector with Loctite 414 Superbonder adhesive. Remove excess adhesive from both parts prior to reassembly.
7. Using a flat blade screwdriver, hold the sealing pin (10) in place and unscrew the locknut (5) using a 5mm nut driver. Remove the spring (6) from the sealing pin.

**CAUTION:** These components are under spring tension, use caution during disassembly.

8. Pull the sealing pin (10) out the bottom side of the connector (7). Remove the o-ring (9) from the sealing pin.

9. Clean residual Loctite from the connector base (4) and valve reducing connector (2).

Before starting reassembly, perform parts cleaning and lubrication in accordance with *Procedure A: Cleaning and Lubricating* in the back of the manual.
Cylinder Valve Connector Reassembly

1. Insert o-ring (9) onto sealing pin (10). Insert the sealing pin into the bottom side of the connector (7).

2. While holding the sealing pin (10) with a flat blade screwdriver, install the spring (6) onto the sealing pin. Place the locknut (5) into a 5mm nut driver. Screw the locknut onto the sealing pin until it is flush with the end.

3. Place one drop of Loctite 414 Superbonder on the bottom threads of the connector base (4). Place the threaded opening of the connector base (4) over the threaded end of the connector (7). Screw both the valve reducing connector (2) and connector onto the connector base. Hold the connector firmly with soft jaw pliers, then insert a 5mm hex key adapter and 3/8" flex handle drive into the valve reducing connector so that it is positioned horizontally and to the left. Tighten the connector base into the connector hand-tight, then an additional 1/4 turn. Remove the valve reducing connector from the connector base when finished.

4. Place o-ring (1) onto the end of the valve reducing connector (2). Insert the threaded end of the valve reducing connector through the threaded end of the knurled nut (3). Place one drop of Loctite 414 Superbonder onto the bottom threads of the valve reducing connector. Screw the valve reducing connector into the connector base (4). Hold the connector (7) firmly with soft jaw pliers and use a 5mm hex key adapter and 3/8" flex handle drive to tighten the valve reducing connector into the connector base until hand-tight.

**NOTE:** Excessive Loctite may cause the knurled nut to stick to the connector base or valve reducing connector. Rotate the knurled nut to free it if necessary.
5. Install o-ring (8) into the groove on the connector (7). Install the connector through the center of the swivel collar (11).

6. Turn the cylinder valve connector (58) over so the bottom of the assembly is face-up. Use circlip pliers to install the retaining ring (12), securing the connector to the swivel collar (11). Verify that the flat side of the retaining ring is face up and secured in place.

Please Refer to Final Assembly and Testing section of this manual.
Cylinder Valve Disassembly

1. Open the cylinder valve to ensure cylinder (55) is fully depressurized. Secure the cylinder with a strap wrench and remove the cylinder valve with a 1-1/16 inch (27mm) crowfoot and flex handle drive.

2. Remove the o-ring (54) from the valve body (53).

3. Use the modified screwdriver to unscrew the handwheel nut (40). Remove the spring (41), handwheel (42) and washer (43) from the spindle (48).

4. Place the valve body (53) in a vise. Unscrew the valve seat adapter (51) from the valve body using a 3/8" flex handle drive and 5mm hex key adapter.

5. Remove o-ring (52) from the valve seat adapter (51). Remove the old blue Loctite from the valve seat adapter and valve body (53).

6. Secure the valve body (53) in a vise, use a 22mm (7/8 inch) socket and 3/8" flex handle drive to remove the valve plug (44). Remove the o-ring (45) from the valve plug.
Before starting assembly, perform parts cleaning and lubrication in accordance with Procedure A: Cleaning and Lubricating section of this manual.

8. Unscrew the valve seat (50) from the valve body (53) using the spindle (48) and oldham (49).

9. Using your fingers, remove the washer (46) from the spindle (48). Remove the o-ring (47) from the groove on the spindle.

**NOTE:** If the washer does not come out on the spindle, check for it inside the valve plug.
**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 Aqua Lung® parts, subassemblies, and components whenever assembling any Aqua Lung® product. DO NOT attempt to substitute an Aqua Lung® 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.

**Cylinder Valve Reassembly**

1. Install o-ring (47) into the groove on the spindle (48). Install a lubricated washer (46) onto the spindle.

2. Lubricate the threads of the valve seat (50). Using the oldham (49), spindle (48) and handwheel (42), screw the valve seat into the valve body (53) until it bottoms out. Remove the handwheel, leaving the spindle and oldham in place.

**NOTE:** Prior to installing the valve seat, inspect the fixed crown inside the valve body. Ensure it is free from scratches, nicks and dents. If the fixed crown has significant damage, the valve body will have to be replaced.

3. Install o-ring (45) onto the valve plug (44). Ensure it is seated into the groove on the plug below the shoulder. Screw the valve plug into the valve body (53) until handtight. Using a Newton Meter torque wrench and 22mm (7/8 inch) socket, tighten the valve plug to 15 Nm (132 in lb). Ensure the o-ring is seated inside the groove on the valve body.

4. Install the washer (43) and handwheel (42) onto spindle (48).

5. Place the spring (41) on top of handwheel (42). Install the handwheel nut (40) onto the spindle (48) using the modified screwdriver. The handwheel nut should be flush with the top of the spindle.

**CAUTION:** Avoid cross threading the handwheel nut. If resistance is felt while screwing the handwheel nut onto the spindle, stop and start over.

6. Install o-ring (52) onto the valve seat adapter (51). Apply one drop of Loctite 242 to the small threads of the valve seat adapter. Secure the valve body (53) in a vise. Using a Newton Meter torque wrench and 5mm hex key adapter, tighten the valve seat adapter to 10 Nm (89 in lb).

**Loctite 242**
1. Remove the both universal connector caps (62) from the manifold.

2. Remove the gasket (13) and closely inspect it for damage. This component may be reused if no damage is found. Examine the manifold for any damage. Clean any debris out of the manifold with a clean cloth.

Please Refer to Final Assembly and Testing section of this manual.
4. While holding the dual-valve assembly secure, firmly grasp the airway body assembly (31) and pull it in a straight line directly away from the dual-valve assembly. Check the attachment points of the hose (25) at both ends. If any signs of damage or decay can be detected, it is important to replace the hose before proceeding any further.

5. Immerse the airway and surrounding area of the hose (25) in fresh water to wet the airway body assembly (31). Grasp the hose approximately 6 inches above the airway body assembly and pull the hose in a straight line with moderate force while holding the airway body. Check to ensure that no separation occurs at the attachment point and the hose remains seated flush against the base of the airway body.

6. Finally, bend the hose at a right angle. If the hose shows any sign of separating from the airway body assembly it is important to replace the clamp.

7. Manually inflate the BC until it is taut and fully inflated. Press the deflation button, then pull down on the airway body to test the rapid exhaust valve (REV), ensuring a rapid and unobstructed exhaust using both methods of deflation. Fully inflate the BC once again and listen closely for any signs of leakage.

8. Connect a full cylinder to the cylinder valve connector. Open the cylinder valve to inflate the bladder until the over pressure relief valve (OPRV) releases the excess air from the bladder. Close the cylinder valve and remove the cylinder from the BC. Check the caps, airway and cylinder valve connector for any signs of leakage. If no leaks are detected, let bladder stand inflated for one hour. Check the firmness of the bladder after one hour has passed. Ensure the bladder has remained firm and no air loss has occurred. If the bladder has lost air, recheck all connections, inflate BC, submerge and check for leaks. If a continuous leak is detected, the component must be disassembled and examined for damage or contamination of the seals and seating surfaces.

NOTE: Do not confuse bubbles from trapped air with a true leak. If a true leak is detected, bubbles will come out in a constant stream.

NOTE: If leakage is not immediately detected, allow the BC to stand for at least one hour to ensure that none exists.

CAUTION: If the BC is being used for Non-Mag applications, it must be tested on with a Magnetometer IAW with STANAG requirements 2897 EOD.

NOTE: Ensure the cylinder valve connector, airway and caps are secured to the BC prior to performing a leak test or submerging in water. Failure to do so will cause the BC to leak air or water to enter the bladder if submerged.
Instructions for the BC Repair Kit (Export)

1. Inspect the material of the BC surrounding the hole or tear to ensure that it is perfectly clean and dry. Rinse and dry the BC to clean if necessary.

2. Check to ensure that the patch extends at least twice the diameter or length of the hole or tear on all sides.

3. Apply a generous coat of Weld-On® 4784 adhesive to the material of the BC surrounding the hole or tear. Allow this preliminary coat to set for at least twenty four hours.

4. After twenty four hours have elapsed, apply a generous second coat of adhesive to the material of the BC surrounding the hole or tear and to the glossy surface only of the patch. Wait exactly twenty minutes.

5. After twenty minutes have elapsed, apply a third coat of adhesive to the BC material, a second coat to the patch. Wait between five to ten minutes for this coat to grow tacky, and immediately apply the patch over the hole or tear, using a small roller to press out any pockets of air that may be present between the patch and BC material. Position a 2.27 kg (5 Lb.) weight directly over the patch to apply pressure, and allow exactly one hour for the patch to set.

6. Partially inflate the BC no more than 1/2 full, causing the inner surface of the bladder to separate if adhesion has occurred. Apply a final coat of adhesive over the entire patch area. Allow twenty four hours to completely cure, and then fully inflate the BC to ensure that leakage is no longer present. If the BC does not remain completely full for at least one hour, immerse it in fresh water to determine the source of leakage and repair as needed.
<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>129198</td>
<td>Adjustable Face Spanner</td>
<td>Removal/Installation of Push Button (36)</td>
</tr>
<tr>
<td>840817</td>
<td>Tank Fill Adapter GERS</td>
<td>Charging cylinder</td>
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<tr>
<td>944022</td>
<td>O-ring Tool Kit (Brass)</td>
<td>Removal/Installation of O-rings</td>
</tr>
<tr>
<td>103102</td>
<td>O-ring Tool (Plastic, 5 pk)</td>
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<tr>
<td>820466</td>
<td>Christo-Lube MCG 111</td>
<td>Lubrication of O-rings/Parts</td>
</tr>
<tr>
<td>820467</td>
<td>(2 oz.)</td>
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<td>9-44363</td>
<td>Flex Handle Drive 3/8”</td>
<td>Removal/Installation of Parts</td>
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<tr>
<td>111100</td>
<td>Circlip Pliers 90 Degree</td>
<td>Removal/Installation of Circlip (12)</td>
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<tr>
<td>54325A22</td>
<td>Strap Wrench</td>
<td>Retaining Cylinder (55)</td>
</tr>
<tr>
<td>FC34A</td>
<td>27mm (1-1/16 inch) Crowfoot</td>
<td>Removal/Installation of Valve Body (53)</td>
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<tr>
<td>9-45171</td>
<td>Diagonal Pliers (small)</td>
<td>Removal/Installation of Clamp (23 &amp; 39)</td>
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<tr>
<td>941586</td>
<td>Modified Medium Blade Screwdriver (short)</td>
<td>Removal/Installation of Handwheel Nut (40)</td>
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<tr>
<td>8367A23</td>
<td>5mm Hex Key Adapter</td>
<td>Removal/Installation of Valve Seat Adapter (51) and Valve Reducing Connector (2)</td>
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<tr>
<td>769354</td>
<td>22mm (7/8 inch) Socket (3/8” Drive)</td>
<td>Removal/Installation of Valve Plug (44)</td>
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<td>APPLICATION</td>
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<td>N/A</td>
<td>Loctite 242</td>
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<td>N/A</td>
<td>Loctite 425 or 480</td>
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<td>Gasgacinch</td>
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<td>Cord Hook (Locally Manufactured)</td>
<td>Installing Braided Spectra Cord (24) through Spiral Hose (25)</td>
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<td>Poppet Fixture (Locally Manufactured)</td>
<td>Removal/Installation of Braided Spectra Cord (24)</td>
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<td>Knot Tying Fixture for Braided Spectra Cord (24)</td>
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<td>5.5mm Nut Driver</td>
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<td>5mm Nut Driver</td>
<td>Removal/installation of Locknut (5)</td>
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<tr>
<td>N/A</td>
<td>Small Punch</td>
<td>Removal/Installation of Poppet Guide (22) and Oral Inflator Pin (29)</td>
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<td>Pliers</td>
<td>Removal/Installation of Stem (32)</td>
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<td>3/8 Drive Torque Wrench; 0-15 Nm (0-133 in lb) Range</td>
<td>Torquing of Parts</td>
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<td>3/8 Drive Torque Wrench; 0-110 Nm (0-81 ft lb) Range</td>
<td>Torquing of Parts</td>
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<tr>
<td>N/A</td>
<td>Screw Driver</td>
<td>Removal/Installation of Dual Valve Cap (18) &amp; Sealing Pin (10)</td>
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<td>N/A</td>
<td>Soft Jaw Pliers</td>
<td>Removal/Installation of Connector (7)</td>
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<td>Needle Nose Pliers</td>
<td>Removal/Installation of Inflator Parts</td>
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### TABLE 2: TORQUE SPECIFICATIONS

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<th>PART #</th>
<th>DESCRIPTION / KEY ITEM #</th>
<th>TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>840923</td>
<td>Plug, Valve (44)</td>
<td>15 Nm (132 in lb)</td>
</tr>
<tr>
<td>840917</td>
<td>Body, Valve (53)</td>
<td>30 Nm (22 ft lb)</td>
</tr>
<tr>
<td>840919</td>
<td>Adapter, Valve Seat (51)</td>
<td>10 Nm (89 in lb)</td>
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### TABLE 3: RECOMMENDED CLEANERS, LUBRICANTS AND SEALANTS

<table>
<thead>
<tr>
<th>LUBRICANT/CLEANER</th>
<th>APPLICATION</th>
<th>SOURCE</th>
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</thead>
<tbody>
<tr>
<td>Christo-Lube MCG 111</td>
<td>All o-rings</td>
<td>Aqua Lung&lt;br&gt;2340 Cousteau Court&lt;br&gt;Vista, CA 92081</td>
</tr>
<tr>
<td>Oakite #31</td>
<td>Acid bath for reusable stainless steel and brass parts.</td>
<td>Oakite Products, Inc.&lt;br&gt;50 Valley Road&lt;br&gt;Berkeley Heights, NJ 07922</td>
</tr>
<tr>
<td>Loctite 425 or 480 Adhesive</td>
<td>Component Adhesive</td>
<td>Website Information&lt;br&gt;www.loctite.com</td>
</tr>
<tr>
<td>Loctite 414 Superbonder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loctite 242</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasgacinch</td>
<td>Sealant for hose</td>
<td>Website&lt;br&gt;www.gasgacinch.com</td>
</tr>
<tr>
<td>White distilled vinegar</td>
<td>Acid bath for reusable stainless steel and brass parts.</td>
<td>“Household” grade</td>
</tr>
<tr>
<td>Non-ionic Liquid dishwashing detergent (diluted with warm water)</td>
<td>Degreaser for brass and stainless steel parts; general cleaning solution for plastic and rubber.</td>
<td>“Household” grade</td>
</tr>
</tbody>
</table>
PROCEDURE A: CLEANING AND LUBRICATING

Cleaning Brass & Stainless Steel Parts

1. Pre-clean in warm, soapy water* using a nylon bristle tooth 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 clean, low pressure 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, rubber or silicone such as box bottoms, box tops, dust caps, diaphragms, 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 (including hose ends), rubber, silicone or anodized aluminum parts in acid solutions. Doing so may alter the physical properties of the component, causing it to prematurely degrade and/or break.

Cleaning Hoses

1. Hose fittings: Ultrasonically clean with soapy water*; vinegar OK on tough corrosion – (only brass or stainless hose ends).
2. Run soapy water through hose if needed.
3. Thoroughly rinse with fresh water– (hang with hose ends down).
4. Blow out hose before installing.

Lubrication and Dressing

All o-rings should be lubricated with Christo-Lube® MCG 111. Dress the o-rings with a very light film of lubricant and remove any visible excess by running the o-ring between thumb and forefinger. Avoid applying excessive amounts of Christo-Lube® MCG 111, 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.

CAUTION: Silicone grease and sprays must be strictly avoided, since silicone does not provide adequate lubricity in extreme weather conditions.
### AIRWAY AND CYLINDER VALVE CONNECTOR EXPLODED VIEW

**840558 Connector Assy, MDB (Non-Mag)**

<table>
<thead>
<tr>
<th>Key #</th>
<th>AQA PN</th>
<th>AQF PN</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>840556</td>
<td>840556</td>
<td>Kit, O-rings Cylinder Connector</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>820038P</td>
<td>124704</td>
<td>O-ring (20 pk)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>101028</td>
<td>N/A</td>
<td>Connector Valve Reducing (Non-Mag)</td>
<td>1</td>
</tr>
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<td>3</td>
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**101239 Airway Complete (Non-Mag)**

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<th>AQF PN</th>
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<td>16</td>
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<td>36</td>
<td>101222</td>
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<td>Push Button</td>
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<td>104913</td>
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<td>Clamp Strap Black</td>
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Part numbers in **BOLD ITALICS** are standard overhaul replacement parts.
### Cylinder Valve Exploded View

**840970 Cylinder Valve (Non-Mag) w/ .43L Cylinder**

<table>
<thead>
<tr>
<th>Key #</th>
<th>AQF PN</th>
<th>Description</th>
<th>Qty</th>
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<tbody>
<tr>
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<td>Kit, O-rings &amp; Seat Cylinder</td>
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<td>Nut, Handwheel</td>
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<td>41</td>
<td>480952</td>
<td>Spring</td>
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<td>42</td>
<td>228176</td>
<td>Handwheel</td>
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<td>43</td>
<td>213421</td>
<td>Washer</td>
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<td>Plug, Valve</td>
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<td>45</td>
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<td>46</td>
<td>840523</td>
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<td>480932</td>
<td>Oldham</td>
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<td>Seat, Valve</td>
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<td>Adapter, Metric, Valve Seat</td>
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<td>Body, Valve</td>
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<td>54</td>
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<td>55</td>
<td>840955</td>
<td>Cylinder .43L 200 BAR, Black Alu</td>
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Part numbers in **BOLD ITALICS** are standard overhaul replacement parts.
# MDB COMPONENTS

![MDB Components Diagram]

<table>
<thead>
<tr>
<th>Key #</th>
<th>AQA PN</th>
<th>Description</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>13</td>
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<td>Gasket, Connector Seal</td>
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<td>Airway Complete, Non-Mag</td>
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<td>57</td>
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<td>Cylinder, .43L w/ Valve (Export)</td>
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<td>58</td>
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<td>Connector, Assy, MDB</td>
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<td>59</td>
<td>841335</td>
<td>Vest Only, MDB, Blk, Tested/Packaged</td>
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<tr>
<td>60</td>
<td>762957</td>
<td>Kit, Back / Waist Strap, 1.5&quot;</td>
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<td>61</td>
<td>762956</td>
<td>Removable Waist / Chest Strap, 1.0&quot;</td>
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<tr>
<td>62</td>
<td>15665</td>
<td>Cap, Universal Connector</td>
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## Accessories

<table>
<thead>
<tr>
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<th>AQA PN</th>
<th>Description</th>
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<tr>
<td>N/A</td>
<td>42653</td>
<td>Repair Kit BC’s Export</td>
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Annual Maintenance
The MDB is subject to annual maintenance. All service kit parts indicated on the component exploded view must be replaced annually, even if they appear to be in good condition.

Composition:
(4) Gasket (Key # 13).
(1) Breathable airway with rapid exhaust valve / over pressure relief valve (Key #56).
(1) Auxiliary air cylinder, with valve (GERS connection) (Key #57).
(1) GERS 90° cylinder valve connector (Key #58).
(1) Vest only constructed of heavy duty urethane coated black nylon fabric (Key #59).
(1) Waist strap kit (Key #60).
(1) Chest strap kit (Key #61).
(2) Universal connector caps (located rear inside lobes Key #62).

(Refer to MDB Components for specific locations)

Features:
Lift Capacity (Fresh Water) ....................... 14L (33 lbs)
Cylinder Capacity .................................... 1 X .43L
Cylinder Working Pressure ...................... 200 BAR (2900 PSI)
Dual Valve Opening Pressure (Non-Mag) .09 - .16 BAR (1.3 - 2.3 PSI)
Over Pressure Relief Valve Opening Pressure (Non-Mag) .07 - .14 BAR (1 - 2 PSI)
Dual Valve & Over Pressure Relief Valve Closing Pressure .07 - .14 BAR (1 PSI) under opening pressure

Weight (with cylinder) ....................... 3.0 kg (6.61 lbs)
  (without cylinder) ....................... 1.8 kg (3.9 lbs)
Packaging (individual box) ............... 62.2 cm x 41 cm x 11.5 cm
  ....................... 24.5 in x 16 in x 4.5 in
Total Packed Weight ..................... 3.7 kg (8.1 lbs)

References:
841345: BC, MDB w/o Cylinder
WARNING: It is dangerous for untrained and uncertified persons to use the equipment covered by this warranty. Therefore, use of these products by an untrained person renders any and all warranties null and void. Use of SCUBA equipment by anyone who is not a certified diver, or receiving training through a recognized certification agency, shall render void all warranties, expressed or implied.

Restrictions

The following restrictions apply to this warranty:

• This warranty extends to inflator parts and seams of the bladder. Factory prescribed annual service by a factory trained technician is required.

• This warranty does not extend to abrasion, punctures, or tears of the bladder, or seam separation caused by chemical attack; including prolonged exposure to chlorine.

• This warranty does not extend to damage caused by improper use, improper maintenance, neglect, unauthorized repairs, modifications, accidents, fire, or casualty.

• Cosmetic damage, such as scratches, fraying, and nicks are not covered by this warranty.

• This warranty covers products purchased in the United States. For warranties that may apply elsewhere, please contact your local representative.

• Failure to meet any of the above requirements will render the warranty null and void.
MDB
Military Buoyancy Compensator