CSAV
Combat Swimmer Assault Vest
TECHNICAL MANUAL
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Combat Swimmers Assault Vest (CSAV)
Owner’s Manual P/N 769111

CSAV w/o cylinders PN 769100
CSAV w/ cylinders PN 769116

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WARNINGS, CAUTIONS AND NOTES

Pay special attention to information provided in warnings, cautions and notes which are 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 CSAV should be rinsed in fresh water after use, and it should be stripped down and serviced annually.

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

An Official Inspection consists of:

1. Testing instructions see Pre-Dive Inspection.
2. Orally inflate the CSAV. Check that the over pressure relief valve (OPRV)/rapid exhaust valve (REV) are operating correctly, tightened down properly and no leaks are detected.
3. A visual inspection of the CSAV checking that there is no excess wear to the hook/loop material, stitching points are not excessively coming undone, quick release buckles are in good working order and outer bag zipper is moving freely.
4. Auxiliary air cylinders are full and no leaks are detected. If the CSAV fails any of the 4 steps, 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/inflator 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 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 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 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 (28) from the valve body ...", the number 28 is the key number to the o-ring.

---

![CAUTION: Use only a plastic (pn 103102) or brass (pn 944022) 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.]
GENERAL PRECAUTIONS AND WARNINGS

WARNING: Before using the CSAV, 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 CSAV. Continue venting air to slow your ascent rate if neutral buoyancy cannot be reestablished.

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

WARNING: NEVER lubricate any part of the vest with any lubricant. Lubrication of certain parts and assemblies must only be performed by an Aqua Lung trained service technician.

WARNING: Do not apply any type of aerosol spray to the vest. 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. Unauthorized service will render the warranty null and void.

WARNING: The CSAV is NOT a life jacket! 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 buoyancy compensator 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 an Aqua Lung Technical Representative*
SYSTEM OVERVIEW

The CSAV’s modular configuration allows for easy multi-mission adaptability. Simple torso and girth adjustments allows the military diver to custom fit the CSAV. The CSAV is comprised of the following four components:

1. **Adjustable Harness** *(Fig. 1)*
   - One size fits most - Allows for size adjustments to be made for each individual diver.
   - Evenly distributes the weight of the chosen diving apparatus on the body.
   - Easily adjustable waist belt.
   - Space is provided for the crotch strap behind the back pad.

   ![Fig. 1](image)

2. **Outer Container and Air Bladder** *(Fig. 2)*
   - 1000 denier black Cordura® outer bag with MOLLE style webbing for attaching mission related gear/pockets.
   - 35lb. lift capacity bladder made of 200 denier urethane coated nylon.

   ![Fig. 2](image)
3. SureLock™ Weight Pouches and Sheaths *(Figs. 3 & 4)*

- Can be mounted horizontally / vertically on the side of the vest or vertically on the back of the harness.
- SureLock™ weight pocket positioning will depend on type of diving apparatus used.

![Fig. 3](image1)

![Fig. 4](image2)

4. Apparatus Attachment Strap Kits *(Fig. 5)*

- Female 2" buckles for the MK25 and MK16 are attached to CSAV.
- Strap kits are provided for each of the three diving apparatuses: MK16, MK25 & single and twin SCUBA cylinders.

![Fig. 5](image3)

MK25 Kit

MK16 Kit

Twin and Single Cylinder Kit
SYSTEM LAYOUT

Auxiliary Air Cylinder

The auxiliary air cylinders are attached to the CSAV by means of a threaded hand fitting (Fig. 6). Air is added to the CSAV by opening each cylinder valve. Required for closed circuit and semi-closed circuit diving.

Powerline Airway

The Powerline airway comes standard on the CSAV. It can be orally inflated or a LP inflator hose can be added for power inflation while using open circuit SCUBA. MP air is supplied to the inflator assembly by a quick disconnect inflator hose attached to the first stage regulator. Air can be added to the vest by pushing the power inflator button or orally through the mouthpiece by pushing the oral inflator button. The quick disconnect (QD) fitting cover will keep water and debris out of the inflators key components (Fig. 7).
Integrated Non-Ditchable Weight Pockets

The CSAV is designed with two internal weight pockets capable of holding two block or soft weights. These pockets are located on the rear/inside of the CSAV (under the comfort pad). Each has a secure hook and loop closure. These are to be used with two 4 lb. soft weights for MK25 and may be used for other configurations as well (*Fig. 8*).
SureLock™ Weight Integrated System

The CSAV is supplied with two different options of SureLock™ weight system, two 10-lb. pouches/sheaths and two 20-lb. pouches/sheaths. This is a positive locking mechanical release weight system. Each pouch is capable of holding up to 10 lb. (4.5 kg) or 20 lb. (9 kg) of weight. Block or soft weights can be used. The sheath portion can be attached to the CSAV using the built in “MOLLE” style straps. The weight pouches can then be inserted or removed in the same manner as other weight integrated diving vests. When the weight pouch is inserted in the sheath, the diver should hear and feel the pouch “click” in. This assures the diver that the weight pouch is firmly and securely attached (Figs. 9 - 12).
Filling the Auxiliary Air Cylinder

To fill the cylinder, you will need an optional fill adapter: Aqua Lung part number **101215** (Fig. 13).

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 3,000 PSI (206 BAR).

2. Using a calibrated pressure gauge, check the supply cylinder is filled to 3,000 PSI (206 BAR). It is very important to ensure that the auxiliary air cylinder is filled to its total capacity, but not overfilled.

**WARNING:** DO NOT attempt to fill the cylinder if the markings indicate that it is rated for a different fill pressure other than 3,000 PSI (206 BAR). Doing so may result in rupture or explosion in the event of fire or overfilling. Instead, immediately return the unit to a qualified technician and do not use under any circumstances.

3. Inspect the o-ring at the end of the fill adapter to make sure it is in good condition. Thread the adapter onto the threaded outlet boss on the cylinder valve until finger tight (Fig. 14).
4. Loosen the yoke knob. While supporting the auxiliary cylinder in one hand, attach the adapter to a fully pressurized 3,000 PSI (206 BAR) scuba cylinder (Fig. 15).

![Fig. 15 Bleed Valve Yoke Knob](image)

5. Close the bleed valve on the adapter by turning clockwise until finger tight.

**WARNING:** DO NOT attempt to fill the auxiliary cylinder from a supply cylinder which contains more than 3,000 PSI (206 BAR). Doing so may weaken and damage the cylinder.

6. Open the handwheel on the auxiliary cylinder counterclockwise until the valve is completely open.

7. VERY SLOWLY open the valve on the scuba cylinder.

**NOTE:** Always fill the auxiliary cylinder as slowly as possible 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.

8. Close the valve of the supply cylinder and then the valve of the auxiliary cylinder. Slowly loosen the bleed valve by turning it counterclockwise to relieve the high pressure air trapped in the adapter.

9. Loosen the yoke knob and remove the adapter from the supply cylinder. Unscrew the adapter from the auxiliary cylinder valve. Place the dust cap back in place and tighten the yoke knob.
Attaching the Auxiliary Air Cylinder

1. Before attaching the cylinder, inspect the o-ring located at the tip of the cylinder connector (Fig. 16).

![Check O-ring](image)

Fig. 16

2. Insert the cylinder into the cylinder pocket and align the threaded valve outlet with the cylinder connector. Turn the knurled nut counterclockwise and thread the cylinder connector onto the valve outlet until finger tight (Fig. 17).

![Inserting Cylinder](image)

Fig. 17

**CAUTION:** Failure to put the cylinder in the cylinder pocket may cause the cylinder connector to separate from the manifold.

Inflation Methods

The distribution of the buoyancy chamber 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 unique "split horse collar" design of the CSAV is easy to don, ditch and comfortable to wear.

The CSAV can be inflated by:

- Power inflator (SCUBA regulator).
- Oral inflator.
- Pressurized HP or MP air cylinders.
Using the Oral Inflator

To orally inflate your vest, place your lips on the oral inflator mouthpiece (A) and exhale a small amount of air into the mouthpiece. This will purge any water that may be still in the housing. While continuing to exhale into the mouthpiece, depress the oral inflator button (B) to inflate the vest. Immediately after exhaling, release the oral inflator button to prevent air from escaping (Fig. 18).

Using the Power Inflator

For the power inflator to work, the low pressure inflator hose must be connected. To connect the LP inflator hose, grip the grooved sleeve (C) with your thumb and forefinger and slide the sleeve back. Place the hose fitting over the quick disconnect (QD) fitting (D), and push inward while releasing the sleeve. Check to ensure the hose is securely attached.

To inflate your vest with medium pressure air, depress the power inflator button (E). Do not hold the inflator button depressed continuously underwater, as this could cause you to become excessively buoyant. Instead, depress the button in short bursts until you become neutrally buoyant (Fig. 18).

Using the Auxiliary Air Cylinder

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

**WARNING:** DO NOT rely on the power inflator as the only means to inflate your vest. It is important to maintain proficiency in the skill of orally inflating your vest so that you are prepared for an emergency, such as an out of air situation.

Deflation Methods

Throughout the course of a dive, it may be necessary to release air from the CSAV 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.
WARNING: Whenever you ascend, whether intentionally or accidentally, you must simultaneously vent air from the vest as needed to maintain buoyancy control. If air is allowed to expand inside the vest unchecked, you may experience a rapid, uncontrolled ascent, which could lead to serious injury or death if not immediately corrected. To regain buoyancy control during an uncontrolled ascent, you must continuously exhaust air from the vest until you have stopped ascending.

**Deflation using the Rapid Exhaust Valve**

Inside the inflator’s chevron hose is a stainless steel cable that attaches the inflator to the dual valve at the top of the Powerline airway. You can vent air from the CSAV by firmly pulling straight down on the lower Powerline inflator assembly. Once resistance is felt, only 1/4 in (7mm) of pull is needed to open the rapid exhaust valve (REV). Excessive force is not needed. The rapid exhaust valve (REV) provides an effective and convenient way to vent air from the vest while in either an upright or face down swimming position (Fig. 19). It also functions as an over pressure relief valve (OPRV) that will open automatically to relieve excessive air pressure. This feature is very critical for preventing stress or damage to the bladder (Fig. 20).

![Fig. 19](image1)

![Fig. 20](image2)

**CAUTION:** The proper function of the over pressure relief valve 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.

**Deflation using the Oral Inflator**

To deflate the CSAV using the oral inflator, lift the inflator body to its highest possible position (above the head). Press the oral inflator button (Fig. 18B, previous page) to start venting air. This method is most effective on the surface for making an initial feet-first descent, but is not very useful while you are in a facedown swimming position.

**NOTE:** Depressing the oral inflator button while the vest is empty may cause water to enter the air bladder.
Areas of Adjustment

The harness has five areas of adjustment in order to achieve the best possible fit for a wide range of divers.

1. **Torso Length Adjustment** - Find the metal knurled adjusters located at the top corner of the waist belt retainer. Adjust the webbing length and secure the excess by using the hook & loop web retainers at the end of the webbing (Fig. 21).

![Fig. 21](image)

2. **Torso Girth Adjustment** - The CSAV has three release buckles attached to the front of the container. Don the CSAV, connect and adjust the front buckles. Secure the excess by using the hook & loop web retainers at the end of the webbing. Lastly, to provide a snug fit, locate and adjust the webbing straps that connect the container to the harness, located on the back of the harness (Fig. 22).

![Fig. 22](image)
3. Waist Belt Adjustment - The CSAV waist belt range of adjustment is 30 - 60 inches, it can resize by adjusting the hook & loop overlap and adjustable straps in or out as needed for a snug fit around the body (Fig. 23). Secure the excess strap by using the hook & loop web retainers at the end of the webbing.

![Fig. 23](image)

4. Rear Shoulder Adjustment (Container Retainer Straps) - The container retainer straps are designed to allow the diver several additional inches of room if needed. Adjust the webbing length and secure the excess strap with the hook and loop retainers located in the ends of the webbing strap. (Fig. 24).

![Fig. 24](image)

5. Crotch Strap Adjustment - An adjustable crotch strap is provided to prevent the CSAV from riding up when inflated. There is a hook & loop strap provided under the comfort pad to allow stowage of the crotch strap if not needed (Fig. 1).
DONNING AND ADJUSTMENT PROCEDURES

Donning and Adjustment (Figs. 25 & 26)

1. Insert your arms thorough the arm slots as if you were putting on a jacket.
2. If the crotch strap (A) is to be used, bring it up between your legs and insert the internal waist belt (B) buckle thorough the sewn in loop of the crotch strap.
3. Fasten the lower internal waistband buckle.

4. Secure the lower buckle (C) and upper buckle (D).
5. Secure the chest strap (E).
6. Tighten torso girth straps (F).
7. Check all areas of adjustment are properly fit. Remove CSAV and readjust if necessary.
AIR BLADDER REMOVAL AND INSTALLATION PROCEDURES

1. Hardware must be removed prior to removing the bladder. Unscrew the cylinders from the cylinder connectors. Next, unscrew the cylinder connectors from the bladder (Fig. 27).

![Fig. 27](image1)

2. Remove the Powerline airway (located on the left shoulder) from the CSAV by unscrewing the collar at the base of the rapid exhaust valve (REV) (Fig. 28).

![Fig. 28](image2)
3. Unzip the outer container and remove the bladder (Fig. 29).

4. Stuff the bladder back into the container. Properly align the threaded connectors on the bladder with the holes on the container. Reconnect the inflator, cylinder connectors or caps. Inflate the vest and let sit for one hour to ensure proper air integrity (Fig. 30).

⚠️ CAUTION: Do not use any tools to tighten the Powerline airway, cylinder connectors or caps onto the vest manifold. Doing so may result in overtightening or cross threading and could cause permanent damage that will require replacement of the bladder.
DIVE APPARATUS CONFIGURATION

Weight Pouch Setup

When setting up the CSAV to dive MK16 or SCUBA, the placement and orientation of the weight pouches is left to the discretion of the diver, either mounted vertically or horizontally (Figs. 31 & 32).

NOTE: When setting up the CSAV to dive MK25, follow the mandatory weight configurations in the MK25 Setup Section of this manual.

Inflation System Setup

The 1.5 cf. air cylinders used for inflation are mandatory for the MK16 and the MK25. For SCUBA, the primary source for inflating the vest is MP air from the 1st stage regulator through the Powerline airway. It is suggested that the HP cylinder connectors used for MK16 and MK25 be removed from the vest and blanked off using the caps PN 15665 (Figs. 33 & 34).
SCUBA Setup

There is one CSAV strap kit that is designed to fit two existing Aqua Lung made SCUBA cylinder configurations, shown in the two photos below (Figs. 35 & 36).

**Fig. 35**

Single cylinder, shown with CSAV Strap Kit (PN 769141).

**Fig. 36**

Twin cylinders, shown with CSAV Strap Kit (PN 769141).

**NOTE**: The four MK25 female buckles may be removed or left in place for SCUBA diving operations (Fig. 37).

**Fig. 37**
CSAV Strap kit, PN 769141, is used for all aluminium & steel single SCUBA cylinders.

**NOTE: Pre-soak the nylon webbing in strap kit PN 769141 prior to installation. This allows for more flexibility in the straps. The stabilizer straps will not be used in this configuration.**

1. Install traction sleeves onto tank bands. Skip the last loop in the traction sleeve, ensure hook and loop is face up. Slide the traction sleeves all the way up to the cam-buckle. *(Figs. 38 & 39).*

![Fig. 38](image1.png)  
![Fig. 39](image2.png)

DO NOT THREAD TANK BAND THROUGH LAST SLOT

2. Thread both tank bands through the upper and lower tank band loops on rear of the harness until the traction sleeves are tight against the cam buckle *(Figs. 40 & 41).*

![Fig. 40](image3.png)  
![Fig. 41](image4.png)
3. Lay the vest face down on a clean surface. Carefully place the cylinder down on to the center of the vest (Fig. 42).

4. Securing the tank bands (Figs. 43 & 44).
   - Align the cylinder so that there are approximately 12 inches between the lower tank band and the bottom of the cylinder.
   - Follow number sequence and directional arrows molded into cam buckle.
   - Close cam buckle, fastening hook and loop material to secure.

5. When both tank bands are installed properly, the ends of the tank bands should almost touch the back of the vest as shown. Adjust as needed (Fig. 45).
INSTALLATION INSTRUCTIONS FOR TWIN TANK CYLINDER BAND KIT (PN 083405)

RECOMMENDED TOOLS
1. Ratchet wrench
2. Extension 3" or longer
3. 1/2" socket
4. 1/2" box wrench

1. Lay the twin tanks on a sturdy table or workbench such that the bottom 8 inches of the cylinders stick off the edge of the table.

2. Unscrew the nut (65) and remove the bolt (64), spacer (62) and back-up plates (63) from the band (60).

3. Slide the band (60) onto the bottom of the twin cylinders so the band is 6 inches from the bottom of the cylinders (Fig. 46).

4. Slide a non-slip cover (61), (ribbed side facing inward) between the band and cylinder. Work the non-slip cover into place across the top circumference of the cylinder. Repeat the process for other side. Turn the twin cylinders over and continue to slide the non-slip covers into place. Make sure the band is centered on top of the non-slip covers.

5. Place the back-up plate (63) onto the bolt (64). Position the spacer (62) between the two holes in the band. Insert the bolt (64) through the hole on the bottom side of the band (the threaded end of the bolt should be facing you) and through the spacer (62). Hold these parts in place with your finger.

NOTE: The bolt will not be inserted through the other hole until step 6 has been completed.

6. Place the other back-up plate (63) on the band such that the two holes align. Press up on the bolt (64) and guide the threaded end of the bolt through the band and back-up plate. Take the nut (65) and thread it onto the bolt while simultaneously pressing down on the center of the band. You only need to engage the first couple of threads.

7. While holding the head of the bolt with a 1/2" wrench, tighten the nut with a 1/2" socket wrench. Tighten the nut until the band is tightly secure to the cylinder.

![Fig. 46]
Twin Cylinder Setup (Strap Kit PN 769141)

CSAV Strap kit, PN 769141, is used for all aluminium & steel twin SCUBA cylinders.

**NOTE:** Pre-soak the nylon webbing in strap kit PN 769141 prior to installation. This allows for more flexibility in the straps. The stabilizer straps will not be used in this configuration.

**CAUTION:** Do not remove the lower metal band. Doing so could cause major damage to the manifold while handling cylinders.

1. Using a 1/2 inch socket or wrench, remove the upper metal band. Lay the cylinder set down for safety after removal of the upper band (Figs. 47 & 48).

![Fig. 47](image1)

![Fig. 48](image2)

2. Install traction sleeves on to tank bands. Skip the last loop in the traction sleeve, ensure hook and loop is face up. Slide the traction sleeves all the way up to the cam buckle. (Figs. 49 & 50).

![Fig. 49](image3)

![Fig. 50](image4)
3. Thread the tank bands through both lower tank band loops (one on each side) on the rear of the harness from the outside to the middle. Hook and loop material should be facing inwards on both tank bands. Pull the tank bands through until the traction sleeves on both bands are tight against the lower tank band loops and butting up against the cam buckle (*Figs. 51- 53*).

4. Weave both stabilizer straps through the stabilizer strap loops located near shoulders from the outside to the inside. Allow 6 inches of strap to extend beyond loop as shown (*Fig. 54*).
5. Lay the CSAV face down on a clean surface. Carefully lay the twin cylinders down onto the vest while feeding the ends of the tank bands between the cylinders above the lower tank bands (Fig. 55).

6. Securing the tank bands: (Figs. 56 & 57).

- Align cylinders so that there are approximately 12 inches between the tank straps and the bottom of the cylinders.
- Follow the number sequence and directional arrows molded into the cam buckle.
- Close the cam buckle and fasten hook and loop to secure.
7. Securing the stabilizer straps:

- Weave the ends of the stabilizer straps between the cylinders.
- Feed the ends through the bale rings and tighten.
- Fasten hook and loop to secure.

8. When both tank bands and both stabilizer straps are installed properly, the ends should lay between the cylinders as shown (Figs. 58 & 59).
MK16 Setup (Strap Kit PN 769089)

1. Attach all five straps to the MK16 using “dog bones.” Straps consist of two shoulder straps, two waist straps and one Y-crotch strap (Figs. 60 & 61).

2. Shorten the shoulder straps to keep the MK16 high on the back.

3. Prior to mounting the MK16, ensure the CSAV female buckles are attached to the harness as follows:
   a. Top/Shoulder Buckles: Attached to the forward set of metal web adjusters sewn into the upper area of the harness shoulder straps (Figs. 62 & 63).

   ![Fig. 60](image) ![Fig. 61](image)

   **NOTE:** Most divers will use the forward sets of metal web adjusters. The rear set of metal web adjusters behind these are for very tall, large chested divers.

   ![Fig. 62](image) ![Fig. 63](image)

   b. Bottom/Waist Buckles: Attached to the front set of metal web adjusters sewn into the front ends of the harness shoulder straps (Figs. 62 & 63).
1. Attach the four straps to the MK25. Straps consist of two shoulder and two waist straps (Figs. 65 & 66).
2. Prior to mounting the MK25, ensure the female MK25 buckles are attached as follows (Fig. 67):
   • Top shoulder buckles, (2 ea.): Attach to angled MOLLE loops located at the top of the CSAV front right and left shoulders.
   • Bottom waist buckles, (2 ea): Attach to the MOLLE loops located just forward of the cylinder connectors.

3. Attach the MK25 to the CSAV by connecting the male buckles on the MK25 to the female buckles at the shoulders and the waist of the CSAV. Adjust the straps as needed (Fig. 68).

NOTE: Please note that in newer versions of Strap kit PN 769092, thumb loops have replaced plastic D-rings.
PRE-DIVE INSPECTION CHECKLIST

Diver Name_____________________________  Date_____________
CSAV Number_________

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

_____ 1. Inspect all buckles and hardware on the harness and container.

_____ 2. Install LP inflator hose or two fully charged air cylinders 3,000 PSI (206 BAR) to the vest.

_____ 3. Use one of the two inflation methods listed below to check the vest is functioning properly. Each will vary depending on equipment being used:

   a) Inflate the CSAV with the power inflator button until the over pressure relief valve (OPRV) opens to relieve excess pressure *(See Inflation Methods)*. Verify the OPRV re-seats and keeps the bladder fully inflated.

   b) Slowly open one cylinder valve and fully inflate the CSAV until the over pressure relief valve (OPRV) opens to relieve excess pressure *(See Inflation Methods)*. Close cylinder valve. Verify the OPRV re-seats and keeps the bladder fully inflated. Refill cylinder prior to diving.

_____ 4. While the CSAV is still inflated, check the function of both the rapid exhaust valve (REV) and the oral inflation valve. Ensure rapid and unobstructed exhaust from each valve, verify each valve re-seats and no leakage is detected. *(See Deflation Methods).*

_____ 5. Fully inflate CSAV once again and listen closely for any signs of leakage.

_____ 6. Verify that all harness straps are connected properly in the correct mission configuration. Verify all buckles operate correctly.

_____ 7. Diving Supervisor check previous steps and record deficiencies below.

WARNING: If any leakage can be heard or if the bladder begins to deflate within ten minutes, DO NOT attempt to use the CSAV until it has been repaired by a trained technician.

Remarks________________________________________________________
________________________________________________________________
________________________________________________________________

Divers Signature ________________________________________________
Diving Supervisor Signature _________________________________________
POST-DIVE INSPECTION CHECKLIST

Diver Name_____________________________  Date_____________
CSAV Number_________

Initials

_____ 1. Remove the Powerline inflator assembly from the CSAV by unscrewing the collar at the base of the REV.

_____ 2. Direct fresh water into the manifold opening on the vest until the bladder is 1/4 full. Reinstall the Powerline inflator assembly onto the CSAV.

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

_____ 4. Remove the Powerline inflator assembly and two cylinder connectors/caps to allow water to drain out of the bladder. Rinse out the Powerline airway assembly, cylinder connectors/caps. Hang the Powerline inflator assembly upside down to allow complete drainage, utilizing the hook and loop retainer on the vest. Allow CSAV to dry completely.

_____ 5. Ensure no water remains inside the bladder. Reinstall Powerline airway and cylinder connectors caps. Inflate the CSAV and check for leaks.

_____ 6. Store CSAV deflated in a clean, dry area away from extreme temperatures: no greater than 120˚F/49˚C and no less than 0˚F/-18˚C.

_____ 7. Diving supervisor check previous steps and record deficiencies below.

Remarks


Divers Signature_________________________  Diving Supervisor Signature_________________________
POST DIVE CARE & MAINTENANCE

With proper care, the CSAV will provide many years of reliable service. The following preventive maintenance must be performed to extend the life of the CSAV:

1. Avoid prolonged exposure to direct 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.

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

3. Do not allow the CSAV 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 CSAV.

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

5. After diving, give the CSAV a thorough fresh water rinse and check for water inside the air bladder. If there is any water inside the bladder, it must be rinsed out with fresh water using the following procedure:
   a) Remove the Powerline inflator assembly from the CSAV by unscrewing the collar at the base of the REV.
   b) Direct fresh water into the manifold opening on the vest until the bladder is 1/4 full. Reinstall the Powerline inflator assembly onto the CSAV.
   c) Thoroughly shake the bladder so the water rinses the entire inside of the bladder.
   d) Remove the Powerline inflator assembly and two cylinder connectors/caps to allow water to drain out of the bladder. Rinse out the Powerline airway assembly, cylinder connectors/caps. Hang the Powerline inflator assembly upside down to allow complete drainage, utilizing the hook and loop retainer on the vest. Allow CSAV to dry completely.
   e) Ensure no water remains inside the bladder. Reinstall Powerline airway and cylinder connectors/caps. Inflate the CSAV and check for leaks.
   f) Store CSAV deflated in a clean, dry area away from extreme temperatures: no greater than 120°F/49°C and no less than 0°F/-18°C.
Cylinder Valve 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 (p/n 103102 or brass o-ring removal tool (p/n 944022) 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 Disassembly

1. Open cylinder valve counterclockwise and ensure cylinder (29a or 29b) is fully depressurized. Secure cylinder in cylinder vise (pn 100397) and remove the cylinder valve from the cylinder by turning valve body (24) counterclockwise with a 1-1/16 inch (27mm) crow-foot (pn FC34A) and 3/8" flex handle drive (pn 9-44363). When done, remove cylinder from cylinder vise.

2. Remove the o-ring (28) from the valve body (24). Use the appropriate o-ring tool (pn 944022 or 103102). Discard o-ring.

3. Use the modified screwdriver (pn 941586), to remove the handwheel nut (13), handwheel (14) and the handwheel washer (15) from the spindle (22).

4. Holding the valve body assembly in a vise, unscrew the valve seat adapter (27) from the valve body (24) using a 3/8" flex handle drive (pn 9-44363) with 5-mm hex key adapter (pn 8367A23).

CAUTION: Do not damage the internal surface of the valve seat adapter.

NOTE: If the valve seat adapter is not leaking, DO NOT remove, go directly to step 6.

NOTE: If the valve seat adapter does not loosen, use a heat gun to heat up the body and adapter to loosen the adhesive.

CAUTION: Loctite 242 is used to hold this part in place in addition to the torque applied during assembly.
5. Using the brass or plastic o-ring tool (PN 944022 or 103102) remove o-ring (26) from the valve seat adapter (27). Discard o-ring. Remove the old blue Loctite from the valve seat adapter and body.

6. Holding the valve body assembly in a vise, use a 7/8" (22mm) socket and 3/8" flex handle drive (PN 9-44363), remove the valve plug (16) from the valve body (24). Remove the o-ring (17) from the valve plug (16) using the appropriate o-ring tool (pn 944022). Discard o-ring.

7. Remove the spindle (22) from valve body (24). Remove back-up ring (18), o-ring (18), metal washer (20) and plastic washer (21) from the spindle (22). Discard back-up ring, o-ring and plastic washer.

8. Unscrew the valve seat (23) from the valve body (23) using the spindle (22). Discard valve seat.

9. Remove the safety plug (25a) from the port of the valve body (24) using a 1/2" (13mm) socket (pn 9-44333) and 3/8" flex handle drive (PN 9-44363). Discard safety plug. Remove the safety disc, red (25b) and gasket (25c) from the port in the valve body. Discard safety disk and gasket.

This Concludes Disassembly of the Cylinder Valve

Before beginning reassembly, perform parts cleaning and lubrication in accordance with *Procedure A: Cleaning and Lubricating.*
2. Lubricate threads of valve seat (23) and screw into the valve body (24) using the spindle (22) until it bottoms against the crown.

3. Place parts in the following order onto the spindle (22). Lubricated plastic washer (21), metal washer (20), o-ring (19) and backup ring (18).

4. Insert the spindle assembly into the valve body (24) ensuring the spindle (22) aligns with the slot in the valve seat (23).

5. Lubricate the o-ring (17) and install it on to the valve plug (16). Ensure it is in the groove on the plug below the shoulder. Screw the valve plug (16) back into the body (24) until hand tight. Using a Inch Pound torque wrench and a 7/8 inch (22mm) socket (pn 769345), tighten the valve plug to 90 in/lbs (10.2 Nm). Ensure the o-ring (17) is seated back inside the valve body (24).

Cylinder Valve Assembly

1. Hold the valve body (24) in a vise, install the burst disk assembly in the following order: gasket (25c), safety disc (25b) and safety plug (25a). Torque the safety plug to 90 in/lb (10.2 Nm) using a 1/2 inch (13mm) socket and Inch Pound torque wrench.

NOTE: The Burst Disk Assembly PN 487590 (25) comes as a complete kit, it is to be installed together and cannot be ordered as separate parts.

NOTE: Install safety disc (25b) with the red side of the disc facing out of the port on the valve body.

NOTE: DO NOT Lubricate the threads of the safety plug.

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.
This Concludes Assembly of the Cylinder Valve

Cylinder Valve Final Assembly and Testing

1. Fill cylinder to 500 PSI (34 BAR) and listen for audible leaks. Submerge in a fresh water supply and visually inspect valve for any leaks that may be present. If no leaks are detected, fill cylinder to 3,000 PSI (206 BAR), again listen for audible leaks and submerge in fresh water. If any leaks are detected, disassemble valve, replace worn parts, rebuild and retest.

6. Install washer (15) and handwheel (14) onto spindle (22).

7. Secure the handwheel (14) to the spindle (22) by placing the handwheel nut (13) on to the spindle (22) and tighten it down with the modified screwdriver (pn 941586) until it stops.

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

8. Lubricate the o-ring (26) and install on the valve seat adapter (27). Apply one drop of Loctite 242 to the threads of the valve seat adapter. Secure the valve body assembly in a vise, using a 5-mm hex key adapter (pn 8367A23) and inch pound torque wrench tighten the valve seat adapter to 90 in/lbs (10.2 Nm).

9. Install a new lubricated o-ring (28) onto valve body (24). Lightly lubricate the threads of the valve body (24). Secure cylinder in cylinder vise (pn 100397) and screw the cylinder valve into the cylinder by turning valve body (24) clockwise until hand tight. Using a 1-1/16 inch (27mm) crowfoot (pn FC34A) and Foot Pound torque wrench, tighten the valve assembly into the cylinder to 25 ft/lbs (34 Nm).
Powerline 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 valve or how much use it has received since it was last serviced.

CAUTION: Use only a plastic (p/n 103102) or brass o-ring removal tool (p/n 944022) 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.

Powerline Airway Disassembly

1. Turn the retaining collar and remove the dual-valve assembly (2) from the manifold. Remove the gasket (1) from the vest manifold. Inspect the gasket for damage. If no damage is found, it may be reused.

2. Remove QD cover (7). Using diagonal pliers (pn 9-45171), carefully cut and remove the clamp (3).

3. Pull the chevron hose (4) off the Powerline lower inflator assembly (8). Press the pin (6) out from one side with a pin punch or similar tool to release the cable. Remove QD cover (7) from chevron hose.

4. Using diagonal pliers (pn 9-45171), carefully cut and remove the clamp (3). Slide the chevron hose (4) off the dual-valve assembly (2).

This Concludes the Disassembly of the Powerline Airway

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, 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.

Powerline Airway Assembly

1. Fit the chevron hose (4) over the cable assembly and onto the barrel of the dual valve assembly (2), until it is mated flush at the base of the barrel. Be sure to align the notch on the dual valve body assembly (2) with the notch molded into the chevron hose (4).

2. Lightly fasten a clamp (3) over the chevron hose (4) so that it is evenly seated inside the groove near the end. Position the end of the clamp to either side, where it will not interfere with the LP hose and pull the end of the clamp sufficiently snug. Trim the excess length of the clamp (3) with diagonal pliers (pn 9-45171).
3. Slide the QD cover (7) up the chevron hose (4). Insert the cable pin (6) partly through one of the holes of the Powerline lower inflator assembly (8). Pull back the chevron hose (4) to expose the crimped retainer of the cable and pass the retainer over the pin. Insert the pin through the opposite side of the Powerline lower inflator assembly (8), so that it is flush on both sides of the barrel.

4. Fit the chevron hose (4) over the Powerline lower inflator assembly (8) until it is mated flush at the base of the barrel. Be sure to align the notch on the Powerline lower inflator assembly (8) with the notch molded into the chevron hose (4). Position the end of the clamp to either side, where it will not interfere with the connection of the QD hose and pull the end of the clamp sufficiently snug. Trim the excess length of the clamp (3) with diagonal pliers (pn 9-45171).

Powerline Airway Final Assembly and Testing

**WARNING:** Protective eyewear must be worn at all times during testing.

1. Lay the gasket (1) flat inside the connection manifold and mate the retaining collar of the body dual valve assembly (2) directly over it, onto the manifold. Gently turn the collar clockwise to engage the threads, being careful to avoid cross-threading and hold the Powerline airway in the desired position while tightening the retaining collar by hand until snug.

**CAUTION:** Do not use any tools to tighten the retaining collar onto the vest manifold. Doing so may result in overtightening or cross threading and could cause permanent damage that will require replacement of the bladder.

2. While holding the dual-valve assembly (2) secure, firmly grasp the Powerline lower inflator assembly (8) and pull it in a straight line directly away from the dual-valve assembly. Check the attachment points of the chevron hose (4) at both the dual valve assembly and the Powerline lower inflator assembly. If any signs of damage or decay can be detected, it is important to replace the chevron hose (4) before proceeding any further.

This Concludes the Assembly of the Powerline Airway.
3. Immerse the inflator and surrounding area of the chevron hose in fresh water to wet the Powerline lower inflator assembly (8). Grasp the chevron hose (4) approximately six inches above the inflator assembly and pull the chevron hose in a straight line away from the inflator with moderate force while holding the inflator secure. Check to ensure that no separation occurs at the attachment point and the chevron hose remains seated flush against the base of the inflator housing.

4. Finally, bend the chevron hose (4) at a right angle to the Powerline lower inflator assembly (8), in the direction opposite of the quick disconnect stem. If the chevron hose shows any sign of separating from the inflator assembly it is important to replace the clamp.

5. Verify that the first stage regulator which the Powerline will be used with has been recently serviced and is adjusted to a stable MP of 130-145 PSI (9-10 BAR). Attach the first stage to a cylinder filled to 3,000 PSI (206 BAR). Connect the Powerline to the first stage via the quick disconnect LP hose. Slowly open the valve of the supply cylinder to pressurize the regulator.

6. Depress the inflator button of the Powerline lower inflator assembly (8) several times to ensure that airflow is unobstructed. After releasing the button, listen carefully to ensure that the airflow has completely stopped. If internal leakage can be heard, replace the Powerline lower inflator assembly (8).

7. Hold the inflator button depressed to fully inflate the vest until the over pressure relief valve (OPRV) of the dual valve assembly opens to release excess pressure inside the bladder of the vest. Check the operation of the over pressure relief valve (OPRV) by inflating the vest repeatedly to ensure that the valve opens to relieve excess pressure, yet closes immediately to allow the bladder of the vest to remain taut and fully inflated.

8. Press the deflation button and then pull down on the chevron hose to test the rapid exhaust valve (REV) to ensure a rapid and unobstructed exhaust using both methods of deflation. Fully inflate the vest once again and disconnect the Powerline from the quick disconnect hose to listen closely for any signs of leakage.

9. If any leakage is heard or if the vest has begun to deflate within one hour, fully inflate the vest once again with the Powerline inflator and hold the entire vest submerge in fresh water for at least one minute to determine the source of leakage. During this time carefully observe the Powerline for any signs of bubble formation indicating a leak, especially around the inflator buttons and vest connections. If a continuous leak is detected, the Powerline must be examined for damage, contamination of the seals and seating surfaces. If contamination or damage is found, replace the component.

CAUTION: Before pressurizing the first stage, it is important to have a properly adjusted second stage attached to the first stage. This will provide a safety relief valve if the MP exceeds 145 PSI (10 BAR). Failure to relieve increasing MP may result in damage to the LP hose.

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

This Concludes Final Assembly and Testing of the Powerline Airway
INSTRUCTIONS FOR BC REPAIR KIT (PN 42611)

Precautions and Warnings:

⚠️ **WARNING:** Do not attempt to perform these procedures using patches or adhesives other than those provided in the BC Repair kit, PN 42611.

⚠️ **WARNING:** Do not attempt to patch a hole or tear which is larger than 3/4” in diameter or length.

⚠️ **WARNING:** Do not attempt to patch a tear or puncture which is located directly over or within 2 inches of a seam or internal baffle.

⚠️ **WARNING:** Adhesive should only be applied in a room with plenty of cross ventilation. Carefully read all cautions on the label of the adhesive and avoid inhaling vapors.

1. Inspect the material of the bladder surrounding the hole or tear to ensure that it is perfectly clean and dry. Rinse and dry the bladder to clean if necessary.
2. Check to ensure that the patch extends at least twice the diameter or length of the holes or tear on all sides.
3. Apply a generous coat of Weld-On 4784® Vinyl adhesive to the material of the bladder 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 bladder 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 bladder material and a second coat to the patch. Wait 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 bladder material. Position a 5 pound soft weight pouch directly over the patch to apply pressure and allow exactly one hour for the patch to set.

⚠️ **CAUTION:** It is important to prevent any adhesion between the internal surfaces of the bladder caused by the entrance of adhesive through the hole or tear. Position the bladder as needed to maintain a separation of the bladder at the point of the hole or tear.

NOTE: DO NOT allow the patch to set for more than one hour before performing the next step.

6. Partially inflate the vest no more than 3/4 full, causing the inner surfaces of the bladder to separate if any 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 vest to ensure that leakage is no longer present. If the vest 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>9-45171</td>
<td>Tool, Pliers</td>
<td>Removal/Installation of Clamp (3)</td>
</tr>
<tr>
<td></td>
<td>Diag. Small</td>
<td></td>
</tr>
<tr>
<td>101215</td>
<td>Adapter, Tank Fill</td>
<td>Charging cylinder (46)</td>
</tr>
<tr>
<td>944022</td>
<td>Kit, O-ring, Tool</td>
<td>Removing and installation of o-rings</td>
</tr>
<tr>
<td>103102</td>
<td>Tool, Pick Plastic (5 pk)</td>
<td>Removing and installation of o-rings</td>
</tr>
<tr>
<td>820466</td>
<td>Christo-Lube MCG 111</td>
<td>Lubrication of O-rings/Parts</td>
</tr>
<tr>
<td>(2 oz.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>820467</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(16 oz.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-44363</td>
<td>3/8” Drive, Flex Handle (Sears)</td>
<td>Removal of Valve/Connector Parts</td>
</tr>
<tr>
<td>100398</td>
<td>Inserts, Tool Vise Jaw</td>
<td>Removal/Installation of Cylinder Valve (45)</td>
</tr>
<tr>
<td></td>
<td>(For Existing Shop Vise)</td>
<td></td>
</tr>
<tr>
<td>100397</td>
<td>Tool, Bottle Vise, Table Mount</td>
<td>Secures Cylinder (29a or 29b) for Removal/Installation of Cylinder Valve (45)</td>
</tr>
<tr>
<td>8367A23</td>
<td>Hex Key Adapter 5mm</td>
<td>Removal/Installation of Valve Seat Adapter (27) 5mm key</td>
</tr>
<tr>
<td>FC34A</td>
<td>Crowfoot 1-1/16 In (27mm) Snap-On</td>
<td>Removal/Installation of Valve (45)</td>
</tr>
<tr>
<td>N/A</td>
<td>Small Punch</td>
<td>Removal/Installation Retaining Pin (6)</td>
</tr>
<tr>
<td>947448</td>
<td>Screwdriver, Medium Blade, Modified</td>
<td>Removal/Installation of Cylinder Valve Nut (13)</td>
</tr>
</tbody>
</table>
## TABLE 1: LIST OF TOOLS (CONTINUED)

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>3/8” Drive Torque Wrench; 0-15 Nm (0-132 in/lbs) Range</td>
<td>Torque Parts</td>
</tr>
<tr>
<td>N/A</td>
<td>3/8” Drive Torque Wrench; 0-110 Nm (0-81 ft/lbs) Range</td>
<td>Torque Parts</td>
</tr>
<tr>
<td>769354</td>
<td>Socket, 7/8” (22mm) (3/8” Drive)</td>
<td>Removal/Installation of Valve Plug (16)</td>
</tr>
</tbody>
</table>
| 9-44333| 1/2” (13 mm) Socket | Removal/Installation Burst Disk Assembly (25)
Removal/Installation Twin Cylinder Band Nut (62) |
| N/A    | 1/2” Box Wrench | Removal/Installation Twin Cylinder Band Bolt (61) |
### TABLE 2: TORQUE SPECIFICATIONS

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION / KEY ITEM #</th>
<th>TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>101169</td>
<td>Plug, Valve, Mag (16)</td>
<td>90 in/lbs (10 Nm)</td>
</tr>
<tr>
<td>101305</td>
<td>Body, Valve, Mag (24)</td>
<td>25 ft/lbs (34 Nm)</td>
</tr>
<tr>
<td>487590</td>
<td>Safety Plug (25)</td>
<td>90 in/lbs (10 Nm)</td>
</tr>
<tr>
<td>101306</td>
<td>Adapter, Valve Seat, Mag (27)</td>
<td>90 in/lbs (10 Nm)</td>
</tr>
</tbody>
</table>

### TABLE 3: RECOMMENDED CLEANERS AND LUBRICANTS

<table>
<thead>
<tr>
<th>LUBRICANT/CLEANER</th>
<th>APPLICATION</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christo-Lube MCG 111</td>
<td>All o-rings</td>
<td>Aqua Lung, PN 820466 or Lubrication Technologies 310 Morton Street Jackson, OH 45640 (800) 477-8704</td>
</tr>
<tr>
<td>Oakite #31</td>
<td>Acid bath for reusable stainless steel and brass parts.</td>
<td>Oakite Products, Inc. 50 Valley Road Berkeley Heights, NJ 07922</td>
</tr>
<tr>
<td>White distilled vinegar</td>
<td>Acid bath for reusable stainless steel and brass parts.</td>
<td>&quot;Household&quot; 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>&quot;Household&quot; grade</td>
</tr>
</tbody>
</table>

**CAUTION:** Silicone rubber requires no lubrication or preservative treatment. DO NOT apply grease or spray to silicone rubber parts. Doing so may cause a chemical breakdown and premature deterioration of the material.

**CAUTION:** Do not use muriatic acid for the cleaning of any parts. Even if strongly diluted, muriatic acid can harm chrome plating and may leave a residue that is harmful to o-ring seals and other parts.
Cleaning Brass and Stainless Steel Parts

1. Preclean 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 or silicone or 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 ten minutes. Remove and blow dry with low pressure (25 PSI) filtered air and inspect closely to ensure proper cleaning and like-new condition.

Cleaning Plastic & Rubber Parts

Parts made of plastic or rubber, such as Powerline lower inflator assembly, dual valve assembly, chevron hose, 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.

Cleaning Hoses

1. Hose fittings: Ultrasonically clean with soapy water*, vinegar OK on tough corrosion (only 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 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.

CAUTION: Do not place plastic and rubber parts in acid solutions. Doing so may alter the physical properties of the component, causing it to prematurely degrade and/or break.
<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>769347</td>
<td>Airway Complete, Powerline</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>15309</td>
<td>Gasket, Connector Seal</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>42743</td>
<td>Dual Valve Assembly</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>15719</td>
<td>Clamp, Black, Plastic Tie</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>15261</td>
<td>Hose, Chevron, Powerline</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>15262</td>
<td>Clip, Chevron Hose</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>15610</td>
<td>Pin, Retaining S/S</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>15029</td>
<td>Cover, Q/D, Powerline</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>15280</td>
<td>Lower Inflator Assy, Powerline, Char</td>
<td>1</td>
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</tbody>
</table>

**POWERLINE W/ DUAL VALVE EXPLODED VIEW**

**769347 Airway Complete, Powerline**

**44827 Low Pressure Hose 27”**

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>820011</td>
<td>O-ring</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>44827</td>
<td>LP Inflator Hose 27”</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>820043</td>
<td>O-ring</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>778564</td>
<td>Valve, Schrader</td>
<td>1</td>
</tr>
</tbody>
</table>
### Key # | P/N | Description | Qty
--- | --- | --- | ---
394099 | Kit, Maintenance, Cylinder Valve | 1
13 | 101173Z | Nut, Handwheel, Mag | 1
14 | 101172 | Handwheel | 1
15 | 101171 | Washer, Handwheel | 1
16 | 101169Z | Plug Valve, Mag | 1
17 | 820088 | O-ring | 1
18 | 828009 | Ring, Backup | 1
19 | 820010 | O-ring | 1
20 | 101168 | Washer, Metal | 1
21 | 101167 | Washer, Nylon | 1
22 | 101166Z | Spindle, Mag | 1
23 | 101165 | Seat Valve, Non O2, Mag | 1
24 | 101305Z | Body, Valve, Mag | 1
25 | 487590 | Burst Plug Assembly, Non-Mag | 1
25a | N/A | Safety Plug | 1
25b | N/A | Disc, Safety Red 3,000 PSI | 1
25c | N/A | Gasket Zytel #101 .206 x .032 | 1
26 | 820013 | O-ring | 1
27 | 101306 | Adapter, Valve Seat, Mag | 1
28 | 820316 | O-ring | 1
29a | 079105 | Cylinder 1.5 cf. 3,000 PSI Black, Alum | 1
29b | 079109 | Cylinder 1.5 cf. 3,000 PSI Black, Alum Anodized | 1

*PART NUMBERS IN BOLD ITALICS ARE INCLUDED IN VALVE REBUILD KIT P/N 394099*

### 101314Z Cylinder Valve Connector

| Key # | P/N | Description | Qty |
--- | --- | --- | --- |
30 | 820310 | O-ring | 1 |
31 | 101314Z | Connector, Cylinder Valve, Fixed, Mag | 1 |
### CSAV Components

#### CSAV Parts List

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>769352</td>
<td>Kit, Buckle, F, MK25, MMJ</td>
<td>4</td>
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<tr>
<td>33</td>
<td>769367</td>
<td>Container, CSAV</td>
<td>1</td>
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<tr>
<td>34</td>
<td>769105</td>
<td>Bladder, MMJ, Pckgd</td>
<td>1</td>
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<tr>
<td>35</td>
<td>769321</td>
<td>Belt, Waist w/ M-F Buckles, MMJ</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>769347</td>
<td>Airway Complete, Powerline</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>769148</td>
<td>Comfort Pad, Pckgd</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>769082</td>
<td>Pocket, 1.5 HP Cylinder, Blk, MMJ</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>44827</td>
<td>Low Pressure Hose 27”</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>769318</td>
<td>Strap, Container Retainer, MMJ</td>
<td>2</td>
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<tr>
<td>41</td>
<td>769366</td>
<td>Harness, Adjustable, CSAV</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>769320</td>
<td>Strap, Crotch, MMJ</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>15309</td>
<td>Gasket, Connector Seal</td>
<td>3</td>
</tr>
<tr>
<td>43</td>
<td>101314Z</td>
<td>Connector, Cyl Valve, Fixed, Mag</td>
<td>2</td>
</tr>
<tr>
<td>44</td>
<td>15665</td>
<td>Cap, Universal Connector</td>
<td>2</td>
</tr>
<tr>
<td>45</td>
<td>101280Z</td>
<td>Valve Assy, Mag</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>101271Z</td>
<td>Valve Assy, w 1.5 cf. Cylinder, Mag</td>
<td>2</td>
</tr>
<tr>
<td>47</td>
<td>769122</td>
<td>Hose Retainer, MMJ</td>
<td>2</td>
</tr>
<tr>
<td>48</td>
<td>769317</td>
<td>Drop Belt Loops</td>
<td>5</td>
</tr>
<tr>
<td>49</td>
<td>769314</td>
<td>Retainer, 1.0” Webbing, MMJ</td>
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<tr>
<td>50</td>
<td>769316</td>
<td>Retainer, 1.5” Webbing, MMJ</td>
<td>3</td>
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<tr>
<td>51</td>
<td>769315</td>
<td>Retainer, 2.0” Webbing, MMJ</td>
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</tr>
<tr>
<td>52</td>
<td>769143</td>
<td>WT Sheath, (ea), 20 lb, Blk, Pckgd</td>
<td>2</td>
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<tr>
<td>53</td>
<td>769144</td>
<td>WT Pouch, (ea), 20 lb, Blk, Pckgd</td>
<td>2</td>
</tr>
<tr>
<td>54</td>
<td>769083</td>
<td>WT Sheath, (ea), 10 lb, Blk, Pckgd</td>
<td>2</td>
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<tr>
<td>55</td>
<td>769084</td>
<td>WT Pouch, (ea), 20 lb, Blk, Pckgd</td>
<td>2</td>
</tr>
<tr>
<td>56</td>
<td>710108</td>
<td>Weight, Soft 4lb, Navy Blue</td>
<td>2</td>
</tr>
<tr>
<td>57</td>
<td>769141</td>
<td>Kit, SCUBA Strap, CSAV Single &amp; Twin</td>
<td>1</td>
</tr>
<tr>
<td>58</td>
<td>769089</td>
<td>Kit, Strap, CSAV - MK16</td>
<td>1</td>
</tr>
<tr>
<td>59</td>
<td>769092</td>
<td>Kit, Strap, CSAV - MK25</td>
<td>1</td>
</tr>
</tbody>
</table>
### TWIN CYLINDER BAND EXPLODED VIEW

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>083410</td>
<td>Band, Bottom Twin 7.25&quot;</td>
<td>1</td>
</tr>
<tr>
<td>61</td>
<td>081240</td>
<td>Cover, Non-Slip Tank Band 20.5&quot;</td>
<td>2</td>
</tr>
<tr>
<td>62</td>
<td>082729</td>
<td>Spacer, Twin Cyl. 7.25&quot;</td>
<td>1</td>
</tr>
<tr>
<td>63</td>
<td>081245</td>
<td>Plate, Back-up</td>
<td>2</td>
</tr>
<tr>
<td>64</td>
<td>838031</td>
<td>Bolt, .313-18 X 4&quot;, SST</td>
<td>1</td>
</tr>
<tr>
<td>65</td>
<td>852021</td>
<td>Nut, 5/16&quot;-18 Hex SST 17/64</td>
<td>1</td>
</tr>
</tbody>
</table>

**083405 Kit, Twin Tank Cylinder Band**
# SPARE PARTS KITS

## 769106 Kit, Spare Parts, Field, CSAV

<table>
<thead>
<tr>
<th>PN</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>101314Z</td>
<td>Connector, Cyl Valve, Fixed, Mag</td>
<td>2</td>
</tr>
<tr>
<td>15050</td>
<td>Screw, Threaded, 3/8&quot;, S/S, Male</td>
<td>8</td>
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<tr>
<td>15051</td>
<td>Barrel, Threaded, 1/4&quot;, S/S, Female</td>
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<tr>
<td>15309</td>
<td>Gasket, Connector Seal</td>
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<tr>
<td>15665</td>
<td>Cap, Universal Connector</td>
<td>4</td>
</tr>
<tr>
<td>44827</td>
<td>Low pressure hose, 27&quot;</td>
<td>2</td>
</tr>
<tr>
<td>769347</td>
<td>Airway, Complete, Powerline</td>
<td>1</td>
</tr>
<tr>
<td>769092</td>
<td>Kit, Strap, CSAV, MK25</td>
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<tr>
<td>769089</td>
<td>Kit, Strap, CSAV, MK16</td>
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<tr>
<td>769141</td>
<td>Kit, SCUBA Strap, CSAV Single &amp; Twin</td>
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</tr>
<tr>
<td>769105</td>
<td>Bladder, MMJ, Packaged</td>
<td>3</td>
</tr>
<tr>
<td>769098</td>
<td>Case, Pelican 1500, w/ Pick Foam, Blk</td>
<td>1</td>
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<tr>
<td>769099</td>
<td>Kit, buckle set, 1.0&quot;/1.5&quot;/2.0&quot;, CSAV</td>
<td>1</td>
</tr>
<tr>
<td>101271Z</td>
<td>Valve Assembly w/ 1.5 cf. Cylinder, Mag</td>
<td>1</td>
</tr>
<tr>
<td>769078</td>
<td>Hex Key, L Shape, 1/8&quot;, Nickle Plated</td>
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</tr>
<tr>
<td>947448</td>
<td>Screwdriver, Medium Blade, Modified</td>
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</tr>
</tbody>
</table>

## 394099 Kit, Maintenance, Cylinder Valve

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/S</td>
<td>394099</td>
<td>Kit, Maintenance, Cylinder Valve</td>
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</tbody>
</table>

## 101314Z Connector, Cylinder Valve, Fixed, Mag

<table>
<thead>
<tr>
<th>Key #</th>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>820310</td>
<td>O-ring</td>
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</tbody>
</table>

## ACCESSORIES

## 083405 Kit, Twin Tank Cylinder Band

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>083405</td>
<td>Kit, Twin Tank Cylinder Band</td>
</tr>
</tbody>
</table>
**108607 Kit, LPIS Complete**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>769146</td>
<td>Pocket, Bottle 3.0 LP Cylinder, Blk, MMJ</td>
<td>1</td>
</tr>
<tr>
<td>108615</td>
<td>Low Pressure Inflation System, 33” Hose</td>
<td>1</td>
</tr>
<tr>
<td>108325</td>
<td>Fill Adapter, SCUBA Tank, HABD/SEA</td>
<td>1</td>
</tr>
</tbody>
</table>

*MMJ bag is designed to hold CSAV plus accessories*

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>769364</td>
<td>Kit, MMJ Bag</td>
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</tbody>
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*For filling 101280Z, 101294, 769123 cylinders*
<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>769371</td>
<td>Kit, Strap, Buckle, M, Front Mount, MMJ, 40MM</td>
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</table>

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
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<tbody>
<tr>
<td>102100</td>
<td>Valve Assy, w/ 3.0 cf. Cyl, CSAV, 300 ft.</td>
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<tr>
<td>769123</td>
<td>Pocket, Bottle 3.0 Cyl, 300 ft, Blk, CSAV</td>
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<th>P/N</th>
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<tr>
<td>101294</td>
<td>Valve Assy, w/ 1.5 cf. Cyl, Blk, Andz, Mag</td>
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MANUFACTURERS RECOMMENDED MAINTENANCE CHECKS FOR THE CSAV

1. **Annually** – Perform interior cylinder inspection, clean cylinder as required.
   a. Inspect exterior of the cylinder valve.
      I. Clean cylinder valve threads.
      II. Replace cylinder valve o-ring.
      III. Lubricate cylinder valve threads.
      IV. Inspect mechanical operation of cylinder valve.

2. **Annually (Pre-mission)** – Perform a complete leak check on the CSAV.
   a. Attach two full cylinders 3,000 PSI (206 BAR) to the vest or install LP inflator hose.
   b. Fully inflate the CSAV using the power inflator button *(if equipped)* until the over pressure relief valve (OPRV) releases pressure. Verify the OPRV re-seats and does not leak.
   c. Slowly open the cylinder valve and fully inflate the CSAV until the over pressure relief valve (OPRV) releases pressure. Close the cylinder. Verify the OPRV re-seats and does not leak.
   d. Push the oral inflation valve and release to close. Test the rapid exhaust valve (REV) by pulling on the Powerline lower inflator assembly until air releases, close the REV by releasing the lower inflator assembly. **NOTE**: ¼” is all the pull required. Excess force will damage the Powerline airway. Ensure rapid and unobstructed exhaust from each valve, verify each valve re-seats and no leakage is detected.
   e. Refill the CSAV and remove both cylinders from the vest.
   f. Verify no leakage from the cylinder connectors.
   g. Allow the vest to sit fully inflated for one hour.
   h. After one hour, inspect the CSAV for fullness. If the pressure has gone down significantly, refill the vest and check the CSAV for leakage by submerging the vest fully in water and re-test. Repeat steps a-g until no leakage is present or have the CSAV repaired by a trained technician prior to use.

3. **Annually (or as required)** – Replace the external o-ring both cylinder connectors.
   a. Carefully remove the external o-ring on both cylinder connectors.
   b. Replace external o-ring with new lubricated o-ring on both cylinder connectors.

4. **Annually (Pre-mission/Pre-use)** – Inspect all strap assemblies.
   a. Inspect all straps for damage or chafing.
   b. Inspect all hardware connectors for cracks or breakage.
   c. Inspect de-rigging loops for damage (if equipped).

5. **Every 5 Years** – Rebuild air cylinder supply valves.

6. **As Required** – Paint HP air cylinders (if painted).

7. **As Required** – Prepare the CSAV for extended storage in excess of 30 days.
   a. Perform Step 2 annually.
   b. Remove Powerline airway and both cylinder connectors/caps.
   c. Store the CSAV deflated in a clean, dry area from extreme temperatures: no greater than 120°F/49°C and no less than 0°F/-18°C.
   d. Store cylinders full at 2900 - 3,000 PSI (200 - 206 BAR) or with 50 - 100 PSI (3 - 7 BAR) to prevent moisture entry into the cylinders.

**WARNING:** Partially full cylinders present an explosion hazard when exposed to extremely high temperatures by not allowing the safety plug to function as designed.
Annual Maintenance

The CSAV is subject to manufacturers recommended annual maintenance checks. All parts listed in the valve overhaul parts kits, must be replaced every 5 years, even if they appear to be in good condition.

Components:
- (1) Bladder is constructed of heavy duty 200 denier urethane-coated nylon with welded seams and connectors.
- (1) Outer Container is constructed of 1000 denier black Cordura®. Inside mesh: #8855 Raschel Knit Mesh. Horizontal webbing: 1” Nylon AA-55301 with 1000 lb. breaking strength. Harness: C1-1A, Mil-W-4088, black nylon with 7000 lb. breaking strength.
- (4) Kit, Buckle, F, MK25, MMJ
- (1) Belt, Waist w/ M-F Buckles, MMJ
- (1) Airway Complete, Powerline w/ 27” LP Hose
- (1) Comfort Pad, Pckgd
- (2) Pocket, 1.5 HP Cylinder, Blk, MMJ
- (1) Low Pressure Hose 27”
- (2) Strap, Container Retainer, MMJ
- (1) Harness, Adjustable, CSAV
- (1) Strap, Crotch, MMJ
- (3) Gasket, Connector Seal
- (2) Connector, Cyl Valve, Fixed, Mag
- (2) Cap, Universal Connector
- (2) Valve Assy, w 1.5 cf Cylinder, Mag
- (2) Hose Retainer, MMJ
- (4) Retainer, 1.0” Webbing, MMJ
- (3) Retainer, 1.5” Webbing, MMJ
- (8) Retainer, 2.0” Webbing, MMJ
- (5) Drop Belt Loops
- (2) WT Sheath, (ea), 20 lb, Blk, Pckgd
- (2) WT Pouch, (ea), 20 lb, Blk, Pckgd
- (2) WT Sheath, (ea), 10 lb, Blk, Pckgd
- (2) WT Pouch, (ea), 20 lb, Blk, Pckgd
- (2) Weight, Soft 4lb, Navy Blue
- Kit, Strap, CSAV - MK25
- Kit, Strap, CSAV - MK16
- Kit, SCUBA Strap, CSAV Single & Twin

(** Refer to CSAV Components for specific locations)

Features:

Lift Capacity (fresh water) ................. 35 lbs (15L)
Cylinder Capacity ....................... 2 x .15 cf. (0.43L)
Cylinder Working Pressure ............... 3,000 PSI (206 BAR)
Dual Valve Opening Pressure 1 - 2. PSI (.07 - .14 BAR)

Over pressure relief valve opening pressure (OPRV) (non-mag) 2.5 - 3.5 PSI (.17 - .24 BAR)
Dual valve & over pressure relief valve (OPRV) closing pressure is 1 PSI (.07 BAR) under opening pressure.

Weight (with cylinders x 2) .............. 11 lbs (5.0 kg)
(without cylinder x 2) ............... 8.0 lbs (3.6 kg)
Packing (Individual box) ............... 24” X 11¼” X 18”

60.9cm X 28.5cm X 47.5cm

References:
CSAV w/o cylinders PN 769100
CSAV w/ cylinders PN 769116
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 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 damages 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.
CSAV
COMBAT SWIMMER ASSAULT VEST

AQUA LUNG®
Military & Professional

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