



Powerline™ Inflator
(With Dual Valve)
Service & Repair Manual

for Authorized Sea Quest Service Centers

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INTRODUCTION

Sea Quest buoyancy compensators and regulators are the product of many years of research and development. Sea Quest has utilized proven materials and design to maximize reliability and performance.

This manual is intended only as a guide for the experienced repair person that has completed a Sea Quest service and repair seminar. It is not intended to educate inexperienced repair personnel or the consumer in all aspects of Sea Quest regulator and buoyancy compensator repair. Sea Quest repair seminars are available periodically to Authorized Sea Quest Dealers. Servicing and repair at the repair shop level mainly involves cleaning, inspection, adjustment, and replacement of worn parts.

If you have any questions on any of the procedures, inspections, or tests, please contact Sea Quest at 877-253-3483.

SAFETY PRECAUTIONS

This manual provides step by step instructions for the disassembly, inspection, cleaning, reassembly, and testing of the Powerline™ inflation system. It is recommended that all steps are followed in the order given. Read each section completely PRIOR to beginning work described in that section. This will familiarize the repair technician with important precautions to take during each service procedure.

Pay close attention to all WARNINGS, CAUTIONS, and NOTES that are intended to draw your attention to items of importance.

Definition of Warnings, Cautions, and Notes:



WARNING

Indicates a procedure or situation that may result in serious injury or death for either the technician or the user if instructions are not followed correctly.



CAUTION

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

NOTE

Is used to emphasize important points and tips.

GENERAL PROCEDURES

MAINTENANCE SCHEDULES

Regulators and inflation systems are subjected to a variety of environmental elements that over time can affect the performance of the product and as such require frequent tuning and adjustment. As an Authorized Sea Quest Dealer you are advised to inform your staff and customers that Sea Quest regulators and buoyancy compensators require complete servicing at least once a year. Under certain circumstances a complete servicing is required every 3-6 months. Some of these circumstances are:

- Frequent or improper use
- Inadequate routine freshwater rinsing
- Use in dirty or polluted waters
- Rental use
- Regular use in chlorinated (pool) water

Recommended maintenance schedules are based on average use under normal conditions and assume that recommended preventative maintenance and storage procedures have been followed as outlined in the Sea Quest owner's manuals.

Advise the customer that any adjustments or servicing on Sea Quest regulators and buoyancy compensator inflation systems must be performed by Sea Quest, or by an Authorized Sea Quest Dealer that has attended a Sea Quest regulator service seminar.

INITIAL INSPECTION AND PRE-TEST

Prior to servicing any B.C. or regulator, Sea Quest recommends that a preliminary inspection of the entire breathing system should be performed. This will help the repair technician identify any problems that may affect the Powerline Power Inflator.

Preliminary inspection should include:

- **First stage inlet filter** - If the first stage inlet filter is discolored or corroded, the entire regulator should be completely serviced. Deposits of rust (red powder) or aluminum oxide (gray powder) on the filter may indicate that water has entered the SCUBA cylinder and caused internal cylinder corrosion. The customer should be notified that their SCUBA cylinder(s) may be in need of visual inspection, cleaning and testing. Advise your customers to regularly inspect the inlet filter for any discoloration or corrosion.

- **High pressure (HP) and low pressure (LP) hoses** - Inspect the hoses carefully for any evidence of cracking, tearing, or excessive abrasion of the outer rubber covering. Remove all of the hose protectors and examine the area around the metal fittings for any damage to the hose. Inspect the fittings for signs of excessive corrosion.

- **All chrome plated parts** - Inspect for any excessive corrosion indicating weak or absent chrome plating. Also look for any signs of peeling or flaking of the chrome plating.

- **Regulator pre-test** - A regulator pre-test should include all tests outlined in the test section for each regulator. A pre-test will assist the technician in determining if there are any specific performance deficiencies not mentioned by the customer.

INFREQUENTLY USED BUOYANCY COMPENSATORS

Do not assume that the Powerline or buoyancy compensator is in good condition because of infrequent use or because it has been in storage. Deterioration of the O-rings and corrosion can still occur under these circumstances.

WORK AREA & REQUIRED TOOLS

Servicing and repair of the Sea Quest Powerline should be carried out in a clean well lighted work area. As each regulator is disassembled all parts should be kept separate from parts of other regulators. Some special tools are required for proper disassembly and reassembly of the Sea Quest Powerline. Please see Table 1 (below) for a list of these tools.

O-RING REMOVAL

When removing O-rings, care must be taken to not damage the regulator surfaces in contact with the O-rings. Tools used to remove O-rings must not have any sharp edges or points that could scratch metal sealing surfaces. Sea Quest strongly recommends that all O-ring removal tools should be made of either brass or plastic.

LUBRICATION

O-rings should be lubricated with an approved compound (please refer to Table 2 for proper lubricants). O-rings should be lubricated only with a very light film of silicone grease. Do not use spray (aerosol) silicone under any circumstances. The aerosol propellant may damage the plastic and rubber components of the regulator, and the lubricant will quickly evaporate, providing little or no lasting benefit.

CAUTION

Do not use any petroleum based lubricants or products, or any aerosol silicone sprays to lubricate or clean any part of Sea Quest regulators or inflation systems. The petroleum base or propellant gas may attack or weaken the plastic or rubber parts. Refer to Table 2 for approved lubricants.

WARNING

Sea Quest regulators and inflation systems are intended for use in water temperatures warmer than 45°F (7°C). Colder water may cause regulators to be more sensitive to a freeflow condition and can lead to a situation that requires an appropriate response to prevent serious injury or death. Users of Sea Quest regulators are advised to ensure that they are adequately trained to deal with a regulator in a freeflow condition or an out-of-air emergency before attempting to dive in a cold water environment.

REQUIRED TOOLS - POWERLINE INFLATOR

TABLE 1

Sea Quest Part No.	Description	Application
5116236	Seal/seat extractor	Removal/ installation of crown and filter
778694	Valve Core Tool	Removal/ installation of LP hose valve core
1116-10	I.P. test gauge	First stage intermediate pressure testing
9440-22	O-ring tools (Plastic or Brass)	O-ring removal & installation
41532	LP air nozzle	Parts drying
42314	T-Tool	Removal/ installation of inflator bezel
N/A	Magnifier w/ illumination	Sealing surface inspection
N/A	Ultrasonic cleaner - 60HZ, 1.3 amp	Brass & stainless steel parts cleaning
N/A	3/16" Hex Key	Disassembly/ assembly of purge rod & valve retainer
N/A	Inch-Pounds Torque Wrench	Torque measurement of purge rod

LUBRICANT AND CLEANER

TABLE 2

Lubricant / Cleaner	Recommended Type	Application	Source
Silicone Grease (food grade)	Dow Corning 111	All O-rings, threaded metal parts as indicated	Dow Corning Corp P.O. Box 1767-T Midland, MI 48640 800-248-2481
Chemical Bath Solution	Oakite #31	Chrome-plated brass, brass, and stainless steel parts	Oakite Products, Inc. 50 Valley Road Berkeley Heights, NJ 07922
Acetic Acid	50/50 mix distilled white vinegar and water	Chrome-plated brass, brass, and stainless steel parts	Local grocery stores
Liquid dishwashing detergent (diluted with warm water)	Joy®	General cleaning solution, degreaser for plastic and rubber parts, leak detection	Local grocery stores

CAUTION

DO NOT use muriatic acid for the cleaning of any parts. Muriatic acid, even when strongly diluted, can harm chrome plating, and may leave a residue that is harmful to O-ring seals and other parts.

CAUTION

Aerosol spray silicone should be avoided because (1) common aerosol propellants may attack plastic and rubber parts, and (2) because only a slight amount of silicone remains after the solvent evaporates, and provides no lasting benefit.

CAUTION

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

POWERLINE INFLATOR

1.1 DISASSEMBLY

1.1.1 Firmly grasp the mouthpiece(25) and twist it off the body to remove. Closely examine its condition to ensure it is free of any tears or cuts that may cause leakage of water into the second stage, or other discomfort. Discard or set it aside to be replaced or reused as needed.

1.1.2 Snip the clamp(12) which holds the ribbed hose(13) onto the lower valve assembly, and work the hose off the power inflator body(30) to expose the cable retaining pin(17).

1.1.3 Press the pin out from one side with a pin punch or similar tool to release the cable assembly(11), and set the pin and upper dual valve assembly with ribbed hose aside.

1.1.4 Using a small pair of pliers which are padded with neoprene or cloth, firmly grip the stem of the quick disconnect fitting(37) and turn the fitting counter-clockwise to loosen and remove from the body. Remove the O-ring(36) from the quick disconnect fitting and discard.



CAUTION: Do not fasten pliers or a wrench onto the nipple of the quick disconnect fitting. Doing so may cause permanent damage to the part, requiring its replacement.

1.1.5 From inside the body, or beneath the fitting, remove and discard the inlet filter(35). Do not attempt to reuse.

1.1.6 Apply a $\frac{3}{16}$ " hex key to the center of the valve core retainer(17). While holding the body secure, turn the valve core retainer counter-clockwise to loosen and remove (see Fig. 1). Using either the pinch method or a plastic O-ring removal tool, carefully remove the external O-rings(32&33) from the valve core retainer. Discard both O-rings and do not reuse.



Do not use a brass O-ring tool, pick, or other metal instrument to remove the O-rings from the sealing surfaces of the valve core retainer. Doing so may cause permanent damage to the part which will result in leakage if it is not replaced.

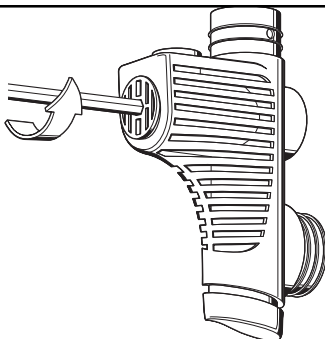


Figure 1

1.1.7 While holding the valve core retainer secure, gently apply a pair of needle-nose pliers to the valve core(31), and turn it counter-clockwise to loosen and remove. Discard the valve core and do not attempt to reuse.

1.1.8 Closely examine the condition of the valve core retainer to ensure it is completely free of any scratches or damage, paying particularly close attention to the areas of the external and internal threads, and to the O-ring sealing surfaces. Discard and replace it with new or set it aside to be reused as needed.

1.1.9 Mate both pins on the large end of a T-Tool (P/N 42314) into two opposing holes in the inflator bezel(24). (See Fig. 2.) While holding the tool securely engaged, turn the bezel counter-clockwise to loosen and remove the bezel with the inflator valve subassembly (items 18-24). Remove and discard the screen(18).

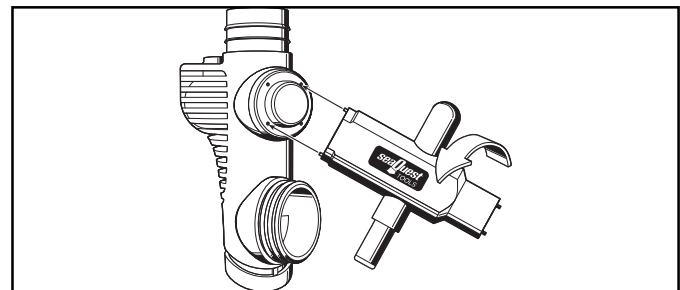


Figure 2

1.1.10 While holding the inflator bezel and button cover(23) secure, firmly grasp the push rod housing(21) and pull it straight away to separate from the bezel. Lift out the inflator button(22) from one end, and turn the push rod housing over to allow the push rod(19) to drop out. Then, remove and discard the O-ring(20). Closely examine the push rod housing, push rod, and inflator button to ensure they are in good condition, with no visible signs of damage. Discard if any damage is found, or set these aside if they are in reusable condition.

1.1.11 Separate the button cover from the bezel, and closely inspect the button cover to check for any signs of damage or wear, including tears, abrasion, or decay. If found, discard the button cover and do not reuse.

1.1.12 Examine the inflator bezel to ensure it is in good condition, with no signs of cracking or thread damage. Discard if any damage is found, or set aside if it is in reusable condition.

1.1.13 While holding the oral inflator button(26) completely depressed, apply a $\frac{3}{16}$ " hex key to the purge rod(15), through the upper barrel of the body, and slowly turn the purge rod counter-clockwise with steady, controlled force until it begins to turn freely (see Fig. 3). Maintain pressure on the button to prevent the ejection of parts, and continue turning the purge rod counter-clockwise to loosen and remove. Relax the oral inflator button, and set the body with button aside.



To ensure that the purge rod does not become loosened, a small amount of non-permanent thread adhesive has been applied to the threads during manufacturing or previous service. This will require that slightly more force should be applied to initially loosen the rod from the threads of the button on the outside of the body.

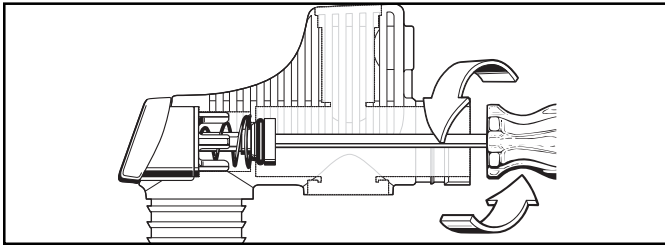


Figure 3

1.1.14 Using either the pinch method or a plastic O-ring removal tool, carefully remove the O-ring(16) from the purge rod. Discard the O-ring, and do not reuse.

CAUTION

Do not use a brass O-ring tool, pick, or other metal instrument to remove the O-ring from the plastic sealing surface of the purge rod. Doing so may cause permanent damage to the part which will cause leakage if it is not replaced.

1.1.15 Using a plastic O-ring tool, carefully remove any residue of thread adhesive from the threads of the purge rod. Closely inspect the purge rod for any signs of damage or distortion, especially around the area of the threads. Discard or set the purge rod aside to be replaced or reused as needed.

1.1.16 Remove the oral inflator button and spring(29) from the body, and separate the gasket(28) from the button. Examine the gasket for any signs of wear, damage, or decay, and discard or set it aside to be replaced or reused as needed.

1.1.17 Closely inspect the condition of the oral inflator button to check for any signs of damage or distortion, and to ensure that the rubber molded insert(26) is intact and securely attached. Discard or set the button aside to be reused as needed.

1.1.18 Closely inspect the oral inflator spring under magnification to check for any signs of damage or corrosion. If found, discard and replace with new.

1.1.19 Closely examine the overall condition of the body, and inspect all sealing surfaces and female threads under adequate lighting to ensure that the body is free of any scratches, cracks, or thread damage which may cause leakage or separation from other components. If any damage is found, discard the body and replace with new.

1.2 CLEANING & INSPECTION

1.2.1 All parts should be cleaned first in a warm (not over 120°F) mild soap and water solution. Use a soft nylon bristle brush to help remove any excess or loose contamination. After an initial cleaning in warm soapy water, metal parts should be cleaned in an ultrasonic cleaner using the appropriate ultrasonic cleaning solution (see Lubricant and Cleaner Table 2).

NOTE Be sure all O-rings and other rubber or plastic parts are removed before cleaning in an ultrasonic cleaner or chemical bath. Cleaning solutions may damage these components.

1.2.2 If an ultrasonic cleaner is not available, metal parts can be cleaned by soaking the metal parts in a chemical bath solution of Oakite #31 (see Lubricant and Cleaner Table 2) and agitating gently for 3-4 minutes. Cleaning of metal parts can also be done by soaking in a mild acetic acid solution (distilled white household vinegar) for 10-15 minutes.

NOTE Cleaning times in excess of those recommended may damage plated parts. Never clean parts for longer than specified by the manufacturer of the solution used. After completion of cleaning in any solution, thoroughly rinse parts with clean fresh water and blow dry with low pressure (30 psig) air. Only brass, plated brass, and stainless steel parts should be immersed in chemical cleaning solutions.

WARNING

To avoid injury, always use hand and eye protection when handling chemical cleaning solutions.

1.2.3 After cleaning, all parts should be thoroughly rinsed in fresh water and dried with filtered low pressure (30 psig) air.

NOTE Before performing any reassembly, it is important to inspect all parts, both new and those that are being reused, to ensure that each part is clean and free of any contamination, corrosion, or blemish.

1.2.4 All O-rings should be replaced at every servicing. New O-rings should be inspected for contamination and/or imperfections, and lightly dressed with a thin film of approved lubricant prior to installation. (See Lubricant and Cleaner Table 2.)

CAUTION

Do not use any petroleum based lubricants or products, or any aerosol silicone sprays on any part of the Powerline Inflator or Dual Valve Assembly. The petroleum base or propellant gas may attack or weaken plastic or rubber parts. Refer to Table 2 for a list of approved lubricants.

1.2.5 In addition to the O-rings, the following parts should be routinely replaced at the time of servicing:

- Clamp (12)
- Inlet Filter (35)
- Valve Core (31)
- Screen (18)

NOTE All O-rings and the above mentioned routine replacement parts are included in the Powerline overhaul service kit.

1.3 REASSEMBLY

⚠ WARNING

Use only genuine Sea Quest parts, subassemblies, and components whenever assembling Sea Quest products. DO NOT attempt to substitute a Sea Quest part with another manufacturer's, regardless of any similarity in shape, size, or appearance. Doing so may render the product unsafe, and could result in serious injury or death.

1.3.1 Prior to reassembly, it is important to perform a final inspection of each part. Do not assume that a part is in acceptable condition because it has been cleaned or it is new. Check all metal parts for excessive wear or corrosion, and closely examine all sealing surfaces which make contact with O-rings for any signs of contamination and/or imperfections that may cause leakage past the O-ring seal. Examine all chrome plated surfaces for any evidence of peeling or flaking of the chrome plating. Inspect all threads for galling, cross threading, excessive wear, or damage to the chrome plating. If any parts show any damage or excessive wear, they must be replaced with new.

1.3.2 Fit the oral inflator gasket(28) over the four guides of the oral inflator button(27) until it is evenly seated at the base of each guide. Set the button aside.

1.3.3 Install the O-ring(16) onto the purge rod(15), into the groove around the base of the large end.

1.3.4 Stand the inflator body(30) with the mouthpiece end facing up, and place the large end of the oral inflator spring(29) inside the opening of the body.

1.3.5 Place the oral inflator button directly over the spring, and rotate the button as needed to align the indexing tab with the center groove of the body (see Fig. 4). Depress the oral inflator button, and hold it fully depressed while turning the body over so that the barrel faces up.

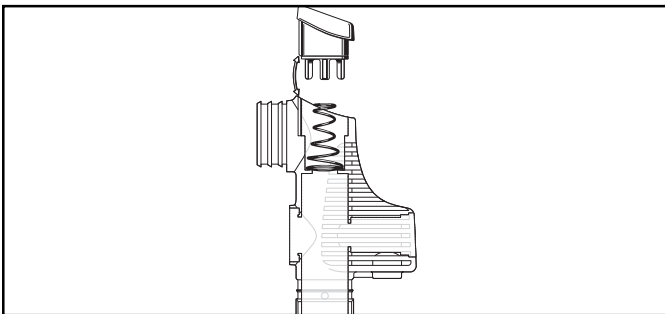


Figure 4

1.3.6 Carefully apply only one drop of Loctite® brand, 425 grade thread adhesive to the center threads of the purge rod stem.

1.3.7 Engage the purge rod with a 3/16" hex key, and use the hex key to guide the purge rod through the open barrel of the inflator body and into the oral inflator button (see Fig. 5). Slowly turn the purge rod clockwise to engage the threads of the oral inflator button, and tighten further until lightly snug. Be careful to avoid cross threading.

⚠ CAUTION

It is imperative to use the specified grade and brand of thread adhesive. Other types of thread adhesive may chemically attack the plastic parts, and could cause them to separate.

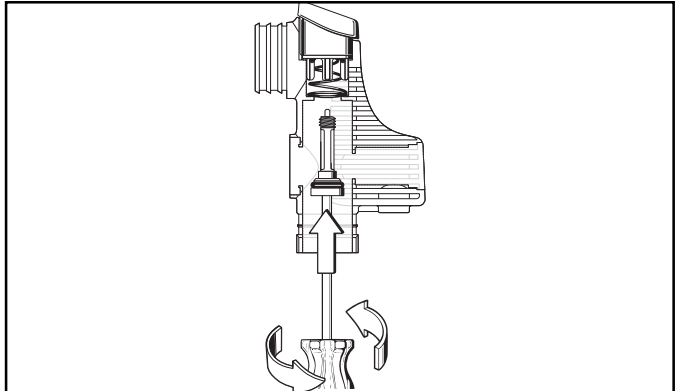


Figure 5

1.3.8 Apply an inch-pounds torque wrench with a 3/16" hex key to tighten the purge rod to a torque measurement of 12 inch-pounds (±2). Do not overtighten.

1.3.9 Insert the narrow stem of the push rod(19) into the small end of the push rod housing, and hold it securely in place with the stem protruding from the opposite end.

1.3.10 Place the inflator button(22) inside the top of the push rod housing, with the opening facing down over the push rod stem. Squeeze the push rod and inflator button between thumb and forefinger to fit them securely together (see Fig. 6).

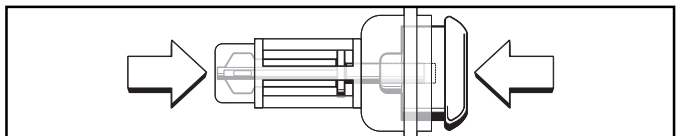


Figure 6

1.3.11 Slide the cylindrical screen(18) over the narrow end of the push rod housing until it rests against the base (see Fig. 7).

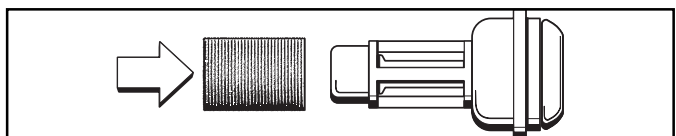


Figure 7

1.3.12 Fit the O-ring(20) over the narrow end of the push rod housing so that it rests flush against the seating shoulder.

1.3.13 Insert the purge rod housing into its opening in the body, and press firmly against the button to ensure the O-ring seats evenly between the body and the housing.

1.3.14 Fit the button cover(23) over the inflator button so that it seats flush against the shoulder of the purge rod housing.

1.3.15 Carefully fit the inflator bezel(24) over the button cover and button assembly, and press down while rotating the bezel counter-clockwise until a click is felt. Then, turn the bezel clockwise to engage the threads and continue tightening by hand until finger snug. Be careful to avoid cross-threading.

CAUTION

It is important to rotate the bezel counter-clockwise, in order to properly seat the threads before tightening it into the body. Failure to correctly follow this step may cause permanent damage to the bezel and the body due to cross threading, which could result in leakage if both parts are not replaced.

1.3.16 Mate both pins on the large end of the T-Tool (P/N 42314) into two opposing holes in the inflator bezel. While holding the tool securely engaged, turn the bezel clockwise until it is flush with the surface of the body (see Fig. 8). **DO NOT** overtighten. Closely inspect the button cover to ensure that it is seated evenly on all sides, and does not appear to be crimped or partially unseated.

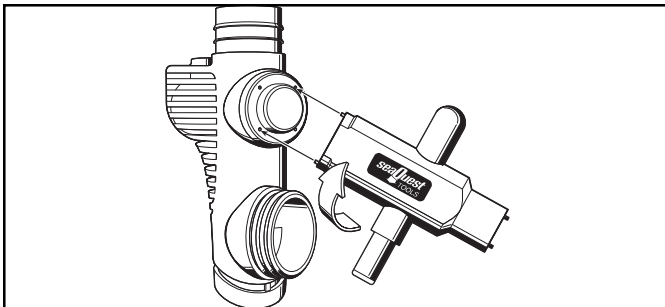


Figure 8

1.3.17 Install the larger external O-ring(33) onto the valve core retainer(34), in the groove below the base of the threads. Install the smaller O-ring(32) over the small end of the retainer, so that it rests against the seating shoulder.

1.3.18 Insert the valve core(31) into the open end of the valve core retainer, with the threaded portion facing up. Using a pair of needle nose pliers, turn the valve core clockwise to engage the threads of the retainer, and tighten further only until it is snug. Be careful to avoid cross-threading or overtightening.

1.3.19 Mate the narrow end of the valve core retainer into the threaded opening of the body, and turn clockwise to engage the threads. Then, apply a $\frac{3}{16}$ " hex key to the center hole of the retainer and tighten until snug, or until the end of the valve retainer is flush with the surrounding surface of the body. Do not overtighten.

1.3.20 Lay the inlet filter(35) inside the hole of the body which contains the quick disconnect fitting(37). Check to ensure that it is seated evenly below the threads, and reinstall if needed.

1.3.21 Install the O-ring(36) onto the quick disconnect fitting at the base of the threads. Mate the quick disconnect fitting into the inflator body, and turn clockwise by hand to engage the threads. Continue turning clockwise by hand until it is completely threaded into the body, and apply a small pair of pliers

padding with neoprene or cloth to tighten the fitting until it is snugly seated against the body at the base. Do not overtighten.

NOTE

If the dual valve assembly requires service, proceed directly to the disassembly procedure on the next page, and return to perform the following steps when service for the dual valve has been completed.

1.3.22 Insert the cable retaining pin(17) partly through one of the holes of the inflator barrel of the body. Pull back the lip of the ribbed hose(13) to expose the crimped retainer of the cable(11), and pass the retainer over the pin.

1.3.23 When the crimped retainer of the cable is securely seated over the pin, insert the pin through the opposite hose of the inflator barrel, so that it is flush on both sides. Fit the ribbed hose over the inflator barrel until it is mated flush at the base of the barrel.

1.3.24 Lightly fasten a tie-strap clamp over the ribbed hose so that it seated evenly inside the groove near the end. Pull the end of the tie-strap sufficiently snug, and snip the excess length with a small pair of scissors or wire cutters.

1.3.25 Fit the mouthpiece(25) onto the inflator body, so that it is securely seated at the base.

This concludes the reassembly of the Powerline Inflator. If no further disassembly of the Dual Valve is required, proceed directly to Section 3.1 — Final Inspection Procedures.

2.1 DISASSEMBLY – DUAL VALVE

NOTE If the Powerline inflator has not been removed from the airway, perform steps 1.1.2-1.1.3 on page 6 before proceeding with the following procedure.

2.1.1 To remove the airway from the B.C., firmly grip the area of the bladder which surrounds the connection manifold, and hold it securely with one hand while turning the retaining collar of the dual valve body assembly(5) counter-clockwise to loosen and remove with the other. Remove and discard the gasket(5.1).

2.1.2 Snip the clamp(12) which holds the ribbed hose(13) onto the body assembly, and work the hose off the lower barrel of the body. Set the ribbed hose aside.

NOTE The outer cap is bonded to the body of the dual valve assembly with a non-permanent adhesive. It will be necessary to separate this bond prior to performing further disassembly by carefully following the procedure outlined below.

2.1.3 Locate the seam that runs along the circumference between the dual valve body and the outer cap(1), 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 to break the adhesive bond (see Fig. 9).

CAUTION

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

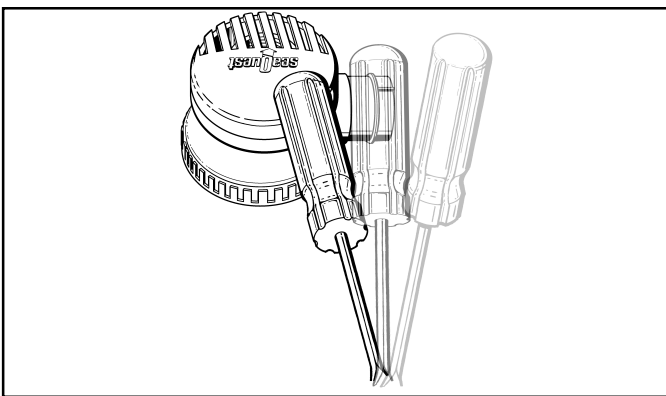


Figure 9

2.1.4 While holding the dual valve assembly secure, firmly grasp the outer cap and turn it counter-clockwise to loosen. While maintaining slight inward pressure to counteract the spring pressure inside, continue turning the cap until it has disengaged from the valve body, and remove the cap and the spring(2) beneath it. 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 1 to break the adhesive bond.

2.1.5 Closely inspect the spring under magnification to check for any signs of damage or corrosion. If found, discard and replace with new.

2.1.6 Remove the valve plate(3) with gasket(4) from the body, and remove the gasket from the valve plate. Discard the gasket, and set the valve plate aside.

NOTE Further disassembly is not necessary, unless leakage has been detected from the exhaust valve at the top of the dual valve body. Steps 7-9 provide instructions for removing the exhaust valve assembly from the dual valve body for the purposes of replacing the dump plug(6).

2.1.7 Locate the two holes on opposite sides of the barrel of the dual valve body which hold the arms of the poppet guide(9). To remove the poppet guide and exhaust valve assembly from the dual valve body, press the arms of the poppet guide inward by simultaneously inserting two small probes through the opposing holes in the barrel (see Fig. 10).

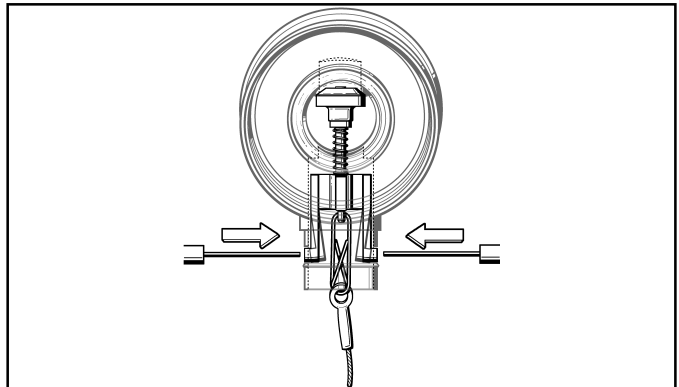


Figure 10

2.1.8 When the arms of the poppet guide have disengaged from the body, firmly grasp the cable and pull the exhaust valve assembly straight out while holding the body secure. This will pull the poppet stem(7) out of the dump plug. Remove the dump plug and discard.

2.1.9 To replace the dump spring(8), it will be necessary to first remove the cable hook(10) from the cable assembly(11), and then from the poppet stem. Pull the poppet stem straight out of the poppet guide, and discard the spring.

2.2 CLEANING & INSPECTION

2.2.1 All parts should be cleaned first in a warm (not over 120°F) mild soap and water solution. Use a soft nylon bristle brush to help remove any excess or loose contamination. After an initial cleaning in warm soapy water, metal parts should be cleaned in an ultrasonic cleaner using the appropriate ultrasonic cleaning solution (see Lubricant and Cleaner Table 2).

NOTE Be sure all O-rings and other rubber or plastic parts are removed before cleaning in an ultrasonic cleaner or chemical bath. Cleaning solutions may damage these components.

2.2.2 If an ultrasonic cleaner is not available, metal parts can be cleaned by soaking the metal parts in a chemical bath solution of Oakite #31 (see Lubricant and Cleaner Table 2) and agitating gently for 3-4 minutes. Cleaning of metal parts can also be done by soaking in a mild acetic acid solution (50/50 mix of distilled white household vinegar and water) for 10-15 minutes.

NOTE Cleaning times in excess of those recommended may damage plated parts. Never clean parts for longer than specified by the manufacturer of the solution used. After completion of cleaning in any solution, thoroughly rinse parts with clean fresh water and blow dry with low pressure (30 psig) air. Only brass, plated brass, and stainless steel parts should be immersed in chemical cleaning solutions.

WARNING

To avoid injury, always use hand and eye protection when handling chemical cleaning solutions.

2.2.3 After cleaning, all parts should be thoroughly rinsed in fresh water and dried with filtered low pressure (30 psig) air.

NOTE Before performing any reassembly, it is important to inspect all parts, both new and those that are being reused, to ensure that each part is clean and free of any contamination, corrosion, or blemish.

CAUTION

Do not use any petroleum based lubricants or products, or any aerosol silicone sprays on any part of the Powerline Inflator or Dual Valve Assembly. The petroleum base or propellant gas may attack or weaken plastic or rubber parts. Refer to Table 2 for a list of approved lubricants.

2.2.5 If overhaul of the dual valve assembly is necessary, the following parts should be routinely replaced at the time of servicing:

- Dump Plug (6)
- Overpressure Relief Valve Gasket (4)

NOTE The above mentioned routine replacement parts are included in the Powerline overhaul service kit.

2.3 REASSEMBLY – DUAL VALVE

2.3.1 Place the dump spring(8) over the poppet stem(7), and insert the poppet stem through the flat side of the poppet guide(9), so that the hole through the end of the stem is visible on the opposite side, between the two arms.

2.3.2 While holding the poppet secure with the stem extended through the poppet guide, press the dump plug(6) onto the barbed tip of the poppet stem until it is securely seated flush against the flange that is directly below the barbs.

2.3.3 While holding the poppet and poppet guide between thumb and forefinger to compress the poppet spring, install the cable hook(10) onto the poppet stem so that it is held inside the single-looped end (see Fig. 11).

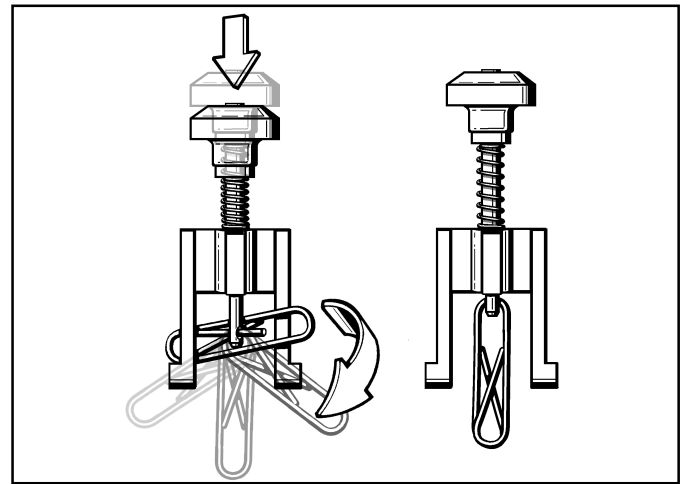


Figure 11

2.3.4 Install the cable assembly(11) onto the hook by first working it over one end, and then spread both ends apart to work it over the other (see Fig. 12a). When correctly installed, the cable should be held inside the double-looped end (see Fig. 12b).

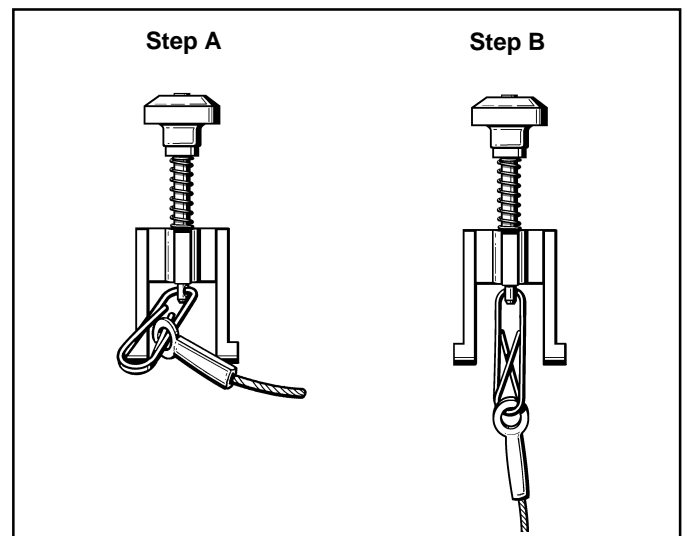


Figure 12

2.3.5 Position the poppet guide with poppet and dump plug outside the barrel of the dual valve body so that the larger rib faces toward the open side of the body, away from the collar (see Fig. 13). Lubricate the dump plug with a small amount of water, and align the arms of the poppet guide with the grooves inside the barrel of the body. Insert the poppet with dump plug into the barrel only until the “ears” of the poppet guide rest above the rim.

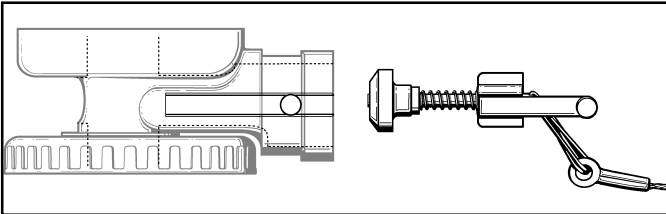


Figure 13

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

2.3.7 Install the gasket(4) onto the valve plate(3), and lay the valve plate inside the dual valve body with the gasket facing down.

2.3.8 Place the overpressure spring(2) directly in the center of the valve plate, standing up.

2.3.9 Carefully apply only one drop of Loctite® brand, 425 grade thread adhesive to the center thread of the outer cap(1). Mate the cap directly over the spring and valve plate, and press down while turning clockwise to engage with the threads of the body. Continue turning clockwise by hand until snug.

2.3.10 Fit the ribbed hose(13) over the cable assembly and onto the barrel of the dual valve body, until it is mated flush at the base of the barrel.

2.3.11 Lightly fasten a tie-strap clamp over the ribbed hose so that it seated evenly inside the groove near the end. Position the end of the clamp to either side, where it will not interfere with the connection with the QD hose, and pull the end of the tie-strap sufficiently snug. Snip the excess length with small pair of scissors or wire cutters.

2.3.12 Lay the gasket(5.1) flat inside the connection manifold, and mate the retaining collar of the body assembly(5) directly over it, onto the manifold. Gently turn the collar clockwise to engage the threads, being careful to avoid cross-threading, and hold the airway in the desired position while tightening the retaining collar by hand until snug.

CAUTION

Do not use tools to tighten the retaining collar onto the B.C. manifold. Doing so may result in overtightening and/or cross-threading, and could cause permanent damage that will require replacement of the entire bladder assembly.

3.1 FINAL INSPECTION PROCEDURES

WARNING

Use eye protection while performing the testing procedure. Airborne particles can cause eye injury.

3.1.1 Verify that the first stage regulator which the Powerline will be used with has been recently serviced, and is adjusted to a stable intermediate pressure of 135-147 psi. Connect the Powerline to the first stage via the specialty quick disconnect low pressure hose, and ensure that a second stage is also connected to function as a safety relief valve in case of an intermediate pressure leak. All other first stage ports must be sealed.

3.1.2 Connect the first stage to a cylinder that is filled with 3000 psi, and slowly open the valve of the supply cylinder to pressurize the regulator.

3.1.3 Depress the inflator button of the Powerline inflator several times to ensure that airflow is unobstructed.

3.1.4 After releasing the button, listen carefully to ensure that the airflow has completely stopped. If internal leakage can be heard, refer to the Troubleshooting Guide on the following page and correct the problem as needed before proceeding.

3.1.5 Hold the inflator button depressed to fully inflate the B.C. until the overpressure relief valve of the Dual Valve assembly opens to release excess pressure inside the bladder of the B.C. Check the operation of this relief valve by inflating the B.C. repeatedly to ensure that the valve opens to relieve excess pressure, yet closes immediately to allow the bladder of the B.C. to remain taut and fully inflated.

3.1.6 Press the deflation button and pull the rapid exhaust cable to ensure a rapid and unobstructed exhaust using both methods of deflation. Fully inflate the B.C. once again, and disconnect the Powerline from the quick disconnect hose to listen closely for any signs of leakage.

NOTE

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

3.1.7 If any leakage is heard or if the B.C. has begun to deflate within one hour, fully inflate the B.C. once again with the Powerline inflator and hold the entire B.C. 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 B.C. connections. If a continuous leak is detected, the Powerline must be disassembled and examined for damage or contamination of the seals and seating surfaces. (Refer to the Troubleshooting Table on page 14, and correct as needed.)

The service of the Powerline inflator with Dual Valve is now complete. If you have any questions on any of these procedures, please contact Sea Quest at 877-253-3483.

3.2 POWERLINE TROUBLESHOOTING

SYMPTOM	CAUSE	ACTION REQUIRED
BC inflates slowly (with full tank, stable IP)	<ol style="list-style-type: none"> 1. Low pressure hose is obstructed. 2. Filter(35) is clogged or obstructed. 3. Valve core(31) is clogged or corroded. 	<ol style="list-style-type: none"> 1. Clean or replace hose. 2. Replace filter. 3. Replace valve core.
Air does not vent when rapid exhaust valve cable is pulled	<ol style="list-style-type: none"> 1. Rapid exhaust cable(11) is not properly connected to the inflator or dual valve, or is damaged. 2. Ribbed hose(13) is incorrect length and part number. 	<ol style="list-style-type: none"> 1. Check condition and connections of cable, and correct as needed. 2. Verify length and part number of ribbed hose, and replace as needed.
Air leaks continuously from Dual Valve when BC is inflated	<ol style="list-style-type: none"> 1. Dump plug(6) is worn or damaged. 2. Dump plug spring(8) is damaged. 3. OPRV gasket(4) is damaged. 4. OPRV spring(2) is damaged. 5. Dual valve body(5) is damaged. 	<ol style="list-style-type: none"> 1. Replace dump plug. 2. Replace dump plug spring. 3. Replace gasket. 4. Replace spring. 5. Replace body.
External air leakage from inflator	<ol style="list-style-type: none"> 1. O-ring(36/33/20/16) is damaged or worn. 2. Inflator button cover(23) is damaged or installed incorrectly. 3. Push rod(19) is damaged. 4. Inflator body(30) is damaged. 	<ol style="list-style-type: none"> 1. Replace faulty O-ring. 2. Disassemble and correct as needed. 3. Replace purge rod. 4. Replace body.
Internal leakage from inflator	<ol style="list-style-type: none"> 1. Valve core(31) corroded or damaged. 2. O-ring(32) damaged or worn. 3. Valve core retainer(34) scratched. 4. Inflator body(30) is damaged. 	<ol style="list-style-type: none"> 1. Replace valve core. 2. Replace O-ring. 3. Replace valve core retainer. 4. Replace body.

 **CAUTION**

Recommended treatments which require disassembly of the inflator must be performed during a complete overhaul, according to the prescribed procedures for scheduled, annual service. Do not attempt to perform partial service. For assistance with a problem not described here, contact a Sea Quest Technical Advisor.

NOTES

REPAIR AND REPLACEMENT PARTS

POWERLINE INFLATOR & DUAL VALVE ASSEMBLY

Item	Description	Part #	Item	Description	Part #
	Powerline/ Dual Valve Airway	42746	20	O-ring	15034
	Powerline Inflator Assy (lower unit)	42747	21	Push Rod Housing	15749
n/s	Dual Valve Assy (Acme Thread)	42743	22	Button	15747
n/s	Dual Valve Assy (Std. Thread)	42745	23	Button Cover	15086
n/s	Overhaul Kit, Powerline w/ Dual Valve	42609	24	Bezel	15746
n/s	Service & Repair Manual	42983	25	Mouthpiece	15741
1	Cap	15700	26	Molded Insert	15745
2	Overpressure Spring	15613	27	Oral Button	15742
3	Valve Plate	15698	28	Gasket	15718
4	Gasket	15714	29	Oral Valve Spring	15709
5	Body Assy, Dual Valve (Std. Thread)	42744	30	Body	15750
	Body Assy, Dual Valve (Acme Thread)	42742	31	Valve Core	15504
5.1	Connector Seal Gasket	15309	32	O-ring	15032
6	Dump Plug	778559	33	O-ring	15061
7	Poppet Stem	778558	34	Valve Retainer	15744
8	Dump Spring	15901	35	Filter	15628
9	Poppet Guide	15649	36	O-ring	820011
10	Cable Hook	15652	37	Quick Disconnect Fitting (w/ O-ring)	090018
11	Cable Assembly	15724			
12	Clamp (2 required)	15719			
13	Ribbed Hose	15734			
14	Hose Clip	15735			
15	Poppet, Oral Valve	15736			
16	O-ring	15066			
17	Cable Pin	15610			
18	Filter Screen	15720			
19	Push Rod	15743			

Items in bold are included in the Overhaul Service Kit

Powerline™ Schematic

