

STREAMLINE P-VALVE



HALCYON
DIVE SYSTEMS



Installation Manual

Congratulations on your purchase of the Halcyon P-Valve. You can be confident that every effort has been made to ensure that it will function flawlessly in every diving condition. The Streamline design is the result of several years of testing and refinement; it is the culmination of a design process that draws inspiration from thousands of dives by Halcyon staff, test divers, and explorers around the world.



Extreme exploration dives, such as the 14-hour immersion in the Chip's Hole cave system, are made possible with the Streamline P-valve

The Halcyon Streamline P-Valve is a balanced system, machined from a solid piece of Delrin[®], with a threaded cap that protrudes 5/8" (15 mm) from the surface of the suit. The internal and external components screw together and are united with Aquaseal to ensure watertight reliability. The external cap allows individuals to vent out of the suit through a condom catheter and flexible tubing, or to easily seal off the outside water by turning the cap down to seal the captured o-ring, preventing water from entering the suit. The external cap can be left open during the dive for immediate availability, or left sealed and only opened prior to use.

The Halcyon P-Valve's one-way check valve is designed to prevent any water from entering the connection assembly and to reduce the resistance of water pressure. The check valve, mounted in the Delrin base, only allows fluid to flow out of the suit, preventing water from entering the connection assembly— even if condom attachment has failed. As a final fail-safe, should the check valve malfunction the exterior cap can be locked down to seal off surrounding water. However, the need to seal the cap is unlikely since the connection hardware AND the check valve must fail to allow water into the suit. A second check valve in the Delrin base allows gas in the drysuit to equalize with air in the connection/catheter assembly. This check valve eliminates the resistance of water pressure while the diver expels, reducing the risk of a connection failure. The balanced check valve assembly not only allows for greater redundancy and ease of operation, but prevents ambient water from entering the connection/catheter system. The elimination of ambient water in the connection system is particularly beneficial in cold water or questionable water sources. Additionally, the low-pressure design increases the viability of the Streamline valve for use by women when paired with an external female catheter.

Installation

You will need the following:

- Halcyon Streamline P-Valve
- Aquaseal (supplied)
- Applicator suitable to spread Aquaseal, such as a clean, thin rod etc.
- Halcyon P-Valve installation wrench (supplied)
- Device capable of creating a hole in your suit such as a 3/4" (19mm) punch or pencil soldering iron
- 60 or 80 grit sandpaper (supplied)
- Isopropyl (Rubbing) alcohol
- Dry or Wet Suit
- Assistant (very helpful, though not necessary)
- Gloves (when handling sealant)



1) Deciding on a Location

Installation of the assembly is a fairly simple process once one overcomes the resistance to putting a hole in your dry or wet suit.

Carefully choose the area where the valve body will be installed. Location is most commonly on the inner thigh. It is recommended that you don your suit fully (including undergarments) while determining valve placement. Mark your position of choice with chalk or fabric marker.

It is important to note that divers vary in their preference for the connection tube location. Some individuals prefer to “dress left” or “dress right.” This preference would dictate a location on the left or right thigh. You will also need to decide if you want to angle the valve up with the connection tube running over the underwear and down to the Delrin base.

Most drysuit divers use undergarments with a front zip design, and therefore will either have to cut another hole in the insulation (not particularly recommended) or run the tubing up over the lowest part of the zipper and down to the base unit. In any case, care should be taken to choose the location of the base unit so that unnecessary holes do not have to be repaired later.

The hose that comes with your Halcyon valve will be too long for most users, but is designed to allow individuals to trim the length in accordance with the discharge location.



Mark the location of the valve after carefully deciding on where you want to make the cut into the suit.

2) Creating a Hole

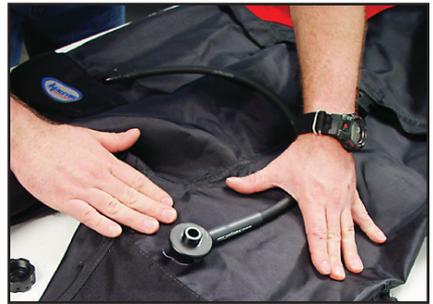
Halcyon recommends using a professional punch (such as a 3/4" grommet punch) to create the hole for the valve installation. When using a punch, place a small length of board on the inside of the suit to create a strike surface for the tool. Be careful not to damage the inside of the suit with the support board. A small hand towel can be used under the board to protect the inside of the suit. Make sure that the suit's internal suspenders are pulled clear of the valve's location, and run your hand along the inside of the suit to verify that you are not cutting through the extended edge of a sealed seam. With a hammer, use the punch to place a very neatly sized hole into the suit. This method is especially recommended for fabric-style drysuits, although it is very effective for neoprene as well.



If you choose not to use a punch, many divers have successfully used a variety of methods. Be certain that the method you choose gives you control over the size and shape of the hole. A hole may be burned into the suit with a pencil-style soldering iron, but great care should be taken not to burn any other areas of the suit. For this method, place a small hole in the mark made during the location selection from step one. Slowly work that hole outward by making ever-widening circles in the material. Remember that most materials will stretch, so the hole should be a little smaller than the actual size of the threaded nipple of the Delrin base (especially with neoprene).

3) Installing the Valve

Before actually installing the valve, verify that the connection assembly will point in the desired direction and that the tubing will be comfortably placed on its path to the condom catheter connection. Once the location of the base unit is established, the unit should be prepared for installation. All surfaces that will touch the suit are to be glued and should be prepared with a light sanding and then a good cleaning with alcohol.



This valve is intended to be installed using the supplied tube of Aquaseal. Watertight integrity cannot be assured when using other compounds as a sealant. Prepare the base unit for installation by applying a liberal film of Aquaseal on the upper surface of the Delrin base (the part that will be touching the inside of the suit) and up to the first threads of the nipple. For faster cure, mix the Aquaseal with Cotal-240 Accelerator. Gloves and proper ventilation are recommended when working with sealants and solvents. Installation will not require the use of the entire tube of Aquaseal supplied with the valve; apply only enough to establish a seal without creating drips or runs from overflow. Push the threaded nipple through the hole in the suit, being careful not to brush off the glue onto the inside of the suit. Once the base unit is installed, apply a thin layer of Aquaseal to the lower surface of the outer portion of the valve (to be in contact with the outside of the suit), and align it with the threaded



After applying Aquaseal to the base of the valve (top left), work quickly to position the valve assembly in the desired direction within the suit and then press to seal the fabric on the base. Apply Aquaseal to the top seating surface, thread, then use the supplied wrench to hand-tighten valve.

nipple of the base unit protruding through the hole in the suit. Apply a small dab of Aquaseal to the threads of the nipple with the tip the applicator. Screw the outer portion onto the threaded nipple until it is tightened against the base unit. Using the supplied installation wrench, hand-tighten the assemblies together. Be careful not to over-tighten this connection. Position the suit so that none of the Aquaseal areas will rest on the suit while it is drying to the manufacturer's specifications, two hours.

Once the valve installation is complete and the sealant is dry, carefully thread the external cap and screw it down until snug at the suit shoulder. If you want to use the optional



set screw to make sure that the external cap cannot be removed from the valve, gently tighten the set screw with an Allen wrench until the head almost touches the cap body. Test to ensure that the external cap is able to be loosened approximately two full turns and then stops. If the cap seems to bind, back the set screw out slightly until the movement is unimpeded. Use of the set screw is optional– however it can prevent accidental loss of the cap.

Valve Operation

When the cap is turned clockwise and snug against the suit shoulder, the valve is completely closed and inoperable. No fluids can be discharged or enter the suit. When the cap is turned counterclockwise approximately two turns, the valve is operational and fully automatic. Fluids can be discharged at will, but water cannot re-enter the valve due to the one-way check valve.

The valve is designed to be used with the cap in the open position during diving, and really need only be closed in the event of failure. Normal valve travel is approximately two turns from the closed to fully open position.

Failure Modes

Kinked Hose

The use of the noprrene tubing has drastically reduced the likelihood of a kinked hose. The valve is best positioned to avoid sharp bends in the hose routing to further reduce the risk of kinking. Use only Halcyon P-Valve hose for any replacements.

Kinked/blocked Condom Catheter

This may occur in the event that the catheter was not properly/completely installed. Blockages in flow may be due to a sharp bend at the end of the catheter, or a restriction created by the adhesive within the catheter. Be sure to follow the catheter instructions carefully.

Check Valve Failure

Debris or deposits can build up on the check valves over time and interfere with their function. Follow a periodic maintenance and cleaning schedule as recommended in this manual. Replace any worn or damaged check valves.

Maintenance and Cleaning

The Halcyon Streamline P-Valve, like all valves used in scuba diving, *must* have a basic maintenance check on regular intervals. If not cleaned properly, organic and inorganic deposits will, over time, reduce the valve's ability to function properly. Additionally, regular cleaning of the Streamline P-Valve is essential in preventing

bacterial growth that could contribute to a urinary tract infection.

Several careful rinses of the p-valve with a mild vinegar/water solution are recommended *after each dive*. Many users have found that a standard restaurant style squeeze bottle or large bore medical syringe work well to introduce the solution through the catheter interface, and flush the valves thoroughly.

Check valve replacement

To inspect or replace the main umbrella valve, unscrew the button cap set screw (if used) and remove the threaded cap. Lift the edges of the umbrella valve to expose the center stem. Grasp the stem firmly, and gently work it free with a side-to-side rocking motion.

To install a new umbrella valve, slip the center stem into the retaining hole in the middle of the valve face. Apply gentle pressure to the center of the umbrella valve, until it becomes fully seated.

To inspect or replace the balance check valve within the internal valve body, use a coin to unscrew the retainer. The duckbill valve can then be removed for inspection/replacement. When reinstalling the retainer, be sure not to over-tighten the fitting.

P-valve Parts		FTP
80.000.199	Streamline P-Valve stainless set screw	1.00
40.044.012	Streamline P-Valve umbrella "flapper" valve	3.00
40.044.009	Streamline P-Valve duckbill check valve	5.00
40.044.002	P-Valve hose (cost per/ ft), for any Halcyon P-valve	7.00
40.000.002	P-Valve connector for catheter, for any Halcyon P-valve	3.00
40.041.028	Medium 28mm condom catheter for P-Valve	5.00



Warranty Information

All warranty requests must be accompanied by proof of original purchase from an Authorized Halcyon Dealer. Be sure to save your sales receipt, and present it whenever returning your Halcyon gear for warranty service.

HALCYON warrants, to the original purchaser only, that the HALCYON Streamline P-Valve will be free of defects in materials and/or craftsmanship under normal diving use for one year from the date of purchase, provided proper care is performed on all materials as described within this manual. Should your P-valve prove to be defective for any reason it will be repaired or replaced (at HALCYON's discretion) free of charge excluding shipping and handling charges. All correspondence concerning this warranty must be accompanied by a copy of the original sales receipt. Repair or replacement is HALCYON's only responsibility and your only remedy under this warranty.

ALL WARRANTIES, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO A PERIOD ENDING ONE YEAR FROM THE DATE OF PURCHASE.

Some states in the U.S. and certain foreign countries do not allow limitations on the duration of implied warranties, so this may not apply to you. This warranty gives you specific legal rights. You may have rights which vary from state to state and country to country.

HALCYON MANUFACTURING DISCLAIMS AND EXCLUDES ANY LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES IN THE U.S. AND CERTAIN FOREIGN COUNTRIES DO NOT ALLOW EXCLUSIONS OR LIMITATIONS OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS MAY NOT APPLY TO YOU.

The following restrictions apply to this warranty:

1. This warranty does not extend to damages caused by improper use, improper maintenance, neglect, unauthorized repairs, modifications, accidents, fire, or casualty.
2. Cosmetic damage, such as scratches, fraying, and nicks are not covered by this warranty.
3. This warranty does not extend to equipment used for rental, commercial, governmental or military purposes.
4. This warranty covers products purchased in the United States. For warranties that may apply elsewhere, please contact your local representative.
5. Failure to meet any of the above requirements will render the warranty null and void.

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