

Back Mounted Counterlung Kit

Installation Manual

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PRISM 2
Back Mounted Counterlung Installation Guide
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INTRODUCTION

This guide provides procedures for proper “User Level Installation” of the Hollis PRISM 2 Rebreather Back Mounted Counterlung System at the time of this writing. “User Level Installation” are equipment installations that Hollis has deemed suitable for end users to perform themselves as needed. This guide does not cover all systems that require maintenance.

It is still necessary to have a Hollis PRISM 2 Service Facility complete a “Full Service” annually to maintain safe operation of the unit.

This guide does not replace proper instruction from a PRISM 2 Instructor. Instructions contained within this guide are only to be performed by persons trained to dive and assemble the PRISM 2. Before service, ensure with Hollis that this is the most current revision of this guide. If you do not completely understand the instructions given in this manual, lack the correct tools, or lack the appropriate level of mechanical knowledge - have an authorized Hollis PRISM 2 Service Facility or Hollis Customer Service complete repairs. Your Hollis PRISM 2 Dealer or PRISM 2 Instructor can personally advise you on this matter. You may prefer to have your local PRISM 2 Service Center perform all installations and repairs. Hollis has provided these guides simply as a convenience for those individuals with the desire and aptitude to complete basic repairs themselves.

WARNINGS, CAUTIONS, AND NOTES

Pay attention to the following symbols when they appear throughout this document. They denote important information and tips.



WARNINGS: are indicators of important information that if ignored may lead to injury or death.



CAUTIONS: indicate information that will help you avoid product damage, faulty assembly, or unsafe conditions.



NOTES: indicate tips and advice.

The Back Mounted Counterlung (BMCL) kit comes with the following items:

- a: BMCL with installed T-Pieces (ADV enclosed in inhalation T-Piece), Inflow and outflow breathing hoses. (Fig 1)
- b: Diluent Manual Addition Block with male QD fitting (Fig 2a)
- c: Diluent side 1st stage with 6LP port, 1HP port body. Hoses include (one each), BOV supply (45" w/ threaded female adapter), wing inflation (38" w/QD), ADV supply (30" w/ QD), HP hose with attached SPG (40"). An LP overpressure valve is factory installed into an LP port. (Fig 2b)



Fig 1



WARNING: DO NOT REMOVE THE LP OVER-PRESSURE VALVE FROM THE FIRST STAGE. IF THE VALVE MALFUNCTIONS, IT MUST BE REPLACED PRIOR TO THE FIRST STAGE BEING PUT IN SERVICE. FAILURE TO DO SO CAN CAUSE A RUNAWAY LOOP INFLATION OR HYPOXIC LOOP CONDITION, RESULTING IN INJURY OR DEATH.

- d: Oxygen side 1st stage with 4LP port, 1HP port body. Hoses include (one each), Solenoid supply (22" with threaded female adapter), O2 manual feed (38" with QD & green sleeve), HP hose with attached SPG (40" with green indicator sleeve). An LP over-pressure valve is factory installed into an LP port hole. (Fig 3a)

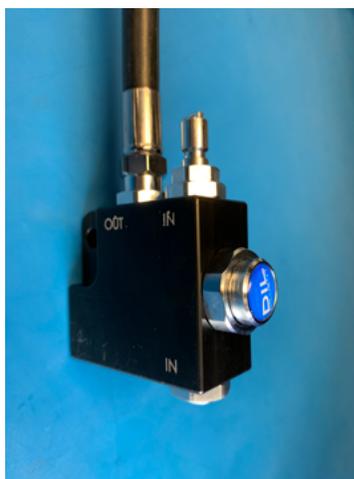


Fig 2a



Fig 2b

- e: Oxygen Manual Addition Block with male QD fitting (Fig 3b)



WARNING: DO NOT REMOVE THE LP OVER-PRESSURE VALVE FROM THE FIRST STAGE. IF THE VALVE MALFUNCTIONS, IT MUST BE REPLACED PRIOR TO THE FIRST STAGE BEING PUT IN SERVICE. FAILURE TO DO SO CAN CAUSE A POTENTIAL FIRE HAZARD RESULTING IN SUBSTANTIAL PROPERTY DAMAGE, INJURY OR DEATH.



Fig 3a

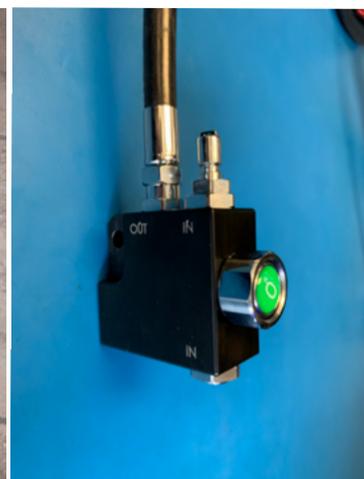


Fig 3b

- f: Oeteker Clamp tool to install DSV/BOV Hardware.
- g: 4 Oeteker Clamps,
- h: 2 Silicone Clamp covers.

Installing the DSV/BOV hose nuts onto the breathing hoses

Hollis Rebreathers always recommends users allow their Factory Trained Prism 2 dealers to install all system upgrades and servicing to insure that all upgrades and servicing are completed and tested to factory specifications.



WARNING: IF, AFTER READING THESE DIRECTIONS YOU ARE NOT ABSOLUTELY SURE HOW TO CORRECTLY INSTALL THE PRISM 2 BREATHING HOSE HARDWARE, CONTACT YOUR HOLLIS REBREATHING DEALER OR CONTACT HOLLIS REBREATHING DIRECTLY FOR FURTHER GUIDANCE. FAILURE TO CORRECTLY INSTALL THE BREATHING HOSE HARDWARE CAN RESULT IN INJURY OR DEATH.

1: Remove the existing hardware from your FMCL setup.

a: Pull back the black silicone protective sleeve from the Oeteker clamps holding the DSV/BOV nuts in place. You do not need to remove the silicone cover from the hose. (Fig 4)



NOTE: You will notice that the 2 clamps are put on in reverse from each other. This insures that should the clamps receive an impact in such a way as to cause damage to the toothlock (clamp locking mechanism), only one clamp will be compromised. This will be important when you re-install them on the BMCLs.



Fig 4

DSV Hose Fittings



Fig 5

FOR DSV SYSTEMS ONLY:

To insure the gas flow of your Prism 2 does not get reversed, remove the DSV Hose hardware ONE SIDE AT A TIME! It is highly recommended that you DO NOT remove both inhallation and exhallation side hardware at the same time.

(Fig 5)



WARNING: DSV SYSTEMS ONLY: WHEN TRANSFERRING THE BREATHING HOSE HARDWARE FROM YOUR FMCL'S TO YOUR BMCL'S, YOU MUST INSURE YOU REPLACE THE INHALLATION AND EXHALLATION HARDWARE ON THE CORRECT HOSES. FAILURE TO DO SO WILL CAUSE THE SYSTEM TO FUNCTION INCORRECTLY AND CAN LEAD TO INJURY OR DEATH.

b: Using the Oeteker clamp tool, remove the two Oeteker Clamps by inserting the Oeteker Clamp Tool into the Oeteker Clamp as shown in Figure 6 (white arrows) and gently squeeze the tool handles together until the clamps pops free from the toothlock.



WARNING: MAKE SURE IF CHANGING FROM DSV TO BOV YOU ALSO CHANGE THE HOSE HARDWARE. THE DSV HOSE HARDWARE HAS THE MUSHROOM VALVE INSTALLED (FIG 5), WHEREAS THE MUSHROOM VALVE ON THE BOV IS INSTALLED INSIDE THE BODY OF THE BOV.



Fig 6

c: Once both clamps have been removed, remove the plastic fitting and DSV/BOV counterweight nut by grasping the hose and pulling the fitting gently away from the hose. (fig 7)

d: Inspect the hose for any wear, cuts or holes. If found, the hose must be replaced.



WARNING: ATTEMPTING TO DIVE WITH HOSES WHICH SHOW SIGNS OF WEAR OR HOLES CAN LEAD TO A CATASTROPHIC LOOP FLOOD, CAUSING INJURY OR DEATH.



Fig 7

d: Remove the O-Ring from the fitting and clean the O-Ring and O-Ring groove with warm soapy water then rinse with fresh water. Clean the inside of the hose in the same manner. Once cleaned, lightly lubricate the O-Ring and re-install. (fig 8)



Fig 8

2: Installing the existing hardware to your BMCL system

f: Once both hose and fitting are cleaned, install a new silicone cover (included in the kit) onto the BMCL hose. Pull it far enough back on the hose to allow you to mount the hardware. If you find that pulling the silicone over the hose is difficult, you can dip the silicone cover in soapy water before attempting to install it on the hose. (fig 9)



Fig 9

g: Put the plastic fitting through the hole of the DSV/BOV counterweight nut and install the assembly into the hose until the hose is firmly seated against the flange of the fitting. (fig 10)



Fig 10

h: Being careful not to bend the clamps more than required, install the two new Oeteker clamps (included in kit) onto the hose making sure that the 2 clamps are mounted opposite each other. (fig 11)



NOTE: Mounting the two Oeteker clamps in opposition to each other insures that should the clamps receive an impact in such a way as to cause damage to the toothlock, only one clamp will be compromised.



Fig 11

i: Using the Oeteker clamp tool, install the two Oeteker Clamps by inserting the Oeteker Clamp Tool into the Oeteker Clamp as shown in Figure 12 (white arrows) and gently squeeze the tool handles together while using a finger to push down on the clamp end. When the clamp toothlock engages, you will feel it click into place.



Fig 12

j: Release pressure on the Oeteker clamp tool and by close inspection, insure that the toothlock is firmly engaged as shown in figure 13 (white arrow).



WARNING: FAILURE TO INSURE THAT THE OETEKER TOOTHLOCKS ARE FIRMLY ENGAGED CAN LEAD TO A FAILURE OF THE CLAMP CAUSING A CATASTROPHIC LOOP FLOOD LEADING TO INJURY OR DEATH.

k: Once the Oeteker clamps are installed, gently pull on the DSV/BOV counterweight nuts to insure the fitting is firmly held onto the hose.

l: Pull the silicone sleeve over the Oeteker clamps.

m: Repeat these steps with the other side of the breathing loop, then do a complete pre-dive check to make sure there are no leaks in the BMCLs.



Fig 13

BMCL System Assembly

1: Prepare to route the hoses past the bucket by pulling out enough of the 1 1/2" tank band webbing top and bottom to pull the hoses and SPG through. YOU Do not need to pull out any slack on the oxygen side top band, as you will not be routing any hoses through it. (Fig. 1)



Note: The SPGs will only go through the bottom bands, so you do not need to give the top band as much slack as the bottom bands.

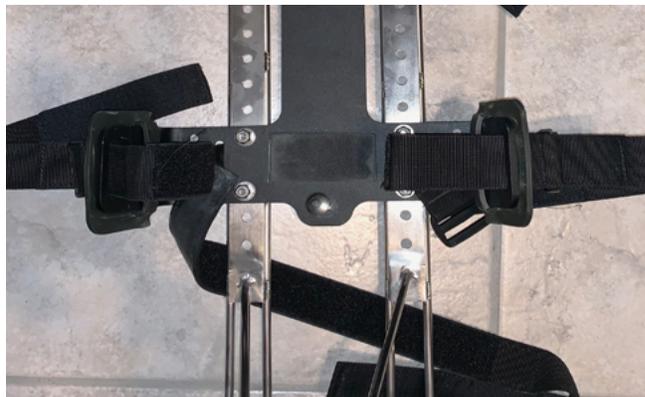


Fig 1

2: **OXYGEN HOSE ROUTING:** Route all 3 hoses through the bottom inside of the tank band. Leave the Oxygen Manual Addition hose and SPG loose (we will run it through the Wing tank band slot shortly). (Fig 2)



Note: There is no concern of pinching off gas flow by using the tank bands to hold the hoses in place. The hoses are rugged and will withstand any conceivable pressure put on them by tightening the tank band. Further, once the tank valve is opened, the lines will pressurize which will keep them fully expanded.

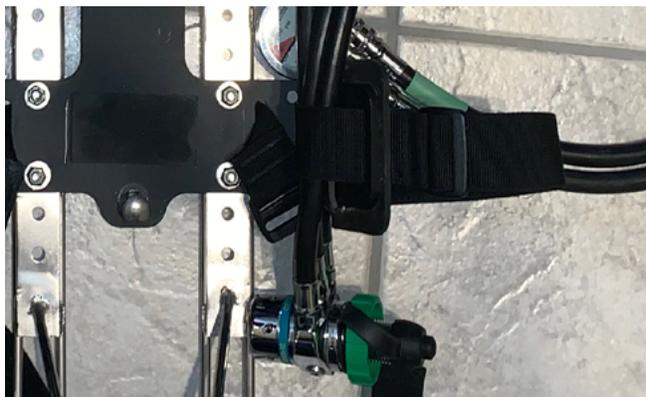


Fig 2

3: Route the Solenoid feed hose between the head and H-Plate and thread it onto the solenoid housing. (Fig 3)



WARNING: WHEN ROUTING BREATHING HOSES, MAKE SURE YOU DO NOT ROUTE THE LOOP BREATHING HOSE UNDER THE SOLENOID FEED HOSE. IF THE OXYGEN TANK WERE TO SLIP, THE SOLENOID FEED HOSE COULD CRIMP THE LOOP BREATHING HOSE, MAKING BREATHING ON THE LOOP UNCOMFORTABLE OR EVEN IMPOSSIBLE, POTENTIALLY RESULTING IN INJURY OR DEATH.

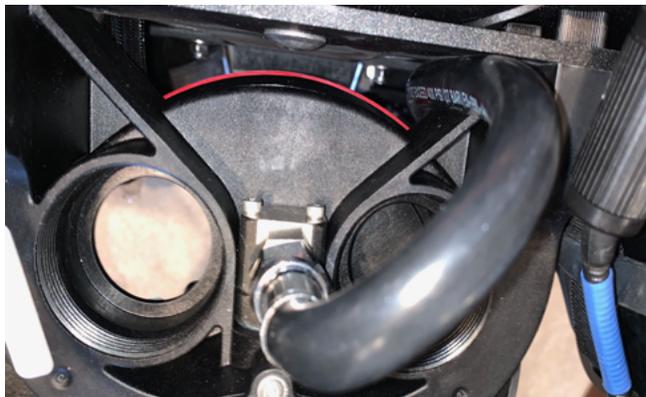


Fig 3

4: **DILUENT HOSE ROUTING:** Route all the Diluent hoses through the bottom inside of the tank band. If you are using a BOV and have attached the BOV hose to the 1st stage, run that hose through the bottom tank band as well. (Fig 4)



Note: There is no concern of pinching off gas flow by using the tank bands to hold the hoses in place. The hoses are rugged and will withstand any conceivable pressure put on them by tightening the tank band. Further, once the tank valve is opened, the lines will pressurize which will keep them fully expanded.

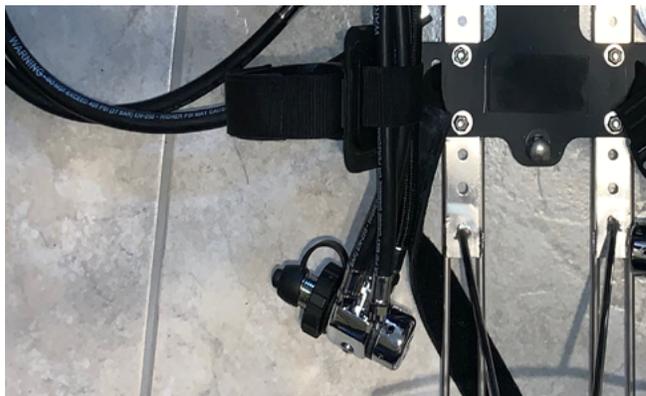


Fig 4

5: Route the Wing Inflator hose (and BOV supply hose, if so equipped) through the top Tank band, leaving all other supply hoses loose (we will run them through the Wing slots shortly. (Fig 5)



Fig 5

6: Place the wing on top of the H-Plate bolts, positioning the wing for correct trim. It may be helpful to screw on the butterfly bolts to keep the wing in place while pulling the hoses through the upper tank band holes. Run the remaining Oxygen and Diluent supply hoses through the upper wing tank band slots as shown, making sure to keep the Diluent and Oxygen feed hoses on the correct side (O2 feed on divers right, Diluent feed on divers left). Once the hoses are pulled through the tank band holes, remove the wing nuts from the bolts. (Fig 6)



Fig 6

 Note: For best in-water trim, if you tend to be “leg heavy”, position the wing using the top mounting holes and if you are “head heavy”, use the bottom mounting holes.

7: Place the Back Mounted Counterlungs onto the bolts using the appropriate holes. Generally, small-framed people will want to use the top hole while larger-framed people will use the middle or bottom mounting hole. Once placed, put the wing nuts back in place to keep the BMCLs in place while you make sure the supply hoses are flat and not twisted under the BMCLs. Once you are satisfied with the hose routing, remove the wing nuts. (Fig. 7)



Fig 7

Place the Backplate onto the bolts and secure using the wing nuts. Before tightening the backplate, check that the BMCL exhalation side drain valve pull cord is not caught between the wing and BMCL.

 **WARNING: FAILURE TO INSURE THAT THE DRAIN CORD IS FREE AND NOT STUCK OPEN CAN RESULT IN A CATASTROPHIC LOOP FLOOD, POSSIBLY CAUSING INJURY OR DEATH.**

8: On the top inside of the BMCLs on the opposite side of the T-Pieces, you will see Velcro straps on the inside of the “Over-The-Shoulder segments of the BMCLs. Open the Velcro straps and secure the shoulder webbing of the backplate under the straps. This will insure that the T-Pieces remain in the correct position while diving. (Fig. 8)



Fig 8

 **WARNING: FAILURE TO SECURE THE BMCL “OVER-THE-SHOULDER SEGMENTS ONTO THE BACKPLATE SHOULDER STRAPS CAN ADVERSELY AFFECT BREATHING EFFORT, POTENTIALLY RESULTING IN INJURY OR DEATH.**

9: Place the P2 in an upright position so the top of the rebreather can be easily accessed.

10: Install the loop breathing hoses as follows: Pre-treat the O-rings with lubricant and place one hose onto the head in its correct position. Thread the Hose Nut into the hole, gently pushing down on the hose fitting to seat the O-Ring. You DO NOT need to tighten the nut down too firmly as that can make it difficult to loosen later on (especially with water-logged fingers!). Now repeat the procedure with the other Hose Nut.



WARNING: WHEN ROUTING BREATHING HOSES, MAKE SURE YOU DO NOT ROUTE THE BREATHING HOSE UNDER THE SOLENOID FEED HOSE. IF THE OXYGEN TANK WERE TO SLIP, THE SOLENOID FEED HOSE COULD CRIMP THE BREATHING HOSE, MAKING BREATHING ON THE LOOP UNCOMFORTABLE OR EVEN IMPOSSIBLE, POTENTIALLY RESULTING IN INJURY OR DEATH.

11: HOSE CONNECTIONS: From the earlier hose routing steps you will have 2 sets of hoses on the front side of the rebreather. Set 1 shown in *Fig 9a* has the supply hoses which you routed through the wing tank band straps. The second set of hoses will be the Wing Inflation hose (and BOV hose if added) which are routed across the top of the wing. (*Fig 9b*)



Fig 9a



Fig 9b

12: Starting with the first group of hoses, the shortest hose connects to the ADV Housing at the Inhalation T-Piece by a screw-on connection. (*Fig 10a*) Hand tighten the hose onto the ADV. DO NOT use a wrench to tighten this part as you can accidentally break the T-Piece housing if you use too much force.

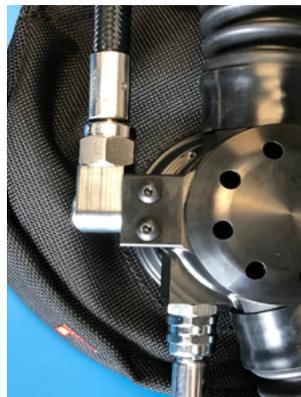


Fig 10a



Fig 10b



NOTE: There is no need to use a wrench on the hose nuts, because as soon as you turn on the gas supply you will have the systems' intermediate pressure keeping the nut from coming loose. Be sure to hand tighten the hose nuts BEFORE pressurizing the system!

13: The long hose with the QD connection is the diluent feed for the Diluent Manual Addition Block. (*Fig 10b*) Insert the QD hose fitting onto the male QD fitting on the Diluent Manual Addition Block. Once the QD fittings are locked into place, pull on the hose to make sure the hose is secure.



NOTE: You can run the supply hose through a shoulder D-Ring which will help keep the addition block from straying too far from easy reach.

14: Connect the Oxygen Supply Hose QD to the Oxygen Manual Addition Block male nipple. Once connected, give it a tug to insure it is firmly connected. (Fig 11)



NOTE: You can run the supply hose through a shoulder D-Ring which will help keep the addition block from straying too far from easy reach.



Fig 11

15: Run the Wing Inflation hose through the large hose loop on top of the wing and connect the hose fitting onto the male QD of the inflator. (Fig 12)



Fig 12

16: If you are using a Dive Surface Valve (DSV), connect both breathing hoses. The inhalation and Exhalation hose nuts are sized differently so you cannot accidentally put it on incorrectly.

17: If you are using a BOV, Install the exhalation side breathing hose nut onto the BOV. Then, thread the BOV gas supply hose onto the BOV and hand tighten. DO NOT use a wrench to tighten the fitting as you can damage the plastic housing of the BOV using excessive force. Once the gas supply hose is hand tight, install the Inhalation Breathing hose onto the BOV. (Fig. 13)

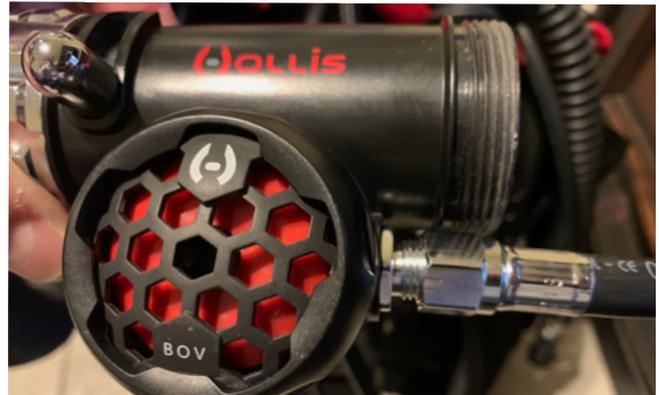


Fig 13

18: Lastly, insure that BOTH Inhalation and Exhalation T-Piece nuts are tight by turning the nut clockwise. The T-Pieces are designed to swivel to aid in better hose movement even when the T-Piece nut is tight. (Fig. 14)



WARNING: AS PART OF YOUR PRE-DIVE ROUTINE, YOU MUST CHECK THE T-PIECE NUTS TO INSURE THEY ARE TIGHT. FAILURE TO DO SO CAN RESULT IN A CATASTROPHIC LOOP FLOOD, POSSIBLY CAUSING INJURY OR DEATH.



NOTE: These instructions represent just one of the ways the hoses can be routed. Depending upon your equipment, different hose routings may work better for your diving needs.



Fig 14