



## *Thermo and XS Scuba Isolation Manifolds*

### *Assembly Instructions*

Thank you for choosing a Thermo or XS Scuba Isolation Manifold. You can dive with confidence knowing that each manifold is built to the highest standards. Your manifold is the result of quality engineering, material selection, and precise assembly methods. Furthermore, each manifold is 100% pressure tested, in water, prior to final packaging, so you know that it works right the first time you use it.

Isolation manifolds consist of 3 sub-assemblies: a LH modular valve, a RH modular valve and a Crossbar with Isolator Valve. While the two brands are very similar, the main difference is that the XS Scuba brand offers the patented Safety Handwheel with red/green visual indicator. This allows you to see, at a glance, whether the breathing gas is fully on, fully off, or somewhere in between.

#### **Center to Center Distance**

Your manifold has a center-to-center distance of 215 mm (8.46") +/- 5 mm (0.2"). It is critical that your tank bands have the same center to center distance and that you have the correct diameter cylinders for the tank bands.

#### **Install the LH and RH Modular Valves**

Using a 5/32 hex key adapter on a torque wrench, install the dip tube on each valve to 40 lbs\*in. (46 kg\*cm). Remove the large inlet o-ring from the base of each valve and apply a thin layer of lubricant to each. For elevated percentages of oxygen (nitrox), you must use an oxygen compatible lubricant such as Tribolube-71 or Christolube-MCG111. After thoroughly inspecting the inside of each cylinder, thread each valve into a cylinder until hand tight. Torque the valve into the cylinder to 50 lbs\*in (690 kg\*cm).

#### **Remove the Modular Access Plugs**

The modular access plugs are the large hex head plugs opposite the valve hand wheel. Be sure to retain these access plugs should you ever wish to reconfigure the cylinders as singles.



**NOTE:** The RH modular valve has a manifold port plug that is notched to indicate that it turns in the clockwise direction to remove. The other LH modular valve manifold port plug turns in the usual counter-clockwise direction to remove.

#### **Final Assembly**

Set the cylinders on a table or flat working surface, placing them parallel to one another and with the valve orifices facing upward.

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Carefully orient the crossbar so that its threads correctly match those of the LH and RH Modular Valves. The notched lock nut on the crossbar (indicating threads that turn opposite the normal direction) will be on your left as you face the opening of the valves. Slowly turn the crossbar in the direction that causes thread engagement into both outboard valves simultaneously.



**NOTE:** If the threads on one side do not engage, you must back the crossbar all the way out and begin again. Be patient as this may require several attempts.

When the crossbar threads engage properly, turning the center bar draws the tops of the cylinders together. Keep the cylinders parallel to one another by stopping periodically to gently tap the bottom of the cylinders together. You can tell when tapping the cylinders together is necessary because the crossbar becomes difficult to turn when the cylinders are no longer in proper alignment. This explains why it is important you avoid using wrenches for this step and turn the crossbar only by hand; any resistance you feel tells you that something is wrong.

Repeat slowly turning the crossbar and tapping the cylinders as often as necessary until you reach a point where approximately 1/8-inch of threads are visible on each side of the isolator crossbar. Make certain the isolator handwheel is positioned at approximately the desired angle.

#### Positioning Bands on Cylinder

While the cylinders are laying parallel, on their side, slide the top band up the cylinders until it is just below the shoulder of each cylinder. Make sure that the crossbar can still rotate freely by hand. If it cannot, the cylinder band spacing is not matching the manifold spacing, so you will need to lengthen or shorten the manifold accordingly. Position the bottom band so that the bolts will be spaced exactly 11 inches apart, when measured center-to-center.

#### Tightening Bands

Insert the band bolts from underneath the bands. Examine the entire assembly. If the cylinders are parallel to one another and able to lie flat, then alternately tighten the nut on each band bolt until they are snug. Do not over-tighten to the point where there is visible distortion in the band reinforcing plates under the nuts.

#### Tighten the Isolator Crossbar

Position the center isolator handwheel in place. Turn the crossbar jam nuts so that they rest snugly against the LH and RH Modular Valves. Snug them in place with a wrench. The recommended torque is 85 lbs\*in (100 kg\*cm).

Assembly is now complete. Leaks are unlikely, but if you wish to check, fill the cylinders with gas. Check for leaks by immersing them in water, or if that is not convenient, spray them with soapy water. Look closely for bubbles forming around the cylinder neck where it mates with the valve, burst disk plugs, access ports, hand wheels and outlets.



**CAUTION** – If you find the need to move or loosen the tank bands later, after the tanks have been pressurized, it is critically important to drain all the gas from your tanks before loosening the band bolts. Never loosen the bands on cylinders that are pressurized.

This completes the assembly of your Isolator Manifold and twin cylinders. You can learn more about assembling twin cylinders by visiting [XSscuba.com/support](http://XSscuba.com/support) and locating the document called *Assembling Twin Cylinders*.

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