BandMask Tri-Valve Exhaust

Contents

1.1 Tri-Valve Exhaust Assembly on Band Masks

Both BandMasks use the Tri-Valve Exhaust system to provide an exceptionally dry breathing regulator. However, these masks are not recommended for contaminated water diving. Hooded face masks should NOT be used for diving in contaminated water. Water can leak past the face seal and expose the diver to contaminants.

⚠ CAUTION

When diving in heavy current (i.e. exceeding 3 knots) the original single exhaust system on all KMDSI masks/ helmets can allow water to enter, due to turbulence/eddying. It is important for the diver to take excessive currents into consideration. The Tri-Valve Exhaust system will help prevent water intrusion when diving in heavy currents, up to 5 knots.

The Tri-Valve exhaust system is standard equipment for the KMB 18 and 28. This superior exhaust system has exceptionally low exhalation resistance, and helps to keep the mask free of contaminants in polluted water (though not recommended for contaminated water).

The Tri-Valve is designed to couple the regulator exhaust and two additional exhaust valves to a single plenum chamber, mounted below the regulator body. Therefore, the regulator exhaust gas must also pass through either one of two (or both) exhaust valves that are part of the bubble deflector (whisker). By having an exhaust valve in both sides of the bubble deflector, exhalation resistance is minimized, while still helping to maintain the isolation of the BandMask® regulator exhaust valve.

The Tri-Valve is superior to the previous Double Exhaust System or standard exhaust whisker. All users of these masks that are still in the original configuration are encouraged to upgrade their mask to the Tri-Valve Exhaust System.

1.2 Tri-Valve Assembly Removal

Tools required:

- Screwdriver
- Small Cutting Pliers

NOTE: It is necessary to first remove the regulator and exhaust assembly from the mask to remove the Tri-Valve Assembly from the regulator. See “1.3.1 SuperFlow® 350 Demand Regulator Removal from Helmet or Mask” on page SF350-8

1) Removal of the Tri-Valve is started by cutting the tie wrap that holds the assembly to the regulator. After removing the tie wrap, stretch exhaust main body over and off of the regulator exhaust flange.

2) Remove the screws that secure the whiskers to the port retainer. Do not lose the kidney plates or spacers.

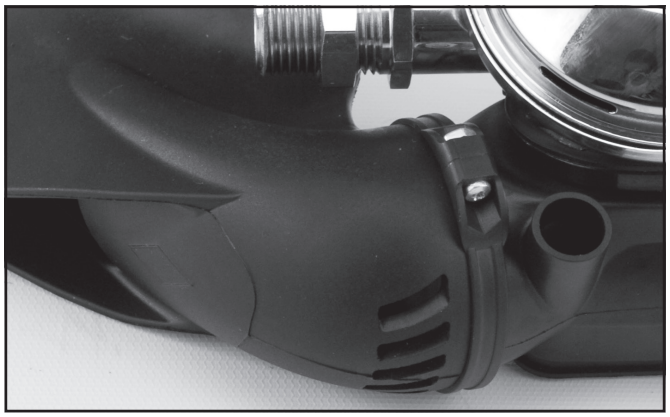
3) You can now remove the Tri-Valve assembly from the mask.

1.3 Tri-Valve Exhaust Valve Replacement

NOTE: It is necessary to first remove the regulator and exhaust assembly from the mask to replace the exhaust valves.

1) Remove the Tri-Valve Assembly.

2) Using a small Phillips screwdriver, carefully remove the two whisker clamps that hold the deflector whiskers to the main exhaust body.



To allow access to the two exhaust valves in the Whisker wings, you must first remove the two whisker clamps that hold the whiskers on the exhaust main body.

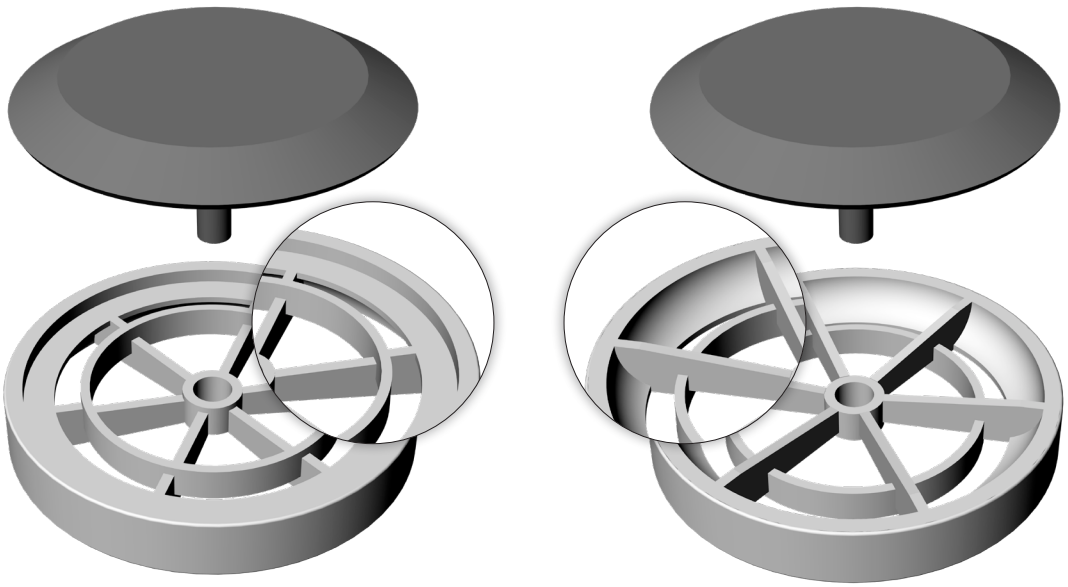
3) Remove the two exhaust valve seats and valves. Carefully note which side the valves are installed into and which way they face when mounted in the body. They MUST be reinstalled facing the same way. If you exhale into the regulator, the valves must open.

4) Install a new exhaust valve into each whisker exhaust valve seat on the correct side by feeding valve tail through hole in center of valve seat and pulling on it until valve is seated.

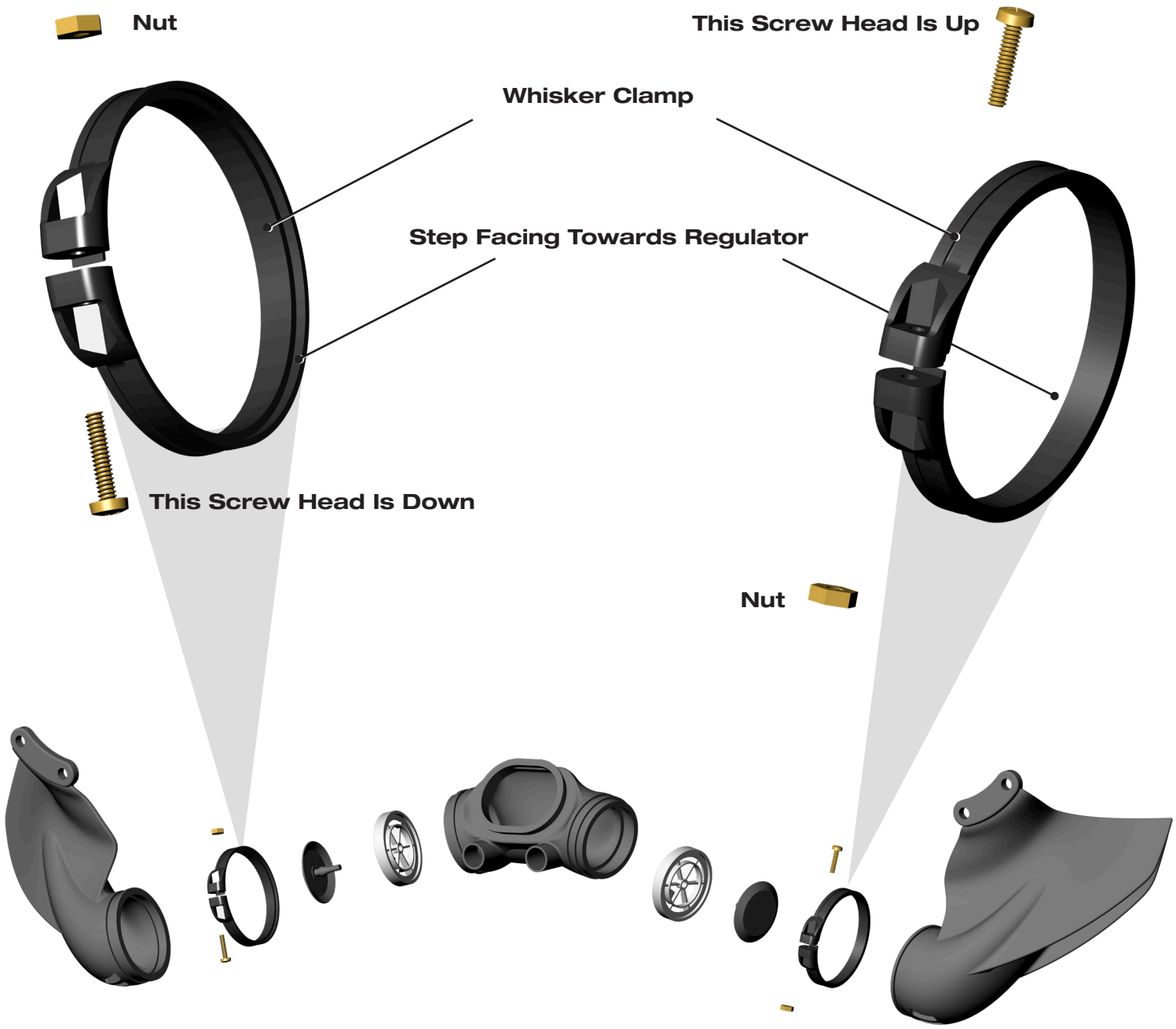
⚠ WARNING

The exhaust valve seats must be installed in the correct orientation in exhaust main body. If the seats are installed backwards, the diver will be unable to exhale. This could lead to suffocation and death.

NOTE: The exhaust valve/whisker exhaust valve seat assembly must be placed into the Tri-Valve exhaust main body correctly to provide gas flow in the proper direction. The flow must be from the inside of Tri-Valve exhaust main body out to the starboard and port whisker.



The exhaust valve seats are recessed on one side to accept the exhaust valves so they sit flush in the seats. The exhaust valves must be installed properly into the seats or they will not seal or perform properly.



Whisker Assembly Details

Special note on whisker clamps: There is no left or right whisker clamp. Both clamps are identical.

If the clamps are not oriented correctly, it will be very difficult to tighten the screws that secure them. There is also a strong possibility that the clamp will come off the whisker, reducing the effectiveness of the exhaust system in keeping the breathing system dry.

⚠ WARNING

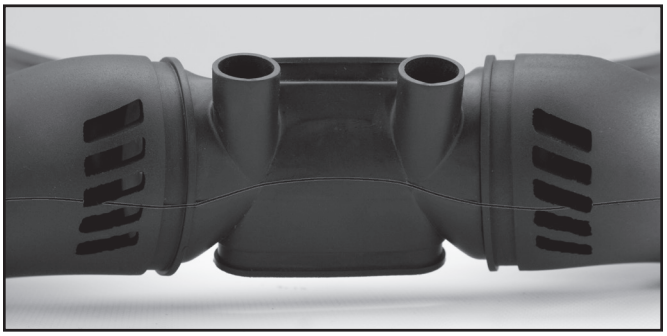
If the whisker clamps are not installed properly, the exhaust valves will leak. This leads to a chance of backflow into the regulator through the exhaust valve. If contaminated water diving, this is may result in serious illness leading to permanent injury or death.

⚠ WARNING

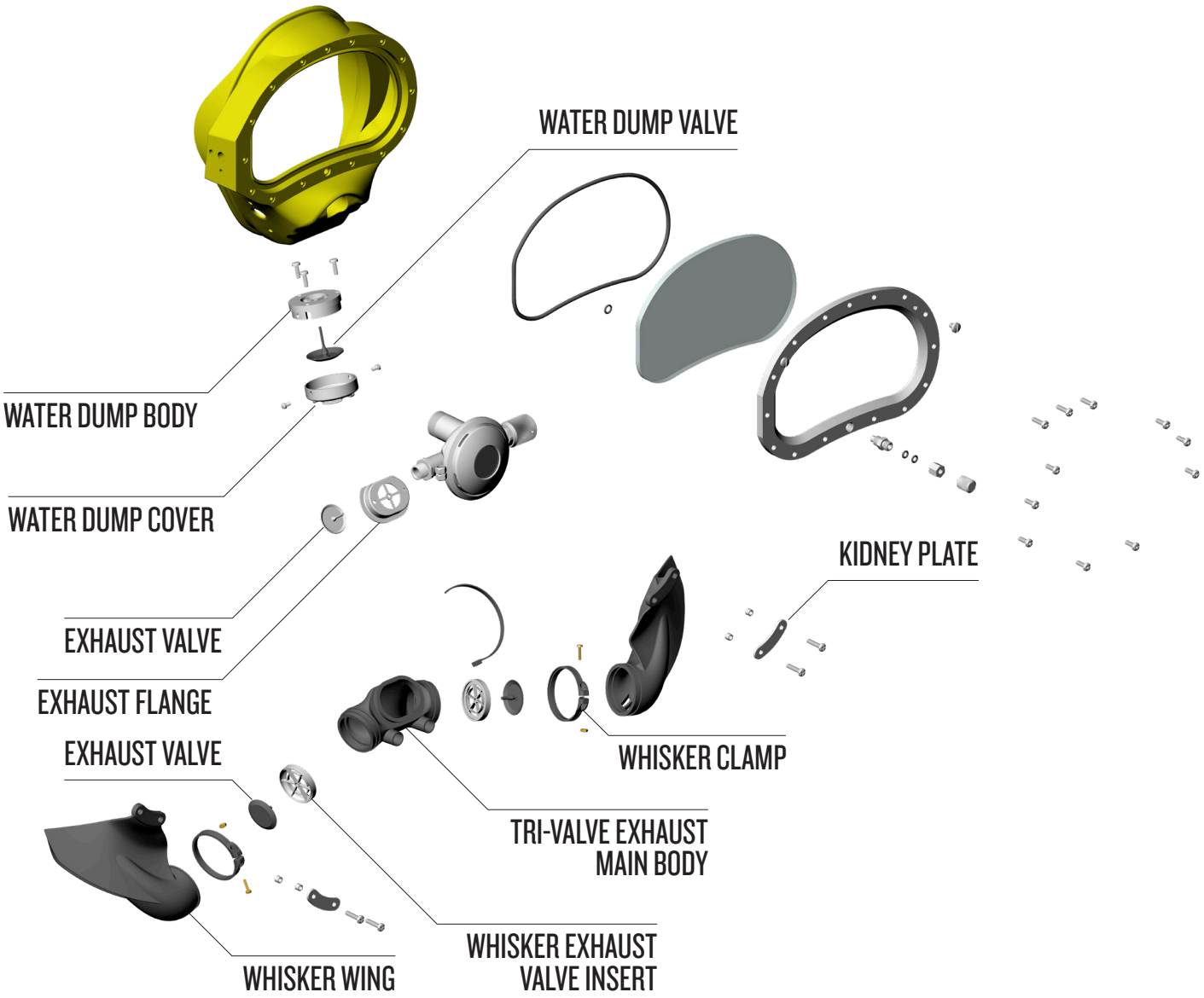
The exhaust valves must be correctly installed in the exhaust valve seats or they will not seal correctly. This could lead to a backflow of water into the helmet, which could expose the diver to any contaminants that are in the surrounding water. Depending on the contaminants, this could lead to serious personal injury or death.

5) Install an exhaust valve/whisker exhaust valve seat assembly into both seating areas on each side of tri-valve exhaust main body.

6) Slide the starboard whisker onto the starboard side of the main exhaust body, making sure that you do not dislodge the exhaust valve/whisker exhaust valve seat assembly from its seating area.



The whiskers must be aligned properly on the exhaust main body.

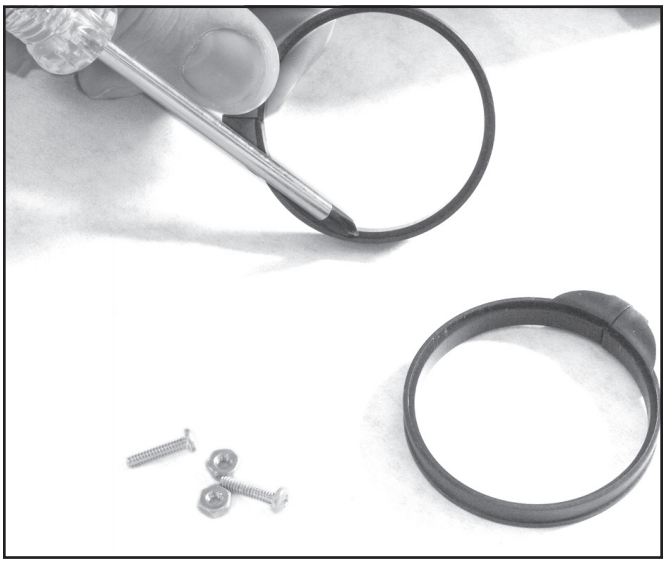


Exploded view of the Tri-Valve exhaust system on Band Masks.

Note the correct positioning of the mold line that appears on the whiskers and the exhaust main body.

7) Repeat this procedure for the port side.

8) Place whisker clamps around the grooves on each of the two whiskers. Before doing the final tightening of the clamps, make sure that the parting lines on the bottom of the whisker wings are aligned with the parting line on the exhaust main body, and the clamps are positioned properly on the body.



Note the step on the inside of the whisker clamps. These must be oriented in the correct position to retain the whisker properly.

The correct orientation of the whiskers relative to the exhaust main body are as shown in the photo here. Tighten the screws that hold the clamps until the screws are snug. The threaded ends of the screws should be at least flush with the outer edge of the nut that holds them. Do not overtighten.

1.4 Tri-Valve Assembly Installation

1) The Tri-Valve exhaust main body opening mates to the regulator exhaust flange. This opening needs to be worked onto the regulator flange. Make sure that the Tri-Valve exhaust system is facing the correct direction and is not upside down.

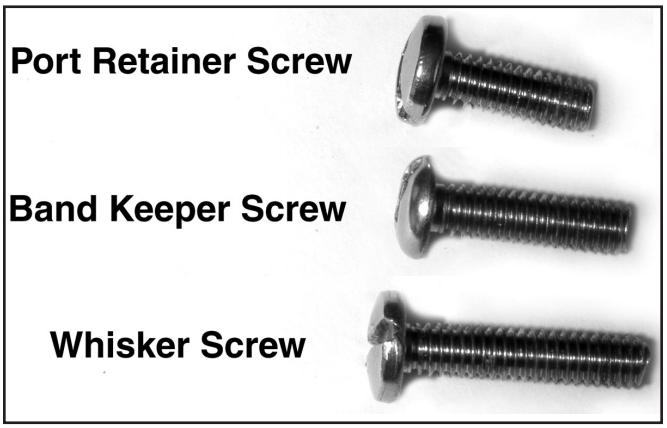
IMPORTANT NOTE: Do **NOT** attempt to stretch the whisker onto the regulator flange by pulling the long part of the whisker. Doing this could loosen or separate the parts. Grasp the main exhaust body area of the whisker, while stretching the rubber onto the flange. Make sure that the Tri-Valve Exhaust System is facing the correct direction and is not upside down.

2) Install the clamps onto each wing, making sure the step side on the clamp will face towards the regulator when finished. You should see where the step will capture the rubber on the end of the wing. The whisker clamps must be installed in the proper direction. Notice one side of the clamp

is flat and the opposite side has a step. When installing the clamp, make sure the stepped side faces towards the regulator. You will not achieve a sound installation if they are not positioned properly. Properly re-align the port and starboard wings to the main body.

3) Place the regulator into the mask opening, then attach the screw, spacers and plates on each side of the port retainer and using a torque screwdriver. (See "1.10 KMB 18 Torque Tables" on page APNDX-28 for correct torque). Special care must always be taken to not over torque any port retainer screws!

Don't forget to reinstall the spacers before attaching the kidney plate(s) to the mask.



Note that the screws used for the port retainer, band keeper and whisker have a similar appearance, but that all are different lengths. They are not interchangeable.

4) Lightly lubricate a new O-ring and place on the regulator inlet tube then thread the retaining nut on hand tight only.

5) With silicone grease, lightly lubricate the O-ring on the bent tube assembly. Slide the O-ring end of bent tube assembly into the regulator inlet nipple until the side block end is aligned with the threads for the bent tube mount nut.

6) Thread the large nut on the bent tube assembly onto the inlet nipple 1 or 2 threads. Ensure that the Teflon® ring is in place and engage the bent tube nut to the side block fully until it is hand tight. You may need to rock the regulator body and/or the bent tube to fully engage side block nut.

7) Fully engage the large nut on the bent tube into the regulator inlet nipple by turning it clockwise until it is hand tight. This will ensure the nut is bottomed on the shoulder on the bent tube. Do not tighten further.

8) Loosen the jam nut on the regulator inlet nipple (counterclockwise), and engage the jam nut fully to the large nut on the bent tube. Using a ⅞" open end wrench, hold the large nut on the regulator end of the bent tube and tighten the jam nut against it using a torque wrench with a ⅞" adapter, see "1.10 KMB 18 Torque Tables" on page APNDX-28 for correct torque.

9) Retighten the regulator mount nut, see

"1.10 KMB 18 Torque Tables" on page APNDX-28 for correct torque.

1.5 Water Dump Valve Removal

Tools required:

- Flat Blade Screwdriver

1) The cover is removed by unscrewing the two screws. If the cover is badly dented so that it interferes with the performance of the water dump valve it must be replaced.

The water dump is a molded part on the KMB 28.

Note the difference between the water dump cover on the KMB 18 and 28. They are NOT interchangeable.

2) The valve must be replaced at the slightest sign of deterioration or aging of the rubber. Simply grasp the valve and pull to remove.

3) Replace the water dump valve by feeding the tail of the new valve into the hole in the center of the body and pulling it through until the stem seats. The excess tail may be trimmed off.

4) The water dump body on the KMB 18 should never need servicing, unless the seal is broken between the silicone sealant (RTV) and the body and mask frame. On the KMB 28 the water dump body is molded into the mask frame.

⚠ CAUTION

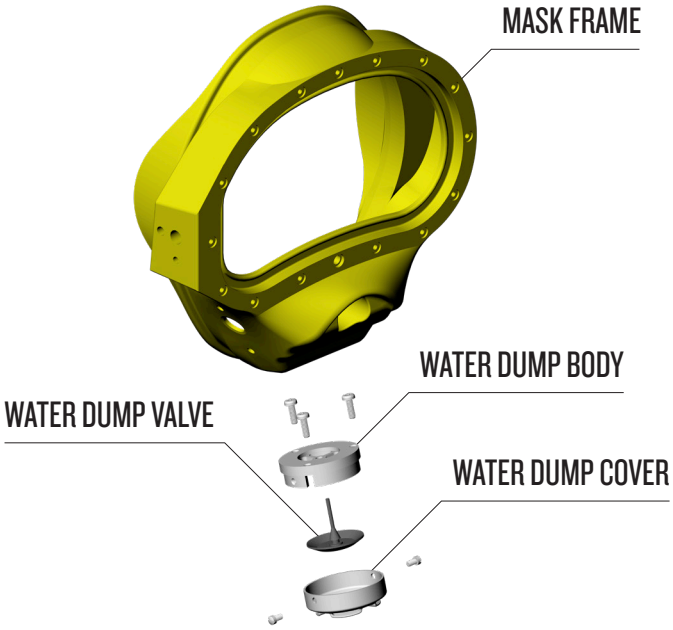
Overtightening the water dump cover screws on the KMB 28 could damage the threads in the water dump body. This body is not replaceable and could require the replacement of the entire mask frame.

1.5.1 Inspect the Water Dump Valve

1) Remove the water dump cover from the exhaust body by removing the two screws.

2) Inspect the water dump valve for cracks or tears, replace if needed. Reinstall the cover and the screws.

NOTE: The KMB 18 and 28 have different exhaust covers and should not be exchanged.



Water dump body, valve, and cover relationship on the KMB 18. On the KMB 28 the body is molded into the mask frame.