OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

1A Scope:

This document provides instructions for disassembly, O-Ring replacement and reassembly of the OmniSwivel for the AGA FFM (P/N SW-A, old P/N SW-3000).

It is recommended that the OmniSwivel be serviced annually.

1B Important Note:

OmniSwivels that are stamped with a date of manufacture between 01-04 through 02-05 must NOT be used unless stamped with an arrow (highlighted below in picture 1). Swivels with these dates were subject to a voluntary product safety recall in August 2005. The date is stamped on the Swivel body underneath the Patent number (highlighted below in picture 2). If your OmniSwivel has a date within this range and does not have an arrow stamped as shown, contact OmniSwivel International or your supplier.

1.

2.

1C Before Use Checks:

All OmniSwivels should be checked prior to use. See Section 7 below.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

2 Tools Required:

OmniSwivel International recommends the following tools and equipment to properly service and replace the O-Rings in the SW-A (SW-3000) Swivel. Failure to do so may result in damage to the Swivel and voiding of the manufacturer's warranty.

1. OmniSwivel Service Tool Kit - P/N RK-TK (old P/N SW-8000)
   Kit includes the following:
   - 1 ea Swivel repair bar
   - 1 ea 3/16" hex wrench
   - 1 ea 3/32" hex wrench
   - 1 ea flat head screwdriver, approx 5/16"
   - 1 x AGA 2nd Stage Swivel O-Ring Kit (see below)

2. AGA 2nd Stage Swivel O-Ring Kit - P/N OK-A (old P/N SW-4003)
   Note: Only this kit may be used for OmniSwivel SW-A service.

(P/N OK-A) AGA 2nd Stage Swivel O-Ring Kit - Contents List	
1 ea	7/8" OD O-Ring (brown): Internal Outer Ring
1 ea	5/16" OD O-Ring (brown): Internal Inner Ring
1 ea	7/16" OD O-Ring (brown): Insert O-Ring
1 ea	1/2" OD Viton O-Ring (brown): Anti-Vibration Ring
1 ea	8mm x 1mm O-Ring (black): Insert to Swivel Body
1 ea	Teflon washer 5/16"OD, 0.01 thick: For Swivel Body Screw
1 ea	Polymer washer 1/2"OD, 0.025 thick: Insert to Swivel Body
1 ea	Set Screw (Hex)
1 ea	Swivel Body Screw (Flat Head)

3. Test Plug (AGA) - P/N TP-A (old P/N TP-3000).

4. Christo-Lube lubricant (MCG-111).
   Note: If the Swivel is <u>not</u> for use with Enriched Air Nitrox (EAN) or pure O2 then standard silicone lubricant (e.g. Dow-Corning) may be used.

5. LocTite® Thread Locker (P/N # 242).

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

3 Disassembly and Cleaning Procedure:

3.1 Place the Swivel in the Swivel repair bar with the Flat head screw facing in the up position. The knurled fitting for attachment to the AGA 2nd stage regulator should be outside of the of the repair bar.

3.2 Using the Flat Head Screwdriver (PN-9804), Turn the flat head screw in the Swivel counter clockwise to remove screw. Before completely removing the flat head screw, remove Swivel from the repair bar. Finish removing the top half of the Swivel from the lower half.

Notes:

1. The top half of Swivel body can be easily identified as the half with engraving. Engraving will state "Made in USA" "M&J ENG" "Pat# 5275444"

2. From January 2007 the engraving on the Swivel changed to "OmniSwivel International"

3.3 Remove and discard the two O-Rings on the inside of the Swivel.

3.3.1 1ea 5/16" O.D O-Ring (Small)

3.3.2 1ea 7/8" O.D O-Ring (Large)

3.4 Remove Flat head screw from the Swivel Body.

3.4.1 Remove and discard 1ea 5/16" O.D Teflon (White) flat washer from the top half of the Swivel Body

3.4.2 Using the 3/32" Hex wrench remove the setscrew from the bottom half of the Swivel body.

3.4.3 Remove 9/16" O.D Anti-vibration O-Ring from bottom half Swivel body. Located on male threads between Swivel and hose from 1st stage regulator.

3.5. Place top half of Swivel body in the Half Moon Shaped slot on the Swivel Repair Bar.

3.6 Insert the 3/16" Hex wrench into the AGA insert. Turning counter clockwise, remove the insert and nut.

3.6.1 Remove the nut from the insert.

3.6.2 Remove O-Rings and washer from insert and discard.

3.7 Thoroughly clean male threads on the AGA insert and female threads on the bottom half of Swivel body using compressed air. Clean the flat head screw and the hex set screw with a medium durability bristle brush.

Proceed to Stage 4.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

4 Installing O-Rings and Reassembly Procedure:

For installation of all O-Rings, lightly lubricate each O-Ring prior to installation unless otherwise instructed. A light film of lubricant is all that is needed. After the O-Ring is installed again apply another light film to make sure all the surface area is covered.

4.1 Lubricate and install new 7/16" OD O-Ring over the hex end of the AGA Insert. Be sure to have the O-Ring rest fully into the O-Ring groove.

4.1.1 Install new black Viton O-Ring on the male threaded end of the insert. No lubrication is necessary on this O-Ring. Be sure that the O-Ring sets to the bottom of the threads without resting on the threads.
4.1.2 Place nut onto top half of the Swivel body. Install new 1/2"OD polymer washer into the nut. Be sure to seat the washer fit around the step of the swivel inside the nut.
4.1.3 Put top half of Swivel body in Swivel half round repair bar.
4.1.4 Place 1 small drop of LocTite Thread Locker on the thread of the insert.
4.1.5 Thread male end of insert into the female end of the top half of the Swivel body. Use the 3/16” Hex wrench to gently seat the insert into the Swivel body. Be cautious not to over tighten at first. If the washer is not properly seated in the nut while tightening down you may break the washer. You will feel the insert bottom out in the Swivel body. When the insert bottoms out apply hand tight pressure (approximately 12 to 15 inch pounds)

4.2 Install new Teflon washer into Top half of Swivel body where the Flat head screw goes.

4.2.1 Install Flat head screw into top half of the Swivel Body.
Note: The old Screw may be re-used provided that the screw threads and head are not damaged/discoloured. If there is any doubt, use the new screw.

4.3 Apply the LocTite Thread Locker from the bottom of the Swivel body and NOT inside the O-Ring groove area. Apply a drop of LocTite Thread Locker inside the female threads of the bottom half of the Swivel body (located in the smaller O-Ring groove).

4.3.1 Install the new Hex set screw into the bottom half of the Swivel body. Install from bottom of Swivel body. Thread the setscrew through the entire length of the female threaded area using the 3/32 Hex wrench. When the setscrew is flush with the bottom of the O-Ring groove, back out again until flush with the bottom of the Swivel body.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

4.3.2 Install new pre-lubricated 5/16" OD O-Ring (small) and 7/8" OD O-Ring (large) inside O-Ring groove of bottom half of Swivel.

4.4 Apply a small amount of lubricant to 7/8" OD and 5/16" OD O-Rings. Rub lubricant around O-Rings. Inspect both O-Rings to ensure that there is no debris on the O-Rings or the smooth surface of the Swivel bodies.

4.4.1 Place the two body halves together and screw the flat head screw down to the point where the Swivel body halves become tight to move. Back the flat head screw off approximately 5-10 degrees.
Note: There will be some natural resistance in the Swivel bodies' movement.
CAUTION: Over-tightening of the Swivel halves may cause damage to the O-Rings or Teflon Washers.

4.4.2 When the top and bottom halves of the Swivel bodies are set, lay the Swivel on a flat surface. Place the Flat Head Screw Driver (PN# 9804) in the flat head screw. Take the 3/32" Hex wrench and place it in set screw. Tighten the hex set screw while holding the flat head screw from moving. Once the setscrew is locked against the flat head screw, tighten hand tight only (approximately 12-15 inch pounds). Check the Swivel to make sure that the flat head screw did not move. If the Swivel seems loose back the set screw off and readjust the flat head screw until you get the same amount of resistance as before. Then retighten set screw to 12-15 Inch pounds.

4.5 Place the ½" OD O-Ring around the male thread end of the Swivel. This is the end that the hose attaches to. The Swivel is now ready for testing.

Proceed to Stage 5.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

5 Testing the Assembled Swivel:

5.1 Place the Swivel in line with the low-pressure side of the 1st stage regulator hose. Apply the Test Plug (TP-A / TP-3000, AGA Test Plug) to the female end of the Swivel.
Note: When pressure is applied to the system a way to release the pressure is required. Place an octopus regulator on another low-pressure port of the 1st stage regulator to relieve the pressure from the system after the testing is completed.

If no Test Plug is available an Interspiro Divator MKII (AGA) FFM 2nd stage regulator may be connected instead. If using a positive pressure FFM ensure that the positive pressure lever is in the closed position.

5.2 Open the cylinder and let the system pressurize.

5.2.1 Turn the Swivel to a 90-degree angle. Apply upward and downward pressure on the end of the Swivel with the Test Plug on it. This will help to seat the O-Rings inside the Swivel.

5.3 Place the Swivel with pressure on in a container of fresh water. Ensure that the Swivel is completely submerged. Turn the Swivel around back and forth to make sure there are no bubbles coming out area where the two Swivel halves meet.
Note: If bubbles are seen coming from the Swivel halves then there may be some debris on the O-Ring. Using the steps above, disassemble the Swivel again and check the 7/8" OD O-Ring to make sure there is no debris on it or that the O-Ring is not damaged. Clean, lubricate, reassemble and retest the Swivel.

5.3.1 While submerged put upward and downward pressure on the end of the Swivel with the Test Plug on it. Check for leaks coming from the flat head screw.
Note: If bubbles are seen coming from the flat head screw, the Swivel halves may be too loose. Readjust according to step 4.4 above. If during retest the bubbles persist there may be some debris on the inner O-Ring. Disassemble the Swivel again and check the 5/16" OD O-Ring to make sure there is no debris on it or that the O-Ring is not damaged. Clean, lubricate, reassemble and retest the Swivel.

Proceed to Stage 6.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

6 Final Results:

6.1 If all steps were correctly followed then the Swivel should test correctly without any sign of leaking. Always allow the Swivel to dry naturally after testing.

If there is a problem during the testing process or the Swivel fails testing after 3 tries, DO NOT USE THE SWIVEL. Please contact OmniSwivel International.

IMPORTANT NOTE

For Before Use Checks - See Section 7.

OmniSwivel SW-A (SW-3000)
Service Instructions (including O-Ring Replacement)

7 Before Use Checks:

7.1 Before use each Swivel should be checked as follows:

7.1.1 Place the Swivel in line with the low-pressure side of the 1st stage regulator hose and connect an Interspiro Divator MKII (AGA) FFM 2nd stage regulator. Ensure that the positive pressure lever is in the closed position (if fitted).

7.1.2 Initial Test. Hand tighten the Swivel nut fully into the FFM regulator body. The Swivel should be able to move back and forward into the body of the 2nd stage regulator approximately 20-30 thousandths of an inch (.020 to .030). The Swivel should also rotate inside the body of the regulator with minimal resistance (there is natural resistance from the O-Ring inside the regulator body). If there is movement back and forward and the Swivel is free moving inside the regulator body then proceed to next step.

7.1.3 Pressurization Test. Open the cylinder and pressurize the system.

7.1.4 Turn the Swivel to a 90-degree angle position. Apply upward and downward pressure on both ends of the Swivel. This will help to seat the O-Rings inside the Swivel.

7.1.5 Move the FFM by hand in a circular motion (i.e. to simulate head movement) 3 to 5 times then check that the connection nut has not backed away or worked loose from the FFM. Tighten as required. The Swivel itself must rotate with minimal restriction and without locking up or binding.

7.1.6 Leak Test. Submerge the FFM and Swivel in a container of fresh water. Move the FFM around to simulate the full range of motion that would normally be incurred while diving. Observe the Swivel for leaks.
Note: When the Swivel is first moved around 1 or 2 bubbles may escape from the Swivel body halves, especially if the Swivel has not been used for an extended period. If this occurs simply move the Swivel into a 90-degree position and apply upward and downward pressure on both ends. This will help to seat the O-Rings. Redo the leak test. If air is still leaking from the Swivel halves or if the Swivel nut has backed off from the FFM do NOT use the Swivel - contact OmniSwivel International or your supplier.

7.1.7 If all tests are correct and there are no leaks then the Swivel is safe to dive.