



AS-900A

Operation and Maintenance Manual

UM05-6



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Radio and Flasher
Beacons

SERVICING

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SPECIFICATIONS

Transmitter Output	1 watt
Harmonics	-40 db minimum
Battery Life	30 days
Batteries	4 alkaline 'C' cells
Operating and Storage Temperature	-40 °C to +60 °C
Ocean Depth Rating	24,000 ft. (7,300 m)
On/Off Control	Automatic pressure activated switch. Beacon OFF below 10 meters and ON above 8 meters. Manual override ON/OFF control by rotating knob.
Transmit Frequency	ARGOS-II band (S1-S23, L1-L3) 401.6300 MHz – 401.6800 MHz
Antenna	Field replaceable ½ wave whip Zinc anode protected
Materials	Case and pressure switch: 6061-T6 aluminum hard anodized to MilSpec A8625, Type 3 Antenna Cap: Brass core with molded neoprene rubber on exterior surface
Weight with Batteries	In air 3.6 lb (1.6 kg) In water 2.1 lb (0.95 kg)
Dimensions (exclusive of antenna)	18.5" long (470 mm), 1.7" diameter (43 mm)

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1 Operator Warnings

As with any sealed pressure case, the contents could be under pressure due to battery or seal failure. This could expel the batteries with force when the Pressure Switch is removed and cause severe injury. To be safe, always point the open end away from you and always remove the Pressure Switch first. The Pressure Switch is designed to vent any internal pressure when it is being removed. If a battery is trapped in the case take extreme care, there could be a pressure buildup behind it and the battery could be expelled at any time.

2. Withdraw the Zinc Anode and the black “Delrin” Knob Carrier.
3. Make sure the PS-200 Pressure Switch is in the **upright position** (Cup Seal up, spring down); this will make sure a small internal pin will not fall out. **Do not lose this pin.**
4. Carefully pry off the rubber Cup Seal, do not scratch the Cup Seal or the mating “O” ring surface.
5. Observe the S.S. Flat Spring and note how it is installed.

6.4.2 Lubrication

1. Clean all surfaces and the Cup Seal.
2. Lubricate (very lightly) the “O” ring shaped portion of the Cup Seal and the mating aluminum surface with silicone grease (Parker Super O Lube). **Do not spread the silicone grease anywhere else. Excess silicone grease can cause the Pressure Switch to fail.**

- A typical seal failure results in a very small amount of water entering the case, not a flooded case. Most seal failures occur near the surface.
- The O-ring becomes less flexible as the rubber ages.

If you are operating or storing at low temperature, it makes it even more important to service the O-ring regularly.

6.3 O-Ring Maintenance

Seimac strongly recommends that O- rings be serviced on a regular basis to ensure a reliable seal. **Remove and lubricate at least once a year or sooner and replace every two years or sooner.** With regular maintenance, O-rings will be very reliable and trouble free. Most failures due to O-rings are a direct result of improper maintenance and of subsequent operations at their design limits.

There are two O-rings to service and a cup seal to service. The O-rings are at the top end of the Pressure Case and on the Pressure Switch. The cup seal is on the Pressure Switch. Replace the two O-rings with Parker #218 or equivalent available from Seimac or your local O-ring supplier. Lubricate lightly with a silicone grease, we recommend Parker Super O Lube. Instructions for the lubricating or replacing the cup seal can be found in Section 6.4.

6.4 Pressure Switch Cup Seal

The Cup Seal must not be overlooked when lubricating the “O” rings. The Cup Seal should be lubricated every year and replaced every two years or sooner. Lightly lubricate the Cup Seal by performing the procedure below.

6.4.1 Disassembly

1. Remove the two socket head cap screws on the Zinc Anode.

2 Introduction

Thank you for purchasing the Novatech AS-900A by Seimac.

If you have suggestions for improvements to any part of this product or this manual, please contact us using the contact information at the back of this manual. We strive to improve our products and documents continuously and we very much appreciate your feedback.

The AS-900A ARGOS Beacon contains an ARGOS system transmitter designed as a ruggedized incident alerting system for oceanographic applications anywhere in the world. The beacon can be installed on any submersible equipment with working ocean depths to 7,300 meters. A pressure sensitive switch in the battery cap automatically turns the beacon OFF while submerged below 10 meters and ON at 8 meters from the surface. While submerged, the AS-900A does not draw any current so it may be left submerged for up to 1 year.

At the surface the beacon transmits an ARGOS position data message for 30 days.

3 Shipping Box Contents

The contents of the AS-900A shipping box are listed in Table 1. This box is designed to protect the AS-900A during shipment to you. Please take the time to inspect the contents of the box carefully. The shipping box should contain the following items for each AS-900A:

Table 1 - Contents of AS-900A Shipping Box

Qty	Description
1	AS-900A
1	Operation and Maintenance Manual
2	218 O-rings
2	AN-901 Antenna

Please ensure that all of the above items are included in the box and that they have not been physically damaged during shipment. Please report any missing or damaged items to Seimac immediately.

It is a good idea to read this manual completely before beginning the installation and operation of the AS-900A.

6 Maintenance

6.1 Regular Maintenance

- Rinse thoroughly with fresh water after every use
- Always remove batteries when not in use
- Always use fresh batteries
- Protect “O” ring surface from damage
- Replace worn or damaged “O” rings
- Keep batteries and electronics dry

6.2 O-Ring Facts

O-rings have a limited useful life; two to five years is a conservative estimate. The main problem with O-rings is that they become slightly flattened (“set”) resulting in less compressibility. Reduced compressibility can lead to a water leak near the surface. The best way to prevent a problem is to service the O-rings on a regular basis and before every deployment.

Some of the main factors that can cause a “set” are:

- High storage temperature (exceeding 40 °C) over time will cause the rubber to harden.
- Exposure to sunlight and ozone will cause the O-ring to deteriorate and stiffen.
- Temperature does not have to be that cold for an O-ring to lose a great deal of its flexibility. At 4 °C, an O-ring has stiffened significantly.
- O-rings must be lightly lubricated with silicone-based grease. We recommend “Parker Super O Lube”.

4.2.2 Pressure Case

When mounting the pressure case take care to prevent any side loading on the Pressure Switch or the top end Delrin bulkhead cap. Over time, side loading on these parts can cause a leak.

Never attach anything to the two mounting screws on the Pressure Switch Zinc anode.

To minimize corrosion never mount the pressure case to metal. Isolate the pressure case by wrapping it with vinyl tape at the contact points.

4.2.3 Batteries

The AS-900A uses 4 Alkaline “C” cells for approximately 30 days of operation at the surface. To replace the batteries remove the Pressure Switch and install fresh batteries with the positive terminal towards the antenna. Rechargeable batteries are not recommended. Always remove and discard batteries when the AS-900A is not in use.

4.2.4 Turn On & Off

A manual ON/OFF switch is incorporated in the Pressure Switch. To turn the Beacon ON or OFF, rotate the knob as shown in Figure 4-1.

Prior to deployment or testing, check that the pressure switch is secure by turning it fully clockwise, finger tight. **FAILURE TO SECURE PRESSURE SWITCH CAN RESULT IN A FLOODED RADIO BEACON.**

4.2.5 Test Operation

Prior deployment it is recommended that you test the AS-900A with a receiver such as the Seimac CATs Meow.

Turn the beacon ON and place the CATs Meow next to the transmit antenna. When the beacon transmits a signal the CATs Meow will beep. The transmissions should occur at the repetition rate programmed into the unit at the factory from the information provided (with a 10 second randomization). The beacon may also be tested using an ARGOS uplink receiver that is capable of decoding 20-bit and 28-bit IDs over the complete ARGOS II band.

To check operation of the pressure switch, turn the pressure switch OFF, the signal should stop. This verifies the pressure switch is working properly, since the knob assembly actually presses against the pressure switch diaphragm just as seawater would.

CAUTION:

Please note that any time the AS-900A is operated there is a potential to incur ARGOS system charges. ARGOS satellites can receive the signals transmitted by the AS-900A even from within an enclosed space, unless that space is a RF shielded enclosure.

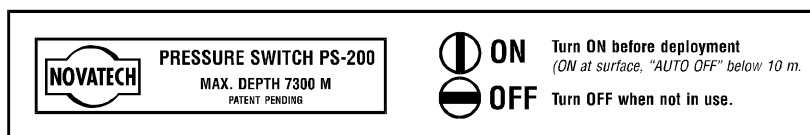


Figure 4-1 - PS-200 Label