

INSTALLATION INSTRUCTIONS

Paddlewheel & Valve Kit 33-415

Models: S650 and ST650

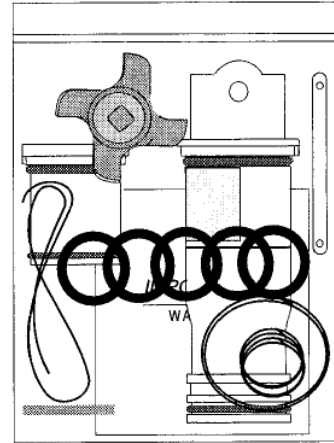
U.S. Patents: 4,898,029; 5,186,050. Australian Patent 605,281
Canadian Patent 1,313,775. Japanese Patent 1851014

IMPORTANT: Please read the instructions completely before proceeding with the installation. These directions supersede instructions in your instrument manual if they differ.

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WARNING: NEVER USE SOLVENTS!

Cleaners, gasoline, paint, sealants, and other products may contain strong solvents, such as acetone, which can attack many plastics dramatically reducing their strength.



Servicing

Warning: O-rings must be free of abrasions and cuts to ensure a watertight seal.

1. On the replacement, **short**, emergency plug, inspect and lubricate the O-rings with silicone grease or petroleum jelly (see Figure 1).
2. Remove the safety wire from the cap nut. Remove the **short** emergency plug and discard it (see Figure 2).

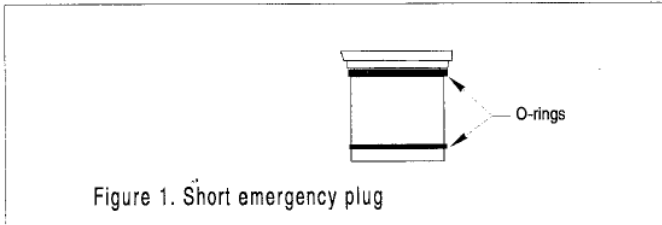


Figure 1. Short emergency plug

3. Remove the paddlewheel insert from the valve assembly by removing one safety ring and the retaining pin. Grasp the insert by the pull ring and pull slowly upward.
4. Unscrew the cap nut. With the new, **short**, emergency plug ready in one hand, remove the valve assembly. Rapidly install the **short** emergency plug to minimize the flow of water into the boat.

Warning: When the valve assembly is removed, always insert the **short** emergency plug with the cap nut and safety wire for a watertight seal.

5. Secure the **short** emergency plug with the cap nut and safety wire. **Hand-tighten** the cap nut; *do not* over-tighten.

WARNING: If the insert is caught in the valve assembly trapping the cap nut, remove the valve assembly with the insert inside. **TEMPORARILY** hold the **short** emergency plug in place with the safety wire. Then separate the insert from the valve assembly to free the cap nut. In the unlikely event that the insert and valve assembly cannot be separated, and the sensor must be left unattended, cut the cable [a minimum of 1 m (3') from the insert] to free the cap nut. Use the cap nut and safety wire to secure the **short** emergency plug. Later splice the cable with Airmar's Junction Box 33-035.

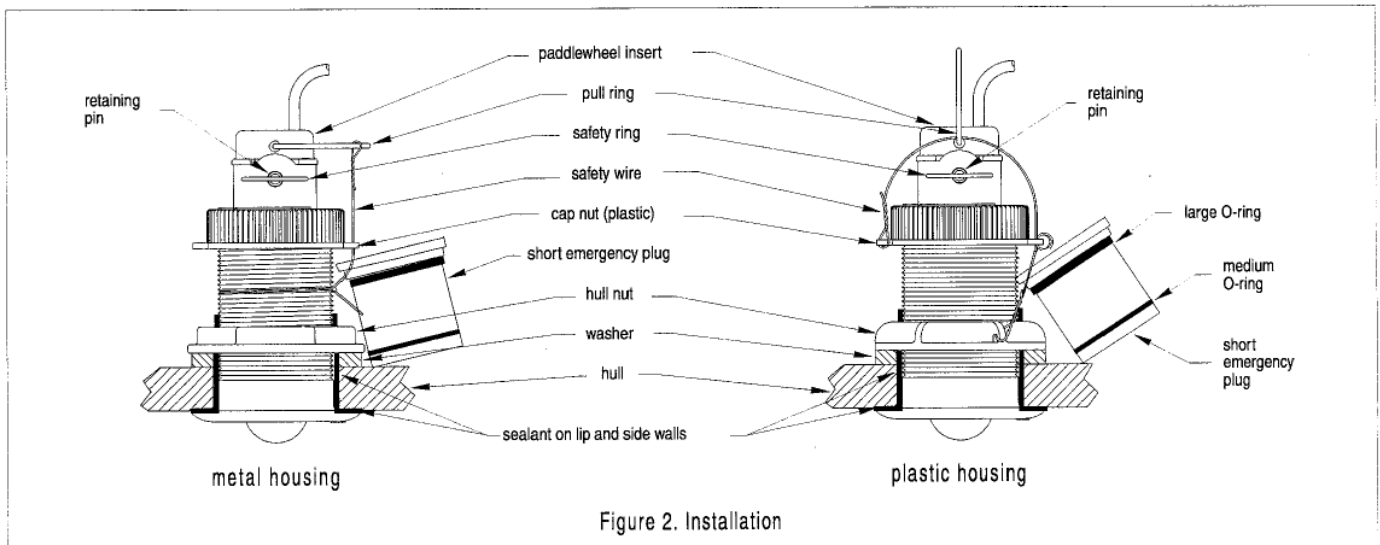
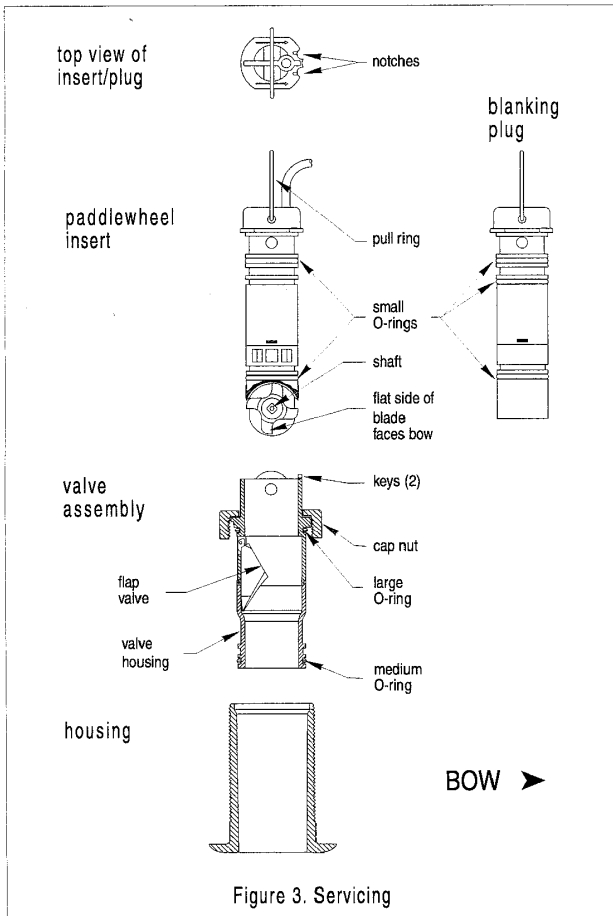


Figure 2. Installation



6. Discard the old valve assembly. Check the replacement valve assembly to see that the flap valve moves freely and seats against the valve housing (see Figure 3).
7. On the replacement valve assembly, inspect and lubricate the O-rings with silicone grease or petroleum jelly.
8. On the paddlewheel insert, use the new paddlewheel shaft to push the old shaft out about 6 mm (1/4"). With pliers remove the old shaft.
9. Remove any aquatic growth from the insert using a stiff brush or putty knife. Clean the surface with mild household detergent. If fouling is severe, lightly wet sand with fine grade wet/dry paper.
10. Place the new paddlewheel in the cavity with the flat side of the blade facing the same direction as the arrows on the insert top.
11. Tap the new shaft into place until the ends are flush with the insert.
12. Replace the two small O-rings and lubricate them with silicone grease or petroleum jelly.
13. On the **long** blanking plug, replace the three small O-rings.
14. To reinstall the valve assembly, first remove the safety wire and unscrew the cap nut from the housing. With the valve assembly

ready in one hand, remove the **short** emergency plug. Rapidly slide the valve assembly into the housing with a pushing twisting motion to engage the key in the notch. Screw the cap nut in place **hand-tightening** only. *Do not* over-tighten.

Warning: Always attach the safety wire to prevent the insert from backing out in the unlikely event that the cap nut fails or is screwed on incorrectly.

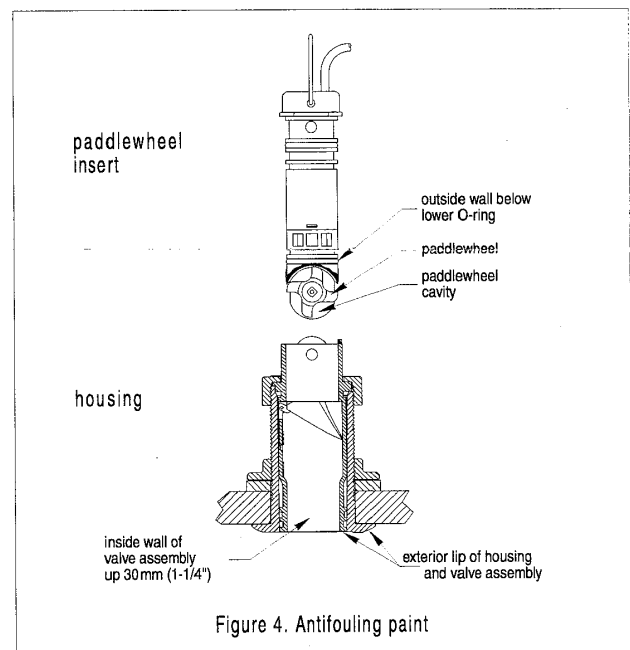
15. Slide the paddlewheel insert into the valve assembly with the arrows on the top pointing forward toward the bow. Seat it into place with a twisting motion until the keys fit into the notches. Secure the insert with the retaining pin and safety rings. Thread the **short** emergency plug onto the safety wire and twist it in place (see Figure 2).

Antifouling Paint

Marine growth can accumulate rapidly on the sensor's surface reducing performance in weeks. Surfaces exposed to salt water *must* be coated with antifouling paint. Use **water-based** or **mineral spirits-based** antifouling paint only. *Never* use ketone-based paint, since ketones can attack many types of plastic possibly causing damage.

Apply paint every 6 months or at the beginning of each boating season. Paint the following surfaces (see Figure 4):

- Outside wall below the lower O-ring of the paddlewheel insert
- Paddlewheel cavity
- Paddlewheel
- Exterior lip of the housing and valve assembly*
- Inside wall of the valve assembly up 30 mm (1-1/4")
- Blanking plug below the lower O-ring and the exposed end



AIRMAR
TECHNOLOGY CORPORATION

35 Meadowbrook Drive, Milford, N H 03055-4618, USA
Tel (603) 673-9570 ■ Fax (603) 673-4624