

AQUAMATIC® SYSTEM TECHNICAL DATA SHEET

Corrpro Europe Marine Division

The Aquamatic® System

The Aquamatic® system comprises several anodes, reference electrodes and a transformer rectifier/controller power unit. A drawing of a typical installation which applies to both small and large vessels is shown in Figure 1 below. The types and sizes of these components and their positions on the hull are specified according to design parameters which allow for the size of the vessel and fluctuations in the protection current likely to be encountered during sea-going service.

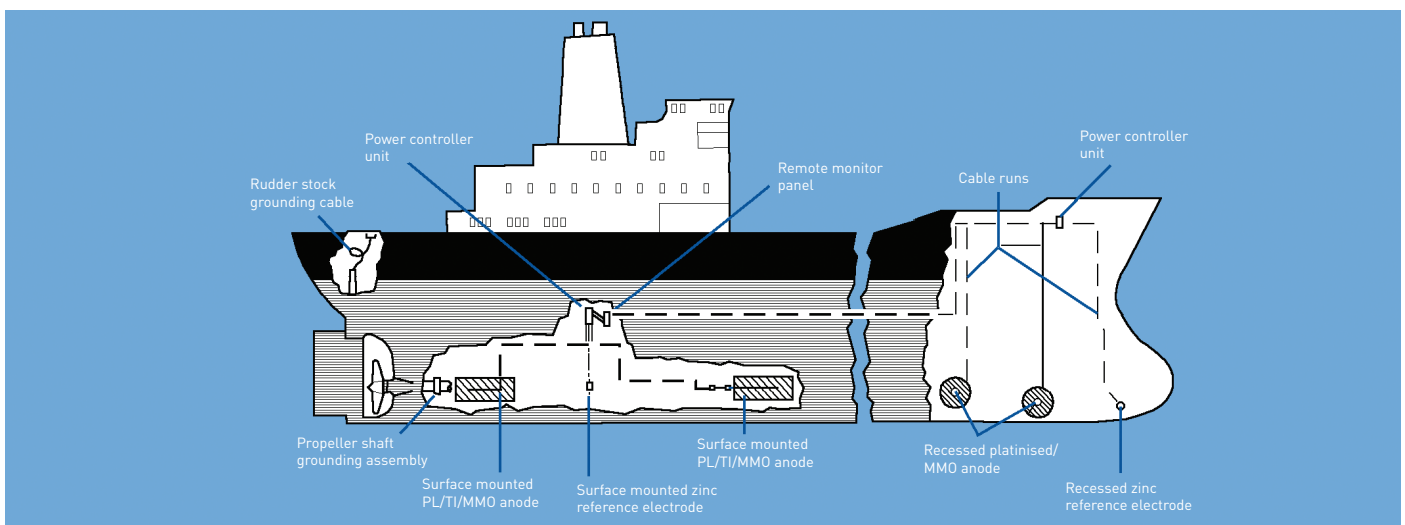


Figure 1. Typical locations of Aquamatic® equipment

Whilst these measures protect the hull structure, it is important to protect the propeller, exposed shafting and the rudder. The propeller and shafting are grounded to the hull structure with a shaft slipring, making them electrically common with the hull, and the rudder is also grounded with a flexible cable. In this way, electrical continuity is established, ensuring that these components are protected by the Aquamatic System.

Anodes

The anode types used in an Aquamatic® system may be linear, elliptical or circular, all of which are relatively inert.

All types of anode are provided with a cofferdam, incorporating a double gland assembly approved by the classification societies, to ensure a watertight hull penetration for the anode cable.

Reference Electrodes

At least two and sometimes four reference electrodes are fitted in the Aquamatic® system and these can be surface mounted or recessed. Both types incorporate a block of high purity zinc which, because of its robust construction and stable electrochemical characteristics, is an ideal material for reference purposes.

Controller Power Unit

The controller power unit (See Figure 4) is self-contained in a cabinet situated in the engine room or other convenient space. It includes solid state circuitry with PCBs for easy maintenance.

Power supply is from the ship's AC mains which is transformed and rectified to produce the DC current required for cathodic protection.

Full electrical protection is provided on input whilst output fuses are fitted in each anode circuit. All components are readily accessible within the drip-proof steel enclosure.

Remote Monitoring System

The remote monitoring system has a LED display. One panel is directly connected to the forward and 'aft' controller boards. The signal from both power units can be displayed or monitored on the remote unit from any location on the vessel.

Rudder Stock

Rudder stock bearings do not give adequate electrical continuity between the rudder and the hull, so to provide a bond which will ensure cathodic protection for the rudder, a flexible cable is secured between the rudder stock and the deck head.

ELECTRICAL BONDS

Propeller Shaft Grounding and Monitoring Assembly

This assembly ensures good electrical contact between the propeller and propeller shaft and the ship's hull. This, in turn, inhibits dezincification of bronze propellers, and provides a level of protection to propellers made of other materials. It also protects the shaft bearings from corrosion.

The assembly comprises a silver inlaid copper band, clamped to the shaft and a brush assembly (See Figure 2). High silver content brushes running on the silver strip provide electrical continuity with the hull. Monitoring panels can be supplied for single and twin shafts which can be used as stand alone monitoring systems if required (See Figure 3).

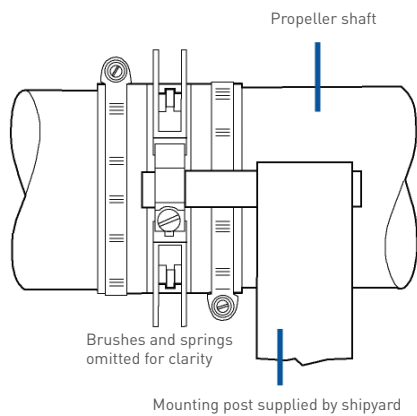


Figure 2. Propeller shaft slip ring assembly



Figure 3. Propeller shaft monitoring system

Installation, Commissioning and Service

Typical Aquamatic® installations are shown in Figure 1. That for 'aft' systems is applicable both for small and large vessels, whereas the forward system applies only to large vessels whose length necessitates the use of a supplementary system near the bow section. For forward systems it is necessary to recess anodes to protect them from mechanical damage and to reduce drag.

Once commissioned, an Aquamatic® system operates automatically, requiring no adjustment. However, to confirm that the system is functioning correctly, log sheets are provided, on which daily recordings of operational readings from the control unit are made. The log sheets provide a continuous record of the level of protection and data from which any malfunction of the system and the state of the underwater coating can be assessed.

Completed log sheets returned to Corrpro offices are used to evaluate system performance. Possible malfunctions requiring the attention of a service engineer are identified at an early stage. Corrpro's worldwide network of offices and agents ensures that service calls are made quickly and economically.

Although the reliability of the Aquamatic® system is well proven, we recommend that installations are serviced on a routine basis during dry docking by our trained personnel.

Stocks of Aquamatic® components are maintained in all Corrpro offices to ensure delivery at short notice when required.

Multifunction CP Controller (fitted to Aquamatic® power controller unit)

Functions

The following can be used as standalone monitoring systems if required (see Figure 3):

- Metering
- Monitoring
- Data logging
- Data output
- Controlling
- Input keypad
- Alarm
- Remote control

Multifunction OLED Graphic Display Features

- Total current and applied voltage
- Individual anode current reference electrode potential
- Voltage monitoring
- Temperature
- Alarm



Figure 4. Six-Pulse Power Unit



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