

# Precautions when removing the sensor of EM Log system

Issued on January 30, 2018  
Revised on January 10, 2023

To our valued customers,

Please take note of the precautions when removing the sensor of the electromagnetic (EM) log system.

Please read and follow the below instructions carefully to ensure safe work onboard.

## **EM Log Sensor : “Important precautions when removing the sensor”**

EM Log sensor is installed to penetrate the bottom plate and come into contact with the seawater. It protrudes into the seawater through the sea valve, which allows sensor to be removed for cleaning or replacement even when the vessel is at sea. When removing the sensor, the sea valve must be closed to prevent seawater immersion, just before the sensor is pulled out completely.

This document describes the precautions to be followed when removing the sensor. These are very important to prevent the sensor and connecting cables from becoming damaged, and more importantly, to avoid serious accidents such as seawater immersion or casualties. **Read this document carefully and pay maximum attention when performing maintenance work.**

### 1. Relationship between Draft and Force to push up the sensor

During the removal procedure of the sensor, force to push up the sensor is caused due to the pressure of seawater. This force increases as the draft of the ship becomes deeper (see below table). The operator must pull out the sensor slowly, while holding down the sensor not to jump out from the sea valve.

Draft (meters)	HD Type Dia 35mm		FB,FA Type Dia 48mm		HV Type Dia 70mm	
	N	( kgf )	N	( kgf )	N	( kgf )
2.0	19	( 2.0 )	36	( 3.7 )	77	( 7.8 )
4.0	38	( 3.9 )	72	( 7.4 )	154	( 15.7 )
6.0	58	( 5.9 )	109	( 11.1 )	231	( 23.5 )
8.0	77	( 7.8 )	145	( 14.8 )	<b>308</b>	<b>( 31.4 )</b>
10.0	96	( 9.8 )	181	( 18.5 )	<b>385</b>	<b>( 39.2 )</b>
12.0	115	( 11.8 )	217	( 22.1 )	<b>462</b>	<b>( 47.1 )</b>
14.0	135	( 13.7 )	253	( 25.8 )	<b>539</b>	<b>( 54.9 )</b>

It often becomes difficult to hold the sensor down, if the force to push up the sensor exceeds 294N (30kgf). Under such condition, it is strongly recommended not to remove the sensor and work at a shallower draft.

### 2. Preparation and assignment of workers

Usually the sensor and sea valve are installed in a watertight compartment partitioned by maintenance holes. Often workers cannot walk in this area. To address an unexpected situation and to prepare for an emergency, it is strongly recommended to assign one or more support staff. Also, ensure that adequate ventilation and clean air (oxygen level in the air) are present for the worker's safety, prior to starting the work.

3. Be sure to use the Chain when removing HV-type sensor (LS571)

As explained above, force to push up the sensor is caused due to the pressure of seawater. Especially, HV-type sensor with large diameter is pushed up by strong force. Be sure to use the chain to attach the sensor to the sea valve. It is important to avoid the sensor unexpectedly jumping up from the sea valve.

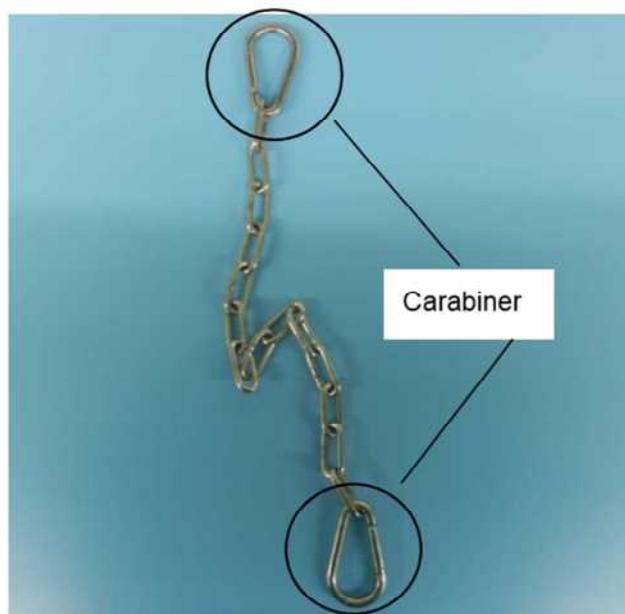
Sea valve can be opened or closed when the chain is completely taut (please refer to below picture).



a. The Sensor is folded inside of the Valve.



b. As the Sensor is pulled all the way up, the Chain is completely taut



c. Chain

#### 4. Precaution about the maintenance of the HV-type sensor (LS571)

If the chain is pulled up too quickly, the carabiner might unexpectedly become detached from the chain plate. Pull up the sensor slowly, while paying attention to the carabiner.

