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MOORING WINCH BRAKE RENDERING TEST[1]

1. MOORING WINCH BRAKE RENDERING TESTING

1.1. Purpose and Frequency

The main purpose of brake testing is to verify that brake will render at a lower load than the ship design MBL. The brakes should be set at 60% of the **ship's design MBL.**

Each vessel at the design stage is assigned an **"EN" (Equipment Number)** by Class. The EN sets a ship design MBL which then determines minimum requirements for Mooring Winch Heaving Speed, Brake Holding Capacity, Mooring Rope Minimum Breaking Load and the Minimum Number of Mooring Ropes. The mooring winches are equipped with mooring lines of an MBL roughly equal to the ship design MBL.

Ship design MBL based on Class Rule (IACS Rec.10) is provided in the certificate endorsed by Class.

Each mooring winch brakes should be tested as following (applicable for vessels provided with the mooring winch brake test kit):

a. Annually
b. After completion of any modification
c. After completion of any maintenance i.e. change of brake pad
d. Where there is evidence of premature brake slippage or related malfunctions

1.2. Mooring Winch Test Procedure

Where complete set of test equipment is provided on board the vessel, it is to be stowed in an appropriate location marked with WINCH BRAKE TEST EQUIPMENT under the custody and supervision of Chief Engineer.

Collect the information pertaining to the hawser drum diameter/PCD from ship's manual, diameter of mooring ropes from the rope certificate, ship design MBL from the certificate, internal diameter of the jack and measure the test force arm correctly as required by brake test force calculation formula provided in the Form 6.5.6 and calculate the brake test force which is to be applied to the mooring winch.

The 3rd layer of the mooring ropes based on the most probable layers left on the single drum during mooring has been taken as the arm for the brake rendering force.

The Winch brake rendering should be tested in supervision of Chief Officer and Chief Engineer.

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The winch test procedure includes:

a. Preparing the winch for testing

b. Setting up the test gear and applying the test load

c. Hydraulic jack pressure at which the brake is designed to render, refer company Form 6.5.6 for the calculation of the hydraulic jack pressure.

d. Recording the test results and ensuring markings on the drum are correct and visible.

1.3. Method of Testing

Before testing a winch brake, the condition of the brake and the brake drum should be confirmed as satisfactory. Any damage or failure should be fixed before testing takes place.

Run the winch for a short period to ensure the surfaces of the brake drum and band are dry.

a. The lever or brace is bolted to the flange of the winch drum with the hydraulic jack pressed under the end of the arms at the designated location and resting on foundation.

b. With the winch prepared for testing, the testing gear securely in place and winch brakes set accordingly to the testing instructions, pressure is applied to the hydraulic jack.

c. At the first sign of the brake rendering, the pressure applied to the hydraulic jack is recorded and following action taken:

- If slippage occurs at less than the design pressure, the brake should be tightened and pressure to jack reapplied.
- If the recorded pressure corresponds to the design pressure, the jack should be released, and the test gear removed.
- If slippage doesn't occur at the design pressure, the brake setting should be adjusted so that the brake can render at the design load.

d. Install or adjust the brake rendering indicator to the correct remaining threads. A stopper arrangement, e.g. locking nut on the threaded end, should not be used on the tightening screws. Stopper arrangements can impede the brake setting and reduce the brake holding load.

e. Issue the test certificate indication mooring winch, jack pressure applied and rendering force.

1.4. Clarification on the Brake Rendering Set Point

Brake rendering is to be set at the 60% of the design MBL, not at the 60% of the lines MBL.

2. MARKING ON MOORING WINCH

Mooring winch is to be marked with design brake holding capacity, nominal mooring speed, brake rendering load, date of test and mooring line pay out direction.