## Routines, Maintenance, Diagnostics and Troubleshooting, Repair, and Overhauling

Much of a marine engineer’s time is dedicated to routine procedures and maintenance. However, problems do occur, and education and experience provide the necessary knowledge when attempting to diagnose and repair an engine or machinery problem.

Using the correct terminology and communicating clearly and efficiently goes in a long way when discussing what steps to take in the event of an engine or machinery problem. The technical aspects of engine room diagnostics and troubleshooting are areas you have most likely learned about at school or work. The goal of this section is to activate your prior knowledge regarding engine room troubleshooting and to give you an opportunity to practice your English engine room terminology.

What action should you take?

* Check
* Overhaul
* Replace
* Install
* Remove
* Clean
* Adjust
* Tighten
* Release
* Slacken
* Heat/ Raise temperature
* Fill
* Drain
* Use
* Charge
* Open
* Close
* Assess

What tools should you use? Click [here](toolsvalvesmaterialsformarineuse-150405104141-conversion-gate01.pdf) to read about the different tools marine engineers use.

## The engine room logbook

Keeping the engine room logbook accurate and up to date is a necessary part of a marine engineer’s job . This means that every engineer, upon ending his or her watch must ensure that all the necessary entries have been made. The logbook is an important tool that all marine engineers rely on to keep the ship operational. The values and information recorded in the logbook help keep track of any developing machinery or engine issues as well as telling engineers what they need to know about the functionality of the ship’s engines and machinery. Besides general information like the ship’s name, IMO number, and MMSI number, the logbook should contain information about the current voyage and the ship’s position. The Norwegian Maritime Authority requires certain information to be entered in the engine room logbook. Regulation 15, § 16 states the following:

**§ 16 Engine-room log book**

The title page of the engine-room log book shall be filled in according to the form in the book. The number of propulsion engines, type of engine, whether two-stroke or four-stroke, and the name of the manufacturer shall be noted. The total capacity of the fuel oil tanks shall be noted. Times shall be noted as four-digit figures from 0000 hrs to 2400 hrs. The following shall be entered in the «Remarks» column:

a) The time of initiating preparations for engine running and the time of starting or stopping the main and auxiliary machineries.

b) The time of filling and changing fuel oil tanks, and the time of bunkering.

c) The time of filling and emptying ballast tanks.

d) Any defect, fault and breakdown of the main and auxiliary machineries and important accessories, and the measures taken to rectify such matters.

e) All important maintenance work on the main and auxiliary machineries, cleaning of tanks, etc. The engineroom crew’s maintenance work on deck machinery shall also be noted.

f) The time of inspection of the boilers, and also any other piece of information regarding the boilers.

 g) Any abnormal condition registered by means of alarms, etc. for: 1. lubricating oil pressure and temperature; 2. cooling water pressure and temperature; 3. starting air pressure; 4. temperature of bearings; 5. boiler pressure; or 6 feed water temperature.

h) Any fire in the engine and boiler rooms, such as a fire in the scavenging air belt, fire in the waste oil tray of the boiler, etc. i) Failure of the electric power supply.

 j) Observation of oil in observation tanks, etc.

k) The time of testing the emergency power supply, of running the emergency fire pump, and of checking or replacing fire-fighting equipment.

 l) In ships operating with an unmanned engine-room, all alarms communicated to the engineer from the bridge or the engine-room shall be noted, including the measures taken in this connection. Manoeuvring shall be entered in a separate manoeuvre book as far as possible.

m) Adjustment and inspection of alarms, and the change-over from engine-room control to bridge control, and vice versa, shall be noted.

n) The engine-room crew’s commencement and termination of service, and whether foreign labour is employed, shall also be noted in the engine-room log book, and also matters relating to accidents in the engine-room, and any irregularity regarding the engine-room crew. (Cases of illness among the engineroom crew shall be entered in the deck log book.)

o) Any other information required by regulations laid down by the Norwegian Maritime Directorate.

Amended by Regulation of 30 June 2003 No. 937 (effective from 1 July 2003, formerly § 15).

After an engineer has entered all of the necessary information into the logbook, they must write their signature. The chief engineer on board must also sign to ensure that the logbook has been properly filled out. All entries must be legible. Logbooks are to be kept up to three years after the final entry has been made and current logbooks are to be available for inspection or upon demand by internal, class, or insurance surveyors, port inspectors and shipping company executives. Entries that are incorrect should have a single line drawn through them as well as the signature of the engineer who corrected the entry.

### Record books

Engineers are also responsible for keeping track of both the oil record book and garbage record book. These are required by MARPOL.

* Annex V discusses the prevention of garbage pollution from ships, and Appendix II explains exactly how a garbage record book should be kept. Read through Annex V, Appendix II and write a summary describing what qualifies as garbage as well as other information that should be included in a garbage record book. Conclude your summary with why keeping a garbage record book is important.
* Annex I contains regulations regarding the prevention of oil pollution by ships. Regulation 17 discusses Part I of the oil record book. In Appendix III, you find all the information needed to complete an oil record book as well as how it should be recorded. Read through this appendix and write a summary describing Part I of the oil record book. What needs to be recorded there? Conclude with why the oil record book is necessary.

<https://www.ppuk.com/common-problems-with-marine-engines/>

<https://www.marineinsight.com/main-engine/8-common-problems-2-stroke-marine-engines/>

<https://www.marineinsight.com/main-engine/the-basics-of-troubleshooting-engine-room-machinery/>

<https://www.pinoyadventurista.com/2015/04/5-common-problems-with-marine-diesel-engines.html>

Exercise, IMLP

## Troubleshooting

While maintenance and routines go a long way in helping to keep the ship and its engines and machinery operational, all marine engineers encounter problems in the engine room. Some problems are easy to identify and have simple solutions while other issues require time, money, and lots of excess effort. Below you can

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