Examining Lifting Appliances and Loose Gear — study guide

Examining a ship's lifting appliances and loose gear is a specialist inspection job with its own hazards, paperwork and acceptance criteria. This guide covers what a surveyor or examiner must know before, during and after the examination and testing.

Hazards and personal safety

The examiner's main exposures are working over water, working at height, and simultaneous operations. Personal protective equipment is required on board — never assume the job is safe because someone else organised it. A risk assessment must be carried out before every examination.

Rules and survey services

Most maritime countries have introduced requirements similar to ILO Convention 152 (occupational safety and health in dock work). Ship-mounted lifting appliances are retested every 5 years. The services used are certification and classification. Removing an appliance from service, or delaying a required examination, has a significant impact on operations and profit.

Before the examination

Review the ship's general arrangement diagram, block lists, reeving diagrams and manufacturer's manuals so you know the appliance and its equipment are in the correct place. Inspect the register of the ship's lifting appliances and cargo handling gear (Form One) before the examination takes place.

Cranes

You may be required to inspect ram-luffed cranes, rope-luffed cranes and engine room cranes. The three common types of slewing bearing are the single ball bearing, twin ball bearing and three roller bearing. Protective devices include luffing-in limiters and slack-rope switches. Note that the sheave and block unit on a ram-luffed crane is **not** easily dismantled for inspection.

Derricks and masts

When examining a derrick system, inspect the derrick boom, the mast, and the gooseneck and derrick heel assembly. Unlike cranes, derricks do not have to be fitted with protective devices. Masts permanently attached to the deck must still comply with the regulations.

Deck fittings

Deck fittings include wire rope stoppers, cleats and eye plates. Examine them for

© 2026 maritimetest.com · free study guide

excessive wear, deformation or corrosion, and check that the welds attaching eye plates and cleats to the deck are sound.

Loose gear

Loose gear is any equipment used to attach a load to the lifting appliance that does not form an integral part of the appliance. Common hardware includes the Dee shackle and the ramshorn hook, and a surveyor must be able to recognise the standard types. All loose gear must be permanently and clearly marked with the safe working load, the steel grade, and the manufacturer's or surveyor's stamp. It does not have to be retested while it remains clearly identifiable, holds an appropriate test certificate, and is in good condition.

Load terms

The **safe working load (SWL)** is the breaking load of a component divided by a safety factor, giving a safe load for a given condition. The **working load limit (WLL)** is the maximum load, specified by the manufacturer, that the gear can safely lift.

Wire ropes

The examiner's tools for rope work include a steel spike, a pair of clamps and callipers. Deterioration is assessed by counting visibly broken wires, measuring the decrease in rope diameter from external wear or abrasion, and visually assessing damage. "Valley breaks" show that the centre of the rope is no longer supporting the strands. A rope failure will almost never result in an accident.

Proof testing

Proof testing evidences that the appliance, gear and attachments are structurally sound and can withstand the operational loads required of them. It is carried out before new equipment enters service, after modification or repair, and at set periods required by national regulations. For appliances with an SWL up to twenty tonnes, the proof load is 1.25 times the SWL. Rope terminations must be proof tested to twice the SWL of the rope. After testing, all equipment is re-examined to confirm nothing was damaged.

Key facts to remember

- Examiner's hazards: over water, at height, simultaneous operations. Risk assessment before every examination.
- Requirements track ILO Convention 152; ship-mounted lifting appliances are retested every 5 years.
- Check the register (Form One) before the examination; review GA diagram, block lists, reeving diagrams, manuals.
- Slewing bearings: single ball, twin ball, three roller. Protective devices: luffing-in limiters, slack-rope switch.
- Loose gear markings: SWL, steel grade, manufacturer's/surveyor's stamp.

- SWL = breaking load / safety factor; WLL = manufacturer's maximum safe load.
- Proof load up to 20 t = 1.25 × SWL; rope terminations = 2 × SWL.

Sources

1. ILO Convention No. 152 — Occupational Safety and Health in Dock Work (periodic testing and examination of ship-mounted lifting appliances and loose gear).

2. ILO Code of Practice — Safety and Health in Ports (examination, marking and proof testing of lifting equipment and loose gear).