



Yacht and Powerboat Safety at Sea - Rigs and Rigging - Good practice for inspection

Notice to all designers, builders, surveyors, owners, managing agents, skippers, crew and Certifying Authorities of yachts and powerboats including pleasure vessels and small commercial vessels.

This notice should be read with:

The Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998 (SI 1998/2771) as amended;*

The Safety of Small Commercial Motor Vessels - A Code of Practice (Yellow)

The Safety of Small Commercial Sailing Vessels - A Code of Practice (Blue)

The Safety of Small Vessels in Commercial Use for Sport or Pleasure Operating from a Nominated Departure Point (NDP) - A Code of Practice (Red)

The Merchant Shipping (Small Workboats and Pilot Boats) Regulations 1998 (SI 1998/1609) as amended;*

*The Safety of Small Workboats and Pilot Boats - A Code of Practice (Brown) ;
and MGN 280.*

Summary

- This MGN gives non-mandatory guidance on checking a sailing vessels mast and its associated standing and running rigging.
- The rig and its rigging, based on the number of hours used, will need to be periodically inspected, maintained and replaced.
- Understanding of how a rig works and the transfer of hull loads helps identify what to look for in terms of fatigue.
- An owner, managing agent or skipper should be aware that a visual inspection is just that, and that an experienced marine professional should be employed on a periodic basis to carry out a technical inspection of the rig and its rigging.
- This guidance is non-mandatory for pleasure vessels.
- This MGN is one of six MGNs aimed at providing generic good practice safety advice.

1. Introduction

1.1 A sailing vessel is designed to be propelled by its sails, which are supported by a mast and its rigging. The loss of a sailing vessel's mast will reduce its ability to make passage to a safe haven and is detrimental to the overall safety of the vessel. This MGN gives guidance on inspection of the mast, its standing rigging and running rigging as well as other elements



such as hull attachment points for a skipper to consider prior to and during a voyage. Prior to a non-coastal voyage, the skipper and crew should discuss what to do in the event of the failure of the rig including specifically with regards to roles that are required to be performed on board and in relation to any additional equipment that may be required.

- 1.2 For the purposes of this MGN, “non-coastal voyage” means a voyage this is beyond 60 nautical miles from a safe haven.
- 1.3 A mast and its standing and running rigging have a finite life span even if well maintained and inspected. By logging the amount of usage either by sailing miles or hours (which may include sea and wind conditions), this will give the owner, managing agent or skipper an idea of when an inspection may be prudent, especially if such inspection ought to occur during a planned non-coastal voyage.
- 1.4 If a vessel is insured, it is important for an owner to understand whether there are any limitations placed on the use of the rig by their insurance coverage. Some insurance companies will not insure a vessel for racing or may stipulate for a specific inspection regime to be carried out by an experienced marine professional.
- 1.5 Inspection of the spars, standing rigging and running rigging are complex undertakings. Whilst a visual inspection can show areas of fatigue, an experienced marine professional will have tools and equipment to be able to carry out a more detailed inspection which may uncover unseen areas of damage and fatigue. Modern rigs may be made from a variety of different materials, be complex in their design and installation, and may include different in built systems such as hydraulics or electronics. All of this makes a technical inspection of a rig and its rigging a job for an experienced marine professional only.

2. Know your Rig

- 2.1 Knowledge of a vessel in terms of its rig and rigging is important in order to determine a suitable inspection regime. Knowing when a rig was last inspected and the amount of use it has had since it was inspected, will help in understanding when it may need to be inspected next as well as its potential replacement.
- 2.2 A rig has its own design pressure limitations, as do the rigging and deck fittings that support the rig and rigging. These all are designed to fail at a certain point of loading or if loaded to a certain point over numerous occasions – however these loads should not be exceeded when in normal use. A vessel used for cruising will normally be subjected to lower loads in use, therefore not putting as much pressure on the rig or its rigging and fittings, where in contrast a racing yacht is more likely to experience higher loads (even if specifically designed for racing) and therefore may require more frequent inspections. Knowledge of the type of usage will help determine an inspection regime that is appropriate for the rig and its rigging.
- 2.3 It is important to note that certain elements of the rig cannot be easily inspected visually. As such an experienced marine professional should periodically undertake a rig survey which in most cases may require the rig to be removed from the vessel which allows for a closer and more detailed technical inspection and help to determine the history of the rig and its prior usage. As an example, the T-terminal on a shroud would need to be disconnected to closely inspect whether any damage has occurred to the terminal or the mast socket.
- 2.4 Modern rigs can be made up of a number of different materials and construction types. An experienced marine professional should install and uninstall your rig and should advise on the correct tensions required and their safe working loads. The owners manual should also give guidance on maintenance and loading limitations as well as suggested sail plans for different wind and sea conditions.



- 2.5 Developing an understanding of how loads are distributed around a vessel underscores the importance of checking a vessel's rig and rigging. For example, every time a sailing vessel slams into a wave, the deceleration of the hull transfers additional load in to the rig and the rigging. Over a period of time, the cyclic loading and unloading of a rig in this manner can lead to fatigue failures, even if operating within its designed safety factors.
- 2.6 Some standing rigging is made from high strength fibres such as aramid or carbon. Additional care should be taken with these materials as, whilst they may have a protective coating, they are more prone to damage, especially from UV degradation if not treated carefully and professionally maintained.
- 2.7 Some owners or managing agents may choose to sheath or cover elements of the rig and rigging, normally to protect sails. However, in doing so, this means that a visual inspection cannot be carried out and allows for the degradation of the materials underneath the sheathing or protective covering.
- 2.8 An experienced marine professional should also be able to inspect and advise on a number of additional areas on board, such as the condition of the stanchions and lifelines. Whilst not normally associated with a rig or rigging, inspection of these items is also important. As they normally are made from stainless steel and wire rope, similar rig inspection techniques can be applied to these components.

3. Inspections

- 3.1 A mast, its standing rigging and running rigging, like any piece of equipment on board, is required to be maintained and inspected to ensure its continued safe functioning. Where provided, the manufacturers instructions for servicing and inspection should be followed.
- 3.2 A visual inspection of the rig and its rigging on a regular basis will allow an owner, managing agent or skipper to identify points of fatigue and wear by noting its condition over a period of time. During a non-coastal voyage a daily rig inspection is considered good practice as the rig is likely to be under constant use during such a voyage.
- 3.3 A visual inspection by the owner / managing agent or skipper should look primarily at potential points of failure. These are normally at points of connection where a piece of rigging, rig or hull are connected together. This may require someone on board the vessel to go aloft to check all connection points such as shroud and forestay terminals.
- 3.4 Different elements of the rig require different inspection regimes. For example, running rigging (which is more susceptible to wear and tear) will require inspection on a more regular basis than standing rigging which is less likely to fatigue in the short term.
- 3.5 A technical inspection requires the removal of the rig from the vessel in order to properly conduct a detailed review of all the fittings and terminal points and should be carried out by an experienced marine professional who has direct experience with rigs and rigging and is very familiar with the construction, maintenance and replacement of the rig and its rigging.
- 3.6 During a technical inspection of the rig, an experienced marine professional will use different techniques to determine the life expectancy of the rig and its rigging. Such tests could include dye penetration testing, x-ray scanning or other methods of non-destructive testing.
- 3.7 A technical inspection by an experienced marine professional should cover all aspects of the rig and rigging. The results of the technical inspection should take the form of a detailed report which is presented to the owner / managing agent for their reference. The report should include recommendations about when an item of rigging should be replaced as well



as a detailed description of the condition of the rig and its rigging. All recommendations from the experienced marine professional should be followed.

Note

* A consolidated copy of an amended statutory instrument can be made available upon request

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