Food and Agriculture Organization of the United Nations

# Guidelines for the seaworthiness and safety inspection of small fishing vessels

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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# Preparation of this document

These *Guidelines for the seaworthiness and safety inspection of small fishing vessels* have been developed to provide practical guidance for conducting seaworthiness and safety inspections of small fishing vessels, with the aim of facilitating the supply of insurance services for small fishing vessels worldwide.

These guidelines complement the 2015 *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* (SSF Guidelines), and the 2012 FAO/ILO/IMO *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels*. They also support the implementation of the 1995 FAO Code of Conduct for Responsible Fisheries and contribute to the achievement of the United Nations Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth), SDG 13 (Climate Action) and SDG 14 (Life below Water).

The preparation of these guidelines involved a literature review, consultations with naval architects, fisheries safety inspectors and vessel surveyors, insurers, fisherfolk leaders and fisheries authorities. The draft guidelines were reviewed at the Expert Workshop on Developing Guidelines for the Inspection and Valuation of Small-scale Fishing Vessels, which was held at FAO headquarters in Rome on 24–26 September 2024. Thirty-two fisheries insurance experts, maritime safety inspectors, naval architects, fisheries associations and fisheries experts, as well as representatives of the Africa Rural and Agricultural Credit Association (AFRACA), the Asia-Pacific Rural and Agricultural Credit Association (APRACA), International Maritime Organization (IMO), the IMO International Maritime Law Institute (IMLI) and the CAFI-SSF Network participated in the expert workshop. An updated draft of these guidelines was reviewed at a Validation workshop on developing guidelines for inspection and valuation of small-scale fishing vessels, which was held virtually on 22 January 2025. The document was finalized by FAO in March 2025 and was submitted to IMO for its review with the aim of producing a joint FAO/IMO publication.

These guidelines were written by naval architects Derrick Menezes and Matteo Scarponi in close consultation with FAO Consultant Varun Tandon, who was involved in preparing a related document, the *Guidelines for insurance value and risk assessment of small fishing vessels*. These guidelines were reviewed by Raymon van Anrooy of the FAO Fisheries and Aquaculture Division. FAO acknowledges the valuable contributions to these guidelines made by the participants in the expert and validation workshops.

The publication was designed by Manuela Marazzi, with publication support provided by Marianne Guyonnet (FAO).

The guidelines development process was supported by the Lloyd's Register Foundation through its financing of the "Guidelines for inspection and valuation of small-scale fishing vessels to facilitate insurance" project (MTF/GLO/1161/LRF).

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# Abbreviations

**AFRACA**
African Rural and Agricultural Credit Association

**APRACA**
Asia-Pacific Rural and Agricultural Credit Association

**EEZ**
exclusive economic zone

**FAO**
Food and Agriculture Organization of the United Nations

**FRP**
fibreglass-reinforced plastic

**HDPE**
high-density polyethylene

**ILO**
International Labour Organization

**IMO**
International Maritime Organization

**ISO**
International Organization for Standardization

**LOA**
length overall

**RFB**
regional fishery body

**UPN**
European normal channels

**VCG**
vertical centre of gravity

# 1. Introduction

This document aims to provide practical guidance for the survey and inspection of small fishing vessels in order to facilitate insurance. The scope of its application is decked fishing vessels of less than 12 m in length and undecked fishing vessels of any size.

The processes described in these guidelines assesses the vessel's seaworthiness and safety. For the purpose of these guidelines, the term "seaworthiness" encompassing life-saving appliances, communications equipment and fire protection and fire fighting equipment.

## 1.1 Safety in small-scale fisheries

Commercial fishing is one of the most dangerous occupations globally. In 2019, the Food and Agriculture Organization of the United Nations (FAO) estimated that, worldwide, 32 000 fishers die each year during fishing operations and many more are injured. However, new research suggests that the fatality rate is actually three to four times higher (Willis and Holliday, 2022). Non-fatal injuries are also very common among fishers (e.g. arm or leg fractures; head and neck injuries; finger, hand, arm and leg amputations), although they are grossly under-reported. Most accidents and fatalities happen in small-scale fisheries, which are the largest source of employment in capture fisheries worldwide. Bad weather, engine failure, collisions, fire, improper vessel construction, overloading, fatigue, and insufficient safety and training are among the many risks faced by fishers. Moreover, as the demand for aquatic foods grows worldwide, and as climate change continues to impact fishing conditions, fishing and fishing-related activities could become more dangerous (FAO, 2024a).

Recognizing the challenges faced by small-scale fisheries, FAO developed the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) together with the fishing industry. The SSF Guidelines call on states to ensure the development, enactment and implementation of appropriate national laws and regulations consistent with the international guidelines set out by FAO, the International Labour Organization (ILO) and the International Maritime Organization (IMO) for work in fishing and sea safety in small-scale fisheries (FAO, 2015a)

Together with IMO and ILO, FAO has produced a range of voluntary international safety instruments that address the seaworthiness and safety of small fishing vessels, as well as the safety and health of small-scale fishers.

These instruments include:

- FAO/ILO/IMO (2005) *Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels.*
- FAO/ILO/IMO (2006) *Code of Safety for Fishermen and Fishing Vessels, Part B.*
- FAO/ILO/IMO (2012) *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.*
- FAO/ILO/IMO (2014) *Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations.*
- FAO (2015b) *Fisheries operations. Best practices to improve safety at sea in the fisheries sector. FAO Technical Guidelines for Responsible Fisheries: No 1 Supplement 3.*

- FAO/ILO/IMO (2001) *Document for Guidance on Training and Certification of Fishing Vessel Personnel (2001 edition).*

These international guidance documents are widely used and have contributed to making small-scale fisheries safer. They constitute the backbone of the present guidelines. Nevertheless, the increase in the number of fishers, their limited access to training, and the challenges presented by climate change continue to impact the safety record in small-scale fisheries, alongside a range of other technical, social, financial, regulatory and environmental factors.

## 1.2 Policies and legislation for seaworthiness and safety inspections

Fishing vessels are excluded from most international shipping conventions, and to this day there is no international instrument in force that deals with the safety of fishing vessels. This is because the nature of fishing operations is significantly different to that of maritime transport. For example, a cargo vessel or oil tanker loads and offloads its cargo within the safety of a port. Fishing vessels, on the other hand, load their holds at sea, often in adverse weather conditions, with their hatches open, something that would be inconceivable in commercial shipping.

Traditionally, the focus of fishing safety has been on industrial-scale fishing operations, as industrial vessels generally operate further offshore, including in the exclusive economic zones (EEZs) of other states, in the mandate areas of regional fishery bodies (RFBs) and in areas beyond national jurisdiction. The IMO thus developed the 2012 Cape Town Agreement, an internationally binding instrument that sets minimum requirements on the design, construction, equipment, and inspection of fishing vessels of 24 m in length (and over or equivalent in gross tonnes). The Cape Town Agreement includes mandatory international requirements for stability and associated seaworthiness, machinery and electrical installations, life-saving appliances, communications equipment and fire protection, as well as fishing vessel construction (IMO, 2012). The seaworthiness and safety inspection of fishing vessels is therefore only governed internationally for industrial fishing vessels of those states that have ratified the Cape Town Agreement or for vessels operating in the waters of a state that is a signatory to the agreement

The 1995 International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F) of the IMO covers basic safety training for fishing vessel personnel on industrial vessels. The safety training requirements of this convention are embedded in the national legislation of numerous states, and these requirements often apply also to semi-industrial and small fishing vessels.

Yet despite small-scale fishers' need for safe fishing vessels, the design, construction, seaworthiness and safety equipment of small fishing vessels are not regulated in most countries. What is more, while some countries have seaworthiness and safety inspections policies and regulations in place for small fishing vessels, they do not always have the capacity to enforce them.

The current gap in seaworthiness and safety inspections for small fishing vessels is often the consequence of:

1. a lack of specific policies and legislation;
2. where such regulations exist, a lack of enforcement as a result of the limited expertise available to carry out the required inspections; and
3. a lack of internationally accepted minimum standards for the seaworthiness and safety of small fishing vessels.

The present guidelines will assist states that do not have national standards or legislation in place for the seaworthiness and safety inspection of small fishing vessels, offering practical guidance and easily applicable methods. National laws and regulations always prevail.

# 2. Objectives and context

## 2.1 Objectives of the guidelines

The primary objectives of this document are:

1) To facilitate the supply of insurance services for small fishing vessels worldwide, with an emphasis on small-scale fishers in developing countries.

2) To provide practical guidance for conducting seaworthiness and safety inspections of decked fishing vessels of less than 12 metres in length and undecked fishing vessels.

The long-term goals of the guidelines are to contribute to the prevention of accidents with small fishing vessels; reduce damage and loss in small-scale fisheries; and make commercial fishing a safer profession.

These guidelines will also help fishing vessel owners to assess the safety and seaworthiness of their vessels themselves, thereby contributing to increased safety awareness and risk management within small-scale fisheries.

Together with their companion document, *Guidelines for insurance value and risk assessment of small fishing vessels*, the present guidelines are expected to remove some barriers that frequently constrain the supply of insurance services to small-scale fishers and their vessels.

## 2.2 Target audience/stakeholders

These guidelines are intended for the following stakeholders that have an interest in the safety and risk management of small fishing vessels:

- insurance and financial service providers;
- insurance brokers/underwriters;
- risk assessors;
- loss adjusters and marine surveyors;
- mutual associations and self-insurance pools;
- naval architects;
- vessel builders;
- fishers;
- fishing vessel owners;
- fisheries and maritime administrations;
- fisheries and vessel inspectors; and
- fisher organizations.

## 2.3 Definitions

For the purpose of these guidelines, the following definitions apply:

**Approved:** means approved by the competent authority.

**Competent authority:** the government of the state whose flag the vessel is entitled to fly.

**Consultant:** a suitably qualified maritime professional whose knowledge and experience are described in the relevant FAO Technical Guidelines (2015b).

**Decked vessel:** a vessel that has a fixed watertight deck covering the entire hull above the deepest operating waterline. Where open wells or cockpits are fitted in this deck the vessel is considered a decked vessel if flooding of the well or cockpit will not endanger the vessel.

**Existing vessel:** a vessel that is not a new vessel.

**Fishing vessel:** (hereinafter referred to as "vessel") means any vessel used or intended for use for the purposes of the commercial exploitation of living marine resources, including mother ships and any other vessels directly engaged in such fishing operations.

**Fishing vessel certifying authority:** a third party authorized by a competent authority to inspect and certify fishing vessels.

**Fit for purpose:** able to perform its intended function, including safe operation.

**Inspection:** an examination carried out to ensure compliance with the relevant provisions of the shipping and/or fisheries legislation with regard to safety construction standards, safety equipment, equipment and vessel operation.[1]

**New vessel:** is a vessel the keel of which is laid, or which is at a similar stage of construction, on or after the official release date of these guidelines.

**Owner:** means any person or entity having assumed the responsibility for the operation of the vessel.

**Significant modification:** any modification to the construction or outfit that affects the vessel's compliance with the standards on the basis of which it was granted a certificate of registry (where vessel registration is a requirement) or local fishing vessel license / authorization to fish.

**Skipper:** means the person in command of a vessel.

**Survey:** a detailed examination conducted by a surveyor to enable the vessel's valuation, assess its condition and/or verify its continued compliance with applicable standards, codes, and instruments.

**Surveyor:** a staff member of a ship classification society; a person appointed as a non-exclusive surveyor on behalf of a classification society; a person appointed by a Lloyd's agent; or a person accredited by a professional body as a surveyor of ships.

**Undecked vessel:** a vessel that is not a decked vessel.

[1] If the competent authority has no existing legislation or regulations concerning fishing vessel safety, it could, on the basis of the various FAO, ILO and IMO instruments and guidelines, produce such legislation.

The above definitions have been adapted from FAO/ILO/IMO (2012), FAO (2015b), FAO (2024b) and MCA (2021), with some minor changes in wording.

## 2.4 When is a seaworthiness and safety inspection needed?

The typical inspection regime for a new vessel consists of an agreed programme of in-build and pre-registration inspections, followed by periodic inspections to ascertain that compliance has been maintained over time (FAO, 2015b). The competent authority stipulates the timing, scope, and extent of these periodic inspections. Periodic inspections may be replaced by self-declarations, as discussed in Section 2.6.2 of these guidelines.

A serious incident (e.g. a fatality or serious injury, serious damage to the vessel, fire, or a major mechanical breakdown) may trigger an ad hoc inspection. Contact should be made with the owner or skipper and an inspection arranged for the earliest suitable date. The extent of an ad hoc inspection will depend on the nature of the incident.

Resuming commercial operation after a change of ownership, a change of fishing method, de-registration, a major refit or alteration, typically requires an inspection. A competent authority may choose to conduct unannounced inspections following evidence or allegations of safety deficiencies, unsafe operation or significant alterations to a vessel that may invalidate its certificate.

## 2.5 Why are inspections important for fishing vessel insurance?

Seaworthiness and safety are crucial factors in marine insurance because unseaworthy vessels pose a significant risk to its crew, cargo, and the environment. To benefit from insurance cover, vessels should be seaworthy for their intended purpose and area of operation and carry the appropriate safety equipment (namely, lifesaving and firefighting appliances, and navigation and communication equipment).

### 2.5.1 Inspection of registered vessels for insurance purposes

Small fishing vessels that require registration to operate commercially must typically be presented for inspection upon first registration and at regular intervals throughout their lifespan. Following the satisfactory completion of the inspection, a certificate is issued that confirms the vessel's compliance with the applicable standards (e.g. construction and outfit, stability, water freeing arrangements, machinery, crew protection, pollution prevention). Having been assessed by an inspector against recognized standards, registered vessels that have received their certificate can be insured without needing further examination.

Any deficiencies found at inspection must be rectified and a follow-up inspection may be required. A deficiency may result in the certificate being withheld until a successful re-inspection.

If major deficiencies (e.g. significant structural alterations or extensive repairs that require formal approval) are found, a closer examination by a marine consultant or the competent authority is required. For minor deficiencies, a short-term certificate may be issued until the follow-up inspection, or restricted certification may be provided.

### 2.5.2 Inspection of unregistered vessels for insurance purposes

Unregistered small fishing vessels must demonstrate they are fit for purpose in order to qualify for insurance cover. To this end, they may either:

i. pass an inspection based on these guidelines, which may involve simple stability tests and structural checks suitable for the vessel size, construction and intended operation; or

ii. seek voluntary compliance against larger fishing vessel standards (where these exist), or other recognized standards appropriate to the vessel size, construction and intended operation; or

iii. prove that they continue to meet the standard they were originally built to. Vessels modified since their build may need to revert to their original design to ensure compliance.

Following inspection (and re-inspections as needed), an unregistered fishing vessel may either be:

- declared fit for purpose and qualify for insurance cover; or
- declared unfit for purpose and be refused insurance cover until deficiencies are rectified.

If minor deficiencies are identified, safety-related improvements may be recommended (e.g. enhancing on-board lifesaving appliances, hull repairs or increasing buoyancy reserves), or a restricted certification provided. The latter would result in restrictions to the vessel's operating area, weather or sea state, or a reduction to its maximum permitted load. If major vessel deficiencies are identified, professional assistance should be sought to resolve these.

A history of successful operation does not guarantee safety.

## 2.6 Methods for seaworthiness and safety inspections

### 2.6.1 Vessel inspection by a maritime safety or fisheries inspector

Small fishing vessels should follow the inspection regime of the competent authority or its insurer. A combination of formal inspections and self-declarations is recommended in order to minimize costs for the vessel owner or skipper.

Most authorities require that larger vessels undergo an "out of water survey" and an "afloat survey" over two separate visits. For small vessels, every effort should be made to complete the seaworthiness and safety inspection in a single visit, in order to minimize downtime in the fishing operations and therefore loss of earnings. To enable this, fishers should be informed of the inspector's expectations and know how to prepare their vessel for inspection. This information should be made available to them to facilitate this process.

Appendix 4 of the *FAO Best practices to improve safety at sea in the fisheries sector* (FAO, 2015b) provides a code of conduct for a vessel inspector, while Appendix 13 of the same document provides general guidance for the inspection of fishing vessels.

Annex J of the present guidelines contains a list of the tools commonly used for conducting fishing vessel inspections.

### 2.6.2 Self-declaration

A self-assessment of the condition of a vessel by the vessel owner or skipper is used in the fisheries sector in many countries and is usually recorded in a self-declaration form (see for example Annex I of these guidelines). Such a form enables a check of the vessel's condition and safety against the applicable standards, the identification of any repair or replacement work needed, and the urgency or timescale of this work. Depending on the national fishing safety policies, the form is either submitted to the Competent Authority or retained by the vessel owner or skipper, so that it may be shown to an inspector if required.

Sanctions should be applied if the self-declaration is false.

Vessel owners may also choose to contract a consultant to perform the self-assessment. In this case, the expectation is that the consultant will produce a formal inspection report. The report should provide an inspection summary, areas of non-compliance and remedial work required, and a list of recommendations. Appendix 6 of the FAO *Best practices to improve safety at sea in the fisheries sector* (FAO, 2015b) describes the self-assessment of vessel conditions and fishing vessel safety undertaken by consultants.

# 3. Structure

All tables presented in this section are sourced from the *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels* (FAO/ILO/IMO, 2012), unless otherwise stated.

## 3.1 Watertight and weathertight integrity

The following items affect the watertight and weathertight integrity of the vessel and should therefore be inspected:

### Decked and undecked vessels:

- Hull: inspect condition as appropriate to hull material.
- Watertight hatches/coamings: condition, height and operation. Seal properly when closed, clips and dogs operate freely.

### Decked vessels:

- Bulkheads: frames are intact, penetrations properly sealed.
- Any store rooms: clear so the internal hull and decks can be inspected.
- Decks: watertight condition, no perforation/damage, no unplugged holes, non-slip.
- Watertight doors: condition and operation, seal properly when closed, rubber seals in good condition. Clips and dogs operate freely.
- Watertight door clips: free and seals in good condition.
- Hold back clips: removed and notice fitted on both sides of the door stating: 'Door to be kept closed at sea'.
- Shelter access hatches and clips: condition and operation.
- Flush hatches and scuttles: condition, operation and watertight when closed.
- Seawater inlet valves: easily and readily accessible and operable from above floor plate level.
- Freeing port areas: clear of obstructions/blockages.
- Freeing ports: size, number and location should be sufficient to drain exposed decks. Guidance on dimensions of freeing ports can be found in Annex VIII of FAO/ILO/IMO (2012). If fitted with hinged covers (flaps), ensure they pivot freely. Sliding or lockable freeing port covers are unacceptable.
- Discharges: if fitted below freeboard deck, must have shut off valve and non-return valve. Exhaust pipes penetrating hull below deck need non return valve, device or flap.
- Windows: weathertight condition above weather deck, and watertight below.
- Port holes/windows: securing clips and deadlights free, blanks available for external windows if they are broken.
- Skylights: condition, operation, close watertight, blanks available if skylight not of same strength as surrounding structure.

### Undecked vessels:

- Check foam-filled reserve buoyancy material and, if required, swamp test as described in these guidelines.
- Ensure no freeing ports are fitted.

## 3.2 Structural inspection of small fibreglass-reinforced plastic fishing vessels

The structural inspection of small, fibreglass-reinforced plastic (FRP) fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

### Check structural integrity:

- Inspect the hull, deck, bulkheads, and other structural components for their specific thickness and strength in line with the recommendations of FAO/ILO/IMO (2012).
- Note signs of damage, wear, or patches of dry glass lacking resin.
- Pay special attention to the condition of the FRP material, such as osmosis, delamination, and other defects (FAO/BOBP-IGO, 2023).
- Inspect the structure against the original/certified build drawings (if they exist).

### Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory standards and requirements for seaworthiness and safety.
- Stay updated on any changes in regulations to maintain compliance.

### Regular maintenance:

- Fix cracks immediately.
- Wash the vessel regularly.
- Wax the outer gelcoat surfaces periodically.
- Keep the bilges dry.
- Repair damages of hull and frames resulting from impact against beach, rocks, jetties, and quaysides. If not, the boat will deteriorate rapidly.
- Use gelcoat to finish any surface defects or repairs.

### Note:

- Raw materials used need to be certified and used before the expiry date specified.
- The storage of fiber reinforced plastic raw materials is critical. Storage at low temperature and low humidity is recommended.
- Material quality and workmanship determines the strength and lifespan of a vessel.

### Inspection guidance:

**Hull**

- Physical check for soft patches/ large deflection on the deck, ship-sides and bottom.

- Visual check for blisters and osmosis on the hull.
- Visual check for discolouration and whitening of the FRP laminate indicating loss of resin content with the glass mat showing through.
- Visual check for damage, cracks and delamination.
- High stress areas, physically check for softness in the transom and deflection.
- Fittings (bollards, railings, towing eyes) should be secured on backing plates.

### Internal stiffener structure

Check the following structural elements of the vessel for major damage or for having been removed altogether:

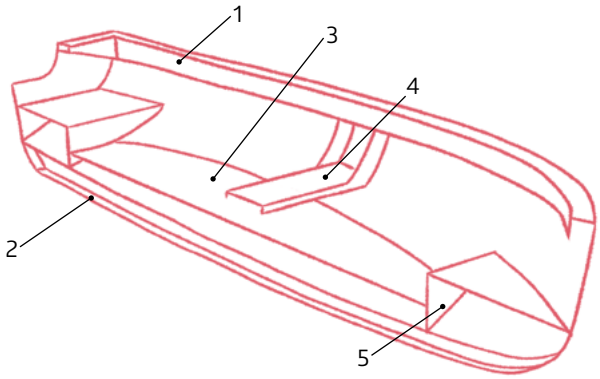
- Longitudinal keel/ keelson.
- Transverse frames on the bottom and sides.
- Water pass notches on the frame bottom corners.
- Bulkheads and their watertight integrity.
- Deck beams transverse and longitudinal.

### Buoyancy material

Check the buoyancy material for:

- Waterlogging in the material below the waterline.
- Presence and volume of buoyancy foam distribution in compartments.

**Figure 1.** Typical framing in a small FRP vessel




**Key**

1. gunwale stringer
2. keel
3. sole
4. thwart
5. deep floor

*Source:* Adapted from **FAO/ILO/IMO.** 2012. *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.* Rome, Italy. https://www.fao.org/4/i3108e/i3108e.pdf.

1. Gunwale stringer. Longitudinal element providing strength at the top edge of the hull. This is important in small boats (< 7m).

2. Keel. Longitudinal element providing strength in the bottom of the boat and for protecting the hull bottom.

3. Sole. Transverse panel in the bottom of the boat providing strength and, in some cases, forming watertight compartments to stop flooding.

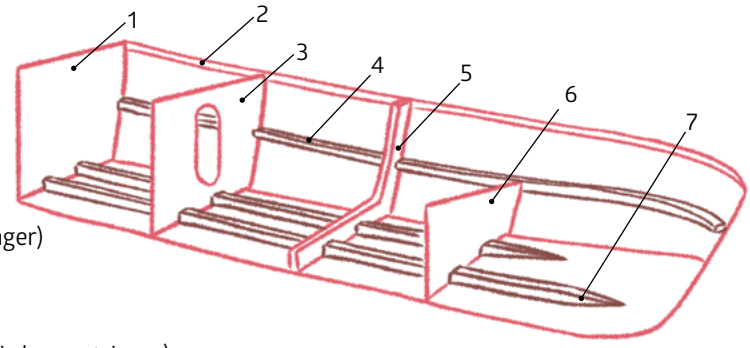
4. Thwart. Transverse seat which strengthens the hull and can act as a frame.

5. Deep floor. Transverse panel like the side longitudinal but deeper for additional strength.

The Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels (FAO/ILO/IMO, 2012) present structural standards for vessels of design categories C and D. Scantling tables are available and based on the ISO 12215 standard and are appropriate for the survey of most small FRP fishing vessels. These scantling tables are provided in Annex K, Tables 3 and 4 for FRP vessels.

If the vessel's scantlings and/or arrangement are significantly different, then the inspector or surveyor should consult either the safety recommendations in FAO/ILO/IMO (2012) or an equivalent set of standards. Most small fishing vessels that operate in coastal waters should be of design category C.[2]

**Figure 2** Guidance on structural integrity checks for small fibreglass-reinforced plastic vessels – longitudinal frames




**Key**

1. transom
2. gunwale stringer
3. bulkhead
4. side longitudinal stiffener (stringer)
5. web frame
6. deep floor
7. bottom longitudinal stiffener (girder or stringer)

*Source:* Adapted from **FAO/ILO/IMO.** 2012. *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.* Rome, Italy. https://www.fao.org/4/i3108e/i3108e.pdf.

1. Transom. Transverse panel at aft of hull, for strength and to support machinery.

2. Gunwale stringer. Longitudinal element providing strength at the top edge of the hull.

3. Bulkhead. Full height panel from keel to deck edge of the boat providing strength. Sometimes applied to make watertight compartments to stop flooding.

4. Side longitudinal stiffener or stringer. Longitudinal element providing strength on hull side and reducing the size of shell panels.

5. Web frame. A transverse stiffener or frame providing support to the hull bottom and reducing the size of shell panels.

[2] Vessels of design category C are considered suitable to operate in seas with significant wave heights of up to 2 m and a typical steady wind force of 6 Beaufort (12 m/s) or less. Vessels of design category D are only suitable for inland waters with waves of up to 0.5 m in height and winds force of 4 Beaufort (7 m/s) or less.

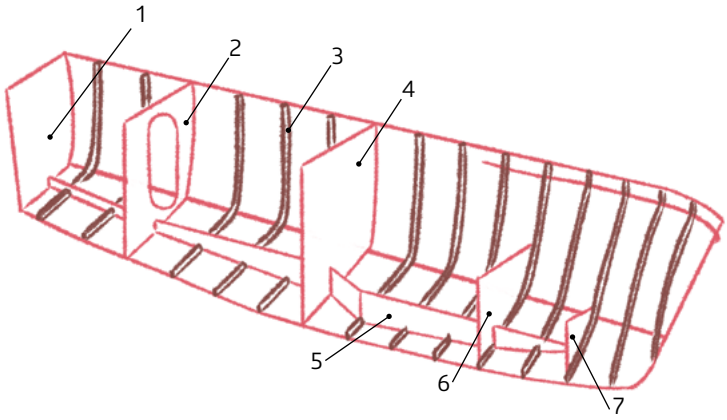
6. Deep floor. Transverse panel like the side longitudinal but deeper for additional strength.

7. Bottom longitudinal stiffener (girder or stringer). Longitudinal stiffener or stringer providing support to the hull bottom and reducing the size of shell panels.

**Figure 3.** Guidance on structural integrity checks for small fibreglass-reinforced plastic vessels – transverse frames

**Key**

1. transom
2. bulkhead
3. frame
4. bulkhead
5. bottom girder
6. deep floor
7. deep floor




*Source:* Adapted from **FAO/ILO/IMO.** 2012. *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.* Rome, Italy. https://www.fao.org/4/i3108e/i3108e.pdf.

1. Transom. Transverse panel at aft of hull, for strength and to support machinery.

2. Bulkhead. Full height panel from keel to deck edge of the boat providing strength.

3. Frame. Transverse element providing strength across the boat. These are closer spaced compared to a longitudinal framed FRP vessel.

4. Bulkhead. Full height panel from keel to deck edge of the boat providing strength. Sometimes applied to make watertight compartments to stop flooding.

5. Bottom girder. Longitudinal stiffener providing support to the hull bottom and reducing the size of shell panels.

6. Deep floor. Transverse panel like the side longitudinal but deeper for additional strength.

7. Deep floor. Transverse panel like the side longitudinal but deeper for additional strength.

Note:

Inspectors may assess the structure of a small FRP fishing vessel using their local knowledge and experience:

1. Very small boats up to 3 meters, operating in inland water bodies and not powered. Ensure the structure maintains the shape of the vessel and supports the crew while being light and easy to handle.

2. Boats of 3 to 5 meters: The frame sections, spacing and transom need to strengthen the boat to operate near shore, powered by a small engine plying at speeds up to 10 knots.

3. Boats of 6 to 9 meters going 20 nautical miles or more offshore at planning speeds and able to withstand Beaufort 4 sea states should have a well-built internal structure of longitudinal and transverse stiffeners.

4. Boats of 9 to 12 meters must be designed and comply with the recommendations of FAO/ILO/IMO (2012) design category C or an equivalent set of standards.

## 3.3 Structural inspection of small wooden fishing vessels

The structural inspection of small wooden fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

### Inspect the structural integrity:

- Check for any signs of rot, decay, or damage to the wooden structure.
- Look for cracks, leaks, or any areas that may need repair.
- Conformity to the design specification (if it exists).

### Hull inspection:

- Look for any signs of damage to the hull, such as cracks or holes.
- Check the caulking and seals to ensure they are watertight.
- Identify the material of the fastenings. The use of galvanized steel fastenings should be a minimum standard.

### Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory standards and requirements for seaworthiness and safety.
- Stay updated on any changes in regulations to maintain compliance.
- Where the scantlings tables are not applicable to the vessel being surveyed and there is significant traditional experience and history for the vessel concerned, then such scantlings may be acceptable. The construction details should be recorded (e.g. sketches, scantlings and photographs) and, if appropriate, a competent authority may choose to review the design.

### Regular maintenance:

- Schedule regular maintenance and inspections to keep the vessel in good working condition and address any issues promptly.
- Keep the vessel dry.
- Clean the surfaces regularly and protect the wood with oil or paint.
- Address rot immediately.

Note:

- Local materials and timber may vary from the tables below. The best match needs to be identified.
- Material quality and workmanship determines the strength and lifespan of the vessel.

**Figure 4.** Guidance on the structure of small wooden vessels

## PLANK THICKNESS AND FRAME SPACING

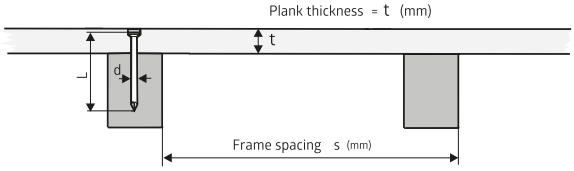



**Table a.** PLANK THICKNESS AND FRAME SPACING - Category C

| Loaded displacement $m_{LCD}$ kg | FRAME SPACING s - centre to centre | | | | | | |
|---|---|---|---|---|---|---|---|
| | Planking thicknes s t mm | | | | | | |
| | 16 | 19 | 22 | 25 | 29 | 32 | 35 |
| Nail d x L | 4 x 50 | 4 x 60 | 5 x 60 | 5 x 75 | 6 x 75 | 6 x 90 | 6 x 100 |
| 500 | 290 | 350 | | | | | |
| 1000 | 270 | 330 | | | | | |
| 2000 | | 310 | 370 | | | | |
| 3000 | | 300 | 350 | | | | |
| 4000 | | | 340 | 400 | | | |
| 5000 | | | 330 | 380 | | | |
| 6000 | | | 320 | 370 | | | |
| 7000 | | | | 360 | 420 | | |
| 8000 | | | | 360 | 430 | | |
| 9000 | | | | 360 | 420 | | |
| 10000 | | | | 350 | 410 | | |
| 15000 | | | | | 390 | 440 | |
| 20000 | | | | | | 420 | 460 |
| 25000 | | | | | | 400 | 450 |

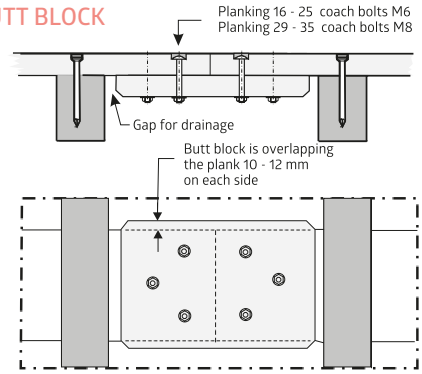
**Table b.** STANDARD TIMBER DIMENSIONS

| Sawn dimension | | Dimension surfaced on two sides |
|---|---|---|
| mm | Inch | mm |
| 19 | ¾ | 16 |
| 22 | ⅞ | 19 |
| 25 | 1 | 22 |
| 28 | 1⅛ | 25 |
| 32 | 1¼ | 29 |
| 35 | 1⅜ | 32 |
| 38 | 1½ | 35 |
| 41 | 1⅝ | 38 |
| 44 | 1¾ | 41 |
| 47 | 1⅞ | 44 |
| 50 | 2 | 47 |
| 63 | 2½ | 60 |
| 75 | 3 | 72 |
| 90 | 3½ | 87 |
| 100 | 4 | 97 |
| 125 | 5 | 120 |
| 150 | 6 | 144 |
| 175 | 7 | 169 |
| 200 | 8 | 194 |
| 225 | 9 | 219 |
| 250 | 10 | 244 |
| 300 | 12 | 294 |

Adjustment for design categories:
Plank thickness the same. Frame spacing adjusted:
Design category D : Tabular frame spacing x 1.15
Design category B : Tabular frame spacing x 0.92
Design categor A : Tabular frame spacing x 0.85

Same plank thickness for timber in strength classes: C30,C40, D25, D30 and D35
For wood in class D40 use one standard thickness
lower with the same frame spacing.

### PLANK BUTT BLOCK



(continued)

## FRAMES

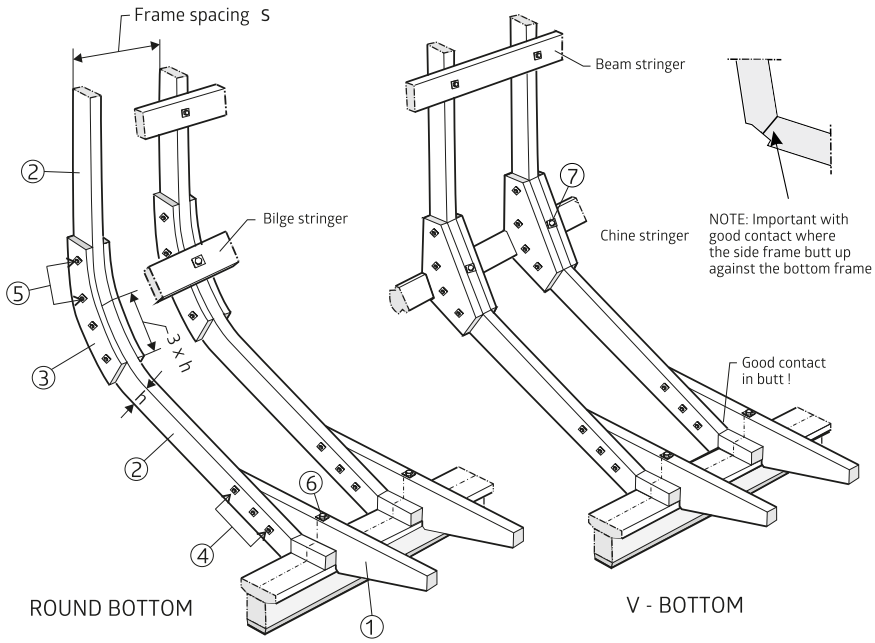



**Table c.** FRAME DIMENSIONS AND BOLT SIZE

| Loaded displacement $m_{LDC}$ kg | TIMBER DIMENSION | | | BOLTS | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ① Floor mm | ② Frame mm | ③ Gussets mm | ④ d mm | ④ No of bolts | ⑤ d mm | ⑤ No of bolts | ⑥ Keel bolt mm | ⑦ Chine bolt mm |
| 500 | 35 x 97 | 35 x 60 | 16 | 6 | 2 | 6 | 2 | 8 | 6 |
| 1000 | 35 x 97 | 35 x 60 | 19 | 6 | 2 | 6 | 2 | 8 | 6 |
| 2000 | 47 x 120 | 35 x 72 | 19 | 8 | 2 | 8 | 2 | 10 | 8 |
| 3000 | 47 x 120 | 47 x 72 | 25 | 8 | 3 | 8 | 2 | 10 | 8 |
| 4000 | 47 x 144 | 47 x 87 | 25 | 8 | 3 | 8 | 2 | 10 | 8 |
| 5000 | 47 x 144 | 47 x 87 | 25 | 10 | 3 | 10 | 2 | 10 | 8 |
| 6000 | 47 x 144 | 47 x 97 | 25 | 10 | 3 | 10 | 2 | 12 | 10 |
| 7000 | 47 x 144 | 47 x 97 | 25 | 10 | 3 | 10 | 2 | 12 | 10 |
| 8000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |
| 9000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |
| 10000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |
| 15000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |
| 20000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |
| 25000 | 60 x 144 | 60 x 97 | 32 | 10 | 3 | 10 | 2 | 12 | 10 |

Frame timber is strength category D30 or higher
Same dimensions for all design categories.

(continued)

## KEEL

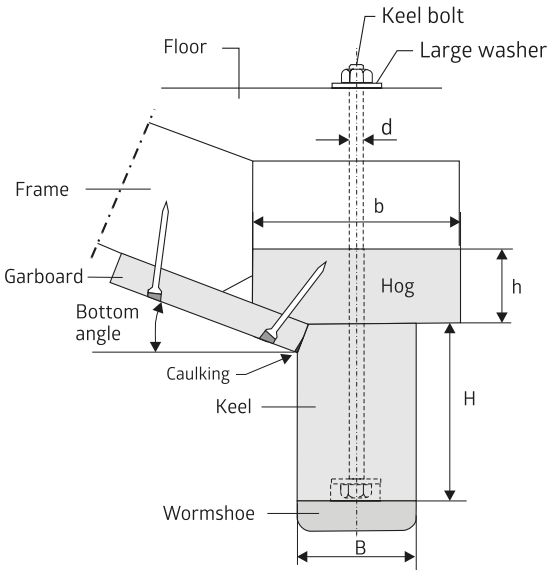



**Table d.** WASHER DIMENSIONS

| Keel bolt diameter mm | Washer dimensions mm |
|---|---|
| 6 | 3 x 20 x 20 |
| 8 | 3 x 25 x 25 |
| 10 | 3 x 30 x 30 |
| 12 | 4 x 40 x 40 |

For keel bolt diameter see Table c.

**Table e.** KEEL AND HOG DIMENSIONS

| Light displacement $m_{LCC}$ kg | KEEL | | HOG | |
|---|---|---|---|---|
| | Width B mm | Height H mm | Width b mm | Height h mm |
| 250 | 60 | 60 | 120 | 47 |
| 500 | 60 | 72 | 120 | 47 |
| 1000 | 72 | 72 | 120 | 47 |
| 2000 | 72 | 97 | 144 | 60 |
| 3000 | 72 | 97 | 144 | 60 |
| 4000 | 97 | 120 | 169 | 60 |
| 5000 | 97 | 144 | 169 | 60 |
| 6000 | 97 | 144 | 169 | 60 |
| 7000 | 97 | 169 | 194 | 72 |
| 8000 | 120 | 169 | 219 | 72 |
| 9000 | 120 | 194 | 219 | 72 |
| 10000 | 120 | 194 | 219 | 87 |
| 11000 | 120 | 194 | 219 | 87 |
| 12000 | 120 | 194 | 219 | 87 |

(continued)

## DECK, BILGE STRINGER AND BEAM STRINGER

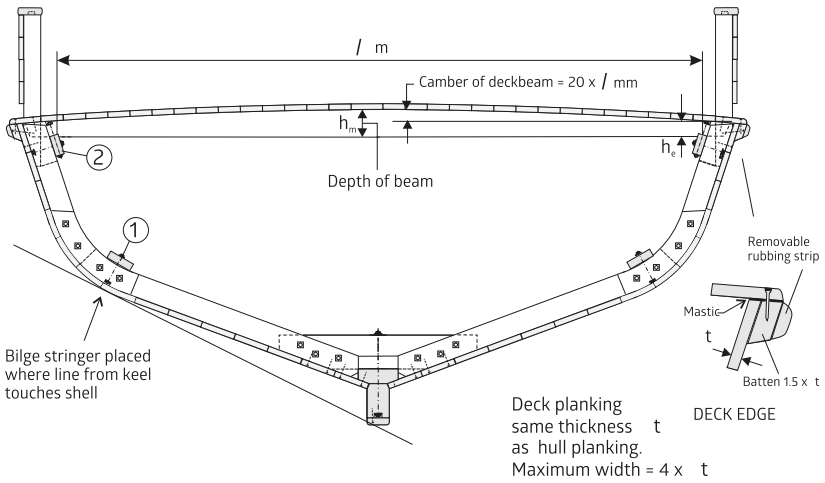



**Table f.** DECK BEAM DIMENSIONS

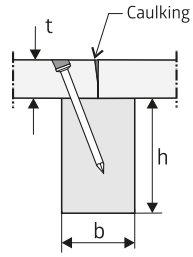
| Width of beam b mm | Beam spacing s mm | DEPTH OF BEAM $h_m$ = depth at mid beam $h_e$ = depth at end | | | | |
|---|---|---|---|---|---|---|
| | | l 2.0 m | l 2.5 m | l 3.0 m | l 3.5 m | l 4.0 m |
| | | $h_m/h_e$ mm | $h_m/h_e$ mm | $h_m/h_e$ mm | $h_m/h_e$ mm | $h_m/h_e$ mm |
| 47 | 350 | 75/65 | 90/65 | 110/75 | 130/75 | |
| | 400 | 80/65 | 95/65 | 120/75 | 140/75 | |
| 60 | 350 | 65/65 | 80/65 | 100/75 | 115/75 | 130/90 |
| | 400 | 70/65 | 85/65 | 110/75 | 120/75 | 140/90 |

Same dimensions for all design categories
Timber of strength group D30 or higher.
Beams at edge of deck openings increased in width = b x 1.5

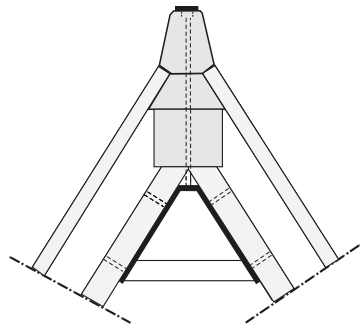
**Table g.** BILGE STRINGER AND BEAM STRINGER

| Loaded displacement mLDC kg | ① Bilge stringer mm | ② Beam stringer mm |
|---|---|---|
| 4000 | | 47 x 72 |
| 6000 | | 47 x 97 |
| 8000 | | 47 x 97 |
| 10000 | | 47 x 97 |
| 15000 | 35 x 144 | 47 x 97 |
| 20000 | 34 x 144 | 47 x 120 |
| 25000 | 35 x 144 | 47 x 120 |

### PLANKING BUTT JOINT




### STEEL KNEE TO CONNECT TO CONNECT BILGE AND BEAM STRINGER TO STEAM



All bolting of bilge stringer and deck beam = M10 with large washers

*Source:* Adapted from **FAO/ILO/IMO.** 2012. *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.* Rome, Italy. https://www.fao.org/4/i3108e/i3108e.pdf.

## 3.4 Structural inspection of fibreglass-reinforced-plastic-coated small wooden fishing vessels

The structural inspection of fibreglass-reinforced-plastic-coated small wooden fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

### Check structural integrity:

- Inspect the hull, deck, bulkheads, and other structural components for their specific thickness and strength in relation to FAO/ILO/IMO (2012).
- Use a mallet or survey hammer to tap the FRP-coated hull surface to identify soft patches or delaminated areas.
- Note signs of damage, wear, especially delaminated patches of FRP on the hull surface.
- Mark the defective areas to be stripped off the FRP coat, for inspection of the wood planking beneath.
- Pay special attention to the condition of the wood and check for any signs of rot, decay, or damage to the vessel's wooden structure.
- Also check the FRP material for osmosis, delamination, and other defects in the composite material – guidance on this is available in FAO/BOBP-IGO (2023).
- Inspect against the original/certified build drawings (if they exist).

### Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory standards and requirements for seaworthiness and safety.
- Stay updated on any changes in regulations to maintain compliance.

### Regular maintenance:

- Inspect the bilges for the ingress of water and check wood planking for signs of damage, rot or decay.
- Fix cracks immediately.
- Wash the vessel regularly.
- Wax the outer gelcoat surfaces periodically.
- Keep the bilges dry.
- Use gelcoat to finish any surface defects or repairs.

## 3.5 Structural inspection of small steel fishing vessels

The structural inspection of small steel fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

### Inspect the hull and its structural integrity:

- Inspect the steel hull for signs of corrosion, cracks in the plating or welded butts, or damage.
- Pay close attention to areas prone to rust and deterioration, such as around welded joints, keel, and bilge.

- Ensure that the hull is structurally sound and watertight.
- Inspect the anodes (cathodic protection) on the hull below the waterline and on the stern gear. Replace anodes that are more than 70 percent depleted.

Inspect the deck and superstructure:

- Examine the deck, superstructure, and deck fittings for any signs of wear, corrosion, or leaks.
- Check for proper drainage to prevent water accumulation and deck damage.

Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory requirements and standards, including those specific to small steel fishing vessels.
- Stay informed of any updates or changes to regulations that may affect the vessel.

Regular maintenance:

- Rust is the main problem with steel vessels. The key steps to address rust issues are:

    1. Chip off the rust area.
    2. Inspect doubler plates and surrounding area.
    3. Inspect seams and butts according to best practice.
    4. Wire brush to bare metal.
    5. Sand the area.
    6. Paint a first coat of metal primer.
    7. Paint topcoat.

**Table 1.** Guidance on the structure of small steel vessels of design category C

### Scantlings

Minimum scantlings should be in accordance with the table below. Figures may be based on interpolation for vessels with a length overall between 8 m and 15 m.

| LOA (m) | 8 | 9 | 10 | 11 | 12 | 15 | Remarks |
|---|---|---|---|---|---|---|---|
| **Frame spacing (mm)** | Max. 500 | 500 | 500 | 500 | 500 | 500 | |
| **Bar keel**<br><br>Sectional area ($cm^2$) | 15 | 15 | 15 | 15 | 15 | 15 | Where bar keel is omitted, keelplate = 1.5 x t bottom. |

| LOA (m) | 8 | 9 | 10 | 11 | 12 | 15 | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | | | | Total breadth 30 x LOA mm |
| **Centre keel** | | | | | | | |
| Sectional area ($cm^2$) | 15 | 16 | 17 | 17 | 18 | 20 | Required only where the bar keel is omitted. |
| Min. thickness (mm) | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | |
| **Floor** | | | | | | | |
| Height (mm) | 200 | 210 | 215 | 225 | 230 | 250 | Required only at every third frame on the other frames skeleton floors. |
| Thickness (mm) | 4 | 4 | 4.5 | 4.5 | 5 | 5 | |
| Flange (mm) | 50 x 3.5 | 50 x 4 | 50 x 4.5 | 50 x 4.5 | 50 x 5 | 50 x 6 | May be omitted where cement is inserted up to the top of the floors. |
| **Keelson (UPN)** | 100 | 100 | 100 | 100 | 120 | 120 | Channel) Required only where centre keel is omitted. |
| **Frames** | | | | | | | |
| Web (mm) | 90 x 6.5 | 90 x 6.5 | 100 x 6.5 | 100 x 6.5 | 100 x 7 | 100 x 7 | |
| Section mod. ($cm^3$) | 10 | 11.6 | 12.6 | 14.7 | 15.8 | 19 | |
| Height (mm) | 200 | 210 | 215 | 225 | 230 | 250 | Required only at every third frame on the other frames skeleton floors. |
| Thickness (mm) | 4 | 4 | 4.5 | 4.5 | 5 | 5 | |
| **Floor** | | | | | | | |
| Flange (mm) | 50 x 3.5 | 50 x 4 | 50 x 4.5 | 50 x 4.5 | 50 x 5 | 50 x 6 | May be omitted where cement is inserted up to the top of the floors. |
| **Keelson (UPN)** | 100 | 100 | 100 | 100 | 120 | 120 | (Channel) Required only where centre keel is omitted. |
| **Frames** | | | | | | | |
| Web (mm) | 90 x 6.5 | 90 x 6.5 | 100 x 6.5 | 100 x 6.5 | 100 x 7 | 100 x 7 | |

| LOA (m) | 8 | 9 | 10 | 11 | 12 | 15 | Remarks |
|---|---|---|---|---|---|---|---|
| Section mod. ($cm^3$) | 10 | 11.6 | 12.6 | 14.7 | 15.8 | 19 | |
| **Bottom plates** (mm) | 5 | 5.5 | 6 | 6.5 | 6.5 | 7.5 | Keel plates and stem plates to be increased by 1 mm. |
| **Shell plates** (mm) | 4.5 | 5 | 5.5 | 5.5 | 6 | 6.5 | |
| **Bulkheads** | | | | | | | |
| Plates (mm) | 5 | 5.5 | 5.5 | 6 | 6 | 6.5 | |
| Stiffener web (mm) | 50 x 6.5 | 50 x 6.5 | 50 x 6.5 | 50 x 7 | 50 x 7 | 50 x 7 | Max. spacing 750 mm. |
| Stiffener sec. mod. ($cm^3$) | 6.5 | 6.5 | 6.5 | 7.5 | 7.5 | 7.5 | |
| **Deck** | | | | | | | |
| Plates (mm) | 4.5 | 5 | 6 | 6 | 7 | 7 | |
| Beam web (mm) | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | Max. spacing 300 mm. Max. span 3.5 m. |
| Beam sec. mod. ($cm^3$) | 25 | 25 | 25 | 25 | 25 | 25 | |
| **Bulwark** (mm) | 4.5 | 4.5 | 4.5 | 5 | 5.5 | 5.5 | Stiffener 50 x 6 mm. Max. spacing 500 mm. |
| **Superstructure/ deckhouse** (mm) | 4.5 | 4.5 | 4.5 | 5 | 5.5 | 5.5 | Stiffener 50 x 6 mm. Max. spacing 500 mm. |

## 3.6 Structural inspection of small aluminium fishing vessels

The structural inspection of small aluminium fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

### Inspect the hull and its structural integrity:

- Aluminium is a popular material for small fishing vessels by virtue of its lightweight and corrosion-resistant properties.
- However, special attention should be paid to any signs of structural fatigue, cracks, or corrosion that could compromise the integrity of the vessel.
- Inspections should focus on the hull's welds, seams, and joints to ensure they are secure and watertight.
- Any signs of stress, distortion, or damage should be promptly addressed to prevent leaks or hull failure.
- Cathodic protection for the hull structure should be provided and inspected. Inspect anodes fitted below the waterline and replace anodes with 70 percent or greater depletion.

Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory requirements and standards, including those specific to small fishing vessels.
- Stay informed of any updates or changes to regulations that may affect the vessel.

Regular maintenance:

- Rinse and dry the vessel thoroughly.
- Pay attention to crevices and joints.
- Check for any damage.
- Protect against corrosion with an aluminium polish or wax

Table 2. Guidance on the structure of small aluminium vessels of design category C

### Scantlings

Minimum scantlings should be in accordance with the table below. Figures may be based on interpolation for vessels with a length overall between 8 m and 15 m.

| LOA (m) | 8 | 9 | 10 | 11 | 12 | 15 | Remarks |
|---|---|---|---|---|---|---|---|
| **Frame spacing (mm)** | Max. 300 | 300 | 300 | 300 | 300 | 300 | |
| **Bar keel** | | | | | | | |
| Sectional area ($cm^2$) | 18 | 19 | 20 | 21 | 22 | 24 | Where bar keel is omitted, keelplate = 2.5 x t bottom. |
| Min. Thickness (mm) | 17 | 18 | 18 | 19 | 20 | 21 | Total breadth 30 x LOA mm |
| **Centre keel** | | | | | | | |
| Sectional area ($cm^2$) | 18 | 19 | 20 | 21 | 22 | 24 | Required only where the bar keel is omitted. |
| Min. thickness (mm) | 6.5 | 6.5 | 7.5 | 7.5 | 8.5 | 8.5 | |
| **Floor** | | | | | | | |
| Height (mm) | 200 | 210 | 215 | 225 | 230 | 250 | Required only at every third frame on the other frames skeleton floors. |
| Thickness (mm) | 5.5 | 5.5 | 5.5 | 6.5 | 6.5 | 6.5 | |
| Flange (mm) | 50 x 5.5 | 50 x 5.5 | 50 x 5.5 | 50 x 5.5 | 50 x 6.5 | 50 x 6.5 | May be omitted where cement is inserted up to the top of the floors. |
| **Keelson (UPN)** | 100 | 100 | 100 | 100 | 120 | 120 | (Channel) Required only where centre keel is omitted. |
| **Frames** | | | | | | | |

| LOA (m) | 8 | 9 | 10 | 11 | 12 | 15 | Remarks |
|---|---|---|---|---|---|---|---|
| Web (mm) | 90 x 8.5 | 90 x 8.5 | 90 x 8.5 | 95 x 8.5 | 95 x 8.5 | 100 x 8.5 | |
| Section mod. ($cm^3$) | 23 | 24 | 25 | 25.2 | 26.3 | 28.4 | |
| **Bottom plates** (mm) | 5 | 5.5 | 6 | 6.5 | 6.5 | 7.5 | Keel plates and stem plates to be increased by 1 mm |
| **Shell plates** (mm) | 4.5 | 5 | 5.5 | 5.5 | 6 | 6.5 | |
| **Bulkheads** | | | | | | | |
| Plates (mm) | 5 | 5.5 | 5.5 | 6 | 6 | 6.5 | Max. spacing 500 mm |
| Stiffener web (mm)<br>Stiffener sec mod ($cm^3$) | 50 x 6.5<br>6.3 | 50 x 6.5<br>6.3 | 50 x 7.5<br>7.4 | 50 x 7.5<br>7.4 | 50 x 8.5<br>8.4 | 50 x 8.5<br>8.4 | |
| **Shell plates** (mm) | 4.5 | 5 | 5.5 | 5.5 | 6 | 6.5 | |
| **Deck** | | | | | | | |
| Plates (mm) | 4.5 | 5 | 6 | 6 | 7 | 7 | |
| Beam web (mm) | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | 90 x 9 | Max. spacing 300 mm. Max. span 3.5 m |
| Beam sec. mod. ($cm^3$ | 31 | 31 | 31 | 31 | 31 | 31 | |
| **Bulwark** (mm) | 4.5 | 4.5 | 4.5 | 5 | 6 | 6 | Stiffener 50 x 6 mm. Max. spacing 600 mm |
| **Superstructure / deckhouse** (mm) | 3.5 | 3.5 | 4.5 | 4.5 | 5 | 6 | Stiffener 50 x 6 mm. Max. spacing 300 mm. |

## 3.7 Structural inspection of small, high-density polyethylene fishing vessels

The structural inspection of small HDPE fishing vessels includes the following tasks for the inspector and vessel owner or skipper.

Inspect the hull, deck, frames, bulkheads, and other structural components for their specific thickness, arrangement and strength in line with the recommendations of the following resources:

- Indian Register of Shipping.
  Guidelines on Hull Structure of Thermoplastic Vessels, 2024.
- Bureau Veritas.
  Hull in Composite, Plywood, & High-density polyethylene materials, NR546, November 2022.
- Biro Klasifikasi Indonesia (BKI).
  Guidelines for thermoplastic vessels. Volume 2, 2023 Edition.

The scantling calculations can be complex and where possible a naval architect should be involved.

### Inspection of the hull and structural integrity:

- Check that all components of the internal and external structures are present as the original build drawings (if they exist).
- Where the vessel is of welded construction inspect the welding quality and any degradation of welds.
- Where the construction is roto moulded check the overall hull and deck for any areas showing problems or degradation of the hull.
- Check the hull for any cracks, punctures, or signs of wear.
- Ensure there is no water leakage into the hull and that there are sufficient drain holes (with stoppers) so that water does not accumulate.

### Inspection of the deck and cabin:

- Inspect the deck and cabin areas for any structural damage or hazards.
- Make sure that all equipment is securely fastened.
- Check that any openings such as doors, hatches, inspection openings and vents are in serviceable condition and still closing (as required).

### Review regulatory compliance (if applicable):

- Ensure that the vessel meets all regulatory requirements and standards, including those specific to small fishing vessels.
- Stay informed of any updates or changes to regulations that may affect the vessel.

### Regular maintenance:

- Regular washing to prevent material degradation of the hull sides and bottom.
- Use mild cleaning agents.
- Dry storage when ashore.
- Routine inspections and repairs using HDPE welding and repair methods.

### Note:

HDPE plastic is a very robust material and can withstand impact and abrasion. However, it should not be assumed that it is indestructible. Inspection and maintenance are important.

# 4. Stability

## 4.1 What is stability

Stability is the vessel's ability to withstand an external heeling force, and to return to an upright position when the heeling force ceases. The vessel may heel, for example, in response to wind or wave action, or while retrieving catch over the side.

A well-designed, seaworthy vessel has adequate stability reserves. When it undertakes the hardest fishing operation permitted by its gear in the worst weather permitted by its design category,[3] it retains enough "residual stability" to withstand additional, unforeseen heeling forces. However:

**Stability is variable**, because it changes during the fishing voyage and over time if the vessel is modified. Therefore:

- Follow up the initial, as-built stability certification with periodic stability checks.

**Stability is in the hands of the skipper**, because unsafe work practices such as vessel and gear overloading reduce stability. Therefore:

- The skipper and/or the vessel owner should assess and monitor stability regularly.

**Stability may be inadequate for the intended operation**, because the stability reserves may just be too low for the vessel. Therefore:

- Inspect seaworthiness in relation to fishing method/s undertaken, area of operation and worst weather permitted for the design category.

## 4.2 Why it matters

Accidents involving small fishing vessels are often caused by stability problems. The reasons for this are well-known:

- Small vessels are the most vulnerable by virtue of their size relative to the sea state.
- Vessel modifications can reduce the vessel stability to an unsafe level.
- Seaworthy vessels may still be at risk if operated unsafely, or by untrained crews.
- Fishing operations are more hazardous because of the potential of vessel and/or gear overloading.

Insufficient stability may result in the vessel capsizing or sinking. Capsizes are often fatal, as they occur suddenly and without warning, leaving the crew little or no time to request assistance, increase the stability again, use lifesaving appliances and/or abandon ship.

[3] Design categories for small fishing vessels can be found in the safety recommendations detailed in FAO/ILO/IMO (2012).

## 4.3 How to demonstrate adequate stability

The stability of larger fishing vessels (usually 12 m and over) is typically calculated by a naval architect, who will then produce a vessel-specific stability booklet for approval by the competent authority. Some standards also require stability booklets for decked vessels of under 12 m that undertake at-risk fishing methods (e.g. those involving heavy lifts). However, most small vessel owners cannot afford a stability booklet and some inspectors may lack the specialist training required for their interpretation.[4] Small vessels seeking seaworthiness certification for insurance purposes should therefore not be advised to obtain a stability booklet as a first step, but rather to undergo inspection against the present guidelines.

Small vessels built to a recognized stability standard should carry the appropriate certification and prove that they are maintained to that standard. Should any doubts arise regarding the vessel's ongoing compliance, practical checks may be conducted as part of a seaworthiness inspection on the vessel's loading, flotation, centre of gravity, freeboard, built-in buoyancy, watertight/weathertight integrity, and water freeing arrangements (see Section. 4.4).

Small vessels with unknown stability or invalid stability documentation should pass a physical test that is suitable to their construction and intended purpose. Such a test should represent the vessel's worst foreseeable operating condition. Suitable tests are presented in international standards such as FAO/ILO/IMO (2012) and ISO (2022a; 2022b) and are described in Section. 4.5.

## 4.4 Stability-related checks

The following points should be assessed as part of a seaworthiness inspection. Further information is widely available in fishing safety handbooks worldwide, such as FAO (2019), Europêche (2007) and MCA (2020).

i. **Loading**: Any vessel can capsize if overloaded, for example with excess catch, fishing gear or ice. At inspection, ensure the vessel is loaded to its heaviest condition, allowing for typical levels of catch and a full crew. The resulting waterline should be assessed against the vessel's freeboard marks, if fitted.

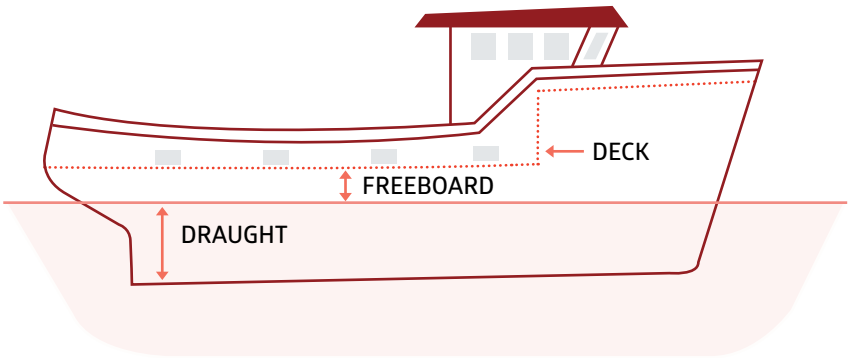
ii. **Flotation**: When loaded to its heaviest condition (i), the vessel should float approximately level. If not, adjust flotation by movement of loose gear ahead of the stability inspection.

iii. **Vertical centre of gravity position**: A vessel with a high vertical centre of gravity (VCG) heels over further than one with a low VCG and is therefore more likely to capsize. Placing a small weight high up will have the same effect as a larger weight lower down. Check if weight distribution and lifting arrangements are unusual in comparison to any sister vessels.

iv. **Freeboard**: on a decked vessel, the minimum distance between the vessel's deck and the waterline. On an undecked vessel, the minimum distance between the vessel's gunwale and the waterline. At inspection, record the minimum upright freeboard and its longitudinal (fore/aft) position, together with the horizontal datum (e.g. the transom). When conducting a stability test, the minimum residual freeboard (i.e. that on the low side) should also be recorded.

[4] The preparation of a stability booklet requires a digital drawing of the hull form, an inclining experiment to derive the baseline 'lightship' displacement and centre of gravity position and assessment against the appropriate stability criteria over a range of load conditions.

Figure 5. Draught and freeboard of a small vessel




*Source:* **Gudmundsson, A.** 2009. *Safety practices related to small fishing vessel stability. FAO Fisheries and Aquaculture Technical Paper.* No. 517. Rome, FAO. https://www.fao.org/4/i0625e/i0625e00.htm

v. **Incremental modifications**: Over time, vessels are often altered to suit new fishing methods (more structure added, usually above deck), or heavy items are replaced (engine or large winches). This typically reduces the original stability reserves. Check the vessel's history and photo records, and/or identify any modifications by comparison with a sister vessel maintained to its original design.

vi. **Built-in buoyancy (undecked vessels)**: it is recommended that every undecked vessel be fitted with buoyancy compartments, which are filled with solid buoyancy material, acceptable to the competent authority. They should be distributed in such a way that the vessel stays afloat and approximately level, to enable bailing.

Where practicable, adequate buoyancy should be demonstrated by completing a physical test in accordance with Section 4.5.2.1: "FAO simplified flooded stability test"; or Section 4.5.2.2: "ISO level flotation test". Alternatively, adequate buoyancy may be demonstrated by calculation, using the formulae provided in FAO/ILO/IMO (2012).:

vii. **Watertight integrity**: All potential sources of water ingress should be checked to ensure buoyancy is maintained. Ensure hatches, doors and vents can be securely closed. If in doubt, carry out a hose test.

viii. **Water freeing arrangements**: Water retained on board the vessel will increase the risk of capsize. If freeing ports are fitted, their lower edges should be as close as possible to the deck. Lift-up closing appliances should not be fitted to freeing ports. If freeing ports are fitted with non-return closures ('flaps'), they should be free to pivot. On undecked vessels, ensure bailers are readily available and fit for purpose.

ix. **Bilge-pumping systems**: Ensure that the bilge pumps (manual and electric) are correctly installed, of adequate capacity and in good working order.

x. **Sails and rigging**: On wind-assisted vessels, ensure their construction is appropriate (Annex H provides an example criterion) and the sails can be reefed, dropped, or stowed at sea, in preparation for adverse weather.

## 4.5 Physical stability tests

### 4.5.1 Test framework, results and actions to take

This section presents four physical stability tests for small fishing vessels:

- FAO simplified flooded stability test
- ISO level flotation test
- FAO heel test
- FAO offset load test

These tests are available in FAO/ILO/IMO (2012), the ISO standards (ISO, 2022a; 2022b) and national regulations such as MCA (2018) and Maritime New Zealand (2019). The choice of a test should suit the vessel's construction and intended operation. Not all stability tests are suitable for all vessel types. Vessels undertaking multiple fishing methods ("multipurpose") should be assessed against the hardest fishing method, which may be identified in consultation with the owner and/or competent authority.

The test results should be recorded to ensure consistency at subsequent inspections and at self-directed assessments. Inconsistent results across repeated tests may indicate that the vessel's stability has changed over time, in which case further investigation may be needed.

A vessel that meets the acceptance criteria has passed the test and its stability is therefore deemed satisfactory.

A vessel that does not meet the acceptance criteria has not passed the test and its stability is therefore deemed unsatisfactory. The owner should get the opportunity to retest the vessel.

Following an unsuccessful test, the recommended course of action is as follows:

- The vessel's seaworthiness certificate is withheld.
- Remedial actions are identified, approved by the competent authority (if required) and implemented.
- A retest is carried out.
- Where the vessel meets the acceptance criteria on the retest, a seaworthiness certificate is issued, providing no deficiencies are identified in other areas.
- Where the vessel does not meet the acceptance criteria on the retest, a restricted seaworthiness certificate may be offered, or the owner may be advised to seek naval architecture support to achieve compliance.

### 4.5.2 Physical tests for undecked fishing vessels

The FAO simplified flooded stability test and the ISO level flotation test are suitable physical stability tests for most small fishing vessels.

#### 4.5.2.1 FAO simplified flooded stability test

**Source**: FAO/ILO/IMO (2012) and Maritime New Zealand (2019)

**Scope**: Undecked fishing vessels of any length.

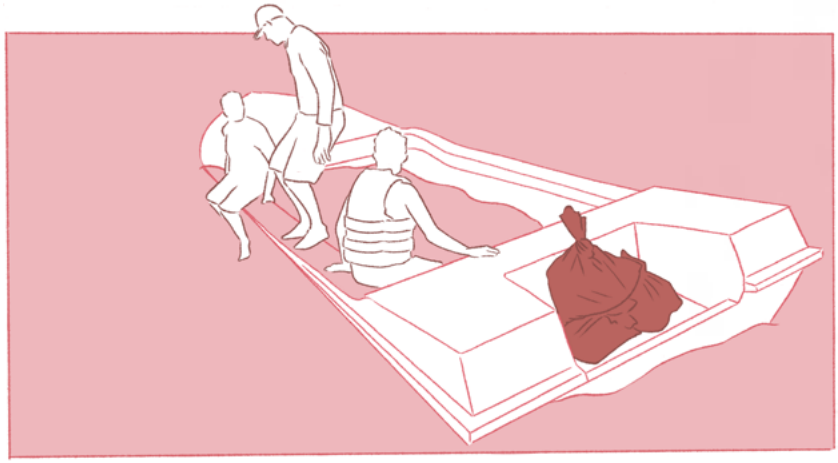
**Test conditions**: Loaded with a simulation of the equipment and motor weights + a weight equivalent to 25 x Length Overall (LOA) x Breadth (B) (kg) on the centre line amidships, and then flooded to the point of submergence. The vessel should then bear a weight of 15 kg on the gunwale amidships on one side of the vessel, without capsizing.

**Acceptance criterion**: Flooded vessel withstands all applied loads without capsizing.

#### 4.5.2.2 ISO Level Flotation Test

ISO standards (2022a; 2022b) present a two-part level flotation test:

**Figure 6.** FAO simplified flooded stability test



*Source:* Author's own elaboration.

i. A flooded stability test, in which the swamped vessel must withstand a test weight suspended over the side at each of four positions.

ii. A flooded buoyancy test, where the swamped vessel must withstand a test weight at the centre of the area available to the crew.

FAO/ILO/IMO (2012) Annex XIII describes the level flotation test as an "alternative" to the FAO simplified flooded stability test. The ISO standards also provide useful worksheets and checklists.

**Source**: FAO/ILO/IMO (2012) and ISO (2022a; 2022b).

**Scope**: Undecked fishing vessels of any length.

**Test conditions**: Loaded in the light craft condition and then equipped in accordance with FAO/ILO/IMO (2012), including: a weight equal to 25 percent of the dry weight of stores and equipment added on the interior deck, on the centre line at midships; vulnerable items (such as engine and battery) replaced with weights at the appropriate location; portable tanks removed; fixed tanks either removed or full.

**Note**:

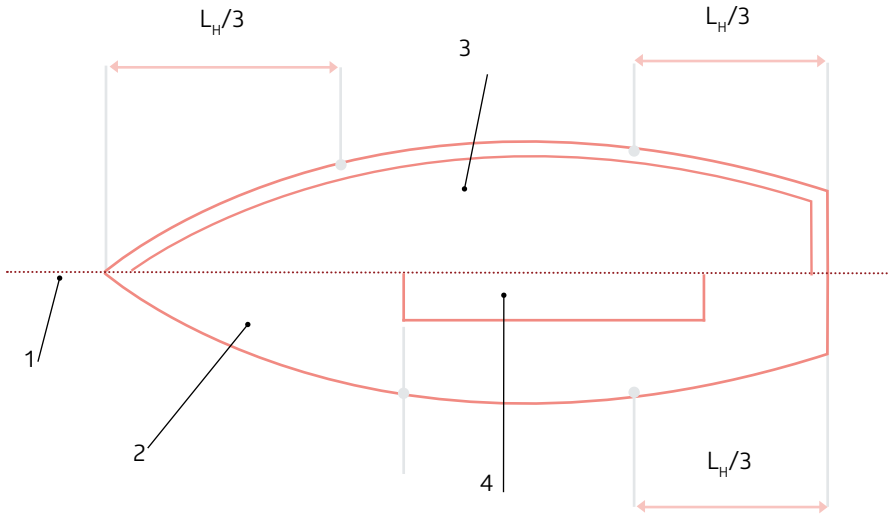
- Empty craft condition: empty boat including fittings and all items of equipment permanently attached to the craft such as fixed ballast and inboard engine (where fitted). Wind-assisted vessels are to be fitted with mast(s), boom(s) and rigging.
- Light craft condition: empty craft condition + standard equipment + removable ballast (whether solid or liquid) carried when the boat is afloat.
- Standard equipment: devices including outboard motors, anchors, chain, warps; loose external equipment such as fenders, boathook, oars and sails; essential safety equipment. Sails should be in their usual stowed position.

**Acceptance criteria**: Equilibrium heel angle of 45 degrees or less (i - flooded stability test) and approximately level flotation with the entire top of gunwale or coamings above water (ii - flooded buoyancy test). The vessel must meet both these criteria.

Figure 7. Test weights positions for flooded stability element (i) of ISO level flotation test

### 4.5.3 Physical tests for decked fishing vessels of less than 12 metres

These tests enable small, decked fishing vessels with unknown stability to demonstrate their fitness for purpose in the worst foreseeable loading condition, in a controlled environment.




**Key**

1 centreline
2 deck
3 open boat
4 cockpit

Note: $L_H$ = Length of hull

*Source:* Authors' own elaboration.

Depending on the fishing method undertaken, such a worst-case scenario is typically associated with heavy loading and/or heavy lifting. Vessels equipped for multiple fishing methods should be tested in the hardest one.

The FAO heel test is suitable for vessels that routinely undertake lifting and/or operate their gear over the side as part of their fishing operations, and where the weight used is known and repeatable. Where a vessel has no haulers and does not lift any loads, the FAO offset load test may be more suitable.

Vessels should be tested in an intact condition: that is, all watertight compartments should be dry.

#### 4.5.3.1 FAO heel test

Vessels on which equipment for shooting and hauling fishing gear has been installed should not heel more than 10 degrees when the maximum allowable weight (the weight for which the vessel and gear were designed and tested) is being lifted from the highest and furthest outboard lifting point enabled by the gear.

**Source**: FAO/ILO/IMO (2012)

**Scope**: Decked monohull and multihull vessels of less than 12 metres undertaking lifting or operating gear over one side.

**Test condition**: Loaded similarly as on departure for the fishing grounds with full fuel, stores, ice, fishing gear, etc. and in the hardest lifting scenario permitted by the gear.

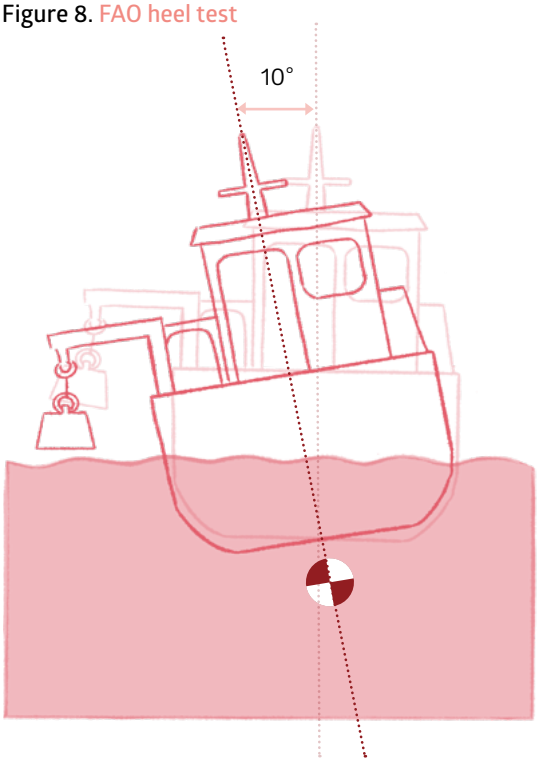
**Acceptance criterion**: Equilibrium heel angle of 10 degrees or less.

**Stability guidance**: To maximize the value of the FAO heel test, apply the Wolfson Freeboard Mark to the topsides, assess the equilibrium waterline against it, and then obtain the maximum recommended sea state for safe operation from the Wolfson Stability Notice (MCA, 2018). See Annex G for more information on how to apply the Wolfson Freeboard Mark. If required, follow this procedure to enact restricted certification.

**Note 1**: The suspended weight used and lifting point must be recorded at inspection, to ensure repeatability.

**Note 2**: Changes to the vessel's lifting or net hauling equipment that result in a large increase of the lifting/hauling capability (e.g. the installation of more powerful winches) require that the heel test be repeated with a suspended weight in keeping with the new lifting equipment.

**Figure 8.** FAO heel test




*Source:* Authors' own elaboration.

#### 4.5.3.2 FAO offset load test

A weight equivalent to 25 x Length overall (LOA) x Breadth (B) (kg) should be distributed along one side of the vessel. Stability is deemed satisfactory when the angle of heel does not exceed 15 degrees and the freeboard to the deck is not less than 75 mm at any point.

**Source**: FAO/ILO/IMO (2012)

**Scope**: Decked monohull and multihull vessels of less than 12 m that do not undertake lifting or operating gear over the side.

**Test conditions**: Loaded similarly as on departure from the fishing grounds with full catch (represented by replacement weights at the appropriate location), 30 percent stores, fuel, etc.

**Acceptance criteria**: Equilibrium heel angle of 15 degrees or less, and freeboard to the deck no less than 75 mm at any point.

**Stability guidance**: To maximize the value of the FAO offset load test, apply the Wolfson Freeboard Mark to the topsides, assess the equilibrium waterline against it, and then obtain the maximum recommended sea state for safe operation from the Wolfson Stability Notice (MCA, 2018). See Annex G for more information on how to apply the Wolfson Freeboard Mark. If required, follow this procedure to enact restricted certification.

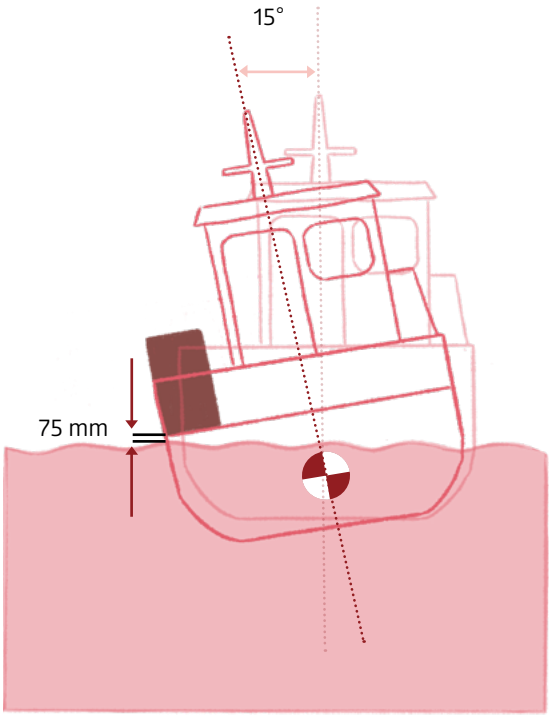
**Note 1**: The mass and position (fore/aft and port/starboard) of the offset weight used must be recorded at inspection to ensure repeatability.

**Note 2**: Enclosed containers such as drums or Intermediate Bulk Containers (IBC) are suitable offset weights if pressed up with water and leak-free. Open-top water containers such as fish crates cause free surface effects and are therefore unsuitable. Sandbags can be used if a scale is available to measure the weight.

**Note 3**: The test should ideally be conducted in three stages:

- Stage 1: Weights of one-third of 25 x LOA x Breadth (kg) distributed along one side.
- Stage 2: Weight of two-thirds of 25 x LOA x Breadth (kg) distributed along one side.
- Stage 3 (final): Weight of 25 x LOA x Breadth (kg) distributed along one side.

**Figure 9.** FAO offset load test




*Source:* Authors' own elaboration.

## 4.6 Stability information

### 4.6.1 International stability recommendations

The skipper must always assess and mitigate the risks associated with the fishing operations. The boatbuilder, inspector, consultant or trainer should provide simple stability information to the skipper to enable this. Such information should include specific instructions warning of those operating conditions which could adversely affect the stability and the trim of the vessel (FAO/ILO/IMO, 2012).[5]

The stability information should be posted on board, and readily accessible at all times for the crew and for inspections of the vessel.

### 4.6.2 Restricted certification

The stability tests recommended in Section 4.5 may not suit all combinations of hull form, construction and fishing methods. It is expected that some artisanal vessels may not meet the acceptance criteria. Local knowledge and expertise should be relied upon, to judge whether 'the vessel fails the test' or 'the test fails the vessel'.

It should also be recognized that, having been refined over many years' experience, traditional vessel designs are typically a good fit for the local fishing grounds, fishing methods and boatbuilding techniques available. Vessels of these traditional designs may be safely operated by skilled crews.

Those small fishing vessels that fail a physical stability test as a result of minor deficiencies should be offered a restricted seaworthiness certificate. The fishing operations will then be restricted to good weather and sea state conditions and/or limit the distance from land and/or allow only lower loads. Such restrictions must be evidence-based, to ensure the stability is adequate to perform the restricted operations safely.

The Wolfson Stability Guidance is an evidence-based, straightforward, inexpensive option for the restricted certification of small fishing vessels. It is based on the vessel's residual freeboard while loaded or lifting (which may be easily measured as part of an FAO stability test) and provides the maximum recommended sea state for safe operation. Skippers can manage the risk of ongoing fishing operations by consulting the Wolfson Stability Notice and (where appropriate) assessing their vessel's waterline against the Wolfson Freeboard Mark, as described in Annex G.

[5] The trim of a vessel is the difference in draught between the forward and aft ends of the vessel.

# 5. Safety equipment

During a safety equipment inspection, the vessel will be checked for having the minimum standard safety gear and equipment on board, such as life jackets, fire extinguishers, first-aid kits, and emergency flares. The inspection checks that all equipment is in good working condition and conforms to its safety plan (if available). Small fishing vessels may use an emergency 'grab bag', like the one promoted by the Pacific Community (2017), which contains all safety, emergency and communication equipment for small fishing vessels, see Annex C.

The proper stowage, ease of access and availability for immediate use of the safety equipment should be ascertained at inspection. Competence in the use of life-saving equipment and fire, first-aid and emergency equipment should be verified (if possible).

**Emergency procedures**: Review emergency procedures with the crew, including what to do in case of fire, flooding, or man overboard situations.

**Navigation and communication equipment**: Verify that the vessel has functioning navigation lights, compass, GPS, and VHF radio for communication with shore and other vessels.

The equipment carried on board is determined by a vessel's size, range and operation. Example lists of safety equipment are provided in Annexes A and B, where reference is made to fire protection and firefighting, life-saving appliances and radio communications. National laws and regulations for minimum safety equipment to carry on board always prevail over these guidelines.

Typical safety equipment for small fishing vessels would include the following:

**Firefighting**

- Fire extinguishers
- Fire buckets/bailers
- Sand bucket
- Fire blanket
- Fire axe

**Life-saving appliances**

- Life jackets for all crew
- Life raft
- Buoyant apparatus (e.g. life buoy or ring)
- Distress signals: hand flares
- Handrails or capsize rope
- Whistle, mirror and torch
- Means of recovering a person from the water (e.g. rescue ladder, rescue sling or scramble net)
- First-aid kit

### Communication and navigation equipment

- Radio: fitted or handheld VHF
- Mobile (cellular) telephone
- Radio receiver for weather forecasts
- Compass, navigation maps (and GPS, fitted or handheld)
- Navigation light(s)

### Vessel marking

Various countries have regulations for the marking of fishing vessels to facilitate their identification in case of emergencies, and for inspections. Vessel markings should be white on a black background or black on a white background and should meet the required sizes and placements on the hull. Often it is also required that the wheelhouse top is marked. Specific colour schemes for fishing vessels may also be mandatory to enhance their identification at sea.

# 6. Inspection of machinery and electrical installations

Seaworthiness and safety inspections of small fishing vessels generally include an inspection of the engine, machinery and electrical system on board. Such an inspection includes the following tasks for the inspector and vessel owner or skipper.

**Main engine, auxiliary machinery, and any generators**:

- Inspect the engine and gearbox (record make, model, date of manufacture)
- How many engines are fitted?
- What is the power of engine(s)?
- Is the engine inboard or outboard?
- Is the engine petrol or diesel?
- Is there a means of securing the outboard engine to the transom?
- For outboard engines of over 20 HP, is there an engine-well that drains overboard?
- Is there an alternative means of propulsion such as oars, paddles or sails?

**Engine and auxiliary machinery functionality inspection**:

- cooling and lubrication systems
- heat exchanger
- engine controls / steering
- engine starting condition/noise
- engine idle speed/noise
- engine pads/ foundation/ transom reinforcement
- engine fastenings
- integrity and condition of flexible joints
- no cooling water, fuel or oil leakages
- cooling water pump, intake and return valves (cooling water indicator for outboard motors)
- exhaust piping position, cooling and insulation
- trim tilt system (outboard motors)
- engine hood lock levers (outboard motors)
- functioning of meters and gauges.

**Propulsion and steering systems**:

- Inspect and record propeller shaft clearances, by lifting the shaft and using a clock gauge or feeler gauges. A decision can then be made on whether withdrawal or renewal of the shaft is required.

- Check the condition of propeller hub, blades and operation (for controlled pitch propellers).
- Check and record the rudder pintle bearing clearances.
- Check the steering system (hydraulic or manual).
- Does the vessel have alternate or emergency steering arrangements?

**Fuel system inspection**:

- fuel filters and water separators
- piping or fuel supply line
- valves and gauges for both fuel and oil
- quick closing valves

**Air intakes and ventilation system inspection**:

- airduct inlets
- airduct closures
- their height and positions.

**Seawater/ bilging system inspection**:

- sea inlet valves, sea chest and strainers
- electrical pumps
- hand pumps
- bilge pumps
- functioning, capacity, piping, filters and valves
- alarms.

**Electrical systems inspection**:

- Inspect the electrical systems on the vessel, including wiring, lights, and battery.
- Make sure all connections are secure and there are no exposed wires.
- Charging and supply from generator(s).
- Main switchboard and alarms (functioning of meters and gauges).
- Trim tilt system (for outboard motors).
- Electrical appliances: safe and have correct wiring fuses, circuit breakers/ protection against overload.
- Switchboard: guarded, clearly marked, correct ratings, mats or gratings provided.
- Insulation resistance: condition of cable and resistance.
- Emergency generator system runs safety and navigation equipment.
- Shore power: if fitted, reliable, safely installed with appropriate circuit breakers and sufficient for the necessary services working together, for safety as well as domestic purposes.
- Electrical system load tests (as applicable).

The inspection also includes a check of repair and maintenance tools available on board, as well as key spare parts for the engine. Example checklists for the seaworthiness and safety inspection of small fishing vessels are provided in Annexes A and B.

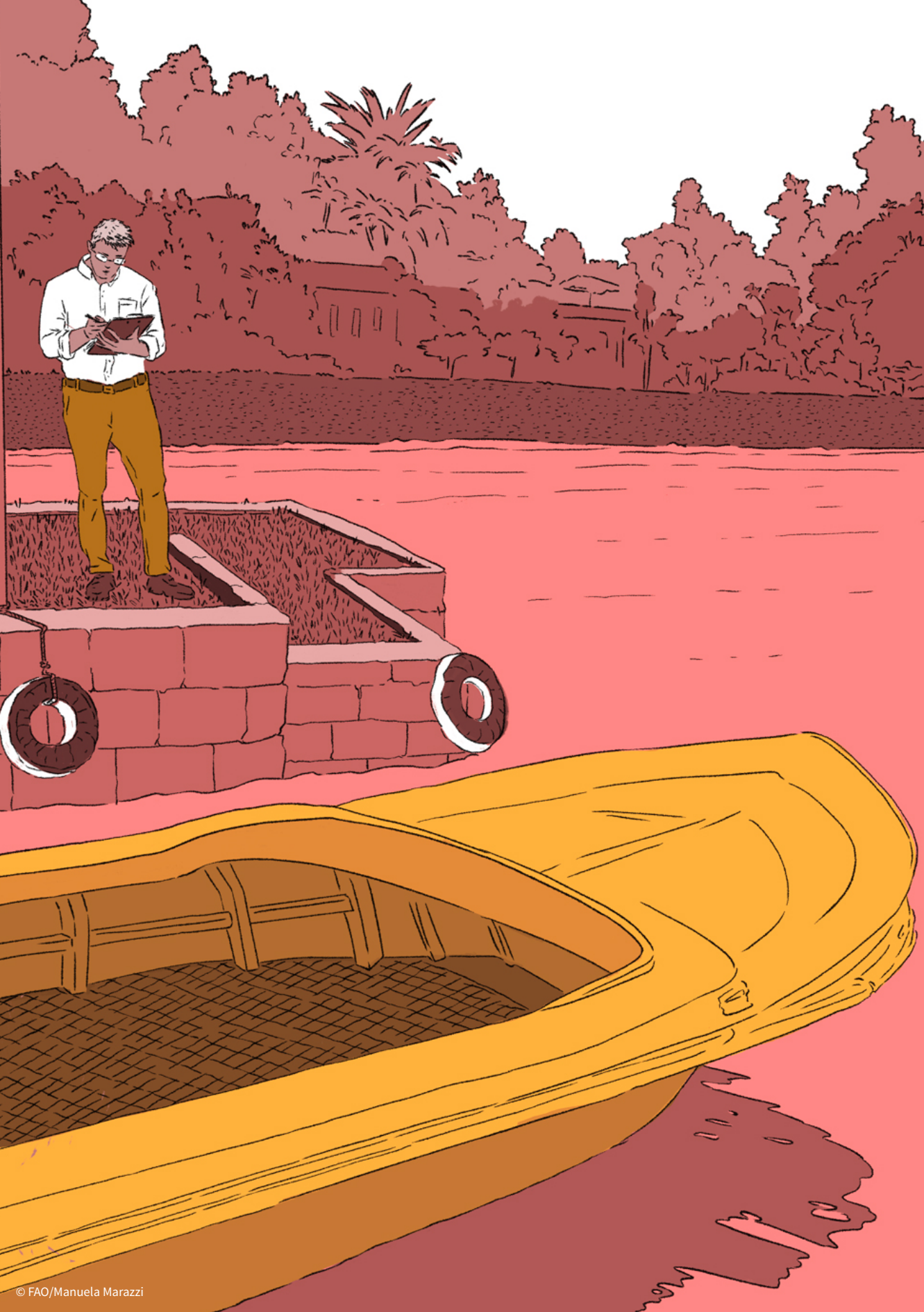
Annex A: example checklist for a decked wooden vessel of less than 12 m in length.

Annex B: example checklist for an undecked fibreglass-reinforced plastic vessel.

These checklists contain sections for the inspection and recording of:

- vessel history;
- hull;
- machinery;
- safety equipment;
- stability.

Sample inspection checklists for various types of small fishing vessels can be found online at https://www.fao.org/fishery/services/storage/fs/fishery/documents/infopesca/2025/SSI_checklist.xlsx. The checklist tool (in MS Excel) allows inspectors to generate specific vessel checklists by selecting vessel hull material (e.g. wood, FRP, aluminium, steel, HDPE), decked/undecked, and inboard engine/outboard motor.



# 7. Reporting and documentation

The fishing vessel inspection also includes checking the vessel's documents. This should be done in the presence of the vessel owner or skipper, and the findings are entered in the inspection report. The vessel documentation includes (where applicable) the following:

- certificate of registry;
- local fishing vessel license / authorization to fish;
- record of the vessel's modifications and previous inspections;
- safe manning certificate;
- inventory of machinery and equipment; and
- vessel stability information.

Registered fishing vessels should be assigned a unique vessel identifier (UVI) as part of the registration process. Such a number should be permanently carved, marked, or affixed to the hull for identification purposes. Guidance on the marking of fishing vessels to facilitate identification is available in the *Standard Specifications for the Marking and Identification of Fishing Vessels* (FAO, 1989).

# 8. Awareness-raising and capacity building

Successful implementation of these guidelines requires the collaboration of maritime and fisheries authorities, insurers, vessel inspectors, boatbuilders and fisherfolk organizations. International and national organizations (both governmental and non-governmental) can support in the introduction of these guidelines and the initial implementation phase at country level.

To facilitate the application of these guidelines a spreadsheet-based (MS Excel) checklist tool has been developed which includes hull, machinery, safety and stability items that need to be inspected to certify the fitness for purpose of small fishing vessels. This tool automatically lists the relevant items based on the selection of hull material, engine type and vessel type (decked or undecked). The tool can be accessed online here: https://www.fao.org/fishery/services/storage/fs/fishery/documents/infopesca/2025/SSI_checklist.xlsx. The items listed for inspection are based on the current *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels* (FAO/ILO/IMO, 2012) and the *Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations* (FAO/ILO/IMO, 2014), which are internationally accepted boat construction and outfitting standards. Example checklists for two vessel types are provided in Annex A and Annex B.

The checklists also include the collection of information on the vessel history, ownership, modifications made and past accidents (if any). This information is important, as these guidelines aim to facilitate the supply of insurance services for small fishing vessels worldwide, and to give practical guidance for conducting seaworthiness and safety inspections of small fishing vessels. Insurers and financial service providers that provide credit for the purchase of small fishing vessels need to be aware of the safety and seaworthiness of the vessels they insure or finance.

Key stakeholders should build the necessary capacity to implement these guidelines.

## 8.1 Recommended actions for maritime and fisheries authorities

Maritime and fisheries authorities are encouraged to support the implementation of these guidelines for the seaworthiness and safety inspection of small fishing vessels. The absence of a seaworthiness and safety inspection is a barrier to the insurance of these vessels, and so the guidelines and related checklists are a vital part of removing this barrier.

The following actions are recommended:

- Provide sector information: The competent authorities should compile statistics for small fishing vessels per region, including the number of the vessels, their sizes, age distribution, average values and vessel accidents, and losses reported.

- Introduce mandatory vessel registration and certification: The competent authorities should legislate for the mandatory registration and certification for all small fishing vessels. This includes issuing registration certificates and/or boatbuilding certificates by approved builders, which confirm that vessels meet recognized construction and safety standards. Moreover, the digitalization of registrations and controls would simplify the implementation of legislation and its enforcement.

- **Conduct training to implement the guidelines:** The competent authorities should organize the training of staff, independent vessel surveyors, marine engineers and fisherfolk representatives in conducting vessel stability tests, seaworthiness and safety inspections, and the use of the checklists.

- **Organize regular seaworthiness and safety inspections:** The competent authorities should carry out regular inspections that include checks on vessel strength, structure, stability, and safety equipment. These inspections are needed to ensure that vessels are fit for purpose and comply with safety regulations. Such tests should also be conducted in remote fishing communities.

- **Raise awareness on the guidelines:** The competent authorities should create awareness among fishing vessel owners and boatbuilders about the guidelines, the related vessel stability and safety requirements, and inspections. Awareness-raising tools could include information leaflets, videos, meetings with fisherfolk organizations, social media and radio announcements.

- **Develop policies and legislation:** The competent authorities should consider preparing enabling policies and regulations for the seaworthiness and safety inspection of small fishing vessels in order to introduce small fishing vessel inspections that meet at least the internationally accepted minimum standards laid out in these guidelines.

## 8.2 Recommended actions for national stakeholders

Fisherfolk organizations, boatbuilders' organizations, insurers, financial service providers and non-governmental organizations with an interest in sustainable fisheries, have important roles to play in the implementation of these guidelines. The following actions are recommended:

- **Inform members and staff:** Fisherfolk and boatbuilders' organizations, finance and insurance providers, should organize awareness-raising and information meetings and workshops for their members and staff on the guidelines. These events should outline the purpose and objectives of the guidelines, and inform members and staff of their role in implementing the guidelines.

- **Increase institutional and organizational capacity:** Fisherfolk and boatbuilders' organizations, finance- and insurance providers, should collaborate with the competent authorities to increase capacity for the implementation of the guidelines. This includes, among other things:

    - Supplying the boatbuilders' vessel design drawings, stability booklets and stability test results of small fishing vessels to the authorities and insurers, in order to facilitate vessel inspections.
    - Insurers preparing the informative leaflets, policy documents, and insurance application forms for the roll-out of the fast-track system for small fishing vessel insurance.[6]
    - Finance and insurance providers participating in vessel safety and seaworthiness inspection tours conducted by the competent authorities to promote fast-track insurance for small fishing vessels.

  **Pilot test the guidelines:** Fisherfolk organizations and insurers should actively collaborate with the authorities to pilot the guidelines in selected fishing communities and increase insurance access for small-scale fishers.

[6] Detailed in the *Guidelines for insurance value and risk assessment of small fishing vessels* (FAO, forthcoming).

## 8.3 Recommended actions for international stakeholders

To achieve the objectives of these guidelines and to support their effective implementation, international organizations, whether governmental or non-governmental, and financial services providers should recognize the special circumstances and requirements of small-scale fishers in developing countries. These stakeholders should collaborate with the authorities, fisherfolk representatives and insurers to address the vessel safety and vessel insurance needs of small fishing vessel owners, especially in areas of financial, legal and technical assistance, technology transfer, and capacity building.

The following actions are recommended:

- Endorse or adopt the guidelines: International and regional stakeholders are invited to endorse or adopt these guidelines and promote their implementation among the members of these organizations.

- Provide technical advice: International and regional stakeholders should (upon request) assist their members with technical assistance and capacity building to facilitate implementation of these guidelines (and the related Guidelines for insurance value and risk assessment of small fishing vessels).

- Give legal and policy advice: International and regional stakeholders should (upon request) assist their members with legal and policy assistance. This could include, among other things:

    - The review of existing fisheries and maritime laws and regulations for gaps and entry points, in order to incorporate mandatory vessel safety inspection and insurance requirements for small fishing vessels.
    - The preparation of draft compulsory regulations for the "Seaworthiness and safety inspection of small fishing vessels" and for the "Insurance value and risk assessment of small fishing vessels".

Collaboration in the implementation of the present guidelines will also support the development of – and access to – other services that are important for small-scale fishing communities, such as microfinance, savings, credit and social protection schemes. Ensuring that the access to insurance and these other services is also available to women will be key to the widespread and successful implementation of these guidelines. FAO will contribute to the implementation of these guidelines through its SSF Guidelines implementation support programme. Finally, the implementation of these guidelines contributes to achieving the Sustainable Development Goals (SDGs); it is therefore a responsibility for all stakeholders.

# References


**BKI.** 2023. Guidelines for thermoplastic vessels. Volume 2, 2023 Edition. Biro Klasifikasi Indonesia. In: *Guidelines for Classification and Construction: Part 3 Special Ships.* [Cited 27 March 2025]. https://bit.ly/42dnVBa

**Bureau Veritas.** 2022. *Hull in Composite, Plywood, & High-density polyethylene materials, NR546, November 2022.* [Cited 27 March 2025]. https://erules.veristar.com/dy/data/bv/pdf/546-NR_2022-11.pdf

**Europêche**. 2007. European Handbook for the Prevention of Accidents at Sea and the Safety of Fishermen. Brussels, Europêche.

**FAO.** 2025. *Guidelines for insurance value and risk assessment of small fishing vessels.* Rome. https://doi.org/10.4060/cd5007en

**FAO.** 2024a. *The State of World Fisheries and Aquaculture 2024 - Blue Transformation in Action.* Rome. Italy. https://openknowledge.fao.org/items/06690fd0-d133-424c-9673-1849e414543d.

**FAO.** 2024b. *Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas.* Rome. Italy. https://doi.org/10.4060/cd2921m.

**FAO.** 2019. *Safety at sea for small-scale fishers.* Rome. https://openknowledge.fao.org/handle/20.500.14283/ca5772en.

**FAO.** 2015a. *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication.* Rome, Italy. https://openknowledge.fao.org/handle/20.500.14283/i4356en.

**FAO.** 2015b. *Fishing operations. Best practices to improve safety at sea in the fisheries sector.* FAO Technical Guidelines for Responsible Fisheries. No.1, Suppl.3. Rome. Italy. https://openknowledge.fao.org/handle/20.500.14283/i4740e.

**FAO.** 1989. *The Standard Specifications for the Marking and Identification of Fishing Vessels.* Rome, Italy. https://www.fao.org/3/t8240t/t8240t.pdf .

**FAO/BOBP-IGO.** 2023. *Fibreglass-reinforced plastic (FRP) boat repair in the tropics: A practical guide.* FAO/Bay of Bengal Programme–Inter-Governmental Organisation. Rome, Italy. https://doi.org/10.4060/cc3814en.

**FAO/ILO/IMO.** 2001. *Document for Guidance on Training and Certification of Fishing Vessel Personnel (2001 Edition)*. International Maritime Organization. London.

**FAO/ILO/IMO.** 2005. *Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels*. International Maritime Organization. London.

**FAO/ILO/IMO.** 2006. *Code of Safety for Fishermen and Fishing Vessels, Part B. Safety and Health Requirements for the Construction and Equipment of Fishing Vessels.* International Maritime Organization. London.

**FAO/ILO/IMO.** 2012. *Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels.* Rome, Italy. https://openknowledge.fao.org/handle/20.500.14283/i3108e.

**FAO/ILO/IMO.** 2014. *Implementation Guidelines on Part B of the Code, the Voluntary Guidelines and the Safety Recommendations.* Rome. Italy. https://openknowledge.fao.org/server/api/core/bitstreams/849fbcb6-1749-4bd1-b5f7-4a2e63d495db/content.

**Gudmundsson, A.** 2009. *Safety practices related to small fishing vessel stability.* FAO Fisheries and Aquaculture Technical Paper. No. 517. Rome, FAO. https://www.fao.org/4/i0625e/i0625e00.htm.

**Gulbrandsen, O.** 2012. *Fuel savings for small fishing vessels – a manual.* Rome, FAO. https://openknowledge.fao.org/items/c771b67d-32cc-4418-b940-e6f6c47deca2.

**IMO.** 2018. Cape Town Agreement of 2012: Consolidated text of the regulations annexed to the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, as modified by the Cape Town Agreement of 2012. 2018 Edition. In: *IMO*. London. [Cited 1 September 2024]. https://www.imo.org/en/MediaCentre/HotTopics/Pages/CapeTownAgreementForFishing.aspx.

**IRS.** 2024. *Guidelines on Hull Structure of Thermoplastic Vessels. Revision 1, September 2024.* Indian Register of Shipping. Guidelines.[Cited 27 March 2025]. https://www.irclass.org/media/7469/guidelines-on-hull-structure-of-thermoplastic-vessels-provisional-_rev1_sept-2024.pdf.

**ISO.** 2022a. ISO 12217-1:2022 Small craft - Stability and buoyancy assessment and categorization. Part 1: Non-sailing boats of hull length greater than or equal to 6 m, 2022. International Organization for Standardization (ISO)Technical Committee (TC) 188. In: *ISO – Online Browsing Platform (OBP)*. [Cited 1 December 2024]. https://www.iso.org/standard/79072.html

**ISO**. 2022b. ISO 12217-3:2022 Small craft - Stability and buoyancy assessment and categorization. Part 3: Boats of hull length less than 6 m. International Organization for Standardization (ISO) Technical Committee (TC) 188. In: *ISO – Online Browsing Platform (OBP)*. [Cited 1 December 2024]. https://www.iso.org/standard/79074.html

**Maritime & Coastguard Agency.** 2021. MSN 1871 Amendment No. 2 (F) The Code of Practice for the Safety of Small Fishing Vessels of less than 15m Length Overall. In: *GOV.UK.* London. [Cited 1 November 2024]. https://www.gov.uk/government/publications/msn-1871-amendment-no-2-f-the-code-of-practice-for-the-safety-of-small-fishing-vessels-of-less-than-15m-length-overall

**Maritime & Coastguard Agency.** 2018. Marine Guidance Note 526 (F) Stability Guidance for Fishing Vessels - Using the Wolfson Method," November 2018. In: *GOV.UK*. London. [Cited 1 November 2024]. https://www.gov.uk/government/publications/mgn-526-stability-guidance-for-fishing-vessels-wolfson-method.

**Maritime & Coastguard Agency.** 2020. Fishermen's Safety Guide - A guide to safe working practices and emergency procedures for fishermen. In: *GOV.UK.* London. [Cited 1 October 2024]. https://www.gov.uk/government/publications/fishermens-safety-guide.

**Maritime New Zealand.** 2019. Maritime Rules Part 40D: Design, Construction and Equipment - Fishing Ships. In: *Maritime New Zealand – Rules.* Wellington. [Cited 1 November 2024]. https://www.maritimenz.govt.nz/rules/all-rules/maritime-rules-part-40d/.

**Met Éireann - Irish Meteorological Service.** 2025. Marine terminology. In: *MET.IE*. Dublin. [Cited 7 March 2025]. https://www.met.ie/forecasts/marine-inland-lakes/sea-area-forecast-terminology.

**Pacific Community.** 2017. The emergency grab bag [Leaflet]. In: *Pacific Community*. Noumea, New Caledonia [Cited 22 January 2025]. https://www.spc.int/digitallibrary/get/2snnu.

**Willis, S. and Holliday, E.** 2022. Triggering Death - Quantifying the True Human Cost of Global Fishing. In: *FISH Safety Foundation*. Kapiti Coast, New Zealand. [Cited 1 September 2024]. https://fishsafety.org/wp-content/uploads/2024/02/White-Paper-Triggering-Death-November-2022.pdf.

# Annexes

## A. Example checklist for a decked, wooden fishing vessel

This Annex provides example checklists to support the inspection of a decked, wooden fishing vessel of less than 12 m in length and fitted with an inboard engine.

| Hull Checklist | | | | | | |
|---|---|---|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | | Vessel registration No. | | | |
| Name: | | | District No.: | | | |
| Length overall: | | | Place of survey: | | | |
| Date of survey: / / | | | Validity of survey: / / | | | |
| Vessel History: | **HULL** | | **DECK** | | **MOTOR** | |
| Date of build/ commissioning: / / | **Wood** | | **Decked** | | **Inboard** | |
| Original owner: | Wood | **W** | Undecked | **U** | Inboard | **I** |
| Change of ownership: | Fibreglass | **F** | Decked | **D** | Outboard | **O** |
| Modifications carried out: | Aluminium | **A** | | | | |
| Survey after modification: | Steel | **S** | | | | |
| Accident / damage & repairs | HDPE | **H** | | | | |

Hull items to be inspected for a decked-wood hull vessel with inboard motor

| SR | ITEMS INSPECTED | Remark | Comments |
|---|---|---|---|
| **1010** | **Outer shell/planking, damage, borers** | | |
| **1030** | **Stem** | | |
| 1040 | Keel | | |
| 1050 | Bilge Keel | | |
| 1060 | Stem/wing | | |
| 1080 | Spikes/fastenings | | |
| 1090 | Caulking | | |
| 1100 | Stern box/board/transom | | |
| 1110 | Rescue ladder | | |
| 1120 | Rudder and pintle clearances | | |
| 1130 | Rudder stop | | |
| 1140 | Propeller hub and Blades | | |
| 1150 | Axle and bearings | | |
| 1180 | Transducer | | |
| 1190 | Load lines | | |

| | | | |
|---|---|---|---|
| 1200 | Superstructure | | |
| 1210 | Bulwark | | |
| 1220 | Bulwark planking | | |
| 1230 | Guardrails/handles | | |
| 1240 | Ladders | | |
| 1250 | Mast, boom, gooseneck | | |
| 1260 | Deck crane | | |
| 1270 | Emergency exit | | |
| 1280 | Sole | | |
| 1290 | Drain holes | | |
| 1300 | Deck condition, non-skid, perforations, holes | | |
| 1310 | Hatches hatches/coamings: condition, height and operation. Seal properly when closed, clips and dogs operate freely | | |
| 1320 | Box covers | | |
| 1330/1 | Freeing ports' lower edges at deck. | | |
| 1330/2 | Freeing port flaps (if fitted) pivot freely | | |
| 1330/3 | No lift-up closing appliances fitted to freeing ports. | | |
| 1330/4 | Freeing port dimensions in accordance to FAO Safety Recommendations (Annex VIII). | | |
| 1340 | Deck frame and stanchions | | |
| 1350 | Frames | | |
| 1360 | Divisions/bulkheads frames, intact condition, penetrations properly sealed | | |
| 1370 | Engine casing | | |
| 1380 | Hatch cover and coaming | | |
| 1390 | Means for securing weather tightness | | |
| 1400 | Trim tabs | | |
| 1410 | Fastening device/bollards | | |
| 1420 | Securing of fishing gear | | |
| 1430 | Air pipes to tanks | | |
| 1440 | Tank filling equipment | | |
| 1460 | Engine foundations | | |
| 3706 | Watertight door(s) | | |
| 1990 | Other | | |
| | | | |

| Survey results | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | N/A |
| **No remarks** | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |
| | | Remarks entered into: | | |
| Vessel surveyor | | Inspection book _____20___ | | |
| | | Book of remarks _____20___ | | |
| Verification by customer that survey has taken place | | Computer _____20___ | | |

## Machinery Checklist

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | Vessel registration No. | | | | | |
| Name: | | District No.: | | | | | |
| Length overall: | | Place of survey: | | | | | |
| Date of survey: / / | | Validity of survey: / / | | | | | |
| Vessel History: | | **HULL** | | **DECK** | | **MOTOR** | |
| Date of build/ commissioning: / / | | **Wood** | | **Decked** | | **Inboard** | |
| Original owner: | | Wood | **W** | Undecked | **U** | Inboard | **I** |
| Change of ownership: | | Fibreglass | **F** | Decked | **D** | Outboard | **O** |
| Modifications carried out: | | Aluminium | **A** | | | | |
| Survey after modification: | | Steel | **S** | | | | |
| Accident / damage & repairs | | HDPE | **H** | | | | |

Machinery items to be inspected for a decked-wood hull vessel with inboard motor

| SR | ITEMS INSPECTED | Remark | Comments |
|---|---|---|---|
| **2000** | **Engine** | | |
| 2010 | Engine conforms to regulations | | |
| 2020 | Engine is functional | | |
| 2030 | Water leaks | | |
| 2040 | Oil leaks | | |
| 2070 | Engine controls | | |
| 2080 | Propeller gear, condition and clearances | | |
| 2090 | Engine fastenings | | |
| 2100 | Engine pads | | |
| 2110 | Flexible junctions | | |
| 2120 | U-joint | | |
| 2130 | Steering engine | | |
| **2200** | **Fuel equipment** | | |
| 2210 | Fuel filters | | |
| 2220 | Fuel piping | | |
| 2230 | Fuel separator | | |
| 2240 | Oil tank valves | | |
| 2250 | Quantity gauges | | |
| 2260 | Glass valves | | |
| 2270 | Quick closing valve | | |

| | | | |
|---|---|---|---|
| **2300** | **Airducts** | | |
| 2310 | Air ducts to engine | | |
| 2320 | Air duct closures | | |
| 2330 | Height and position | | |
| **2350** | **Cool. water equip** | | |
| 2360 | Cool. water piping | | |
| 2370 | Sea water piping to engine | | |
| 2380 | Sea water intake | | |
| **2400** | **Seawater/bilges** | | |
| 2410 | Hand pumps, including quantity | | |
| 2420 | Electrical pumps, including quantity | | |
| 2430 | Eng. pumps qty: | | |
| 2440 | Bilge piping/valves | | |
| 2450 | Alarm sea water in engine | | |
| 2460 | Bilge filters | | |
| 2470 | Sea water pump/deck | | |
| 2480 | Bottom valves | | |
| 2490 | Sea water piping | | |
| **2500** | **Fire/see equipm.** | | |
| **2550** | **Exhaust piping** | | |
| 2560 | Sea water cooling | | |
| 2570 | Insulation | | |
| 2580 | Position | | |
| **2600** | **Spares and tools** | | |
| 2610 | Belts | | |
| 2620 | Hoses | | |
| 2630 | Lubrication filter | | |
| 2640 | Fuel filter | | |
| 2650 | Tools | | |
| **2700** | **Aux. engine** | | |
| 2710 | Auxiliary engine | | |
| 2720 | Gauges | | |
| 2730 | Oil leaks | | |
| **2800** | **Electric equipment** | | |
| 2810 | Gen. cond. el. equip | | |

| | | | |
|---|---|---|---|
| 2820 | Switchboard, gauges, fuse mark. Cable insulation resistance | | |
| 2830 | Generator 1 is functional | | |
| 2840 | Generator 2 is functional | | |
| 2850 | Special survey demanded | | |
| **2900** | **Engine room** | | |
| 2910 | Lighting is adequate | | |
| 2920 | Orderliness | | |
| 2930 | Floors / soles | | |
| 2940 | Servicing arrangement | | |
| 2950 | Safety covers | | |
| 2960 | Side valves | | |
| 2990 | Other | | |
| | | | |

Survey results

| 0 | 1 | 2 | 3 | N/A |
|---|---|---|---|---|
| No remarks | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |

| | |
|---|---|
| | Remarks entered into: |
| Vessel surveyor | Inspection book _____20___ |
| | Book of remarks _____20___ |
| Verification by customer that survey has taken place | Computer _____20___ |

## Safety and Stability Checklist

| | | | |
|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | Vessel registration No. | |
| Name: | | District No.: | |
| Length overall: | | Place of survey: | |
| Date of survey: / / | | Validity of survey: / / | |

| Vessel History: | HULL | | DECK | | MOTOR | |
|---|---|---|---|---|---|---|
| Date of build/ commissioning: / / | **Wood** | | **Decked** | | **Inboard** | |
| Original owner: | Wood | **W** | Undecked | **U** | Inboard | **I** |
| Change of ownership: | Fibreglass | **F** | Decked | **D** | Outboard | **O** |
| Modifications carried out: | Aluminium | **A** | | | | |
| Survey after modification: | Steel | **S** | | | | |
| Accident / damage & repairs | HDPE | **H** | | | | |

Machinery items to be inspected for a decked-wood hull vessel with inboard motor

| SR | ITEMS INSPECTED | Remark | Date | Type | Quantity |
|---|---|---|---|---|---|
| **3100** | **Equipment** | | | | |
| 3513 | Inflatable life raft ( > 100.NM ) | | | | |
| 3514 | Buoyancy apparatus life raft ( > 20.NM ) | | | | |
| 3519 | Release mechanism for life raft ( > 100.NM ) | | | | |
| 3510 | Immersion suits ( > 100.NM ) | | | | |
| 3523 | Floatation work suits ( > 100.NM ) | | | | |
| 3511 | Lifejackets | | | | |
| 3101 | Certificate of Measurement | | | | |
| 3202 | Magnetic compass | | | | |
| 3206 | Medicine chest / First aid kit | | | | |
| 3204 | Fire alarm | | | | |
| 3108 | Telecomm. equipment | | | | |
| 3501 | Hand flares | | | | |
| 3502 | Rocket parachutes | | | | |
| 3212 | Fire extinguishers | | | | |
| 3205 | Fire-extinguishing syst. | | | | |

| SR | ITEM INSPECTED | Remark | Comments | | |
|---|---|---|---|---|---|
| 3302 | Markings | | | | |
| 3424 | Navigation lights | | | | |
| 3425 | Fishing lights | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 3515 | Fixed painter for life rafts | | | | |
| 3516 | Inflatable life raft handle | | | | |
| 3303 | Safety colour | | | | |
| 3504 | Lifebuoys | | | | |
| 1390 | Means for securing weathertightness | | | | |
| 3718 | Anchor-chain and rope | | | | |
| 3726 | Drop anchor | | | | |
| 3702 | Net winch safety equipment | | | | |
| 3604 | Emergency steering | | | | |
| 3712 | Fixed rescue ladder | | | | |
| 3430 | Torch | | | | |
| 3401 | Binoculars | | | | |
| 3413 | National flag | | | | |
| 3406 | Almanac | | | | |
| 3405 | Charts / GPS | | | | |
| 3426 | Nautical instruments | | | | |
| 3431 | Fog signalling apparatus | | | | |
| 3419 | Whistle and bell | | | | |
| 3209 | Inspection book | | | | |
| 3908 | Instruction cards | | | | |
| 3914 | Ventilation | | | | |
| 3904 | Stove–fire prot.and fuse | | | | |
| 3909 | Lavatories | | | | |
| 3524 | Rescue quoit | | | | |
| 3990 | Other | | | | |
| | **Stability** | | | | |
| | Valid stability information book, if required | | | | |
| | Wolfson Stability Notice or equivalent | | | | |
| | Decked Vessel Freeboard Mark | | | | |
| | Stability history documented? | | | | |
| | FAO Heel Test | | | | |
| | FAO Offset Load Test | | | | |
| | Other equivalent stability test? (specify) | | | | |
| | Restricted certification? (if so, specify) | | | | |

| Survey results | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | N/A |
| No remarks | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |
| | | Remarks entered into: | | |
| Vessel surveyor | | **Inspection book** _____**20**___ | | |
| | | Book of remarks _____20___ | | |
| Verification by customer that survey has taken place | | Computer _____20___ | | |

## B. Example checklist for an undecked, fibreglass-reinforced plastic fishing vessel

This Annex provides example checklists to support the inspection of an undecked, FRP fishing vessel fitted with an outboard motor.

| Hull Checklist | | | | | | |
|---|---|---|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | | Vessel registration No. | | | |
| Name: | | | District No.: | | | |
| Length overall: | | | Place of survey: | | | |
| Date of survey: / / | | | Validity of survey: / / | | | |
| Vessel History: | HULL | | DECK | | MOTOR | |
| Date of build/ commissioning: / / | **Fibreglass** | | **Undecked** | | **Outboard** | |
| Original owner: | Wood | W | Undecked | U | Inboard | I |
| Change of ownership: | Fibreglass | F | Decked | D | Outboard | O |
| Modifications carried out: | Aluminium | A | | | | |
| Survey after modification: | Steel | S | | | | |
| Accident / damage & repairs | HDPE | H | | | | |

Hull items to be inspected for a undecked fibreglass hull vessel with outboard motor

| SR | ITEMS INSPECTED | Remark | Comments |
|---|---|---|---|
| 1020 | Gelcoat, stiffness, osmosis, de-lamination | | |
| 1030 | Stem | | |
| 1040 | Keel | | |
| 1060 | Stem/wing | | |
| 1100 | Stern box/board/transom | | |
| 1140 | Propeller hub and Blades | | |
| 1160 | Outboard drive | | |
| 1230 | Guardrails/handles | | |
| 1280 | Sole | | |
| 1290 | Drain holes | | |
| 1330/5 | Open vessels must not have freeing ports | | |
| 1350 | Frames | | |
| 1360 | Divisions/bulkheads frames, intact condition, penetrations properly sealed | | |
| 1410 | Fastening device/bollards | | |
| 1420 | Securing of fishing gear | | |
| 1440 | Tank filling equipment | | |
| 1391 | Reserve buoyancy | | |
| 1990 | Other | | |

| Survey results | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | N/A |
| **No remarks** | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |
| | | Remarks entered into: | | |
| Vessel surveyor | | Inspection book _____20___ | | |
| | | Book of remarks _____20___ | | |
| Verification by customer that survey has taken place | | Computer _____20___ | | |

## Machinery Checklist

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | | Vessel registration No. | | | | |
| Name: | | | District No.: | | | | |
| Length overall: | | | Place of survey: | | | | |
| Date of survey: / / | | | Validity of survey: / / | | | | |
| Vessel History: | HULL | | DECK | | MOTOR | | |
| Date of build/ commissioning: / / | **Wood** | | **Decked** | | **Inboard** | | |
| Original owner: | Wood | **W** | Undecked | **U** | Inboard | **I** | |
| Change of ownership: | Fibreglass | **F** | Decked | **D** | Outboard | **O** | |
| Modifications carried out: | Aluminium | **A** | | | | | |
| Survey after modification: | Steel | **S** | | | | | |
| Accident / damage & repairs | HDPE | **H** | | | | | |

Machinery items to be inspected for a undecked fibreglass hull vessel with outboard motor

| SR | ITEMS INSPECTED | Remark | Comments |
|---|---|---|---|
| **2000** | **Engine** | | |
| 2010 | Engine conforms to regulations | | |
| 2020 | Engine is functional | | |
| 2070 | Engine controls | | |
| 2090 | Engine fastenings | | |
| 2130 | Steering engine | | |
| **2200** | **Fuel equipment** | | |
| 2210 | Fuel filters | | |
| 2220 | Fuel piping | | |
| 2230 | Fuel separator | | |
| 2250 | Quantity gauges | | |
| **2400** | **Seawater/bilges** | | |
| 2410 | Hand pumps, including quantity | | |
| 2420 | Electrical pumps, including quantity | | |
| **2550** | **Exhaust piping** | | |
| 2560 | Sea water cooling | | |
| **2600** | **Spares and tools** | | |
| 2640 | Fuel filter | | |
| 2650 | Tools | | |
| 2990 | Other | | |
| | | | |

| Survey results | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | N/A |
| No remarks | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |
| | | Remarks entered into: | | |
| Vessel surveyor | | **Inspection book** _____**20**___ | | |
| | | Book of remarks _____20___ | | |
| Verification by customer that survey has taken place | | Computer _____20___ | | |

## Safety and Stability Checklist

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ Periodical survey ☐ Additional survey | | | Vessel registration No. | | | | |
| Name: | | | District No.: | | | | |
| Length overall: | | | Place of survey: | | | | |
| Date of survey: / / | | | Validity of survey: / / | | | | |
| Vessel History: | HULL | | DECK | | MOTOR | | |
| Date of build/ commissioning: / / | **Fibreglass** | | **Undecked** | | **Outboard** | | |
| Original owner: | Wood | W | Decked | D | Outboard | O | |
| Change of ownership: | Fibreglass | F | Undecked | U | Inboard | I | |
| Modifications carried out: | Aluminium | A | | | | | |
| Survey after modification: | Steel | S | | | | | |
| Accident / damage & repairs | HDPE | H | | | | | |

Safety items to be inspected for a undecked fibreglass hull vessel with outboard motor

| SR | ITEMS INSPECTED | Remark | Comments |
|---|---|---|---|
| 3100 | Equipment | | |
| 3511 | Lifejackets | | |
| 3101 | Certificate of Measurement | | |
| 3202 | Magnetic compass | | |
| 3206 | Medicine chest / First aid kit | | |
| 3108 | Telecomm. equipment | | |
| 3501 | Hand flares | | |
| 3502 | Rocket parachutes | | |
| 3212 | Fire extinguishers | | |
| 3302 | Markings | | |
| 3424 | Navigation lights | | |
| 3516 | Inflatable life raft handle | | |
| 3504 | Lifebuoys | | |
| 3718 | Anchor-chain and rope | | |
| 3702 | Net winch safety equipment | | |
| 3430 | Torch | | |
| 3401 | Binoculars | | |
| 3405 | Charts / GPS | | |
| 3419 | Whistle and bell | | |
| 3209 | Inspection book | | |

| | | | |
|---|---|---|---|
| 3524 | Rescue quoit | | |
| 3990 | Other | | |
| | **Stability** | | |
| | Stability information available to skipper | | |
| | Undecked Vessel Freeboard Mark, if required | | |
| | Stability history documented? | | |
| | FAO simplified Flooded Stability Test | | |
| | ISO Level Flotation Test | | |
| | Other equivalent stability test? (specify) | | |
| | Restricted certification? (if so, specify) | | |

Survey results

| 0 | 1 | 2 | 3 | N/A |
|---|---|---|---|---|
| No remarks | **Rectification: Corrective action within 30 days** | **To be surveyed again before:** | **Recommended to not sail** | **Not Applicable** |

| | |
|---|---|
| | Remarks entered into: |
| Vessel surveyor | Inspection book _____20___ |
| | Book of remarks _____20___ |
| Verification by customer that survey has taken place | Computer _____20___ |

## C. Example of a safety grab bag


*Source:* **Pacific Community**. 2017. The emergency grab bag [Leaflet]. In: *Pacific Community*. Noumea, New Caledonia [Cited 22 January 2025]. https://www.spc.int/digitallibrary/get/2snnu.

**1. Floating emergency grab bag**
Water-proof bag used to store all of the items below; it should be of a size large enough to store additional items such as tinned food, water bottles, a knife and some fishing tackle.

**2. Manual inflatable lifejackets**
Light-weight and compact personal flotation device that may be inflated by either activating a self-contained CO2 cartridge or blowing through an inflation tube.

**3. Sea rescue streamer**
Floating signalling device used during day-time, it lasts indefinitely and is visible for miles by airplanes

**4. Whistle**
Signalling device used at night or in foggy conditions to attract the attention of nearby boats.

**5. Mirror**
Signalling device used during day-time to attract the attention of nearby boats as well as airplanes.

**6. Rescue laser**
Long-range, AAA battery-operated laser device used at night to attract the attention of nearby boats as well as airplanes; the rescue laser replaces flares or parachuterockets (no expiry date and can be air-shipped) although the latter may still be required under national sea safety regulations.

**7. Personal locator beacon**
When activated the PLB transmits a signal with the beacon's ID and vessel position to the nearest searchand-rescue operation centre via satellite relay.

**8. Solas strobe light**
AAA battery-operated, waterproof, flashing light that is visible for miles at night and continuously indicates the distressed boat's position.

**9. Batteries**
AAA-size dry cell batteries used in portable electronic devices such as hand-held GPS and VHF radios, strobe light and rescue laser.

**10. Hand-held VHF radio (waterproof)**
Multi-channel, two-way radio (can transmit and receive), which enables boat-to-boat and boatto-land communication; the operating range is 5-10 nautical miles in open water and distress signals should be sent on channel 16 (international calling frequency for distress messages).

**11. Compass**
A device used to determine geographic direction and consisting of a horizontally-mounted magnetic needle that is free to pivot until aligned with the Earth's magnetic field.

**12. Emergency blankets**
Very low-weight, low-bulk first-aid blanket made of heat-reflective plastic sheeting; it reduces the heat loss in a person's body and because of its large, metallic and radar-reflective surface, it can be used as an improvised signalling device by drifters if the sun is shining, and as a reference point for searchers.

**13. Mobile phone**
Useful communication tool in areas with adequate mobile phone coverage; does not allow boat-to-boat communication with unidentified/ unknown boats and, from a legal/regulatory point of view, does not replace the VHF radio.

**14. Hand-held GPS**
Navigation device that uses the Global Positioning System (GPS) and relies on a network of satellites to give the user's geographical position; it increases the safety of boat operators navigating at night or with poor visibility and, in a distress situation, the exact geographic position of the vessel is known and can be given to the rescue team using the VHF radio or mobile phone.

**15. Medical kit**
Box or bag containing medical supplies and tools to give emergency medical treatment to a sick or injuredperson on board.

**16. Sea anchor or drogue (125 cm)**
Device, usually made of canvas, deployed upwind of the vessel to keep the vessel heading into the wind and to slow its drift; unlike conventional bottom anchor, the sea anchor can be deployed at any depth.

## D. FAO Heel test form

### 1. Basic data

1 Location of test ..... Date of test ...../...../.....

2 Vessel name .....

3 Vessel identifier .....

4 First test ☐ Retest ☐

5 If retest:

date of first test ...../...../.....

heel angle at first test .....; min. freeboard at first test ..... mm

### 2. Checklist

1 Loose items secured or stowed ☐

2 Fish hold empty ☐

3 Full ice (or replacement weights) ☐

4 Full stores (or replacement weights) ☐

5 Full fuel ☐

6 Full gear (or replacement weights) ☐

7 Full crew in operating positions (or replacement weights) ☐

8 Vessel floats approximately level (move loose gear if necessary), then... ☐

9 ... lift from highest and furthest outboard location (record below), then... ☐

10... take photo of heeled vessel at equilibrium. ☐

### 3. Vessel's loading

1 Number of crew onboard at Heel Test .....

2 Type of suspended weight used .....

3 Weight lifted (kg) .....

4 Fore/aft position of block..... metres from .....

5 Port/Stbd position of block..... metres from .....

### 4. Result

1 Angle (measure with an inclinometer).....degrees

2 Minimum freeboard..... mm

3 Min. freeboard location..... metres from .....

4 Pass ☐ Fail ☐

→ Acceptance criterion: equilibrium heel angle of 10 degrees or less

→ Each retest should be no more than 10 percent of the first test. If the percentage change is greater, then remedial actions are recommended. Seek professional advice.

## E. FAO Offset load test form

### 1. Basic data

1 Location of test ..... Date of test ...../...../.....

2 Vessel name .....

3 Vessel identifier .....

4 First test ☐ Retest ☐

5 If retest:

date of first test ...../...../.....

heel angle at first test .....; min. freeboard at first test ..... mm

### 2. Checklist

1 Loose items secured or stowed ☐

2 Weights in fish hold representing full catch ☐

3 30% ice (or replacement weights), if appropriate ☐

4 30% stores (or replacement weights) ☐

5 30% fuel ☐

6 Full gear (or replacement weights) ☐

7 Full crew in operating positions (or replacement weights) ☐

8 Vessel floats approximately level (move loose gear if necessary), then... ☐

9... apply (25 x Length Overall x Breadth) kilograms of offset load , then... ☐

10 ... take photo of heeled vessel at equilibrium. ☐

### 3. Vessel's loading

1 Number of crew onboard at offset load test.....

2 Type of offset weight used .....

3 Length Overall (LOA) ..... metres; Breadth (B)..... metres

4 Offset load, last stage = 25 x LOA x B = ..... kg

5 Fore/aft position of offset load, last stage.....

6 Port/Stbd position of offset load, last stage.....

### 4. Results

1 Results referred to Stage no. 1 2 3 (circle as appropriate)

2 Angle (measure with an inclinometer).....degrees

3 Minimum freeboard ..... mm

4 Min. freeboard location ..... metres from .....

5 Pass ☐ Fail ☐

- → Acceptance criteria: Stage 3 equilibrium heel angle of 15 degrees or less and Stage 3 free board to the deck not less than 75 mm at any point.
- → Each retest should be no more than 10 percent of the first test. If the percentage change is greater, then remedial actions are recommended. Seek professional advice.

## F. FAO Simplified flooded stability test form

### 1. Basic data

1 Location of test ..... Date of test ...../...../.....

2 Vessel name .....

3 Vessel identifier .....

4 First test ☐ Retest ☐

### 2. Checklist

1 Loose items secured or stowed ☐

2 Weights representing equipment at equipment CG ☐

3 Weights representing motor and battery at respective CGs ☐

4 Water ballast in ballast tanks (if fitted) ☐

5 Apply 25 x LOA x Breadth (kg) on centre line amidships, then... ☐

6 ... submerge gunwale or fill with water until equilibrium is reached, then... ☐

7... apply 15 kg on gunwale amidships on one side, then... ☐

8... take photo of heeled vessel at equilibrium. ☐

### 3. Vessel's loading

1 Type of centre line weight(s) used .....

2 Length Overall (LOA) ..... metres; Breadth (B)..... metres

3 Centre line load = 25 x LOA x Breadth (B) = ..... kg

### 4. Results

1 No capsize = Pass ☐ Capsize = Fail ☐

→ Acceptance criterion: flooded vessel withstands all applied loads without capsizing.

→ This test is unsuitable for monitoring stability or buoyancy changes over time.

## G. Wolfson Stability Method

**1 How can I produce a Stability Notice for my own vessel?**

Visit our Stability and Loading Guidance web page at https://www.wumtia.soton.ac.uk/service/vessel-safety/, download our free Stability Notice and Freeboard Calculator, type your vessel's overall length and beam, and print your Notice.

**2 Which loading condition should be assessed against the Wolfson Method?**

The vessel's worst foreseeable operating condition, typically the most onerous lift over the side your boat can perform (heaviest load & furthest reach & highest lifting point).

Multipurpose vessel: worst foreseeable operation over the range of fishing methods undertaken.

When assessing the heaviest lift, be mindful of the load rating of your lifting equipment (your winch may be powerful enough to capsize the boat).

**3 Should I put the mark to port or starboard?**

The mark should be placed on both sides of the vessel.

**4 Should I put the Mark forward/aft/amidships?**

Load the vessel to the worst foreseeable operating condition (FAQ 2), pick the location where the deck is closest to the water and put the Mark there. A consistently useful position is 25% length overall (forward of the aft end i.e. 75% abaft the fore end).

**5 How far down the topsides should I put the Mark?**

This distance is shown in the 'Freeboard Guidance Mark' diagram, either as a distance from the deck edge (for decked vessels) or as a distance from the top of the gunwale (for open boats). The Stability Notice and Freeboard Calculator (FAQ 1) will produce the appropriate diagram for you.

**6 Is the Wolfson Mark a load line?**

No, because it assesses upright AND heeled freeboard, whereas a load line assesses upright freeboard only. Many vessels operate with upright freeboards in the amber zone, and some in the red zone. This may be acceptable if they operate within the seastate recommended in their Stability Notices.

**7 The Maximum Recommended Seastate looks small, my boat can take far worse!**

The Stability Notice presents seastates in terms of their Significant Wave Height (Hs) in metres. Hs is the average of the 1/3 highest waves and is a standard way to describe seastates. In practice, waves of twice the significant height can be expected once in every 2 000 encounters.

The wave height (trough to crest distance) as estimated by an observer corresponds closely to the significant wave height. This correlation is maintained for all seastates.

**8 Decked vessels have a green zone, open boats don't. Why?**

However large their freeboard, open boats are vulnerable to swamping and their range of positive-stability is limited by gunwale immersion.

**9 I can't see the Mark when I'm at sea, am I supposed to lean over the side?**

In a word, no. It is not expected that fishers will attempt to view the Mark when at sea, but that they will become familiar with its location to increase their awareness of how the heeled freeboard affects their level of safety.

Correlation between Sea State and Significant Wave Height (source: Met Éireann)

| Sea State (Descriptive) | Significant Wave Height (in metres) |
|---|---|
| Calm | 0-0.1 |
| Smooth | 0.1-0.5 |
| Slight | 0.5-1.25 |
| Moderate | 1.25-2.5 |
| Rough | 2.5-4.0 |
| Very Rough | 4.0-6.0 |
| High | 6.0-9.0 |
| Very High | 9.0-14.0 |
| Phenomenal | Over 14.0 |

## Example Stability Notice: Decked Vessel

### Decked vessel: 3 safety zones

**Does the vessel heel significantly when operating its gears?**

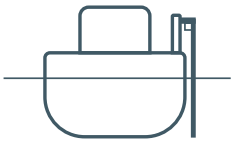
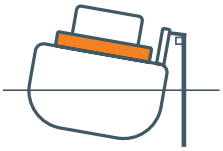
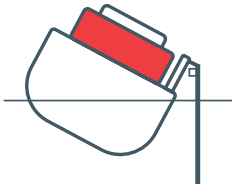
→ **No – check loading, use port or stbd Mark**

| | |
|---|---|
| Wolfson Mark dry | > Green |
| Waterline Through Wolfson Mark | > Amber |
| Wolfson Mark underwater | > Red |

→ **Yes – check heeling, use Mark on low side**

| | |
|---|---|
| Wolfson Mark dry | > Green |
| Waterline Through Wolfson Mark | > Amber |
| Wolfson Mark underwater | > Red |

**Stability Notice**

| Name:<br>No.<br>Owner<br>Length:<br>Beam: | JMT<br>-<br>-<br>11.42m<br>4.38m | Loading & Lifting Guidance | Safety Zone | Minimum Freeboard | Maximum Recommended Seastate |
|---|---|---|---|---|---|
|  | | Good margin of residual freeboard | Good margin of safety | At least 52 cm | |
|  | | Loading or lifting reduces minimum freeboard to less than 52 cm | Low margin of safety | 26 to 52 cm | 1.4 metres |
|  | | Excessive loading or lifting reduces minimum freeboard to less than 26 cm | Danger of capsize | Less than 26 cm | 0.7 metres |

Max recommended Amber seastate:

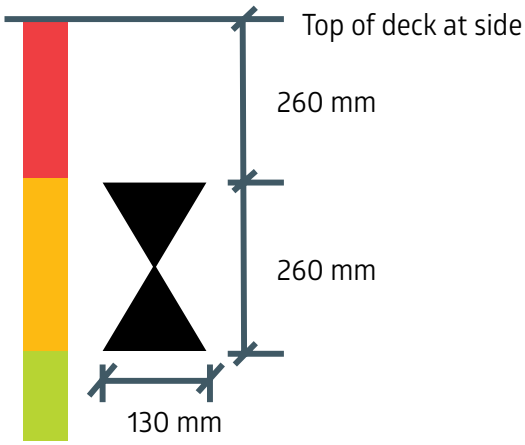
- Sig. wave height limit 1.4 m (low end sea state 4)
- Highest wave of all 2.8 m (approximately 1 in 2000)

Max recommended Red seastate:

- Sig. wave height limit 0.7 m (low end sea state 3)
- Highest wave of all 1.4 m (approximately 1 in 2000)

## Example freeboard guidance mark: decked vessel

### Freeboard guidance mark (or "Wolfson Mark")




**Mark up/down location**:
top of mark 260 mm below
top of deck at side.

**Mark fore/aft location**:
25% overall length forward of transom.

## Example Stability Notice: Decked Vessel

### Open vessel: 2 safety zones only.

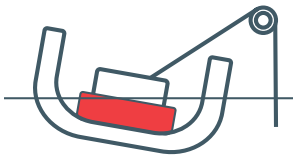
**Does vessel heel when operating its gear?**

→ **No – check loading, use port or stbd Mark**

Wolfson Mark dry → Amber
Waterline through Wolfson Mark → Amber
Wolfson Mark fully underwater → Red

→ **Yes – assess resid. Freeboard, low side**

Wolfson Mark dry → Amber
Waterline through Wolfson Mark → Amber
Wolfson Mark fully underwater → Red

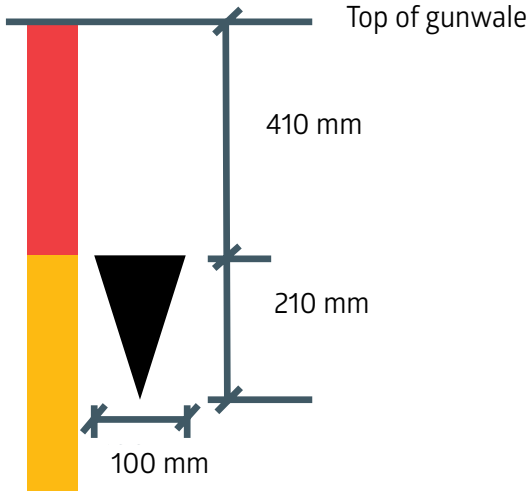
| Stability Notice | | | | | |
|---|---|---|---|---|---|
| Name:<br>No.<br>Owner<br>Length:<br>Beam: | Laura Jane<br>SE80<br>-<br>6.1 metres<br>2.26 metres | Loading & Lifting Guidance | Safety Zone | Minimum Freeboard | Maximum Recommended Seastate |
|  | | Even with a freeboard of at least 41 cm, swamping may be a hazard | Low level of safety | At least 41 cm | |
|  | | Excessive loading or lifting reduces minimum freeboard to less than 41 cm | Danger of capsize | Less than 41 cm | 0.4 metres |

### Max recommended Red seastate:

- Sig. wave height limit 0.4 m (top end of sea state 2)
- Highest wave of all 0.8 m (approximately 1 in 2000)

## Example freeboard guidance mark: open vessel

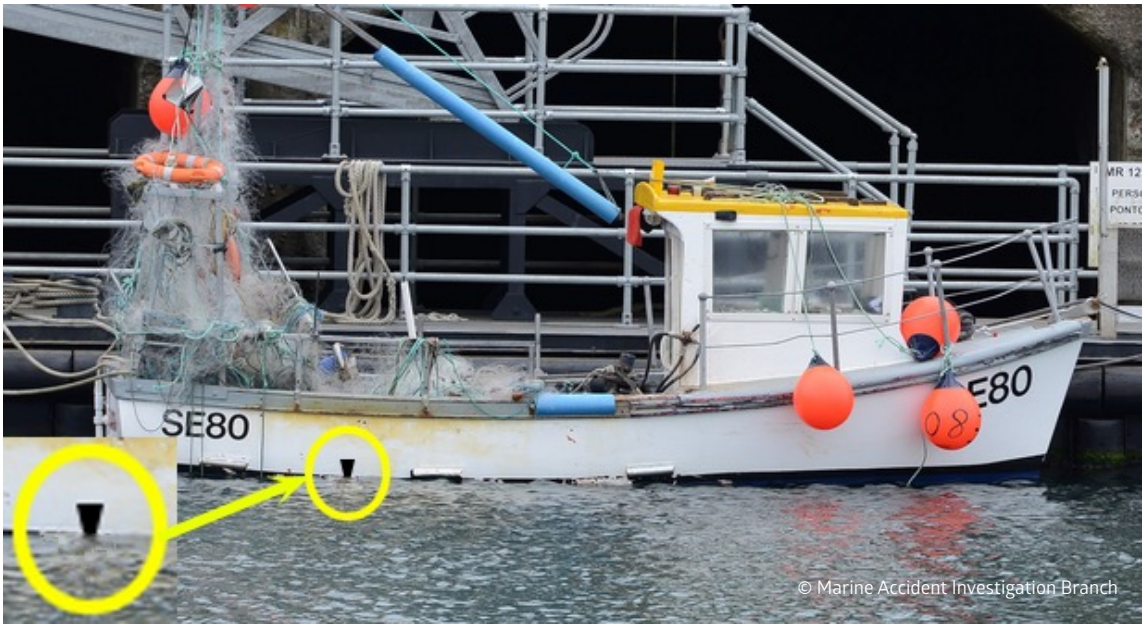
### Freeboard guidance mark (or "Wolfson Mark")




**Mark up/down location:**
top of mark 410 mm below top of gunwale.

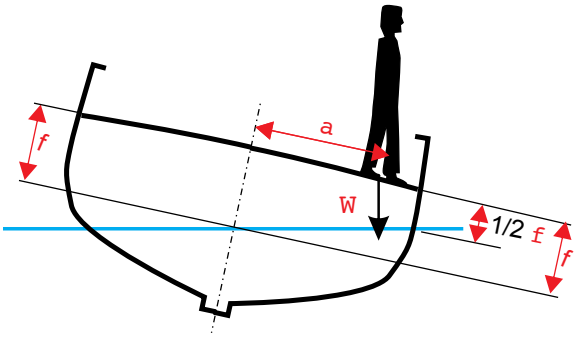
**Mark fore/aft location:**
minimum freeboard in worst foreseeable
operating condition.

**Mark visible = amber zone.**



## H. Example stability criterion for wind-assisted, decked fishing vessell.

### LUG SAIL – CHECKING A BOAT'S STABILITY




The stability of a decked boat should be checked before fitting a sail

Before fitting a sail on a fishing boat, it is necessary to assess the boat's stability. Too large a sail can cause the boat to capsize. The following test will give an indication of the maximum sail area to be fitted. This sail area can be carried up to a wind speed of 15 knots (7.5 m/s).

1. Measure the minimum freeboard f midship with no load in the fish hold.

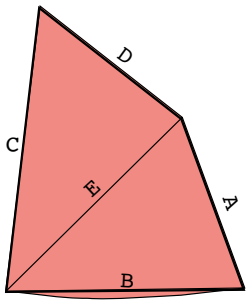
2. Make a mark on the side at ½ f.

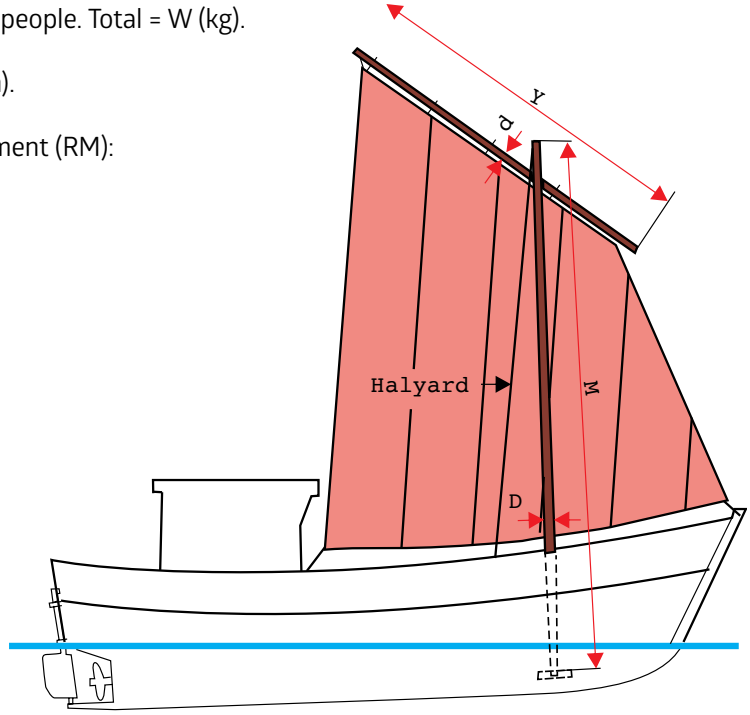
3. Get a number of people to stand alongside the rail midship until the boat is inclined to the ½ f mark.

4. Get a scale and weigh the people. Total = W (kg).

5. Measure the distance a (m).

6. Calculate the righting moment (RM):




*Source:* **Gulbrandsen, O**. 2012. *Fuel savings for small fishing vessels – a manual*. Rome, FAO. https://openknowledge.fao.org/handle/20.500.14283/i2461e

RM = W x a (kgm)

| RM kgm | Sail area $m^2$ |
|---|---|
| 310 | 15 |
| 470 | 20 |
| 650 | 25 |
| 880 | 30 |

| Sail area m2 | Sail dimension (m) | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 15 | 3.4 | 4.5 | 5.5 | 3.3 | 4.8 |
| 20 | 4.0 | 5.2 | 6.3 | 3.8 | 5.5 |
| 25 | 4.4 | 5.8 | 7.1 | 4.4 | 6.1 |
| 30 | 4.8 | 6.4 | 7.8 | 4.9 | 6.5 |

The mast is made from the wood of a suitable tree. It is tapered to 0.7 x D at the top

| Sail area $m^2$ | Mast | | Yard | | Haylard | | Sheet | |
|---|---|---|---|---|---|---|---|---|
| | D mm | M m | d mm | Y m | Diam mm | Length m | Diam mm | Lenght m |
| 15 | 105 | 6.4 | 60 | 3.6 | 10 | 13 | 10 | 12 |
| 20 | 120 | 7.0 | 65 | 4.1 | 12 | 15 | 10 | 14 |
| 25 | 130 | 7.7 | 70 | 4.6 | 12 | 16 | 10 | 15 |
| 30 | 140 | 8.4 | 75 | 5.2 | 12 | 16 | 12 | 17 |

*Source:* **Gulbrandsen, O**. 2012. *Fuel savings for small fishing vessels – a manual*. Rome, FAO. https://openknowledge.fao.org/handle/20.500.14283/i2461e

## I. Example annual self-declaration form[7]

ANNUAL SELF-DECLARATION

I, as Owner, will verify each year that the Vessel continues to comply with the requirements of _____ and sign this Annual Self-Declaration form to Certify this has been done.

Signature _____ Name
Signature of Owner
Date

| | |
|---|---|
| Name of Owner | |
| Address of Owner | |
| Postal Code | |

I CERTIFY, IN RESPECT OF THIS VESSEL THAT:

i) The Vessel remains compliant with the requirements of _____
_____
_____
_____

ii) Such safety equipment carried is in sufficient numbers for the total persons specified on the Certificate;

iii) The Safety equipment has been properly maintained and serviced in accordance with manufacturer's recommendations;

iv) Where applicable, a risk assessment of work activities has been completed in accordance with __
_____
_____
_____

v) The Vessel is fitted with the lights, shapes and sound signals to comply with the International Regulations for the Prevention of Collisions at Sea and is fitted with navigational equipment and carries nautical publications in accordance with _____
_____

iv) The radio communication equipment carried by the Vessel complies with _____
_____
_____

| | | | |
|---|---|---|---|
| 1st Anniversary Signature of Owner | | Date | |
| 2nd Anniversary Signature of Owner | | Date | |
| 3rd Anniversary Signature of Owner | | Date | |
| 4th Anniversary Signature of Owner | | Date | |

[7] This template form is based on: UK Maritime & Coastguard Agency, Annex 4 to "The Code of Practice for the Safety of Small Fishing Vessels of less than 15 m Length Overall", 2021. It assumes a third party inspection every five years.

## J. Tools commonly used for conducting fishing vessel inspections

- Tape measure
- Head torch
- Digital or phone camera
- Mirror mounted on a selfie stick (for hard to inspect / reach areas of engine and congested spaces in general)
- Magnifying glass (engine surveys)
- Small hammer (dull indicates a defective GRP laminate, softwood or rotting wood or badly rusted steel plating)
- Ultrasound meter (for measurement of shell thickness)
- Dye penetrant (detection of cracks in welding seams and butts)
- Humidity tester (moisture content in wooden structures)
- Inclinometer (measurement of static heel and trim at inspection).

## K. Scantlings tables for small FRP vessels

**Table 3.** Guidance on structural integrity checks for small FRP vessels built to design category C

| | Vessel length groups | | |
|---|---|---|---|
| Vessel length (m) | 5–7 | 7–10 | 10–12 |
| Bottom thickness (mm) | 8–10 | 12–14 | 16–18 |
| Side thickness (mm) | 6–8 | 8–10 | 10–12 |
| Deck thickness (mm) | 5–6 | 6–8 | 7–9 |
| Bottom transverse stiffener (mm) | 75 × 50 × 5 | 150 × 50 × 6 | 150 × 50 × 7 |
| Side transverse stiffener (mm) | 50 × 50 × 5 | 75 × 50 × 6 | 100 × 50 × 6 |
| Deck transverse stiffener (mm) | 75 × 50 × 5 | 85 × 50 × 5 | 100 × 50 × 5 |
| Bottom girder (mm) | 150 × 50 × 6 | 200 × 50 × 7 | 250 × 50 × 8 |
| Bottom/side longitudinal stiffeners (mm) | 50 × 50 × 4 or 40 × 40 × 4 | 65 × 50 × 6 or 50 × 50 × 4 | 50 × 50 × 5 |
| Transom (mm) | Same as side laminate + 25 mm marine grade plywood + 450 CSM + 20 mm marine grade plywood + 3 × 450 CSM | | |
| Transverse frame spacing 750 mm & longitudinal frame spacing 400–500 mm | | | |
| Above scantlings are adequate for a vessel speed of 25 knots | | | |

*Source:* Authors' own elaboration.

Table 4. Guidance on structural integrity checks for small FRP vessels built to design category D

| | Vessel length groups | | | |
|---|---|---|---|---|
| Vessel length (m) | 3–5 | 5–7 | 7–10 | 10–12 |
| Bottom thickness (mm) | 6–7 | 7–8 | 8–10 | 10–12 |
| Side thickness (mm) | 5–6 | 6–7 | 7–8 | 8–10 |
| Deck thickness (mm) | 4–5 | 4–5 | 5.5–6.5 | 6–7 |
| Bottom transverse stiffener (mm) | 50 × 50 × 3.5 | 75 × 50 × 3.5 | 100 × 50 × 4.5 | 150 × 50 × 6 |
| Side transverse stiffener (mm) | 50 × 50 × 3.5 | 50 × 50 × 3.5 | 65 × 50 × 4.0 | 100 × 50 × 5 |
| Deck transverse stiffener (mm) | 50 × 50 × 3.5 | 75 × 50 × 3.5 | 85 × 50 × 4.0 | 100 × 50 × 5 |
| Bottom girder (mm) | 125 × 50 × 4.5 | 150 × 50 × 4.5 | 180 × 50 × 5.5 | 220 × 50 × 6.5 |
| Bottom/side longitudinal stiffeners (mm) | 40 × 40 × 3.0 | 40 × 40 × 3.0 | 50 × 50 × 4.0 | 50 × 50 × 4.0 |
| Transom (mm) | Same as side laminate + 20 mm marine grade plywood + 450 CSM + 20 mm marine grade plywood + 2 × 450 CSM | | | |
| Transverse frame spacing 750 mm & longitudinal frame spacing 400–500 mm | | | | |
| Above scantlings are adequate for a vessel speed of 15 knots | | | | |

*Source:* Authors' own elaboration.

These guidelines for the seaworthiness and safety inspections of small fishing vessels have been developed to contribute to the prevention of accidents with small fishing vessels; reduce damage and loss in small-scale fisheries; and make commercial fishing a safer profession. The objectives of these guidelines are to facilitate the supply of insurance services for small fishing vessels worldwide, with an emphasis on small-scale fishers in developing countries; and provide practical guidance for conducting seaworthiness and safety inspections of decked fishing vessels of less than 12 metres in length and undecked fishing vessels.

These guidelines complement the 2015 Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines).

The document provides practical guidance for conducting safety inspections of small fishing vessels, covering several hull materials, structural integrity checks, machinery, vessel stability and test procedures, safety equipment, reporting and documentation. It also helps fishing vessel owners to assess the safety and seaworthiness of their vessels themselves, thereby contributing to increased safety awareness and risk management within small-scale fisheries. The document discusses awareness raising and capacity-building actions to support implementation of these guidelines and provides tailored checklists for vessel inspections and for conducting practical stability tests.

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