

Mechanised Fishing Vessels

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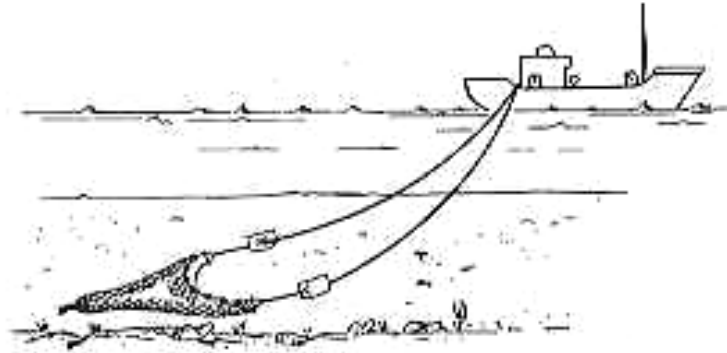
P.O. Matsyapuri, Cochin-682 029

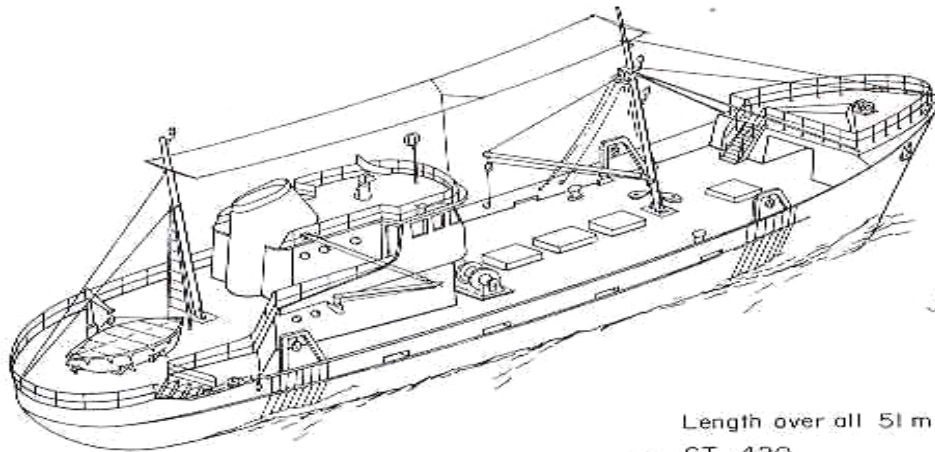
Trawlers

Trawlers use trawl net as fishing gear and are provided with marine engine of sufficient power to tow the net with the boat at appropriate speed. Trawl winches are fitted on the deck of these boats to operate the trawl net. Trawlers are classified into:

Side trawlers

The trawl is set over the side and warp pass through blocks hanging from the gallows, one forward and one aft, the fish hold is situated amidships and trawl winch transversally at the front of the superstructure.

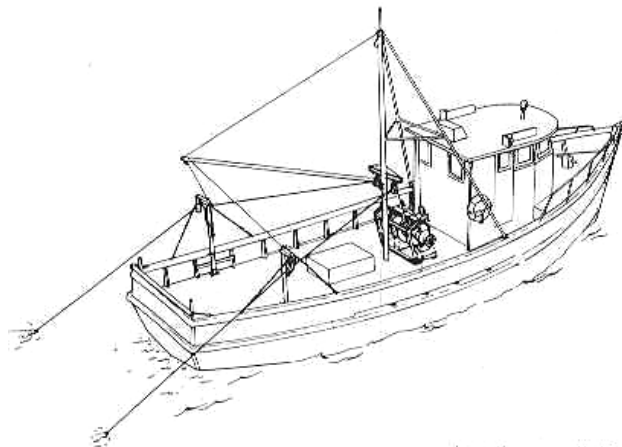




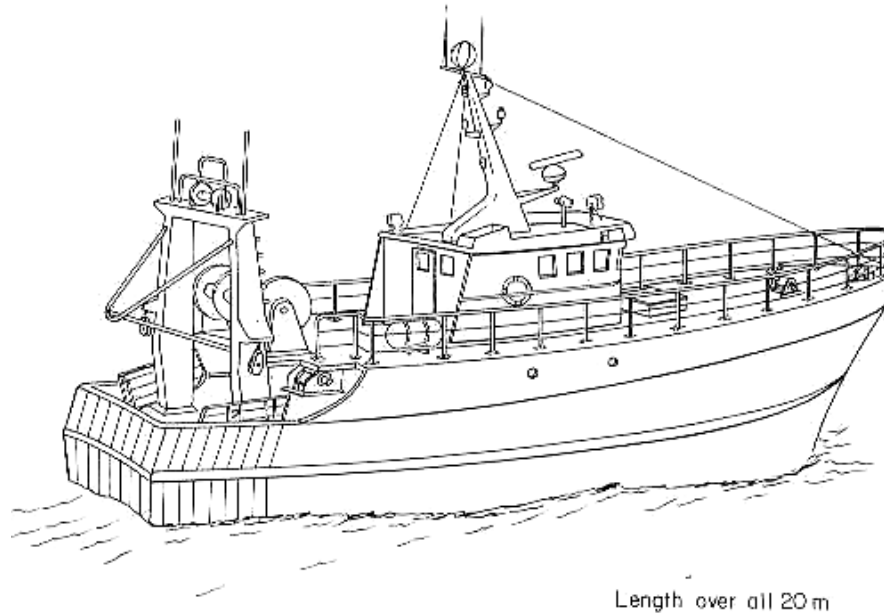
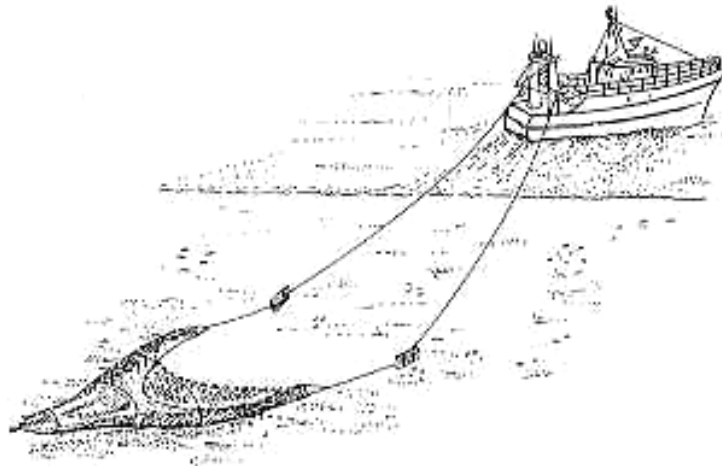
Stern trawlers

In these vessels the warp are led from blocks to the aft deck and over the stern. Towing blocks on small vessels are attached to the stern gallows; on larger vessels to a gantry. On stern trawlers, the wheelhouse is usually situated in the forward part. Medium sized and large stern trawlers are often fitted with a stern ramp on which the trawl is hauled on to the deck.

The trawl winch is placed transversally behind the wheelhouse. Split winches are used on medium and large stern trawlers. On small vessels the fish hold is situated amidships and on medium sized and large trawlers in the forward part of the vessel



Length over all 13 m

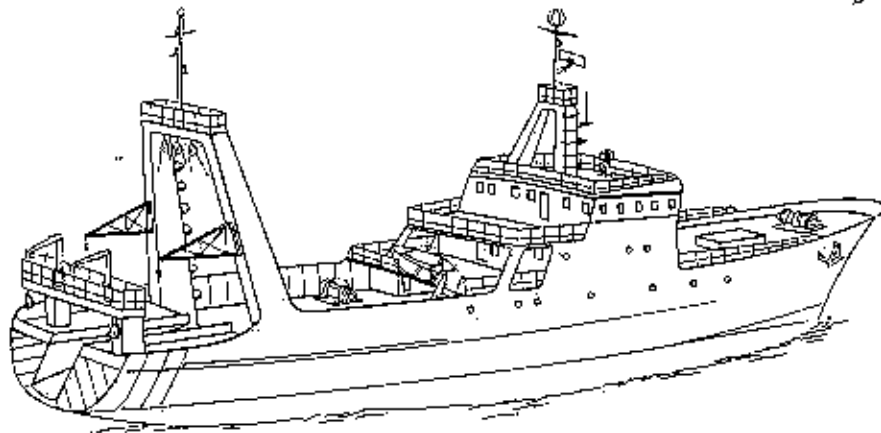


Wet fish trawlers

In these trawlers the fish is kept in the hold in wet/fresh condition. So they operate close to the landing place.

Freezer trawler

In freezer trawler fish is preserved by freezing. The majority of trawlers operating on distant waters are freezer trawlers. These are outfitted with refrigerating plant and freezing equipment.



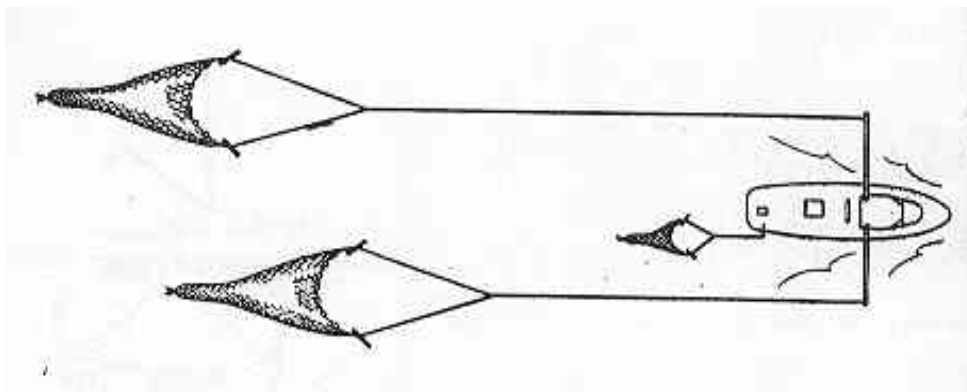
Length over all 56m
GT 800

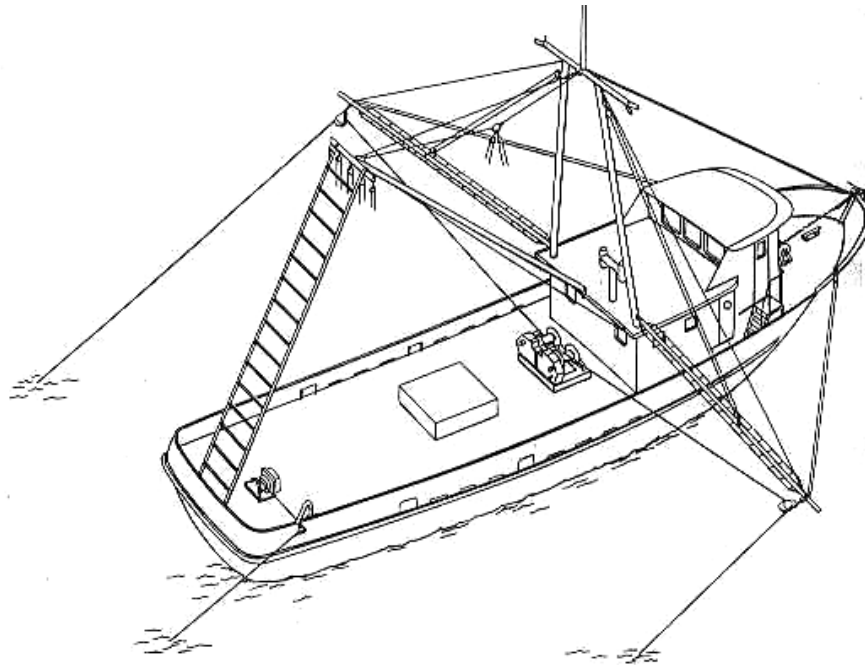
Factory trawlers

These are large stern trawlers equipped with processing plant including mechanical gutting and filleting equipment with accompanying freezing facilities, fish oil, fish meal and canning plant.

Outrigger trawler

These trawlers use strong outrigger booms to tow the fishing gear. These outriggers are usually fastened to the mast and extend out from the sides of the vessel each towing one or two trawls by means of warps passing through blocks at the end of the outriggers.





Length over all 18 m

Gear handling equipments of trawlers

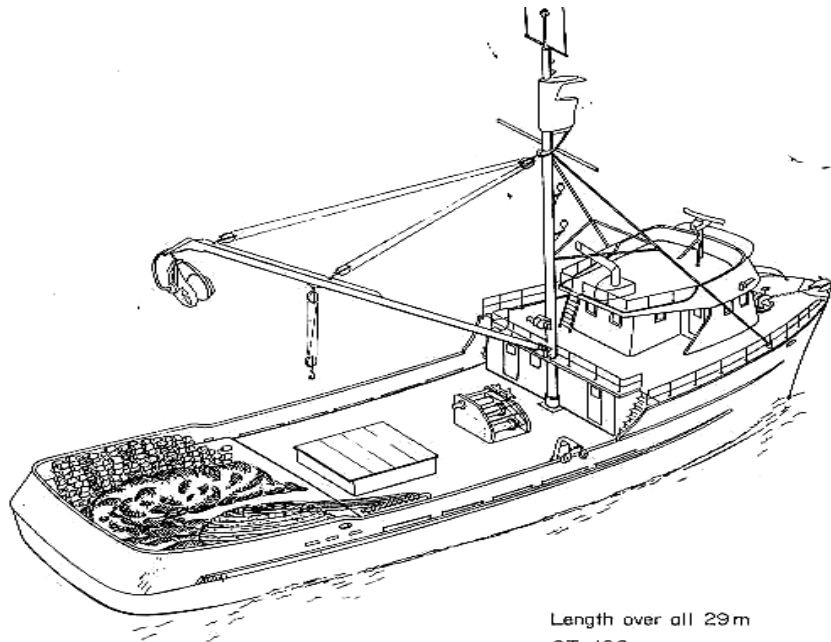
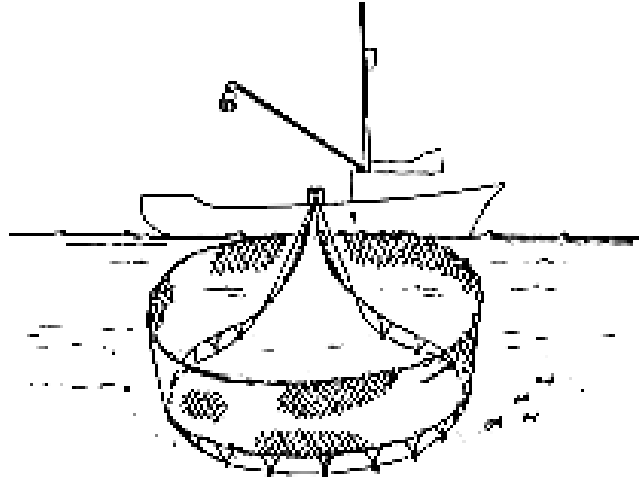
- i. Trawl winch
 - Mechanical
 - Hydraulic
- ii. Gallows
 - 'T' Frame
 - Rectangular frame
 - Goal post shaped
- iii. Mast and boom (Derrick), with winch
- iv. Stern ramp for smooth hauling of the catch

Seiners

These vessels use surrounding and seine nets. They comprise a large group appearing in all sizes, ranging from small boats to large ocean going vessels. To assist fish school spotting observation crow's nest are fitted on masts. The equipment of seiners consists usually of a power block and /or a net drum for hauling and stowing the net aboard and one or more winches for setting and hauling operations.

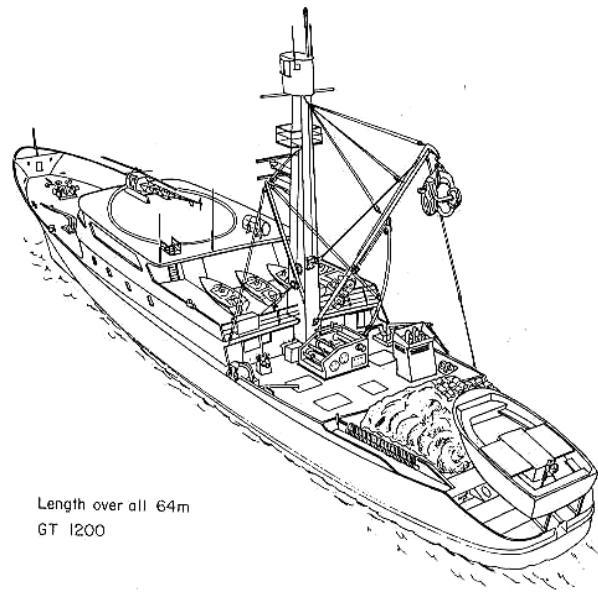
Purse seiners

Vessels using purse seiners are equipped with pursing gallows and pursing winches for hauling the purse lines which close the net after setting.



Tuna purse seiners

These are large purse seiners equipped with a skiff located on top of the net at the slopped part of the stern of the vessel. Their deck equipment consists of a three-drum purse seine winch and a power block, with topping, vang, cork and other specific winches to handle the heavy boom and net. A crow's nest is placed at the top of the mast.



Seine netter

The fishing area is surrounded by a net attached to very long ropes. Next the net is towed or dragged over the bottom. The vessel lays the ropes and net returning to pick up the anchor line to which the vessel lies during the hauling process.

Gear Handling Equipments of seiners

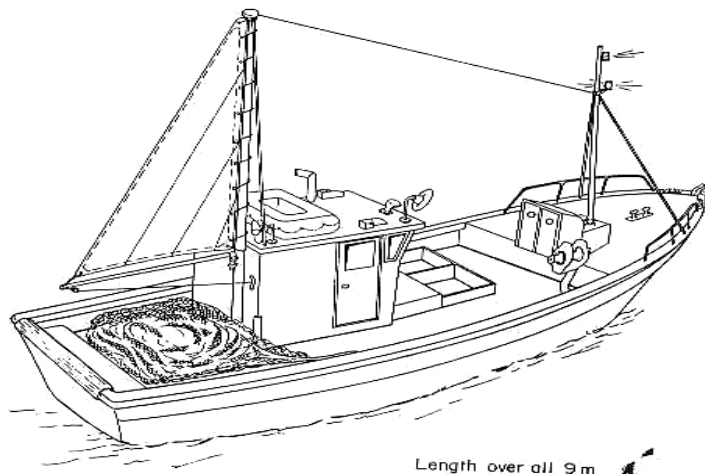
- i. Purse gallows
- ii. Purse winches
- iii. Power block
- iv. Net drum
- v. Crow's nest
- vi. Topping winch
- vii. Brailing equipment

Gillnetters

Gillnetters can be operated from boats and canoes on inland waters and inshore decked small vessels in coastal waters and from medium sized vessels fishing offshore. Small gillnetters have their wheelhouse either aft or forward. On medium sized vessels, using drifting gillnets and called drifters, the bridge is located aft. On small vessels setting and hauling operations are performed by hand. Larger vessels are often equipped with hydraulic net haulers or net drum.

Gear Handling Equipments of gill netters

- i. Net drum
- ii. Net roller



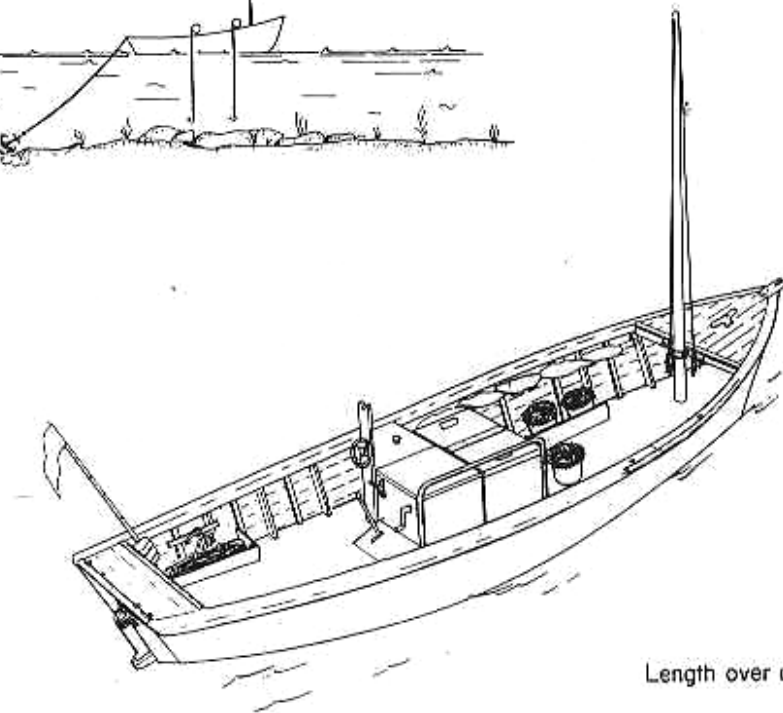
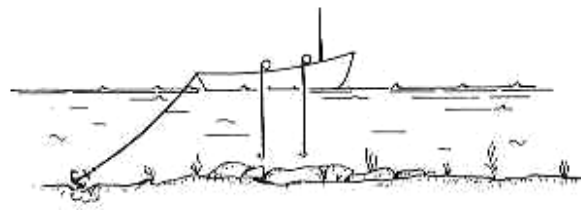
Liners

These vessels use lines and hooks with or without bait or lure. Depending on the method of fishing with lines, area of operation and species to be caught,

liners comprise vessels of all size classes. Containers or tanks for storing the bait, sufficient deck area for attaching the bait to the hooks and a convenient place for preparing the lines for setting and hauling are typical features for liners.

Hand liners

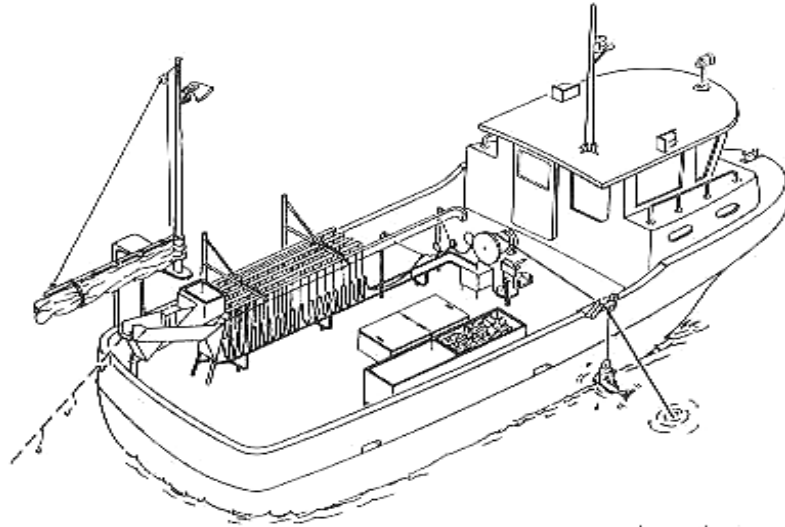
Hand liners are operated from boats, canoes and other small vessels, without any special features for gear handling. Hand lines can be set and hauled either manually or by mechanized reel. If mechanized reels are used, these are fastened to the gunwales.



Length over all 7.6 m

Long liners

Long liners can be operated from vessels of any size adapted for the length of long line to be set. Bottom long lines are placed on or near the bottom and drifting long lines are maintained at the surface or at a certain depth by means of floats. In typical arrangements the gear is hauled from bow or from the side with a mechanical or hydraulic line hauler and the lines are set over the stern. The wheel house can be situated aft or forward, but on larger vessels the bridge is generally placed aft. Several automatic or semi-automatic systems are used on bigger boats to bait the hooks and to shoot the lines.

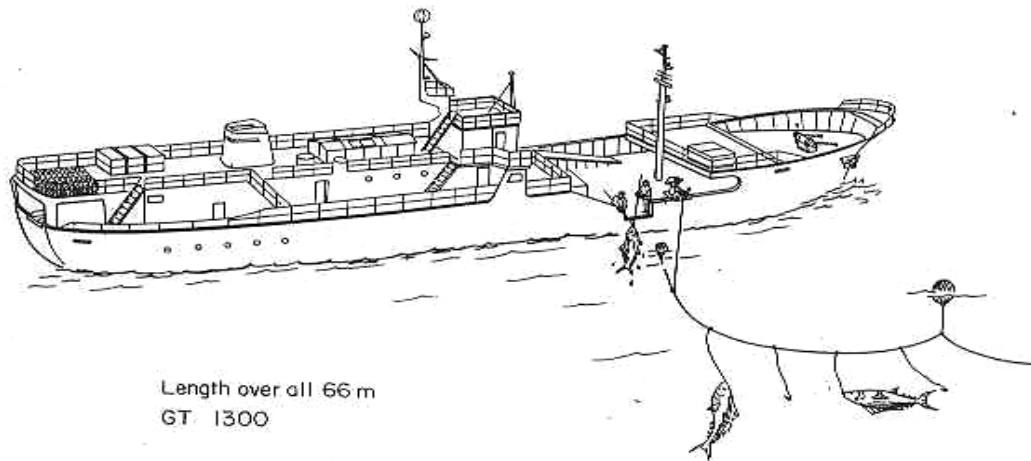


Length over all 14m

Tuna long liners

Tuna long liners are generally medium sized vessels. The line hauler on tuna long liners is usually placed on the starboard side forward and a gate in the rail is provided to haul in the fish. A conveyor to the after deck then carries the long lines and the buoys ready for baiting and setting. A baiting table and a chute are located on the stern, from where the lines are set.





Pole and line vessels

On these vessels, used primarily for catching of tuna and skipjack, the fishermen stand on the railing or on special platforms and fish with poles, to which a line with hook is attached.

Tanks with live bait and a water spray system for attraction are typical features of these vessels. Because live bait is used to attract fish, the fishing method is also known as live-bait fishing.

Trollers

Equipped for catching pelagic fish swimming close to the surface these vessels tow a number of lines fitted with lures.

The lines are attached to trolling booms which are raised and lowered by topping lifts and fore and aft stays. Hydraulic or electrically powered reels are frequently used to haul in the lines. According to the area of operation the vessels may be laid out with wheel house and mast either forward or in the aft.

Gear handling equipments of liners

- i. Bait tank
- ii. Basket
- iii. Line hauler
- iv. Rollers
- v. Chute

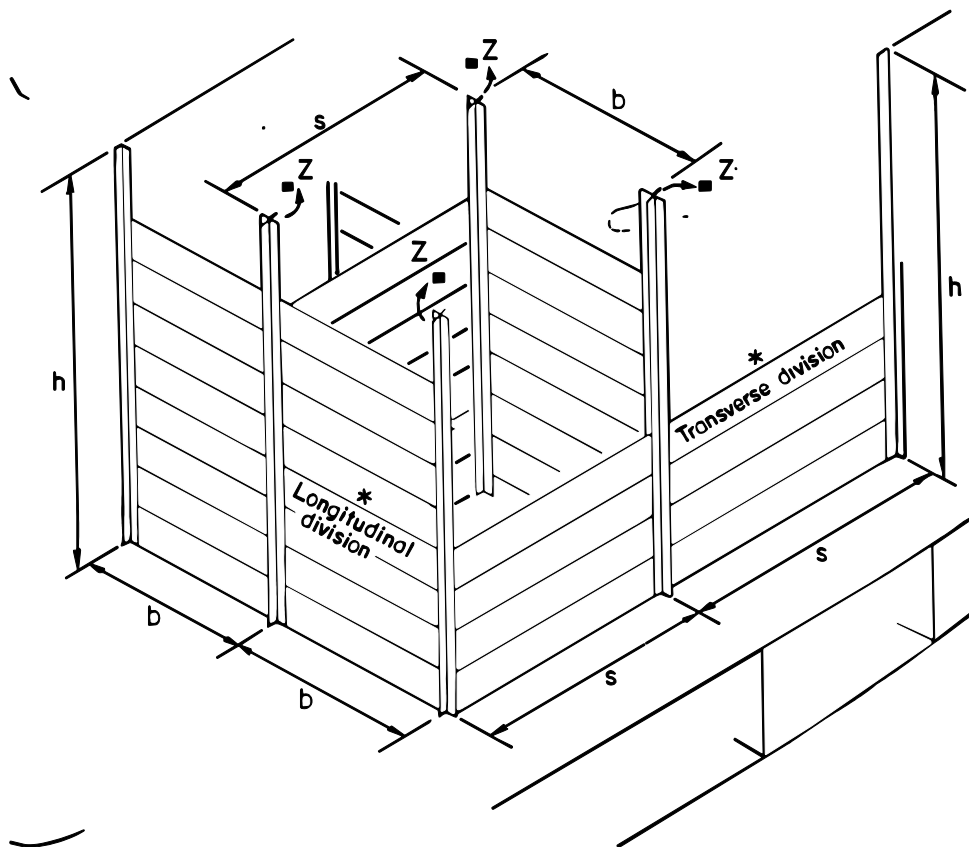
Fish storage and preservation onboard

Fish can be preserved in ice as well as in cold storages. Vessels catching fish from near shore and having endurance less than a week are storing fish in ice in the insulated hold. Deep sea vessels with larger catches are storing fish in cold storages.

Construction of fish hold depends on the method of fish preservation. Subdivision using pens.

Two types

- i. Vertical steel uprights and horizontal wooden boards
- ii. Horizontal steel beams and vertical boards

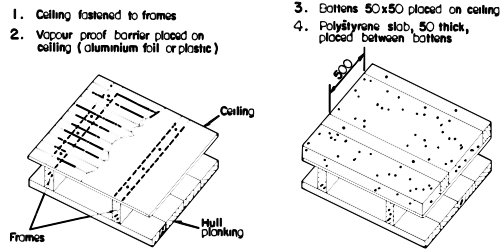


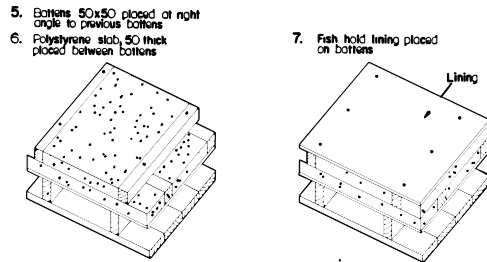
* NOTE :

When the longitudinal and transverse divisional boards are interchangeable b will equal s and the thickness by either formula will be the same. If the board are required to be of equal thickness but varying span the greater thickness should be used for all the boards when the section modulus is kept constant for all the uprights.

Insulation and lining of fish hold

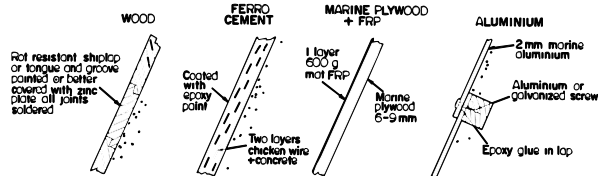
INSULATION = 100 mm

1. Ceiling fastened to frames
 2. Vapour proof barrier placed on ceiling (aluminium foil or plastic)
 3. Battens 50x50 placed on ceiling
 4. Polystyrene slab, 50 thick, placed between battens
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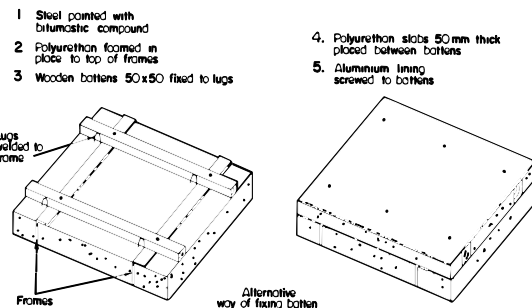
5. Battens 50x50 placed at right angle to previous battens
 6. Polystyrene slab, 50 thick placed between battens
 7. Fish hold lining placed on battens
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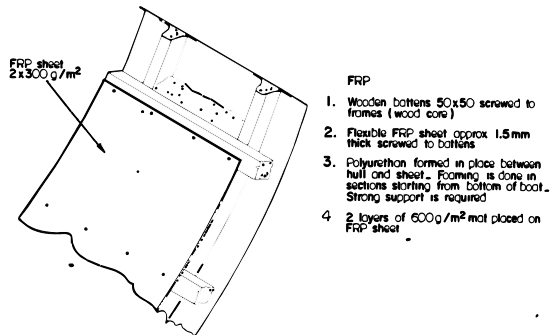
Note Wood should be pressure treated or rot-resistant

Different types of fish-hold linings:



STEEL INSULATION = 50 mm OVER TOP OF FRAME

1. Steel pointed with bitumastic compound
 2. Polyurethan foamed in place to top of frames
 3. Wooden battens 50x50 fixed to lugs
 4. Polyurethan slabs 50 mm thick placed between battens
 5. Aluminium lining screwed to battens
- 
- Lugs welded to frame
- Frames
- Alternative way of fixing batten
- Wooden ground fastened to side of frame

- 
- FRP sheet 2x300g/m²
- FRP
1. Wooden battens 50x50 screwed to frames (wood core)
 2. Flexible FRP sheet approx 1.5 mm thick screwed to battens
 3. Polyurethan foamed in place between hull and sheet. Foaming is done in sections starting from bottom of boat. Strong support is required
 4. 2 layers of 600g/m² mat placed on FRP sheet

The insulation material must be heat insulant, non-water absorbing and odourless. The lining must allow the hold to be easily washed and kept clean.

Life Saving Appliances (LSA)

The following life saving appliances are used on board a fishing vessel:

- i. Life jacket for each person on board. Jacket with self igniting light is used.
- ii. Life buoys
- iii. Buoyant apparatus
- iv. Life rafts
- v. Life boats
- vi. Hand flares
- vii. First aid box
- viii. EPIRB (Emergency Position Indicating Radio Beacon)

Depending on the size of the boat the number and position of the above items will vary.

Fire Fighting Appliances (FFA)

Prevention of fire on board a vessel is a serious problem. It can be extinguished or controlled by using:

Fire extinguishers

The following types are used on board:

- i. AFFF type - used in the engine room
- ii. Carbon Dioxide type - kept for use in the crew cabins
- iii. Dry Chemical Powder (DCP). Kept in the wheelhouse and engine room for fire fighting purpose.

Fire hydrant

This is used to force water to the fire affected area on the deck, etc. The water required for this purpose is drawn from sea by using a pump.

- i. Fire hose: used for the above equipment
- ii. Nozzle : used for the above equipment.
- iii. Fireman's axe: Kept in the engine room for emergency use.
- iv. Sand box with scoop: Kept on board
- v. Sand buckets
- vi. Fire pump

Depending on the size of the boat the number and position of the above items will vary.

Navigation light and sound signals (LS&S)

The following table gives the light and sound signals used on board a fishing vessel.

| Sl.No | Requirements | Nos | Position |
|--------------|----------------------------------------------|------------|--------------------|
| 1 | Mast light-White (24V DC & Oil) | 1each | Mast |
| 2 | Side lights-Green (24V DC & Oil), | 1each | Wheel house - STBD |
| 3 | Side lights-Red (24V DC & Oil), | 1each | Wheel house - PORT |
| 4 | Stern Light –White (24V DC& Oil) | 2each | Mast |
| 5 | Fishing Light Allround –Green (24V DC & Oil) | 1each | Mast and yarden |
| 6 | Fishing Light Allround –White(24V DC & Oil) | 1each | Mast and yarden |
| 7 | NUC Light – Red (24V DC & Oil) | 2each | Mast and yarden |
| 8 | Anchor Light-White (24V DC & Oil) | 1each | Mast and yarden |

List of shapes

| No | Requirements | Nos | Position |
|-----------|---------------------|------------|-------------------|
| 1 | Spherical balls | 3 | Accommodation top |
| 2 | Diamond shapes | 2 | Accommodation top |