

Deck longitudinal

Deck longitudinal are bulb plates fitted under deck plating to provide longitudinal strength. They run fore and aft and through the bulkheads where the ship's length is excessive.

Deck plating

The deck plating of the ship experiences stresses due to longitudinal bending. Hence the deck plating is made strong enough to withstand the load. The area around the hatch openings has the heaviest deck plating. Since the magnitude of the longitudinal bending stresses is higher around the midship, the thickness of deck plating is maximum in this region.

Keel

A series of plates connected to each other and running longitudinally along the centreline at a ship's bottom is called the keel. Keels are stiffened by a vertical plate on the inside of the shell on the centreline of a ship. The keel forms the backbone of a ship.

Keel plate

The keel plate is the main structural member of a ship. Hence, it is termed as the backbone of a ship. The keel plate runs longitudinally along the centreline of the ship's bottom.

Garboard strake

The first plate adjacent to the keel is called the garboard strake. Since strakes are named with reference to the keel, the garboard strake is also called the 'A' strake. It has the same function as bottom plating. The plate is sufficiently thickened to take the load of the entire ship and withstand outside water pressure.

Scuppers

Scupper pipes are fitted on open decks along a ship's side to drain water. They drain sea water which accumulates onboard, during rough weather. The openings of the scupper drain are led directly overboard. If scuppers are fitted within a compartment, they lead to a bilge from where water is pumped out. Scuppers below the waterline have one or more automatic non return valves.

Web frame

Web frames run vertically and are fitted parallel to the side shell frames. The web frames are deeper than the conventional transverse frames. These frames are spaced at not more than 5 frame spaces apart.

Sheer strake

Sheer strake is a continuous row of shell plate on a level with the uppermost continuous deck. It is 10% to 20% thicker than the remaining side shell plating. The connection of the sheer strake and the deck stringer can pose a problem, especially in areas where the plating is heavy. Usually, the midship area has increased plate thickness and so a rounded gunwale is fitted to solve the problem. The radius of the rounded gunwale is not less than 15 times the thickness of the plate.

Side stringer

Side stringers are fitted horizontally along the side shell of a transversely framed ship. They provide additional strength along the mid height of the ship's side shell. Side stringers are made of angle bar, bulb angle or plates and are located depending upon the area where stresses are on the higher side.

Side shell frames

The side shell frames run vertically along the side shell. They extend from the underside of the upper deck plating to the tank top and are connected by beam knees and tank side brackets.

Hopper tank

Bulk carriers have a hopper tank in between the top side tanks and double bottom tanks. The top side hoppers help in preventing cargo from shifting and the double bottom hoppers collect the cargo within the hatch square. Both the hoppers are used to carry ballast water.

Hopper transverse web frame

Transverse web frames are fitted inside the hopper tanks and are spaced at intervals laid down by classification societies. The transverse web frames are deeper in scantlings when compared to the conventional transverse frames.

Bilge strake

Bilge strake refers to the strake of plates at the turn of the bilge extending outward to a point where the ship side rises vertically.

Bilge well

Bilge wells are sunken compartments fitted in the double bottom tank. Hold washings, cargo sweat, ship sweat and rainwater, which accumulate inside the hold easily find their way into the bilge wells. Water thus collected in the bilge wells is pumped overboard. There are two bilge wells each for every cargo hold situated at the aft end of the hold.

Bilge plating

Bilge plating is a plate which forms a part of the bilge.

Lightening holes

A hole cut in a plate to make it lighter and yet not reduce its strength is termed as a lightening hole. Sometimes such holes may be large enough to be called a manhole. The solid floor of a double bottom tank has lightening holes.

Double bottom tank

Double bottom tank is situated at the bottom of a ship and is used to carry water or fuel. The construction inside double bottom is a combination of a transversely fitted solid floors and longitudinal frames running from the bottom and side of the tank. The port and starboard double bottom tanks are separated by a centreline girder.

Tweendeck plating

Tweendeck is an abbreviation for between deck. The tweendeck plating is used to subdivide the cargo hold vertically. These decks provide segregation of cargo.

Deck girders

Deck girders are fitting along the hatch openings and run longitudinally similar to under deck longitudinals. They provide longitudinal strength in the vicinity of hatch openings.

Beam knees

A beam knee is a triangular plate which connects the side frame to the deck beams. The size of the beam knee depends upon the scantling of the frame and the beam.

Margin plate

Margin plate forms the sides of the inner bottom tank of a ship and connects the bilge plating to the tank top. The margin plate is at 45 degrees to double bottom tank and perpendicular to side shell plating.