

Specification of an Iron Screw Steam-Ship

Rev 11/1/96

Dimensions	Length of Keel and Fore Rake	327 ft 0 in
	Breadth of Beam, Moulded	42 . 0 .
	Depth, Moulded to Spar Deck	29 . 0 .
	do do to Main Deck	21 . 2 .
	Height of Saloon & Forecastle, between deck & deck	7 . 6 .
	Tonnage, Builders Measurement,	2831 ⁷³ / ₉₄ Tons
	Top gallant Forecastle to be as long as required to berth the crew, and to have a Deck House 20 feet wide extending from stern to forecastle	

Stern To be of the best hammered scrap iron, 13 by 3½ inches at bottom, tapering to 11 by 3 inches at top, and to form about 8 feet of keel

Keel To be of the best hammered scrap iron, 13 by 3½ inches and in as long lengths as possible. Scarps not less than 3 feet

Stern posts or screw frames To be in one piece (and made so that a lifting device could be applied at a future time) of the best scrap iron. Inner post to be 13 by 7 inches and not less than 5 inch of metal round the eye. Outer post to be 15 by 7 inches. The lower part of the frame to be 10 inches deep by 12 inches broad, and to taper from inner post and form about 8 feet of the keel. The opening in screw frame to be not less than 20 feet by 7 feet 6 inches wide, to have a projection on eye in fore part of inner post to allow for recess for coupling, and also a projection in fore part of outer post for journal of propeller.

Plan of screw frame to be submitted for approval before proceeding with the work

Frames

To be spaced throughout the vessel 18 inches from centre to centre for 180 feet amidships to be of angle iron 6 by 4 by $\frac{3}{8}$ inch: remainder fore and aft 6 by 4 by $\frac{1}{2}$ inch. Every frame to run up to spar deck and every alternate frame to run up to main rail except in wake of rigging, fore-castle, and stern, when every frame is to run up to top gallant rail and fore-castle beam stringers, and at rigging to main rail. All the frames under engines to be double, back to back, up to the 8 feet water line and all frames to rest on the keel. Frames to be in one piece from keel to gunwale and rolled in one piece

Reverse frames

Of angle iron 4 by 3 by $\frac{1}{2}$ inch on every frame, and run along the top edge of floor plates to top of main deck waterways, and on every alternate frame to 5 inches above spar deck beams, with short pieces on the adjoining frames to secure clamp plates between main and spar deck. In the engine room and boiler space the top edge of floor plates to have two bars of reverse angle iron $4\frac{1}{2}$ by $3\frac{1}{2}$ by $\frac{1}{2}$ inch the extra one to run up to the 8 ft waterline in boiler space and to orlop stringer in engine space

Floorings

One on every frame of plates 29 by 5 inch thick for 180 feet amidships and to be carried up the bilge to about the 8 feet waterline. Remainder fore & aft to be 29 by $\frac{1}{2}$ inch: but the floor plates in frames at entrance and run of vessel to be carried up 7 or 8 feet above keel and in after end to 2 feet above stern pipe with strong angle iron bars secured to

stern frames, and decked over with $\frac{8}{16}$ inch plate, and made Watertight between frames

Keelsons

To have five keelsons, centre one and one on each side of it to be the same thickness as floors, let in between floors and extending above them, to be secured by two bars of angle iron, back to back. Centre keelson to run from stern to stern, and to be formed with two bars of angle iron 8 by 4 by $\frac{5}{8}$ inch, with a plate on each side 14 by $\frac{5}{8}$ inch thick, riveted over floors to reverse angle iron (See margin). Next one to be formed of two bars angle iron 6 by 4 by $\frac{5}{8}$ inch thick, back to back, and to extend fore and aft as far as practicable. Bilge keelson to be formed of two bars angle iron ~~6 by 4 by $\frac{5}{8}$ inch thick~~ 5 by 4 by $\frac{1}{2}$ inch, to run as far fore and aft as the form of the vessel will permit, and all to be made perfectly watertight where they pass through the bulkheads to be secured to floors with short pieces of angle iron.

Galvanized iron timber chains $\frac{1}{4}$ inch throughout the engine & boiler space. All keelsons except centre one to be secured to bottom of ship with double angle iron 4 by 4 by $\frac{1}{2}$ inch

Deck Beams for 180 ft amidships

All Beams to be patent bull iron. Spar deck beams 8 by $\frac{11}{16}$ inch thick with two bars angle iron $3\frac{1}{2}$ by 3 by $\frac{7}{16}$ inch on top edge (See margin) to be spaced on every alternate frame 3 feet from centre to centre. Main Deck beams to be 10 by $\frac{11}{16}$ inch with two bars of angle iron 4 by 3 by $\frac{1}{2}$ inch on top edge and spaced 3 feet from centre to centre. Lower or orlop deck beams to be 8 by $\frac{11}{16}$ inch with two bars angle iron on top edge $3\frac{1}{2}$ by 3 by $\frac{7}{16}$ inch thick. The topgallant forecabin beams to be 7

by $\frac{1}{2}$ inch with two bars angle iron 3 by 3 by $\frac{3}{8}$ inch on top edge and spaced 3 feet from centre to centre. Beams must go through all coal spaces in engine room and boiler space where they can be got across to advantage. All beams to be in one length. Beams fore and aft may be $\frac{1}{2}$ inch thinner. Main deck beams in orlop decks, both fore and aft, to have iron rods fitted to beams for hammocks (see margin)

Knees To be forged solid upon all beams. Spar and orlop knees to be 20 inches long: main 25 inches

Stanchions and Pillars } To be spaced throughout the holds and coal spaces 6 feet from centre to centre. Stanchions under spar deck beams 3 inches diameter: under main deck beams $3\frac{1}{2}$ inches diameter and under orlop deck beams 4 inches diameter. All to be secured so as to suspend and support

Beam Ties To have plates on spar deck 24 by 2 inches thick not less than in 15 feet lengths running the whole length of the ship on each side under coamings of cabin securely riveted to top side of beams. Main deck ties to be 24 by 2 inches placed to suit boiler and engine hatchways. Plates in wake of riding bits and capstan on spar deck to be not less than 28 by 2 inches thick and on topgallant forecabin deck 24 by 2 inches running forward to knightheads. Beams to be plated under steam winches with 2 inch plate. All bulks of beam ties to be secured with double butt straps, top and bottom

Mast Partners

To have callings same size as beams & plated on with 2 inch plate

Stringers for
180 ft amidships

Spar deck of plates 48 by 2 inch for 180 feet tapering fore and aft to 30 by 8 inch let into and rivetted to outside plating by short pieces of angle iron bar 10 by 4 by 7/8 inch. An angle iron 5 by 4 by 5/8 inch running the whole length of the vessel and well rivetted to reverse frames and stringer plates. Main deck of plates 36 by 7/8 inch for 180 feet tapering gradually to 24 by 7/8 inch aft. An angle iron 5 by 4 by 7/8 inch running the whole length of the vessel and well rivetted to reverse frames and stringer plates. Orlop decks, in fore and after holds of plates 24 by 7/8 inch with an angle iron bar 5 by 4 by 2 inch rivetted to reverse frames and stringer plates. In engine room and boiler space to have two angle iron bars, back to back, 8 by 11 by 7/8 inch, with a 24 by 7/8 inch plate between them. Outer edge of plate to have an angle iron bar 14 by 4 by 7/8 inch rivetted tight and to have suitable knees of plate and angle iron underneath at every alternate frame. Top gallant forecastle stringer of plate 24 by 2 inch and rivetted to beams, angle iron 3 by 3 by 7/8 inch. The whole of the stringers or covering plates to be in lengths of 10 feet 6 inches, and well secured at joinings by double butt straps 16 inch thicker than plate and double rivetted. Spar deck stringers to have double butt straps 7/8 inch thick, one on top and one below. The main and spar deck stringer plates to run round the stern, and well secured to frames. The counter frame abaft of stern post to have a floor plate of 2 inch thick and to be of sufficient depth to strengthen the vessel at that part. The forward part of vessel to be well strengthened by bracing beams of such size and number as may be found practicable to get

in, so as to completely strengthen the vessel both forward and aft at the extreme ends.

Plating of Hull

All plates (with the exception of garboard which is to be of Blochairs best best iron) to be boiler best best plate 10 feet 6 inches long and stamped with makers name, put on alternately out and in (except bulwark plating the butt of which are to be flush throughout) The spaces between the outside strakes and the frames to have solid filling pieces of the same thickness as the adjacent strakes

Scantlings as follows

	Fore	amid	ast
Garboard strake (Blochairs best best iron)	8 in	8 in	8 in
Next Strake	$1\frac{1}{16}$	$\frac{11}{16}$	$\frac{11}{16}$
Flat of bottom to 9 feet Waterline	$\frac{1}{16}$	$\frac{13}{16}$	$\frac{13}{16}$
From 9 ft Waterline to Main Shear	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{12}{16}$
Main Shear	$\frac{9}{16}$	$\frac{13}{16}$	$\frac{9}{16}$
Main Shear to Spar Shear	$\frac{7}{16}$	$\frac{10}{16}$	$\frac{7}{16}$
Spar Shear double plate	$\frac{9}{16}$	$\frac{9}{16}$ or $\frac{11}{16}$	$\frac{13}{16}$
Plating of top of deck and fore-castle to be $\frac{1}{16}$ inch thick. Bulwark plating to be $\frac{3}{8}$ inch thick			

Riveting

To be double riveted throughout except butts of spar shear, which are to be lapped, and bulwark single riveted. The whole of the rivets used to be of the best quality and all of sufficient size for the thickness of plate. Rivets in Stern keel and stern posts to be 1 1/2 inches in diameter. All butt joints to be flush and all longitudinal joints to be overlapped. All rivets in keel lower part of stem, and stern posts and bottom under the 8 feet waterline to be left prominent but all others to be dressed flush with plates

7

The whole of the joints to be well caulked and made watertight. Rivet holes in stem stern and keel to be all made perfectly fair before rivets are put in

Bulk Shaps All to be the same thickness as plates (except the Garboard & upper sheer strakes which are to be $\frac{1}{16}$ inch thicker) All the bulk shaps of outside strakes for 100 feet amidships to be about 2 feet 8 inches long by the breadth of the corresponding plates, so as to pass through two frames & riveted to plating (See marginal sketch) All bulk shaps to be cut across the red of the iron from plates.

Bulk Heads To have seven watertight bulkheads, five to run up to Spar Deck and two to main deck, the one between engines and boilers and the one immediately before boilers to have watertight doors below and the one abaft engines and before boilers to have hinged doors in cabin passages. All to have double frames at ship's side, with a filling plate 3 feet 6 inches long same thickness as the adjoining plate all made of such strength so as to pass the Admiralty Survey.

Masts & Spars Suitable to size of ship of Vancouver Island pine Mizzen Mast crossbars to be brass, as also the fastenings at Mast head for standard compass To be fitted with Cunninghams patent reefing gear. All gear about Mizzen Gaff and boom to be brass: also sheet blocks and to have short top-gallant masts and jibboom

Boats

To have eight same as "China" (size and capacity will be given by owners) four of which to be life boats to have a copper buoyant apparatus under the thwarts and at each end, fitted as required by the Board of Trade Survey; oars boat hooks, rudders, masts, and sails for each boat, davits and brass sheaved blocks, falls for lowering &c on the most improved plan as also supports for boats to rest upon.

Specifications to be submitted for the approval of the Board of Trade Surveyor. 2 of the cutters to be fitted with davits for weighing a kedge: also 8 boats ensigns

Davits

Eight pairs of boat davits, three for the life boats to be 5 inches diameter, the others to be $11\frac{1}{2}$ by $14\frac{1}{2}$ inches diameter. Lockings in pockets of davits, to prevent them unshipping. Collars of davits to be bored, and davits to be turned in way of collars and pockets

Anchor
Davits

Two anchor davits of $6\frac{1}{2}$ inches diameter, or of sufficient strength for fishing anchors. Bitts davits, anchor davits, and cat and fish blocks fitted with brass sheaves with stuffing boxes

Anchors &
Cables

To have Trotman's patent anchors, also cables, to be tested to the Admiralty proofs, best bower of Brown & Kennor & Co's manufacture, one of 56 cwt one of 54 cwt and one of 51 cwt: sheet 45 cwt 2 cables 150 fathoms each $2\frac{1}{8}$ inches diameter stud link stream chain 100 fathoms $1\frac{1}{2}$ inches diameter: stream anchor 20 cwt: heavy kedge 10 cwt: kedge 6 cwt: kedge 4 cwt: 4 boats anchors 1 cwt each and 4 ditto 6 cwt each with cat and

fish blocks and falls complete, with brass sheaves.
 All the small anchors from 1 cwt downwards to
 be galvanized



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