



U.S. Coast Guard History Program

36-Foot Motor Lifeboat-Type T

Number: 3389-3392; 3370-3677; 3692 (27); 3700-3710; 3764-3766
Completed: 1929-1931
Remarks: These boats were stationed throughout the United States.

Cost: \$15,250 (1930)

Hull

Displacement (lbs): 19,246 lbs.
Length: 36' 6" oa
Beam: 10' 4.5" max
Draft: 3' 3"

Machinery

Main Engines: Sterling Petrel; 6-cylinder, 4-cycle
BHP: 90 at 1000 RPM

Performance

Cruising Radius: 280 miles at 8 knots

Logistics

Complement: 3
Passengers: 30

Electronics

Radar: N/A

Design

Following in the tradition established by McLellan and Hunnewell, Alfred Hansen in 1928 developed plans for a new wooden 36' motor lifeboat, which was designated a Type T (it is believed that the "T" simply stood for "new type"). Hansen's design, which was later modified to the Type TR and TRS, was destined to be the Coast Guard's standard motor lifeboat for the next thirty-four years until the advent of the 44ft. steel motor lifeboat in 1962. The Type T was designed to be a more powerful lifeboat for carrying out not only traditional types of coastal rescues in heavy weather, but also for responding to the increasing number of rescue cases requiring the towing of recreational or fishing boats. In particular, the rugged conditions of the Pacific Northwest coast between Neah Bay to the north, and Coos Bay to the south, demanded the assignment of well-built, highly-capable lifeboats that could withstand the severe conditions associated with crossing of inlet bars, and that were better equipped for towing.

As discussed above, the first 36' McLellan Type E motor lifeboats built for Canada as well as for the USLSS were assigned to stations in the Pacific Northwest region. The reason for stationing these new boats in this region was the clear need for a more capable lifeboat than the earlier 34' pulling/sailing version (with or without motor conversion). To be noted are the frequent instances in this area (even to this day) when lifeboats are called upon to tow disabled fishing vessels over inlet bar entrances in heavy surf conditions. As capable as the 36' McLellan Type E and later Type H motor lifeboats were, however, the need for a more capable lifeboat clearly emerged. By 1928, this need was felt so strongly that a study of European lifeboat designs was included as part of a visit by the then-Commandant of the Coast Guard (RADM F. C. Billard, USCG) to the 2nd International Lifeboat Conference in Paris. Along with other Coast Guard representatives, RADM Billard inspected lifeboats then in use by organizations in France, Great Britain, Germany, and Holland. Billard was most impressed with the 45ft. Watson Type motor lifeboat then in use with the RNLI.

A report of this visit included in the Coast Guard's annual report of 1928 stated that:

"Among the English boats there is one type that appeals particularly to the United States representatives; that is the 45-foot (cabin) Watson motor lifeboat. It appears, as a whole, to have the qualities desired by the United States service. This boat is built of teak and mahogany."

Upon the Commandant's return, steps were initiated to develop an American lifeboat which would incorporate many of the design features of the European lifeboats, especially the English models; features that would provide more power and greater protection to both crew and survivors. The Coast Guard's annual report for 1929 indicated that the service was even considering construction of a new, larger lifeboat that would be about 45ft. in length, similar to the RNLI Watson type⁴³.

As was the situation with the development of the original pulling/sailing, self-righting/self-bailing lifeboat for the Lifesaving Service in the 1870s, the United States once again turned to Great Britain when considering design features for a new motor lifeboat. There was now a significant difference, however. By this time, the United States had acquired considerable operational experience in coastal rescue with different lifeboat designs that reflected American preferences in terms of size, outfit, and capabilities. A new motor lifeboat design would, while incorporating some technological advances used in foreign lifeboats, be truly American in approach.

To provide a more powerful motor lifeboat for these expanded duties, the Type T was a completely new design as a replacement for the previous Type H motor lifeboat. The Type T had a more powerful motor, heavier and stronger scantlings, and a stronger hull form. Due to the existing station boathouses and launchways, however, any increase in overall size and weight would have to be limited. None-the-less, overall length was slightly increased in the Type T to 36'6" (versus 36' in the Type H), waterline length to 35' (versus 34'6" in the Type H), and maximum beam outside of planking to 10'5 1/4" (versus 9' 1/4" in the Type H). Total displacement also increased from the 14,285lbs. of the Type H, to 19,676lbs., and draft from 3'2.5" to 3'3" (please see Appendix X for detailed specifications). With these dimensions, the Type T would still be suitable for slipway launch⁴⁴.

The 40HP Wisconsin gasoline engine of the Type H was replaced in the Type T with a more powerful Sterling Petrel Model L-6, six cylinder, four cycle engine of 90HP at 1000RPM, weighing about 1500lbs. The motor was an L-head type, with pistons of 5 1/4" bore and 6" stroke. A substantially oversized clutch and reverse gear were provided to handle the three-bladed, 28" diameter/15" pitch propeller. For the first time, an electric starter was provided. The increase in horsepower was intended to provide a propulsion power reserve for heavier duties such as towing, but there was little change in the maximum speed, which was still about 9 statute MPH.

The two-masted dipping lug sailing rig, which had been standard for almost twenty years, was replaced in the Type T with a single-masted sloop rig with jib and mainsail, without a centerboard. The mast was installed in a tabernacle mounting for easier lowering and removal. By this point in time, gasoline engines had achieved a higher degree of reliability, so use of the sailing rig in a Type T was intended only as an emergency measure; moreover, the Type T had no provision for rowing due to its greater displacement.

Perhaps one of the most significant design changes was the Type T's means of self-bailing. Starting with the imported RNLI pulling lifeboat design of 1872, almost all American coastal lifeboats had been provided with through-bottom bailing tubes or freeing trunks. This approach, however, resulted in more complicated and costly construction, tended to weaken the affected areas of the hull structure, and tended to be a location for dry rot or corrosion to occur. In the Type T lifeboat, these features were replaced by simple side scuppers, cut into the hull planking at main deck level for self-bailing. There were three freeing scuppers on each side of both the forward and aft cockpits. The watertight main deck had a raised section (i.e., camber) along the centerline, with gutters or waterways leading to the scupper openings. Self-bailing tests of this arrangement indicated that after capsizing both cockpits were cleared of all water in approximately 13-14 seconds.

Construction of the Type T was extremely strong, with heavy framing and numerous longitudinal members. The practice of single planking initiated with the Type H lifeboat was continued in the Type T, with 1 1/8" cedar or cypress planks over white oak frames. The number of frames was increased from the 35 of the Type H lifeboat to 42 in the Type T, laid on 10" rather than 12" centers. Frame side/mold dimensions were also increased from 1 3/8" x 1 3/8", to 1 1/2" x 1 3/4". Boats intended for assignment to areas where icing occurred were sheathed with an extra skin of white ash planking covered with heavy copper plating. The upper keel was of Georgia pine 5" sided, while the lower keel, the weight of which contributed to the lifeboat's self-righting capability, was of 5" sided by 4" molded bronze. Original specifications had called for a cast iron keel as used on the Type H; however, on the final plans this was replaced with a bronze keel. Bulkheads for the three above-deck compartments were of double-diagonal planked white pine with a layer of canvas glued in-between. All hull fastenings were of corrosion-resistant Monel metal.

The Type T had fewer watertight compartments than the Type H, with only six below and four above the watertight main deck (10 total; the Type H had 12); however, buoyancy blocks, which had been eliminated from both the Type E and H lifeboat designs, were again included in the Type T design. These were made of built-up cork slabs rather than of canvas-covered pine or copper, as used in pre-Type E designs.

In order to improve survivor accommodations, the forward air case was considerably lengthened and formed into a relatively large, enclosed compartment with a watertight door, which also had the effect of reducing the floodable area in the forward cockpit. These accommodations were a significant improvement over earlier lifeboat types, which only offered a canvas spray hood for protection. At the bow was a small self-bailing cockpit (with one freeing scupper on each side) for use by a bow lookout or linehandler. The aft cockpit was arranged as the conning station for the coxswain, and all controls engine controls were located here for one-man operation and maneuvering. Coxswain comfort was somewhat improved over earlier types by the addition of a bronze sprayshield that was streamlined and faired into the amidships engine compartment bulkhead and sides. The engine compartment itself was improved by the elimination of side port lights, and its roof line was balanced with that of the forward and aft compartments in order to give a more correlated and graceful appearance. Removal of the engine for repair or maintenance was achieved through a hatch in the top of the engine compartment.

The Type T's stern design presented somewhat of a contrast with the Type H's stern. The squarish, unguarded rudder of earlier types had been replaced by a more rounded rudder in bronze, set some distance from the stern post and protected by a heavy, curved bronze skeg which ran from the stern post, under and around the rudder and propeller, and then fitted into the bronze keel. This was the first application of a protective skeg in an American lifeboat design, although it had already been incorporated into the design of the 26' Type H motor surfboat in 1917. Following some six or seven years of experimentation with the Type T and follow-on Type TR lifeboats, however, this feature would be deemed non-essential and eliminated in the later Type TRS lifeboat in 1937.

A semi-tunnel similar to that used in the Type H lifeboat was included in the Type T as a means of minimizing draft. A propeller shaft stern tube bearing of rubber was used to minimize wear from accumulated sand when operating in shallow water. The steering mechanism for the rudder was entirely gear driven and of positive action, providing better maneuverability.

The first Type T lifeboat was completed at the Curtis Bay Yard in May, 1929. Between then and June 1931, a total of 27 boats of this type were constructed, all at Curtis Bay. The boat numbers for this type were: 3389 through 3392, 3570 through 3575, 3676 through 3677, 3692, 3700 through 3710, and 3764 through 3766. The cost of each boat was just over \$15,200 completely outfitted.

Before the construction of boat No. 3389 was started, two modified Type H lifeboats were completed at Curtis Bay during the summer of 1928. Interim types, they were really neither a Type H or Type T lifeboat. These two lifeboats, numbered 3205 and 3380, were basically constructed to Type H specifications in terms of keel, stern and stern posts, frames, floors, bulkheads, and hull planking. They differed, however, in that the above-deck compartments, as well as the engine installation, were closer to those of the Type T (please see Appendix X for detailed specifications and drawings). This included an extended forward cabin to provide better protection for survivors, and a forward sailing mast that was installed in a tabernacle mount on top of the forward cabin similar to the Type T lifeboat.

Although the Type HR motor lifeboat did not become a standard new construction series model, many of the previously built Type H motor lifeboats were retrofitted to the HR configuration in the late 1920s and early 1930s, including replacement of their original engine with a new Kermath gasoline motor similar to the Type T series motor lifeboat. There is also photographic evidence to indicate that some 34' motor lifeboats underwent local modification to include improved survivor accommodations and a revised engine mount in an extended amidships cabin, with a new coxswain station (with steering wheel) located on the cabin's exterior aft bulkhead⁴⁸.

Trials for Type T boat No. 3389 began on May 8, 1929 and ran through May 18th. Initial field testing was based out of Station Cobb Island, Virginia, with cruises up and down the coast and runs into the Wachapreague and Assateague inlets. In his report on the trials and tests, Hansen stated that the behavior of the new Type T under various conditions of wind, sea and current were entirely satisfactory. The full stern lifted easily before a sea, and the bow gave evidence of ample reserve buoyancy. Stability was good at all times even in the trough of a heavy sea. The boat was tested on several days when the sea was rough and the winds varying from a strong breeze to a moderate gale. Runs were made in surf, over shoals, in tide rips, in cross seas, and heading into and running before the sea, particularly over the Assateague Bar. These tests showed that one of the outstanding features of the Type T was the sprayshield, providing a drier shelter when operating in broken water. The Type T was the first motor lifeboat in Coast Guard use to have this feature, which would be improved upon later in the follow-on Type TR and TRS lifeboats by the addition of a folding windshield and a canvas spray hood. Self-bailing through the scuppers was also shown to be very successful. In concluding his report, Hansen stated of the overall results that:

“... it is believed that the features of design, construction details, general arrangement and power plant installation are harmoniously combined and with some slight modification tending toward improvement, the boat as a type is considered very satisfactory for use to the Service. There can be no doubt but that the boat is a decided improvement and of more modern construction and more comfortable and able than preceding boats of this type. It is believed that a program of these boats built at the Depot would meet the much needed requirements of the Service at this time. It is still possible to improve on the design features at a later date, inasmuch as it is believed that the shifting of the center of gravity and center of buoyancy to more near the mid-waterline length would improve somewhat the behavior of the boat when working in a seaway. This is a refinement, of course, but it is believed worthy of consideration at a later date.”

The trials of No. 3389 held between May 8 and 18 showed that the rudder was considerably over-balanced, making steering on all courses very difficult. Upon the lifeboat's return to Curtis Bay, the rudder was removed and 3" was cut from its forward area, reducing the total blade area from 4.98 to 4.43 square feet. Originally, 23% of the area had been forward of the rudder post, but after the redesign only 13.5% was forward of the rudder post. The change resulted in a considerably improved rudder design, which had good balance and provided good turning response with little application of the helm. Trial runs with the new rudder took place on May 23, 1929 in the area off of Curtis Bay Yard. At the same time, speed trials were run, which showed the new lifeboat to have a maximum speed of about 9 statute MPH.

Self-righting tests were conducted, showing a time for complete re-righting of 7 seconds in one test, and 6 seconds in a second test. A year later, on June 4, 1930, further self-righting and self-bailing tests were carried out with Type T boat No. 3574, which had wood and copper ice sheathing, adding approximately 1000lbs. to the total weight of the boat. The added weight made little difference in the self-righting qualities, as in two separate trials re-righting was accomplished in 7 and 9 seconds, respectively.

During the fiscal year ending June 30, 1930, a total of 8 Type T lifeboats were completed and shipped to their assigned stations. Five were sent from Curtis Bay under their own power, manned by personnel from the stations on the Great Lakes to which they were being assigned. All five arrived at their stations in excellent condition after having traveled many hundreds of miles without breakdown or trouble. That these new lifeboats were very much needed was reflected in the following comment from the Coast Guard's annual report for 1930:

“The lifeboats at a number of the stations are very old, and are giving out to a perilous degree. They have battled with the storms for many years, in fact too long for safety. It is imperative that they be replaced. Nothing less than a consistent, adequate, continued program of replacement will satisfy this unfortunate situation. Then there are new stations to be supplied, and other stations of strategic importance not now having lifeboats that should have them if the best interests of Commerce and humanity are to be served.”

By the end of June 1931, all 27 of the Type T motor lifeboats built had been completed and assigned to stations on both the Atlantic and Pacific coasts, as well as on the Great Lakes, with the majority of boats sent to this latter area of operation. Since by 1929-1931 there were still several of the older 36ft. McLellan Type E motor lifeboats serving at Great Lakes region stations, these stations were among the first to receive a new Type T, with 55.5% of the new lifeboats going to Great Lakes stations. Usually, stations that had previously been assigned the earlier Type H motor lifeboat did not receive the new Type T lifeboat, although there were exceptions. In these cases, the older Type H motor lifeboat was re-assigned to a different station.

Images



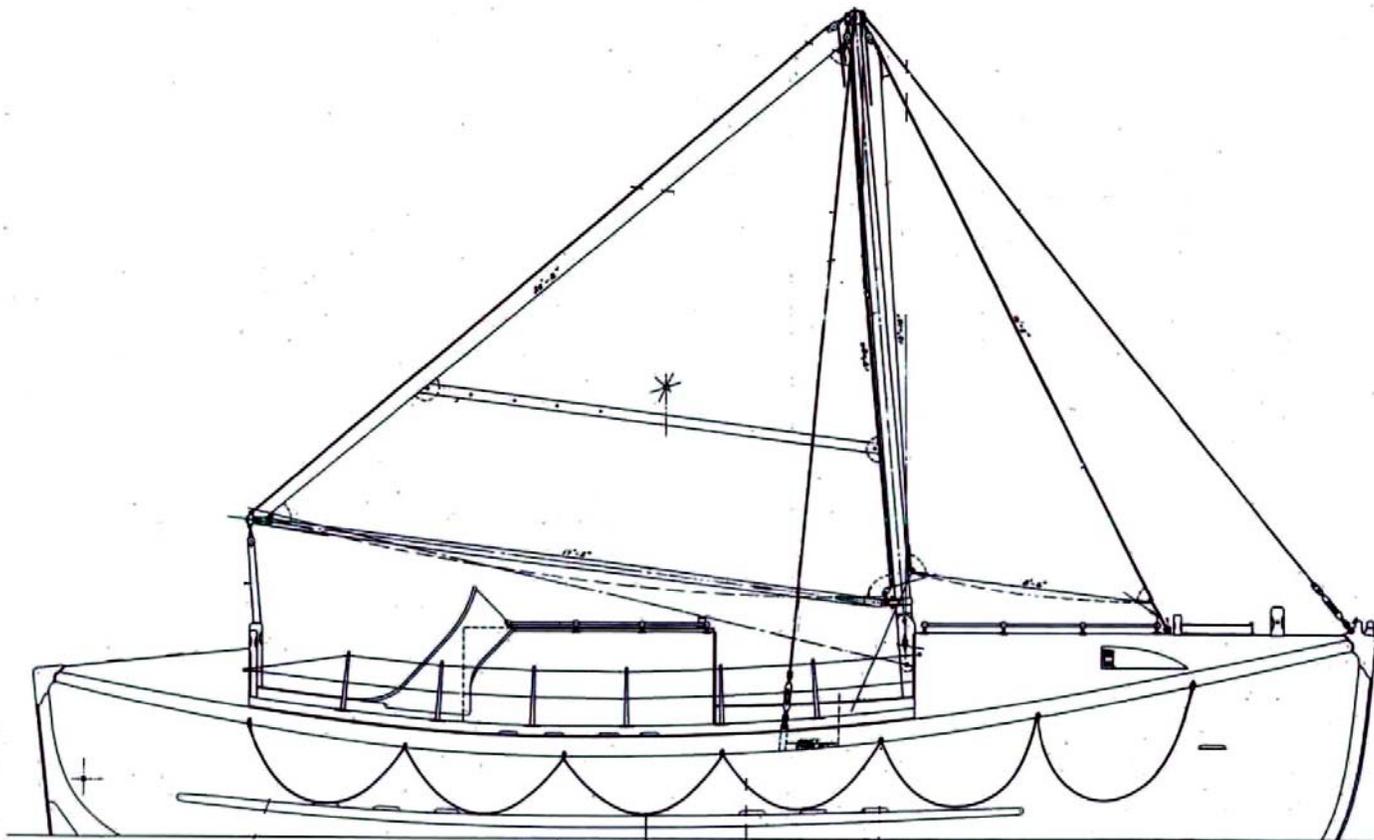
Type-T 36-footer tied up



36-Foot MLB Type-T out of the station at Racine, WI



Type-T 36-Foot MLB underway in New York harbor



36-Foot Type T MLB Line-Drawing

Sources

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