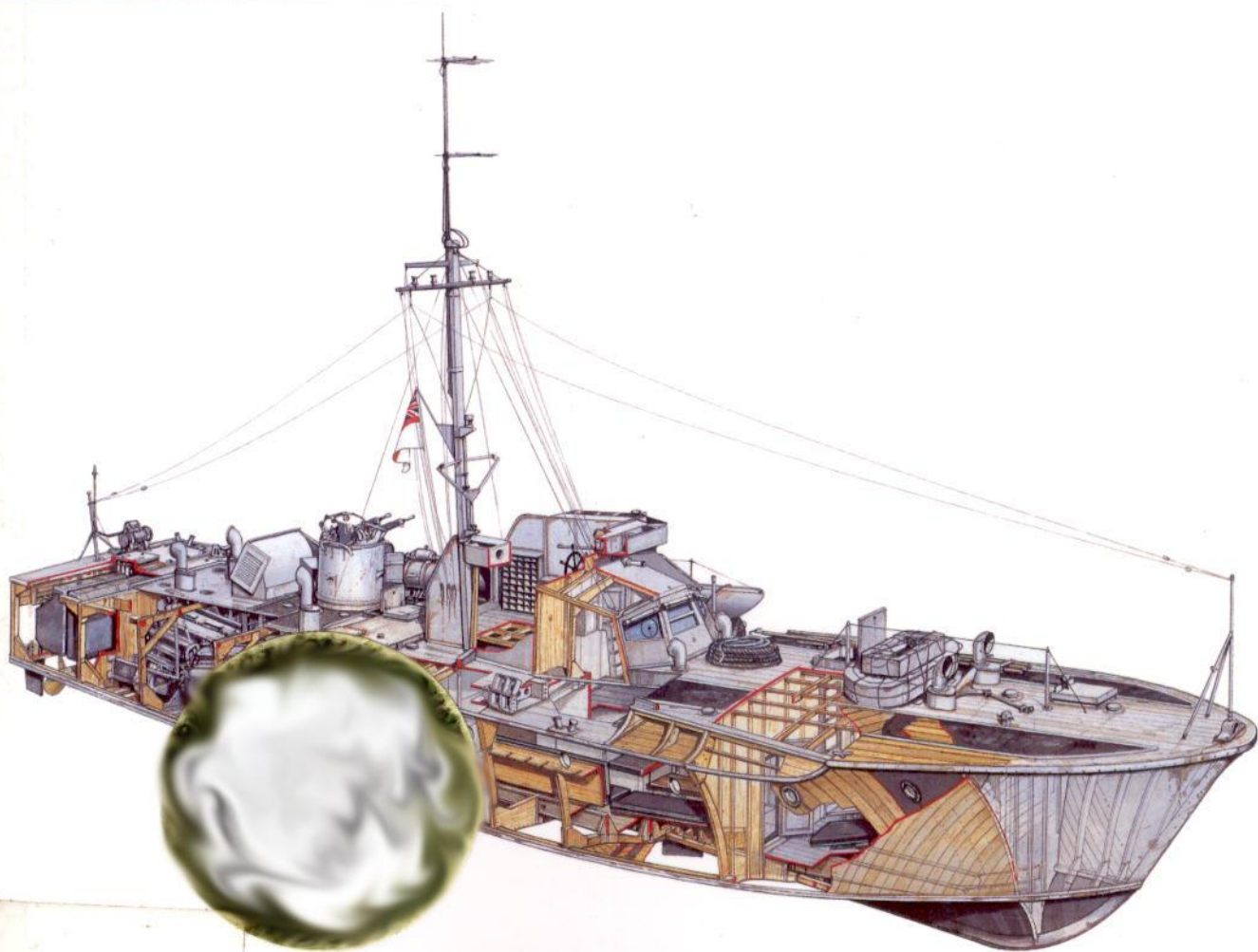


British Motor Torpedo Boat 1939–45





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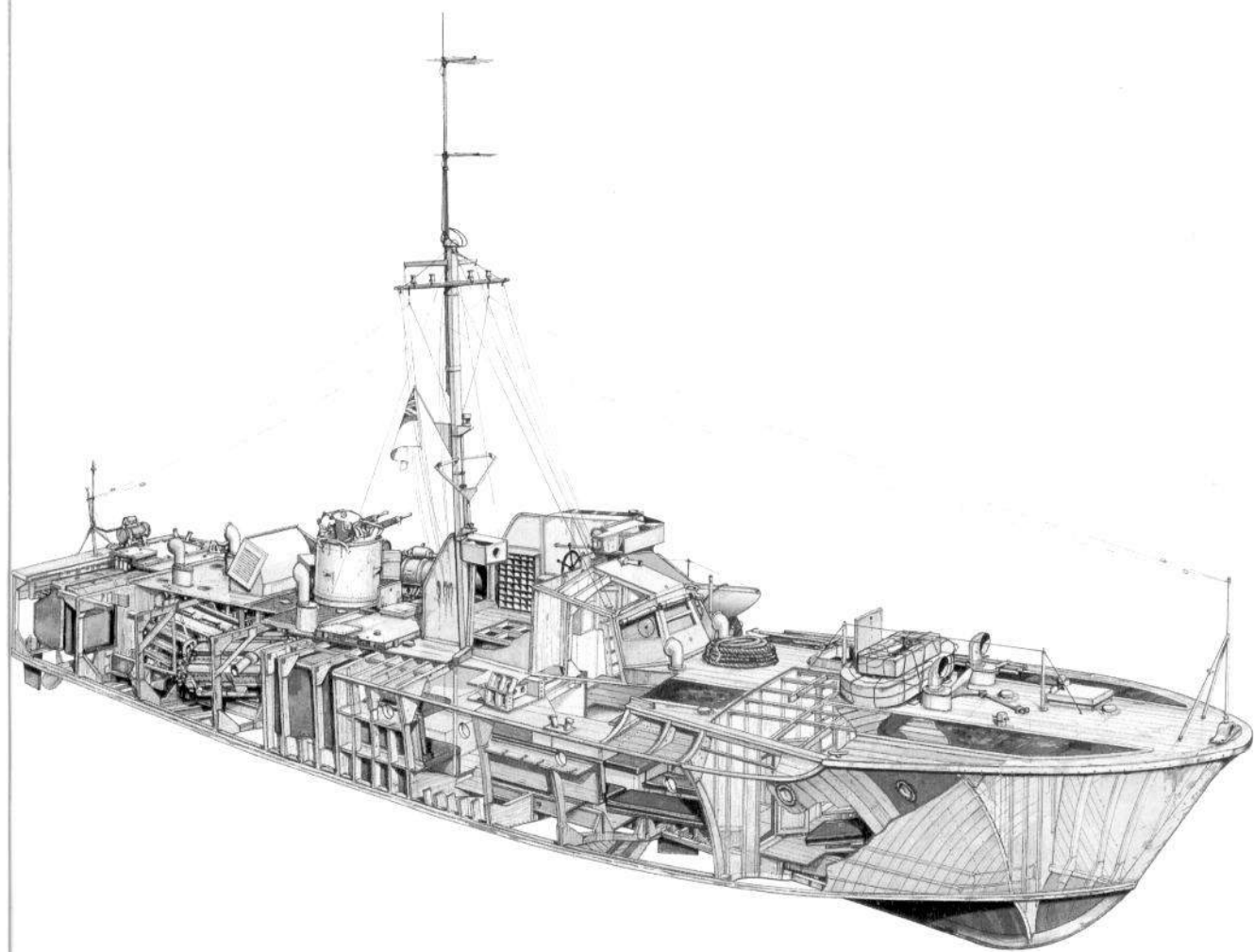
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BRITISH MOTOR TORPEDO BOAT 1939-45

INTRODUCTION

Of all the sea battles fought by the British during the Second World War, the closest-fought were the fast little ships of the Coastal Forces and their Axis counterparts. These boats came in a variety of types: Motor Torpedo Boats, Motor Gun Boats, Motor Launches and several other variants. All shared the ability to move quickly - often silently, to hunt virtually unseen, and to strike quickly, then escape in the darkness. Too small and too numerous to warrant individual names, these craft were distinguished by their identifying pennant numbers. Of all these types, the Motor Torpedo Boats were the real hunters, harassing enemy coastal convoys in the English Channel, the North Sea, the Mediterranean and the Adriatic. While the battleships of the Home Fleet spent much of the war at anchor in Scapa Flow, these small craft were waging their own private war, fighting in craft that combined grace, vulnerability and menace. Veterans speak of the sheer exhilaration of cutting through the waves at speeds of 40 knots, then the sheer confusing terror of fighting actions that lasted seconds, but where a false move could lead to the instant destruction of boat and crew.

Motor Torpedo Boats were able to use speed or stealth, waiting in the dark for an enemy ship to emerge, firing their torpedoes at the target then roaring away at full speed. As the war progressed and both weapons and equipment improved, the rules of engagement remained the same, meaning that crews had to have strong nerves and the ability to respond

MTB 376, a 72-foot 6-inch Vosper built in Annapolis, Maryland. Its design allowed the hard-chine hull to ride out of the sea at high speed, increasing its velocity through the water. While this produced a highly visible plume in its wake, it was thought that its top speed of just under 39 knots was enough to get it out of trouble when required. (Private collection, Christopher Henry)



instantly to any event. For years the exploits of these men and the craft they served in have been overshadowed by the larger elements of the fleet: the battleships, carriers, cruisers and destroyers. This book is an attempt to redress the balance.

DEVELOPMENT

Background: Pre-war development

Motor Torpedo Boats (MTBs) answered the need for a small, fast craft that could attack larger warships, but which could be built cheaply and in numbers. The development of the modern torpedo in 1877 provided naval strategists with the weapon, but they still needed to perfect a vessel to deliver the torpedo to its target. During the period from 1880 until 1914 the world's leading maritime powers developed torpedo boats, then enlarged them to create destroyers. These vessels were designed to fight each other as well as launch torpedo attacks, so that by the outbreak of the First World War the original design and purpose of the torpedo boat had been overlooked.

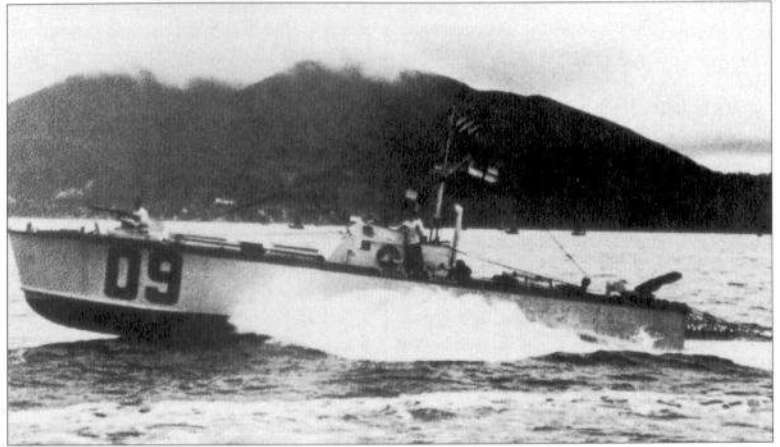
The development of British Motor Torpedo Boats (MTBs) can be traced back to the First World War. In mid-1915 three naval officers proposed an attack on German coastal shipping using shallow-draught motor boats to pass through the German minefields. The proposal was deemed worthy of further investigation, and preliminary specifications were drawn up calling for a craft that was capable of carrying an 18-inch torpedo, with a top speed of 33 knots. Finally it was hoped to carry these attack craft to the edge of the German minefields on the davits of a light cruiser, which limited their overall length to 40 feet and their displacement to 4.5 tons. The shipyard of John I. Thornycroft was known for producing fast pre-war luxury motor boats, so it was awarded the contract to build six of these craft, designated as Coastal Motor Boats (CMBs). These first 40-foot CMBs proved themselves in the Mediterranean theatre, but the first torpedo boat successes were achieved by the Italians, whose 50- and 70-foot *Motoscarfo Armato Svan* (MAS) boats sank an Austrian light cruiser in 1917 and a battleship in 1918. Thornycroft built 66 CMBs during the war, improving their design in 1917 by increasing their length to 55 feet. Although they achieved little during the war, in 1919 they sank the Soviet cruiser *Oleg* and damaged several other vessels during a raid on the Russian naval base of Kronstadt.

Although the Royal Navy abandoned its CMB programme after the war, other foreign navies were impressed by the success of the Kronstadt attack and continued to place orders for Thornycroft boats until after the outbreak of the Second World War. Having decommissioned or sold most of the CMB fleet, it was not until the mid-1930s that the Admiralty resurrected the idea of Motor Torpedo Boats. By 1932 the possibility of a new war led the Admiralty to investigate the question of high-speed torpedo boats, and consequently a recommendation was made that an experimental flotilla be created. In 1935 the Admiralty contracted for six experimental 50-foot boats from the British Power Boat Company. For the first time the official designation of Motor Torpedo Boat (MTB) was used. When the war began, the three flotillas of these boats comprised the total MTB strength of the navy. Each boat carried two 18-inch torpedoes carried

in troughs, which were then dropped from its stern, with the boat quickly turning away to avoid being hit by its own torpedo. Despite the bizarre launching system, the boats proved rugged and effective. Above all, their hard-chine hulls allowed them to rise out of the water at speed, reducing their drag and greatly increasing their speed. This hull design became the basis for virtually all the British and American MTBs that succeeded these early craft.

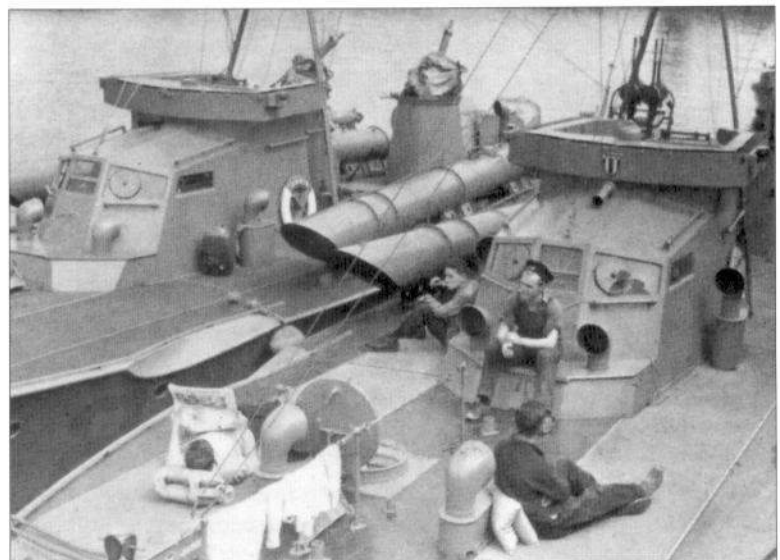
Meanwhile, other British shipbuilders began to realise that there would be a demand for this type of craft, so they developed their own MTB designs. At the same time, the Admiralty were well aware that the Germans were pressing ahead with their own Schnelleboot (S-Boot) design, which became commonly known by the British as an E-Boat ('E' standing for enemy). The Italians were also producing their own MAS boats, which incorporated the role of torpedo boat and small anti-submarine hunter.

The chief rivals of the British Power Boat Company (BPB) were Vosper and Thornycroft. The latter had produced, and were still building, the somewhat antiquated CMBs. For their part Vosper had begun life as an engineering firm, and Herbert E. Vosper developed a name for building marine propulsion systems. Clients included the Admiralty, who used Vosper engines for launches and tenders. By the early 20th century they were producing their own small boats, but the firm remained a small family-run company, incapable of fulfilling large maritime orders. In 1931 Commander Peter du Cane joined Vosper to develop a line of fast pleasure craft. Inevitably his designs would influence the production of MTBs. The award of the BPB contract in 1935 prompted du Cane to work on Vosper's own design, and at du Cane's personal expense an experimental prototype was produced in 1937. The Admiralty bought the design, dubbing it the MTB 102, and suddenly BPB had a rival. In fact they had two, as Thornycroft were still building 55-foot CMBs for foreign clients, but they also introduced their own improvements to the design, building a group of MTBs as another private venture in an attempt to solicit government funding. Therefore when the war began, although the navy only had three small flotillas of MTBs at its disposal, several companies



MTB 9, a pre-war 60-foot British Power Boat vessel, photographed off Hong Kong in 1941 while under the command of Lt. Kennedy RNVR. It was one of three boats forced to scuttle after the Japanese capture of Hong Kong. Its crew then marched across China to British-held Burma. (Private collection, Museum of Naval Firepower, Gosport)

Two 70-foot Vosper boats (MTB 20 in the foreground and MTB 22 behind it) photographed in port during the summer of 1940. MTB 20 was sold to Rumania, where it became the *Viforul*, serving against the Allies during 1941–42. (Imperial War Museum)





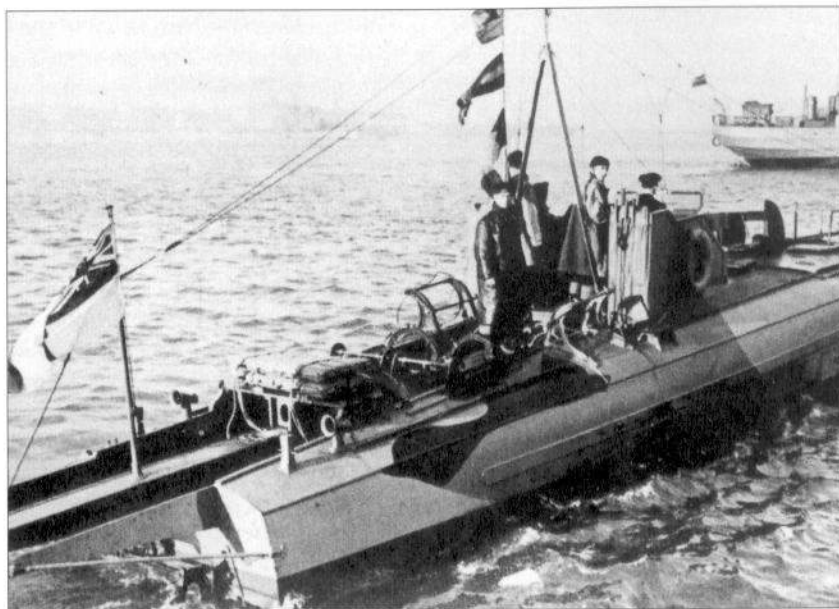
An experimental Thornycroft vessel, MTB 104 was one of four 45-foot craft built during 1940, designed to be carried as an attack launch by larger warships. Based on the pre-war CMB design, these experimental craft were deemed too small for operational use. (Imperial War Museum)

were developing their own plans for boats, each with their own characteristics. The task of the Admiralty's naval planners was therefore made easier, as private designers had already produced the plans and prototypes of the boats that would soon contest the coastal waters of Europe during the war. All they had to do was choose the best design, then issue contracts for the construction of an MTB fleet.

Thornycroft and British Power Boat

Hubert Scott-Paine was one of those larger-than-life characters who combined his entrepreneurial skills with a flair for publicity. In 1916 he founded the Supmarine Aviation Company, and hired the designer R.J. Mitchell who went on to develop the Supmarine Spitfire, one of the most successful fighter aircraft of the war. Scott-Paine sold his company in 1924 in order to concentrate on his new venture, the British Power Boat Company (BPB), based at Hythe on the Kent coast. He hired the best marine designers available, concentrating on the production of high-speed pleasure craft. In 1929 the BPB speedboat *Miss England* won the World Powerboat Championship, its hard-chine hull design placing it well ahead of American and British rivals. The Napier engine used to power this craft was modified by Scott-Paine, and in 1933 he produced the Sea Lion engine, winning a contract to produce a 37-foot high-speed tender for the RAF. Public attention was assured by having it tested by Aircraftsman T.E. Shaw, better known as 'Lawrence of Arabia'. Two years later the publicity generated by the RAF contract resulted in the award of an Admiralty contract to produce two 60-foot MTBs for the Royal Navy. The Abyssinian Crisis prompted the Admiralty to increase its order to six boats, designated MTBs 01 to 06. MTBs 01 and 02 were commissioned in June 1936, and the following year four of these boats escorted King Edward VIII down the River Thames when he opened the National Maritime Museum at Greenwich. Designated the 1st MTB Flotilla, these six boats were sent to the Mediterranean in the summer of 1937.

In 1936 another three boats were ordered, and nine more the following year, forming the 2nd and 3rd MTB Flotillas. After some renumbering of the boats to ensure all flotillas had boats with consecutive numbers, and to avoid unlucky '13', the 2nd Flotilla (MTBs 07 to 12) was sent to Hong



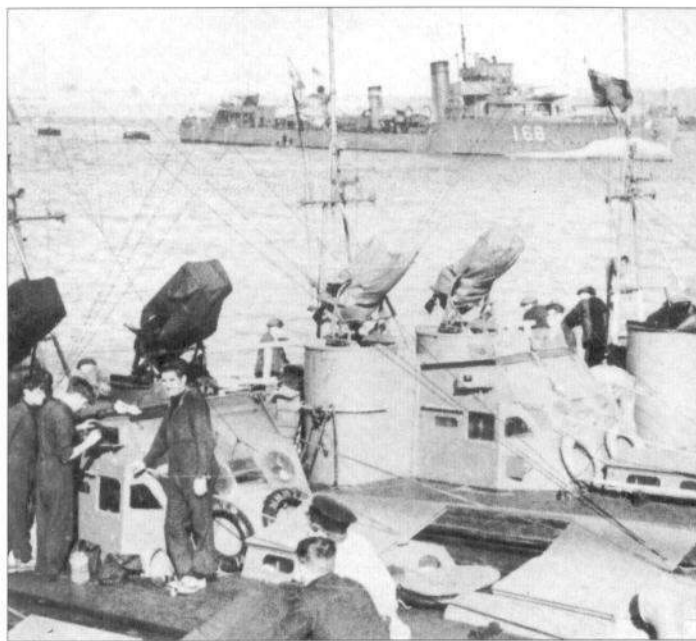
The stern of MTB 213, a 55-foot Thornycroft CMB, photographed off the Egyptian coast in early 1941. Its two 18-inch torpedoes were stern-launched, a manoeuvre requiring considerable dexterity by the boat's helmsman. MTB 213 was one of four boats of this class sunk off Suda Bay in Crete in May 1941. (Private collection, Museum of Naval Firepower, Gosport)

Kong, while the 3rd Flotilla (MTBs 14 to 19) joined the 1st MTB Flotilla in Malta. These 18 boats comprised the sum total of Britain's MTB force in September 1939, when the country found itself at war with Germany. Although Scott-Paine developed plans for a 70-foot MTB in 1938, powered by a 1,100hp Rolls-Royce Power-Merlin engine, no contract had been awarded before the war began, and Rolls-Royce concentrated on aircraft engine production from October 1939 onwards.

At the same time, it was becoming clear that Scott-Paine had enemies in Whitehall. His high-profile publicity stunts had upset some of the senior officials at the Admiralty, and despite the clear merit of BPB designs the Admiralty awarded contracts to BPB rivals, Thornycroft and Vosper. Although BPB would be awarded further contracts, friction with the navy led to the loss of its most influential designer.

In 1940 Scott-Paine sailed to the United States, taking one of his 70-foot designs (PT 9) with him, where it performed to perfection in front of US Naval observers. On the basis of this performance Scott-Paine encouraged the Packard Motor Company to build a 1,000hp marine engine based on the Rolls-Royce Merlin design, then agreed to work with the Electric Boat Company (Elco) of New Jersey to produce Scott-Paine-designed boats for the US Navy. He duly left BPB, then remained in the United States throughout the war, working both with Elco and with his own Canadian Power Boat Company. Although several of his Elco-produced MTBs saw service in the Royal Navy, the British maritime industry lost the skills of one of its greatest designers.

The firm of John I. Thornycroft had continued to produce Coastal Motor Boats (CMBs) since the end of the First World War. The company, based at Hampton on the River Thames, had produced marine engines since 1859, and its move into the power boat business resulted in the award of a contract to build Britain's First World War CMBs. By 1939 Thornycroft was busy producing several craft for various navies, and gradually these were seized by the British government and brought into service as British MTBs. For example MTBs 67 and 68 were being built



60-foot British Power Boat MTBs at Harwich, 1940, with the escort destroyer HMS Wyvern in the background. Lewis guns were mounted fore and aft, but later, the armament was reconfigured, and the guns were mounted in twin bins on either side of the bridge. (Imperial War Museum)

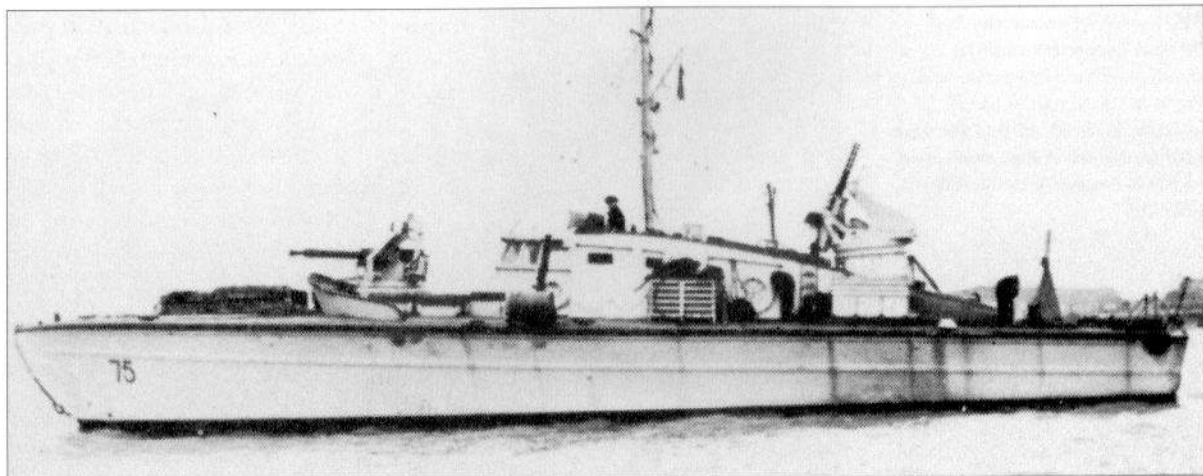
for the Philippine Navy, but in 1939 they were transferred into Finnish service. When Finland signed a peace treaty with Russia in March 1940, the export of the boats was halted, and the craft found themselves in Royal Naval service. MTBs 26 and 27 were acquired from the Chinese Navy, MTBs 67 and 68 from the Finnish Navy, and MTBs 327 to 331 were being built for the Philippine Navy when they were impounded. In addition Thornycroft had five more craft (MTBs 213 to 217) which were being built as a speculative venture, and were duly purchased by the Admiralty. Although it was widely recognised that these boats were obsolete compared with the fast craft produced by the Germans, Italians and even the British Power Boat Company, the navy was desperate for ships of any type. The only

real improvement made in the inter-war years was the increase of propulsive power by the use of two Thornycroft RY12 engines of 650hp each. Like the early BPB designs, their torpedoes were fired by sliding them out of troughs in the stern, then veering away to avoid contact with the torpedo as it burst into life. By May 1940 all available Thornycroft boats were in service.

As the war progressed, both Thornycroft and BPB produced new designs, and these were duly approved by the navy, and contracts were issued. Of these Thornycroft produced four experimental boats (MTBs 104 to 107) which were 45-foot versions of their larger counterparts, designed to ride 'piggy back' in the davits of larger warships. These proved to have poor sea-keeping qualities and were never used in action. A far better design was the Thornycroft 75-foot MTB, of which ten were built (MTBs 24, 25, and 49 to 56). MTBs 24 and 25 were 74-foot prototypes

A British Power Boat Company 72-foot vessel (MTB 494) under way in British waters during April 1944. A year later it was rammed and sunk by a German S-boat (called E-boats by the Allies) in the North Sea during one of the final actions of the war. (Imperial War Museum)





ordered by the Admiralty in 1938, both of which entered service as soon as the war began. Unlike the later boats of the same class, MTBs 24 and 25 were powered by three Isotta-Fraschini engines, capable of speeds of up to 47 knots. Although MTBs 49 to 56 were solid, well-built craft, their heavy displacement and under-powered engines (four Thornycroft RY12s) meant that they were considered too slow for operational use and were withdrawn from service in December 1942 when it was discovered that their frames were cracked. They were eventually converted into target-towing launches.

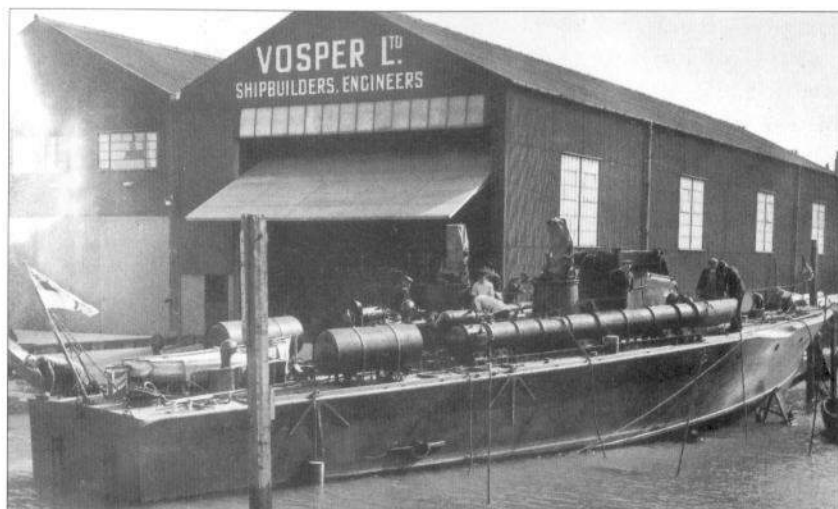
The British Power Boat Company also prospered, as the plans developed by Scott-Paine for a 70-foot MTB were further developed to create a 72-foot (actually 71-foot 9-inch) vessel, which was capable of being completed as either a Motor Torpedo Boat or a Motor Gun Boat. The design was superb: the vessel was an excellent sea boat, well constructed, and capable of carrying a far heavier armament than previous BPB, Thornycroft or Vosper designs. Its vague similarity to Elco boats is proof of its shared design heritage, being first conceived on Scott-Paine's drawing board. First contracted in 1941 as an MGB design, these boats entered service from mid-1942 onwards, and a year later work began on their conversion to MTBs. In all, 78 MGBs were built, but were later converted into MTBs. MGBs 74 to 81 became MTBs 412 to 418, while MGBs 107 to 176 became MTBs 430 to 432, and 434 to 500. Although their conversion involved an increase in displacement (the addition of two 18-inch torpedo tubes, and the replacement of the main gun on most boats by a power-operated 6-pounder Mark II gun added 10 tons to the displacement), the consequent loss of speed was compensated for by the substantial increase in firepower. Even with the added weight, the supercharged Packard engines gave the BPB MTB a top speed of 39 knots. With the possible exception of the Elco 77-foot boat, this craft was probably the best all-round British Motor Torpedo Boat of the war.

Vosper

The wartime success of Vosper is largely due to Commander Peter du Cane, a former naval officer and aviator who joined Vosper in 1931 to boost their involvement in high-speed craft. The following year he won a controlling interest in the company and secured the contract from Sir

The British Power Boat Company produced a 72-foot vessel that was used as an MGB and was later converted into an MTB, the major difference being the addition of two 21-inch torpedo tubes at the sides of the bridge on the MTB, and the replacement of a 2-pounder pom-pom on the earlier MGB (shown here) with a 6-pounder on the later MTB. (Imperial War Museum)

The launch of one of the first 70-foot Vosper boats (MTB 22) at the Vosper Yard in Portsmouth. While MTB 22 was kept in service, MTB 20, 21 and 23 were sold to the Royal Rumanian Navy in 1940. (Vosper Thornycroft (UK) Ltd)



Malcolm Campbell to build his record-breaking speedboat *Bluebird II*. By this stage the company was already building launches for the Royal Navy, and du Cane naturally considered tendering a bid for high-speed 'offensive torpedo boats'. The award of just such a contract to Vosper's rival, the British Power Boat Company, spurred du Cane on to develop a Vosper design, and he personally funded the design and construction of a 68-foot experimental boat with a hard-chine hull, designated PV 1 (standing for 'private venture'). It was duly purchased by the Admiralty as MTB 102. Unlike the Thornycroft and BPB designs (and after some experimentation), it was capable of firing its torpedoes from deck mounts rather than by dropping them astern. To power the craft, du Cane selected the powerful Italian Isotta-Fraschini petrol engine.

A combination of the performance of MTB 102 and the extensive lobbying of du Cane led to the award of Vosper's first real government contract. While 60-foot boats were built for foreign clients, Vosper designers also produced plans for an expanded boat, which became the 70-foot MTB. The design was an improvement, as the added length made it a better sea boat, and it also provided a more stable weapons platform. In August 1938 the Admiralty ordered four 70-foot MTBs (MTBs 20 to 23),

The bridge of a late-war Vosper 73-foot boat (MTB 383) showing the ship's wheel, with the steering compass above it. To its right are (in order) the engine throttles (3), the engine telegraph, the torpedo firing levers (2) and the engine room voice pipe. The hatch and companionway to the left of the wheel leads down to the wheelhouse. (Vosper Thornycroft (UK) Ltd)



part of a six-boat deal. The remaining craft (MTBs 24 and 25) were awarded to Thornycroft, becoming their experimental 72-foot boats. It was later decided that MTB 22 would serve as a prototype, while the remaining three Vosper boats would be sold to the Rumanian Navy. MTB 22 was handed over to the Royal Navy shortly before the outbreak of the war, but the Rumanian transfer was ordered to continue, so three replacement boats were duly ordered from Vosper (MTBs 28 to 30). The first of these would be built under contract by Thornycroft, and the remaining two by Camper & Nicholson, the first of many sub-contracts issued by Vosper during the war. Another experimental boat (MTB 103) was ordered from the company four months later. Additional foreign orders were also received: two 60-foot boats were ordered by Sweden (designated T3 and T4) and delivered in late 1939, while four similar boats were ordered by Norway. Of the latter, two were delivered, and two more were purchased by the Royal Navy, becoming MTBs 71 and 72. Two of these 70-foot boats were earmarked for service in the Greek Navy (also designated T3 and T4), but these were also purchased by the Admiralty who designated them MTBs 69 and 70. Four replacements were duly ordered by the Greek government, and these were also impounded by the Admiralty when Greece was overrun (the boats becoming MTBs 218 to 221). In order to cope with demand, Vosper began building a new yard at Porchester towards the end of 1939.

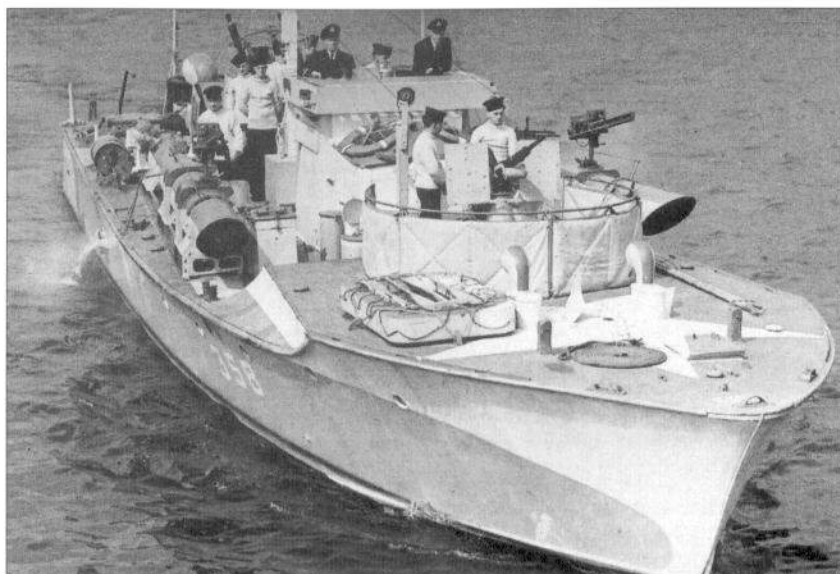
Finally at the end of 1939 Vosper was awarded the contract to build ten more 70-foot MTBs (MTBs 31 to 40). After MTB 34 the supply of Italian engines dried up, and for the remainder of the order a temporary solution was found in the Hall-Scott Defender engine. Eventually American-built Packard engines would be used in the rest of the Vosper fleet. The New Year would bring a new wave of orders. The designations MTB 41 to 56 were already provisionally allocated, so on 26 February 1940 the Admiralty ordered the production of ten more 70-foot boats (MTBs 57 to 66), part of an expanded programme of MTB production. Vosper designs were undergoing a change because of the need to find a reliable replacement engine. In 1941 the boats fitted with the under-powered Hall-Scott engines were refitted with American-built Packard systems, and where possible the entire fleet of 70-foot boats were re-fitted with improved 1,250hp Packard engines during 1942.

During the spring of 1940 du Cane and his design team struggled with the need to design a new type of boat built specifically around the Packard engine. When a new Admiralty contract was negotiated during April the Vosper designers proposed the introduction of a longer boat with an increased displacement, but built around three Packard engines driving three outer shafts, supported by Ford V8 engines designed to provide a silent running

MTB 380 was a late-war 73-foot Vosper Type I design, one of 16 boats in the class. Designed by Commander du Cane RN, these craft were amongst the best Vosper boats of the war, and their four 18-inch torpedo tubes made them far more potent than earlier craft. (Vosper Thornycroft (UK) Ltd)



MTB 358, a 72-foot 6-inch Vosper boat built in the Harland & Wolff Yard in Belfast, and attached to the 5th MTB flotilla based in Dover. It carries a single Oerlikon (protected by a splinter mattress), a twin .5-inch Vickers in a power turret aft, two 21-inch torpedo tubes and two grenade launchers mounted on the torpedo mounts. (Private collection, Museum of Naval Firepower, Gosport)



capability (of 6½ knots). The contract was duly approved on 14 May 1940, and work started on the first 72-foot 6-inch Vosper MTBs (MTBs 73 to 98) in September 1940. The first two entered service before the end of 1941, but delivery of the remainder was spread over a year, from January 1942 to January 1943, largely due to heavy bomb damage in Portsmouth. Of these, MTBs 78 and 79 were sub-contracted to J.S. White's Yard at Cowes; 86, 95 and 96 to Morgan Giles Yard at Teignmouth; 87 to 92 to Harland & Wolff in Belfast; and 93 and 94 to the Berthon Boat Company of Lymington. In all, 27 of the new-style Vosper boats were commissioned (actually 28, as MTB 75 was bombed on the stocks, and a new version built in its place), marking the largest single boat order of the war so far. Of these, MTB 74 was a 'one-off', modified from scratch for special operations. It differed from other boats of its type, first in that it was only 70 feet long, and secondly in that its torpedo tubes were mounted on its forecastle rather than amidships. The configuration was designed to fire torpedoes over net obstructions, and the torpedoes themselves were also specially made, designed to incorporate a delay timer and an extra-large warhead.

At the same time, Vosper was building four new 70-foot MTBs for the Greek Navy, but like almost all other foreign orders it was requisitioned by the Admiralty, and in December 1940 the Royal Hellenic Navy's T3 to

MTB 73 alongside the dock in the Vosper Yard, Portsmouth, in October 1941. This was the first of a batch of 72-foot 6-inch boats designed in 1940, which entered service by the end of 1941. (Vosper Thornycroft (UK) Ltd)



T6 MTBs became the Royal Navy's MTBs 218 to 221. An additional order of four 72-foot six-inch boats was placed by the Admiralty in December 1940, to replace the loss of four MTBs already in service. These became MTBs 242 to 245, and followed the design of the first batch of the larger boats which were already under construction.

The next batch of 20 Vosper boats in February 1941 was the last that had to be sub-contracted exclusively to British firms. Vosper duly sub-contracted all of these 72-foot 6-inch boats. MTBs 222 to 228 were built by the H. Mclean Yard in Renfrew; MTBs 229 to 231 were produced by the McGruer Yard of Clynder; and MTBs 232 to 235 were built by the Berthon Boat Company of Lymington. MTBs 236 to 239 were built by Camper & Nicholson of Gosport; and MTBs 240 and 241 were built by the Morgan Giles Yard in Teignmouth. By early 1941 Vosper was hard-pressed to keep up with the demand, despite the policy of sub-contracting much of the work to smaller yards. Merchant shipping losses were mounting in the Atlantic, and therefore basic materials such as plywood, mahogany and rubber (used for non-slip decking) were all in short supply. The introduction of the Lend-Lease Act in March 1941 was a godsend for British Coastal Forces. It allowed the construction of Vosper boats under licence in the United States, increased the supply of Packard and Ford engines, and allowed the US Navy to 'lend' vessels to Britain at a time when every boat was needed.

While an initial dozen Lend-Lease MTBs were supplied by either the US Navy or Elco (including MTB 258 - the BPB prototype that Scott-Paine brought to the United States), Vosper also brought over plans for their own 72-foot 6-inch boats. The first batch of 31 Lend-Lease Vosper-designed boats was contracted to two American companies: the Annapolis Yacht Yard of Maryland built MTBs 275 to 282, while the Harbor Boat Building Company of Terminal Island, California, were awarded the contract to build MTBs 297 to 306. This meant that by the summer of 1941 Vosper designers had to supervise the construction of boats on both seaboard of the United States as well as throughout Britain. Amazingly, although du Cane and his Vosper team were working at full capacity to produce these new boats, they also found time to modify older craft and to develop plans for improving their existing MTB designs.

The full involvement of the United States in the war from December 1941 brought a change in Vosper policy. While some US yards would still remain available for the production of British boats, the production of the larger yards (such as Elco and Higgins) would be increasingly geared towards the development of an American PT boat fleet. Consequently while the Annapolis Navy Yard remained committed to the production of Vosper boats under licence, production in Britain would have to be increased.

Fortunately the expansion of Vosper facilities at Wyvenhock, Porchester and Portsmouth meant that by early 1942 the company was ready to take on more projects themselves. In April 1942 the Admiralty ordered 16 more Vosper 70-foot boats (MTBs 347 to 362), whose design was similar to earlier craft but whose internal layout was improved to incorporate suggestions proposed by the crews of existing boats. This was followed by an order for 16 72-foot 6-inch boats from Annapolis. Of these, MTBs 363 to 370 were earmarked as British Lend-Lease transfers to the Soviet Union, while MTBs 371 to 378 were to be for British use.



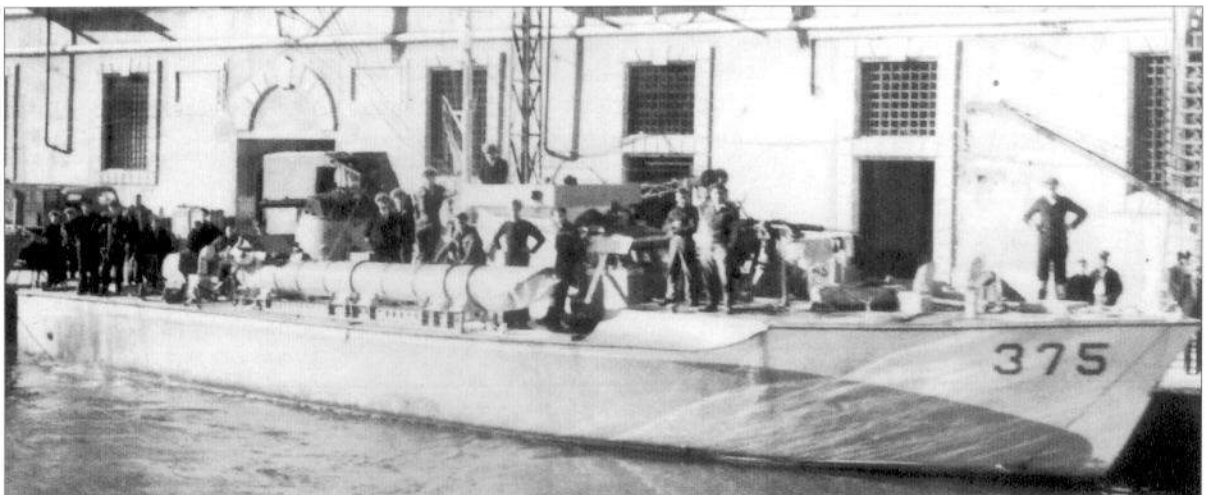
By late 1940 most early MTBs were refitted to carry radar. In this photograph of the 72-foot 6-inch Vosper boat MTB 80, it is shown fitted with a Type 291 radar as well as IFF equipment. (Imperial War Museum)

MTB 375 photographed alongside the quay of an Italian port during early 1944. The Vosper 72-foot 6-inch boat was one of 16 Lend-Lease boats of this class built in the United States during 1943: eight served in the Royal Navy (mostly in the Mediterranean), while eight more (MTBs 363-370) were given to the Soviet Navy in early 1944. (Stratford Archive)

During the year, du Cane and his team worked on plans for a new type of boat, incorporating the firepower of Motor Gun Boats with an expanded torpedo armament. This fulfilled an Admiralty requirement for a short-hulled multi-purpose MTB/MGB design, and the Vosper team worked with experienced MTB commanders and naval architects to produce what many considered to be the perfect Motor Torpedo Boat design of the war. In November 1942 the Admiralty approved the production of a 70-foot experimental boat (MTB 379) which was designed to provide a scaled-down test version of this new design. The final order of

the year was for an experimental boat, and it was hoped that production of the new boats would start in the New Year. Although the experimental boat would not enter service before January 1944, the Admiralty ordered 16 vessels of the new design in March 1943. These craft (numbered MTBs 380 to 395) were given the class name of Vosper 73-foot MTB. A second contract for five more boats in December 1943 was modified to fulfil the need for a boat with a heavier gun armament. The result was the introduction of a variant of the original 73-foot Vosper design. From that point, the original batch (MTBs 380 to 395) were designated 73-foot Type I boats, and the remaining batch (MTB 523 to 527) became 73-foot Type II boats.

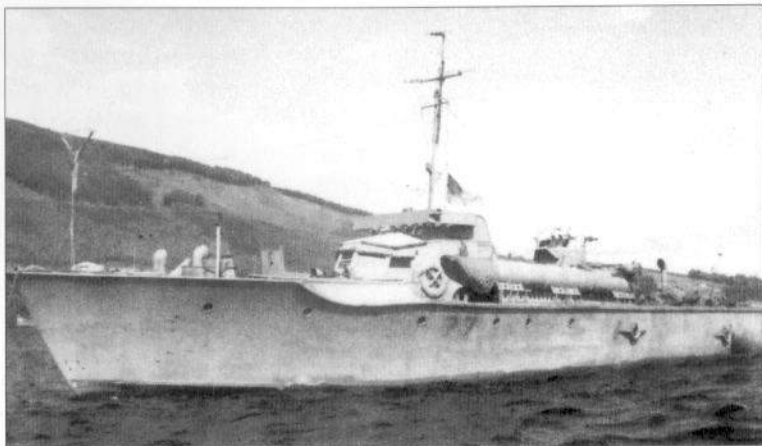
These new MTBs incorporated several technical innovations that made them amongst the most effective MTBs in the fleet. The latest radar and radio equipment, IFF (identify friend or foe) and the latest echo sounders, made them the most technically advanced boats Vosper had yet produced. The Type I boats carried four 18-inch torpedo tubes, a twin 20mm Oerlikon forward, and two twin .303-inch machine guns mounted on the tops of the front torpedo tubes. When the 73-foot Type II boats appeared they only carried two 18-inch torpedo tubes, but the bow armament was substantially increased, as these vessels carried a 6-pounder Quick Firing gun in a power-driven mount and a twin 20mm Oerlikon mounted on the quarterdeck. Two twin .303-inch Lewis guns were mounted on pintles on



the deck on either side of the bridge, exactly where the .303-inch mounts were on the Type I boats. The first two of the 16 73-foot Type I boats entered service shortly before the Normandy invasion (June 1944), and eight more were commissioned between July and September. Four more boats joined the fleet during the last months of the war, but MTBs 394 and 395 were commissioned after the end of hostilities. As for the Type II boats, none entered service before the end of the war.

It is also worth noting that Vosper produced several successful experimental boats, beginning with MTB 102 (Peter du Cane's private venture boat). The projected 45-foot MTB design proposed in 1939 was for use as an attack boat, carried by larger surface units, but the design was abandoned in favour of larger craft. Known as 'MTB small type', the design never entered service, as the prototype (MTB 108) was destroyed during a German bombing raid in January 1941 while still under construction. MTB 103 was an experimental 70-foot boat that was re-designated as a 70-foot target towing boat (CT 5) when it entered service in June 1941. Finally MTB 510 was a 100-foot experimental design produced to test a new type of gearbox. Ordered in April 1942, it entered service in December 1943, but never saw active service, as it remained a test vessel based at Portland for the duration of the war.

Vosper therefore produced three main boat types during the war. The 70-foot boats were the principal boats of the early to mid-war period. Most of those which remained in service in 1942 were modified to incorporate new equipment such as radar, and in some cases the armament was improved by the addition of Oerlikons in place of twin Vickers machine guns. Although the Admiralty ordered later batches of 70-foot boats after May 1940 (when the 72-foot 6-inch design was introduced), the shorter MTB was really a pre-war design that was superseded by the larger mid-war



MTB 77 photographed at anchor somewhere on the south coast, most probably on the River Dart during 1942. It was sunk by German aircraft off the Italian coast in September 1943. (Stratford Archive)



MTB 34 was a 70-foot Vosper boat, built at the Vosper Yard in Portsmouth during 1940. Like the earlier boats of its class (MTBs 20-23 and 29-30) it was armed with twin .5-inch machine guns in bins behind the bridge, while additional smaller machine-guns were fitted as they became available. (Museum of Naval Firepower, Gosport)

boats. The majority of these second-generation boats entered service during 1942, by which time many of the earlier 70-foot craft were 'retro-fitted' with better equipment and weaponry. Finally the third late-war generation of 73-foot boats represented the epitome of wartime design, although only a handful saw active service before the end of the conflict. It was Vosper's ability to adapt its designs in the light of combat experience and to incorporate technical improvements that made the company the most successful MTB producer of the war.

Other British MTB designs

Although Vosper, Thornycroft and the British Power Boat Company remained the main suppliers of British MTBs throughout the war, several smaller yards produced their own designs. Of these, the J. Samuel White Yard of Cowes in the Isle of Wight and the Camper & Nicholson Yard at Gosport were the most important. Vosper issued sub-contracts to White's Yard for the construction of MTBs 41 to 48, 201 to 212 and 246 to 257 between 1940 and 1944. All were built according to the standard Vosper design, although modified slightly to incorporate existing White construction facilities. These varied in length, the initial batch having 72-foot hulls (MTBs 41 to 48), while the later boats were slightly increased to 72 feet, 10 inches. The designation '72-foot MTB' was given to all of these boats. They were initially powered by three Hall-Scott engines, but were later 'retro-fitted' with the more powerful Stirling Admiral engines. The armament was slightly different from conventional Vosper boats: two 21-inch torpedo tubes, a twin .5-inch Vickers machine gun in a turret amidships, two single .303-inch machine guns and up to four depth charges per side. Later in the war, White-designed boats were provided with additional armament, usually a single or twin Oerlikon in place of the Vickers mount.

J.S. White also produced their own design, a 73-foot boat which the company considered an improvement on the Vosper designs they had been producing for three years. The Admiralty contracted for six 73-foot White boats (MTBs 424 to 429) in June 1943, and these entered service the following year. Soon after entering service in late 1944 they were transferred to the Polish Navy and were re-designated S5 to S10. They were heavily armed, mounting a 6-pounder gun forward, a twin 20mm Oerlikon amidships, two twin .303-inch machine guns and two 18-inch torpedo tubes.

Experience gained during the early part of the war led to a demand for MTBs with the firepower to stand up to German S-Boats (E-Boats) in combat. There was also a growing need for a rugged, longer-hulled MTB capable of operating further from its home base and enduring heavier weather. While MGBs were becoming increasingly powerful, their lack of any torpedo armament meant that they could often miss the opportunity of inflicting damage on the enemy. The answer was the creation of the combined MGB/MTB. Two companies specialised in the production of these craft; Camper & Nicholson and the Fairmile Marine Company.

Under the guidance of Norman Hart, Fairmile produced a range of Motor Launches (MLs), culminating in the versatile 115-foot Fairmile 'D' boat which combined the characteristics of an MTB and an MGB. Nicknamed 'dog boats', they were designed to combat the E-boat threat in home waters and in the Mediterranean. The prototype entered service



in February 1942, by which time the first dual-purpose MGB/MTBs (MGB/MTBs 601 to 616) had already been ordered, designed to carry two 18-inch torpedo tubes. MGB/MTBs 617 to 632 were fitted with 21-inch tubes, while in the following batch (MGB/MTBs 633 to 696) the armament varied, and many were never actually fitted with torpedo tubes. While most of the following batch (MGB/MTBs 697 to 800) were designed to carry four 18-inch torpedo tubes, a handful of the class were fitted with only a pair of 21-inch tubes. Of the final batch of Fairmile 'D' combined MGB/MTBs (designated 5001 to 5029), only 11 boats were designated as MTBs (MTBs 5001 to 5003, 5005, 5007 to 5010, 5015 and 5020), carrying a powerful deck armament and two 21-inch torpedo tubes. The designation MGB or MTB varied depending on the actual fit of the individual Fairmile boat, causing some degree of confusion in contemporary accounts. Of the earlier boats, while 616 to 640, 649 to 656, 664 to 673 and 675 to 700 were considered primarily MTBs, the remaining numbers in the sequence were designated MGBs. After that, there was no clear designation, although most appear to have been designated as MGBs rather than MTBs or even MGB/MTBs. The first of the combined Fairmile boats entered service in June 1942, and production continued until the end of the war. Standard deck armament consisted either of two 6-pounder guns or one 6-pounder and a 2-pounder Hotchkiss pom-pom in addition to a variety of 20mm Oerlikons, Vickers and Lewis machine guns and depth charges.

In 1940–41 Camper & Nicholson built eight vessels for the Turkish Navy, but these were requisitioned by the Admiralty, who designated them MGB/MTBs 502 to 509. These 117-foot boats displaced 95 tons, and unlike short-hulled MTBs they were round-bilged, their mahogany hulls built around a steel frame. The original armament of MGB/MTBs 502, 503 and 509 consisted of two 21-inch torpedo tubes, two twin .5-inch Vickers machine guns mounted amidships, and a 2-pounder mounted on the quarterdeck. The remaining five were converted into blockade runners before their completion, designed to run 45-ton cargoes of ball bearings and machine tools from Sweden to Britain. Their armament consisted of a twin Oerlikon and two twin .303-inch machine guns. In late 1944 the

MTB 365 was a 72-foot 6-inch Vosper boat built under licence at the Annapolis Yacht Yard, Maryland. In 1943 it was one of eight Vosper boats (MTBs 363 to 370) that were transferred to Russia. (Stratford Archive)

blockade runners were redesigned as MGBs. A second group of Camper & Nicholson MGB/MTBs were built in 1944, designed to carry four 18-inch torpedo tubes, a 6-pounder, a twin Oerlikon and two single Oerlikons. None of these formidable second-batch vessels saw service before the war ended. Although all these Camper & Nicholson craft carried torpedoes as a means of attacking targets of opportunity, they were not true MTBs, despite their official title. Consequently the Royal Navy tended to classify them as MGBs. To a lesser extent the same was true of the Fairmile MGB/MTBs: when the Admiralty wished to refer to a particular vessel, it tended to use one or other of the designations (although MGB was the more common form). A detailed study of these important craft is beyond the scope of this book, except to discuss their relevance to thoroughbred MTBs. Both MGBs and combined boats warrant their own study, so consequently only the basic information about these craft is supplied in this volume.

Lend-Lease production

During the terms of the Lend-Lease arrangement, 38 American boats were acquired by the Admiralty, helping to bridge the gap before British-built boats could enter service and help turn the tide of the coastal war. Of these, 21 saw service in the Royal Navy. In addition, Vosper arranged for the construction of its own design of boats in American yards at a time when British boatyards were still expanding their facilities to cope with increased wartime demand. The Lend-Lease arrangement also meant that boats could be produced in yards that were not subject to frequent bombing attacks by German aircraft, and where the latest design innovations developed in the United States could be examined and in some cases incorporated into British designs. This was not always an easy process. For example, when British Admiralty officials inspected their new Elco boats, they tried to modify them to conform to the standards of contemporary British designs. This involved removing electric fridges, replacing safe electrical galley stoves with volatile paraffin versions (a standard fit on British boats), and replacing bunks with far less stable hammocks!

The Electric Boat Company (Elco) of Bayonne, New Jersey, produced a 70-foot PT (Patrol Torpedo) which entered British service under the Lend-Lease programme in 1940–41. Although this photograph shows MGB 89, it was identical to the MTB counterparts 259 to 268 apart from the lack of two 21-inch torpedo tubes. (Private collection, Museum of Naval Firepower, Gosport)



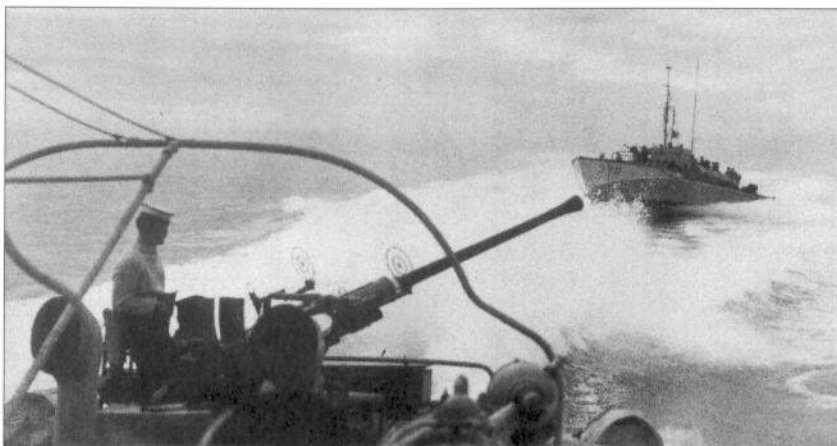


The power-driven mount of a twin .5-inch Vickers machine gun mounted amidships on a 70-foot Elco boat in the Mediterranean. The bin itself remained stationary, and the gun and mounting ring rotated inside the turret. (Imperial War Museum)

Of the Lend-Lease boats, 26 were supplied by the Electric Boat Company (Elco) of Bayonne, New Jersey, five by Higgins Industries Inc. of New Orleans, Louisiana, and the remainder by the US Navy. American interest in Motor Torpedo Boats (or Patrol Torpedo Boats) dated from the mid-1930s, although the US Navy had some experience of Thornycroft CMBs during and immediately after the First World War. Several prototypes were authorised during 1938–39, and some of these formed part of the initial Lend-Lease package. Of the US Navy craft, all were prototype craft of limited value to the Royal Navy. PT 3 (designated MTB 273) and PT 4 (MTB 274) were 58-foot boats displacing 25 tons each, produced by the Fisher Boatworks of Detroit, Michigan. PT 5 to 8 (designated MTBs 269 to 272) were all 81-foot Higgins boats displacing 34 tons each. PT 7/MTB 271 and PT 8/MTB 272 were constructed from aluminium, while the remaining two boats were of all-wood construction. After some discussion it was decided that the US Navy should retain PT 8, which was redesignated YP 110. Likewise the two smaller boats never entered operational service, so only MTBs 269, 270 and 271 were actually commissioned into the Royal Navy. PT 9 was another prototype: the British Power Boat Company 70-foot MTB that Scott-Paine took to America, and which was subsequently purchased for evaluation by the US Navy. Like the other three prototype vessels, this boat (which became MTB 258) spent the war in Canadian waters, serving as a Canadian Navy air-sea rescue craft.

Ten 70-foot Elco boats (PTs 10 to 19) were also transferred, becoming MTBs 259 to 268. All were completed in November and December 1940, and, like the other US Navy craft, were transferred to the Royal Navy in April 1941. A second batch of ten Elco boats (PTs 49 to 58) became MTBs 307 to 316 in February–March 1942, but unlike their predecessors were 77-foot Elco boats. They never actually saw service as PT boats before their transfer, but they all saw heavy action in Royal Navy service. Ten more 77-foot Elco boats were designated MTBs 317 to 326 at the same time, but never saw service, being diverted into the Soviet Lend-Lease programme before they could serve in the Royal Navy. A year later in April 1943 the US Navy transferred six more 77-foot Elco boats (PTs 88 and 90 to 94 becoming MTBs 419, 420 to 424). The origins of the 70-foot Elco boat can be traced to Hubert Scott-Paine's BPB prototype of 1938. A sleek enclosed pilothouse tapered back to a low cabin, which was surmounted by two

The American-built 72-foot 6-inch Vosper boat MTB 378, viewed from the stern of a 78-foot Higgins MTB during operations in the Mediterranean. The Higgins was equipped with a Canadian-built 40mm Bofors gun on its quarterdeck. (Imperial War Museum)



machine gun turrets. These Dewandre turrets could be protected by plexiglass (perspex) domes, similar to those used in bomber aircraft. Power was supplied by three Packard V12 1,200hp engines. The British versions were armed with two 21-inch torpedo tubes, two twin .5-inch Browning machine guns in the Dewandre turrets, two twin .303-inch machine guns and a single 20mm Oerlikon mounted on the stern. Two depth charges could also be carried. The 77-foot boat was an improvement on the earlier design, having improved Packard 1,350hp engines, but these later boats carried a smaller armament (a single twin .5-inch turret, a single 20mm Oerlikon and two 21-inch torpedo tubes).

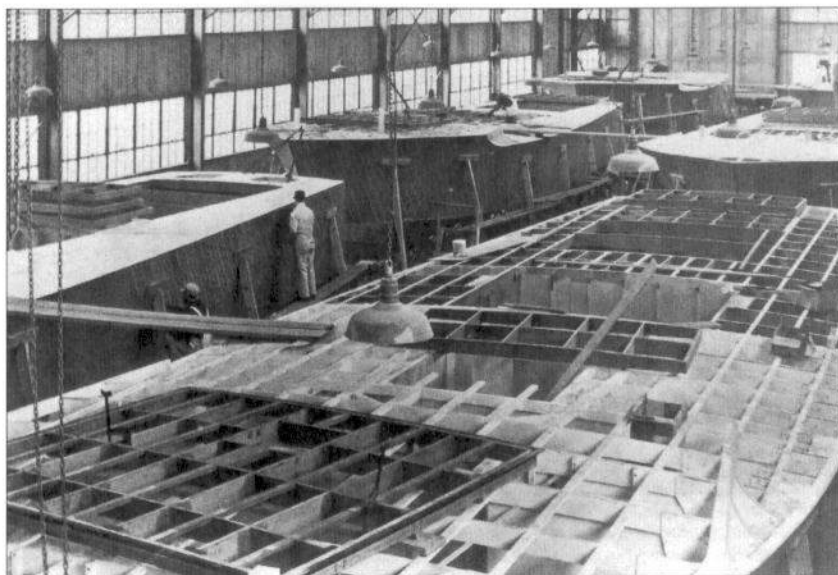
The five 78-foot Higgins PT Boats that entered Royal Navy service in April 1943 were originally designed as a US Lend-Lease contribution to the Soviet Union (formerly being designated PTs 88, and 90 to 93). Instead the boats were sent to the Mediterranean, where they became MTBs 419 to 423. Unlike other British MTBs, they were armed with 40mm Bofors guns supplied from Canada, together with twin Oerlikon guns and two 21-inch torpedo tubes.

CONSTRUCTION AND OPERATION

Construction

The basic shape of a Motor Torpedo Boat was dominated by the hard-chine hull. The design had come about through virtually simultaneous research by both the British Power Boat Company and Vosper, and both rivals developed the concept through the use of water test tanks and small-scale models. Although the boats were short, wide-beamed and prone to rolling badly at slow speeds, they came into their own when their commanders pulled down on the throttle. At speed the hulls lifted clear of the water, creating a minimum amount of water resistance, and increasing the speed through the water. In effect the only portion of the boat that remained in the water was the stern.

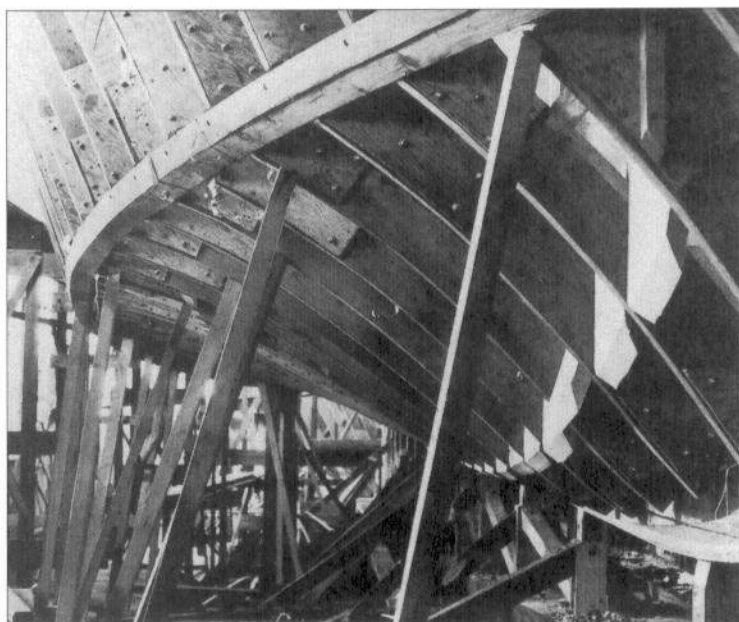
The hulls themselves (with a few exceptions) used a frame system that in its most basic form was similar to that used in wooden ship construction for centuries. The aim was to create a lightweight hull which was as robust as possible, and which could absorb damage without falling apart. First an oak keel was laid, then stem and stern posts were positioned. The transom



A group of six 70-foot Vosper boats under construction in the Vosper Yard in Portsmouth in 1942. This photograph shows the way pre-fabricated pieces were used in construction. (Vosper Thornycroft (UK) Ltd)

(stem) framing and a series of 'D'-shaped birch or mahogany frames were then put into place, providing the outer shape of the hull and delineating the upper deck. Diagonal supporting knees were also added to improve strength, and elm hogs (beams designed to prevent the hull from warping) were also added. A typical 70-foot Vosper boat had 67 such frames. Four of these were then reinforced, extending from keel to upper deck, forming watertight mahogany bulkheads dividing the crew's quarters, engine room, forepeak and fuel tank portions of the lower hull. The outer edges of the frames were then joined by an oak gunwale running around the hull, then the gaps for major hatch carlings and crew areas were created by adding fore-and-aft running stringers between the frames. Extra support was provided in the engine room, where zinc-coated steel engine bearers and deck plates were laid on top of the keel and lower frame structure to distribute the weight of the engines across the whole stern area of the boat. Wooden box-like frames were added to provide stable lower-deck areas above the bilges, then a similar prefabricated box system was used to establish the shape of the upper deck. While most of these non-supporting boxes were glued and then pinned in place, all major joints were strengthened by birch knees and brackets, then reinforced by heavy bolts. Pre-war experiments with less robust fastenings demonstrated a tendency for them to fracture under stress when the boat rose out of the water; hence the need for secure joints. Extra support was provided to the chine brackets, where the

Hull strength combined with light weight was an important part of MTB design. The closely spaced frames provided hull strength and gave the craft some chance of surviving multiple hits by machine gun or auto-cannon rounds. (Vosper Thornycroft (UK) Ltd)



extremities of the hull would take the full force of any pounding of the boat while it was propelled at speed.

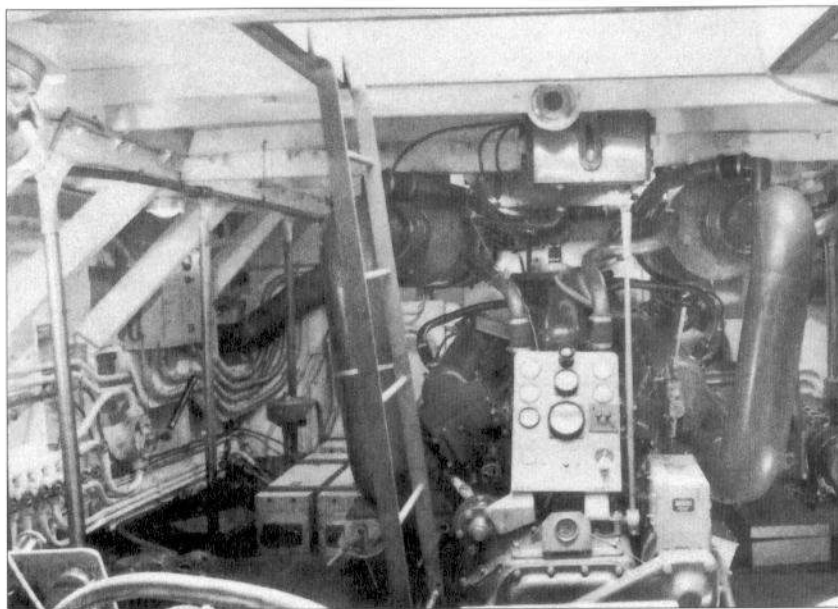
Next the lower hull (from keel to waterline) was planked using triple diagonal mahogany planking. This involved laying a series of mahogany planks at a 45° angle to the horizontal. A caulking compound was used (known as 'Seamflex'), then a layer of oiled cotton fabric was stretched over the planking to improve water resistance. Next, a second layer was placed on top, but the diagonals ran the opposite way, creating a sort of herringbone effect. After another cotton coat, a third layer was then fastened on top, running fore and aft. The upper hull (from waterline to deck) was covered with double diagonal mahogany planking, as was the upper deck of the boat. In these cases the lower planking was laid at a 45° angle, but the upper planking was laid fore and aft. The wheelhouse and bridge structure and any hatch combings were then added using plywood and mahogany, the structure supported by 2-inch square columns that ran down to the keel. Finally a steel sheeting was used to provide some protection for the bridge and wheelhouse.

After construction, the fitting-out process involved the addition of engines, weaponry, crew quarters, ventilators and all the other features needed to transform a small wooden hull into a functional MTB. Average construction time varied, particularly in Britain where bombing raids, shortages of materials and outdated production methods meant slightly longer building times than in the United States. The necessities of wartime also meant that builders in both countries were prepared to work longer hours to complete a project. MTB 22 was ordered from Vosper in August 1938, laid down two months later, and launched in April 1939. Its fitting-out took ten months, and it was delivered in June 1939. The 72-foot 6-inch Vosper MTB 81 was laid down in March 1942, launched five months later and was fitted out by January 1943. By contrast the 77-foot Elco boat MTB 314 was laid down in July 1941 and launched just over two months later. By February 1942 it was in service.

Propulsion

Before 1935 the only British-built marine engine powerful enough to propel MTBs was made by Thornycroft (the 650hp RY 12). While Thornycroft continued to use these engines in their 55-foot CMBs, other companies looked elsewhere. Hubert Scott-Paine modified the 500hp Napier Lion aero engine for marine use, and used it to power his first British Power Boat MTB. He also modified the Rolls-Royce Merlin engines, and used them in a 70-foot prototype, but the supply of these machines was threatened by the growing demand of the Royal Air Force. In September 1939 Scott-Paine arranged for American-built Packard V-12 1200hp engines to be used for BPB designs, but by that time his relationship with Elco meant that the engines were used in American boats, not British ones. Peter du Cane of Vosper opted for the Italian-built Isotta-Fraschini Asso engine, a lightweight V-18 design capable of 1,200hp. Thirteen engines were delivered before Italy declared war on Britain on 10 June 1940. Only MTBs 20 to 23, 29, 30, 71 and 72 were ever fitted with these superb engines. With the supply of Italian engines blocked, Vosper had to look elsewhere for its propulsion units.

Du Cane purchased the American-built Hall-Scott Defender 12 cylinder engine (650hp) for use in the next batch of Vosper boats, but the engines

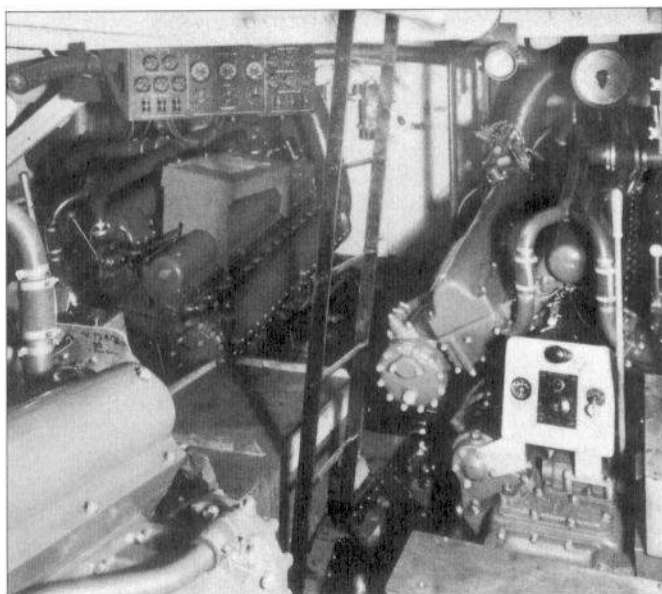


The engine room of the Thornycroft boat MTB 54, looking aft from the forward pair of engines. The boat was equipped with four RY 12 Thornycroft engines of 650hp each, powering two propeller shafts, giving it a top speed of 29 knots at 1,900rpm. (Vosper Thornycroft (UK) Ltd)

supplied from California were considerably heavier than their Italian counterparts, forcing a redesign of the 70-foot Vosper's engine room to accommodate the larger and heavier engine. Even when a supercharged 900hp version was introduced, the Hall-Scott engines were under-powered, and limited the boats fitted with them to a top speed of around 28 knots, compared to the 35–40 knots produced by the Isotta-Fraschini. The search continued for a lighter and faster replacement. The J. Samuel White company used Sterling Admirals, a supercharged British design available in limited numbers and capable of producing 1,120hp, while Thornycroft preferred to use its own engine design. British Power Boat continued to use a combination of British Scott-Napier 1,000hp engines, Rolls-Royce Merlins and Packards, but eventually the latter engine became accepted as the standard for their MTBs.

Vosper also settled on the Packard 4m-2500, a 12-cylinder supercharged engine capable of producing 1,200hp. The Packard Motor Car Company of Detroit, Michigan, was already producing marine engines for the US Navy's growing PT Boat fleet. Although heavier than previous engines, its added power overcame any displacement problems. Packard also had the production facilities to mass-produce these engines for export to Britain. In 1940 alone, 68 Packard 4m-2500 engines were delivered to Britain, allowing the replacement of Hall-Scott engines with the more powerful Packard designs. It also led to the modification of the standard Vosper design, resulting in the development of the 72-foot 6-inch boat. The development of the Lend-Lease programme ensured the steady supply of Packard

The engine room of a Vosper 72-foot 6-inch boat (MTB 351), photographed in April 1943, looking forward. The boat was fitted with three American-built Packard engines of 1,400hp each. The companionway leads up onto the quarterdeck. (Vosper Thornycroft (UK) Ltd)



engines, and by 1941 they had become the standard engine used in Coastal Forces. Refinements to the design were made throughout the war, and by 1942 the 5m-2500 entered service, an engine capable of producing 1,500hp. During the course of the war 4,686 Packard engines were acquired by the British, making the Packard the most widely used Allied marine engine of the war.

Main engines were used while the boats were running at full speed, but silent-running secondary engines were also required when the boats were stalking their prey. The engine of choice was the Ford V8, which allowed the boats to cruise at up to 6–8 knots. These were then de-clutched and the main engine drive was engaged – a tricky process that was particularly fraught when the engines were crash-started in combat.

Armament

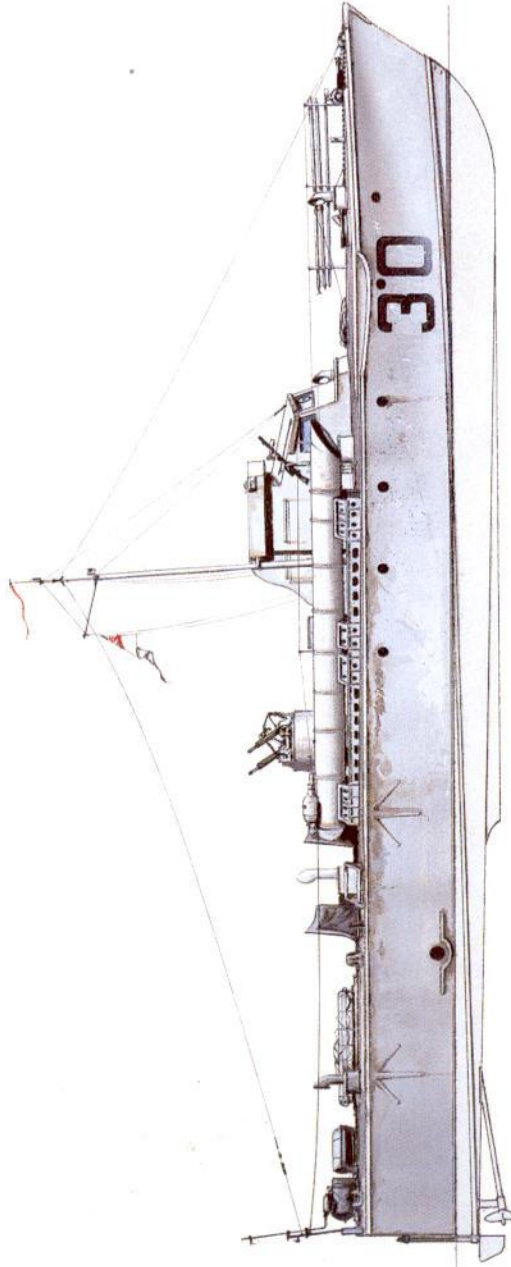
Clearly the main armament of these vessels was the torpedo. MTBs were not designed to engage in stand-up fire-fights with German surface warships such as E-boats and escort vessels. Instead their brief was to fire their torpedoes at a target, then escape. This said, the boats were armed with machine guns for close-range defence, and for anti-aircraft protection, and later in the war these vessels became increasingly heavily armed.

MTBs were armed with one of two types of torpedo: either the 18-inch or 21-inch version. American PT boats used only the 21-inch torpedo. The first torpedo systems fitted on Thornycroft 55-foot CMBs and BPB 60-foot MTBs were stern launch designs, where the 18-inch Mark VIII torpedo was dropped from a trough over the stern, activating the torpedo motor. The delivering boat then had to speed out of harm's way. The Admiralty

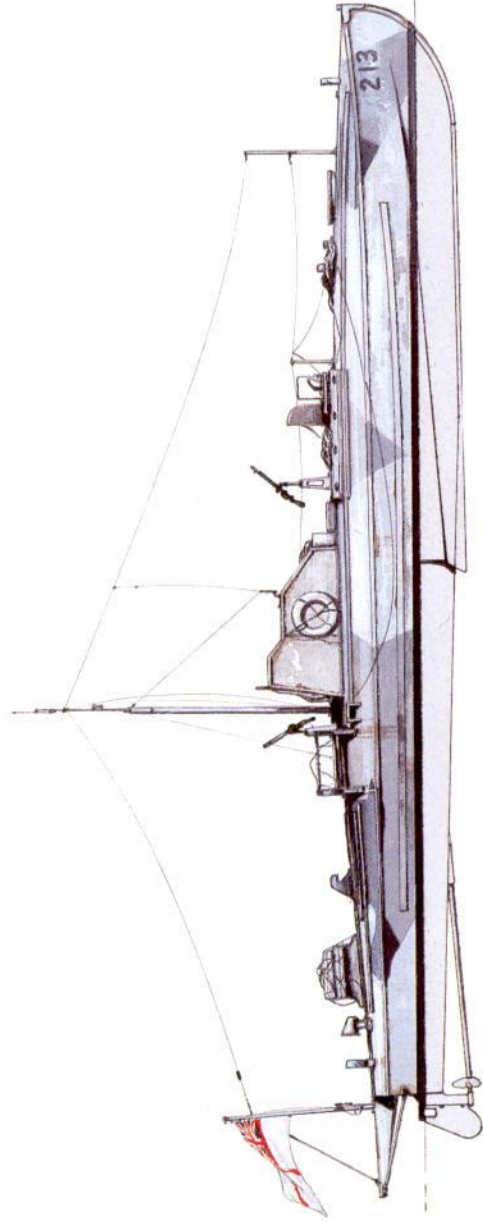
British Vickers Mark III .5-inch machine gun barrels after being removed from a 70-foot Vosper in either Lowestoft or Felixstowe. The guns had a rate of fire of about 650 rounds per minute, equivalent to a single box of ammunition. (Imperial War Museum)



A1: MTB 30



A2: MTB 213

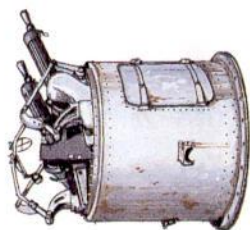
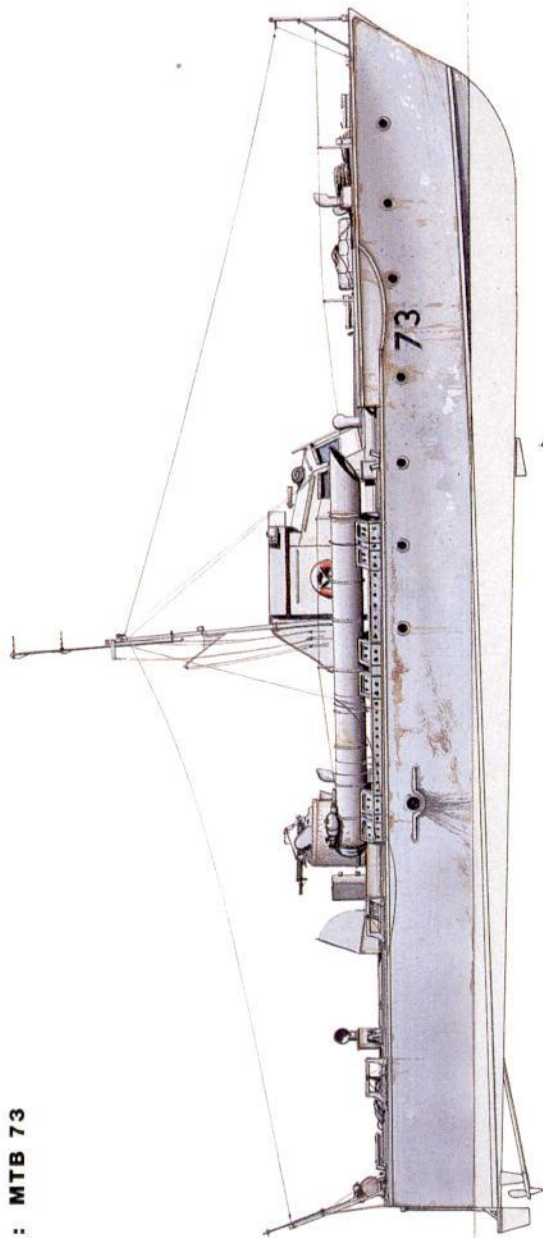


B

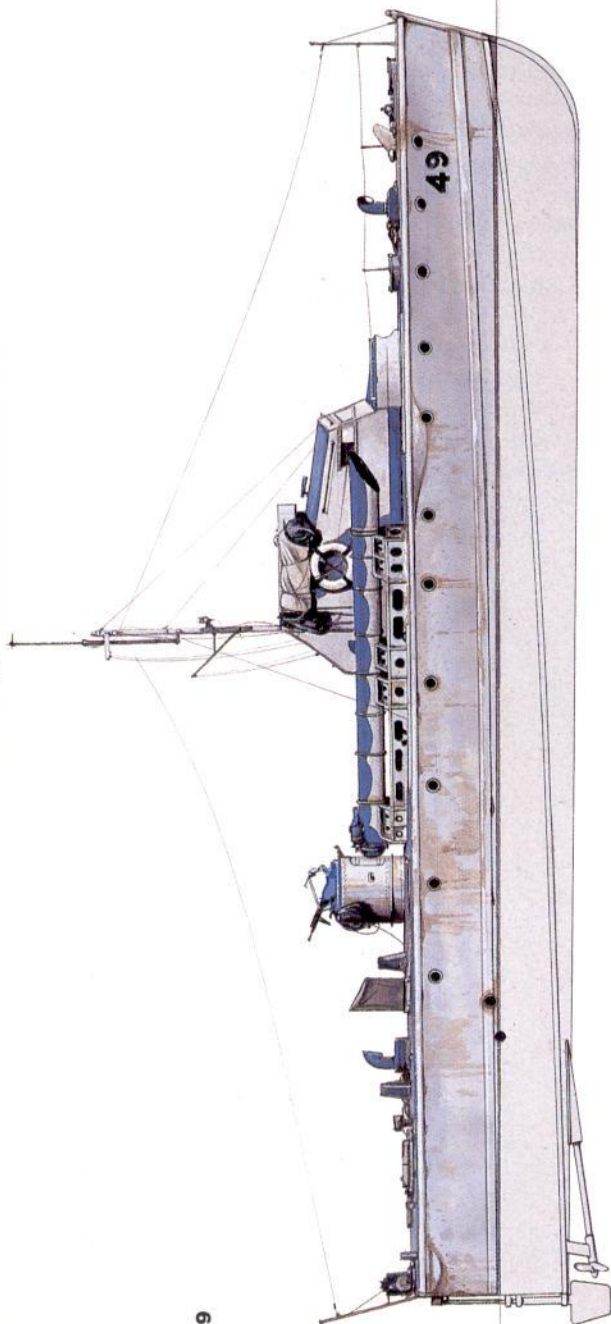


B: Attack on a German convoy, September 1942

C1: MTB 73



C2: MTB 49



D: MTB 223

SPECIFICATIONS

Dimensions: Length overall: 72 feet, 6 inches; Beam: 19 feet, 2½ inches; Draught forward: 2 feet; Draught aft: 6 feet, 3 inches

Displacement: 40 tons

Propulsion: Three Packard 1,400hp engines; auxiliary Ford electric engine (110 volt)

Speed: 39 knots at 2,400rpm, 36 knots at 2,200rpm (maximum continuous speed)

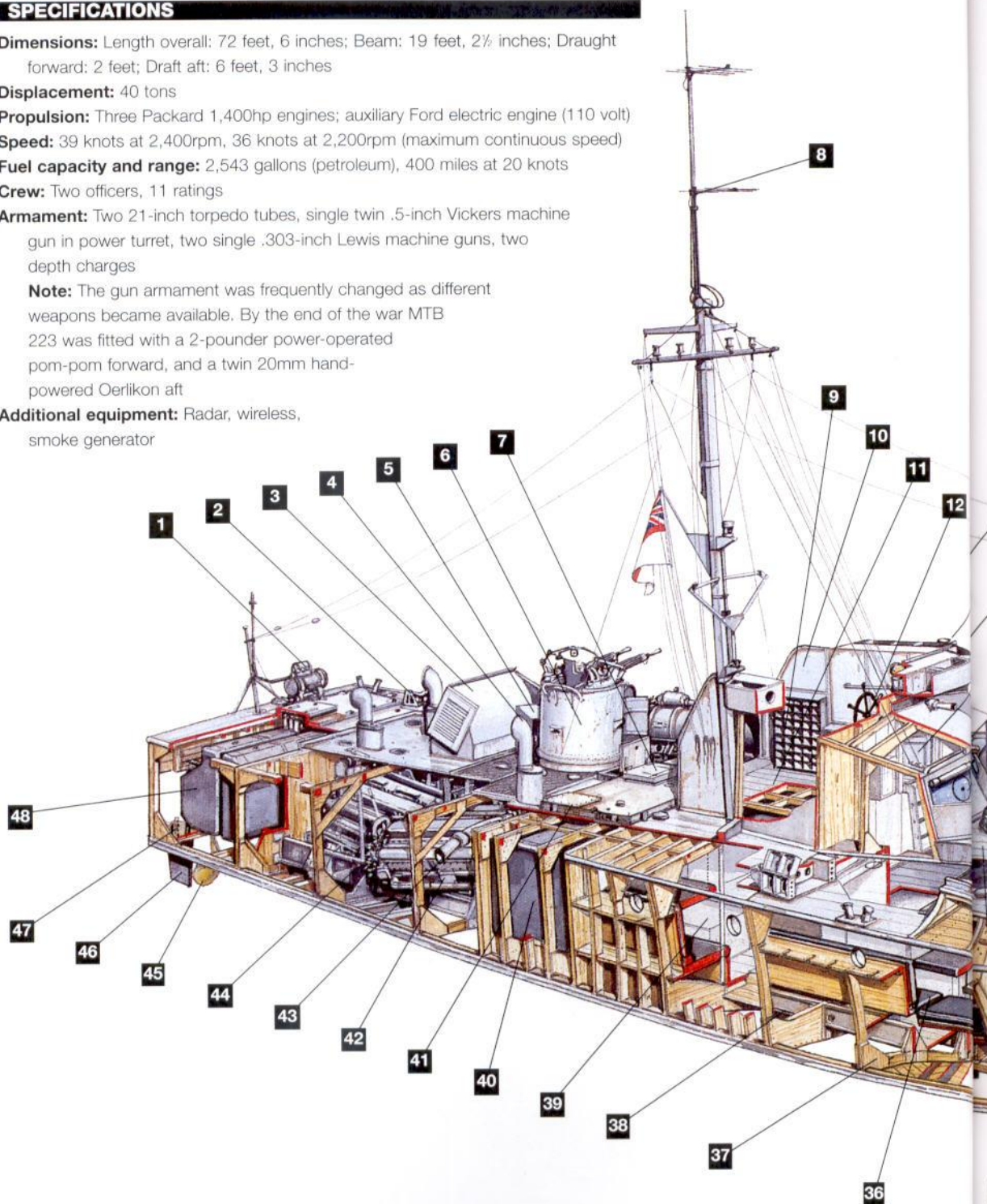
Fuel capacity and range: 2,543 gallons (petroleum), 400 miles at 20 knots

Crew: Two officers, 11 ratings

Armament: Two 21-inch torpedo tubes, single twin .5-inch Vickers machine gun in power turret, two single .303-inch Lewis machine guns, two depth charges

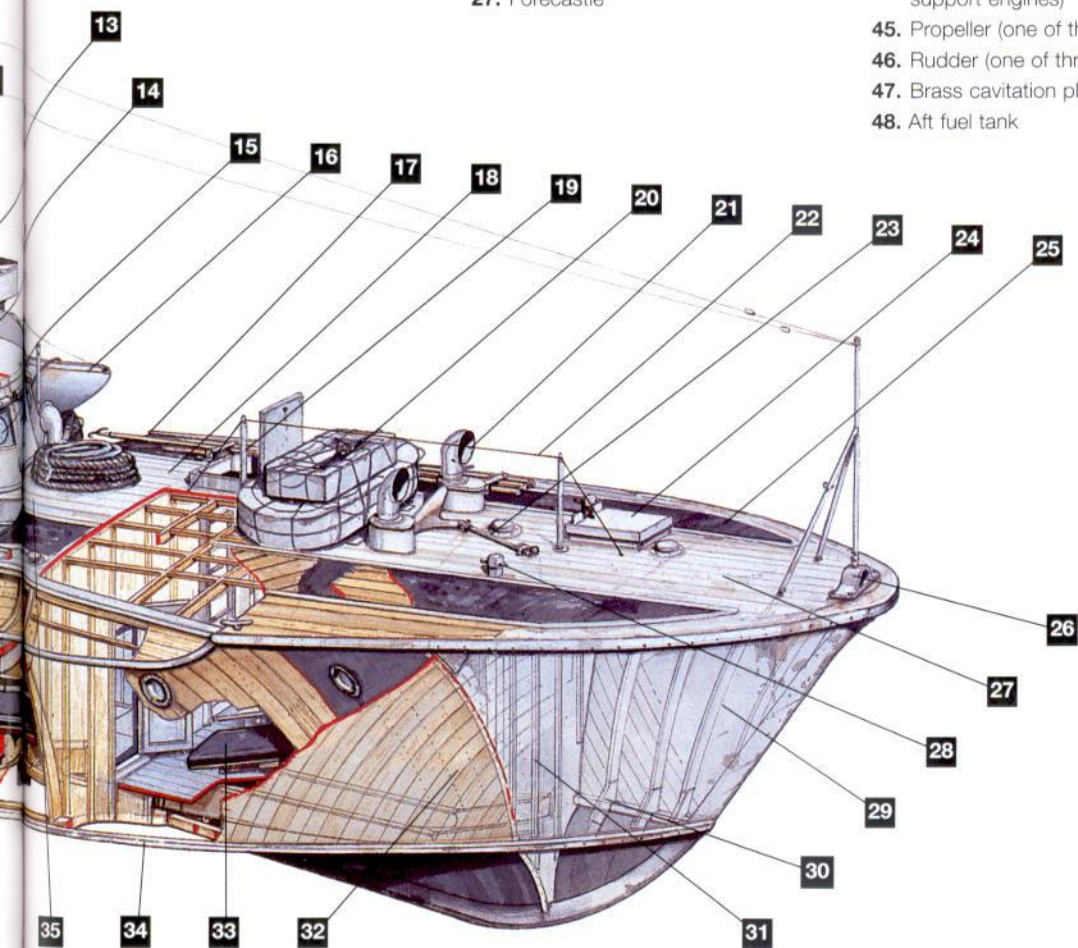
Note: The gun armament was frequently changed as different weapons became available. By the end of the war MTB 223 was fitted with a 2-pounder power-operated pom-pom forward, and a twin 20mm hand-powered Oerlikon aft

Additional equipment: Radar, wireless, smoke generator

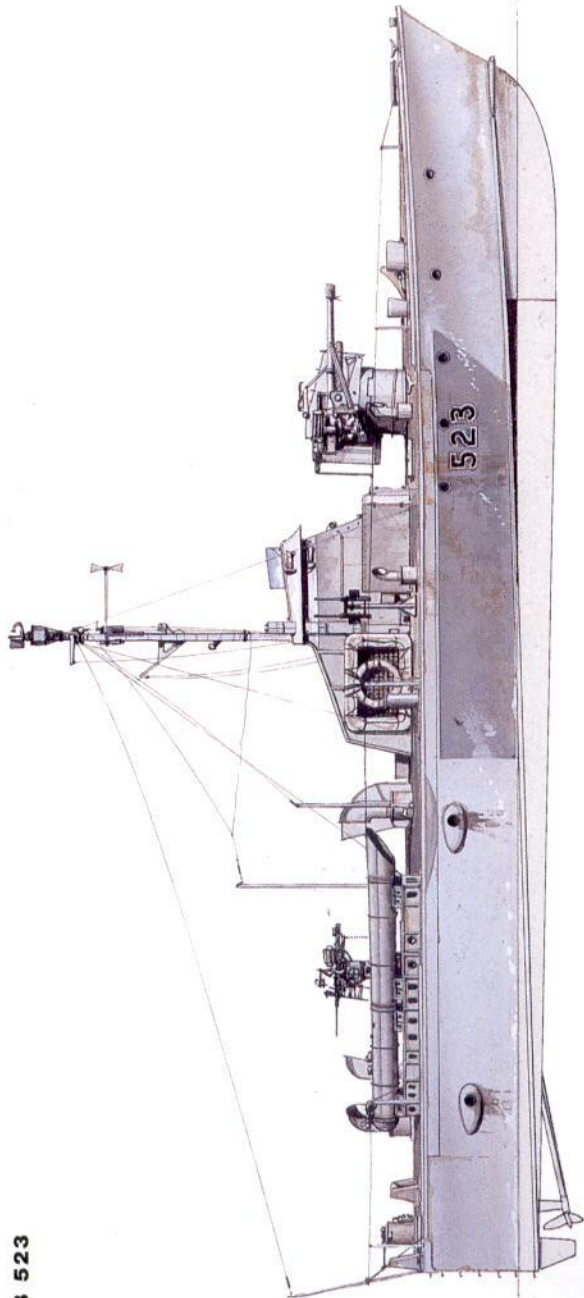


KEY

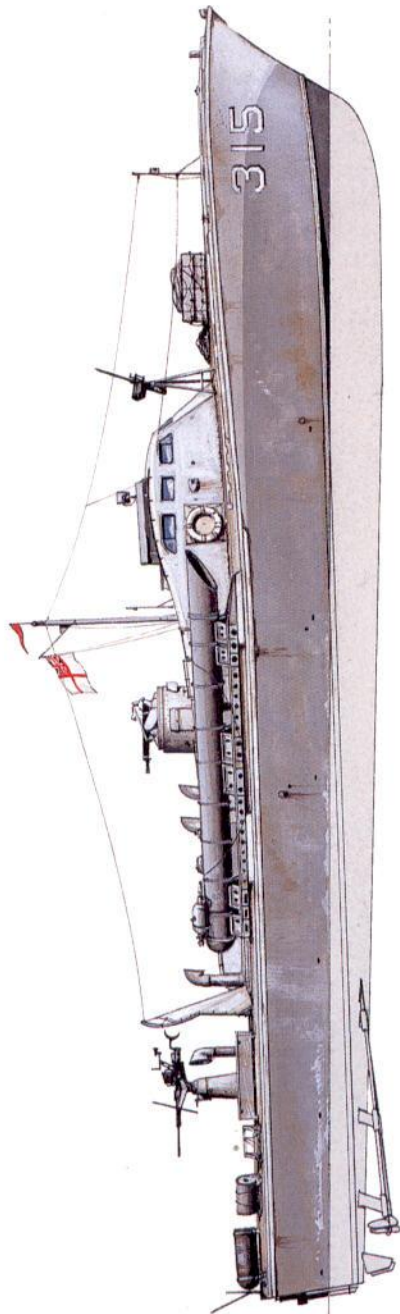
1. Smoke generator (Chemical Smoke Apparatus: CSA)
2. Depth charge rack (one of six)
3. Engine room companionway
4. Engine room ventilators (four)
5. Ammunition ready-use locker
6. Twin .5-inch Vickers machine gun mounting (Mark V)
7. Hatch (leading to Wardroom flats)
8. Radio direction finder (RDF) mast (Type 286 radar omitted for clarity)
9. Flag locker
10. Non-magnetic bullet-proof plating
11. Bridge
12. Ship's wheel
13. Navigation lights (one of two)
14. Wheelhouse
15. Kent clear-view screen (one of two)
16. 21-inch torpedo tube (one of two)
17. Boat hook stowage
18. Location of galley below decks (port side)
19. Companionway (leading to Messdeck)
20. Liferaft stowage
21. Messdeck ventilators (two)
22. Safety lifeline
23. Anchor (C.Q.R. Type)
24. Hatch (leading to forepeak)
25. Non-slip rubber decking panels ('pyramid pattern')
26. Bullring
27. Forecastle
28. Samson post (Towing bitt)
29. Forepeak
30. Cable tier
31. Bulkhead (one of four)
32. Location of crew's heads (WC)
33. Forward messdeck (Crew's quarters)
34. Chine
35. Location of magazine (port side)
36. Wardroom
37. Main frame (one of 68)
38. Fresh water tank
39. Wireless Transmission (W/T) Office
40. Main fuel tank
41. Fuel filling hatch
42. Packard VM-2500 marine engine (one of three)
43. Engine exhaust
44. Longitudinal steel girders (to support engines)
45. Propeller (one of three)
46. Rudder (one of three)
47. Brass cavitation plate
48. Aft fuel tank



E1: MTB 523



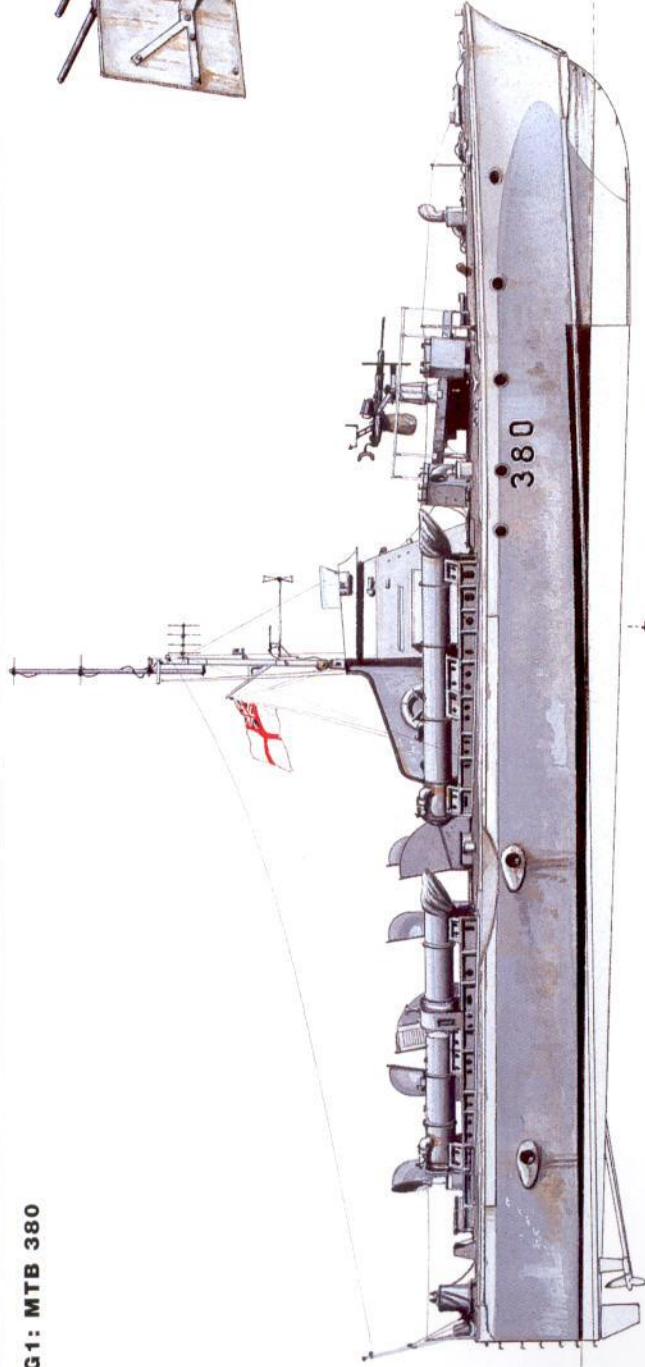
E2: MTB 315



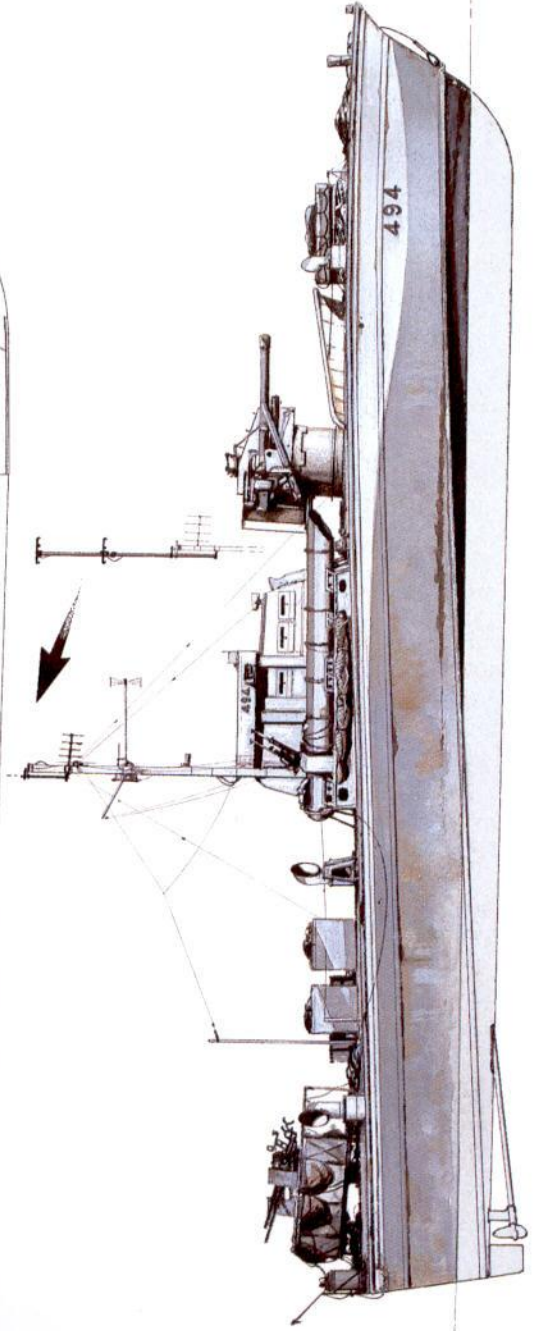


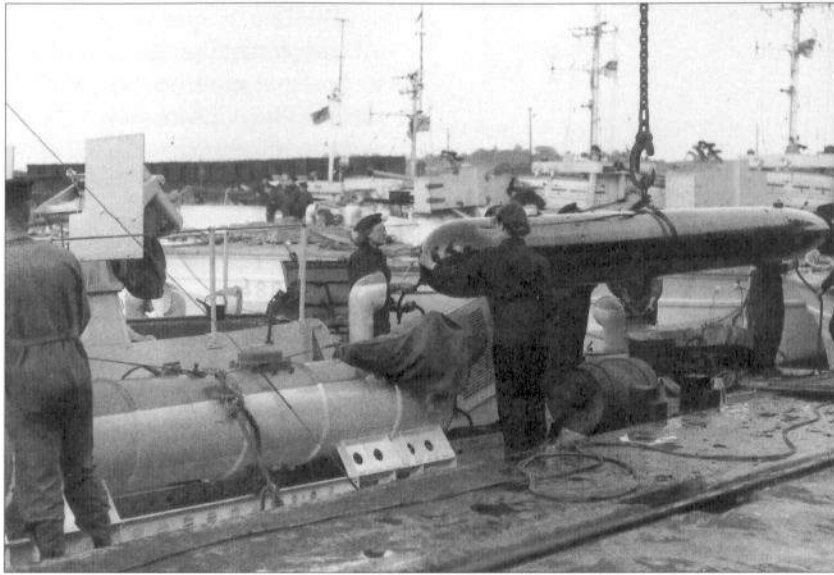
F: MTB 74 during the St Nazaire raid, March 1942

G1: MTB 380



G2: MTB 494

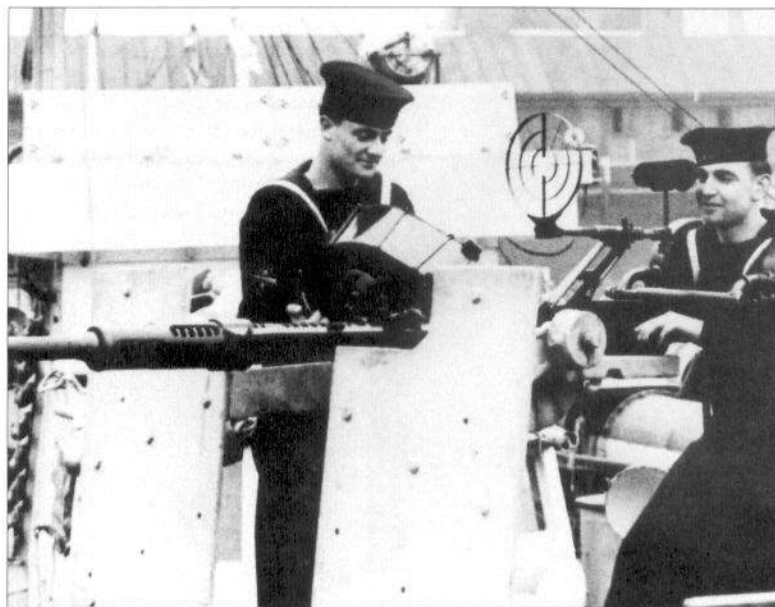




WRNS ('wrens') loading 21-inch torpedoes aboard MTB 234, a Vosper 72-foot 6-inch boat in Harwich, 1944. Wrens played a major part in the maintenance and support of British-based MTB flotillas during the war. (Imperial War Museum)

and Vosper worked together to design deck-mounted torpedo tubes, where the torpedo was launched forward from a tube mounted on the side of the hull. In Vosper 70-foot boats these were angled outwards at $7\frac{1}{2}^{\circ}$ from the hull, and a groove in the forecastle ensured the torpedo would fly clear of the ship's side. This led to a characteristic diamond-shape forecastle on early and mid-war Vosper designs. The 18-inch torpedo was used by the Royal Navy because of a shortage of 21-inch Mark XV torpedoes. Designed for aerial use, the 18-inch torpedo was 17 feet long, weighed 1,801 pounds and packed an explosive warhead of 545 pounds of TNT. Its steam turbine engine gave it a speed and range of 3,000 yards at 33 knots, or 2,500 yards at 40 knots. Depth settings could be varied from 4 to 44 feet, and the torpedo was designed to explode on contact. 18-inch torpedoes were used on BPB MTBs, 60-foot Vosper boats, late-war 73-foot Vospers and Fairmile 'D' MGB/MTBs. Other boats carried the more powerful but heavier 21-inch torpedo. It measured 21 feet 7 inches, weighed 3,452 pounds and carried a charge of 722 pounds of TNT. A 21-inch torpedo had a range of 5,000 yards at 45 knots or 7,000 yards at 41 knots. Although the general trend was towards the standardisation of torpedo armament, the lighter 18-inch torpedoes and mounts found a new lease of life in late-war boats, where their smaller size allowed the fitting of up to four tubes on one boat.

In pre-war Thornycroft and British Power Boat designs, close-range protection was provided by single or more often twin-mounted .303-inch Lewis guns (Mark I). Designed as an infantry support weapon just before the First World War, the Lewis gun had an effective range of around 400 yards, and a rate of fire of 550 rounds per minute. Ammunition usually came in 47-round drums, although 97-round drums were also available but in short supply. Lewis guns were normally fitted on pintle mounts, where they could be used against both aircraft and surface targets. By early 1940 the Lewis gun began to be replaced by the .303-inch Vickers gun (Mark V), a gun with a similar range to the Lewis gun, but roughly twice the rate of fire. Ammunition came in 10,000-round drums. Most Vickers .303-inch machine guns were mounted on pintles atop torpedo tubes.



A single 20mm Oerlikon on a Mark IIa (fixed pedestal) mounting, sited on the forecastle of a 72-foot 6-inch Vosper boat. The gun had a rate of fire of around 475 rounds per minute, and an effective range of 1,000 yards. (Private collection: Museum of Naval Firepower, Gosport)

The first Vosper boats carried a heavier machine gun, a .5-inch Vickers gun mounted in a Mark V turret. The Vickers was another weapon of pre-First World War vintage, but its water-filled cooling system permitted a sustained rate of fire of 700 rounds per minute, equivalent to a single 650-round ammunition box per minute. The Mark V turret was developed in 1939 by Marine Mountings Ltd, and allowed the gunner to control the twin Vickers machine guns with relative ease. It could traverse through 360° in five seconds, and elevate to its full 72° in a little over one second. The effective range of the guns was approximately 550 yards.

Despite the urgings of Lord Mountbatten and the successful deployment of a 20mm (.8-inch) Oerlikon gun on the Vosper prototype MTB 102, the Admiralty only began to issue these Swiss-designed guns to Coastal Forces during the summer of 1941. Although the initial priority was given to MGBs, the first Oerlikon-armed MTBs appeared in 1942, when the last 70-foot Vosper boats and 72-foot White MTBs were equipped with Oerlikons. The gun could fire either an explosive, tracer or armour-piercing round, with a rate of fire of approximately 470 rounds per minute. Although the heavy cylindrical magazine held only 60 rounds, it could be replaced in seconds, ensuring a sustained rate of fire. The usual MTB allowance per gun barrel was eight magazines. The effective range of the gun was 1,200 yards, but maximum range at its highest elevation (45°) was 6,250 yards at a surface target, or 6,000 feet at an aircraft. The Mark I single mount was replaced by a Mark IIa fixed-height pedestal mount, fitted to a stepped platform (which eased aiming at high elevation). The Mark IIIa and single Mark V mounts were variants on the earlier pedestal, while the Mark IV and Mark VIIIa mounts included a .5-inch steel gun-shield to protect the mounting. By 1943 the navy had introduced the Mark IX mount, which permitted the use of twin Oerlikons on the same pedestal. This hand-operated mount became the most common form of Oerlikon mounting used in MTBs by the end of the war, although the twin Mark V power-operated mount was developed by 1944 and used on some Fairmile 'D' MGB/MTBs.

A few MTBs carried even heavier automatic guns. MTBs 396 to 411 (77-foot Elco boats) and a handful of late-war US-built Vospers were fitted with a single Canadian-built 40mm Bofors gun on the stern. Its slow rate of fire (160 rounds per minute, and ammunition came in a four-round clip) was compensated by its effective range of 5,000 yards, and maximum altitude of 22,000 feet at 90°. The 2-pound Vickers QF ('Quick Fire') Mark VIII gun was fitted to BPB gunboats, then retro-fitted to several Vosper boats as guns became available. This 40mm 'pom-pom' had a rate of fire of 115 rounds per minute, but again, ammunition was limited to a four-round

clip. Maximum effective range was 4,800 yards, or 13,000 feet at 70° elevation. Although this British weapon proved inferior to the Swedish-designed Bofors, it provided adequate close-range protection for MTBs when nothing better was available. Finally BPB MGBs converted into MTBs in 1944 and late-war 73-foot Vosper Type II MTBs carried a 6-pounder QF Mark II gun in a powered turret. This gun could fire 40 times a minute and had a maximum range of 6,200 yards, firing high-explosive or semi-armour-piercing rounds.

Finally MTBs relied on whatever firepower they could find. Depth charges were used against surface targets, dropping them in the path of enemy vessels. Their 400-pound charge could destroy almost any enemy escort or E-boat. The 2-inch Holman Rocket flare projectors could illuminate targets up to 2 miles away at night, and the Chloro-Sulphonic Acid (CSA) smoke-producing apparatus pumped out a cloud of white smoke which lasted for up to five minutes, allowing the MTB to escape under cover of the smoke. When all else failed, some of the most successful MTB commanders recommended opening up with whatever weapons were at hand, including pistols, flare guns, rifles, sub-machine guns and even hand grenades.

MTBs in action

Motor Torpedo Boats were used in both home waters and the Mediterranean, but deployment further afield was curtailed after the loss of the squadron based in Hong Kong in December 1941. While their primary mission was the destruction of enemy merchant vessels, MTBs were often called upon to perform a range of duties, from escorting convoys, landing commandos or agents, patrolling areas of sea, or protecting amphibious landings. When the war began, the navy had devoted very little thought to MTB tactics, and operations were limited during the first eight months of the war. The fall of France and the entry of Italy into the war during mid-1940 meant that British Coastal Forces were suddenly involved in two campaigns for naval supremacy: one in the North Sea and English Channel, and the other in the Mediterranean. While space precludes a study of MTB operations in detail, Pope (1954), Cooper (1977), Reynolds and Cooper (1999) and Reynolds (2000) cover the operational use of British MTBs in detail (see bibliography). Instead, a brief examination of the practical use of MTBs in action is appropriate.

The first successful torpedo attack by an MTB was made in September 1940, some three months after the Germans began operating coastal convoys in the English Channel. This isolated success showed what could



A single 20mm Oerlikon on a Mark IIa hand-powered mounting, fitted on the forecastle of the Vosper 72-foot 6-inch boat MTB 353. The splinter mattresses provided the gunner with some degree of protection while in action. (Imperial War Museum)

The crew of MTB 48 discussing their attack on the German battlecruisers *Scharnhorst* and *Gneisenau* off Dover on 12 February 1942. The commander, Sub. Lt. Tony Law, is on the left of the photograph. (Private collection, Museum of Naval Firepower, Gosport)



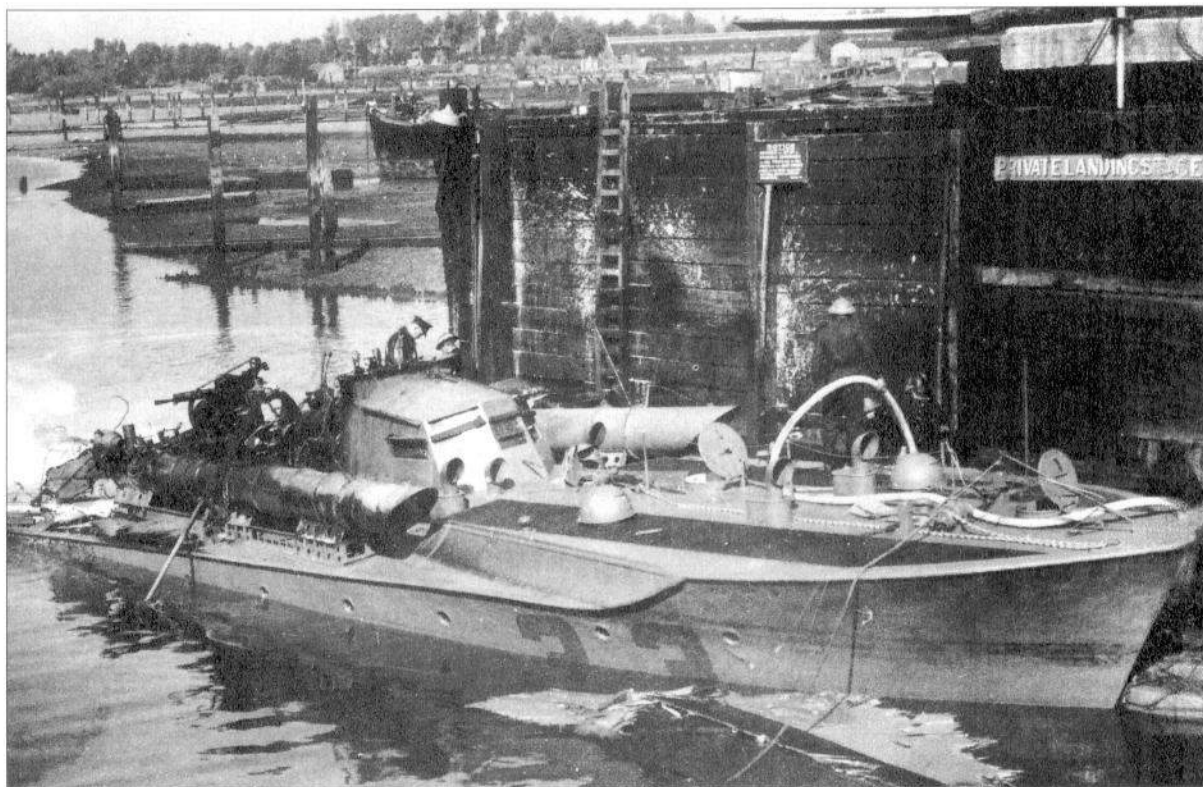
be achieved, but poor tactics and a lack of understanding of the capabilities of boats, crews and weapons prevented any further successes. Flotilla commanders began examining operations and discovered several errors that made any success unlikely. Firstly, boats were roaring into action at full speed, revealing their presence to German escort vessels and making targeting difficult. Secondly, commanders were firing their torpedoes at maximum range (around 3,000 yards), meaning that a hit was unlikely. Gradually crews learned from their mistakes or those of others, and a clearer notion of MTB tactics evolved.

The best way of attacking a target was to approach it at night under silent engines or even remaining stationary, letting the convoy approach the MTB. It was discovered that using stealth, boats could manoeuvre themselves to within 500 yards of a target vessel in moonlit conditions, and even closer on darker nights. Approaching an enemy from astern was another popular tactic, as it was less likely that enemy lookouts would be maintaining as vigilant a watch astern of their vessel. Once within range a boat would try to manoeuvre into an ideal firing position, to the side of the vessel, and just forward of the bow. This meant that the torpedo would hit its target at something close to right angles, increasing the chances of a hit. If a torpedo was spotted, the vessel would also have the furthest possible distance to turn to evade it. Firing from the stern or bow quarters were the worst possible positions, as the target presented a narrow aspect, the risk of a glancing shot was increased, and the target could also manoeuvre away from the path of the torpedo with relative ease.

Once a torpedo was fired the silent engines would be de-clutched and the main engines thrust into gear. The MTB would then accelerate up to full speed, bearing away from the target and its escorts. While some commanders favoured the use of smoke to screen the departing boats, others found it a hindrance if a second torpedo run had to be made. Some skippers also favoured opening up with every available gun, hoping that the pandemonium would unnerve enemy gunners trying to hit the fleeing MTB. While the boat's radio operator called in reports of enemy strengths and positions (allowing other attacks to be made),

controllers on the shore would then vector in other attacks, or send reinforcements to cover the retreating MTBs. At the start of the war MTBs were poorly armed, and had little chance of surviving a prolonged encounter with an enemy surface warship of any size. Instead it became commonplace to launch an attack, then to retire behind a screen of waiting MGBs, which could then protect the MTBs from enemy pursuers. As larger and more powerful deck guns became available, MTBs became better equipped to engage small enemy vessels such as E-boats, and sometimes attacks were made without the benefit of an MGB screen. Often these brief clashes between coastal forces were fought at point-blank range, and commanders resorted to firing any available weapon at enemy boats that came too close. Many commanders even carried a box of hand grenades on the bridge, and ready-use lockers of sub-machine guns for use by any crewmen who were not manning other weapons, conning the ship or operating the engines. Another tactic was to cut across the bow of an enemy vessel, then drop depth charges from the MTB, timed to go off at the shallowest possible depth setting. MTB commanders were playing a dangerous game, fighting at night, at point-blank range and in boats that were little more than high-speed mahogany and plywood fuel tanks. In a private war where a clip of 20mm shells or a single heavy gun round could virtually destroy an MTB, to loiter in the battle area after the torpedoes were fired was tantamount to suicide. In these fast and confusing actions, reflexes, experience, nerves and courage accounted for more than anything else. It is a tribute to the men who fought in these small boats that they succeeded in inflicting substantial harm on the enemy.

An early war casualty, the 70-foot Vosper boat MTB 33 was bombed by German aircraft while nearing completion at Portsmouth in September 1940. It is a testimony to the strength of its design that it still managed to float even when the stern was destroyed. (Vosper Thornycroft (UK) Ltd)



MTB SPECIFICATIONS

Note: Where draught is given, the draught aft is quoted, being deeper than the draught forward. Space precludes details of 'long-hull' Fairmile or Camper & Nicholson MGB/MTBs. It is hoped that a later study of MGBs will cover these larger vessels. Experimental MTBs have also been omitted from the list.

60-FOOT BRITISH POWER BOAT MTB

Numbers: MTBs 1-12, 13-19
Dimensions: Length: 60 feet, 3 inches; Beam: 13 feet, 3 inches; Draught: 2 feet, 9 inches
Displacement: 22 tons
Propulsion: Three Napier engines; Speed: 33 knots
Armament: Two 18-inch torpedo tubes, two twin .303-inch machine guns (MGs)
Complement: 9

55-FOOT THORNYCROFT CMB

Numbers: MTBs 26-27, 67-68, 213-217, 327-331
Dimensions: Length: 55 feet; Beam: 11 feet; Draught: 3 feet, 6 inches; Displacement: 17 tons
Propulsion: Two Thornycroft engines; Speed: 38 knots
Armament: Two 18-inch torpedo tubes, two twin .303-inch MGs, two depth charges (DCs)
Complement: 5

75-FOOT THORNYCROFT MTB

Numbers: MTBs 49-56
Dimensions: Length: 75 feet, 6 inches; Beam: 16 feet, 7 inches; Draught: 5 feet, 5 inches; Displacement: 52 tons
Propulsion: Four Thornycroft engines; Speed: 29 knots
Armament: Two 21-inch torpedo tubes, one twin .5-inch MG turret, two single .303-inch MGs, two DCs
Complement: 12

73-FOOT WHITE MTB (VOSPER DESIGN)

Numbers: MTBs 41-48, 201-212, 246-257
Dimensions: Length: 73 feet; Beam: 18 feet; Draught: 5 feet, 6 inches; Displacement: 33-41 tons
Propulsion: Three Sterling engines; Speed: 39 knots
Armament: Two 21-inch torpedo tubes, one twin .5-inch MG turret, two single .303-inch MGs
Complement: 12

73-FOOT WHITE MTB (WHITE DESIGN)

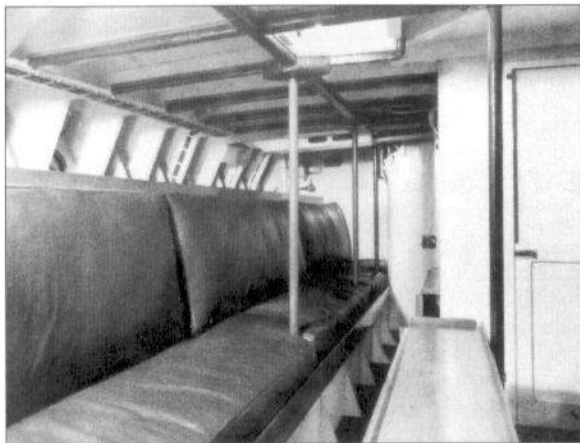
Numbers: MTBs 424-429
Dimensions: Length: 73 feet; Beam: 18 feet; Draught: 5 feet, 6 inches; Displacement: 46 tons
Propulsion: Three Sterling engines; Speed: 37 knots
Armament: Two 18-inch torpedo tubes, one single 6-pdr. QF, one twin Oerlikon, two twin .303-inch MGs
Complement: 17

60-FOOT VOSPER MTB

Numbers: MTBs 71-72
Dimensions: Length: 60 feet; Beam: 15 feet; Draught: 3 feet, 6 inches; Displacement: 32 tons
Propulsion: Two Isotta-Fraschini; Speed: 35 knots
Armament: Two 18-inch torpedo tubes, one twin .5-inch MG turret, one twin .303-inch MGs, 4 DCs.
Complement: 10

70-FOOT VOSPER MTB

Numbers: 20-23, 29-30, 31-40, 57-66, 69-70, 218-221
Dimensions: Length: 70 feet; Beam: 14 feet, 9 inches; Draught: 5 feet; Displacement: 37-40 tons
Propulsion: 20-23, 29-30, 31-34: Three Isotta-Fraschini; Speed: 40 knots
35-40, 57-66, 69-70, 218-221: Three Hall-Scott engines; Speed: 25 knots (In 1942 all were retro-fitted with three Packard engines: Speed 40 knots)
Armament: Two 21-inch torpedo tubes, two twin .5-inch MG turret
Note: MTBs 31-40 had only one MG turret. 57-66 had an additional single Oerlikon. MTB 61 was converted into an MGB, having its torpedo tubes removed, and three single Oerlikons fitted. MTBs 69-70 had two quad .303-inch MGs and two single .303-inch MGs in place of other deck guns. From 1943, MTBs 31-40 were retro-fitted with a single Oerlikon in lieu of the MG turret.
Complement: 10



The forward messdeck of a Vosper 72-foot 6-inch MTB (in this case MTB 351). The photograph is taken looking forward on the port side, towards the heads. The hatch leads out onto the forecastle. (Vosper Thornycroft (UK) Ltd)

72-FOOT 6-INCH VOSPER MTB

Numbers: MTBs 73-98, 222-245, 275-306, 347-378, 396-411

Dimensions: Length: 72 feet, 6 inches; Beam: 19 feet, 2 inches; Draught: 6 feet, 3 inches; Displacement: 40 tons

Propulsion: Three Packard engines; Speed: 39 knots
 Armament: (as fitted) Two 21-inch torpedo tubes, one twin .5-inch MG turret, two single .303-inch MGs, 2 DCs.

Note: Armament varied considerably throughout the war, but by 1944 most remaining boats carried one twin Oerlikon aft, and one single Oerlikon or one 2-pdr. forward in lieu of the .5-inch turret.

Complement: 13

73-FOOT VOSPER MTB TYPE I

Numbers: MTBs 379 (prototype), 380-395

Dimensions: Length: 73 feet; Beam: 19 feet, 4 inches; Draught: 5 feet, 7 inches; Displacement: 47 tons

Propulsion: Three Packard engines; Speed: 39 knots
 Armament: Four 18-inch torpedo tubes, one twin Oerlikon, two twin .303-inch MGs

Complement: 13

73-FOOT VOSPER MTB TYPE II

Numbers: MTBs 523-530, 532-533

Dimensions: Length: 73 feet; Beam: 19 feet, 4 inches; Draught: 5 feet, 7 inches; Displacement: 49 tons

Propulsion: Three Packard engines; Speed: 40 knots
 Armament: Two 18-inch torpedo tubes, one 6-pdr. QF, one twin Oerlikon, two twin .303-inch MG turrets

Complement: 13

72-FOOT BRITISH POWER BOAT MTB

Numbers: MTBs 412-418, 430-432, 434-500, 502-509

Dimensions: Length: 71 feet, 9 inches; Beam: 20 feet, 7 inches; Draught: 5 feet, 9 inches; Displacement: 52 tons

Propulsion: Three Packard engines; Speed: 39 knots
 Armament: Two 18-inch torpedo tubes, one 6-pdr. QF, one twin Oerlikon, two twin .303-inch MG turrets

Complement: 15

70-FOOT ELCO MTB

Numbers: MTBs 259-268

Dimensions: Length: 70 feet; Beam: 19 feet, 11 inches; Draught: 4 feet, 6 inches; Displacement: 32 tons

Propulsion: Three Packard engines; Speed: 42 knots
 Armament: Two 21-inch torpedo tubes, one twin Oerlikon, two twin .5-inch MG turrets, two twin .303-inch MGs, 2 DCs

Complement: 12

A trio of British Power Boat vessels (MTB 416, 413 and 412, all 71-foot 9-inch Mark V boats) photographed in the English Channel in June 1944. With a powerful armament and a top speed of 39 knots, these were amongst the best-designed MTBs of the war. (Imperial War Museum)





77-FOOT ELCO MTB

Numbers: MTBs 307–316
 Dimensions: Length: 77 feet; Beam: 19 feet, 11 inches;
 Draught: 5 feet, 3 inches; Displacement:
 46 tons
 Propulsion: Three Packard engines; Speed: 41 knots
 Armament: Two 21-inch torpedo tubes, one single
 Oerlikon, one twin .5-inch MG turret
 Complement: 12

78-FOOT HIGGINS MTB

Numbers: MTBs 419–423
 Dimensions: Length: 78 feet; Beam: 19 feet, 8 inches;
 Draught: 6 feet, 1 inch; Displacement:
 48 tons
 Propulsion: Three Packard engines; Speed: 40 knots
 Armament: Two 21-inch torpedo tubes, one twin
 Oerlikon, one single 40mm Bofors
 Complement: 13

MTB 74 was specially converted for an attack on the German battlecruiser *Scharnhorst* while it was in Brest during early 1942. Its 18-inch torpedo was remounted on the forecastle to fire over any protective anti-torpedo nets. Although the battlecruiser sailed before it could be used, MTB 74 was able to play a major part in the St Nazaire raid in March 1942. (Vosper Thornycroft (UK) Ltd)

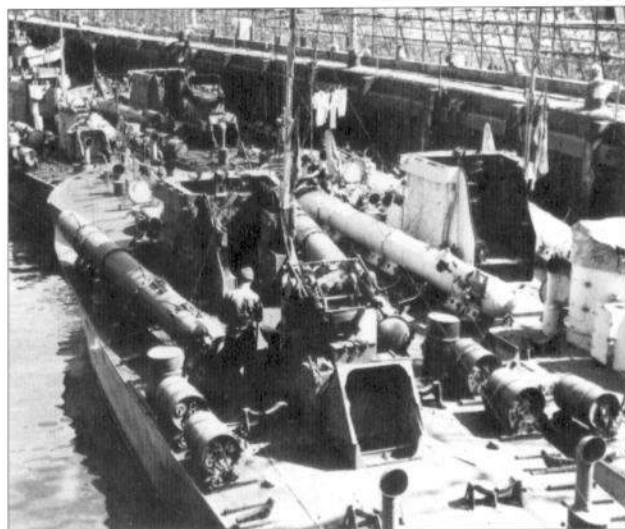
MTB LOSSES

Note: MTBs 33, 37, 39, 40 and 108 were destroyed by air attack while under construction in the Vosper Yard in Portsmouth, 1940–41.

- | | | | |
|---------------|---|---------------|--|
| <i>MTB 5</i> | Sunk by mine, North Sea,
December 1940 | <i>MTB 16</i> | Sunk by mine, Thames Estuary,
October 1940 |
| <i>MTB 6</i> | Foundered, Sardinia,
November 1939 | <i>MTB 17</i> | Sunk by mine, English Channel,
October 1940 |
| <i>MTB 7</i> | Scuttled, Hong Kong,
December 1941 | <i>MTB 26</i> | Sunk in surface action, Hong Kong,
December 1941 |
| <i>MTB 8</i> | Destroyed by artillery, Hong Kong,
December 1941 | <i>MTB 27</i> | Scuttled, Hong Kong,
December 1941 |
| <i>MTB 9</i> | Scuttled, Hong Kong,
December 1941 | <i>MTB 29</i> | Sunk in collision with enemy warship,
North Sea, October 1942 |
| <i>MTB 10</i> | Scuttled, Hong Kong,
December 1941 | <i>MTB 30</i> | Sunk by mine, North Sea,
December 1942 |
| <i>MTB 11</i> | Scuttled, Hong Kong,
December 1941 | <i>MTB 41</i> | Sunk by mine, North Sea,
February 1941 |
| <i>MTB 12</i> | Destroyed by artillery, Hong Kong,
December 1941 | <i>MTB 43</i> | Sunk in surface action, English
Channel, August 1942 |
| <i>MTB 15</i> | Sunk by mine, Thames Estuary,
September 1940 | <i>MTB 44</i> | Sunk in surface action, English
Channel, August 1942 |

- MTB 47* Sunk in surface action, English Channel, January 1942
- MTB 61* Wrecked, Greece, May 1943
- MTB 63* Sunk in collision with friendly warship, Libya, April 1943
- MTB 64* Sunk in collision with friendly warship, Libya, April 1943
- MTB 67* Sunk by air attack, Crete, May 1941
- MTB 68* Sunk in collision with friendly warship, Libya, December 1941
- MTB 73* Sunk by air attack, Sardinia, November 1943
- MTB 74* Sunk by shore batteries, St Nazaire, March 1942
- MTB 77* Sunk by air attack, Ionian Sea, September 1943
- MTB 87* Sunk by mine, North Sea, October 1942
- MTB 93* Sunk in collision with friendly warship, Harwich, August 1944
- MTB 201* Sunk in surface action, English Channel, June 1942
- MTB 203* Lost at sea (cause unknown), English Channel, May 1944
- MTB 213* Sunk by air attack, Crete, May 1941
- MTB 214* Sunk by air attack, Crete, May 1941
- MTB 215* Lost at sea (cause unknown), Mediterranean, 1941
- MTB 216* Sunk by air attack, Crete, May 1941
- MTB 217* Sunk by air attack, Crete, May 1941
- MTB 218* Sunk by mine, English Channel, August 1942
- MTB 220* Sunk in surface action, English Channel, May 1942
- MTB 222* Sunk by mine, North Sea, November 1943
- MTB 230* Sunk in collision with friendly warship, North Sea, November 1943
- MTB 237* Sunk in surface action, English Channel, August 1942
- MTB 241* Sunk in surface action, North Sea, March 1944
- MTB 242* Foundered, Malta, July 1945
- MTB 243* Damaged then scuttled as target, July 1945
- MTB 248* Sunk in collision with friendly warship, English Channel, June 1944
- MTB 255* Destroyed by fire, Ostend, February 1945
- MTB 259* Foundered, Mediterranean, June 1942
- MTB 262* Sunk by air attack, Tunisia, February 1943
- MTB 264* Sunk by mine, Tunisia, May 1943
- MTB 266* Sunk due to damage in surface action, Alexandria, April 1944
- MTB 267* Foundered, Mediterranean April 1943
- MTB 284* Destroyed while freighted as cargo, Mediterranean, September 1943
- MTB 285* Destroyed while freighted as cargo, Mediterranean, September 1943
- MTB 287* Wrecked, Dalmatian Coast, November 1944
- MTB 288* Sunk by air attack, Sicily, July 1943
- MTB 308* Sunk by air attack, Tobruk, September 1943
- MTB 310* Sunk by air attack, Tobruk, September 1943
- MTB 311* Sunk by mine, Tunisia, May 1943
- MTB 312* Sunk by air attack, Tobruk, September 1942
- MTB 314* Captured, Tobruk, September 1942. Sunk by air attack, April 1943
- MTB 316* Sunk in surface action, Sicily, September 1943
- MTB 347* Sunk in surface action, North Sea, October 1944
- MTB 352* Sunk in collision, North Sea, March 1944

A group of 73-foot Vosper MTBs, built by J.S. White of Cowes, photographed at the end of the war. Although White produced 32 boats according to Vosper designs, the yard also produced six White designs (MTBs 424 to 429) that carried a 6-pounder forward, and a twin Oerlikon aft. (Imperial War Museum)



<i>MTB 357</i>	Sunk in surface action, North Sea, December 1943	<i>MTB 444</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 360</i>	Sunk in surface action, North Sea, October 1944	<i>MTB 448</i>	Sunk by air attack, Normandy, June 1944
<i>MTB 365</i>	Sunk in surface action, North Sea, October 1943	<i>MTB 459</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 371</i>	Wrecked, Dalmatian Coast, November 1944	<i>MTB 460</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 372</i>	Sunk in surface action, Adriatic Sea, July 1944	<i>MTB 461</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 412</i>	Sunk in collision with enemy warship, Normandy, July 1944	<i>MTB 462</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 417</i>	Sunk in surface action, English Channel, March 1944	<i>MTB 463</i>	Sunk by mine, Normandy, July 1945
<i>MTB 430</i>	Sunk in surface action, Normandy, July 1944	<i>MTB 465</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 434</i>	Sunk in surface action, Normandy, July 1944	<i>MTB 466</i>	Destroyed by fire, Ostend, February 1945
<i>MTB 438</i>	Destroyed by fire, Ostend, February 1945	<i>MTB 494</i>	Sunk in collision with enemy warship, North Sea, April 1945

MTBS LISTED BY PENNANT NUMBER

PENNANT NUMBER	MTB TYPE	COMMISSIONED	NOTES
1-12	BPB 60-foot	Pre-war	MTBs 1-5 converted into Motor Attendance Craft (MACs), 1940-41
13	<i>The pennant number '13' was not used</i>		
14-19	BPB 60-foot	Pre-war	MTBs 14, 18 and 19 converted into Controlled Target Boats (CTs), 1941-42
20-23	Vosper 70-foot	September-December 1939	MTBs 20, 21 and 23 sold to the Rumanian Navy, 1940
24-25	Thornycroft 72-foot	January 1940	
26-27	Thornycroft 55-foot CMB	October 1939	Originally built for the Chinese Navy
28	Vosper 70-foot	July 1940	Built under licence by Thornycroft
29-30	Vosper 70-foot	June-July 1940	Built under licence by Camper & Nicholson
31-40	Vosper 70-foot	September 1940-May 1941	MTBs 31, 32 and 34 converted into CTs, 1942
41-48	Vosper 72-foot	September 1940-March 1941	Variant built under licence by J.S. White
49-56	Thornycroft 75-foot	August 1940-April 1941	All boats converted into War Office Target Towing Launches, 1941-42
57-66	Vosper 70-foot	October 1941-April 1942	
67-68	Thornycroft 55-foot CMB	March 1941	Originally built for the Finnish Navy
69-70	Vosper 70-foot	June 1940	Originally built for the Greek Navy. Both converted into CTs, 1943
71-72	Vosper 60-foot	June-July 1940	Originally built for the Norwegian Navy
73	Vosper 72-foot 6-inch	October 1941	
74	Vosper 70-foot	December 1941	Special design
75-85	Vosper 72-foot 6-inch	January-August 1942	
86	Vosper 72-foot 6-inch	May 1942	Built under licence by Morgan Giles
87-92	Vosper 72-foot 6-inch	June-October 1942	Built under licence by Harland & Wolff

A trio of MTBs berthed at the submarine base in Malta. The two 77-foot Elco boats in the foreground sport two different types of splinter camouflage; grey and dark grey on their lower hulls. (Private collection, Museum of Naval Firepower, Gosport)



PENNANT NUMBER	MTB TYPE	COMMISSIONED	NOTES
93-94	Vosper 72-foot 6-inch	September-December 1942	Built under licence by Berthon Boat Co. MTB 94 transferred to Free French Navy, December 1942
95-96	Vosper 72-foot 6-inch	July-October 1942	Built under licence by Morgan Giles. MTB 96 transferred to Free French Navy, November 1942
97-98	Vosper 72-foot 6-inch	September-October 1942	Built under licence by Morgan Giles. MTB 98 transferred to Free French Navy, October 1942
99	<i>The pennant number '99' was not used</i>		
100	BPB 60-foot	-	Experimental design
101	White 62-foot	-	Experimental hydrofoil design
102	Vosper 68-foot	July 1940	Private venture experimental design
103	Vosper 70-foot	June 1941	Experimental design
104-107	Thornycroft 45-foot	June 1941	Experimental design
108	Vosper 45-foot	-	Experimental design
109	Denny 43-foot	-	Experimental design
110-200	<i>The pennant numbers '110-200' were not used</i>		
201-212	White 72-foot	June-October 1941	
213-217	Thornycroft 55-foot CMB	March 1941	
218-221	Vosper 70 foot	June-September 1941	Originally built for the Greek Navy
222-228	Vosper 72-foot 6-inch	February 1942-May 1943	Built under licence by H. Mclean. MTB transferred to Free French Navy, December 1942
229-231	Vosper 72-foot 6-inch	February-July 1942	Built under licence by McGruer. MTB 229 and 231 transferred to Dutch Navy, July-August 1943
232-235	Vosper 72-foot 6-inch	January-June 1942	Built under licence by Berthon Boat Co. MTB 235 transferred to Dutch Navy, June 1942
236-239	Vosper 72-foot 6-inch	April-December 1942	Built under licence by Camper & Nicholson. MTB 236 transferred to the Dutch Navy, August 1943. MTB 239 transferred to Free French Navy, December 1942

PENNANT NUMBER	MTB TYPE	COMMISSIONED	NOTES
240-241	Vosper 72-foot 6-inch	February-March 1942	Built under licence by Morgan Giles. MTB 240 transferred to the Dutch Navy, June 1942
242-245	Vosper 72-foot 6-inch	October-December 1942	
246-257	Vosper 72-foot 6-inch	May-October 1942	Built under licence by J.S. White
258	BPB / Elco 70-foot	April 1941	Experimental design. Lend-Lease. Formerly USN PT 9. Transferred to Royal Canadian Navy, 1941
259-268	Elco 70-foot	November-December 1940	Lend-Lease. Formerly PTs 10-19
269-272	Higgins 81-foot	April 1941	Lend-Lease. Formerly PTs 5-8. MTB 272 never commissioned, and remainder transferred to Royal Canadian Navy, 1941
273-274	Fisher 58-foot	April 1941	Lend-Lease. Formerly PTs 3-4. Transferred to Royal Canadian Navy, 1941
275-282	Vosper 72-foot 6-inch		Built under licence by Annapolis Yacht Yard, MD
283-306	Vosper 72-foot 6-inch	March-April 1943	Built under licence by Harbor Boat Building Co., CA. MTBs 304-306 transferred to Indian Navy, March 1943
307-316	Elco 77-foot	July-August 1943	
317-326	Elco 77-foot	-	Lend-Lease order diverted to Soviet Navy
327-331	Thornycroft 55-foot CMB	August 1942	Originally built for the Philippine Navy
332-346	<i>The pennant numbers '332-346' were allocated to Vosper, but were not used</i>		
347-362	Vosper 70-foot	March 1943-January 1944	
363-370	Vosper 72-foot 6-inch	December 1943	Built under licence by Annapolis Yacht Yard, MD. Lend-Lease to Soviet Navy
371-378	Vosper 72-foot 6-inch	November 1943	Built under licence by Annapolis Yacht Yard, MD. Lend-Lease to Soviet Navy
379	Vosper 70-foot	January 1944	Experimental design
380-395	Vosper 730-foot Type I	May 1944-June 1945	
396-411	Vosper 72-foot 6-inch	May 1944	Built under licence by the R. Jacob Yard, RI. Lend-Lease. Formerly US PTs 388-399
412-418	BPB 72-foot	April 1942-March 1943	MTB 418 transferred to Royal Netherlands Navy, 1944. MTB 418 redesignated CT 48, 1945
419-423	Higgins 78-foot	Spring 1944	
424-429	White 73-foot	August 1943- February 1944	
430-500	BPB 72-foot	March-December 1944	Formerly MGBs. MTB 436-437, 453 transferred to Royal Canadian Navy, 1944. MTB 490 redesignated CT 49, 1945
501-509	Camper & Nicholson 117-foot MGB/MTB	February 1941	MTB 501 was an experimental design, and later converted into an MGB. All were redesignated as MGBs
510	Vosper 101-foot	December 1943	Experimental design
511-518	Camper & Nicholson 117-foot MGB/MTB	Summer 1944	
519-522	<i>The pennant numbers '519-522' were allocated to BPB, but were not used</i>		
523-537	Vosper 73-foot Type II	All post-war	
538	Vosper 74-foot 6-inch	Post-war	Experimental design
539	Sanders Roe 75-foot	-	Experimental design

Note: In addition, the pennant numbers 601-800 and 5001-5029 were allocated to Fairmile 'D' MGB/MTBs. As these were more properly classified in the navy

as MGBs, they have been omitted from this list. The pennant numbers 540-600 and 801-5000 were never used.

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COLOUR PLATE COMMENTARY

A1: MTB 30

One of the three 70-foot Vosper boats ordered in September 1938, MTB 30 was built at the Camper & Nicholson Yard at Gosport and delivered to the Royal Navy in June 1939. This became the standard design for British MTBs of the early part of the war, as 61 of the type were built. It was armed with two 21-inch torpedo tubes and a twin .5-inch Vickers machine gun in a turret behind the bridge, although



The crew of MTB 31, a 70-foot Vosper boat, photographed after sinking a German merchant ship off the Dutch coast in November 1940. The commander, Lt. Denis Jermain RN, is second from the left in the front row. (Private collection, Museum of Naval Firepower, Gosport)

frequently single and double .303-inch Lewis guns were added to the armament when available. Powered by three Isotta-Fraschini 1,200hp engines, it could attain speeds of up to 42 knots at 2,400rpm. MTB 30 was lost after striking a mine in the North Sea on 18 December 1942.

A2: MTB 213

A pre-war Thornycroft 55-foot design, these Coastal Motor Boats (CMBs) were based on the 40-foot CMBs used by the Royal Navy during the First World War. Although MTB 213 was built as a speculative venture by Thornycroft during 1940, nine of the 12 vessels of its type were being built for foreign navies when the war began, and were duly pressed into British service. The 55-foot Thornycroft was a relatively poor design, built to drop two 18-inch torpedoes astern of the boat during an attack. Machine gun armament of these boats varied, but MTB 213 used the standard fit of two twin .303-inch Lewis guns mounted forward and aft of the bridge. MTB 213 was sunk by German aircraft in Suda Bay in Crete on 23 May 1941.

B: ATTACK ON A GERMAN CONVOY, SEPTEMBER 1942

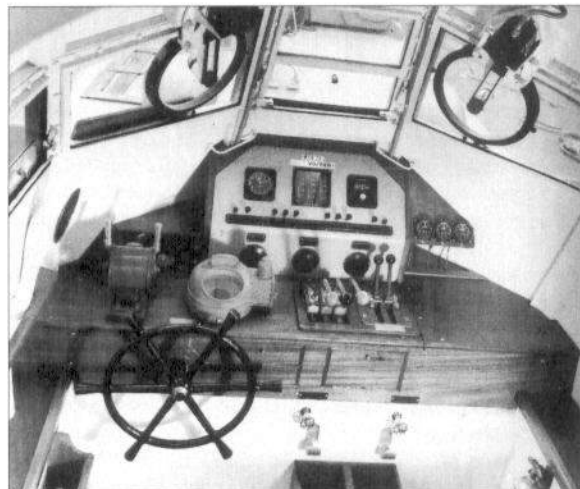
It took time to perfect Motor Torpedo Boat tactics after the Germans began running coastal convoys through the English Channel in the summer of 1940. The first attack against a German coastal convoy was made in September 1940, but problems of radar and radio interception methods meant that encounters were rare. It took a year for the problems to be overcome, and from September 1941 the MTB flotillas were able to maintain a steady pressure on German coastal shipping. Tactics were also refined, and it was found that an approach under full power was

tantamount to suicide, as every German gunner for miles could hear the boat's approach. Instead it was common to wait in the darkness under secondary (silent) engines, then when the target vessel was within sight the boat would crash-start its main engines. The torpedo attack would be launched at close range, and the boats would then circle round and escape at high speed in the confusion.

This plate shows just such an attack, conducted by 72-foot 6-inch Vosper boats of the 21st MTB Flotilla off the Dutch Texel estuary in September 1942. The squadron commander, Lt. P.G. Dickens RN, became an expert in MTB tactics. His boat (MTB 234) and his consort (MTB 230, Lt. J.P. Perkins RNVR commanding) have just fired their torpedoes at German merchant shipping, and are in the process of turning away and racing for their covering force, a group of three MGBs located a few miles seaward. The MTBs sank one merchantman and damaged an armed trawler during this attack.

C1: MTB 73

By 1940 Vosper had modified its pre-war and early war designs, creating a large 72-foot 6-inch boat which was fitted with larger engines and bigger fuel tanks. MTB 73 was one of 26 Vosper boats ordered in May 1940, and was delivered to the Royal Navy in October 1941. A highly successful design, the improved Vosper boats became the mainstay of the Coastal Forces fleet until the arrival of the late-war Vospers in 1944. MTB 73 formed part of the 8th MTB Flotilla, and, under the command of Lt. Tomlinson RN (and later Lt. Aimers RN), operated in the Mediterranean throughout its career, before being bombed and sunk by German aircraft off the northern tip of Sardinia on 24 November 1943. An inset of the twin .5-inch Vickers machine gun mount fitted to most early Vosper boats is shown.



The wheelhouse of a Vosper 70-foot boat (MTB 73) viewed from the top of the companionway leading to the bridge. The bridge instruments were repeated, but in addition the instrument panel contained a clock, a rev counter and engine gauges. Two circular 'clear view' screens were designed to improve visibility in rough weather. (Vosper Thornycroft (UK) Ltd)



MTB 347 during the final stages of construction at the Vosper Yard in Portsmouth. One of 16 boats of this type, this 72-foot 6-inch was sunk in action against German warships off the Dutch coast in October 1944. (Vosper Thornycroft (UK) Ltd)

C2: MTB 49

In addition to its early-war CMBs, Thornycroft produced its own design of eight 75-foot MTBs, designed in 1939 but built in 1940-41. Although these vessels lacked the speed of contemporary Vosper models, their large displacement (52 tons, compared to 40 tons for a 72-foot 6-inch Vosper) and heavy construction made them particularly good at absorbing damage. An armoured bridge and wheelhouse protected the crew, and all craft were equipped with radar and ASDIC, making them valuable general-purpose warships. All eight boats formed the 11th MTB Flotilla, operating from Dover, Portland and Portsmouth during 1941-42. In late 1942 all of these vessels were converted into target-towing launches and renamed, MTB 49 becoming War Office Launch *Meggido*.

D: MTB 223

A 72-foot 6-inch Vosper boat built under licence by the H. Mclean Yard at Renfrew in Scotland, MTB 223 was ordered from Vosper in February 1941, laid down four months later, and entered service in April 1942. It was one of 48 Vosper 72-foot 6-inch boats ordered during 1941, and incorporated several improvements over the first batch of boats of this size. It is indicative of the growing scale of boat production that Vosper were commissioning boats built in yards as far apart as Scotland, Northern Ireland and Southern England during this period, as well as boats built under contract in American yards. MTB 223 operated as part of the 21st MTB Flotilla based in the East Anglian ports of Lowestoft, Felixstowe and Harwich from 1942 until 1944.

E1: MTB 523

A 73-foot Vosper Type II boat, the most powerful Vosper MTB of the war in terms of conventional firepower. These boats were initially ordered as Motor Gun Boats (MGBs) in December 1943, and were completed as experimental MTBs. Although similar to the earlier 73-foot Vosper boats ordered in early 1943, the 16 boats of this class carried a 6-pounder QF gun in a power-operated turret forward, a twin 20mm Oerlikon aft, and two twin .303-inch machine guns on either side of the bridge. Unlike the earlier 73-foot boats (Type I), these craft only carried two 18-inch torpedo tubes.

MTB 523 was commissioned in July 1945, so, like the other boats of its type, never saw active service. Sold to the Danish Navy in 1949, it was lost in an accidental explosion four years later.

E2: MTB 315

The Electric Boat Company ('Elco') of Bayonne, New Jersey, developed the 70-foot Elco Patrol Torpedo Boat (PT) based on a pre-war design produced by Hubert Scott-Paine. Elco's designer, George Selman, developed the idea still further, and in July 1940 the first 77-foot Elco boats were commissioned by the US Navy. Of these, PTs 49-58 were transferred to the Royal Navy under the Lend-Lease agreement, becoming MTBs 307-316. These slick-looking craft proved their worth in the Mediterranean, where they formed the core of the 15th MTB Flotilla. Armed with two 21-inch torpedo tubes, a twin .5-inch Vickers machine gun mount and a single 20mm Oerlikon, these graceful craft were capable of speeds up to 41 knots. MTB 315 entered British service in March 1942 and was returned to the US Navy after the war.

F: MTB 74 DURING THE ST NAZAIRE RAID, MARCH 1942

Although MTB 74 was typical of the 70-foot Vosper boats ordered during 1940, it was specially modified during construction, as the Admiralty intended to use it for some non-specific special operation. The main difference was the mounting of its two 18-inch torpedo tubes on the forecastle, where they would be able to fire over the top of an anti-torpedo net of the type used to protect major warships at the time. The idea was the brainchild of Sub. Lt. 'Micky' Wynn, who became its commanding officer. The torpedoes themselves (nicknamed 'Wynn's weapons') were also modified to contain delayed action fuses, designed to explode after a set time on the seabed. MTB 74 entered service in December 1941.

Although Wynn planned to use MTB 74 to attack the German battlecruiser *Scharnhorst* while it lay at anchor off Brest, the 'Channel Dash' of February 1942 took place before the operation could be planned. Instead it took part in

the St Nazaire Raid on 27-28 March 1942, when an amphibious attack was launched on the French port. Wynn fired his delayed action torpedoes at the main lock gates of the port, and after the MTB withdrew, the delayed charges exploded, destroying the lock gates. MTB 74 was badly hit on its departure from St Nazaire and had to be abandoned.

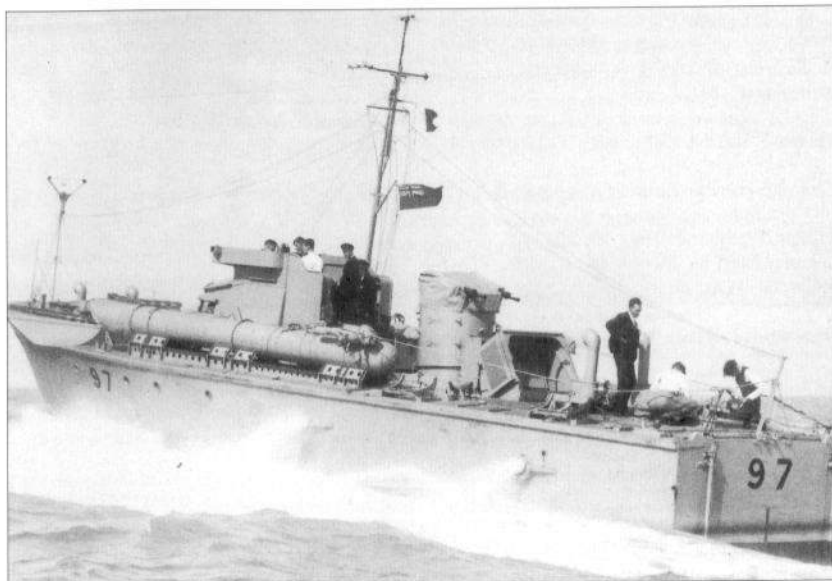
G1: MTB 380

By late 1942 Vosper had developed a boat design representing the culmination of a wartime evolution based on experience and the introduction of new equipment. It was also heavily influenced by the highly successful American designs that had seen service in the Mediterranean since early 1942. A prototype was ordered, then a bulk order for 16 new boats was placed in March 1943. The first of these craft entered service in 1944, including MTB 380, which was commissioned in May 1944. It carried four 18-inch torpedo tubes, a twin 20mm Oerlikon forward (on a manually operated Mark IX mounting - see inset detail), and two twin .303-inch machine guns on each beam. Its bridge and wheelhouse was armoured, and it carried the latest suite of radar sets, radio, inter-ship telephone communications and an emergency steering position on the quarterdeck.

G2: MTB 494

The British Power Boat Company based in Hythe produced a design for a 72-foot MTB, and by 1942 the company won a contract for the mass production of this vessel, of which 78 were produced as Motor Gun Boats (MGBs), and were later converted into MTBs. These BPB designs used Packard engines (capable of a top speed of 42 knots as an MGB and 39 knots as an MTB, at 2,400rpm). While the MGB version carried no torpedoes and mounted a 2-pounder pom-pom, after its conversion into an MTB the same vessel carried two 18-inch torpedo tubes and a 6-pounder gun in a powered turret. These proved highly successful craft, and in both variants the BPB 72-foot boat operated in the English Channel and the North Sea from 1942 until the end of the war.

MTB 97, a 70-foot Vosper boat undergoing sea trials in September 1942. Unlike many earlier boats, it was fitted with a Type 286 radar, mounted on a small mast on the forecastle. (Vosper Thornycroft (UK) Ltd)



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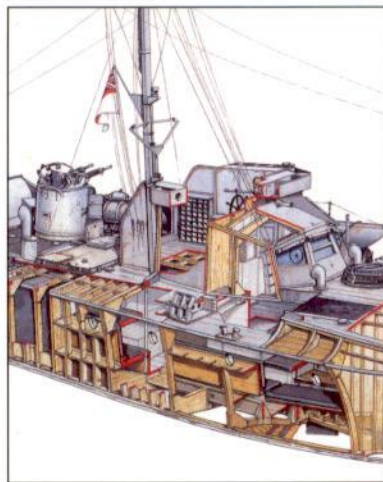
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