70-FT VOSPER MOTOR TORPEDO BOAT

BRIEFING

written by

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Key Information

Country of Origin:	Great Britain
Manufacturers:	Annapolis Yacht Yard, Berthon Boat Co., Camper & Nicholson, Harbor Boat Building, Harland & Wolff, Herreshoff, H McLean, McGruer, Morgan Giles, R Jacobs, Thornycroft, Vosper & Co
Major Variants:	Nine major variants (unnamed) and one prototype.
Role:	Fast attack boat
Operated by:	Royal Navy, Royal Indian Navy, Royal Rumanian Navy, Royal Netherlands Navy, Free French, USSR (also Cuban and Italian Navy post-war).
First Laid Down:	1936
Last Completed:	23 September 1947
Units:	311

Overview

Vosper & Co. had been trying to secure orders from the Admiralty for the development of a new 'Coastal Motor Boat' (CMB) since the early 1930s, however in 1935 they lost out to the British Powerboat Co., to whom the Admiralty awarded the contract for the development of the first new design since the end of the First World War. Known now as 'Motor Torpedo Boats' (MTB), they retained the old style of stern-launched torpedoes. Vosper again lost out in 1936 to the British Powerboat Co., with an experimental design contract also being awarded to White.

Convinced that they could build a faster and more sea-worthy vessel, Vosper tried to persuade the Admiralty to place an order to allow them to develop it. Although they had no direct success, the Admiralty was prepared to indicate that any further contract they placed would be for a boat which could travel over 40 kt (compared to the 33 kt of the current boats), armed with two 21-in torpedoes (compared to the 18 in of the current boats) and fitted with machineguns for anti-aircraft use. After much internal debate, Vosper decided to fund the development of a boat to meet this unofficial specification, in the hope that the Admiralty would be sufficiently impressed to purchase the boat and to order others like it.

The boat was designed to be a planing vessel, in common with the successful British experience to date. Planing hulls are forced out of the water by the pressure of the sea on the hull, reducing the draft of the boat at speed, reducing the amount of the hull in contact with the water, and once 'on the plane' the resistance of the hull does not increase significantly with increased speed.

The successful First World War CMBs were planing vessels with a stepped hull, whereas the Vosper designers went for a hard chine form. A stepped hull form has a round bottom with a sharp discontinuity (step) in the bottom, where the depth of the hull behind the step is several inches less than the hull in front of the step. A hard chine hull has a 'V' shape, with a sharp edge where the side of the hull meets the top of the 'V' (there are thus two sharp edges – one at the side of the boat and one on the bottom of the 'V'). The hard chine form slightly reduced the maximum speed of the boat, but significantly improved the seakeeping qualities and manoeuvrability.

The engines, the heart of the boat, were purchased from the Italian supplier Isotta-Fraschini. These engines had first been developed for Russian boats, then further developed by the Italians, and were undoubtedly the best in the world at that time. Their one weakness was their petrol fuel supply, which was more likely to catch fire than diesel, however no sufficiently light and powerful diesel engines could be found.

Various options were tried for torpedo launching, including the tried-and-tested stern-launching method (which the original CMBs used), but eventually Admiralty engineers devised a method for fitting the torpedoes alongside the bridge, firing forward. This was soon to become the now-familiar position for all Allied torpedoes on fast attack craft. Various gun armament was tried, including quadruple 0.303-in machineguns, a single 20-mm cannon and twin 0.5-in machineguns.

In her works trails in 1937 she made 47.8 kt unloaded and 43.7 kt loaded, and after Admiralty trials in 1938 she was purchased and became *MTB 102*. Subsequent trials followed in 1939, against an improved British Power Boat design, and the Vosper design was controversially selected for the next series of MTBs.

All subsequent 70-ft Vosper designs followed the same basic design as *MTB 102*, but when Italy entered the war the supply of the superb Isotta-Fraschini engines dried up. As a stopgap measure American Hall Scott motors were used, but these were very underpowered and reduced the speed by 11 kt until American Packard engines were developed and installed in their place. Both these engines were run on petrol (gasoline). Improvements over the war years generally resulted in strengthened hulls, greater fuel capacity, more guns and the fitting of electronic devices (such as radar).

In 1942, Elco obtained rights to build the boats in America, where they produced 61 for British service and 121 to go to the USSR. The balance of 129 boats were produced in the UK.

MTBs are intended to be used to attack enemy shipping, rather than to fight enemy fast attack boats. Experience in action lead to the development of Motor Gun Boats (MGBs) to fight enemy small craft, as well as the addition of 20-mm cannon to the MTBs. MTBs and MGBs also routinely carried hand grenades in boxes in the bridge, as well as a selection of small arms.

Units

Variant	MTB	Built	Notes
69.5 ft 33 tons 3,600 bhp	*102*	1 1937	Prototype, used mainly for trials.
70 ft 35.75 tons 3,600 bhp	*20-23, 29, 30*	6 1939-1940	These boats were very similar to the prototype boat MTB102. Armed with two 21-in torpedo tubes and two sets of twin 0.5-in machineguns, they were powered by Italian Isotta-Fraschini engines and could make up to 42 kt. Three went to Rumania, where two were lost, and two were lost in British service.
70 ft 39.75 tons 3,600 bhp	*31-40, 57-66*	20 1940-1942	These boats had significantly more fuel capacity than the previous series, although after Italy's entry to the war units 35 and upwards had to be fitted with Hall Scott engines (1,800 bhp, giving 29 kt in stead of 40 kt full speed). They were upgraded when improved engines became available. Armament was two 21-in torpedo tubes, one twin 0.5-in machinegun, and two twin 0.303-in machineguns. Seven were lost.
70 ft 32-35 tons 2,300 bhp	*69, 70, 218-22*	2 1940-1941	Initially being built for the Royal Hellenic Navy, they were taken over by the Royal Navy before delivery. Although designed for three Italian engines only two were fitted, providing spares for earlier boats but limiting their maximum speed to 27.5 kt. They were armed with two 21-in torpedo tubes, two quadruple 0.303-in machineguns and two single 0.303-in machineguns.
72.5 ft 47 tons 4,050 bhp	*73-98*	26 1941-1942	These and all subsequent boats were fitted with Packard engines, giving a 40-kt maximum speed. Similar to earlier boats, they were armed with two 21-in torpedo tubes, one twin 0.5-in machinegun, and two twin 0.303-in machineguns. Six boats went to the Free French (none were lost), and six were lost in British service.
72.5 ft 47 tons 4,050 bhp	*222-245*	24 1942	Almost identical to the previous series, these boats dropped the 0.303-in machineguns but obtained a 20-mm cannon, dropping the maximum speed to 39.5 kt. Two boats went to the Free French (none lost), and two to the Royal Netherlands Navy (one lost). Five were lost in British service.
72.5 ft 37 tons 4,050 bhp	*275-306, 363-378, 396-411*	64 1942-1944	Built under licence in America for Britain, these boats had the same lines, maximum speed and armament as the previous series. 24 boats went to the Royal Indian Navy (two lost), eight to the USSR (one lost). Four were lost in British service.
72.5 ft 37 tons 4,050 bhp	-	121 1944-1945	Identical to the series above, these boats were built for the USSR in America and transferred directly under Lend-Lease, although 38 boats were not transferred as the war ended before they were sent. Two boats were lost.
72.5 ft 44.75 tons 4,050 bhp	*347-362*	16 1943	A modified internal arrangement was the major change in these boats. They mounted two 21-in torpedo tubes, one twin 0.5-in machinegun, two twin 0.303-in machineguns and one single 20-mm cannon (in some boats the 0.5-in machineguns were replaced by an additional 20-mm cannon). Five were lost.
73 ft 44.5 tons 4,200 bhp	*379-395*	17 1944	This type represented a redesign, under the same basic dimensions. More powerful Packard engines were fitted, and the armament was increased to four 18-inch torpedo tubes, retaining the same maximum speed. None were lost.
72.5 ft 48.75 tons 4,200 bhp	*523-537*	15 1944-1947	Increased gun armament was mounted on these boats: one six-pound gun, two single 20-mm cannon, two twin 0.303-in machineguns and two 21-in torpedo tubes. Only 12 were completed due to the end of the war, and none were lost.

Specifications

	MTB 20-23, 29, 30	MTB 31-40, 57-66
Displacement	35.75 long tons	39.75 long tons
Length (OA)	70 ft	70 ft
Beam	14 ft 9 in	14 ft 9 in
Draft	3 ft 3 in	3 ft 3 in
Propulsion	3600 bhp	3,600 bhp (1,800 bhp)
Speed	42 kt	40 kt (25 kt)
Weapons	2 x 21-inch torpedo tubes 2 x twin 0.5-in machinegun	2 x 21-inch torpedo tubes 1 x twin 0.5-in machinegun 2 x twin 0.303-in machinegun
Magazine	Unknown	Unknown
Armour	Plate around wheelhouse	Plate around conning position
Miscellaneous		
Complement	10	12

	MTB 222-245	MTB 523-537
Displacement	47.0 long tons	48.75 long tons
Length (OA)	72 ft 6 in	72 ft 6 in
Beam	19 ft 3 in	19 ft 6 in
Draft	2 ft 9 in	3 ft (approx.)
Propulsion	4,050 bhp	4,200 bhp
Speed	39.5 kt	40 kt
Weapons	2 x 21-inch torpedo tubes 1 x 20-mm cannon 1 x twin 0.5-in machinegun	2 x 21-inch torpedo tubes 2 x single 20-mm cannon 2 x twin 0.303-in machinegun
Magazine	8 magazines (480 rds) 20 mm Unknown machinegun ammunition	16 magazines (960 rds) 20 mm Unknown machinegun ammunition
Armour	Plate around conning position	Plate around conning position
Miscellaneous		
Complement	13	13