

BISMARCK CLASS BATTLESHIP

BRIEFING

Written by
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Key Information

Country of Origin:	Germany
Manufacturers:	Blohm & Voss, Navy Yard (Wilhemshaven)
Major Variants:	-
Role:	Ship of the Line, Commerce Raider, Shore Bombardment
Operated by:	Kriegsmarine
First Laid Down:	1 July 1936
Last Completed:	25 February 1941
Units:	<i>Bismarck, Tirpitz</i>

Overview

The *Bismarck* class were originally conceived as 35,000 ton battleships, to fit within the Washington (1922) and London (1930) treaty limits. It was found early in the design process that the specified requirements for speed, armour and main armament could not be met within this displacement, and as the preliminary design work progressed the displacement crept up to its final figure of 41,700 tons (standard).

There was considerable debate over the choice of main armament. Initially eight 330 mm (13 in) guns were specified, however this was increased to 350 mm (13.8 in) guns in early 1935. Eight 380 mm (15 in) guns were considered in March 1935, and although this was initially rejected on weight grounds (the ship would not be able to use the largest lock at Wilhelmshaven due to its draft) 380 mm guns were eventually selected in May. These guns were designed for action in the North Sea, where the engagement range was likely to be low due to the typical visibility conditions, and were intended to be able to penetrate the belt armour of ships built within the treaty limits at short range.

Following normal practice in Germany, a secondary and tertiary armament was selected. The secondary armament was intended for use against surface targets, and comprised twelve 150 mm (5.9 in) guns in six twin turrets (three port and three starboard). The tertiary armament was intended for air targets, and comprised sixteen 105 mm (4.1 in) guns in eight twin mounts (four on each side). This arrangement had the advantage that surface and air targets could be engaged simultaneously, however the latest designs from France and Britain provided dual-purpose secondary armament and no tertiary armament, reducing weight and allowing more guns to be available if air and surface threats were met separately. Close range defence against aircraft was provided by eight twin 37 mm (1.5 in) cannon (8 x 2) and 12 single 20 mm (0.8 in) machineguns, and was comparable with contemporary warships.

The armour gave the ship a theoretical immunity zone of 11,000 to 21,000 m (12,000 to 23,000 yds) for the machinery spaces against a 16 in (406 mm) gun, meaning that at ranges below 11,000 m a 16 in shell could be expected to penetrate the side armour, and above 21,000 m a 16 in shell could be expected to penetrate the deck armour. The deck armour was actually split on to two decks, and the upper deck armour immunity zone was a maximum of 11,000 m. The magazines had a maximum immunity zone of 25,000 m (27,300 yds), and although the minimum range is unknown it was certainly very short. It must be stressed that this is a theoretical calculation, as in practice several factors (particularly the sea state) affect the actual resistance to shells at the instant they hit, and the immunity zone is constantly changing as the ship heaves, rolls and pitches.

The *Bismarck* was designed for a maximum (trials) speed of 30 kts, and was powered by geared steam turbines, fed by 12 boilers. Their speed was thus slightly slower than the modern French battleships, but quicker than the latest British designs.

Hangar space was provided for four Arado Ar-196 floatplanes, the standard aircraft for German capital ships at this time.

The *Bismarck* class of ships were fundamentally sound designs that never lived up to their potential. As with all ships of that time her air defence capability was poor, however this was increased in the *Tirpitz* as the war progressed. Their propulsion arrangement, with triple screws, made the ship slightly directionally unstable and meant that the rudder had to be worked more than in contemporary ships, particularly in a following sea, affecting speed and fuel consumption. Nevertheless, these were relatively minor defects, and the ships showed themselves capable of absorbing considerable damage, as well as having effective main armament.

Whilst the *Bismarck* was lost on her first sortie, and the *Tirpitz* never engaged enemy warships, these ships had a profound influence on the naval war. In particular the *Tirpitz*, simply by her presence close to the Arctic convoy routes, forced the British to devote considerable resources to ensuring her containment. The fear that she might be in a position to strike led to the destruction of convoy PQ17, and it was her value as part of a 'fleet in being' that restricted her operational use.

Units

<i>Bismarck</i>	Builder	Laid Down	Launched	Completed	Left Service
	Blohm & Voss	1 Jul 1936	14 Feb 1939	24 Aug 1940	27 May 1941

On completion, the *Bismarck* spent eight months on trials and working up before being declared operationally ready. The *Bismarck* left port in company with the *Prinz Eugen* on 23 April 1941, for commerce raiding, however the *Prinz Eugen* was damaged by a magnetic mine and the departure was delayed until 18/19 May. They arrived off the Norwegian town of Bergen on 21 May, where the *Prinz Eugen* refuelled, then moved off towards the Atlantic. In the evening of 23 May the ships were contacted by British cruisers, and in the early morning of 24 May the battleship *Prince of Wales* and the battle cruiser *Hood* intercepted them. The *Bismarck* destroyed the *Hood* with her fourth salvo, then shifted fire to the *Prince of Wales*, damaging her and forcing her to withdraw. The *Bismarck* had not escaped unscathed, however, being hit three times by the *Prince of Wales*. These hits caused flooding forward (over 1000 tonnes of water came on board), a fuel leak, contamination of some fuel by sea water, damage to pumps and pipes further reducing available fuel, and in addition the forward flooding caused the maximum speed to be reduced to 28 kts. It was decided to return to port in France, leaving the *Prinz Eugen* to continue the commerce raiding sortie alone. At this stage she was still being shadowed by British forces. Near midnight on 24 May the *Bismarck* was attacked by torpedo bombers and fighters, scoring one hit. The torpedo was set to run at 31 ft, but ran on the surface and struck the armoured belt. Nevertheless, this action exacerbated the damage caused earlier and the port number two boiler room flooded, raising fears of salt water contaminating the boiler feed water and necessitating a complete purge of the system. Shortly after the attack the *Bismarck* slipped her shadows and headed for France. She was undetected for the next 31 hours, before being located in the morning of 26 May and shadowed from the air. She was attacked that evening by torpedo bombers, and was struck twice. The critical hit was aft, in the vicinity of the rudders, jamming both rudders and flooding both steering gear compartments. Attempts were made to free the rudders and to steer using the engines, however this proved impossible in the prevailing weather conditions. That night the *Bismarck* was attacked by destroyers, without effect, and the next morning was caught and wrecked, primarily by the *Rodney* and the *King George V*. She finally went down at 10:40 on 27 May 1941, taking with her 2,106 of her 2,221 crew.

<i>Tirpitz</i>	Builder	Laid Down	Launched	Completed	Left Service
	Navy Yard	2 Nov 1936	1 April 1939	25 Feb 1941	12 Nov 1944

The *Tirpitz* began her operational career by acting as the flagship of the German Baltic Fleet during the invasion of Russia, although she was still working up to full operational efficiency. She stood off the Aaland Islands from 23 to 26 September 1941, blockading the Russian fleet in Leningrad, then transferred to Trondheim in Norway on 13 November 1941. On 5 March 1942 the *Tirpitz* left port to attack the Arctic convoys QP8 and PQ12, but were unable to locate them and headed for port. She was attacked by torpedo bombers on the way back but was not struck, and anchored in the Lofoten Islands on 9 March, and returned to Trondheim on 13 March. She was subjected to high level attacks by bombers at night on three occasions in March and April, but suffered no damage. Her next sortie was intended to be against convoy PQ17, however she was recalled late on 5 July after the convoy scattered. She was fired at by the Russian submarine *K21*, however the torpedoes missed. She transferred to Narvik in the summer, then returned to Trondheim for an overhaul on 23 October. This was complete by 28 December 1942. She was tasked with bombarding the Spitzbergen facilities, which were occupied by Norwegians and used by the British as a weather station, leaving port on 6 September 1943 and firing her main guns in anger for the first time on 8 September against shore targets. On 22 September she was attacked by x-craft midget submarines, which placed four charges beneath the ship. The shock from the explosions severely damaged the ship's equipment, with turret Dora (the aft turret) being immobilised, the propulsion system being disabled and numerous other defects. Repairs were undertaken in Norway, despite Allied air raids, and full power trials were scheduled for 3 April 1944. On that day, whilst she was preparing to leave her berth, she was attacked by fighters and dive-bombers. They scored 13 hits and three near misses, and repairs were not complete until mid-July. She was subjected to repeated air attacks thereafter, and was severely damaged by a 'tallboy' bomb on 15 September 1944. Rather than repair her it was decided to relegate her to a floating gun battery, and she was moved to Tromsø for this purpose on 15 October 1944. She was again damaged in an air attack on 29 October, and she finally capsized on 12 November 1944 after being struck by 'tallboy' bombs.

Specifications

	Bismarck	Tirpitz
Displacement - <i>Standard</i>	41,700 tons	42,343 tons
- <i>Full Load</i> ^[Note 1]	49,136 tons	48,794 tons
Length (OA)	250.50 m (820 ft 4 in)	253.60 m (832 ft)
Length (WL)	241.55 m (792 ft 6 in)	241.72 m (793 ft 1 in)
Beam	36.00 m (118 ft 1 in)	36.00 m (118 ft 1 in)
Draft (Standard)	8.7 m (28 ft 7 in)	Uncertain. Similar to <i>Bismarck</i>
Draft (Full) ^[Note 1]	9.99 m (33 ft 6 in)	9.99 m (33 ft 6 in)
Block Coefficient	0.54	Uncertain. Similar to <i>Bismarck</i>
Propulsion	148,283 shp	160,770 shp
Speed	30 kts	31 kts
Weapons		
Main Guns	8 x 380 mm (15 in) in four twin turrets	8 x 380 mm (15 in) in four twin turrets
Other Guns	12 x 150 mm (5.9 in) in three twin mounts 16 x 105 mm (4.1 in) in eight twin mounts 16 x 37 mm (1.5 in) in eight twin mounts 12 x 20 mm (0.8 in) in 12 single mounts	12 x 150 mm (5.9 in) in three twin mounts 16 x 105 mm (4.1 in) in eight twin mounts 16 x 37 mm (1.5 in) in eight twin mounts 78 x 20 mm (0.8 in)
Torpedoes	None	8 x 21 inch (533 mm) torpedo tubes in two mounts
Magazine	1040 rounds of 380 mm 1260 rounds of 150 mm 6400 rounds of 105 mm	1040 rounds of 380 mm 1260 rounds of 150 mm 6400 rounds of 105 mm
Armour		
Side Belt	320 mm (12.6 in) main belt 145 mm (5.7 in) upper belt	315 - 170 mm (12.4 - 6.7 in) main belt (tapering) 145 mm (5.7 in) upper belt
End Bulkheads	220 - 150 mm (8.7 - 5.9 in)	220 - 150 mm (8.7 - 5.9 in)
Magazine	50 mm (2 in) upper deck 95 mm (3.7 in) armour deck	50 mm (2 in) upper deck 100 mm (3.9 in) armour deck
Barbette	340 mm (13.4 in)	340 mm (13.4 in) front and sides 220 mm (8.7 in) rear
Turret	360 mm (14.2 in) face 220 mm (8.7 in) sides 320 mm (12.8 in) rear 180 - 130 mm (7.1 - 5.1 in) roof	360 mm (14.2 in) face 220 mm (8.7 in) sides 320 mm (12.8 in) rear 180 - 130 mm (7.1 - 5.1 in) roof
Deck	50 mm (2 in) upper deck 80 mm (3.2 in) armour deck	50 mm (2 in) upper deck 80 mm (3.2 in) armour deck
Miscellaneous		
Aircraft	4 x Arado Ar-196 floatplanes	4 x Arado Ar-196 floatplanes
Compliment	2,221	2,608

Note 1: Emergency full load (or 'war full load') displacement and draft was greater than this