

The Yamato

Three Yamato-class battleships were constructed during World War II for the Imperial Japanese Navy – Yamato, Musashi and *Shinano*, the last of which was converted to an aircraft carrier during building. At 72,000 tonnes, they were the largest and most heavily armed battleships ever constructed. They carried nine 460mm guns, each capable of firing 2,998-pound (1,360kg) shells for a distance of 26 miles (42km). These were the largest calibre naval guns ever fitted on a warship, each measuring 69 feet (21m) in length and weighing 147 tonnes.

Yamato was launched on 8 August 1940, commissioned on 16 December 1941 and sunk

on 7 April 1945 during Operation Ten-Go, a deliberate suicide attack against American forces off Okinawa. At 12:32 on 7 April 1945, *Yamato* was attacked by a first wave of 280 aircraft from Task Force 58, taking three hits (two bombs, one torpedo). By 14:00, two of *Yamato*'s escorts had been sunk. Soon after, a second strike of 100 aircraft attacked *Yamato* and, at 14:23, having taken 10 torpedo and 7 bomb hits, *Yamato*'s forward ammunition magazines detonated, ripping her hull apart.



TECHNICAL DATA:

The Yamato

Degree of difficulty: Length: 1052mm (41.4in)
Height: 289mm (11.4in)
Beam: 150mm (5.9in)
Scale: 1:250



The birth and death of a giant

The battleship *Yamato* was the flagship of the Combined Fleet of the Imperial Japanese Navy and the only ship in the world with a tonnage allowing it to mount 460mm guns. She was completed on 16 December, 1941, in the Kure shipyard, south of Hiroshima. Her tale ended tragically at 14:23 on 7 April, 1945, south-west of the island of Kyushu, but the history of the formidable battleship is still shrouded in many mysteries.

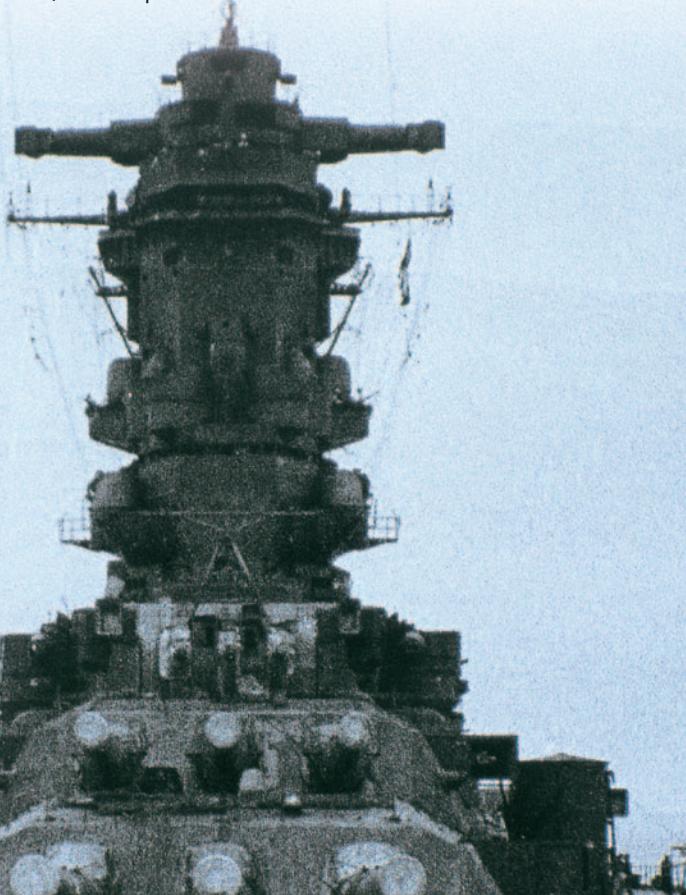
THE BIG IDEA

Between 1921 and 1922, the US government convened a conference in Washington D.C with the aim of curbing the arming of fleets by the major world powers and lessening the tension in the Far East. The treaty signed at the meeting bound each of the countries involved to maintain a set ratio of warship tonnage. This allowed the United States and Britain 500,000 tons, Japan 300,000 tons and France and Italy each 175,000 tons. From then on, Japan built no more battleships (the last was the *Mutsu*, in 1921).

In 1933, the Japanese government left the League of Nations and revoked all naval treaties, while its foreign policy became increasingly warmongering and imperialistic. To swiftly regain its naval power, a project was initiated to build a powerful new battleship, the world's largest, with 460mm guns.

At that time, Japan's economic power was judged to be one-tenth of that of the USA, so any attempt at competing numerically in the construction of battleships was hopeless. The Japanese government, however, was convinced that by building vessels that could mount such huge guns, it would be possible to intimidate the Americans. The US Navy was stationed partly in the Atlantic Ocean and partly in the Pacific Ocean and the passage through the Panama Canal, which linked them, was limited to vessels up to a certain tonnage. Thus, unless they intended to lose this link between the two seas, the US could not afford to build battleships of *Yamato*'s size.

The *Yamato* was the biggest secret of the Japanese Navy, which explains the lack of existing photographs of it. The pictures shown here, provided by the Maritime Museum in Kure, are of the battleship *Musashi*, sister ship of the *Yamato*.



THE YAMATO IN NUMBERS

Displacement in test phase: 69,100 tonnes

Total length: 263m

Maximum beam: 38.9m

Waterline: 10.4m

Engines: 150,000hp

Maximum speed: 27 knots (50km/h)

1941 Armament: Main guns – calibre 460mm,

3 batteries of 3 guns, making a total of 9.

- Secondary guns – calibre 155mm,
4 batteries of 3 guns, making a total of 12 guns.

- Anti-aircraft guns – calibre 127mm,
12 guns at each tower, making a total of 72 guns.

- Machine guns calibre 25mm,

3 guns for each tower, making a total of 24 guns.

- Calibre 13mm on each tower, making a total of 4 guns.

Aircraft: 6 spotter planes

Range: 7,200 nautical miles (13,300km) at 16 knots
(30km/h)

Armour: 410mm along the sides; 200mm on the
central bridge; 660mm in front of the gun turrets.

Complement: 2,300

THE SECRETS OF THE YAMATO

To withstand shell fire and bombing, the *Yamato* was equipped with the most technologically advanced armour plating of the time. The armour was 410mm thick on the sides (in the bow and stern area it diminished respectively to 330 and 300mm) and 200mm on the central bridge. The armour of the front of the gun turrets reached 660mm and the deck of the munitions stores was reinforced with 50–80mm of iron.

Among the innovations that distinguished the battleship *Yamato* from other battleships was air conditioning. At that time, ships only had steam heating for winter, while in summer they were very hot because there was only natural ventilation and the sun made metal surfaces scorching. Although it was limited to the wardroom, the officers' cabins and some of the crew cabins, the *Yamato* was equipped with air conditioning which used the air coming from the cooling plant of the munition stores. It was for that reason known as, perhaps with some envy, 'Hotel Yamato'.

Fitted with the most modern equipment and armament that Japan was able to produce, the *Yamato*, however, was no exception in having the innate weakness of Japanese battleship design – the anti-aircraft weaponry. This was partly due to a numerical lack of machine guns and cannons, but above all to the poor quality of the radar and targeting systems. There were numerous attempts to increase the number of anti-aircraft guns, but the targeting system was not improved and remained a weak point of the *Yamato* until its dramatic end from US bombs and torpedoes.

A bulbous bow

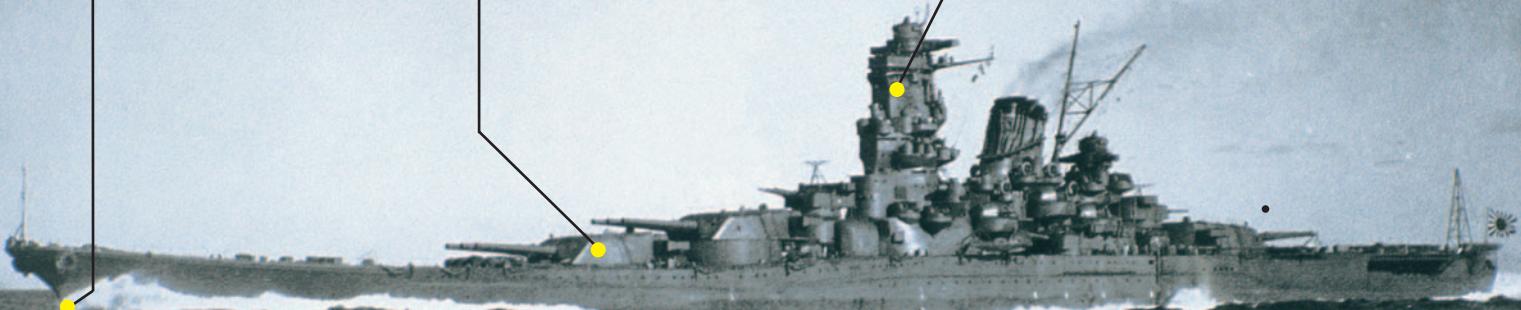
The specially designed bow of the *Yamato* had a rounded projection below the waterline so that the heavy hull would offer less resistance to water. This particular shape allowed the ship to reach 27 knots (50km/h).

Heavyweight armaments

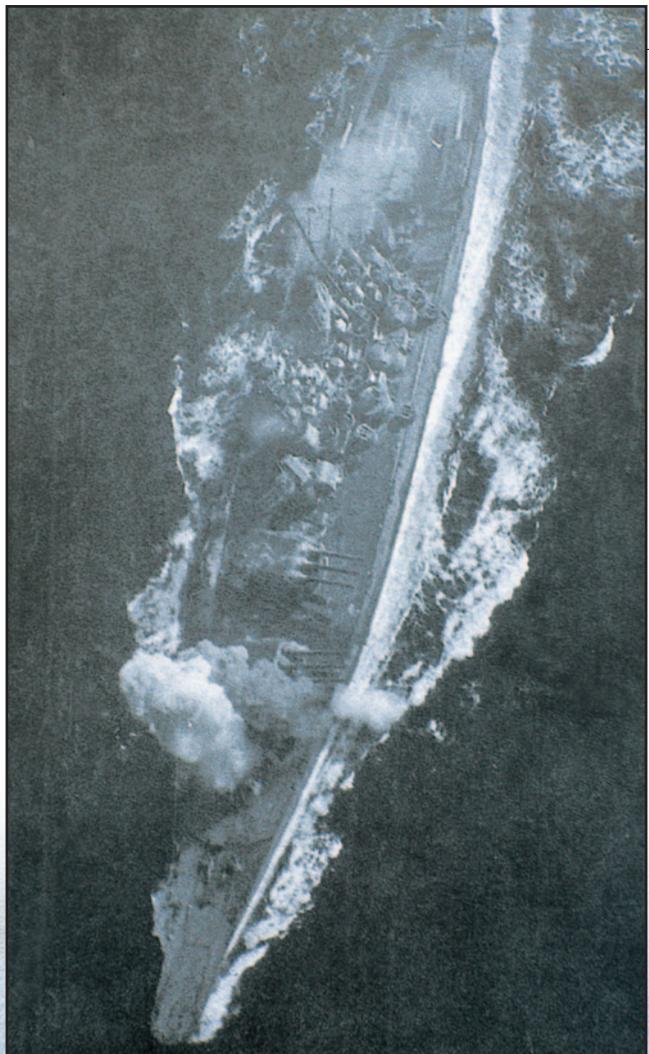
The 460mm guns had barrels weighing 165 tons. A turret weighed 2,760 tons, equivalent to the weight of an American destroyer.

The rangefinder

To measure the distance from an enemy fleet, the *Yamato* was equipped with an optical rangefinder – the largest in the world – the base of which was 15m in length.



A photo taken during the official sea trials of the *Yamato*. This is a unique image showing the full length of the battleship.
(Photo from the Kure Maritime Museum)



This photo (above) shows the *Yamato* during the battle off the coast of Leyte in the Philippines. It was taken on 26 October, 1944, from the back seat of a diving American bomber. (Photo ©American State Archive, supplied by Katsuhiko Hara.).

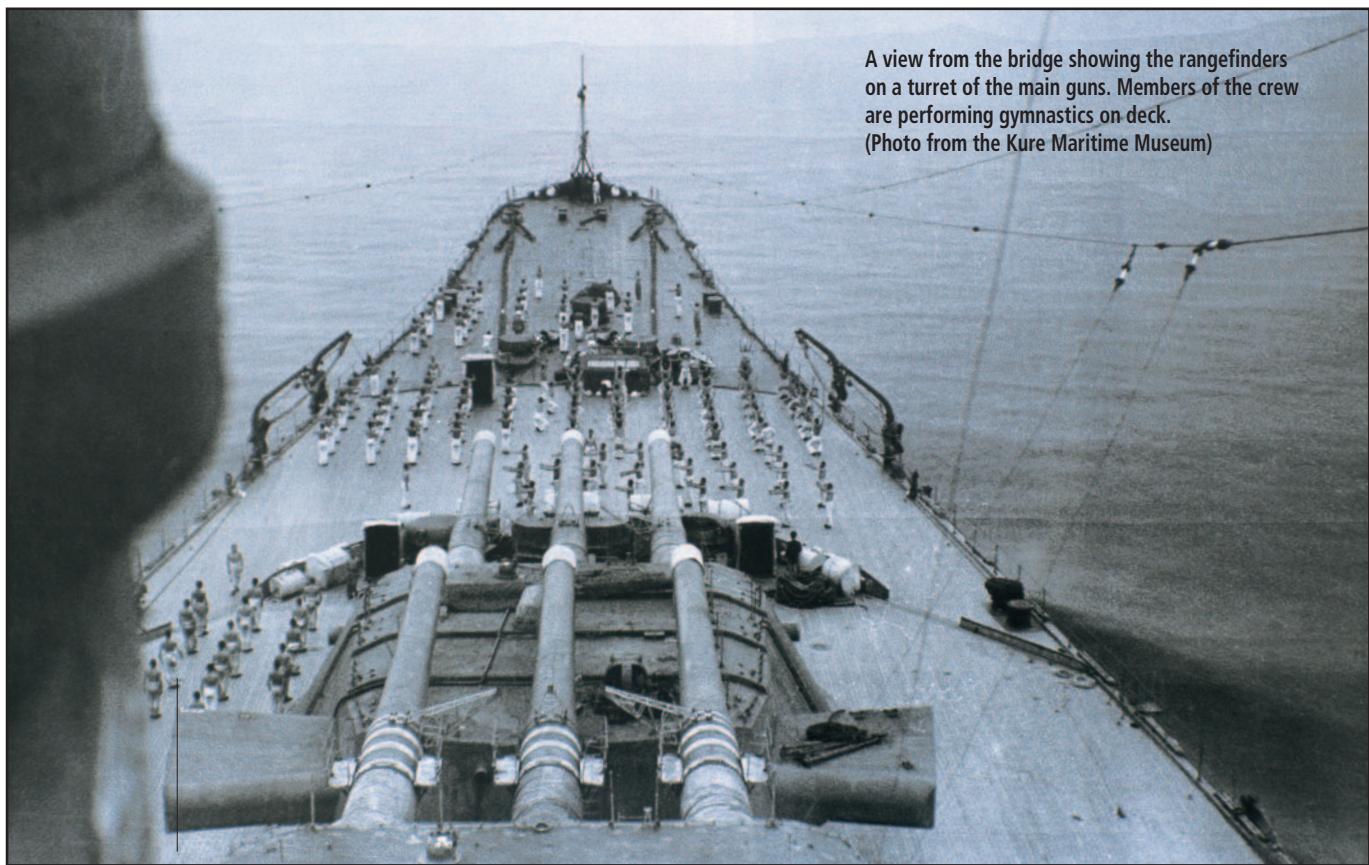
A TOP SECRET CONSTRUCTION

The decision to build the *Yamato* was greeted with great expectations by the Japanese Navy. However, there was fear that the USA, learning of the construction of a battleship of such a size, would also be tempted to build ships with 460mm main guns, or even larger, ignoring the limitation on navigating the Panama Canal. For that reason, the *Yamato* was built in utmost secrecy. The shipyard workers were subjected to meticulous daily body searches and the plans of the battleship were jealously guarded in a safe. Even the commander of the Combined Fleet could not enter the dockyard unauthorized. The dockyard was covered with a roof to hide the work from US reconnaissance airplanes.

Even the high costs of the battleship's construction might have led to suspicions about the scale of the project and size of the main guns, so a double set of accounts was kept. The budget was calculated as if it were a normal battleship, and the costs of a non-existent submarine and a destroyer were added. The price of building the *Yamato*, as shown by the double bookkeeping and the hidden overall cost, was 130 million yen, equivalent to just over 3 per cent of the national budget of Japan at the time, which was about 4 billion yen.

On the eve of the Allied occupation of Japan, special service officers of the Imperial Japanese Navy destroyed virtually all records, drawings and photographs relating to the *Yamato*-class battleships, leaving only fragmentary records of the design characteristics and other technical matters. Until 1948 the only known images of the *Yamato* and *Musashi* were those taken by United States Navy aircraft involved in the attacks on the two battleships. Information on the class largely came from interviews of Japanese officers following Japan's surrender.

Tougetsu (centre) and
Hatsushimo (top left)
witnessing the last
moments of the *Yamato*. In
the left foreground is the
destroyer *Kasumi*, by then
rendered harmless.
(Photo ©American State
Archive, supplied by
Katsuhiko Hara.)



A view from the bridge showing the rangefinders on a turret of the main guns. Members of the crew are performing gymnastics on deck.
(Photo from the Kure Maritime Museum)

DIARY OF THE YAMATO

- 1937 4 November: Keel laid.
- 1940 8 August: Launch.
- 1941 16 December: Commissioned.
- 1942 12 February: Became flagship of the Imperial Japanese Navy Combined Fleet.
- 1942 29 May: Fought in the Battle of Midway.
- 1943 25 December: Damaged north of the island of Truk by a torpedo from the submarine USS *Skate*, resulting in leaks in the engine room and in the third munition store.
- 1944 19, 20 June: Engages in battle offshore of the Marianas.
- 1944 24 October: Attacked by enemy aircraft in the Sibuyan Sea (Battle of Leyte).
- 1944 25 October: Shells a fleet of aircraft carrier escort ships off the island of Samar.
- 1944 26 October: Attacked by enemy aircraft in the Sulu Sea (Western Pacific).
- 1945 6 April: Sets sail for Okinawa with squadrons of suicide pilots.
- 1945 7 April: Attacked by enemy aircraft south-west of Cape Sata, Kyushu island. At 14:23 sinks, going down with 3,000 dead. The survivors number 276.

FIRED IN ANGER – ONCE

In October 1944, *Yamato* engaged enemy surface forces for the first and last time, hitting several American ships in the initial stages of the Battle of Samar. She withdrew from the battle when an approaching spread of torpedoes was detected.

Despite the size of her guns and power of her high-explosive and armour-piercing shells, *Yamato*'s extraordinary weaponry contributed little to Japan's war effort.

MAIN GUNS AND SHELLS

Calibre: 460mm
Barrel length: 20.7m
Angle of max elevation: 45°
Angle of max reduction: -5°
Max range: 42,000m (with angle of elevation of 45°)
Muzzle velocity: 780m/s
Rate of fire: 1.8/min
Weight of ammunition: 1,460kg
Aiming speed: High/Low 8°/min
Rotation speed: 2°/min
Weight of the turret: 2,760 tonnes

Right: A 460mm Type 94 armour-piercing shell manufactured for use on *Yamato*-class battleships.

