

Profile of a Mark XXIII turret.

Range:

Elevation	With 112 lbs CPBC	Striking Velocity	Angle of Fall.
2.3 degrees	5,000 yds (4,570 m)	1,939 fps (591 mps)	3.0
6.2 degrees	10,000 yds (9,140 m)	1,371 fps (418 mps)	10.0
13.1 degrees	15,000 yds (13,720 m)	1,098 fps (335 mps)	23.6
24.1 degrees	20,000 yds (18,290 m)	1,087 fps (331 mps)	39.9
41.1 degrees	24,500 yds (22,400 m)	1,159 fps (353 mps)	56.5
45 degrees	25,480 yds (23,300 m)		

Time of Flight:

5,000 yds (4,570 m)	6.6 seconds
10,000 yds (9,140 m)	15.9 seconds
15,000 yds (13,720 m)	29.4 seconds
20,000 yds (18,290 m)	47.2 seconds
24,500 yds (22,400 m)	71.4 seconds.

Turret weight: Mark XXIII – about 175 tons (178 mt)

Elevation : -5 / +45 degrees

Elevation rate: All 5 – 7 degrees per second.

Train : about +150 / - 150 degrees

Train rate: 10 degrees per second.

Gun recoil limits: -5 to +12.5 degrees

Loading angle: preferred +5 to +7 degrees.

The Mark XXIII

Aboard *HMAS Perth*, and it is assumed that similar if not the exact same figures apply here:

HMAS Sydney carried 8 x 6 inch Mark XXIII guns in four mounts, two (A and B) forward and two (X and Y) aft. Each turret had its own shell room and each pair of turrets shared a magazine for cordite propellant charges. Propellant charges were cordite sewn into bags. Each turret carried a number of ready-use rounds of various types. The shell rooms had 200 rounds each of a variety of shell types and 800 charges respectively. Fire control was from a single director control tower, working with the Transmitter Station (TS) directly below the director, which was situated on top of and at the rear of the bridge.

Target ranges were taken from 4.6m optical rangefinders, one each side of the bridge area and bearings sent to the TS and entered into calculator, where they were paired with ballistic corrections, plotted course, and speed of the target to produce bearings and elevations for individual turrets. Turrets could also be operated in local control.

It is recorded that a complete ammunitioning of the ship took a whole day, which included the loading of 2,400 6 inch shells, similar number of propellant charges, 800 4 inch rounds for the anti-aircraft guns amidships, torpedoes, small arms and ammunition belts for the 0.5 quad Machine gun mountings.

The shells for the 6 inch guns were produced at the Defence Explosive Factory at Maribyrnong in Victoria. This factory was created by the Commonwealth government in 1910 and over the years developed into an area containing over 500 buildings, including

magazines, processing plants and support systems. Working with modern lathes it was possible to finish a 6 inch shell in 115 seconds.

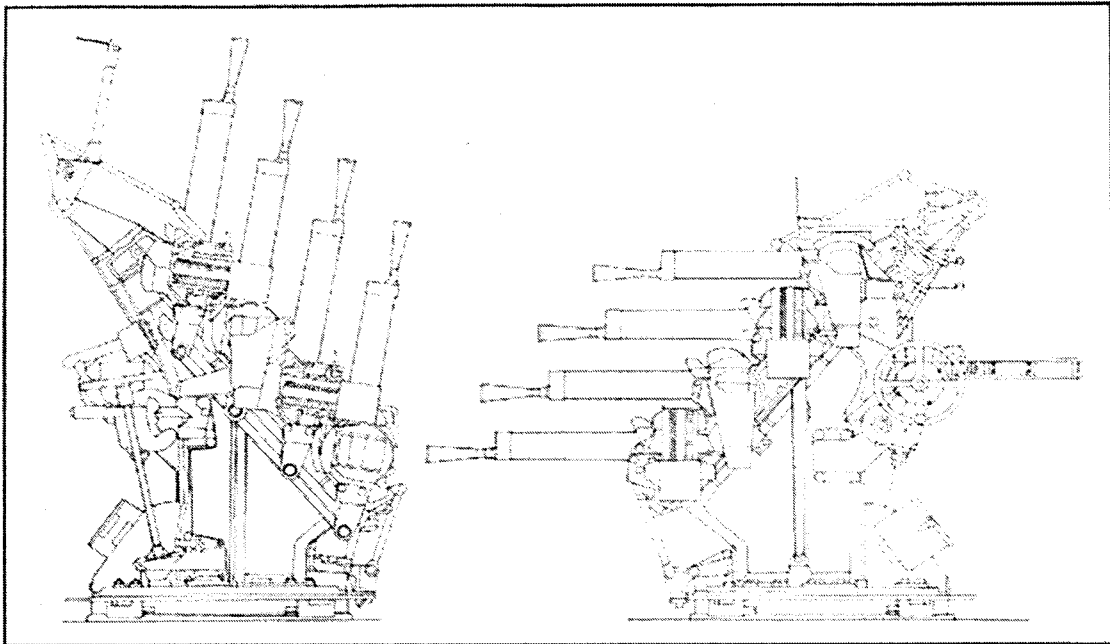
4 Inch Quick Firing Anti-Aircraft Guns.

The *Sydney* also carried 4 single QF 4 inch mountings using fixed ammunition (ie one shell as a single piece). The guns could elevate to 80 degrees and fired a 16 kg shell a maximum of 19 kilometres at a rate of 15 rounds per minute. The 800 rounds were stored in the 4 inch magazines except for 30 kept in ready-use lockers on the deck adjacent to the guns. The high-angle gun director for these guns was mounted behind the main director on the rear of the bridge.

0.5 Inch Vickers Machine Gun

HMAS Sydney carried three 0.5 inch (1.27mm) machine guns. One abaft the mainmast and one either side of the bridge in quadruple mountings.





The ammunition belts can be clearly seen feeding the guns.

The 0.5 inch Vickers was a medium-power heavy machine-gun originally intended to be used by all three services. It fired a 38 gram bullet at a muzzle velocity of 770 metres per second (m/sec) and at a rate of 700 rounds per minute (rpm). The naval application of the gun initially appeared in the early 1930's in a four-barrel mounting weighing between 1,000 and 1,300 kg and intended mainly for destroyers. Unusually, the four barrels were vertically stacked. War experience soon exposed the lack of range and hitting power and the rate of fire meant that it was effective against strafing aircraft which came too close but it was of little use against torpedo and dive bombers.

Over 12,500 of these MG's were accepted during WW2 for RN service and those on the *Sydney* were fitted with the curious four-barrel mounting, with the guns stacked vertically and were manually operated. As an anti-aircraft gun they were insufficiently powerful and were later replaced by the 20mm Oerlikon. The guns were adjusted to provide a spread of fire amounting to 60 feet wide and 50 feet high at 1,000 yards (15-18 m at 915m). The belts were wrapped around large drums which carried 200 rounds per gun. It was claimed they could fire 800 rounds in 20 seconds and could be reloaded in 30 seconds.

Torpedo Tubes

The ship was armed with 2 533mm sets of torpedo tubes, each set containing four torpedoes mounted either side of the ship amidships on the main deck below the 4 inch gun mounts. The torpedoes were MK IX – able to travel at 35 knots for 14 kilometres. No reloads were carried.

Depth Charges

A depth charge rail with five charges was mounted on the stern, these were used in conjunction with the Sonar Type 132 in a retractable dome.