

NAVAL GUNS

Mk 45

The 5 inch/54-calibre (Mk 45) lightweight gun is a modern naval artillery gun mount consisting of a 5 inch (127mm) L54 Mark 19 gun on the Mark 45 mount.

It is designed to be used for naval-gunfire support against surface targets.

The gun mount features an automatic loader with a capacity of 20 rounds. These can be fired fully automatic, taking a little over a minute to exhaust.

For sustained use, the gun mount would be occupied (below deck) by a three-man crew to keep the gun supplied with ammunition.

An advanced version, the Mk 45 mod 4 lightweight gun, uses a longer barrel (62 calibre) for more complete propellant combustion, higher velocity and greater utility as a land-attack weapon.

Australia’s new Air Warfare Destroyer will carry the 62-calibre gun.

Rate of Fire	16–20 rounds per minute
Calibre	5 inch/54 and 62
Range	24km
Usage	Frigate Helicopter (FFH)



Mk 75

The Mark 75 Mod 0 gun is a 76mm (3 inch), fully automated, remotely controlled gun mount, which stows, aims and fires a range of ammunition.

Automatic water-cooling of the barrel allows sustained operation at various firing rates up to 85 rounds per minute.

The gun is primarily a defensive weapon against aircraft and missile threats, however, it can also be used effectively against surface and shore targets.

It has an effective range of about 16km and fires 12kg projectiles that explode in proximity to their target, filling the surrounding air with shrapnel.

Rate of Fire	10–60 rounds per minute (max 85)
Calibre	76mm (3 inch)
Range	18.4km
Usage	Guided Missile Frigate (FFG)

NB — the caliber of a naval gun is an expression of the barrel length as a multiple of the barrel diameter. For example, the 5 Inch/54-calibre Mk 45 has a barrel length of 5x54=270inch — or 6858mm.

MISSILES

Evolved Sea Sparrow

The RIM-162 Evolved Sea Sparrow Missile (ESSM) is a development of the RIM-7 Sea Sparrow used to protect ships from incoming missiles and aircraft.

ESSM is designed to take down supersonic anti-ship missiles, even those capable of manoeuvring.

ESSM has a larger, more powerful rocket motor than its predecessor, for increased range and agility, as well as upgraded aerodynamics.

It uses the latest missile guidance technology, and finds targets illuminated by the ship’s radar.

ESSM can be quad-packed in the Mk 41 vertical launch system, which means up to four missiles can be carried in a single launcher cell.

Range	50km+
Speed	Mach 4+
Warhead	39kg
Weight	280kg
Length	3.66m
Usage	FFG and FFH

SM2

The Standard Missile is a surface-to-air defence weapon with a secondary mission as an anti-ship missile.

SM2 has consistently demonstrated effectiveness against targets from surface ships to aircraft and can also be used against in-coming missiles, from very low to very high altitudes and from stationary to supersonic speeds, under a variety of weather conditions, and across a spectrum of electronic countermeasures environments.

SM2 uses tail controls and a solid fuel rocket motor for propulsion and manoeuvrability. Extended-range versions have a booster with thrust-vector controls.

The missile’s autopilot is programmed to fly the most efficient path to the target and can receive course corrections from the ground.

Target illumination for semi-active homing is needed only for a few seconds in the terminal phase of the intercept.

SM2 is launched from the Mk-13 guided missile launching system (GMLS) — the arm-type launcher prominent on the focsle of Adelaide-class FFGs.

Range	166km+
Speed	Mach 3+
Weight	708kg
Length	4.72m
Usage	FFG



Harpoon

The AGM-84 Harpoon is an all-weather, over-the-horizon, anti-ship missile.

Its low-level, sea-skimming cruise trajectory, active radar guidance and warhead design assure high survivability and effectiveness.

Harpoon Block II is capable of anti-ship and land-strike missions.

To strike targets on land and ships in port, the missile uses GPS-aided inertial navigation to hit a designated target without being distracted by land, buildings or structures such as dockside cranes and so on.

The 227kg blast warhead can deliver lethal firepower against a wide variety of land-based targets.

Range	124km
Speed	High subsonic
Warhead	227kg
Weight	691kg
Length	4.6mm
Usage	FFH



CLOSE-IN WEAPON SYSTEMS

Typhoon

Typhoon Mk 25 is a stabilised gun mount, designed to accommodate, in Australia’s case, the 25mm marine Bushmaster canon.

Being a stabilised system, the weapon can remain on target as the ship moves, with an accuracy fine enough to allow aiming to within 250mm of a target at 1000m.

Weighing less than 1 tonne fully loaded and mounted on a ship’s deck without penetration (except for bolt holes) makes it relatively simple to fit to ships large and small.

Typhoon can use sights attached to the weapon mount or it can receive inputs from independent electro-optical or fire-control radars.

It is remotely controlled from inside the ship, keeping crew safe, or can be left to operate independently.

The mounting can carry a range of calibers from 20 to 30mm, with the 25mm Bushmaster (similar to Australian Light Armoured Vehicles — ASLAV) preferred in Australian applications.

Rate of Fire	200 rounds per minute
Muzzle velocity	1100m/sec
Calibre	25mm
Range	3000m
Cannon	Alliant Tech Systems
Usage	Patrol boats



Mini-Typhoon

Mini Typhoon is a lightweight, naval, stabilised, remotely-operated machine gun system using the .50 calibre Browning Quick Change Barrel (QCB) heavy machine gun, designed to afford perimeter protection for larger vessels.



The system has a high level of accuracy, weighs 170kg and can be installed without structural penetration of a ship’s deck.

The machine gun is belt fed with 230 rounds carried on the mount as standard.

Rate of Fire	450–575 rounds per minute
Muzzle velocity	890m/sec
Calibre	12.7mm (.50cal)
Range	1800m
Usage	LSH (landing ship heavy) and FFH

DS30B

DS30B is a marinised, stabilised gun mount, which accommodates an Oerlikon 30mm cannon — the only 30mm gun in ADF service .

The system is known as a LOCSIG type (locally controlled by a single operator).

Rate of Fire	650 rounds per minute
Muzzle velocity	1080m/sec
Calibre	30mm
Range	Anti-surface 10,000m Anti-air 2750m
Usage	MHC (mine-hunter, costal)



Phalanx

Phalanx is a close-in weapon system consisting of a radar-guided, 20mm, 6-barrel Gatling gun mounted on a swiveling base, for defending against anti-ship missiles.

It is entirely self-contained, detecting, tracking and engaging targets in fully automatic mode.

When the radar senses something moving in the sky, its own computers calculate if it is a threat, by analysing size, speed and direction — and, if it is, automatically unleashes 75 rounds per second of super-sonic tungsten-alloy armour-piercing projectiles until either any piece of the target bigger than a 50cent coin stops coming, or until the system’s 1500-round load has run out.

Rate of Fire	4500 rounds per minute
Muzzle velocity	1100m/sec
Calibre	20mm
Range	3600m
Usage	FFG



TORPEDOES

Mk-44

Mk-44 torpedo is an active homing torpedo using a salt-water-activated electric battery. It can be launched from helicopters or fixed-wing aircraft. Once in the water, the torpedo begins a spiral search pattern for a target.

Mk-46

Mk-46 torpedo, presently identified as the NATO standard, is designed to attack high-performance submarines. It is designed to be launched from ships’ torpedo tubes, ASROC (anti-submarine rocket) missile launchers or fixed- or rotary-wing aircraft.

Mk-48

Mk-48 torpedo is designed to combat fast, deep-diving nuclear submarines and high-performance surface ships. Mk-48 and Mk-48 ADCAP (advanced capability) torpedoes can operate with or without wire guidance and use active and/or passive homing. When launched they execute pre-programmed target search, acquisition and attack procedures. Both can conduct multiple re-attacks if they miss the target.

MU90

MU90 torpedo is a fire-and-forget weapon designed to detect and attack any type of submarine — even those coated with acoustic-absorbing materiels, those deploying active or passive decoys, or even those silently sitting on the ocean floor. It destroys its targets using a shaped charge. Powered by an electric water-jet, it can be run at ‘silent speeds’ to avoid giving its own location away or can ‘dash’ at more than 90km/hr.