

## WEAPONS OF THE ADF

### Handy Reference Guide

#### Part 2



To fit your viewee twoee

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# WEAPONS OF THE ADF

## Reference Guide Part 2

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NOTE: The information in this guide is gathered here as a handy reference only. If you find an errors, we'd be pleased to incorporate corrections in future revisions. Send to [editor@militarycontact.com](mailto:editor@militarycontact.com)

This guide is compiled with information from many sources, especially Wikipedia, but also the various ADF web sites, manufacturers' web sites and enthusiasts' pages – because no one source brings them all together like we do.

You can find Part 1 of this guide at  
**[www.contactairlandandsea.com/adf\\_weapons\\_pt1.pdf](http://www.contactairlandandsea.com/adf_weapons_pt1.pdf)**

This pocket guide is designed to print on gloss 6x4-inch photo paper – ideal for inserting into a standard military viewee twee, after trimming to the line below. You can buy viewee towees at **[www.contactairlandandsea.com/contact\\_shop.htm](http://www.contactairlandandsea.com/contact_shop.htm)**  
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# WEAPONS OF THE ADF

## Heavier Support Weapons

### F2 Mortar



Calibre	81mm
Weight	36.6kg
HE shell weight	4.2kg
Barrel length	1280mm
Muzzle velocity	225m/sec
Effective range	200-4900m

**The 81mm F2 mortar is a crew-served, indirect-fire support weapon.**

It is primarily a man-portable weapon that can also be deployed using helicopters as well as wheeled or tracked vehicles.

In man-pack mode, additional personnel are required to carry ammo.

Mortars add significant firepower to the battlefield, but tubes are easily detectable by their distinctive noise and flash when firing, and the projectile can be readily detected by weapon-locating radar because of the long flight time, high trajectory and relatively slow speed.

The mortar can fire up to 12 rounds per minute sustained or up to 20 rounds per minute for short periods.

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# WEAPONS OF THE ADF

## Heavier Support Weapons

### Javelin



**Javelin was introduced to the Australian Army to engage and destroy current and anticipated enemy armour at ranges beyond that achievable with previous shoulder-fired anti-armour systems.**

It can also be used against fortifications and bunkers, as well as slow-moving or hovering helicopters.

Targets are engaged by locking on to their heat signature and, once fired, there is no further requirement to guide the missile, which allows the firer to get up and go before being counter attacked.

Javelin is mainly used as a dismounted, shoulder-fired weapon, but it can be fitted to vehicles.

Javelin has two modes – direct attack or top attack. In direct attack, the rocket flies directly to the target. In selectable top-attack mode, the rocket initially flies a similar path before arching up to about 150m then down in the last seconds to hit the target almost vertically from the top – where most vehicles' (even tanks) are most vulnerable.

The missile has two warheads – the first to set off explosive-reactive armour, the second to penetrate base armour.

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# WEAPONS OF THE ADF

## Guns

## Minigun



ADF photo

<b>Calibre</b>	7.62mm
<b>Weight</b>	30kg
<b>Length</b>	803mm
<b>Barrel length</b>	559mm
<b>Muzzle velocity</b>	853m/sec
<b>Cyclic rate of fire</b>	3000 rnds/min

**Dillon Aero M134D Minigun is used exclusively in Australia by the Army's C Squadron, 5<sup>th</sup> Aviation Regiment on CH-47F Chinook helicopters.**

It is an air-cooled, percussion-fired, six-barreled, rotary gun, electrically driven from aircraft power.

The gun is fired manually, using belt-fed ammunition at 3000 rounds per minute or 50 rounds per second.

The M134D is virtually free of recoil. When properly mounted, it moves slightly aft with the first shot, without any tendency to pitch or yaw, which significantly assists in keeping rounds on target.

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# WEAPONS OF THE ADF

## Guns

### Bushmaster



Calibre	25mm
Weight	119kg
Length	2527mm
Barrel length	2672mm
Muzzle velocity	1100m/sec
Cyclic rate of fire	200 rounds/min

**The M242 Bushmaster is a 25mm chain-driven autocannon used in the Army on ASLAVs and the Navy in their Typhoon CWIS [see later card].**

It is an externally powered, chain-driven, single-barrel weapon that can be fired in semi-automatic, burst [typically 3 rounds] or automatic.

The gun can destroy lightly armoured vehicles and aerial targets [helicopters and slow-flying aircraft]. It can also suppress enemy positions such as exposed troops, bunkers and fortifications.

The weapon has an effective range of 3000m, depending on the type of ammunition used.

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# WEAPONS OF THE ADF

## Guns

### Giat 30



<b>Calibre</b>	30mm
<b>Weight</b>	65kg
<b>Length</b>	1087mm
<b>Barrel length</b>	???
<b>Muzzle velocity</b>	810m/sec
<b>Cyclic rate of fire</b>	750 rounds/min

ADF photo

**The Giat 30M 781 is an electrically powered cannon, fitted under the nose of the Army's Tiger Armed Reconnaissance Helicopter.**

Given its considerable recoil (600kg), it is typically used in single shots or controlled bursts, though unlimited bursts are possible.

Aiming is slaved to the pilot's or the rear crewmember's helmet, the gun following the movement of his head.

The gun can be aimed 90 degrees left or right of direction of travel as well as about 30 degrees up or down from horizontal.

The system carries a 400-round maximum ammunition load.

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# WEAPONS OF THE ADF

## Guns

**M777**



<b>Calibre</b>	155mm
<b>Weight</b>	4100kg
<b>Length</b>	10.7m deployed 9.5m towed
<b>Rate of fire</b>	5 rounds/min rapid 2 rounds/min sustained
<b>Effective range</b>	24km conventional rounds 30km improved rounds

**The M777 Light-Weight Towed Howitzer (LWTH) is the artillery piece employed by the Australian Army. It replaced the L119 105mm light gun and the M198 155mm medium gun.**

M777 can link with Australian and allied digital networks to provide accurate and rapid fire support in all weather conditions, day or night.

It can provide indirect support to combat troops through offensive and defensive fires with conventional and precision-guided projectiles as well as illumination and smoke projectiles.

M777 is towed behind a medium truck – currently Mack gun tractor, soon to be replaced by MAN. It can also be lifted by CH47 Chinook helicopter or carried in the C17 Globemaster and C130 Hercules.

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# WEAPONS OF THE ADF

## CWIS

[close-in weapon systems]

## Mini-Typhoon



<b>Rate of Fire</b>	450–575 rounds/min
<b>Muzzle velocity</b>	890m/sec
<b>Calibre</b>	12.7mm [.50cal]
<b>Range</b>	1800m
<b>Usage</b>	Anzac-class frigates

**Mini Typhoon is a highly accurate, lightweight, stabilised, machine gun system that can be fitted with a range of weapons. RAN uses the .50 calibre Browning Quick Change Barrel (QCB) heavy machine gun.**

It is remotely operated from inside the ship.

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

The system is designed for force protection and precision engagement for small, fast patrol boats, but is also used as perimeter protection for larger vessels.

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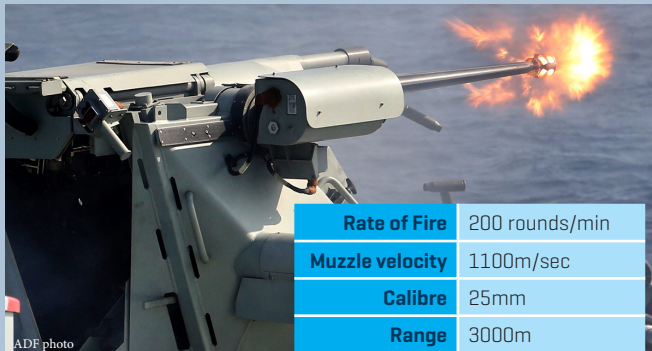
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# WEAPONS OF THE ADF

## CWIS

[close-in weapon systems]

## Typhoon



Rate of Fire	200 rounds/min
Muzzle velocity	1100m/sec
Calibre	25mm
Range	3000m
Cannon	Bushmaster
Usage	Patrol boats & LCH

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

The weapon can remain on target as the ship moves, with an accuracy of 250mm at 1000m.

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 calibres from 20 to 30mm, with the 25mm Bushmaster [similar to Australian Light Armoured Vehicles — ASLAV] preferred in Australian applications.

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## CWIS

[close-in weapon systems]

## DS30B



<b>Rate of Fire</b>	650 rounds/min
<b>Muzzle velocity</b>	1080m/sec
<b>Calibre</b>	30mm
<b>Range</b>	10,000m anti-surface 2750m anti-air
<b>Usage</b>	Mine-hunter, coastal

**DS30B is a marinised, stabilised gun mount, which accommodates an Oerlikon 30mm cannon, fitted on the RAN's six Huon-class coastal minehunters.**

The system is known as a LOCSIG type [locally controlled by a single operator].

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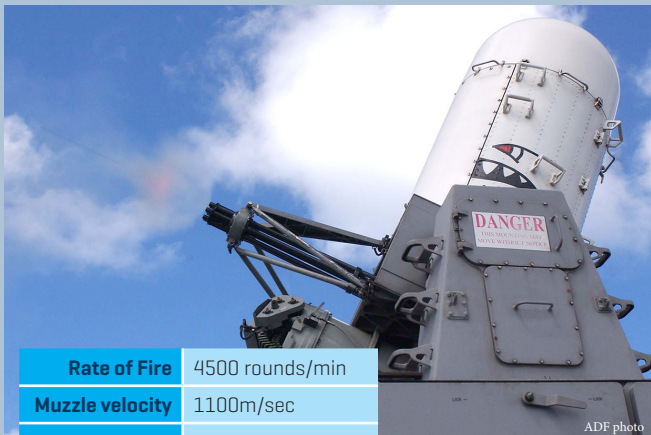
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# WEAPONS OF THE ADF

## CWIS

[close-in weapon systems]

## Phalanx



<b>Rate of Fire</b>	4500 rounds/min
<b>Muzzle velocity</b>	1100m/sec
<b>Calibre</b>	20mm
<b>Range</b>	3600m
<b>Usage</b>	Adelaide-class FFG

**Phalanx consists 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 automatically and autonomously.

When it senses a threat, it fires 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 it runs out of ammo.

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## Naval Guns

### Mk 45



Rate of Fire	16–20 rounds/min
Calibre	5 inch/54
Range	24km
Usage	Anzac-class FFH

**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 for naval-gunfire support against surface targets.

The gun mount features an automatic loader with 20-rounds, which 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.

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# WEAPONS OF THE ADF

## Naval Guns

Mk 75



Rate of Fire	10–60 rounds/min
Calibre	76mm [3 inch]
Range	18.4km
Usage	Adelaide-class FFG

**The Mark 75 Mod 0 gun is a 76mm [3 inch], fully automated, remotely controlled gun mount that 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 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 air with shrapnel.

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## Rockets

**FZ90**



**The FZ90 2.7inch [70mm] unguided rocket has been widely used by the ADF for many years.**

FZ90 is used in a wide variety of roles, including close air support, close combat attack, escort and armed reconnaissance.

Tiger ARH can carry up to four launch pods of 7- or 19-rocket capacity each – but other weapons need to be accommodated too.

FZ90 can also be fitted with a bolt-on laser guidance kit called the Advanced Precision Kill Weapon System (APKWS™) by BAE Systems.

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# WEAPONS OF THE ADF

## Missiles

### Hellfire



ADF photo

Range	500m-8000m
Speed	Mach 1.3
Warhead	9kg
Weight	49kg
Length	1630mm
Usage	ARH, MH-60R

**AGM-114 Hellfire is an air-to-surface missile first developed as an anti-armour weapon, but has evolved for use against a wide variety of targets including buildings, vehicles and even high-value human targets.**

It was originally developed under the name **Helicopter Launched, Fire and Forget Missile**, with the colloquial 'Hellfire' eventually adopted.

It can be launched from multiple air, sea, and ground platforms – currently Tiger ARH and MH-60R 'Romeo' Seahawk in the ADF.

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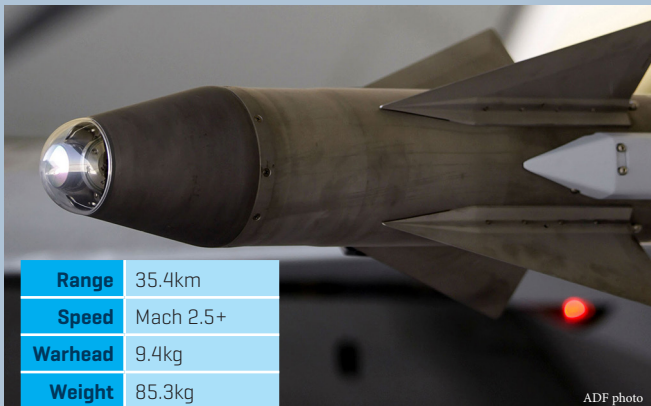
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# WEAPONS OF THE ADF

## Missiles

### Sidewinder



ADF photo

Range	35.4km
Speed	Mach 2.5+
Warhead	9.4kg
Weight	85.3kg
Length	3.02m
Usage	F/A-18A,B,F, EA-18G, F-35A

**AIM-9X Sidewinder is an advanced infrared-tracking, short-range air-to-air missile that can also be used as a surface-to-air weapon.**

Sidewinder, developed more than 60 years ago with the latest iteration in service for more than 14 years, is one of the most widely used missiles in the world.

Sidewinder is the most widely used missile in the West, with more than 110,000 produced. It is also one of the oldest, least expensive, and most successful air-to-air missiles, with more than 270 aircraft kills credited.

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# WEAPONS OF THE ADF

## Missiles

### ASRAAM



**The Advanced Short Range Air-to-Air Missile, ASRAAM, is a British-made heat-seeking air-to-air missile [also known by US identifier AIM-132, though the US doesn't use it].**

The RAF and RAAF bought ASRAAM to replace Sidewinder [which the US has committed to until at least 2055]. India is the only other user.

ASRAAM has more range and greater manoeuvrability than any other IR missile in service. It is capable of 50g turns in its chase to target.

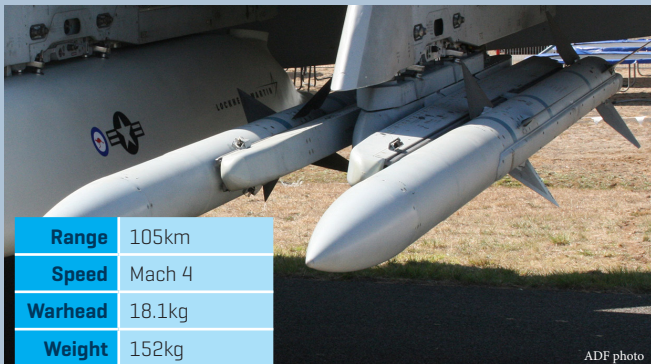
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# WEAPONS OF THE ADF

## Missiles

### AMRAAM



Range	105km
Speed	Mach 4
Warhead	18.1kg
Weight	152kg
Length	3.7m
Usage	F/A-18A,B,F, EA-18G, F-35A

**AIM-120 Advanced Medium-Range Air-to-Air Missile or AMRAAM [pronounced am-ram], is a modern beyond-visual-range missile.**

It is a fire-and-forget missile [employing active transmit/receive radar guidance] and is capable of all-weather day-and-night operations, and can also be surface launched.

Computer and inertial guidance take the missile to a point where its active radar turns on to complete terminal intercept, thus freeing the pilot to aim and fire several missiles at multiple targets and then perform evasive manoeuvres while the missiles guide themselves to the kill.

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# WEAPONS OF THE ADF

## Missiles

### HARM



US Navy photo

Range	150km
Speed	Mach 1.9
Warhead	66kg
Weight	355kg
Length	4.1m
Usage	EA-18G

**AGM-88 High-speed Anti-Radiation Missile (HARM) is a tactical, air-to-surface missile designed to home in on electronic transmissions from surface-to-air radar systems.**

Australia has ordered the latest upgrade – AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) – to arm its EA-18G Growlers.

The upgraded missile features advanced software and the ability to continue targeting the enemy radar even if it stops transmitting.

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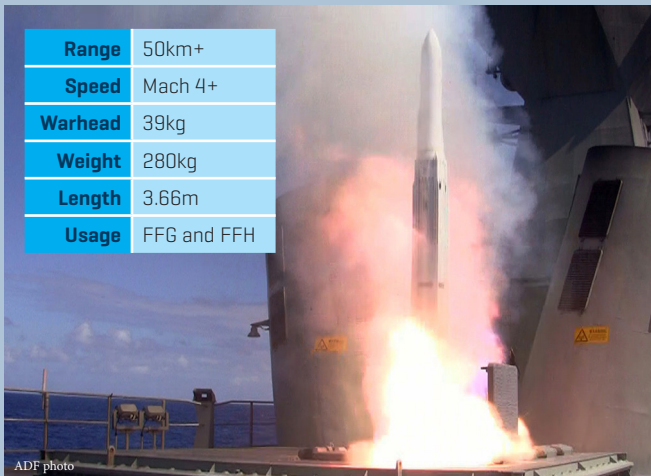
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# WEAPONS OF THE ADF

## Missiles

### ESSM

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



ADF photo

**The RIM-162 Evolved Sea Sparrow Missile (ESSM) is 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.

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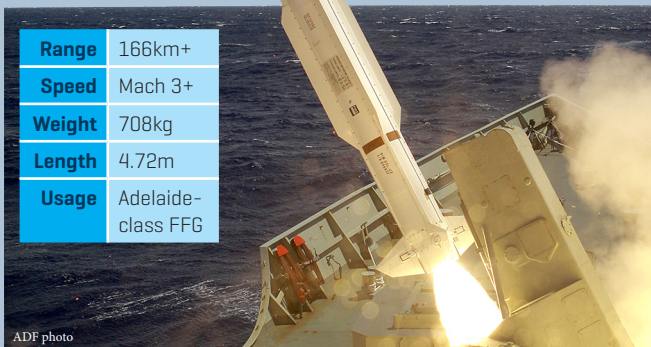
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# WEAPONS OF THE ADF

## Missiles

SM2

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



ADF photo

**The Standard Missile is a surface-to-air defence weapon with a secondary capability 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.

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 on the focsle of Adelaide-class FFGs.

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# WEAPONS OF THE ADF

## Missiles

## Harpoon



Range	124km
Speed	High subsonic
Warhead	227kg
Weight	691kg
Length	4.6m
Usage	Anzac-class FFH, AP-3C, P-8A, F/A-18F

**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 targets.

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## Torpedos

**Mk-44**



<b>Function</b>	Active or passive/ active acoustic homing
<b>Weight</b>	234.5kg
<b>Warhead</b>	43.9kg
<b>Length</b>	2.6m
<b>Range</b>	7.3km
<b>Speed</b>	83km/hr

**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.

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# WEAPONS OF THE ADF

## Torpedos

Mk-48

Ex HMAS Torrens hit by  
a Mark 48 torpedo from  
HMAS Farncomb



ADF photo

<b>Function</b>	Wire guided and passive/ active acoustic homing
<b>Weight</b>	MK-48 1545.3kg MK-48 ADCAP 1662.75kg
<b>Warhead</b>	290kg
<b>Length</b>	5.79m
<b>Range</b>	8km
<b>Speed</b>	52km/hr

**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.

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# WEAPONS OF THE ADF

## Torpedos

**MU90**



ADF photo

<b>Function</b>	Fire-and-forget, passive/active acoustic homing
<b>Weight</b>	304kg
<b>Warhead</b>	290kg
<b>Length</b>	2.85m
<b>Range</b>	12-25km
<b>Speed</b>	53-93km/hr

**MU90 torpedo is a fire-and-forget weapon designed to detect and attack any type of submarine — even those coated with acoustic-absorbing materials, 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.

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# CONTACT AIR LAND & SEA

## About Us

**CONTACT Air Land & Sea** reports on the people, platforms and operations of the world's defence forces, particularly Australia. We are dedicated to presenting stories, photos and video that capture the essence of serving-members' lives, as far as possible in their own words. We welcome story submissions via [editor@militarycontact.com](mailto:editor@militarycontact.com)

**CONTACT Air Land & Sea web site** is our internet-based headquarters where we publish daily news and other interesting, related items. We are also active on Facebook, Twitter, Google+, Pinterest and YouTube as where we engage audiences, inviting them back to our headquarters.

**CONTACT Air Land & Sea newsletter** is a free fortnightly email that draws attention to recent news stories. It highlights the best of the previous fortnight and updates developments in older stories in a handy-reference format, linking back to the original story on our web site.

**CONTACT Air Land & Sea magazine** is a high-quality, full-colour, features-based magazine published four times per year. Initially launched in March 2004 as a traditional paper-based magazine, it switched to digital in 2013 and is now only available by FREE subscription from [www.aussiecontact.com](http://www.aussiecontact.com)

Paper copies of issues 1 to 40 of **CONTACT Air Land & Sea** magazine, can still be purchased from our web site.

All our magazines will also eventually be added to our digital archive.

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