**Bofors 57 mm gun**

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(Redirected from [Mk 110 57 mm gun](https://en.wikipedia.org/w/index.php?title=Mk_110_57_mm_gun&redirect=no))

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| **Bofors 57 mm** | |
| A Bofors 57 mm Mk 1 live-firing on the Swedish Spica-II Class FAC | |
| **Type** | [Naval artillery](https://en.wikipedia.org/wiki/Naval_artillery) |
| **Place of origin** | [Sweden](https://en.wikipedia.org/wiki/Sweden) |
| **Service history** | |
| **In service** | 1966–present |
| **Used by** | See [*users*](https://en.wikipedia.org/wiki/Mk_110_57_mm_gun#Users#Users) |
| **Production history** | |
| **Designer** | [Bofors Defense](https://en.wikipedia.org/wiki/Bofors) |
| **Designed** | * Mark 1: 1964 * Mark 2: 1981 * Mark 3: 1995 |
| **Manufacturer** | * Bofors Defense (1966–2000) * [United Defense](https://en.wikipedia.org/wiki/United_Defense) (2000–2005) * [BAE Systems AB](https://en.wikipedia.org/wiki/BAE_Systems_AB) (2005 onwards) |
| **Produced** | * Mark 1: 1966 * Mark 2: 1985 * Mark 3: 2000 |
| **Variants** | See [*variants*](https://en.wikipedia.org/wiki/Mk_110_57_mm_gun#Variants#Variants) |
| **Specifications** | |
| **Weight** | Mark 3: 14,000 [kg](https://en.wikipedia.org/wiki/Kilogram) (31,000 [lb.](https://en.wikipedia.org/wiki/Pound_(mass))) (weight including 1,000 rounds onboard) 6.5 kg (14 lb.) (complete round) |
| [**Barrel**](https://en.wikipedia.org/wiki/Gun_barrel) **length** | * Bore length: 3,990 mm (157.09 in) * Without flash hider: 4,045 mm (159.25 in) * With flash hider: 4,345 mm (171.06 in) |
|  | |
| [**Shell**](https://en.wikipedia.org/wiki/Shell_(projectile)) | 57 mm × 438 mm 6.1 [kg](https://en.wikipedia.org/wiki/Kilogram) (13 [lb.](https://en.wikipedia.org/wiki/Pound_(mass))) complete round 2.4 [kg](https://en.wikipedia.org/wiki/Kilogram) (5.3 [lb.](https://en.wikipedia.org/wiki/Pound_(mass))) pre-fragmented shell |
| [**Caliber**](https://en.wikipedia.org/wiki/Caliber) | 57 mm/70 caliber |
| **Barrels** | Single barrel (progressive RH parabolic twist, 24 grooves) |
| [**Action**](https://en.wikipedia.org/wiki/Firearm_action) | [Electronic firing](https://en.wikipedia.org/wiki/Electronic_firing) |
| [**Elevation**](https://en.wikipedia.org/wiki/Elevation_(ballistics)) | * Mark 1: −10°/+78° (40°/s) * Mark 2: -10°/+75° (40°/s) * Mark 3: -10°/+77° (44°/s) |
| **Traverse** | Full 360°:   * Marks 1 & 2: 55°/s * Mark 3: 57°/s |
| [**Rate of fire**](https://en.wikipedia.org/wiki/Rate_of_fire) | * Mark 1: 200 rounds/min * Marks 2 & 3: 220 rounds/min |
| [**Muzzle velocity**](https://en.wikipedia.org/wiki/Muzzle_velocity) | 1,035 m/s (3,400 ft/s) (HE round) |
| **Effective range** | 8,500 m (9,300 yd) (HE round) |
| **Maximum range** | 17,000 m (19,000 yd) (HE round at 45°) |
| **Feed system** | [Magazine](https://en.wikipedia.org/wiki/Magazine_(artillery)):   * Mark 1: 40 ready rounds, 128 rounds in ready racks in mount * Mark 2: 120 ready rounds, up to 40 rounds in dual hoists * Mark 3: 120 ready rounds, up to 40 rounds in dual hoists, 1,000 rounds in mounting |
| **Sights** | Gyro-stabilized in local control. |

The Bofors 57 mm guns are a series of dual-purpose naval guns designed and produced by the [Swedish](https://en.wikipedia.org/wiki/Sweden) [defense firm](https://en.wikipedia.org/wiki/Defense_contractor) of [Bofors Defense](https://en.wikipedia.org/wiki/Bofors) (the company was acquired in September 2000 by [United Defense Industries](https://en.wikipedia.org/wiki/United_Defense) but has been a part of [BAE Systems AB](https://en.wikipedia.org/wiki/BAE_Systems_AB) since March 2005). Designed in 1964, production of the baseline 57 mm Mark 1 variant began in 1966 and was initially used to equip smaller coastal patrol craft and fast attack craft. The gun was upgraded and improved several times, first as the Mark 2 in 1981 and the Mark 3 in 1995.

Most recently, it was offered by [BAE Systems AB](https://en.wikipedia.org/wiki/BAE_Systems_AB) (successor of Bofors Defense AB) as the Mk 110 57 mm gun (essentially a slightly modified Mark 3) for use by the [United States Coast Guard](https://en.wikipedia.org/wiki/United_States_Coast_Guard) in 2004 and the [United States Navy](https://en.wikipedia.org/wiki/United_States_Navy) in 2006.

The gun is usually controlled by a fire-control computer but as a redundancy measure, the crew can also train and aim the gun using instrument panels that are either on or in direct contact with the gun.

Although the [Swedish Navy](https://en.wikipedia.org/wiki/Swedish_Navy) is the primary user of the gun, it has been exported widely by Bofors Defense for use by the navies of [Brunei](https://en.wikipedia.org/wiki/Brunei), [Canada](https://en.wikipedia.org/wiki/Canada), [Croatia](https://en.wikipedia.org/wiki/Croatia), [Finland](https://en.wikipedia.org/wiki/Finland), [Indonesia](https://en.wikipedia.org/wiki/Indonesia), [Ireland](https://en.wikipedia.org/wiki/Ireland), [Malaysia](https://en.wikipedia.org/wiki/Malaysia), [Mexico](https://en.wikipedia.org/wiki/Mexico), [Montenegro](https://en.wikipedia.org/wiki/Montenegro), [Singapore](https://en.wikipedia.org/wiki/Singapore), [Thailand](https://en.wikipedia.org/wiki/Thailand) and the [United States](https://en.wikipedia.org/wiki/United_States).

**Design and development**

The baseline version of the Bofors 57 mm (2.2 in) L70 gun was the **Mark 1**, first introduced into service with the [*Spica*-class](https://en.wikipedia.org/wiki/HMS_Spica_(T121)) [fast attack craft (FAC)](https://en.wikipedia.org/wiki/Fast_Attack_Craft) of [Swedish Navy](https://en.wikipedia.org/wiki/Swedish_Navy) in 1966, it has a rate of fire of 200 rounds per minute and a 40-round magazine in the [gun turret](https://en.wikipedia.org/wiki/Gun_turret) with a further 128 rounds stowed inside. With minor modifications, the Mark 1 guns could use [ammunitions](https://en.wikipedia.org/wiki/Ammunition) developed for the Mark 2 gun.

The **Mark 2** was designed in 1981 but introduced into service with the [*Stockholm*-class](https://en.wikipedia.org/wiki/Stockholm_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)—HMS *Stockholm* (K11) in 1985 (sister ship HMS *Malmö* (K12) was built in 1984 but armed with the older Mk 1, subsequently retrofitted with the Mk 2 in 2009), the rate of fire was slightly increased to 220 rounds per minute. Also, it featured a new light weight gun turret with a new [gun barrel](https://en.wikipedia.org/wiki/Gun_barrel) that was [forged](https://en.wikipedia.org/wiki/Forging) from monobloc steel (this eliminated the need to use a water jacket for gun barrel cooling during firing) and a new [servo drive](https://en.wikipedia.org/wiki/Servo_drive)/[servomechanism](https://en.wikipedia.org/wiki/Servomechanism) system (for faster reaction time and better gun aiming and control). According to Bofors, the new servo system allowed the Mk 2 to be both accurate and agile enough for use against [sea skimming](https://en.wikipedia.org/wiki/Sea_skimming) [anti-ship missiles](https://en.wikipedia.org/wiki/Anti-ship_missile) and that it could put more explosives into a surface target within a thirty second window than any naval gun with a caliber smaller than 100 mm (3.9 in).

The latest development is the **Mark 3**, which was designed in 1995 but introduced into service with the [*Visby*-class](https://en.wikipedia.org/wiki/Visby_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)—fitted on [HMS *Visby* (K31)](https://en.wikipedia.org/wiki/HMS_Visby_(K31)) in 2000. This new design retained the Mark 2 gun turret, rate of fire and ammunition capacity and has another 1,000 rounds stowed in the standby rack beneath deck. A small [radome](https://en.wikipedia.org/wiki/Radome) has been added above the gun barrel and is used for measuring the [muzzle velocity](https://en.wikipedia.org/wiki/Muzzle_velocity) of the departing projectiles for [fire-control purposes](https://en.wikipedia.org/wiki/Fire-control_system), usually but not necessarily with the new Bofors 57 mm 3P all-target programmable ammunition. Also, a new optional low radar profile (also known as low [radar cross-section](https://en.wikipedia.org/wiki/Radar_cross-section), or RCS) stealth mounting was developed, this allows the gun to be hidden from radar and plain sight when not in use.

In American service, the United States Navy has designated the Mark 3 as the **Mark 110 Mod 0 57mm gun**. According to a BAE press release dated 1 August 2005, the Mark 110 would be manufactured at the BAE Systems facility in [Louisville, Kentucky](https://en.wikipedia.org/wiki/Louisville,_Kentucky).

**Ammunition**

Ammunition for the Bofors 57 mm gun is produced by Bofors, [Sako Limited](https://en.wikipedia.org/wiki/SAKO) in Finland, [SME Ordnance](https://en.wikipedia.org/wiki/SME_Ordnance) in Malaysia and [Nammo](https://en.wikipedia.org/wiki/Nammo) in Norway.

In 2006, BAE Systems AB began to offer the Bofors 57 mm 3P all-target programmable ammunition, this allows three [proximity fuzing modes](https://en.wikipedia.org/wiki/Proximity_fuze) as well as settings for time, impact, and armor piercing functions. This increases the flexibility and effectiveness of the gun system, which has further reduced the reaction time of the gun and it is possible to choose ammunition mode at the moment of firing, giving it the ability to switch rapidly between surface targets, air targets as well as ground targets.

**Variants**

**Bofors 57 mm/L70**

*Bofors 57 mm Mk 1*

Bofors developed the Mark 1 from the [Bofors 57 mm/L60](https://en.wikipedia.org/wiki/57mm/60_mod%C3%A8le_1951_gun) in 1962. Improvements included a higher rate of fire, the use of new munitions including an improved proximity fuse, water cooling for the gun tubes and a new electro-hydraulic system for rapid training and elevation. Finland, Malaysia, Norway, Indonesia, Singapore and (the former) Yugoslavia are among the countries that adopted the Mark 1.

*Bofors 57 mm Mk 2*

The Mark 2 was a lighter weight version, which utilized a new servo system. Bofors designed the gun in 1981 and it entered active service on the [*Stockholm*-class](https://en.wikipedia.org/wiki/Stockholm_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette) in 1985. The gun was partly dual-purpose in the sense that it is accurate and agile enough to destroy sea-skimming missiles. Bofors manufactured a total of about 25 Mk 2 guns.

*Bofors 57 mm Mk 3*

The Mark 3 is the latest version of the gun. Bofors designed it in 1996 and it entered service in 2000. The gun uses smart ammunition but can also fire the same ammunition as the Mk 2. The stealth variant has a reduced radar profile, in part by hiding the gun barrel when it is not firing. Also, the gun has a small radar mounted on the gun barrel to measure muzzle velocity for fire control purposes and can change ammunition types instantly due to a dual-feed system.

*Mk 110 57 mm gun*

The Mark 110 57 mm gun is the US version of the Bofors 57 mm Mark 3 gun, while the Bofors 57 mm 3P ammunitions are designated as *Mark 295 Mod 0* in US service.

**Users**

*Mark 1*



[RSS *Sea Dragon*](https://en.wikipedia.org/wiki/Republic_of_Singapore_Navy#Missile_gunboats) with its 57 mm Mk 1

* [Croatia](https://en.wikipedia.org/wiki/Croatia):



* + [*Kralj* class](https://en.wikipedia.org/wiki/Kralj_class_fast_attack_craft)
  + [*Končar* class](https://en.wikipedia.org/wiki/Kon%C4%8Dar_class_fast_attack_craft)
  + [*Helsinki*-class](https://en.wikipedia.org/wiki/Helsinki_class_missile_boat) [missile boat](https://en.wikipedia.org/wiki/Missile_boat)
* [Finland](https://en.wikipedia.org/wiki/Finland):



* + [Pohjanmaa class](https://en.wikipedia.org/wiki/Finnish_minelayer_Pohjanmaa)
  + [Hämeenmaa class](https://en.wikipedia.org/wiki/H%C3%A4meenmaa_class_minelayer)
* [Indonesia](https://en.wikipedia.org/wiki/Indonesia)



* + [Andau class](https://en.wikipedia.org/wiki/List_of_current_ships_of_the_Indonesian_Navy) ([Lürssen FPB 57-I](https://en.wikipedia.org/wiki/L%C3%BCrssen" \o "Lürssen))
  + [Mandau class](https://en.wikipedia.org/wiki/List_of_current_ships_of_the_Indonesian_Navy) (modified version of the [South Korean Navy](https://en.wikipedia.org/wiki/Republic_of_Korea_Navy)'s [Bae Ku class](https://en.wikipedia.org/wiki/List_of_Republic_of_Korea_Navy_ships#Patrol_2), which was based on the [U.S. Navy](https://en.wikipedia.org/wiki/United_States_Navy)'s [*Asheville*-class](https://en.wikipedia.org/wiki/Asheville_class_gunboat) [gunboat](https://en.wikipedia.org/wiki/Gunboat))
* [Ireland](https://en.wikipedia.org/wiki/Republic_of_Ireland)



* + [Eithne class](https://en.wikipedia.org/wiki/L%C3%89_Eithne_(P31))
* [Malaysia](https://en.wikipedia.org/wiki/Malaysia):



* + [*Kasturi*-class](https://en.wikipedia.org/wiki/Kasturi_class_frigate) [frigate](https://en.wikipedia.org/wiki/Frigate)
  + [Perdana class](https://en.wikipedia.org/w/index.php?title=Perdana_class&action=edit&redlink=1) ([Combattante-II 4AL](https://en.wikipedia.org/wiki/Tiger_class_fast_attack_craft)) missile boat
  + [Handalan class](https://en.wikipedia.org/w/index.php?title=Handalan_class&action=edit&redlink=1) (Spica-M)
  + [Jerong class](https://en.wikipedia.org/w/index.php?title=Jerong_class&action=edit&redlink=1) (Lurssen TNC 45)
* [Montenegro](https://en.wikipedia.org/wiki/Montenegro):



* + [*Končar* class](https://en.wikipedia.org/wiki/Kon%C4%8Dar_class_fast_attack_craft)
* [Singapore](https://en.wikipedia.org/wiki/Singapore):



* + [*Sea Wolf* class](https://en.wikipedia.org/wiki/Republic_of_Singapore_Navy#Missile_gunboats) (Lurssen TNC 45)
* [Sweden](https://en.wikipedia.org/wiki/Sweden):



* + [Hugin class](https://en.wikipedia.org/w/index.php?title=Hugin_class&action=edit&redlink=1)
  + [Spica class](https://en.wikipedia.org/wiki/HMS_Spica_(T121))
  + [Spica II class](https://en.wikipedia.org/w/index.php?title=Spica_II_class&action=edit&redlink=1)
* [Thailand](https://en.wikipedia.org/wiki/Thailand)



* + [Prabbrorapak class](https://en.wikipedia.org/wiki/List_of_equipment_in_Royal_Thai_Navy#Fast_Attack_Craft) (derivative of Singapore's [*Sea Wolf* class](https://en.wikipedia.org/wiki/Republic_of_Singapore_Navy#Missile_gunboats), which was based on the Lurssen TNC 45)

*Mark 2*



A 57 mm Mk 2 firing from a *Halifax*-class frigate

* [Canada](https://en.wikipedia.org/wiki/Canada):



* + [*Halifax*-class](https://en.wikipedia.org/wiki/Halifax_class_frigate) [frigate](https://en.wikipedia.org/wiki/Frigate)
* [Indonesia](https://en.wikipedia.org/wiki/Indonesia)



* + [Pandrong class/Todak class](https://en.wikipedia.org/wiki/List_of_current_ships_of_the_Indonesian_Navy) (two and four ships respectively) (Lürssen FPB 57-II)
* [Malaysia](https://en.wikipedia.org/wiki/Malaysia):



* + [*Lekiu*-class](https://en.wikipedia.org/wiki/Lekiu_class_frigate) [frigate](https://en.wikipedia.org/wiki/Frigate)
* [Sweden](https://en.wikipedia.org/wiki/Sweden):



* + [*Stockholm*-class](https://en.wikipedia.org/wiki/Stockholm_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)
  + [*Göteborg*-class](https://en.wikipedia.org/wiki/G%C3%B6teborg_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)

*Mark 3/Mk 110 57 mm gun*



The *57 mm Mk 3* on the bow of a *Hamina*-class missile boat; note the prominent but small [radome](https://en.wikipedia.org/wiki/Radome) above the gun barrel which is used for measuring [muzzle velocity](https://en.wikipedia.org/wiki/Muzzle_velocity) of the departing projectile



The *57 mm Mk 3* in a stealth cupola aboard a *Visby*-class corvette, the stealth version of the Mk 110 57 mm is similar in appearance

[USS *Freedom* (LCS-1)](https://en.wikipedia.org/wiki/USS_Freedom_(LCS-1)) firing its Mk 110 57mm gun

**Comparisons between the Mark 3 guns**

* [Brunei](https://en.wikipedia.org/wiki/Brunei):



* + [*Darussalam*-class](https://en.wikipedia.org/w/index.php?title=Darussalam_class_Offshore_Patrol_Vessel&action=edit&redlink=1) [Offshore Patrol Vessel](https://en.wikipedia.org/wiki/Offshore_Patrol_Vessel)
* [Canada](https://en.wikipedia.org/wiki/Canada):



* + [*Halifax*-class](https://en.wikipedia.org/wiki/Halifax_class_frigate) [frigate](https://en.wikipedia.org/wiki/Frigate) (Post HCM/FELEX Refit)
* [Finland](https://en.wikipedia.org/wiki/Finland):



* + [*Hamina*-class](https://en.wikipedia.org/wiki/Hamina_class_missile_boat) [missile boat](https://en.wikipedia.org/wiki/Missile_boat)
* [Mexico](https://en.wikipedia.org/wiki/Mexico):



* + [*Sierra*-class](https://en.wikipedia.org/wiki/Sierra_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)
  + [*Durango*-class](https://en.wikipedia.org/wiki/Durango_class_patrol_vessel) [patrol vessel](https://en.wikipedia.org/wiki/Patrol_vessel)
* [Sweden](https://en.wikipedia.org/wiki/Sweden):



* + [*Visby*-class](https://en.wikipedia.org/wiki/Visby_class_corvette) [corvette](https://en.wikipedia.org/wiki/Corvette)
* [United States](https://en.wikipedia.org/wiki/United_States):



* + [**USCG**](https://en.wikipedia.org/wiki/USCG): [*Legend* class](https://en.wikipedia.org/wiki/National_Security_Cutter)
  + [**USN**](https://en.wikipedia.org/wiki/USN): [*Freedom*-class](https://en.wikipedia.org/wiki/Freedom_class_littoral_combat_ship) [littoral combat ship](https://en.wikipedia.org/wiki/Littoral_combat_ship)
  + [**USN**](https://en.wikipedia.org/wiki/USN): [*Independence*-class](https://en.wikipedia.org/wiki/Independence_class_littoral_combat_ship) [littoral combat ship](https://en.wikipedia.org/wiki/Littoral_combat_ship)
  + [**USN**](https://en.wikipedia.org/wiki/USN): [*Zumwalt*-class](https://en.wikipedia.org/wiki/Zumwalt_class_destroyer) [destroyer](https://en.wikipedia.org/wiki/Destroyer)

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