NAVAL WARFARE PUBLICATION

NAVAL SPECIAL WARFARE

HEAVY WEAPONS

HANDBOOK

NSWG1 9-3.2

DEPARTMENT OF THE NAVY

OFFICE OF THE CHIEF OF NAVAL OPERATIONS

SUMMARY 3

INTRODUCTION

SUMMARY

What is a Naval Special warfare Heavy Weapons, is the firepower backbone of a team, providing superior fire support with crew-served and man-portable heavy weapon systems. They are experts in operating, maintaining, and employing heavy machine guns, grenade launchers, and anti-armor systems in a variety of combat scenarios. Their role requires extensive knowledge of weapon ballistics, fields of fire, and ammunition management.

PURPOSE AND SCOPE

The purpose of a Heavy Weapons Operator is to provide superior fire support and battlefield dominance through the employment of crew-served and man-portable heavy weapons. They are responsible for delivering suppressive fire, and supporting maneuvering elements with precision and overwhelming force.

Heavy Weapons Operators must be proficient in fire coordination. They also play a critical role in mission planning, ensuring that fire support is effectively integrated into operations.

RESPONSIBILITIES

- **Maintain and improve upon the knowledge, skills, and techniques**
- **Fire coordination and planning**
- **To develop techniques and procedures to be used in combat**
- **Be proficient in different weapons, grenade launchers, heavy machine guns, light machine guns, anti-armor systems and mortars**
- **Crew-served weapons**
- **Keeping up-to-date with advancements in weapon systems**

REQUIREMENTS & EXPECTATIONS

To become a Heavy Weapons Operator, one must possess the theoretical and practical knowledge to operate in accordance with established operational standards. This requires successfully passing a comprehensive qualification course lasting several days to meet the operational requirements. Upon qualification, it becomes the operator's responsibility to continuously refine and enhance their skills, ensuring proficiency and readiness for any mission scenario. The duration of the qualification may vary based on the candidate's performance and proficiency levels.

EQUIPMENT LIST

WEAPONS

Crew-Served weapons

- **M2**
- **M134**
- **MK.19**

Medium Machine Gun

- **M240 B**

Light Machine Guns

- **MK 48 MOD 1**
- **M249**

Grenade Launcher

- **M320 (hand)**

Multiple Grenade Launcher

- **M32**

Disposable anti-tank launcher

- **AT4**
- **M72**

Shoulder -Fire Recoilless Rifle

- **M3 MAAWS (Carl- Gustaf)**

Mortar

- **M252 81mm**

Tools

- **Spare Barrel**
- **Tripod**
- **Telemetro**
- **Map tools**
- **Compass**

Attachments:

- **Silencer/w covers**
- **Bipod**
- **AN/PEQ**
- **NGAL**
- **Grip**

Optics:

- **EOTECH/w magnifier**
- **ELCAN SPECTER (7,62 o 5,56)**
- **LVPO**
- **W/ THERMAL (SkeeIR)**

MACHINE GUNS SPECIFICATIONS AND TERMS

Machine guns are a team's most effective weapons against the dismounted enemy force. Machine guns allow the team to engage enemy forces from a greater range and with greater accuracy than individual weapons.

As a heavy weapons operator it is imperative to know the characteristics of the different weapons and terms in order to use them effectively according to the needs of the team to achieve the success of the mission. Table 1 and table 2 , shows references, terms and characteristics of the different machine guns.

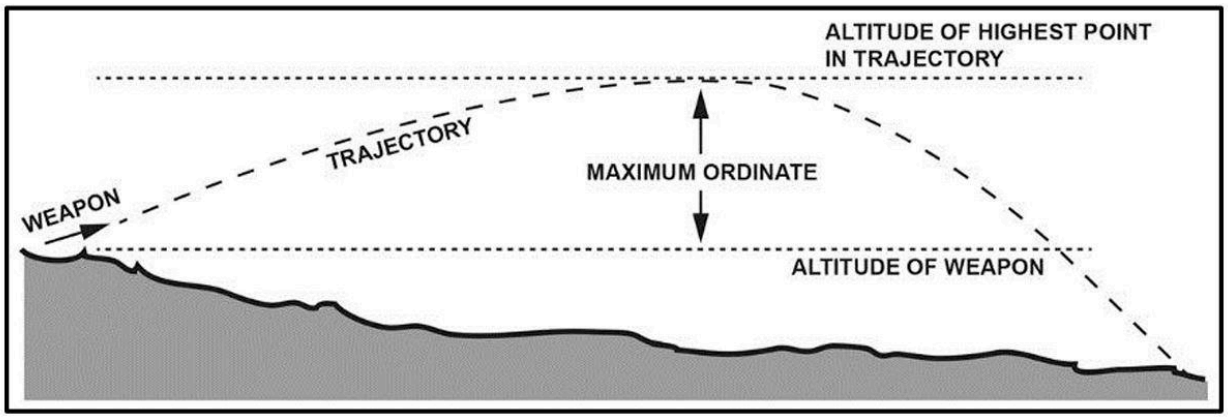
Table1. Specifications of Machine Guns

WEAPON	M249	M240B	MK48 mod 1	M2	M134
Description	5.56mm gas-operated automatic	7.62mm gas-operated medium	7.62mm gas-operated, open bolt	.50 caliber recoil operated heavy	7.62mm six-barrel rotary machine gun
Weight	16.41 lbs (gun w/barrel) 16 lbs (tripod)	27.6lbs (gun w/barrel) 20 lbs (tripod)	18.26 lbs (empty) 24.7lbs w/100 round	128lbs (gun w/barrel and tripod)	85 lbs, 41 lbs lightweigh t mod
Length	104 cm	110.5 cm	100.9 cm (39.75″)	156 cm	80.1 cm
Max Range	3600m	3725m	3600m	6764 m	1000m
Max Eff Range	bipod/point: 600m bipod/area: 800m	bipod/point: 600m Tripod/poin: 800m	bipod/point: 800m bipod/area:	Point: 1500m (single shot)	Area 1000m

Table1. Specifications of Machine Guns					
	tripod/area: 1000m Grazing: 600m	**bipod/area: 800m tripod/area: 1100m Suppression: 1,800m Grazing: 600m**	**1000 m Grazing: 600m**	**Area: 1.830m Grazing: 700m**	
Tracer bo	**900m**	**900m**	**800m**	**1.800m**	**900m**
Sustained rate of fire	**50 rpm 6 to 9 rounds 4 to 5 sec Every 10 min**	**100 rpm 6 to 9 rounds 4 to 5 sec Every 10 min**	**100 rpm 6 to 9 rounds 4 to 5 sec Every 10 min**	**40 rpm 6 to 9 rounds 10 to 15 sec End of day or if damaged**	
Rapid rate of fire	**100 rpm 6 to 9 rounds 2-3 sec 2 minutes**	**200rpm 10-13 rounds 2-3 sec 2 minutes**	**200rpm 10-13 rounds 2-3 sec 2 minutes**	**40 rpm 6 to 9 rounds 5-10 sec Change barrel end of day or if damaged**	
Cyclic rate of fire	**850 rpm continuous burst/min**	**650-950 rpm, continuous burst**	**730 rpm Continuous burst**	**450-550 rpm Continuous burst**	**6000 rpm**

Table 2. Machine Gun Terms	
Line of sight	**The imaginary line drawn from the firer's eye through the sights to the point of aim.**
Burst of fire	**A number of successive rounds fired with the same elevation and point of aim when the trigger is held to the rear. The number of rounds in a burst can vary depending on the type of fire employed.**
Trajectory	**The curved path of the projectile in its flight from the muzzle of the weapon to its impact. As the range to the target increases, so does the curve of trajectory**
Maximum ordinate	**The height of the highest point above the line of sight the trajectory reaches between the muzzle of the weapon and the base of the target. It always occurs at a point about two-thirds of the distance from weapon to target and increases with range.**
Cone of fire	**The pattern formed by the different trajectories in each burst as they travel downrange. Vibration of the weapon and variations in ammunition and atmospheric conditions all contribute to the trajectories that make up the cone of fire.**
Beaten zone	**The elliptical pattern formed when the rounds in the cone of fire strike the ground or target. The size and shape of the beaten zone changes as a function of the range to target and slope of the target, but is normally oval or cigar shaped, and the density of the rounds decreases toward the edges. Gunners and automatic riflemen should engage targets to take maximum effect of the beaten zone. Due to the right-hand twist of the barrel, the simplest way to do this is to aim at the left base of the target.**

Table 2. Machine Gun Terms	
Sector of fire	**An area to be covered by fire that is assigned to an individual, a weapon, or a unit. Gunners are normally assigned a primary and a secondary sector of fire**
Primary sector of fire	**The primary sector of fire is assigned to the gun team to cover the most likely avenue of enemy approach from all types of defensive positions.**
Secondary sector of fire	**The secondary sector of fire is assigned to the gun team to cover the second most likely avenue of enemy approach. It is fired from the same gun position as the primary sector of fire.**
Final protective fire (FPF)	**An immediately available, prearranged barrier of fire to stop enemy movement across defensive lines or areas.**
Final protective line (FPL)	**A predetermined line along which grazing fire is placed to stop an enemy assault. If a final protective line (FPL) is assigned, the machine gun is sighted along it except when other targets are being engaged. An FPL becomes part of the unit's machine gun FPFs. An FPL is fixed in direction and elevation. However, a small shift for search is employed to prevent the enemy from crawling under the FPL, and to compensate for irregularities in the terrain or the sinking of the tripod legs into soft soil during firing. Fire is delivered during all conditions of visibility.**
Principal direction of fire (PDF)	**Assigned to a gunner to cover an area that has good fields of fire, or that has a likely dismounted avenue of approach, a PDF also provides mutual support to an adjacent unit. If no FPL has been assigned, then sight machine guns using the PDF. If a PDF is assigned and other targets are not being engaged, then machine guns remain on the PDF. It is used only if an FPL is not assigned; it then becomes the machine gun's part of the unit's final protective fires.**


ALTITUDE OF HIGHEST POINT
IN TRAJECTORY
TRAJECTORY
MAXIMUM ORDINATE
WEAPON
ALTITUDE OF WEAPON