

# M14 to MK 14 Evolution of a Battle Rifle



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# The M14's Difficult Starting Point



M14 – slated to replace all shoulder arms to be complemented by M60 MG









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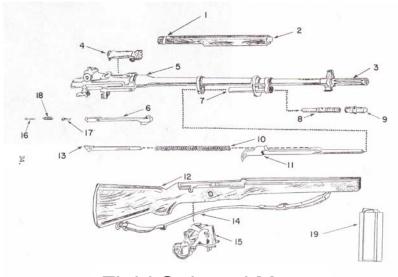
**Browning Automatic Rifle (BAR – M1918A2)** 

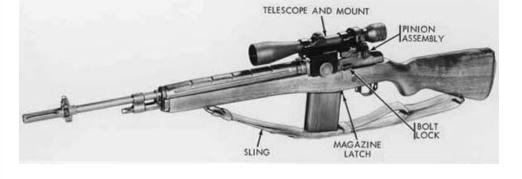
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# Specialty M14 Configurations















# Gene Stoner's Aircraft Alloy AR-15



The M14's "Competition" from Colt at the time – really filling a different role



German FG42 - 10 lbs Paratroop Rifle in 8X57mm

AK-47 Assault Rifle

10 lbs

Assault Rifle vs. Battle Rifle



M14 Battle Rifle

9.7 lbs

All weights – with empty mag.

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#### Evolution Toward the Assault



The "Leap" to a true 300 yard/meter capable Assault Rifle / Sturmgewehr



.30 Carbine7.62X25 and7.92X33 Kurtz



PPSh-41 with 71 round Drum - 12 lbs

loaded

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M1 Carbine



# The Details of Winning Battles

- Inflict casualties in larger numbers than the enemy.
- Inflict casualties at a greater range than the enemy and thus take fewer casualties.
- Inflict casualties at a greater rate than the enemy can tolerate overcoming training, discipline, and morale, to dominate the field of battle.
- The Germans began demonstrating some of these in WWI
- By the End of WWII the world had a solid respect for the effects of pure volume of fire – firepower.
- Russia quickly produced the SKS and AK-47 chambering the intermediate 7.62X39mm Cartridge to support the new fire and maneuver storm troop tactics the Germans had demonstrated.
- Rate of Fire had become a primary measure of effect in battle.
- The primary combat arm would need only a 300 meter range.





# Early 1960's



M79 Grenade Launcher – began use in 1961 beginning to replace M14 in that role



1984 Exercise – M21 and M16A1 w/M203 Grenade Launcher M203s are first issued in early 1970s







ARPA (now DARPA) Tests AR-15 against M2 Carbine for use by South Vietnamese Troops

Results of this testing and use of the 1000 AR-15s procured by DARPA lead to the thought that the AR-15 would also be ideal for US Troops.

The M203 Rifle Mounted GL evolves out of SPIW concepts





# JEA THE SPIW - Undone by Specifications

#### **Special Purpose Infantry Weapon Efforts**

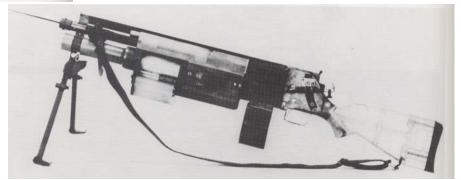
Springfield Armory First Generation SPIW - 14.5 lbs





**Olin / Winchester SPIW** 

H & R SPIW - 23.9 lbs Fired 3 Flechettes per shot







#### Vietnam M14 / M21 Use







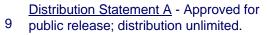






Vietnam Sniper

AN/PVS-2 and M14SS-1 Suppressors







# Sniper Rifle Updates



Navy M14 Port Security (double lugged) and Match Rifles (single lug)



USMC DMR with AN/PVS-10 Day / Night Sight and OPS Supp.



Army XM25 / M25 (also used suppressed)



M24 – Army Commercial Competition 1988



USMC M40A1 - first M40 was 1966





# Current/Future 7.62mm Sniper Weapons



Last Navy Sniper M14 – SSR (Sniper Security Rifle)



MK 11 MOD 0 (Navy SR 25)- Suppressed



Army XM110 – w/minor changes M110



SCAR-H MK 17 SSR Sniper Support Rifle (Prototype)





# Recent Navy M14 / MK 14 Use



Navy EOD MK 14 MOD 0 – (representative optic)



SEALs with MK 48 LMG & 2 MK 14 MOD 0s



SEAL -Advertising Photo

Navy M14 Line Throwing



**Burial at Sea** 





# Recent Army M14 Usage



Baghdad Night / Day





Army Sharp Shooters - Mosul, Iraq





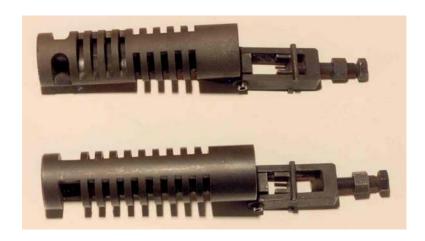
Army M14 in Iraq

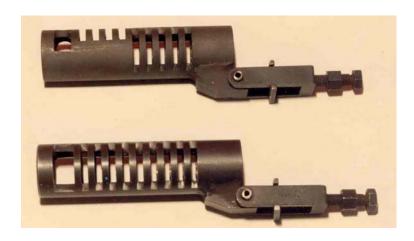






# Navy M14 Muzzle Compensator

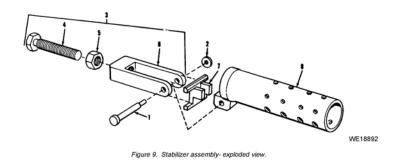




Navy Optimized M14 Brake/Compensator Top







Original M14A1 Compensator





# Arctic Stock for M14 Starting Point



Example of Sage Arctic Stock Upgrade to GI Fiberglass/Plastic



**Arctic Stocked M14 with KAC-RAS** 



Top – M14 bipod leg used for telescoping mechansim on A1 wood stock.

Middle – M4 Carbine Type modified GI fiberglass stock.

Bottom – Later Sage Mod (orig. had no cheekrest).

Not Shown – Butler Creek Side Folder Mod.





# Original EBR Concept Demonstration



GI fiberglass top / 1st Sage below



LMT rail mounted M203 concept ("ammo bearer" recommended)



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Lightening cuts, Paint and 16 inch prototype barrel



Forward mounted AimPoint and light bipod



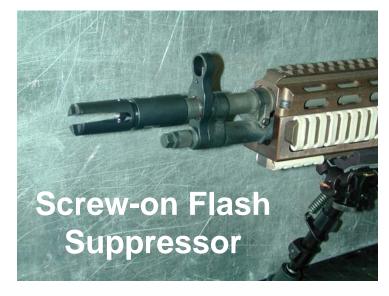


# Original Enhanced Battle Rifle Concept

#### EBR System Features – Starts with Chassis Stock







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# M14 EBR Test Configurations







M983 in front - not great / behind 1.5-5X - not bad

Test EBR configured with Light and Reflex Sight



Pocket Scope (M983) behind AimPoint (or any Reflex sight)



AN/PVS-17 MNVS (2.25X) - Nice (w/PEQ-2)



UNS – Universal Night Sight (now AN/PVS-22) excellent capability





# M14 to MK 14 MOD 0 Changes



- Stock System (Chassis)
- Operating Rod Guide
- Front and Rear Sights
- Gas Cylinder Lock
- Stripper Clip Guide (1913)
- Extended Bolt Release
- 18 inch barrel (vs. 22 inch)
- Improved Flash Suppressor
- Accessories rings, bipod, grip, sling, case, cleaning kit, tool





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#### MK 14 MOD 0 and MOD 1



MK 14 MOD 0



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MK 14 MOD 1 - First Issued



MK14 MOD 1 – after Suppressor Down Select

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#### MK 14 MOD 0 vs MOD 1



MK 14 MOD 1 with AV/PVS-26



Air Force MK 14 MOD 0 w/ Leupold 3.5-10X



Latest Navy MK 14 MOD 1 (2.5-10X NXS)



Special EBR folding Tool

Weight comparison: Empty - No Bipod, No Supp, No Mag. Mag. weighs 1/2 pound empty, weight includes forward grip - no optic (or riser on MOD 1).

MOD 0	MOD 1
11.4 lbs	10.6 lbs
Bipod .74 lbs	Bipod 1.04 lbs

MOD 1 Sound Supp. =1.27 lbs





# MK 14 vs M4A1 Length



Top - MK 14 MOD 1: 37.0 inches

Middle - MK 14 MOD 0: 35.0 inches

Bottom - M4A1 Carbine: 30.5 inches

(all weapons with stocks at shortest length)



MK 14 MOD 0 – 1.5-5X Optic Concept Original M14 is 44.4 inches long



MK 14 MOD 0 Operator's Manual





#### M14 EBRs in use















# More "Drop In" M14 EBR Conversions



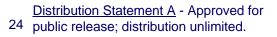
















# Other M14 Related Developments



Original Rock – SOPMOD M14 – had reconfigured gas system and metal stock



JAE 100 - Sniper Type Stock - No bedding required



Latest Troy Industries M14 Stock



McMillan MFS-14 System



Smith Enterprise Day / Night Optic Mounts





#### Accessorization



Many SOPMOD Kit Type Accessories are useful on M14 EBRs / MK 14s to Include the Latest Array of Night Vision and Thermal Clip-On Units as well as the various Lasers, Lights and Optical Sights and most anything else mountable to Mil Std 1913 Rails.





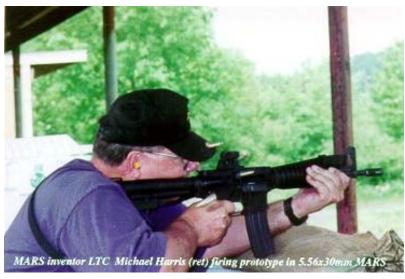
# Fighting at 300 meters and Less



FN P90 5.7X28mm



HK MP7 4.6X30mm



MARS - 5.56X30mm



KAC – PDW 6X35mm (8 inch) (10 inch barrel also available)

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MK 18 CQC or CQBR on M4





#### OPTIMIZATION of Weapon / Ammo Load

Approved for Public Release

Weapon System Weights -Need to fit within an Ideal 45 lbs (50 lb maximum) fighting load including other Kit

An M203 Grenade Launcher adds 3 lbs plus 3/4 lb per M433 HEDP round

Cartridge	7.62X51	7.62X39	5.56X45	5.56X45	5.56X30	5.7X28	4.6X30
Weights-lbs	M14	AKM	M4A1	M4-10"	MARS	FN P90	HK MP7
Weapon	8.6	8.5	6.6	6.3	5.5	5.6	3.9
Cartridge	0.055	0.047	0.026	0.026	0.022	0.014	0.014
Magazine	0.50	0.70	0.24	0.24	0.19	0.21	0.19
w/210 rnds	20.7	18.7	12.2	11.9	10.3	8.6	7.0
w/300 rnds	25.9	23.1	14.7	14.4	12.3	9.9	8.3
w/420 rnds	32.9	28.9	17.9	17.6	15.0	11.6	10.1
w/510 rnds	38.1	33.3	20.3	20.0	17.1	12.9	11.4



#### Ammunition Load Comparison

Minutes of Combat at 45 shots per minute (possible ambush rate of fire) with a 10 pound ammunition load:

- Magazine weight not considered

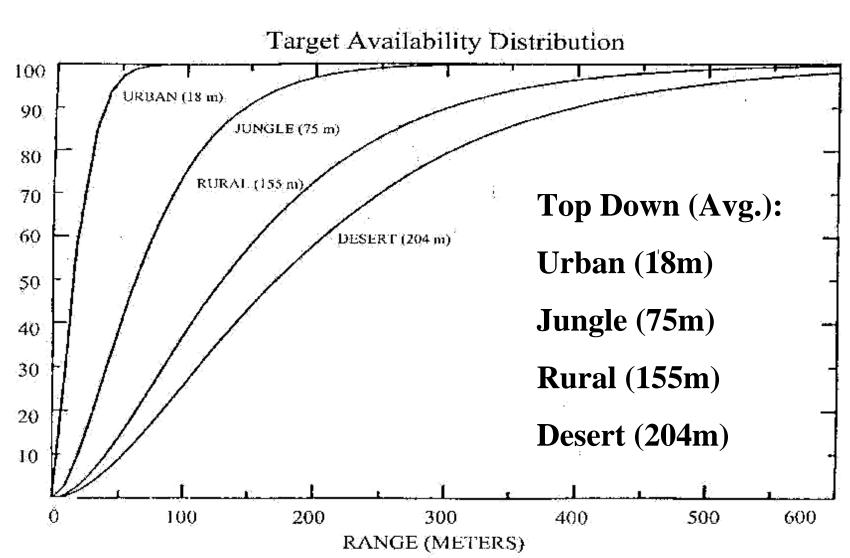


Rnds	Cartridge	Time (+/- 6 sec)
182	7.62 NATO	3 minutes
385	5.56/9mm NATO	6 1/2 minutes
210	7.62X39	3 1/2 minutes
455	5.56X30MARS	7 1/2 minutes
	or 6X35KAC (est.	.)
714	5.7X28 /4.6X30	>11 minutes





# Expected Target Distribution (OICW Study)







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