

# MAGPUL MASADA™ ADAPTIVE COMBAT WEAPON SYSTEM



## Introduction

Designed and built by the Magpul design team in approximately 4 months as an experiment in firearms design, the Masada™ is an evolution of proven technologies in a lightweight package optimized for mass production.

The Masada™ Adaptive Combat Weapon System is rapidly reconfigurable for length, caliber, magazine compatibility, stock type, and fire-control setup. Core features include a gas-piston operating system, tool-less quick-change barrel system, multi-adjustable folding stock, and integrated storage.

Transition from the M16 weapon series is facilitated with similar control placement and function of many critical controls thus requiring minimal re-training. Backward compatibility with a number of AR-15/M16 parts allows for a wide variety of custom configurations using commonly available components.

### Masada™ Design History

Initially the design intent of the Masada™ system was to enhance the features of the M16/AR15 rifle.

Many weapon designs were examined throughout the course of research. In each case, features were discovered that were liked and disliked. The goal of Masada™ became clear: Incorporate what Magpul considered the best features of the most successful weapon platforms into a single, unified design.

Attempting to retrofit the M16 system with the highly desirable features of a next-generation weapon system turned out to be unnecessarily difficult, prohibitively expensive and in the end still fell short of expectations. In March of 2006 the project based upon the M16/AR15 series of rifles was abandoned.

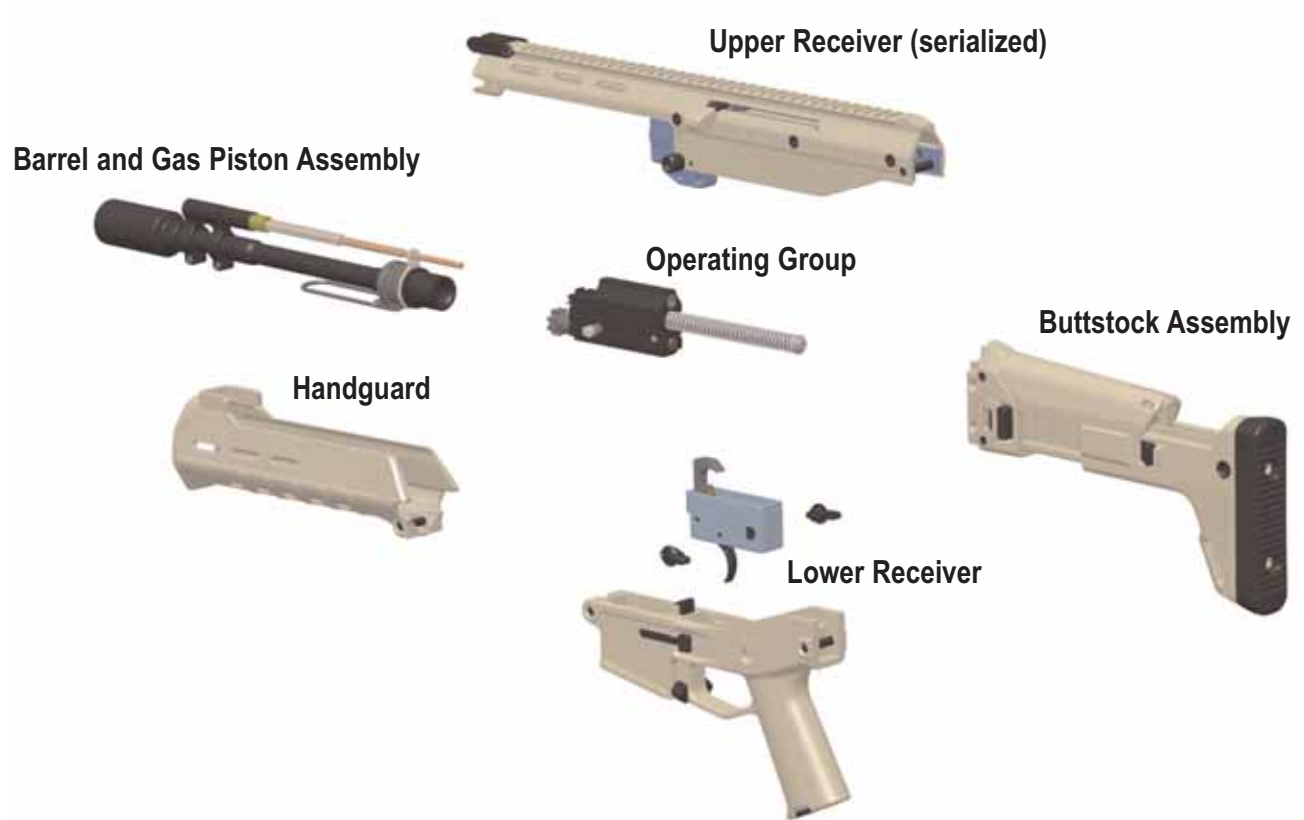


**Polymer M16 project as it was before being abandoned in favor of a new system based on the AR180 platform.**

### Starting from Scratch

In the fall of 2006, Magpul Industries restarted the project from scratch. After reviewing the past research, the proven AR180 was selected as the basis of the operating group. Six operational prototypes were modeled, analyzed, test fired and built in approximately 4 months for the 2007 SHOT Show.

Unlike many weapons of its type, the Masada™ concept is not based on any government solicitation or specification sheet. Rather it is a culmination of ideas and features the team feels is critical for designing a first-rate fighting weapon.



## Features

The Masada™ rifle is user configurable via six main components.

- Upper Receiver (serialized)
- Operating Group
- Lower Receiver
- Barrel and Gas Piston Assembly
- Handguard
- Buttstock Assembly



### Upper Receiver

The Masada™ upper receiver is made from high-strength 7000-series aluminum alloy and extruded in a closed-box profile for strength, dimensional consistency, and overall durability.

Milled into the top of the receiver is a 37 slot, continuous, military specification 1913 rail for mounting optics. Mounted just forward of this rail is a flip up iron front sight compatible with standard AR15/M16 rear sights.

Bolted into the receiver box are internal receiver rails that are made from heat-treated alloy steel and guide the bolt carrier group. Unlike many other weapons, the Masada™ uses a steel-on-steel interface to assure enhanced weapon life and dimensional consistency.



Bolted and pinned into the receiver box is the steel alloy barrel trunnion. The trunnion is heat-treated for maximum durability and connected to the steel internal receiver rails to provide a solid base to maintain consistent point of impact (POI), under the heat increase of high volume firing.

The trunnion also offers a solid mounting point for the free float handguards and 40mm grenade launcher. There are quick-detach sling mounts on either side of the rifle.



### Operating Group

Bolt, carrier and recoil spring are designed to stay together once removed from the weapon thus reducing the chance of lost parts in the field. All parts are easily stripped to their component level for cleaning when required.

The bolt uses an 8-lug-pattern rotating bolt similar to the M16 and AR-180 (7 working lugs due to the extractor) compatible with standard M16/AR15 barrels.

The firing pin is spring-loaded decreasing the possibility of slam-fires and improving drop safety.

Charging handle and actuator stay captured with the upper receiver unless purposefully removed. The charging handle is partially ambidextrous in addition to being reversible to optimize usage from either side.

The charging handle is non-reciprocating but can engage the bolt to act as a forward assist.



### Lower Receiver

The lower receiver is made from long-strand fiber-reinforced impact-modified polymer and contains the fire control parts, grip and magazine well. Fully ambidextrous controls include fire selector, magazine release, bolt release/bolt lock back.

Fire control parts are housed in an aluminum alloy trigger pack housing. This provides strength and rigidity necessary for solid trigger feel and reduced hammer wear. The drop-in trigger pack utilizes unmodified AR-15/M16 hammer, trigger and associated springs.

Multiple ammunition magazine capability is accomplished with unique lower receivers to accept either the NATO STANAG (USGI M-16) or the Automatic Kalashnikov (AK) magazine. Additional lowers receivers that accept other magazine types are also possible.

Textured magazine well grip area provides positive user control in absence of a vertical fore grip. Hinged style “swing down” lower receiver (similar to the M16) allows for quick access to operating parts such as the bolt carrier and trigger group without disassembly of the rifle. The AK lower provides the ability to hinge with or without an AK magazine inserted.

Modular storage in the Primary Grip is compatible with Magpul MIAD™ storage cores. An optional modular-grip lower that will offer multiple grip sizes is also planned.



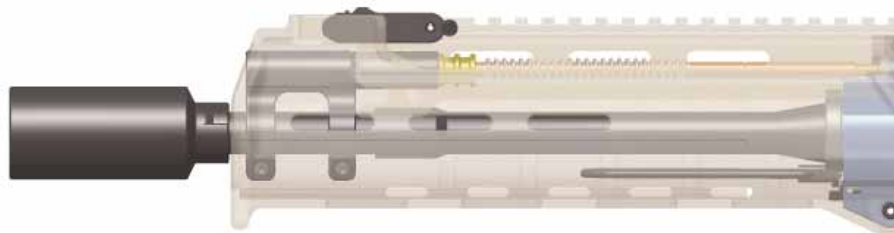
### Barrel and Gas Piston Assembly

The quick-change barrel system utilizes modified AR-15/M16 barrels and requires no tools to operate allowing simple reconfiguration of barrel length or calibers. Barrels are free-floated to maximize accuracy.

Any AR/M16 barrel over 11.5 inches can be used. (10.5 can be used with optional railed handguard).

The barrel change system is tool-less and utilizes an interrupted Acme-type thread in conjunction with a spring-loaded detent in order to operate. This method of attachment differs significantly from other quick-detach barrel systems on the market today.

The gas system is based on the AR180 design and, like the bolt carrier group is designed to stay together as a unit when removed from the rifle. All parts are easily stripped for cleaning.



An adjustable gas regulator allows the user to readily change the amount of gas introduced into the operating system as required by the mission. Production versions will have three distinct settings: "S" for Suppressors, "R" for normal operation, and "H" for high-altitude, extreme cold, fouled weapon or other impaired function conditions.



### Handguard

Two lengths of removable polymer hand-guards allow the user to change hand guard length to suit the mission. As with the lower receiver, the same captured push pin retains the grip and is used similarly throughout the weapon.

Optional rail mounting points are integrated on both the short and long versions of the polymer hand-guard at 3, 6 and 9 o'clock positions.

Optional aluminum alloy hand-guards with integrated rails will also be available and can be permanently secured in place if required.

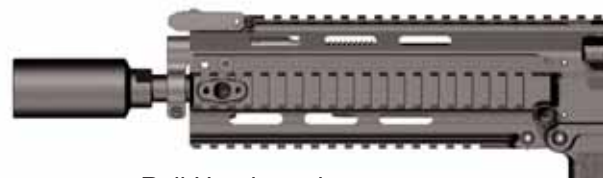
Optional integral light and laser units are also planned.



Long Handguard



Short Handguard



Rail Handguard



## Buttstock Assembly

Stocks are easily removed and replaced to adapt to changing mission requirements. After hinging the lower and upper receivers apart, a captured pin is disengaged allowing the stock to slide upward for removal.

There are three types of buttstock used on the Masada,

### Folding (for use on carbines)

The Folding, telescoping, stock has 7 Length-of-Pull (LOP) positions, a total of 3.0" of telescoping travel and a rubber butt-pad. It includes a 2-position, user-adjustable cheek pad that raises ~0.5" for optics or night vision usage. There is a watertight storage area for small items that can be accessed when stock is in the folded position. The stock may be fitted with a single-point sling mount on the left side.

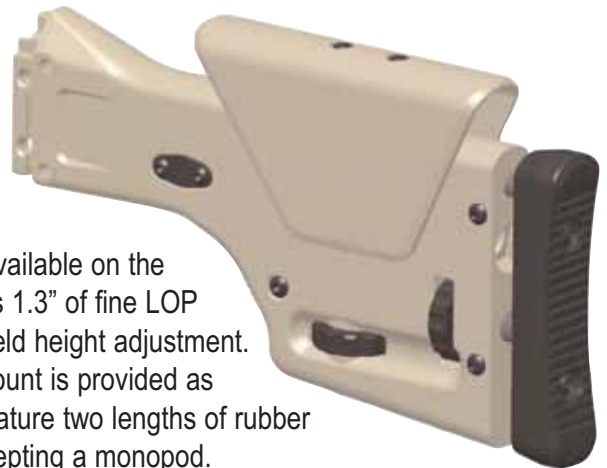


### Standard Rifle (for use on full sized rifles-not shown)

The Standard Rifle stock does not fold but has an increased LOP range, strengthened for butt strikes and has increased storage space. The stock features adjustable cheek riser and optional steel toe plate. Single point and three point sling mounts for left and right sides.

### Precision Rifle (fine adjustment for sniper/target use)

A Precision Rifle stock will also be available on the Masada™. This fixed stock provides 1.3" of fine LOP adjustment and 1.8" of fine cheek-weld height adjustment. A reversible QD single-point sling mount is provided as standard hardware. The stock will feature two lengths of rubber butt pads and will be capable of accepting a monopod.



## Comparison of features with other 5.56 NATO rifles.

	Magpul Masada	FN SCAR	HK XM8	Colt M4
<b>Barrel</b>				
User Removable	✓	✓	✗	✗
No Tools Removable	✓	✗	✗	✗
Average time to change	under 2 mins	under 5 mins	Armory only	Armory Only
Uses common M16 Barrels	✓	✗	✗	✓
Freefloat Barrel	✓	✓	✓	✗
<b>Gas System</b>				
Type	Op Rod	Integrated Op rod	Op Rod	Gas Imp
Adjustable	✓	✓	✗	✗
<b>Upper Receiver</b>				
Iron Back Up Sights	✓	✓	✓	✓
Trunion Mount Material	Aluminum	Aluminum	Plastic	Aluminum
Bolt Carrier Bearing Surface	Steel	Aluminum	Plastic	Aluminum
Full Length Pict Top Rail Mount	✓	✓	✓	✗
Receiver Section	Closed Box	U Channel	Closed Box	Closed Box
<b>Bolt/Bolt Carrier</b>				
Bolt Type	EIGHT Lug	EIGHT Lug	EIGHT Lug	EIGHT Lug
Forward Assist	✓	✓	✓	✓
Non Reciprocating	✓	✗	✗	✓
Forward Charging Handle position	✓	✓	✓	✗
Modular Handguard With Rails	✓	✗	✓	Optional
True Ambi Charging Handle*	✓	✗	✓	✓
<b>Lower Receiver</b>				
Uses Common M16 Magazines	✓	✓	✗	✓
Drop In Trigger Pack	✓	✗	✗	✗
Uses Std M16 Fire Control Parts	✓	✗	✗	✓
Ambi Magazine Release	✓	✓	✓	✗
Ambi Bolt Release	✓	✗	✓	✗
Grip Storage	✓	✗	✗	✗
Modular Grip	Optional	Optional	✗	Optional
Single Point Sling Mount	✓	✓	✓	✗
<b>Stock</b>				
Modular (User Removable)	✓	✓	✓	✗
Foldable	✓	✓	✗	✗
Adjustable LOP	✓	✓	✓	✓
Adjustable Cheek Height	✓	✓	✗	✗
Stock Storage	✓	✗	✗	✗
Integral Rubber Butt Pad	✓	✓	✓	✗
Integral 3 Point Sling Mount	✓	✗	✗	✗
Integral Garrison Sling Mount	✓	✗	✗	✓
<b>Disassembly</b>				
Type	Captured Push Pins	Push Pins and Slides	Non Captured Pins	Captured Push Pins
M16 Break Open Disassembly	✓	✗	✗	✓

\* True Ambi Charging Handle is defined as one that can be activated from the left or right of the weapon with no disassembly of the rifle.

Examples of possible configurations

18" SPR



14.5" Carbine



11.5" AK



10.5" CQB



## The Masada Name

The name Masada comes from the battle of Masada where the Roman X Legion laid siege to the Jews in 72 AD. The fortress stood on top of a plateau and had a secure source of fresh water. Because of this, the Romans were forced to build a ramp to allow their formations to advance up to the fortress without breaking ranks. When the ramp was nearly complete, the Jewish defenders decided to end their existence rather than become the inevitable slaves of the Roman Empire. The citizens of Masada left their food out in plain sight to show the Romans that they were in no danger starving and through this act of defiance they have defined the nature of controlling one's own destiny.

Magpul Industries is not Jewish owned or Israeli backed, however Magpul has always found the story of the Masada as a bold example of defiance.

## Magpul History

Magpul Industries Corp was founded in 1999 by a former U.S. Reconnaissance Marine Sergeant Richard Fitzpatrick with the intent of manufacturing an item to improve the speed of tactical magazine changes. The resulting patented product, the Magpul, has over one million units fielded worldwide and is in service with many military and law enforcement agencies.

From the success of the original design came other tactical accessories such as stocks, grips, an improved follower for the USGI AR15/M16 magazine and even a threading tool for PALS/MOLLIE gear.

Magpul is notable in the industry as a company that focuses on the end user of an item and self-funds it's product development outside of normal government solicitations.

Magpul's research and development arm, known as Magpul Military Industries (formally Magpul Armament Co), is a type 7, class 2 federally licensed manufacturer of firearms.

The Masada™ is the first complete firearm to be developed by Magpul Industries Corp. Magpul has worked extensively on other firearm projects such as the Kriss Super-V .45 caliber Sub Machine Gun from Transformational Defense Industries (TDI) as well as numerous components for other existing weapons systems.

Magpul Industries Corp and it's research arm are privately held Colorado corporations with the same 3 shareholders. Richard Fitzpatrick remains as President and shareholder. All shareholders are US citizens and two are US military veterans.

## Frequently Asked Questions

**Question: What parts of the Masada™ use AR15/M16 stock parts? -**

Answer: The following AR15/M16 parts are currently used but are subject to change.

- Barrel and Barrel Extension
- Trigger
- Disconnecter
- Hammer Assembly
- Trigger/Hammer Pins
- Trigger Spring
- Hammer Spring
- Disconnecter Spring
- Front Sight Post
- Front Sight Plunger
- Front Sight Plunger Spring
- Extractor
- Extractor Pin
- Extractor Spring
- Ejector
- Ejector Retaining Pin
- Ejector Spring

**Question: In the prototype photos the Gas Block is screwed on? Does it have a set screw? Should it be pinned-on like the M16 instead?**

Answer: The prototype design of the Gas Block facilitated adjustability for certain types of testing. Therefore, it does not have a set screw. Once the design is finalized, it will be retained in a more permanent manner which may include pinning.

**Question: What is the serialized/registered part on the Masada™?**

Answer: Initial prototypes are serialized on the upper receiver. Pending BATFE approval this will also be the serialized part on production units.

**Question: How much does the Masada™ weight?**

Answer: Approximate weight of the 14.5" Carbine prototype is 6.7 lb. unloaded without magazine but subject to changes as the design evolves.

**Question: Why does the Masada™ use the M16 barrel design?**

Answer: The M16-pattern barrel is readily available in numerous permutations of length, caliber, contour, rifling twist rate, material and other variables in order to serve specific end-user purposes. In addition, due to its ubiquitous nature, it is usually one of the first systems to benefit from barrel technology advancements.

**Question: Will the Masada™ be available in 7.62 x 51mm NATO (.308 Winchester)?**

Answer: The current design is intended for assault rifle class cartridges 5.56 NATO, 6.8 Rem, 7.62x39 (AK). Battle rifle class cartridges such as 7.62 NATO would likely require a larger upper receiver in addition to the other major components but could be possible.

**Question: Does the folding carbine stock interfere with ejection when folded?**

Answer: No. The Masada™ is designed to be able to be fired with the stock folded and in any LOP position. See illustration below.

**Question: Does the Masada™ have any form of initial extraction?**

Answer: The Masada™ uses a stock AR barrel geometry so there is no fluting or alteration to the chamber. Proper port timing and cylinder pressure should insure reliable extraction after obturation of the casing. Since the Masada™ is not confined to the AR bolt/piston profile, it is able to have optimized chamber volume and piston area as required.

**Question: How long does it take to change the barrel on the Masada?**

Answer: Less than two minutes without tools.

**Question: The Masada™ comes with a front site. Why not include a rear site also?**

Answer: Because there are so many sight options available on the market we have left the decision up to the end user. The front sight is the same height above the rail as an AR15/M16 so any rail mounted back-up iron sight will work.

**Question: Can stock AR15/M16 optic mounts be used on the Masada™?**

Answer: Yes. The distance from the cheek weld to the top rail is identical to the AR15/M16 so all standard mounts can be used.

**Question: What is the projected cost of the Masada in small quantity sales?**

Answer: Projected retail price for a 16 inch carbine with magazines is \$1400 (US)

**Question: How does the Masada™ compare to the AR in terms of ejection strength? Is it safe to assume that it will have a stronger/more reliable extraction mechanism than an AR15?**

Answer: The Masada™ prototypes use the standard AR15/M16 ejector. This may change as we move further into development of the rifle.

**Question: Can the stock plastic handguards accept rails to mount light, pressure switches and foregrips?**

Answer: Yes. The handguard vent holes allow rails or accessories to be mounted at the 3, 6 and 9 o'clock positions with the use of a special flat nut.

**Question: What is the projected cost of the Masada™ in large volume sales?**

Answer: For volume government sales the Masada™ should be close in price to a stock AR15/M16. With this in mind the Masada™ has numerous standard features that would have to be added to the cost of a stock AR15/M16 after it is delivered.

**Question: Is the Masada™ design patented?**

Answer: The current design is based upon the AR180 operating group that was patented but has expired. A patent attorney was consulted to confirm the design did not infringe on any existing patents and file for patents on items developed for this program by Magpul. As such the Masada™ is considered patent pending.

**Question: Did it really only take 4 months to design and build the Masada prototype?**

Answer: Yes. The design team had a pretty clear idea of what the end rifle needed to be from our past work on other projects. A lot of these ideas had already been thought out and so they were ready to be dropped in to the program. As questions were answered other answers presented themselves and things fell into place dynamically. For reference the P51 mustang (one of the premier fighter planes in WW2) took just 117 days to go from idea to flying prototype.

**Question: Are there any magazine limitations on the Masada™ 5.56 NATO lower?**

Answer: The 5.56 NATO lower should work with all magazines built for the AR15/M16 platform including drum type magazines.

**Question: Will the Masada be made in a select fire version? Prototypes have the full automatic markings but internals are all semi automatic.**

Answer: All six initial prototypes built were semi automatic. A version with full automatic function has been designed and will be offered to qualified buyers.

**Question: What barrel lengths will the Masada™ be available in?**

Answer: Because the Masada™ uses stock AR15 barrels, a wide variety of lengths are immediately available. We will most likely offer 10.5, 11.5, 14.5, 16, 18.5 and 20 inch versions as standard.

**Question: There appears to be no cover for the ejection port or the charging handle slot on the prototype guns. Is this intentional?**

Answer: The prototype guns were built to test function and basic ergonomics. As such we are still looking into ways of keeping the action free of debris. Covers are an option we will address later in the development.

**Question: Has a Masada™ rifle been live fired yet?**

Answer: Yes. The first Masada™ prototypes were successfully bench and hand fired on January 5th, 2007

**Question: When will the tentative date be for release of the Masada™?**

Answer: Magpul is aiming for a release in the first quarter of 2008.

**Question: Was the Masada™ project sponsored, funded and/or developed by any other company or government?**

Answer: No. The entire Masada™ project was conceived, developed, and funded as an in-house project and is in no way associated with any government, private or public company entity outside of Magpul Industries Corp / Magpul Military Industries.

### Point of Contact

Drake Clark  
Magpul Military Industries  
400 Young Court Unit #1  
Erie, CO 80516  
303-848-3460 x112  
drake@magpul.com