

M14 Scope Mount FAQ

by

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The M14 type rifle was designed to accept a scope mount. The M14 can be securely scoped if the installation is properly done.

Scope Rail Types

There are three types of scope rails found on M14 type rifle scope mounts are the Weaver style and the Picatinny style. The Picatinny style is also known as the MIL-1913-STD rail or M1913 rail for short. U. S. military scopes use rings designed for the M1913 Picatinny style rail. Weaver scope mounts and rings are popular with civilian hunters. Weaver or Picatinny rings can be used on a M1913 Picatinny rail. A Weaver rail will accept Weaver rings. Springfield Armory, Inc. M1A rifle scope mounts use a hybrid rail pattern that is designed to accept either Picatinny or Weaver scope rings. End users report that Weaver scope rings work best on Springfield Armory, Inc. M1A rifle scope mounts.

Problems with Fitting Scope Mounts

Type of Material - Scope mounts are made using aluminum, steel and titanium. Aluminum is the least expensive and titanium the most expensive material of the three. Aluminum scope mounts are more prone to moving after repeated firing than steel or titanium mounts. This causes the scope to wander and the zero is lost. Aluminum is softer and it expands at a greater rate than the receiver AISI 8620 alloy steel.

Receiver Geometry - As far as the author knows, commercial M14 manufacturers do not and never have guaranteed their receivers meet the dimensional tolerances of USGI M14 receiver drawing 7790189. Therefore, slight dimensional differences exist between USGI and commercial made M14 receivers. On the other hand, several (not all) manufacturers have designed their scope mounts to fit USGI M14 receivers. Consequently, scope mounts do not always fit hand-to-glove on all M14 type receivers. Bill Ricca described the development of the BPT scope mount on www.m14forum.com:

I noticed the posting about certain times mounts must be slightly altered to fit the receivers. Brookfield went thru the same problems and here is the scoop.

When the BPT mount was originally designed they were put on many M14's. The production process was set up to fit all receivers of all makers. Then came the commercial market and the nightmares began.

On the commercial market, at that time, receivers were all over the place as far as dimensions go. Armscorp had a few problems, SA had plenty of problems and

Fed Ord[nance] was totally a waste of time. Believe or not the Chinese versions had no problems fitting at all.

The problem was steel receivers and steel mounts have absolutely no give whatsoever. Everybody was used to aluminum mounts which could be muscled into minor changes to fit.

SA also had the problem of the screw hole being undersized due to worn out reamers. The problem was random, but about 10% of all mounts sold ran into this problem. SA also had the problem of incorrect receiver rails which canted the steel mount sideways. Armscorp had fewer problems and as stated some Fed Ord[nance] were so far off the mount would not even go some rifles without major cutting of the dovetail and rails.

That was back then, but the main focus is as follows: If you purchase one of these steel mounts that have been sold to the military and it does not fit your rifle don't call the company and say "Something is wrong with your mount, it doesn't fit". The problem is in your receiver.

Mr. Ricca's sage advice apparently applies to USGI M14 receivers as well. Smith Enterprise, Inc. states that they have found as much as 0.010 " variance in a 3 " distance on USGI M14 receivers. From a November 15, 1998 discussion thread post on www.snipercountry.com

On the M21/25 and M1A/M14 scope mount question. We (Marine Corps Security Force, Pac) had good luck years back with the Brookfield mounts when we were developing a version of the DM rifle. The Navy was using the same mounts on their version and they were tack welding the bolts to hold the mounts on.

The only problem we had was with the receivers we were using not the scope mounts. It seems that many of the H&R receivers that we had were not manufactured to spec as far as the dimensions pertaining to the area where the scope mount mounts on the left side of the receiver. This gave us a ton of excessive windage when the scopes were mounted. We never had a problem with Winchester receivers. Be aware of this as you put the sucker together.

In the author's opinion, Smith Enterprise and post-'04 customer requested narrow key Sadlak Industries models are the most accommodating scope mount for commercial M14 receivers. Why? 1) adjustable cam which is more forgiving of misplaced receiver bolt holes 2) narrower horizontal key than the BPT mount to fit narrower commercial receiver grooves 3) relief angle on the under side of the rail to minimize stove piping of spent cases 4) no vertical key 5) scope mount can be adjusted during installation to minimize windage and elevation adjustments with the scope turrets for zero.

Miscellaneous Notes on Scope Mounts

Mathewson Tool Company in 1954 designed a means to mount an optical scope on the T44E4 receiver. This design feature was adopted by the U. S. government as part of the M14 receiver. After its involvement with the T44 and M14 rifle projects, Mathewson Tool Company moved from New Haven to Orange, CT by no later than July 1965. The firm

was awarded at least forty-four weapons and ammunition programs contracts from 1965 to 1975 by the U. S. Army and U. S. Air Force. The last of these contracts was awarded to Mathewson Tool Company by the U. S. Army in March 1975. The contract had an estimated completion date of June 1975.

Brookfield Precision Tool, GG&G, Leatherwood Brothers, and Smith Enterprise mounts have been purchased by the U. S. military for match conditioned M14 type rifles. GG&G made its M14 scope mounts for the U. S. Marine Corps M14 DMR. The GG&G M1A1 scope mount has two small rail pads, one at the cartridge clip dovetail and the other located above the barrel ring. Picatinny Arsenal conducted a study on the difficulties of mounting a scope on the M14 rifle. The U. S. Naval Surface Warfare Center (Crane, IN) also worked on the issue. Scope mount adapters were made for the AN/PAS-4 and AN/PVS-1, -2, and -3 night scopes (NSN 5855-00-941-3036) by GPC Night Vision (CAGE Code 1YE66) and the AN/PVS-4 night scope by Brookfield Precision Tool. The scope mount adapter was issued as part of the AN/PAS-4 sight.

Side Single Point Scope Mounts

Side single point design scope mounts like the U. S. Army Weapons Command M14 NM, Basset Machine, Israeli Military Industries, S&K # 1765 and Springfield Armory, Inc. First Generation and A.R.T. IV models, attach to the receiver left hand side using the only bolt hole, with alignment-theoretically at least-assured through firm contact with the receiver's horizontal and vertical grooves. These mounts do not require removal of the cartridge clip guide, while some other mounts do.

In 1966, the Army Weapons Command at Rock Island Arsenal developed a scope mount for the M84 scope to be used on the M14 NM rifle. This scope mount was a two piece affair. The machined base had an integral rail and vertical and horizontal keys to mate to the receiver grooves. The base was attached to the receiver by either a hex head socket screw, large knurled knob screw or a small know with a screwdriver slot. The bases were made of aluminum or steel. The finish of the base was blued, black oxide or phosphate.

The M84 scope was held by a Griffin & Howe, Inc. hinged mount borrowed from the M1C sniper rifle. The scope and mount assembly was secured to the base rail by throw levers. The base had a clearance undercut at the top of the vertical exterior surface to allow free movement of the Griffin & Howe, Inc. mount levers. The scope was centered over the receiver when in use. To use the iron sights, the hinged Griffin & Howe, Inc. mount was rotated counterclockwise to move the scope outboard of the receiver.

The first commercial M14 rifle scope mount was offered by Pete Michaels from 1971 to 1974. This side single point scope mount was a quality copy of the Rock Island Arsenal model used on the M14 NM rifles in the Republic of Viet Nam. There were two versions of this reproduction item. Both versions were made of phosphate coated steel and had horizontal and vertical keys. One version had a clearance undercut at the top of the vertical exterior surface like the Rock Island Arsenal unit. The other copy lacked the clearance undercut.

The Israeli Military Industries scope mount borrowed from the U. S. Army Weapons Command M14 NM mount for its interface with the receiver but it included integral scope rings. It is made of steel and finished with phosphate coating. The Israeli M14 scope

mount was marked 2888-89058 along with Hebrew characters and the serial number of the USGI receiver to which it was mounted.

S&K Manufacturing Co. (then in Pittsfield, PA and now known as S&K Scope Mounts) started producing scope mounts for surplus military rifles in the mid-1960s. It introduced one of the first commercial production M14 scope mount in late 1974. It was of the side single point design. The S&K mount was made from two black anodized pieces of machined 2024 alloy aluminum. The top piece was screwed to the side piece. The top portion of the mount had two blued finish split 1 " scope rings secured by set screws. The rings and screws were made from steel. The S&K scope mount attached to the M14 type receiver by one thumbscrew and alignment ribs.

The Bassett Machine and Springfield Armory, Inc. mounts are made of aluminum, though the Bassett Machine model differs in having hardened steel keys to mate with the receiver grooves. Both scope mounts accept Weaver style rings. The Springfield Armory, Inc. First Generation scope mount was first advertised in the February 01, 1975 issue of *Shotgun News*. The Springfield Armory, Inc. A.R.T. IV scope mount was a two piece unit. The top plate was secured to the side plate by three screws. Split ring scope rings attached to either end of the top plate. The side plate is stamped SA A.R.T. IV. This item was available before the 1994 Assault Weapons Ban. Early Leatherwood Brothers scope mounts were made of aluminum and used a single point of contact to the receiver on the XM21 rifles.

Side Two Point Scope Mounts

The side two point design scope mount uses the receiver bolt hole and the cartridge clip guide to secure the mount. The cartridge clip guide must be removed before this type of scope mount can be installed. B-Square, Leapers, Inc., Marstar Canada, McCann Industries, Springfield Armory, Inc. Third Generation, T T International, UTG, XTA and latter military issue Leatherwood Brothers mounts mount on the side of the receiver at two points. The U. S. Army armorers installed side two point Leatherwood scope mounts on M21 rifles.

The Leapers, Inc. scope mount (Model # MNT914) is made from aircraft grade alloy aluminum and utilizes a Weaver rail. The iron sights can be used with the scope mount installed. The XTA 5100 alloy aluminum M14/M1A scope mount utilizes a 6.13 " long Weaver style rail. It allows limited use of the iron sights and is marked M14/M1A SCOPE MOUNT on the outboard vertical surface. This scope mount was marketed by John Masen Company and New Century Science & Technology, Inc. in 2006.

Beginning in 2006, Marstar Canada marketed the M-14 Deluxe Tactical Scope Mount. This is an alloy aluminum scope mount designed and manufactured in Canada for Marstar. This CNC machined scope mount uses a substitute cartridge clip guide made of carbon steel. It has horizontal and vertical receiver keys and a Weaver style rail. The McCann Industries M1A/M-14 mount is made of steel and is supplied with two Weaver style ring bases.

An optional full length M1913 Picatinny rail is interchangeable with the Weaver style ring bases on the McCann Industries mount. The T T International model TSA scope mount is made of hardened steel with a M1913 Picatinny rail. The UTG model is made of alloy

aluminum and accepts Weaver style scope rings. The second point of attachment is secured by a screw inserted into a dovetail key from the rear end of the rail. The iron sights may be used with the scope removed.

The rifle iron sights can be used up to about an elevation of 200 meters with a Springfield Armory, Inc. scope mount. At higher elevation settings the mount will block the shooter's vision through the rear sight aperture. The Springfield Armory, Inc. Third Generation mount uses a supplied substitute guide that replaces the cartridge clip guide. It was designed and first manufactured some time between 1975 and 1990. The Springfield Armory, Inc. Third Generations scope mount is marked on the side as follows: top line - SPRINGFIELD ARMORY bottom line - Geneseo, Illinois. The catalog number is MA5038. This scope mount has a rail 6 1/8 " long. It uses a hybrid rail geometry that is best suited for Weaver style scope rings.

Side Three Point Scope Mounts

Mounts that have three points of contact with the receiver are the most reliable for keeping the scope zeroed under all conditions, including removal and re-mounting on the receiver. This type of scope mount contacts the M14 type receiver at the scope mount lug on the left side, at the cartridge clip guide and on top of the barrel ring. Note that side three point scope mounts are not always compatible with rail system mounts or modular chassis stocks. The rear end of the top rail on a rail system mount or a modular chassis stock may interfere with the front end of the side three point scope mount.

Commercial M14 manufacturers do not and never have guaranteed that their receivers meet the dimensional tolerances of USGI M14 receiver drawing 7790189. Therefore, slight dimensional differences exist between USGI and commercial manufacture M14 receivers. On the other hand, several, but not all, manufacturers have designed their scope mounts to fit USGI M14 receivers without making any accommodation for commercial manufacture receivers. The bottom line for shooters wishing to use a scope sight on an M14 type rifle is that side three point scope mounts do not always fit hand-to-glove on all M14 type receivers. This scope mount style is very popular among M14 rifle enthusiasts. The overall rail length on this type of scope mount typically varies from 5 " to 7 ". Several models are described below.

Brookfield Precision Tool - The Brookfield Precision Tool mount was developed by Mitch Mateiko. He made the first scope mount in his work shop at home out of steel and subsequently always used steel for the scope mounts. The Brookfield Precision Tool scope mount sits on the military XM25 and M25 rifles. It was sold in the commercial market for a number of years. Brookfield Precision Tool scope mounts and other parts now command a premium due to the collector value. The Brookfield Precision Tool mount is made from an investment casting. It allows the shooter to use the rifle's iron sights with or without the scope installed. It is a M1913 Picatinny style rail with a cam type mounting bolt designed to fit all four makes of USGI M14 receivers. Brookfield Precision Tool scope mounts are marked as following on the side:

BKFLD PREC TL U S PROPERTY

One small production batch of Brookfield Precision Tool M14 scope mounts were marked

with PATENT PENDING on the mounting bolt side.

Smith Enterprise, Inc. - Smith Enterprise scope mounts are made from nitrocarburized AISI 4140 alloy steel. Their surface hardness is 60 to 62 HRC and they have a matte black finish. As of 2003, the Smith Enterprise MIL-STD-1913 Picatinny rail tactical scope mount was stocked in the U. S. military supply system. This mount allows the shooter to use the iron sights with or without the scope installed. It is in use by the U. S. Army 25th Infantry Division and the U. S. Navy. On September 28, 2005, Smith Enterprise was awarded a contract by the U. S. Army 101st Airborne Division to supply deploying units with this scope mount along with its 30 mm heavy duty scope rings and Leupold & Stevens, Inc. 3.5-10X 40 mm scopes to deploying units. This scope mount is marked

NSN 5855-01-506-5750 U. S. PROPERTY

It is manufactured using the wire electro-discharge machining (EDM) method. EDM can be described as spark erosion of metals by local heating and melting. This metalworking method holds very tight tolerances and leaves burr free surfaces.

In April 2005, Smith Enterprise made available a 7 " rail length version of its wire EDM manufactured scope mount to the U. S. Air Force and U. S. Marine Corps. This scope mount was assigned the National Stock Number 1005-01-533-8160 on September 28, 2005 by the Defense Supply Center - Columbus. This scope mount is marked Smith Ent. "Crazy Horse" MIL STD 1913 United States Property NSN 1005-01-533-8160.

In April 2006, Smith Enterprise, Inc. introduced its Trijicon, Inc. ACOG compatible scope mount for the M14 rifle. This mount is made by the wire EDM manufacturing method. The material is AISI 4140 alloy steel. It is marked with the following information:

US PROPERTY SMITH ENT NSN 1005-01-535-4430

The advantage of this scope mount is the detachable MIL-STD-1913 Picatinny rail. The user can quickly swap a traditional rifle daylight scope for a Trijicon, Inc. ACOG scope. There is no loss of zero when the daylight scope is reinstalled. The detachable rail is removed and installed by loosening or tightening the bolts with a t-shape handle hex head wrench.

Smith Enterprise's earlier M14 scope mounts were made using conventional machining methods but are nonetheless just as trouble-free and durable. The older model Smith Enterprise rail scope mounts were produced in two versions, Weaver style rail and MIL-STD-1913 rail. This earlier MIL-STD-1913 version was sold to the U. S. Army in the late 1980s and 1990s. These scope mounts were marked

SMITH ENTERPRISE. TEMPE. AZ M21

The older Smith Enterprise Weaver style rail mounts were manufactured in 1994. These mounts were marked SMITH ENT. XM-21. This scope mount was reintroduced in 2006 as part number 2024 with the marking

SMITH ENT. M-21.

Both Weaver style rail mounts were made using conventional machining methods.

The Smith Enterprise scope mount has a three degree upward slope on the under side of

the rail, just above the rifle's bolt. This allows ejected brass to clear the action while minimizing any contact with the mount because of varying receiver geometries among the manufacturers. This mount utilizes a cam type mounting bolt to compensate for the differing position of the bolt hole on various makes of rifles. For demonstration purposes only, Ron Smith installed a Smith Enterprise scope mount on a commercial manufacture M14 type receiver and torqued the receiver mounting bolt in increments to 140 in-lb. There was absolutely no damage to the bolt, mount or receiver. In field use, 65 in-lb of torque is sufficient for installing any scope mount. Installation instructions are included with every scope mount sold by Smith Enterprise. The mount installation instructions are also posted at its web site. Smith Enterprise will custom fit its M14 scope mounts to customer supplied commercial M14 type receivers.

Armscorp USA - The Armscorp USA M14 scope mount is a very faithful copy of the milestone Brookfield Precision Tool mount. It is machined from steel and heat treated to U. S. military specifications. It has an adjustable cam bolt. The iron sights can be used with this mount installed without removing the scope. The Armscorp USA side three point scope mount is marked as follows on the side

ARMSCORP U.S. PROPERTY

Atlantic Research Marketing Systems, Inc. – Atlantic Research Marketing Systems (CAGE Code 0FBA6) was established by Dick Swan. His 1983 dovetail style rail design for mounting firearm optical sights was adopted by the U. S. Army Picatinny Arsenal in 1995 as the Mil-Std 1913 Rail. Mil-Std is an abbreviation for Military Standard. This rail mount design is referred to as the M1913 Picatinny rail. Atlantic Research Marketing Systems produces a variety of optical sight mounting rails.

Its # 18 mount is designed for use on the M14 type rifle. The # 18 mount has been made in two versions. The early style was first introduced to the commercial market in 1989. It has two base pads, one at each end, for mounting the scope rings. A few of the early style mounts have an integral cartridge clip guide in the rear pad, useful only when the mount is installed on the receiver without a scope installed.

Introduced in 2003, the new style # 18 mount has a full-length rail running from the cartridge clip guide dovetail to the top of the barrel ring. The new style # 18 mount has similar markings as the early style unit. Both models are M1913 Picatinny style rails. Both versions are marked as follows on the side below the bolt: first line - A.R.M.S. M21/ M14 W.B. MA. 98 second line – NSN 1240-01-316-0055. There are four additional markings above the bolt: company logo, registered trademark indicator, 18 and SWAN. The new style # 18 is made of case hardened AISI 8620 alloy steel. Both styles of the # 18 scope mount are made from investment castings. The overall rail length for both versions is 4 9/32 ".

The # 18 scope mount sits low enough on the receiver to allow use of the iron sights if the scope is removed. It sits the lowest over the rifle's bore of any scope mount available. Due to differences in commercial receiver geometry the user may find that a little judicious removal of metal at the underside corner of the mount's front end may be necessary to get a # 18 mount to fit perfectly. The # 20 throw lever mount is used to attach an AN/PVS-4 night vision scope to a Weaver style rail scope mount.

Mil-Spec Logistics, Inc. - This firm marketed a side three point scope mount that was based on the Brookfield Precision Tool design. It was made of steel and had two moderate length Picatinny rail pads instead of a full length rail. The outboard vertical surface of the mount is marked MIL SPEC LOGISTICS, INC.

Sadlak Industries - Since 2002, Sadlak Industries has made M14 scope mounts. This company offers its M1913 Picatinny style rail scope mounts manufactured from three different materials, titanium, steel and aluminum alloys. The rail length is the same for each model, 5 3/8 ". The Sadlak Industries M14 scope mount is based on the Brookfield Precision Tool model.

Sadlak Industries incorporated some new enhancements to its M14 scope mount in late 2004. Two setscrews securely hold the wider adjustable dovetail piece (clip guide key) to the rifle's receiver, to keep it from loosening. The rear end of the scope mount has cutouts to allow wrench access to the dovetail setscrews. The dovetail setscrews securely lock the dovetail piece (clip guide key) into the receiver. The scope mount hole for the adjustable dovetail piece (clip guide) screw has been machined with an oval slot and a larger counterbore to make it more easily compatible with non-USGI receivers. The front post screw size has also been increased for a larger contact area with the receiver barrel ring. The front screw has also been changed from a 1/4 " x 28 fine thread to a 5/16 " x 24 fine thread. The new size front screw reduces the number of hex head wrenches from three to two. The front screw and the dovetail key socket screw now both use the same size hex head wrench. 2006 production scope mount weights were 7.258 ounces (alloy titanium), 11.113 ounces (4142 alloy) and 4.331 ounces (7075 alloy).

Its titanium scope mounts are machined from hot rolled billet and then heat treated to a hardness of 26 to 30 HRC. From 2002 to 2006, the titanium scope mounts were made from two alloys of hot rolled titanium billet: 1) 6 % aluminum 4 % vanadium 89 % titanium 2) 6 % aluminum 5 % vanadium 2 % tin 87 % titanium. After heat treatment, the titanium mounts are finished with a matte black nitride coating for improved corrosion and abrasion resistance. This coating increases the surface hardness to approximately 80 HRC. The Sadlak titanium scope mount is tougher and stronger than steel but is substantially lighter. A Sadlak Industries titanium M14 scope mount made in 2004 was marked

SADLAK INDUST. LLC COVENTRY CT USA M14 T-02

Before 2005, the manufacturer information was located on the right side of the mount. From 2005 and onward, the marking is indicated on the left hand side of the mount. Scope mounts are coded by a single letter prefix and a two digit number, e.g., S03. T stands for titanium and S for steel. The number means the blueprint revision for the scope mount made from the material denoted by the letter, e.g., S or T. There are slight changes between blueprint revisions. As an example, T-02 scope mounts have a two degree relief angle under the horizontal surface. T-03 scope mounts will have a five degree relief angle under the horizontal surface.

Sadlak's steel scope mounts are made from stress relieved AISI 4142 bar stock with a core hardness of 28 to 32 HRC. The steel mounts are given a military specification manganese phosphate coating. A Sadlak Industries steel scope mount made in 2006

was marked: top line - SADLAK INDUSTRIES LLC M14 RIFLE Steel middle line - COVENTRY CT bottom line - USA.

A 7075 alloy aluminum-magnesium-zinc version of its M14 scope mount was in testing in November 2004. This alloy is commonly used to fabricate aircraft frames. The 7075 alloy M14 scope mount is fully machined and hard coat anodized. It became available in early 2005. In early 2006, Sadlak Industries produced a small batch of anodized gray 7075 alloy scope mounts. Otherwise, the 7075 alloy models have been anodized black.

The original alpha-titanium-carbon-nitride coating used on the titanium model was not always as consistent in color as desired. Sadlak Industries, LLC does not compromise on its quality control. So, those off-color mounts have been rejected even though all other inspections were satisfactory. Unfortunately, the rejection rate due to improper color only was unacceptably high. Consequently, as of late 2004, Sadlak Industries was testing a second and more color consistent matte black nitride coating as well as a tungsten coating for the titanium M14 scope mounts. The tungsten coating is even more durable than the nitride coating and has a slight greenish-gray phosphate coloring reminiscent of older military weapons. The tungsten coating was so successful that the black nitride coating for titanium scope mounts was discontinued in 2005.

Beginning in early 2005, a five degree relief angle is machined into the bottom of its scope mounts to minimize interference from spent cases in rifles with worn ejector springs. Sadlak Industries produced in March 2005 a single batch of six tungsten coated version S03 steel scope mounts. In April 2005, Sadlak Industries started a custom scope mount fitting service to accommodate non-USGI dimension receivers and / or allow for elevation adjustment. At the end of September 2005, Sadlak Industries filled a request from the U. S. Army for ninety-eight steel M14 scope mounts.

Entreprise Arms - This is a Weaver style rail scope mount. It is machined from AISI 4140 alloy steel. The Entreprise Arms web site lists this mount in two lengths, standard and extended. This mount allows the shooter to use the iron sights with or without the scope installed. The Entreprise Arms M14 scope mounts have a military specification phosphate finish.

Global Defense Initiatives, Inc. – By no later than 2003, Global Defensive Initiatives, Inc. (San Diego, CA) designed and produced a side three point mount that differed somewhat from the classic Brookfield Precision Tool design. Its G1 Optical Sight Mount (G1-OSM) allows the use of iron sights with the scope removed or installed. However, the M1913 Picatinny rail extended rearward to a point just behind the rear sight aperture. The rear sight assembly stayed in place with the mount installed. The G1-OSM mount accommodated an optical sight requiring very short eye relief between the shooter and the ocular lens. Thus, the versatility of the G1-OSM design allows the use of traditional scopes and dot sights as well as Trijicon, Inc. ACOG optics without the use of rail adapters. The G1-OSM was made from 17-4 precipitation hardening stainless steel and finished with a black oxide coating. By 2006, GDI introduced the second generation G1-OSM scope mount.

Leatherwood Brothers, McCann Industries and Talbot – Leatherwood Brothers began advertising its new side three point rail mount in *Shotgun News* in 2004. All parts are made from steel. This mount allows the use of iron sights and is adjustable for windage. It has a blued finish and will accept M1913 Picatinny style scope rings. Leatherwood Brothers began shipping its mount to customers in June 2004. The McCann Industries MITS mount is a side three point design unit for the M14 type rifle. Installation requires gunsmithing. A traditional design M14 bolt lock should be used in conjunction with the MITS scope mount as it may interfere with an extended bolt lock. The Talbot steel scope mount for the M14/M1A uses an optic mounting surface and quick detach combination dual ring and rail assembly that is common to the firm's many models of scope mounts. Various interchangeable dual ring and rail assemblies are available for the Talbot family of scope mounts. Talbot also offers a dual ring and rail assembly for M1913 Picatinny rail scope mounts.

Keng's Firearms Specialty and US Tactical Systems - These are moderately priced side three point mounts for the M14 type rifle. The Keng's Firearms Specialty unit has a M1913 Picatinny rail. The US Tactical Systems model has a Weaver style rail and is made from AISI 4140 alloy steel. It is heat treated and has a black color nitride surface finish. With the scope removed, the iron sights can be used with these mounts installed on the rifle.

ProMag Industries - ProMag Industries introduced two M14 scope mounts in 2006, product numbers PM081 and PM081A. The PM081 mount was made from steel. The PM081A mount was made from alloy aluminum. It was of similar design as the Atlantic Research Marketing Systems, Inc. # 18 mount. Consequently, the PM081A mount will likely have fitting issues with commercial M14 type receivers. The end user must exercise care not to over tighten the ProMag Industries scope mount bolt hole. Doing so will strip the bolt threads. Both ProMag models use M1913 Picatinny rails.

Unertl Optical Company - In the summer of 2006, Unertl developed two prototype design M14 scope mounts. Both mounts were improved versions of the basic Brookfield Precision Tool design. Both models were made from alloy steel and had forward and rear M1913 Picatinny rail pads. The shorter of the two prototypes was about 6 " long. The rail pads had four slots each with the rear rail pad extending approximately 3/4 " past the front edge of the rear sight cover. The longer scope mount had an overall length of about 7 " with six front slots and two rear slots. The front rail pad of the longer mount reaches 2 " past the receiver barrel ring. This version better accommodates dot sight optics and scopes greater than 10X magnification. The open space between the two rail pads was designed to avoid stovepiping of spent cases. Both prototype scope mounts were marked on the left side UNERTL ORDNANCE with the company logo to the right of the lettering. The longer Unertl scope mount became available for sale in February 2007.

Side Three Point Scope Mount Fitting on Commercial M14 Receivers

There are five points of contact between the side three point scope mount and the rifle's receiver that may cause improper fit up with military design side three point scope mounts when installed on commercial M14 receivers. The surface contact between the left side of the scope mount and the left side of the receiver is of primary importance. The more

contact between these two surfaces the less likely the mount is to shift from firing recoil. The scope mount should be tested first for fit without the cartridge clip guide dovetail key supplied with the mount.

Receiver Bolt Hole - The USGI M14 receiver drawing 7790189 specifies a distance of 1.500 " + or - 0.003 " for the distance between the bolt hole centerline and the front vertical edge of the barrel ring. If the bolt hole is drilled too far to the rear, the rear of the scope mount may contact the receiver cartridge clip guide dovetail. This lifts the back of the mount so the mount horizontal key doesn't fully seat in the receiver horizontal groove. Consequently, the mount is moved left or right, and usually also down, at the front end. The rifle is then likely to shoot high and/or to one side. Furthermore, some bolt holes are undersized because the maker used worn out reamers, or the bolt holes may not be drilled perfectly perpendicular to the receiver wall. A very few commercial receivers lack the scope mount recoil lug or bolt hole.

Receiver Horizontal Groove - The height, angle and width of the horizontal groove affect the fit of side three point scope mounts to M14 type receivers. Some commercial receivers have horizontal grooves too shallow and narrow to accommodate military specification mounts such as the Armscorp USA, Brookfield Precision Tool and Sadlak Industries models. A 2002 manufacture commercial M14 type receiver examined by Sadlak Industries, LLC in December 2004 is a representative case study of the mismatch between commercial receivers and military dimension scope mounts. The receiver horizontal groove of this particular 2002 manufacture commercial receiver measured 0.048 " deep, 0.080 " wide at the bottom and 0.134 " wide at the top.

The width at the top of the receiver horizontal groove should be 0.0149 " to 0.153 " by calculation based on the sixty degree angle and groove bottom width dimension as specified in the USGI drawing number 7790189. The bottom of the horizontal groove is required to be 0.070 " to 0.078 " wide according to the USGI drawing number 7790189. The horizontal groove should be 0.062 " to 0.072 " deep by calculation. Commercial M14 receiver horizontal grooves have been measured as narrow as 0.120 " at the top of the groove.

Receiver Barrel Ring - The top front left hand corner of the receiver barrel ring may interfere with the new style Atlantic Research Marketing Systems # 18 mount. This is no fault of Atlantic Research Marketing Systems, Inc. as its mount was designed to fit on USGI M14 receivers.

Receiver Cartridge Clip Guide Dovetail - The receiver cartridge clip guide dovetail may be machined such that the scope mount adjustable dovetail key will not slide in from the side of the bolt hole, but may do so from the operating rod side. The height of the cartridge clip guide dovetail may also be tall enough to push up on the rear end of the scope mount. The cartridge clip guide dovetail has been found to be as much as 0.030 " taller than USGI specification.

Barrel Hand Guard - The Atlantic Research Marketing Systems # 18 front rail pad setscrew may contact the hand guard. This can be remedied by replacing the mount's front setscrew with one that fits flush with the pad. Again, this is no fault of Atlantic

Research Marketing Systems, Inc. Commercial M14 type receivers are not always machined to the USGI drawing 7790189 dimensions.

Smith Enterprise, Inc. states that it has found as much as 0.010 " variance in a 3 " distance on USGI M14 receivers. In the 1990s, the U. S. Marine Corps and U. S. Navy had great success with the Brookfield Precision Tool scope mounts. However, the U. S. Marine Corps found that the location of mount bolt holes on Harrington & Richardson M14 receivers adversely affected mount alignment to require excessive windage adjustment to zero the scopes. The U. S. Marine Corps had no such problems with the Winchester M14 rifle receivers.

Scope Mounts Secured to the Rear Sight Pocket

In 1985, Smith Enterprise designed and produced pre-production units of two models of longer side three point scope mounts. Both were 9.250 " long. The rear end of both models mounted to the rifle's rear sight pocket, requiring removal of the rear sight assembly. The front end of the mount rail extended past the receiver barrel ring. One mount was TIG welded to the receiver, while the other was bolted on at the rear sight pocket through the sight knob holes. The heads of the bolts for the rear sight pocket were the same diameter as the sight knobs. The project was not pursued since it was found that the market in 1985 was not ready for this new style of scope mount.

In years past, Atlantic Research Marketing Systems, Inc. marketed its M-14/M-1A Rigid Rail Mount. This mount had a ring at the front end that fit around the barrel just forward of the receiver barrel ring. The rear end of the mount fit inside the rear sight pocket and was secured by a bolt through the sight knob holes. The Atlantic Research Marketing Systems M-14/M-1A Rigid Rail Mount had a M1913 Picatinny rail and was offered in two choices of material construction and three differing lengths. The material was either phosphate coated AISI 4140 alloy steel or an aluminum rail with steel barrel ring. The aluminum and steel model was hard coat anodized for the surface finish treatment. The mount was available in standard, extended front or extended rear lengths. The flash suppressor, gas system and operating rod guide had to be removed to install this scope mount. Installation of this scope mount should be done by a gunsmith familiar with the M14 type rifle.

The Springfield Armory, Inc. M25 and Accuracy Speaks, Inc. M1913 Picatinny rail scope mounts both attach to the rear sight pocket instead of the cartridge clip guide dovetail and the barrel. The Accuracy Speaks mount will fit either the M1 Garand or M14 type rifle. This aluminum mount replaces the rear sight and firmly attaches to the barrel. Installation requires drilling and tapping the barrel and removal and modification of the hand guard.

In late 1997, Derrick Martin and Barrett Tillman conducted some accuracy testing of handloaded 175 grain .308 Winchester caliber ammunition in the Arizona desert. The test rifle was a modified and scoped Springfield Armory, Inc. M1A. This particular M1A was outfitted with a Douglas 1:10 twist bull barrel, a McMillan stock, a Harris bipod, and custom gas system. The test rifle had no iron sights. The rear sight assembly was displaced by the Accuracy Speaks, Inc. scope mount.

Rail System Mounts

Knight's Manufacturing Company (Titusville, FL) produces an M16 Carbine style rail system known as the M14 RAS. It is offered in two models. The rear end of the top rail for both models ends at the receiver barrel ring. The deluxe model has a rear scope mount base that replaces the cartridge clip guide. The standard model resembles the deluxe model, but without the rear scope mount base. This is a very solid mount and is easy to install. The rear end of the M14 RAS bolts to the receiver scope mount bolt hole. It will only fit rifles with standard contour barrels. The RAS' side ribbed accessory panels will interfere with a National Match, JAE-100 or other oversized stock, but not USGI contour stocks. The M14 RAS is marked as follows on the right hand side from top to bottom: first line – KNIGHT'S ARMAMENT CO. second line – TITUSVILLE, FL third line – (321) 607-9900 fourth line – PN #22121. The company logo is just to the left of the text markings.

C. J. Weapons Accessories offers the Striker-14 M-14/M1A Tactical Rail System. This model uses three M1913 Picatinny rails, with the rear end of the top rail attaching to the cartridge clip guide. The rifle's iron sights can be used with a scope installed. The Striker-14 unit attaches to the rifle at three points. It is CNC machined from a single piece of aluminum and has a black anodized finish.

The Springfield Armory, Inc. M1A SOCOM II models are fitted with the Vltor Weapons Systems CAS-14 rail system mount. Vltor introduced the aluminum CAS-14 rail system mount at the 2004 SHOT Show. Springfield Armory, Inc. refers to the Vltor rail system as the Cluster Rail. The M1A SOCOM II Cluster Rail has four M1913 Picatinny rails. This longer version of the Vltor CAS-14 rail system has the twelve o'clock rail running from the front band to the cartridge clip guide. A shorter version of the CAS-14 mount terminates at the rear end of the barrel. Both versions attach to the M14 type rifle at the receiver scope mount bolt hole, the barrel hand guard clip grooves and the operating rod guide. A U-shaped bracket is used to mate the CAS-14 rail system to the operating rod guide. A 3/8 " hex head bolt threads into the scope mount hole to fix it to the left side of the receiver. The longer CAS-14 mount uses two screws to mate the rear end to a substitute cartridge clip guide. The bottom portion of the M1A SOCOM II rail system can be quickly removed and left off the rifle by depressing two buttons at the rear of the stock and swinging the part downward.

Barrel Rail Mounts

Springfield Armory, Inc. – Springfield Armory, Inc. offers a barrel scope mount for extended eye relief scopes. The M1A Scout Squad and SOCOM 16 models are sold with a hybrid style rail barrel scope mount installed. The Springfield Armory, Inc. barrel scope mount utilizes a rail geometry that will accept either Picatinny or Weaver style rings. End users of this mount report greater satisfaction with employment of Weaver style rings. This mount is made of aluminum and attaches to a standard contour barrel using six 7/32 " hex head screws that secure the upper half to the lower half of the mount. Medium weight and heavyweight M14 barrels and M1 Garand barrels cannot accept this mount. Springfield Armory, Inc. offers the Scout Squad scope mount finished in a choice of black or brown. Springfield Armory, Inc. also sells it separately.

Rooster33 - Rooster33 began producing and selling its own barrel scope mount in March

2004. It is made of steel and is also sized only for a lightweight (standard) contour M14 barrel. The Rooster33 black color 1 " long scope mount attaches to the barrel by four hex head bolts. It will accept either Weaver style or M1913 Picatinny style rings.

Amega Ranges, Inc. – Beginning in 2006, Amega Ranges offered a M1913 Picatinny rail barrel mount for the M14 type rifle. It is made of anodized black color 6005-T6 alloy aluminum. As of May 2006, two variants were available. One model will fit USGI standard contour barrels. The other model is made to fit Springfield Armory, Inc. M1A Bush, Scout Squad and SOCOM models. Neither Amega Ranges scope mount will fit a Chinese made M14 barrel. The Amega Ranges rail mount runs from the front end of the barrel ring to the front band. The Amega Range barrel rail mount is attached to the M14 type rifle with screws with no other modification required for installation.

D. D. Ross Company - As of 2006, D. D. Ross Company (Medina, OH) produces a M14 barrel rail scope mount that is designed for the heavyweight barrel contour. The scope mount is a M1913 Picatinny style rail. It attaches to the rifle at two points, the cartridge clip dove tail and at the barrel about four inches forward of the receiver. The forward end of the rail terminates about 6 " forward of the receiver.

Midwest Industries – Introduced in 2005, Midwest Industries manufactures an anodized aluminum dual M1913 Picatinny rail mount that attaches to the barrel over the gas cylinder. It is useful for attaching tactical lights or lasers. Any rail mount or bipod that is secured to the barrel may change the zero of the rifle barrel. The rifle should be sighted in and test fired to check for any change in accuracy after installation.

Ultimak - The Ultimak Model M8 scope mount is designed to attach to a USGI, commercial or Chinese M14 standard contour barrel only. The M8 mount runs the length of the barrel from the receiver to the front band. The scope mount is a M1913 Picatinny style rail made of CNC machined 6061 T6 anodized alloy aluminum. No gunsmithing is required to install the unit. The manganese phosphate coated AISI 4142 molybdenum-chromium alloy steel barrel clamps and recoil lug are secured to the barrel by hex head screws. Ultimak offered the M8 scope mount beginning in mid-2006.

Tips for Installing Your Side Three Point Scope Mount

Disclaimer - The following are suggestions intended to help those who install scope mounts on M14 type rifles. If something does not fit easily, stop immediately and seek assistance from a professional gunsmith, preferably one experienced with M14 type rifles. Always make sure the rifle is unloaded prior to commencing any work. Wear eye protection. The author cannot be held liable for any damage or misfortune as a result of installing a scope mount on a rifle.

There are some common pitfalls that can be avoided making successful installation a reality. The task at hand is to securely attach the mount to the rifle so that it is parallel to the barrel line of sight. First and always, read the manufacturer's instructions carefully. If you don't have the instructions, obtain them from the manufacturer. Use the proper tools. This includes using a torque wrench calibrated in inch-pounds of force not foot-pounds of force. Additional tools may include 1/4 " drive socket for the receiver bolt, small flat tip jeweler's screwdriver, large flat tip screwdriver, 3 / 32 " pin punch to drive out the stripper clip guide pin, brass drift and

small hammer to remove the stripper clip guide and appropriate size hex head wrenches for tightening the mount in place. Manufacturers such as Atlantic Research Marketing Systems, Inc., Sadlak Industries, LLC, and Smith Enterprise, Inc. supply the necessary hex head wrenches. Hex head wrench sizes will vary from 3 / 16 " to 5 / 32 " depending on the make of the scope mount.

The stripper clip guide should be gently tapped out from right to left with the muzzle pointed away from the worker. DO NOT force the stripper clip guide out. It should be easy to tap out. Degrease the receiver bolt hole, the mounting bolt and all screw threads prior to installation. Be careful not to cross-thread any screw or bolt. DO NOT exceed the manufacturer torque specifications. DO use blue color Loctite 242 threadlocker as this will permanently attach the mount to the receiver. DO NOT use any other color Loctite threadlocker. DO NOT weld a scope mount to the receiver.

If need be, totally remove the screw from the mount stripper clip adjustable dove tail / guide key. Fit up the scope mount then gently slide the adjustable dove tail / guide key in from the right side, line up the dove tail and mount holes, then put in the screw.

Atlantic Research Marketing Systems, Inc. # 18 Scope Mounts - In addition to the instructions supplied, the following tips will assist the installer. Prior to fitting up the mount, make sure the threaded circular spacer in the rear rail pad is turned into the pad so that it is not touching the receiver stripper clip guide dove tail on fit up. If the receiver mounting bolt is overtorqued, a replacement can be purchased from Atlantic Research Marketing Systems, Inc. If the front rail pad set screw interferes with the barrel hand guard replace it. A proper thread size flush fitting set screw is available from Dan's Shooting Supply or a hardware store. This is a 6-40 fine thread 3/16 " hex head screw. Alternately, one can use the flash suppressor nut set screw after removing the bare narrow tip. This will help center the mount with the barrel in such instances.

Some commercial M14 receivers may have extra material at the top left hand front corner of the barrel ring. This may interfere with the fit up of the Atlantic Research Marketing Systems # 18 scope mount. Another tip is to use some modeling clay to indicate spots under the mount where the receiver is interfering. Apply a thin layer of modeling clay on the receiver where the mount fits against it. Put talcum powder on the under side of the mount to prevent the clay from adhering to the mount. Fit the mount up moderately snug. Then carefully remove the mount from the receiver. Observe where the mount is contacting the receiver. Using a Dremel tool with a sanding drum, carefully and slowly remove the interfering metal from the scope mount. Go slow. Repeat this procedure until all screws can be properly torqued.

If the receiver barrel ring is not interfering with the fit of the mount, check the fit of the vertical key (the key above the bolt hole) to the receiver vertical groove. It may be helpful to carefully and slowly reduce the width of the vertical key to compensate for too narrow a vertical receiver groove. Use a diamond cutter or carbide cutter in the Dremel tool for the vertical key. Use the highest speed with a VERY light touch. Brace your hands to steady the tool. If need be, use a magnifying glass to observe

the cutting of the the Dremel tool. Take your time to avoid removing too much metal from the mount. Touch up ground metal with cold blue.

Smith Enterprise, Inc. M14 Scope Mount - The company web site www.smithenterprise.com has installation instructions for its scope mount. Included in these instructions are directions for adjustment of the scope mount to minimize elevation and windage adjustments with the scope turrets. Replacement bolts and set screws are available from Smith Enterprise, Inc.

Online Sources

Amega Ranges, Inc. www.amegaranges.com

Atlantic Research Marketing Systems, Inc. www.armsmounts.com

Accuracy Speaks www.accuracySpeaks.com

Bassett Machine www.bassettmachine.com

Brownell's www.brownells.com

C. J. Weapons Accessories www.cjweapons.com

C S Gunworks www.csGunworks.com

Entreprise Arms www.entreprise.com

Global Defense Initiatives, Inc. www.gdiengineeredolutions.com

John Masen Company www.johnmasen.com

Leapers, Inc. www.leapers.com

Midway USA www.midwayusa.com

Sadlak Industries, LLC www.sadlak.com

Smith Enterprise, Inc. www.smithenterprise.com

Springfield Armory, Inc. www.springfield-armory.com

Talbot www.talbot.us

Unertal Optical Company www.unertloptics.com