



Engineering and Design Considerations of the M14/M1A CASM® Scope Mount

This mount is one of those design concepts that translates eventually, after months of research and development, into a finished product that is “simply elegant”. Most *good* designs are like that ... simply elegant and elegantly simple.

However, as many engineers have discovered, “simply elegant” and “elegantly simple” are not always simple to achieve. Some very complicated engineering considerations, compromises and choices were made to end up with this “*simple*” M14/M1A scope mount.

This new “*Four-Point*” design may appear similar to many of the previous generation of other so-called “*three point*” M14/M1A mounts available, but this new generation mount has some important differences:

- 1.] The M14/M1A rear sight pocket is used as *a large, solid and consistently dimensioned mounting surface area* for the back end of the mount. Previous generations of M 14/M1A scope mounts most commonly use the M14/M1A receiver side screw hole and the *much smaller* stripper clip guide dove tail slot, *both of which are often out of specification*. By using the rear sight pocket, a larger, more reliable and more secure rear mounting interface between the scope mount and the receiver is achieved.
- 2.] Given the much larger mounting surfaces inside the receiver rear sight pocket, the large screws used to connect the mount, and the close fit between the sight pocket and the CNC controlled scope mount mounting surfaces, the usual left side mounting leg can be left out entirely. This way, the mount construction can be simplified, and all those problems that can occur with the left side scope mount hole as a mounting point have all been eliminated. For example; no more loose side mount screws, no more rotation under recoil around that side screw (which leads to loss of vertical zero) and no more shimming to set the proper tension and windage for horizontal zero on out of specification receivers. Also, no more having to use Epoxy® or welding, and no more worrying about over-torqued side screws shearing off.
- 3.] This new M14/M1A CASM scope mount design *connects securely with the M14/M1A receiver at four different contact points*. Also an important consideration is that, while the contact point at the front of the scope mount may actually be redundant for security, that front screw is there to pre-load and pre-tension the mount to minimize mount flex during firing. To secure the front of the scope to the receiver so that they act, in effect, like one large mass instead of two separate legs of a tuning fork. Think of “Thud” instead of “Ping.” This proprietary spring loaded, pre-tensioned design is intended to minimize vibrations that can occur if the front were left free floating or “cantilevered”.
- 4.] The M14/M1A has a well deserved reputation as a scope destroyer. On the firing and reload cycle of an M14, there are lots of vibrations that can potentially be focused into a scope. The op rod and the bolt slam into the receiver both at the front and rear parts of the recoil cycle, which can cause the M14 rifle to ring like a bell. Poor mount design can focus or even amplify these vibrations into the scope. This back and forth “whiplash “ vibration cycle is one of the reasons the semi-auto action of the M14 may quickly break a scope that might survive for years on a heavier caliber, heavier recoiling single shot or bolt action rifle. This new scope mount design minimizes vibration forces with a proprietary 4-point retention setup that effectively “unitizes” the M14/M1A CASM® to your M14/M1A receiver .

5.] That 4-point retention system begins with the back of this mount tensioned up with an over-sized *5/16" half dog tipped* set screw, which rotates the mount around the two *tapered head 1/4" self centering* screws in the rear sight ears. This upwards tension at the rear forces the front of the mount tight to the front of the receiver. By design, the mount is installed with the front end a few degrees down from true to the bore horizontal. Then, the front of the mount is pre-tensioned up a tiny bit by another *5/16" half dog tipped* set screw.

6.] For greater security, both of the *5/16"* vertical adjusting/ tension screws and the tapered *1/4"* side screws are locked *immovably* in place by smaller locking set screws. Also included is a small tube of Blue Loctite®. This “belt and suspenders” approach to keeping all the screws effectively double-locked, and in securing proper retention of any settings, is designed to achieve absolute “bullet proof” security. All of these locking features ensure your mount won’t come loose...EVER. (*Unless you use the proper tools to make it come loose!*).

7.] This “*pre-stressed for vertical adjustment*” design, *with the front and back of the mount held tightly against rotation*, eliminates all variations in elevation due to mount shifting under recoil, which is a common problem with many of the previous generation “three point” mounts.

8.] *The sides of the mount are held securely in horizontal alignment with the bore* by tight fit in the rear sight pocket, and two large *1/4"* self-centering screws through the holes in the rear sight “ears”. These side screws are locked in place by smaller locking set screws. The large amount of high-strength 7075 alloy material in perfect contact with the left side of the rear sight pocket, plus the tight clearances between the mount and the inside of the receiver rear sight pocket, plus the thickness of the material purposely left in the mount under the picatinny rail, holds the mount securely against any *horizontal* flexing or movement. Beating on the scope mount with a hammer might move the zero, or break something loose, but short of that kind of abuse, *this mount is built to stay in place without any horizontal flex*.

9.] By using a large, solid rail with four large receiver to mount contact surfaces, and by using high quality, high strength 7075 material and Type III hard anodizing, this design eliminated the need for a side leg. That troublesome, and often out of specification left side scope mount hole, that too often loose left side scope mounting screw and that all too common discovery that no matter how much you adjust your scope sideways, you still can’t center/zero your scope with your rifle, is a thing of the past.

So there you have it some of the engineering details and years of experience behind the “*simple*” M14/M1A CASM mount.

Detailed installation instructions, spare screws, and a tube of Blue/removable Loctite are provided.

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