



M14/M1A LSP® Product Data Sheet

Specifications:

<u>Product Name:</u>	M14.ca LSP®
<u>Type:</u>	Mil-spec, Picatinny Rail M14/M1A Scope Mount
<u>Material:</u>	6061 Alloy, Type II Hard Anodized
<u>Colors:</u>	Black, FDE
<u>OAL:</u>	20.25"
<u>Weight:</u>	11.7oz. (Note: removal of the original hand guard and iron sights, net weight gain is 6oz.). (Weight is approximate).
<u>Compatibility:</u>	Fits all Blackfeather® "RS" stocks, all M14/M1A rifle stocks with minor modification). Note: At this time, fits standard contour barrels only.
<u>Company:</u>	The Upgrade Path Inc. for M14.ca
<u>Contact:</u>	Sales
<u>Web Info.:</u>	http://www.m14.ca
<u>Email:</u>	info@m14.ca

Shipping Components:

1 x 6061 alloy hand guard rail with Type II anodizing
 4 x 6-32 x 5/16" allen head screw (front brackets)
 3 x 6-32 x 1/4" tapered allen head screws (rear barrel bulge bracket)
 3 x 6-32 x 1/2" tapered allen head screws (rear barrel bulge bracket)
 2 x #8-32 set screw (sight ear lock screws)
 2 x 9/32" ID x 5/64" x 1/2" OD (1/4) nominal size washer
 2 x 1/4"-20 x 5/8" button head screw
 1 x barrel retention bracket, front
 1 x barrel retention bracket, rear + seating plate
 1 x M14 M1A LSP® instruction sheet
 1x Vial of Vibratite® Threadlocker (Blue, Meets MIL-S-46163A)
 1 x length of .002" alloy tape bracket shim (may or may not be required)
 (+Extra Screws)

Description:

The M14/M1A LSP® (Long Sight Plane hand guard/scope mount/accessory rail) replaces the original M1A/M14 hand guard and iron sights and uses a much larger, sturdier and more reliable fitment methodology to provide the lightest and longest single plane rail available for the M14 platform. It is designed to index perfectly on a Blackfeather "RS" equipped rifle, however, it can be installed to other M14/M1A rifle stocks such as wood, fibreglass and other aftermarket stocks.

The picatinny rail is approx. 20 1/4" long, weighs 11.7oz. and mounts firmly and rigidly to both the barrel and the rear sight pocket in the receiver. After removing the original M14 iron sights and the original handguard, the net weight gain to the rifle is approximately 6oz. and with a scope mounted, optics weight shift is noticeably rearward. In effect, the LSP® combines the mount design of the M14.ca CASM® receiver scope mount with the barrel mounted SHG (M14.ca Scout Hand Guard), in a precision machined, monolithic (one continuous piece), ultra long rail that is rigid, sturdy, and weighs about the same as the two other products combined.

Along with the long 20 1/4", 12 o'clock mounting location for scopes and iron sights, the LSP® includes mounting points at 3 o'clock and 9 o'clock for 4" lengths of picatinny rail, sold separately (these two rails ship with [Blackfeather "RS"](#) rifle stocks). The 4" rail sections are secured in a trackway (on each side), keyed into the LSP and are designed to be optically precise in several locations at 3 and 9 o'clock. Additional mounting points at 10 o'clock 2 o'clock are spaced correctly to allow installation of Magpul® polymer rail sections. While not recommended for optical precision, the polymer rail sections offer an economical and versatile, secondary alternative.

Notes

- 1. M14.ca LSP® compression methodology and proprietary bracket design ensures a tight, uniform fitment to the variety of M14/M1A barrels, some of which can vary in dimension significantly. Our design tightly "straps" the mount to the barrel with our custom designed, precision fitted, compression bands made from 4140 steel.*
- 2. We use a total of 12 fasteners and 2 proprietary steel barrel "straps" to deliver perfect fitment of rail to barrel and receiver. This follows our "belt and suspenders" design philosophy.*
- 3. Blackfeather stock owners are afforded an additional support and connection of rail to rifle due to the precise inletting that matches the Blackfeather RS's operating rod guide contour at the top.*

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M14/M1A Long Sight Plane Hand Guard/Scope Mount/Accessory Rail Introduction

The M14.CA Long Sight Plane Hand Guard/Scope Mount/Accessory Rail has been designed specifically to match, enhance and fit perfectly with the Blackfeather® “RS” stock. While primarily designed to be used as another *modular* component in the M14.ca Blackfeather® "RS" enhancement system, the LSP is also suitable for stand alone installation, and compatible with many other M14 /M1A type stocks, although with some other stocks some modification and fitting may be required.

When used as intended, in conjunction with a B/F stock equipped with the proprietary M14.ca Adjustable Operating Rod Guide [AORG], the close fit between the LSP® and the AORG ensures absolutely zero rotation and perfect vertical alignment.

The internal surfaces of the CNC precision machined LSP® match up with the external contours of the Blackfeather® “RS” AORG. Since the close fit of the AORG to the large support bosses inside the forearm of the stock also ensure perfect vertical alignment of the AORG within the stock, a properly installed LSP® will always be perfectly aligned with vertical, and will stay that way.

This “optically precise” fit, and the security of the massive contact surfaces aligning and maintaining this fit, are critical to ensure retention of zero with any optical devices installed on the LSP®.

The M14.ca LSP® rail is designed to be as long as possible and as light as possible, while still retaining rigidity, strength, and long term durability. The LSP® is precision CNC machined from aircraft grade 6061 alloy, with the internal barrel interface surfaces fitted to precise tolerances matching up to the barrel contours of a standard weight US GI barrel. At this time, the LSP® is not designed to fit “Medium” or “Heavy” weight barrels.

One departure from the CASM series of mounts is noteworthy. The CASM® scope mounts use tapered side mounting bolts to index perfectly off of the inside of the .375” holes in the rear sight ears. With the sometimes wide variations in tolerances of aftermarket receivers and barrels, the original *self-indexing* tapered bolts have necessarily been replaced with flat bolts and soft washers. This allows the new LSP® mount to “*free float*” slightly up or down to index perfectly with the barrel/bore line. The rear of the rail is then anchored securely to the receiver by the low profile, socket head side screws. The included soft crush washers will not chew up the sight serrations, tighten up nicely, and not loosen. The precision fit of the sight pocket inside the ears remains the same. In this new design, there is a bit of clearance built in to allow perfect alignment of the entire rail over both the barrel and the receiver, with no unwanted bending or flexing.

NOTE 1: The following instructions are intended for those mounting the LSP® to an existing Blackfeather® “RS” stock system, which includes the M14.ca proprietary Adjustable Op Rod Guide. The AORG provides perfect rotational/vertical alignment, and massive strength to prevent rotation or shifting with even the heaviest optics under the worst conditions.

NOTE 2: That being said, with two massive barrel clamps, the 12 individual screws with MIL-S-46163A threadlocker, and the precision rear sight boss that fits closely inside the rear sight pocket, even without the AORG, the M14.ca LSP® railed hand guard will still be as strong as or stronger than any other M14 hand guard system available to date.

NOTE 3: The rails on the LSP® alloy railed hand guard are designed to maintain optically precise alignment with the bore. They will maintain zero of precisely aligned critical optical equipment even when the upper part of the rifle [barreled receiver with LSP® attached] is removed for cleaning or for “swapping”. This is a major advantage over other alloy stock and railed hand guard designs. Like an AR-15, the Blackfeather “RS” stock and both hand guard systems have been designed so that various “uppers” are swappable into the same “lower” with no disruption to zero.

Note 4: The lower rails on the fore arm of the Blackfeather “RS” stock, while also precisely machined and fitted, can not guarantee perfect alignment and return to zero when the barreled receiver is removed and replaced into the stock. For this reason these lower fore arm rails are best suited for mounting equipment such as flashlights, etc., that do not require optical precision.

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M14/M1A Long Sight Plane Hand Guard/Scope Mount/Accessory Rail Installation Instructions

Tools Required

1. A 5/64" allen wrench
2. A 5/32" allen wrench

The tolerances on the railed hand guard are very precise, but unfortunately, given the slight variations in contour with even US GI standard barrels, the some times wide “out of spec” variations in after market “standard” barrel contours and also the receivers, some slight fitting may be required to achieve a perfect fit. Perfect fit is not actually required to still achieve suitable strength and optical precision. However, thin self-sticking alloy tape shims, and detailed installation instructions, are included.

NOTE: The front of the railed hand guard has a bedding surface that is noticeably tapered both ways. These tapers are designed to allow for fitting most barrels even with the rather generous variations in barrel outside diameter often seen at this location on the barrel. These tapers also allow for some slight fore and aft adjustment along the tapered barrel. The optical plane of the top of the rail has been designed to be as close to perfect longitudinal alignment with the bore as possible (and also with the rear sight pocket in the receiver) but only with US GI specification barrels and receivers.

START HERE

- 1.] Remove the M14 rifle from the stock.
- 2.] Remove existing hand guard.

OPTIONAL: For those attempting to achieve perfection in top of rail to bore alignment, measure the outside diameter [OD] of the barrel at the rear, and at the two clamping locations. Write down these measurements now.

- 3.] With hand guard up-side-down and resting on a solid flat surface, lay the barreled receiver into the LSP®. The tight precision fit of the internal mounting surfaces at the Adjustable Op Rod Guide will perfectly align the LSP® with vertical.

NOTE: a rubber mallet may be required to gently persuade the mating process between LSP® and AORG.

- 4.] Most M14 barrels are machined with a slightly angled under cut at the shoulder. When tightened down to proper draw and torque, the out side edge of the barrel shoulder usually distorts outwards a noticeable amount. Barrel diameter at the back, over the chamber, is supposed to be 1.100”. The internal dimensions of the barrel mating surfaces at the rear of the railed hand guard are designed to precisely fit that particular dimension. Check that the back of the hand guard has enough clearance from the barrel/receiver joint so that this raised portion is not interfering with the snug fit of barrel to hand guard at the rear end.

5.] Check that the barrel will actually fit into the front bedding surface, and how far down it goes into the tapered section. If the barrel goes all the way down to the bottom, but still is firmly held at the sides, your barrel is on spec for O.D., and should give near perfect top-of-rail to bore alignment.

6.] If the barrel is undersize here, it can move from side to side under impact, which could *theoretically* cause a slight deterioration in accuracy, or shift in zero. However, once the half round at the top front clamps are tightened up, drawing the barrel down, and holding it against the hand guard mounting surfaces, the top half round steel clamp sections should provide more than adequate security and strength.

To achieve perfection in barrel contact, security and bore alignment for those barrels a bit undersize at the front, a bit of shimming may be required. Simply add a piece of the included alloy tape, and apply to the inside of the front barrel mounting surfaces.

OPTIONAL: for those attempting to achieve perfection in top of rail to bore alignment, measure the distance at the front of the rail from the top of the rail to the bottom of the barrel. Subtract HALF of the barrel O.D. measurement. This is the distance from top-of-rail to bore centerline.

Now measure the distance at the rear of the rail, again subtract half of the barrel O.D. measurement. These numbers should be very close. Add or remove shim tape as required

7.] If satisfied with the fit and alignment, start clamping down the screws at front and rear. Go slowly here and for perfect fit, check the measurements again after tightening. The straps are designed to distort slightly under tension to closely adapt to the slight taper of the barrel. The screws are in oval slots which allow for considerable play here, and may or may not pull the clamps down tight enough to bottom out the clamps against the alloy surfaces of the hand guard. With the straps, work evenly with both sides, just like installing a steel scope ring.

NOTE: one side of the rear clamp mechanism comes with a small steel block threaded to accept the three long screws. Use one of the long screws to temporarily engage the threads on the middle hole of the steel block.. Once the clamp is drawn upwards enough for the shorter permanent screws to engage the threads, the shorter screws can be installed. This merely helps with alignment and eases installation. Note also that on one side of the steel block the threaded opening is tapered. The tapered side is installed down so as to allow easier alignment of the screws from the top down.

Proper alignment of rail to bore line can be checked / measured visually by placing the railed hand guard upside down on some precisely flat surface [like a sheet of glass], and eye balling for light under the rail. You can also use a fine [.002"] feeler gage to check at various locations. If required, add shim tape inside, between the barrel and the alloy bosses, or under the clamps to raise or lower at front and rear. Now check for alignment at the rear sight ears. The holes in the ears are nominal .375" and the new style flat head side bolts are nominal .250" so there is considerable margin for perfect alignment here. If the threaded holes in the rail do not line up perfectly centered in the larger holes in the rear sight ears, this is quite acceptable. Once tightened, the pressure from the flat head screws and crush washers is more than adequate to hold the rear of the mount firmly in place, in perfect alignment with the barrel.

Check the right side of the rear clamp to ensure that there is adequate clearance for the op rod to reciprocate without impacting the clamp.

If you are satisfied with the straightness and alignment of the rail top, *remove one screw at a time*, add Loctite to each individual screw, and retighten to where it was before.

8.] For those wanting even more rail space, you can purchase two more optional removable 4" rails. These rails can be mounted at the 3 o'clock and 9 o'clock positions. If you already own a Blackfeather "RS" stock, the 4" rails that were included with the stock may be mounted to the LSP® instead of the fore arm.

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M14/M1A Long Sight Plane Hand Guard/Scope Mount/Accessory Rail Installation Notes For Non-Blackfeather “RS” Rifle Stocks

While the Scout Hand Guard [LSP®] is primarily intended for use with the Blackfeather® “RS” [B/F] stock, and the Adjustable Op Rod Guide [AORG] that is part of the B/F system, the LSP® may be installed with other M14 type stocks. However, the recommended installation with the AORG will be more secure and align the top of the rail more precisely with vertical.

***NOTE:** The AORG of the B/F stock allows for “free floating” the barrel from the AORG forward. This design has demonstrated significant improvements in dampening barrel harmonics, and in some cases has improved accuracy.*

If mounting the LSP® to any stock still using a conventional fore end tensioning system, some care must be used to ensure that the design characteristics of the conventional tensioning system are retained. Specifically, the conventional fore end tensioning system requires some free play between the hand guard and the fore end, so that barrel is free to return to the [hopefully] same location after each shot. The steel tip of the fore end must have free movement within the U shaped lip at the bottom of the stock ferule. Otherwise the barrel may bind at different locations after different shots, and accuracy will not be optimum.

Mounting the LSP® to any conventional stock simply requires that adequate clearances between the hand guard and the fore arm be maintained.

Creating such clearances is a usual step in building any accurate M14 rifles ... even those with the conventional fore arm tensioning and fiberglass hand guards. For some stocks, zero modifications are required. For others, a few minutes with a Dremel or a file or sand paper may be required to create clearances between the clamp screws and the fore end, or else the bottom edges of the LSP® and the top edges of the fore arm.

***NOTE:** many US GI fiberglass stocks are twisted at the fore end, with one side noticeably higher than the other. These stocks may require extra internal reinforcing and more fiberglassing to correct such twisting. Simply sanding down the top edge is NOT the optimum fix for such cases. The black plastic Chinese stocks and most wood stocks seem to be fairly straight, and may or may not require much in the way of modification for clearances.*

1.] Aside from the clearance issues mentioned above, mounting a LSP® to a conventionally stocked M14 is the same as with a Blackfeather stocked version, with one major exception: because the Adjustable op Rod Guide is not there to provide instant and secure vertical alignment, extra care must be taken to ensure the top of the rail is true to vertical.

The best way to achieve this is to use two small straight bars about 6” long, one at the flat on the top of the receiver, and one at the front of the rail. Looking across these two bars will give a very precise indication of alignment. However, maintaining this alignment as the bands are tightened down must be done slowly, and checked often.

***NOTE:** Barrel harmonics with the M14 is a complicated issue. Each M14 can and often will exhibit strong preferences for ammunition type and for various modifications. Whatever you attach to your barrel can often have an effect on accuracy. We are marketing the LSP® for use primarily as a precision optical mount platform, and we make no claims that this hand guard will actually improve accuracy. However, several other semi auto rifles have*

demonstrated improved accuracy with the addition of a clamp on “barrel stiffener”. The LSP® effectively will act as such a barrel stiffener, and may reduce or make barrel vibrations act in a more consistent manner. Theoretically this may improve accuracy, but once again, we are not making any claims or guarantees for that.

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