

FULL AUTO

Volume one

AR-15 Modification Manual



Full Auto Vol. I

AR-15 Modification Manual

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Introduction

The purpose of this small book is to clarify and explain the procedure and parts needed to convert a semi-automatic AR-15 assault rifle to be a selectable, fully automatic weapon. Needless to say the actual conversion would be in violation of federal and various state and municipal laws and the reader is so warned.

While the author does not wish to get into a lengthy discussion on the pros and cons of various gun laws, it should be pointed out that had our forefathers not broken a few laws we would still be an English colony! Also, you cannot be arrested for possessing knowledge. It is in this context that this information is presented.

One can also debate the practicality of owning a fully automatic weapon. Except for a few "hosing down" operations most such weapons are used in the semi-automatic mode, anyway, so a logical question can be raised – why own one in the first place? That question will have to be answered individually and if your answer is in the affirmative then this little booklet will provide you with the necessary knowledge to easily put together such a weapon.



Fundamentals of Full Automatic Conversion

There are three basic ways to obtain a fully automatic weapon:

1. Buy it (both legally and illegally).
2. Build it from scratch. Various plans are available from several sources including this publisher.
3. Convert an existing semi-automatic weapon into a fully automatic version.

Since we are dealing with conversion procedures we will not discuss further the first 2 options.

Most active gun buffs remember the M-1 carbine and the "overdrive kits" that were in abundance several years ago. Both the semi-auto version (M-1) and the selectable fully auto version (M-2) were designed and produced during WWII. The M-2 was merely an afterthought adaption of the M-1. No design effort was expended to prevent the conversion of M-1's that was to become popular in later years. M-1's were plentiful as were the M-2 parts necessary to "roll your own" M-2.

Up until that time, there was no law covering the conversion parts just as long as they were not assembled with the weapon, at which time (naturally) the weapon was considered fully automatic and fell under applicable laws. For quite some time a lot of full auto buffs kept their "overdrive" kit separate from their carbine and all was well — but not for long. With the infamous 1968 Gun Control Act came the

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ruling that such complete conversion kits were the same as a machine gun — the fun was over.

The chain of events concerning the AR-15/M-16 are somewhat different. The civilian, semi-automatic version of the M-16, the AR-15 came about after the M-16. With the Vietnam War tuned down, the gun manufacturers had tons of parts and production lines functioning. The weekend warriors were ready for a new toy and hence the great sales volume of the AR-15 was a natural happening.

With the full auto version being manufactured first, some changes were in store to prevent the ease of conversion as in the case of the M-1 carbines, first of all the full-auto sear, its pin and related hole in the lower receiver were eliminated. Also, the bolt carrier, trigger, disconnect, select lever, and hammer were redesigned to effect semi-automatic operation only. A point of vulnerability was the fact that M-16 parts mentioned previously would interchange and function in an AR-15 rifle — the only exception being the auto sear because the AR-15's lower receiver did not have a hole for the auto sear's pin.

Naturally, it was possible to locate and drill a hole in the AR-15 lower receiver. However, it was also an excellent way to screw up an expensive rifle. Also, once done, there was no easy way to convert back to semi-automatic if so desired. No doubt a few were so converted. However, such practice never became a popular or wise thing to do.

Necessity being the mother of invention, little time evolved before a device entitled "drop-in auto sear" became available. This was a specially designed auto sear pinned to its own small housing that would "drop-in" or otherwise fit into the cavity machined into the rear part of the lower receiver after the take down pin was removed and the upper and lower receiver groups were pivoted apart. Of course, the bolt

AR-15

carrier, trigger, disconnect, hammer and selector lever had to be replaced with the same of M-16 heritage.

WARNING — WARNING — WARNING

Countless individuals undoubtedly have replaced the aforementioned lower receiver group parts — secreted away their auto sear and felt both "ready comes the day" and safe from legal entanglements for possessing a fully automatic weapon. Were they correct? — Wrong!

With the M-16 parts in place minus the drop-in auto sear an AR-15 can still fire 2 or more rounds with one pull of the trigger — unreliably and unsafely — but still sufficient for 5 in Leavenworth. It so happens that when the selector lever is placed in the full auto position the disconnect is prevented from catching the hammer on its return trip, allowing it to follow the bolt forward and "slam fire" the next round — hopefully in full battery. The dangerous aspect is that it is possible for detonation to occur before full battery has been obtained. If the BATF is really on your case all they have to prove in court is the fact that you possess a weapon capable of firing 2 or more rounds with one pull of the trigger. They can accomplish this by various "dirty tricks" such as specially constructed ammunition or repetitive firings.

While on the subject of legal technicalities one small facet of the 1968 Gun Control Act should be focused on: "—any combination of parts designed and intended for use in converting a weapon into a machine gun, and any combination of parts from which a machine gun can be assembled if such parts are under the control of a person." What does this mean? It means that if the BATF so desires they can interpret the mere possession of the forementioned M-16 parts as possession of a machine gun!!! You say you don't own any

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M-16 parts — wanna bet? Many AR-15's are available that have been pieced together with surplus parts and a commercially available lower receiver. Some of these AR-15's have been known to contain a "full house" of M-16 parts. Also, factory fresh, out of the carton AR-15's have been known to contain one or more M-16 parts. A natural question at this time is just what do the M-16 parts in question look like and how do they differ from the same AR-15 part? We hope to answer these questions in the next chapter.

Another natural question is: if you already own a legal, semi-automatic AR-15 can you legally (with BATF approval) convert to full automatic? The latest word is yes by completing a BATF Form 1 (before you acquire any parts necessary for the conversion). Naturally, a \$200.00 tax will have to be paid and any further transferring of the weapon will have to be under BATF guidelines. If you have further questions on the subject we suggest you contact your local BATF office for information.

M-16 vs AR-15 Parts

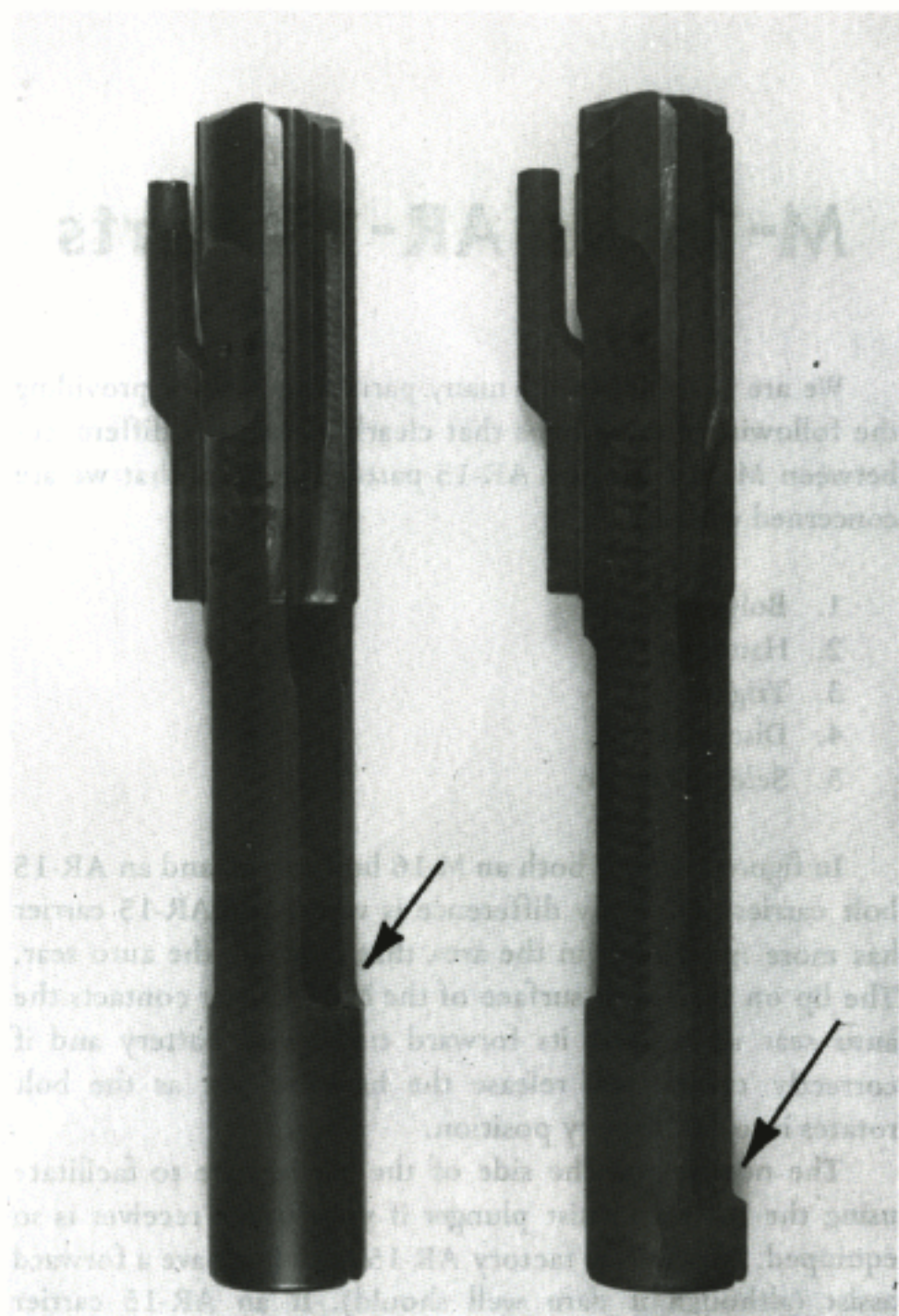
We are thankful to the many parts suppliers for providing the following photographs that clearly depict the differences between M-16 parts and AR-15 parts. The parts that we are concerned with are:

1. Bolt carrier.
2. Hammer.
3. Trigger.
4. Disconnecter.
5. Selector Lever.

In figure 1 we see both an M-16 bolt carrier and an AR-15 bolt carrier. The only difference is where the AR-15 carrier has more machining in the area that contacts the auto sear. The lip on the lower surface of the M-16 carrier contacts the auto sear as it nears its forward travel into battery and if correctly timed, will release the hammer just as the bolt rotates into full battery position.

The notches on the side of the carriers are to facilitate using the forward assist plunger if your upper receiver is so equipped. Normally a factory AR-15 does not have a forward assist (although it darn well should). If an AR-15 carrier contains these notches as does the one pictured here, it denotes that it was manufactured from an existing M-16 carrier. In figure 2 is shown an M-16 bolt carrier — chrome plated but without forward assist notches. All of the other

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M-16 Bolt

AR-15 Bolt

FIGURE 1

AR-15

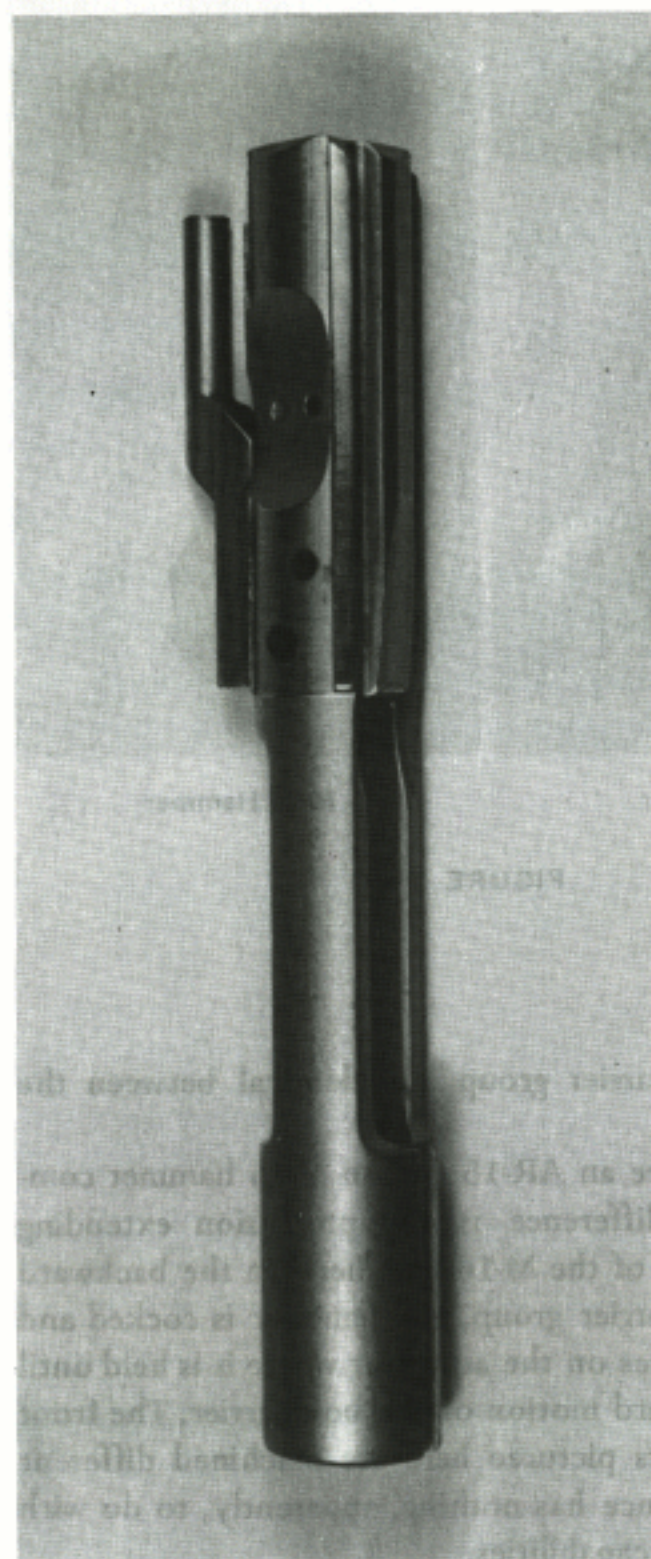
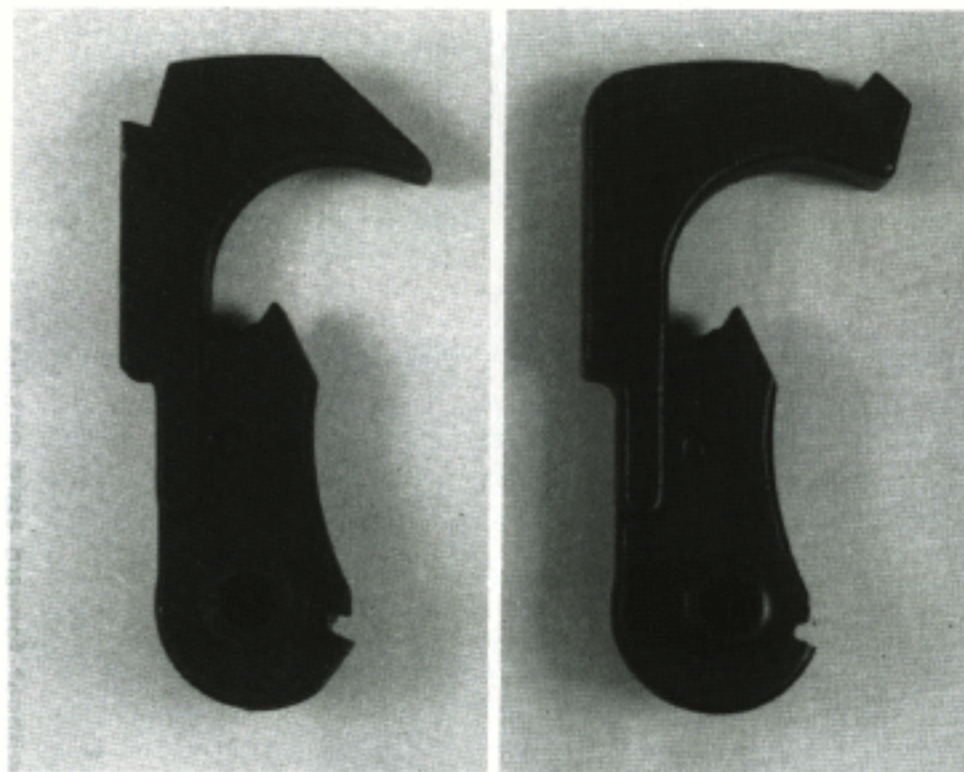


FIGURE 2

Photo of M-16 bolt, chrome plated, without forward assist notches.

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AR-15 Hammer

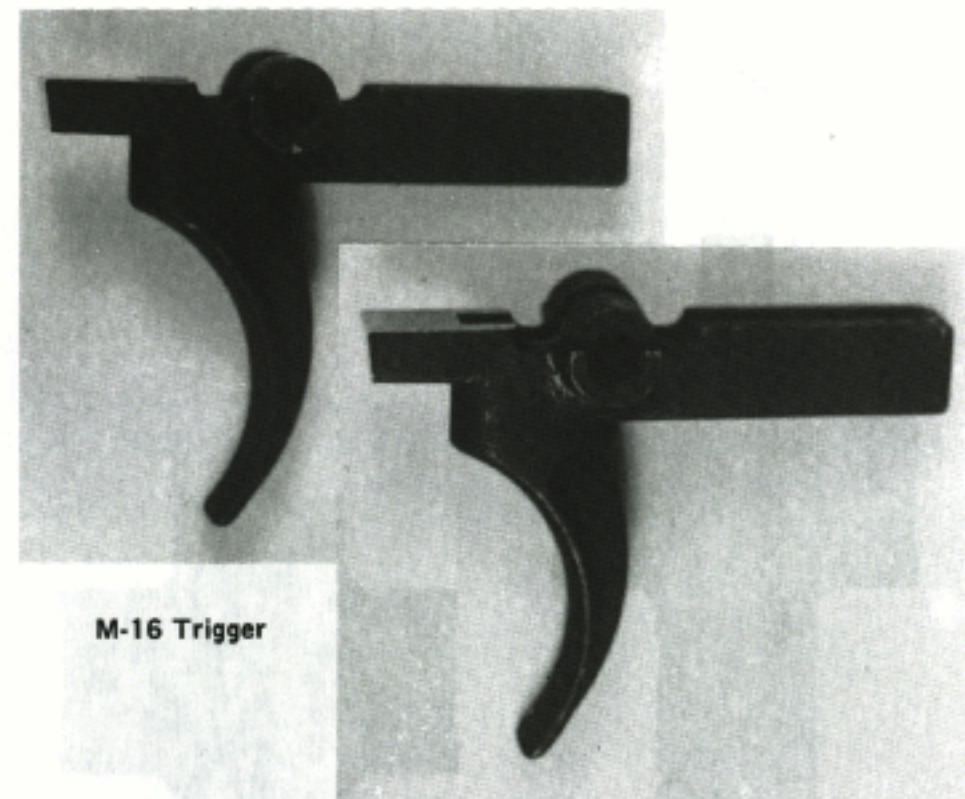
M-16 Hammer

FIGURE 3

parts on the bolt carrier group are identical between the AR-15 and M-16.

In figure 3 we see an AR-15 and an M-16 hammer compared. The basic difference is the protrusion extending upward on the back of the M-16 hammer. On the backward travel of the bolt carrier group, the hammer is cocked and this protrusion catches on the auto sear where it is held until tripped by the forward motion of the bolt carrier. The front face of the hammers pictured here are machined different although the difference has nothing, apparently, to do with the auto functioning capabilities.

AR-15

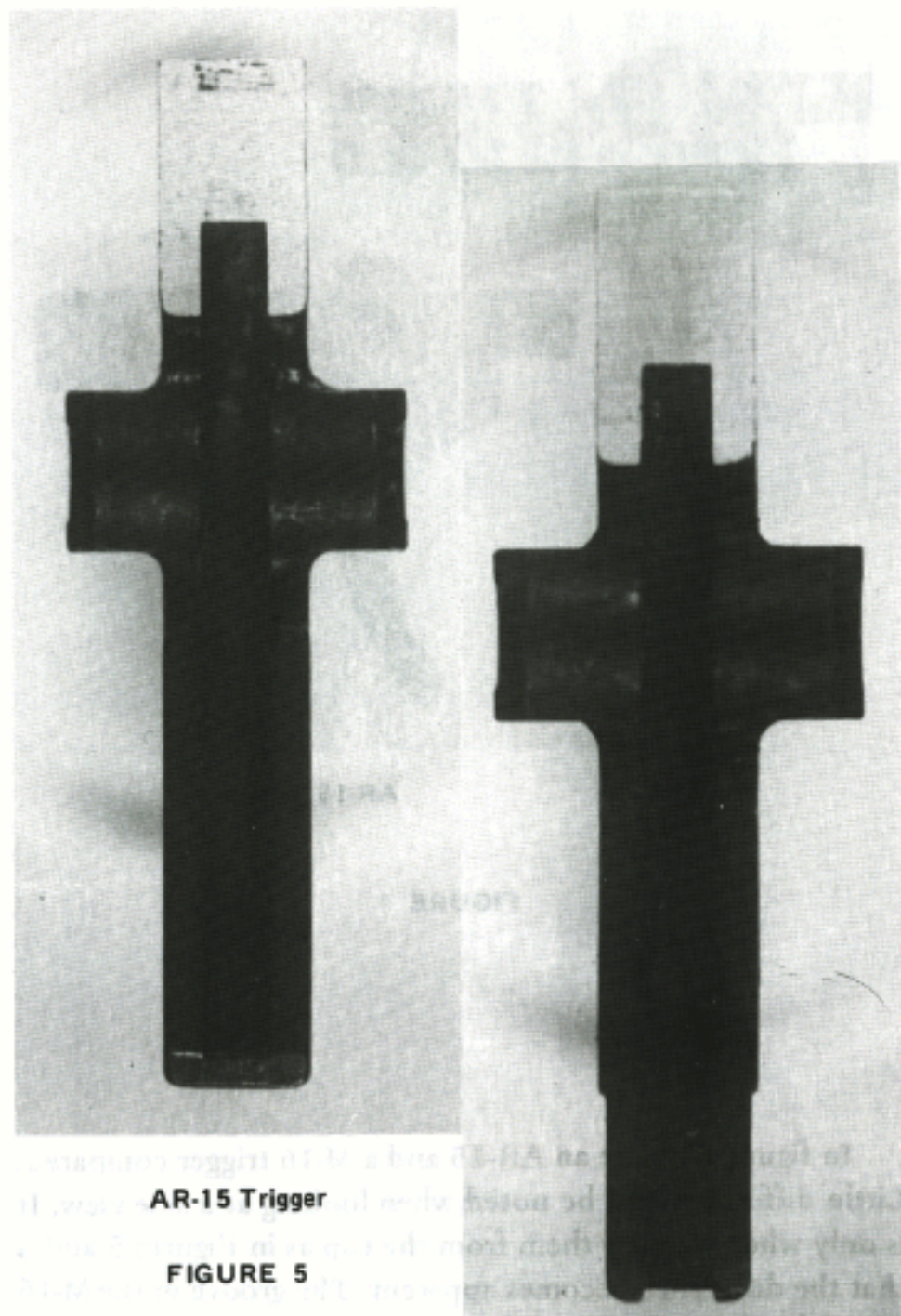


M-16 Trigger

AR-15 Trigger

FIGURE 4

In figure 4 we see an AR-15 and a M-16 trigger compared. Little difference can be noted when looking at a side view. It is only when we view them from the top as in Figures 5 and 6 that the difference becomes apparent. The groove in the M-16 trigger has been machined through the rear where the AR-15's groove stops short of breaking through. This longer groove is necessary to facilitate the longer disconnecter which we will look at next.

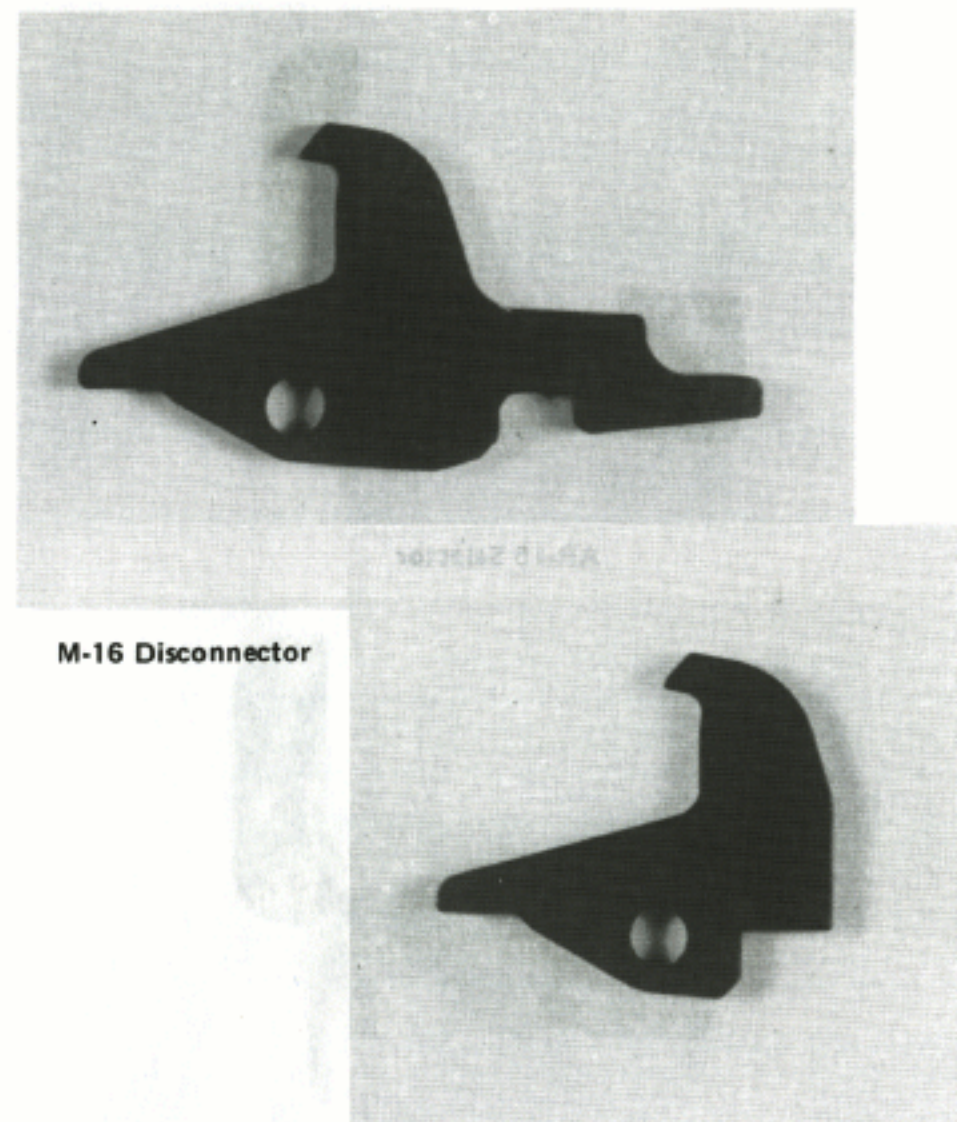


AR-15 Trigger

FIGURE 5

M-16 Trigger

FIGURE 6



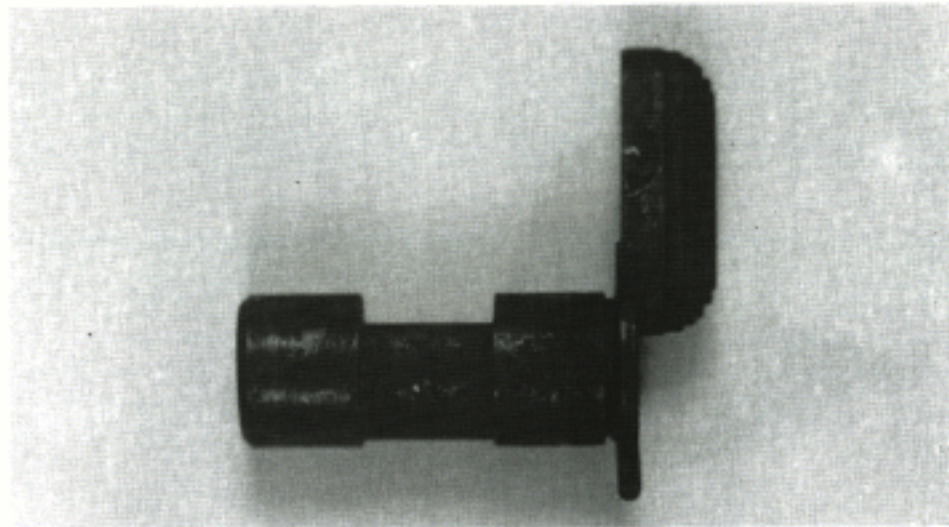
M-16 Disconnector

AR-15 Disconnector

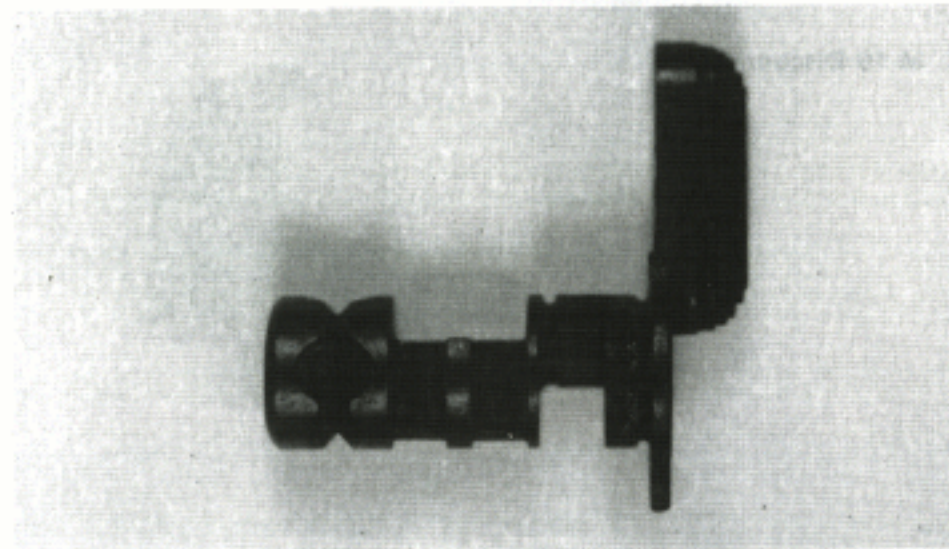
FIGURE 7

In figure 7 we see both versions of the disconnector compared. The M-16 version has a longer "tail" which extends rearward when installed in the lower receiver. This "tail" engages a specially machined groove in the M-16 selector lever.

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AR-15 Selector



M-16 Selector

FIGURE 8

In figure 8 we can easily see the difference between an AR-15 selector lever and one for an M-16. The M-16 version has several differences such as: an extra detent position for fully auto; a radial groove that allows the disconnect to disengage when in full auto mode; additional grooving that "unsafes" the trigger in full auto mode.

AR-15

While on the subject of M-16 parts it should be noted that a part known as a carrier converter is now commercially available from at least two suppliers. This part attaches to the lower rear of an AR-15 bolt carrier to allow it to function the same as its M-16 counterpart. As long as the M-16 carriers remain available at a reasonable price these may or may not be a worthwhile addition. Rumors that they "shake loose" have been heard, although, if the threads of the two allen head screws were doped with loctite, the part should stay in place and function the same as a M-16 carrier. Figure 9 shows the part and figure 10 shows it installed on an AR-15 bolt carrier.

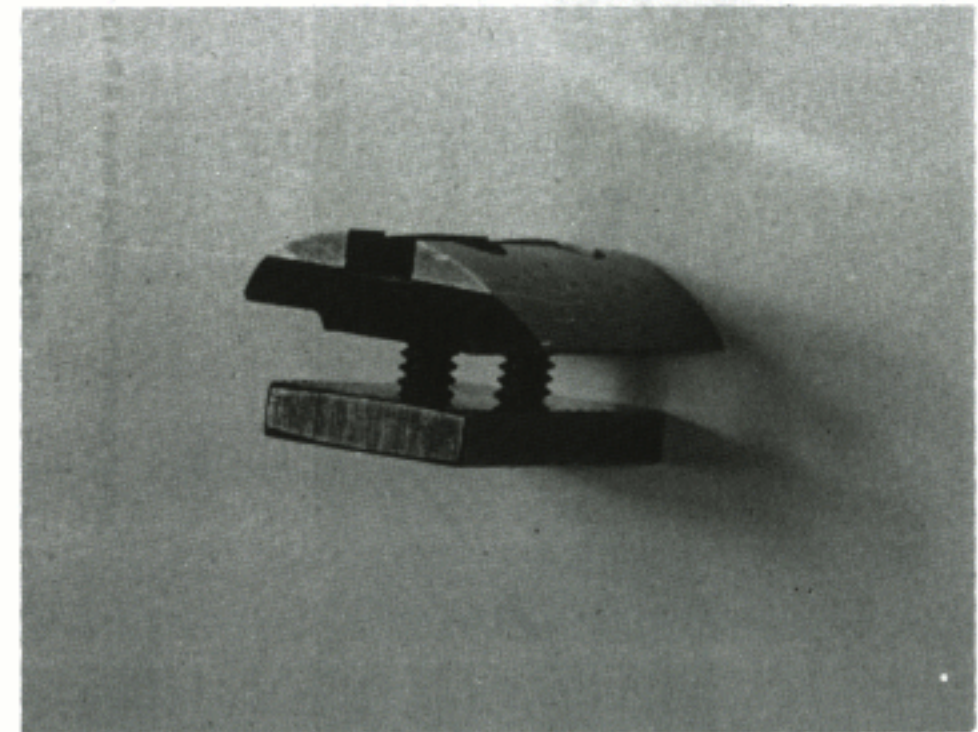


Photo: Courtesy SAC

SAC's Carrier Converter

FIGURE 9

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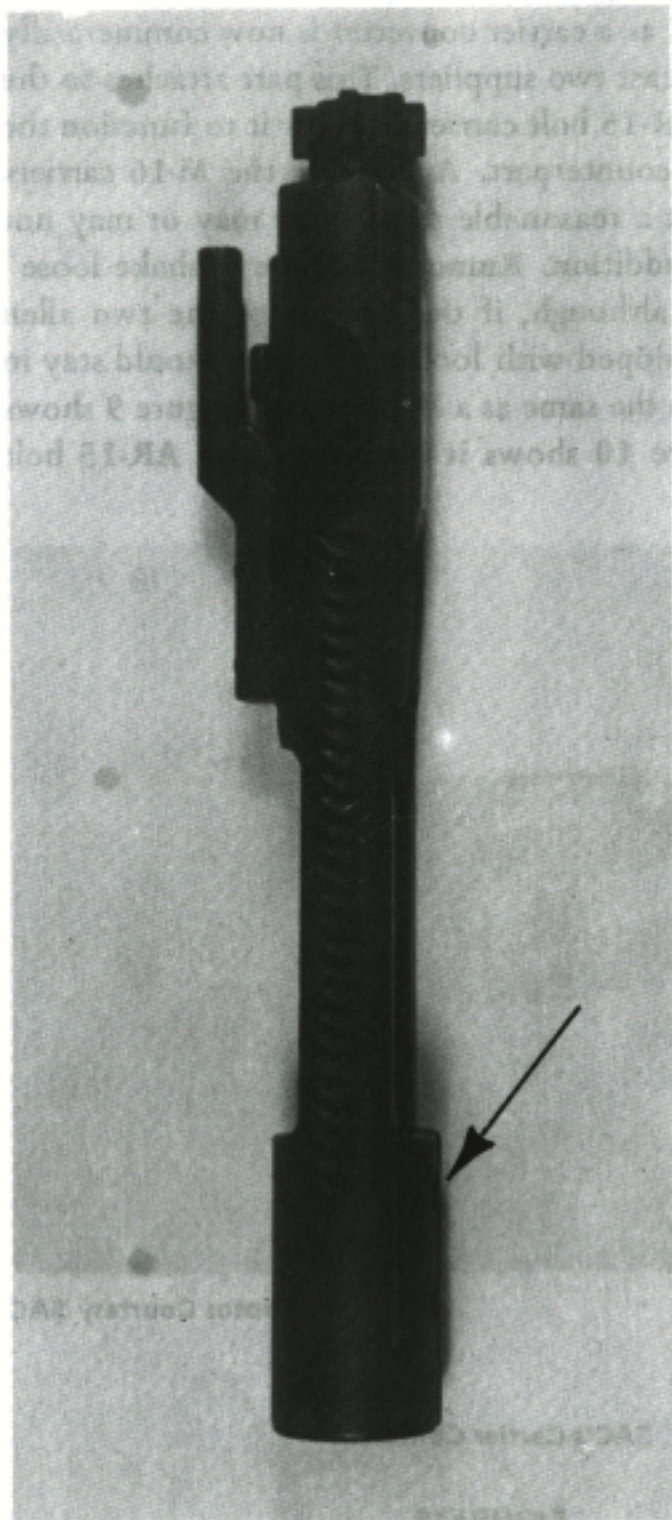


Photo: Courtesy SAC

Carrier converter installed on an AR-15 carrier.

FIGURE 10

AR-15

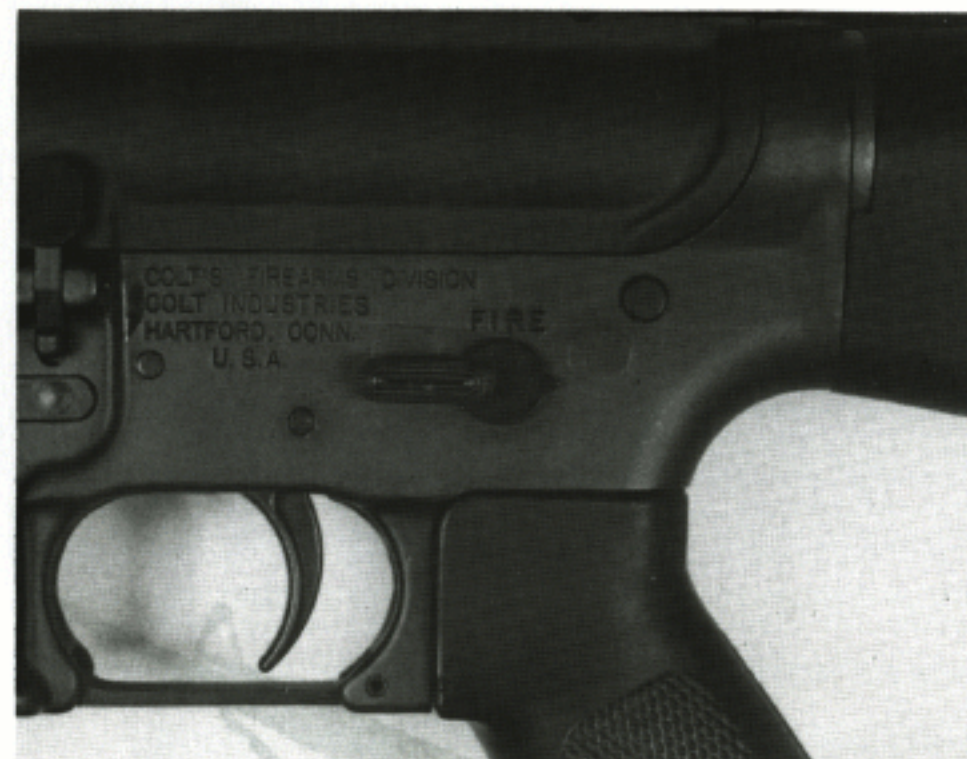


FIGURE 10A

With M-16 lower receiver parts installed the selector lever (or safety if you wish to call it that) can be positioned as shown in Fig. 10 allowing full auto fire.



The Drop-in Auto Sear

In figure 11 an auto sear is being inserted into the pocket of the lower receiver where the take down pin engages the lug of the upper receiver, Figure 12 shows the auto sear fully installed, ready for the receiver to be closed.

It should be noted at this time that in addition to the standard "factory issue" AR-15 it is not uncommon to find ones made up from Colt parts and the lower receiver of some other heritage. One of the most popular is the one manufactured by Palmetto Armory which appears to equal or exceed Colt's. One difference worthy of pointing out is that the machined pocket of the Palmetto is slightly different from the Colt's investment cast pocket. The majority of "drop-ins" studied revealed that they had been machined to fit the Colt and would not readily fit the Palmetto without a little "file-to-fit" hand work. One auto sear appeared to have been designed to fit both receivers. Oddly enough it happens to be one of the lowest priced units.

If you care to examine a copy of *The Shotgun News* which was published in 1980 or 1981, you will find that it carries advertisements for quite an assortment of drop-in auto sears. The prices will vary between \$29.00 and \$95.00. While preparing this volume for its initial publication in the fall of 1981 we examined several of these auto sears and found that the quality varied from excellent to horrible. One specimen of the latter category appeared to have been ma-

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FIGURE 11



FIGURE 12

AR-15

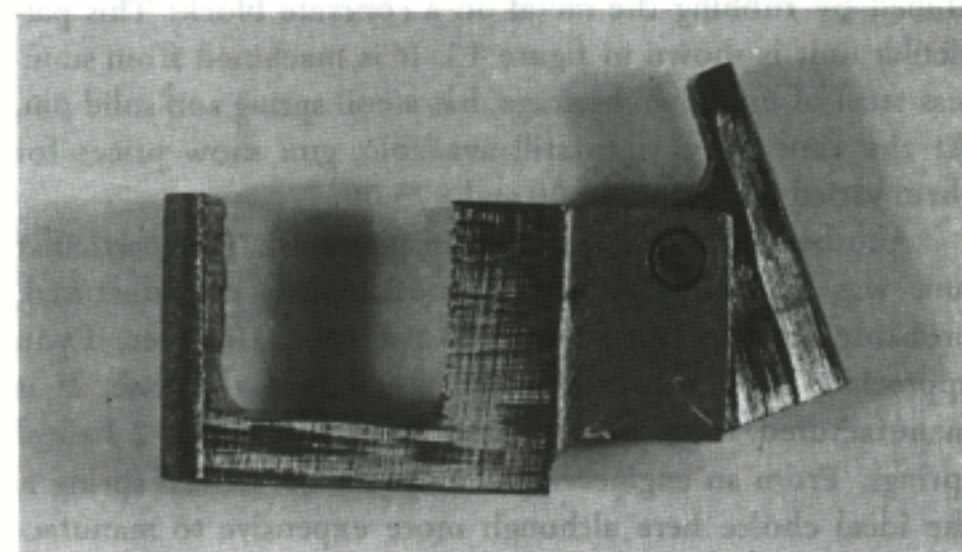


FIGURE 13

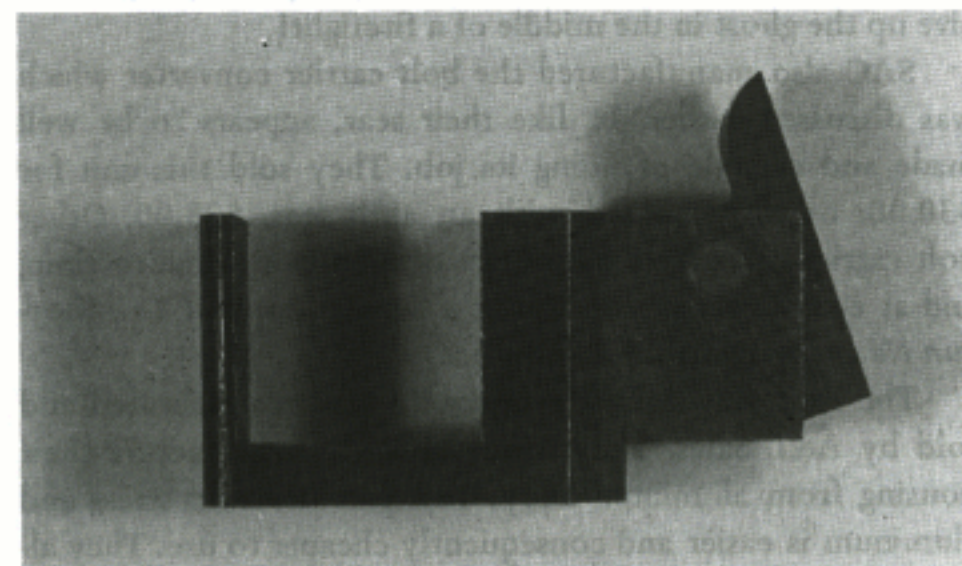


FIGURE 14

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chined by rubbing the metal on a concrete block! This particular unit is shown in figure 13. It is machined from stainless steel of unknown heritage, has a coil spring and solid pin. At the time they were still available, gun show prices for them varied between \$40.00 and \$75.00.

Another auto sear is shown in figure 14. This particular unit was made by SAC and is meticulously manufactured, probably more so than you would ever need. However, if you appreciate good machine work, you'll love this one. It is manufactured from heat treated steel and sports 2 helical springs. From an engineering standpoint the helical spring is the ideal choice here although more expensive to manufacture. The advertised price was \$74.95, and SAC's advertising stated that they had tested their unit for 5 million cycles without a spring failure. Another advertiser of units using coil springs also sold replacement springs. Most suppliers guaranteed their units, which was great so long as your spring didn't give up the ghost in the middle of a firefight!

SAC also manufactured the bolt carrier converter which was discussed earlier. It, like their sear, appears to be well made and capable of doing its job. They sold this unit for \$30.00, or if purchased with an auto sear, \$25.00. Other bolt carrier converters have been offered from time to time, and at even lower prices. Check a current copy of *The Shotgun News* for availability and price.

The auto sear shown in figure 15 was manufactured and sold by A&L Sales. They wisely chose to manufacture their housing from aluminum alloy. This part bears no stress and aluminum is easier and consequently cheaper to use. They also used a roll pin in place of a solid pivot pin. This was good engineering as the roll pin would function fine and didn't require a precision hole as would a solid pin. The net result of these two features was a cheaper to manufacture unit. One other feature worth noting was the part of the sear that con-

AR-15

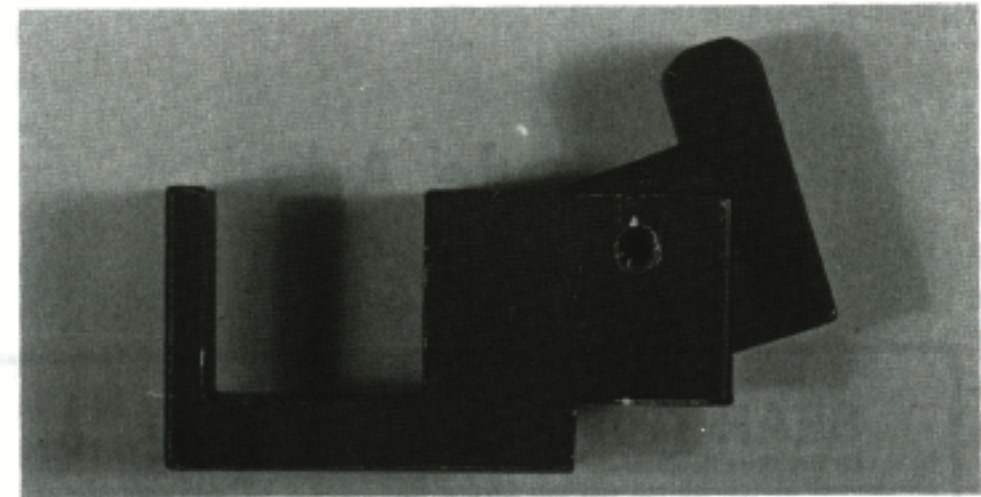


FIGURE 15

tacts the bolt carrier. The A&L unit is much beefier in this area when compared to other units. Although we have no personal knowledge of failure in this area, it stands to reason that this part is subject to a lot of stress and could be a problem if made too "skinny".

Cost reducing was evident in A&L's sales price of \$29.00 each + \$2.00 shipping. An interesting plus for the A&L unit was the fact that their housing was so made as to fit both Colt lower receivers and the commercially available ones that are becoming more common daily. A&L claimed to have originated the auto sear in 1976, and apparently they were intent on giving the competition a run for its money.

You have been shown the features, pros and cons of three different drop-in auto sears which were readily available in the early 1980's. Although the companies that made them are gone, the auto sears themselves are, of course, still around. Those that are documentable as having been manufactured prior to November 1, 1981, are at the present time still legal to own without any BATF paperwork. Any manufactured after that date are classed as machine guns and must be registered with the BATF.

Sample Ads

AR-15 Auto-Sear
SEAR TRIP
for Repair or Replacement



SEAR TRIP **\$19.00**
+ \$1.00 Shp/Ins.

Pivot Pin **\$1.50** + 50¢ Shp/Ins.

Operating Spring **\$5.49** (Pkg. of 2) + 50¢ Shp/Ins.

Sear Base N/A

Machined from solid steel bar stock, completely finished and ready for use! Fully compatible with most pre-November 1 '81 Auto-Sears as well as currently available Auto-Sear replacement bases.* Perfect for building your own AR-15 Auto Sear or upgrading your "cheap" Auto-Sear made from aluminum or pot-metal!

*AR-15 Auto-Sears manufactured or assembled after Nov. 1, '81 require proper ATF registration.

AR-15 to M-16 Bolt Carrier Conversion



No longer is it necessary to discard your AR-15 Bolt Carrier and buy an M-16 Bolt Carrier - at \$80.00 or more - to complete your conversion. This precision-made device installs directly onto your AR-15 Bolt Carrier and converts it to M-16 specifications at a fraction of the cost of a new Bolt Carrier. It's completely functional and reliable, and only an allen wrench is necessary for installation.

M-16 BOLT CARRIER CONVERSION
(Suggested List \$25.00)
Special Price Only **\$21.07**
+ \$1.00 Shp/Ins.

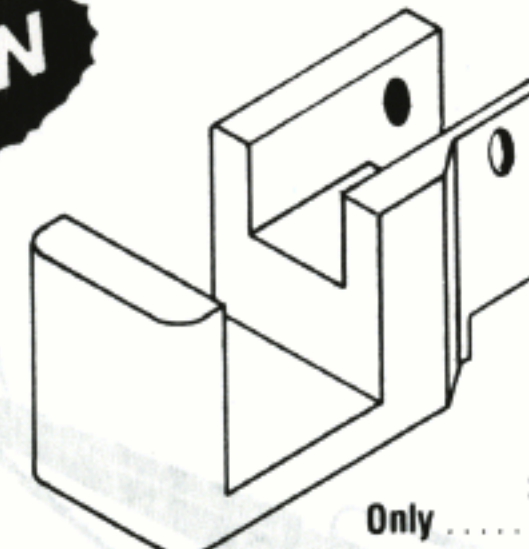
(*SEE PAGE 39)

AR-15 Auto-Sear

SEAR BASE

for Repair or Replacement

NEW




Only **\$29.88**
+ \$1.00 Shp/Ins.

Now Available! Machined from solid steel bar stock, completely finished and ready for use! Fully compatible with most pre-November 1, '81 Auto-Sears as well as currently available Auto-Sear replacement parts. Perfect for building your own premium quality AR-15 Auto-Sear or upgrading your "cheap" Auto-Sear with the aluminum or pot-metal base!

Sorry...
Sear parts!

cannot supply any other AR-15 Auto-Sear parts!

HOURS: M-F 1-7 pm



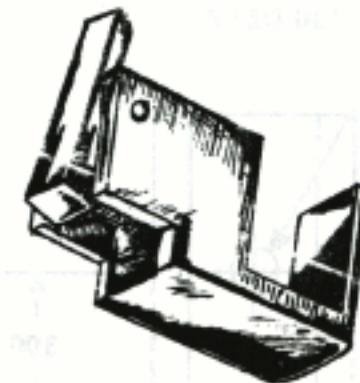
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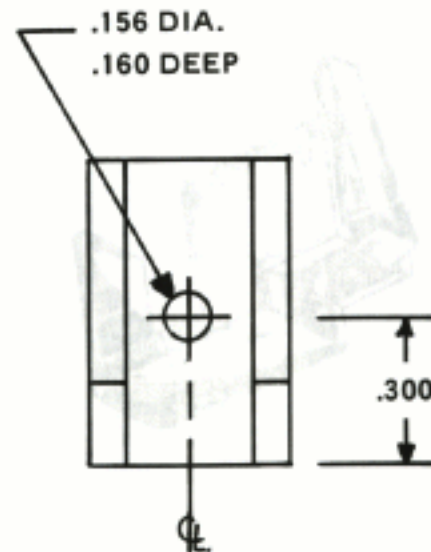
Drop-in Auto Sear Drawings

Few individuals have a machine shop equipped with a milling machine and even if they did it is doubtful if they could produce an auto sear as cheap as they could buy one now. However, we have included drawings for one version. All dimensions are nominal and receivers will vary because of tolerance differences. Therefore, a home brew auto sear will, of necessity, be a file to fit situation.

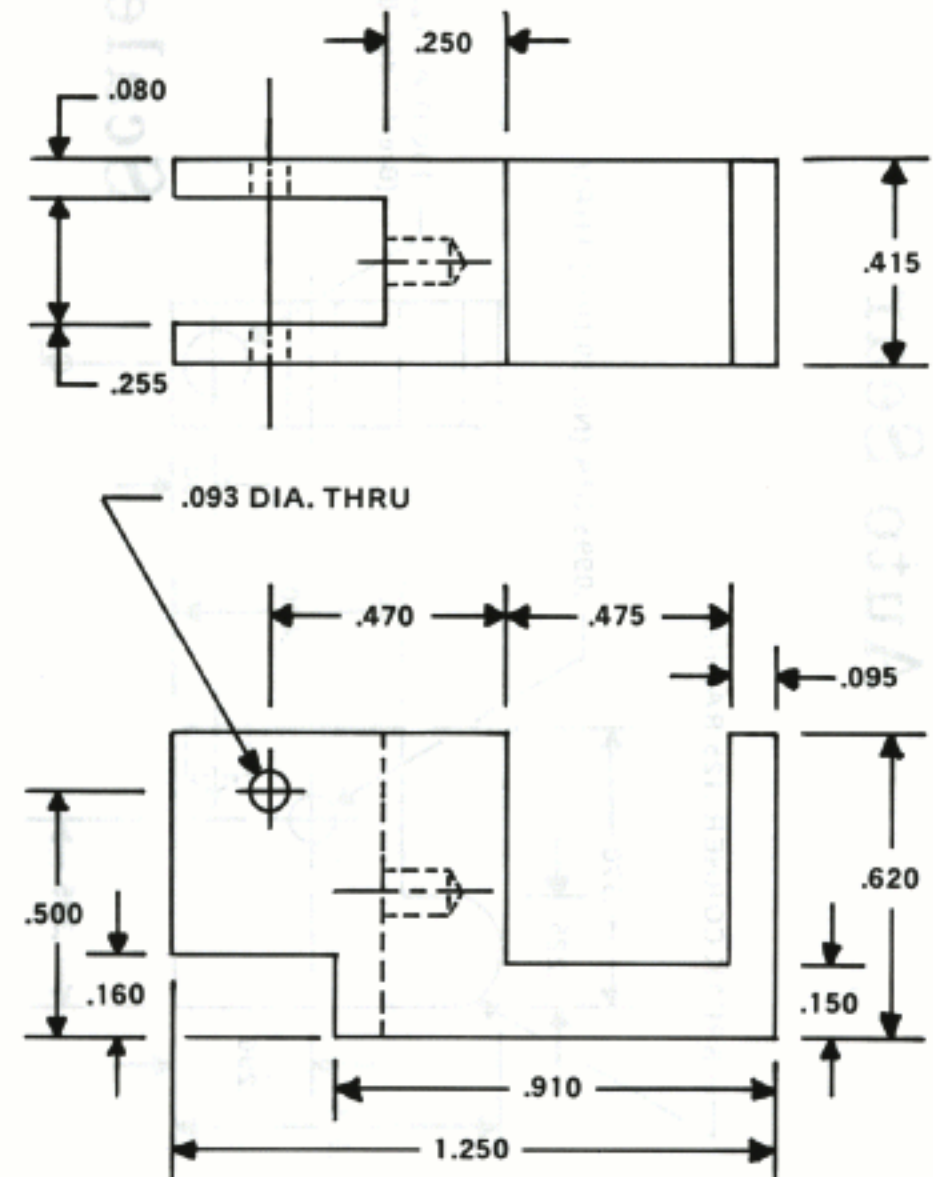


Auto Sear Housing

Scale = 2:1

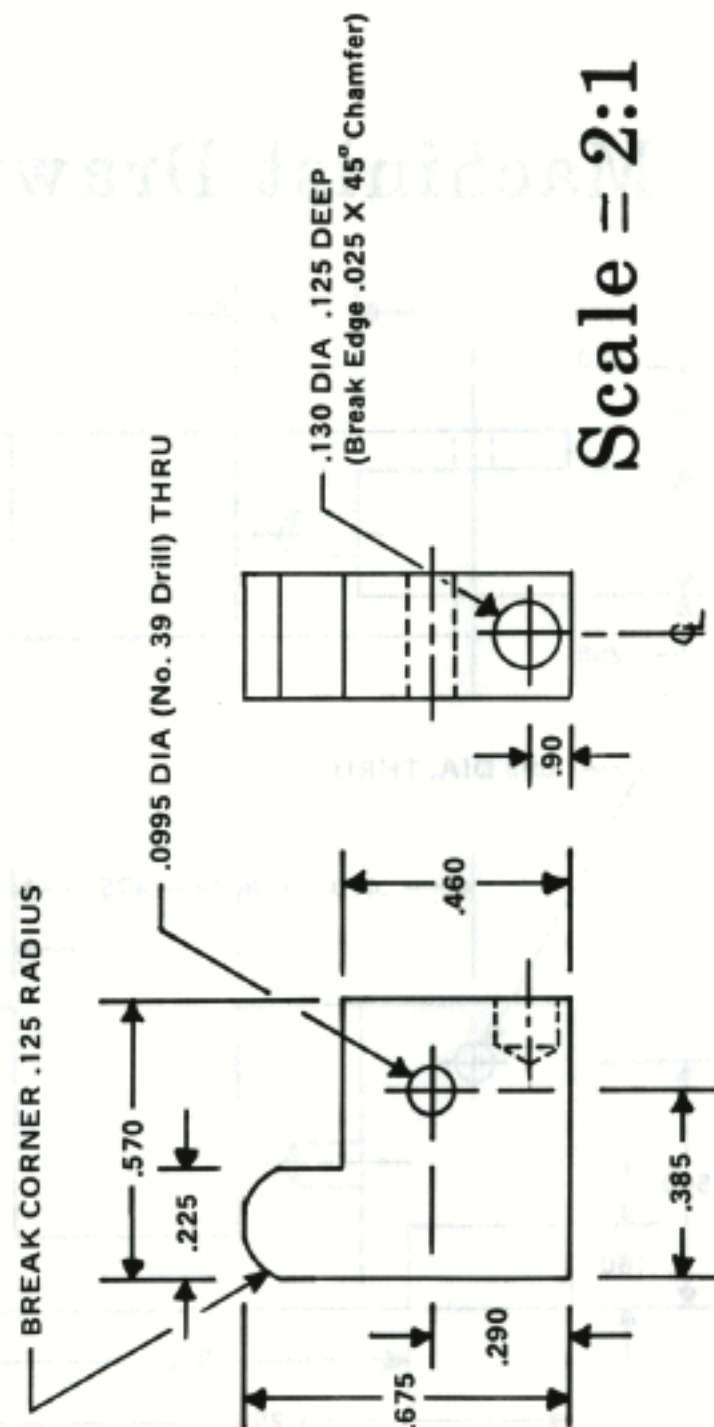


Machinist Drawing



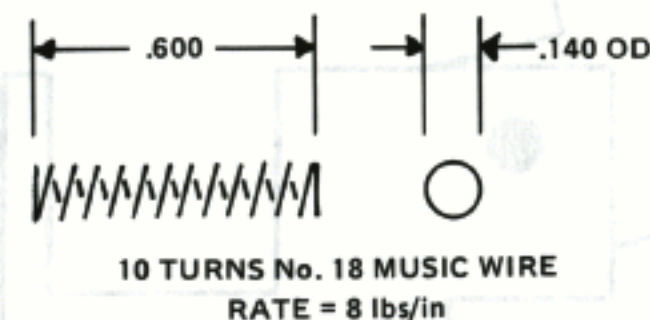
Auto Sear

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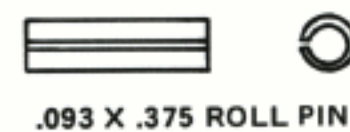


AR-15

Misc. Parts

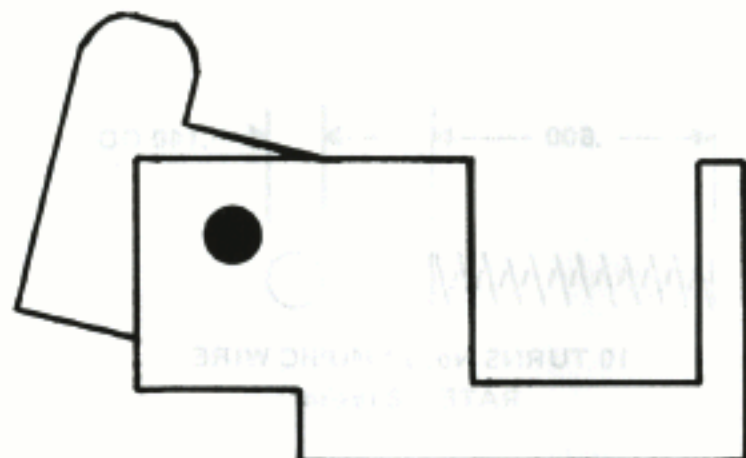


Spring



Roll Pin

Final Assembly



Conversion Update

WARNING!

The Bureau of Alcohol, Tobacco and Firearms, in **BATF Ruling 81-4**, has ruled that auto sears are conversion kits and fall under the registration and other provisions of the National Firearms Act, and as such are classified as machine guns. *The ruling does not affect auto sears made prior to November 1, 1981.* Auto sears made prior to that date are exempt from the BATF ruling, but those manufactured after that date (whether homemade or of commercial manufacture) are subject to it.

With the issuance of the above ruling shortly after this volume was first published in 1981, the AR-15 conversion picture has undergone a number of changes. Not the least of these is the disappearance of ads for auto sears which had run in *The Shotgun News* and other gun publications. These have been replaced by ads for individual *parts* for auto sears, available from separate firms (see pages 24 and 25). Some firms are also advertising auto sears guaranteed to have been made before November 1, 1981. For awhile one firm that did the latter headlined their ad with a photo of a man whose facial

features had been blanked out and the caption, "I bought one, and I don't even own an AR-15!" Someone working for that company certainly understood ad psychology! The blanked out facial features (probably of a professional model, anyway) led potential buyers to believe that they could retain a degree of anonymity when buying. Along the same vein, the caption's message seemed to be: "You'd better buy one now, even if you don't have an AR-15. You may be able to get an AR-15 later, before the balloon goes up, but auto sears won't be available then!"

As is the case with the Colt Government Model .45 auto, AR-15's and M-16's are in such demand that a number of other firms have begun marketing new, commercial parts for them, especially upper and lower receivers. Some enterprising gun dealers are combining these with commercial CAR-15 folding stocks and handguards, or the traditional buttstock and handguard, either GI surplus or new barrels and internal parts to make finished guns.

Serious shooters are often concerned about a gun's performance "out of the box". In the case of these guns, it's a question of performance "out of the parts bin". However, this is not an attempt to disparage against such weapons. Far from it! When assembled by a competent individual using carefully selected parts, a parts bin gun can equal or exceed a factory gun both in performance and in overall quality.

SGW, Inc., manufactures M-16 lower receivers which can be purchased through Class III dealers. These lower receivers are, of course, registered with the BATF and anyone wishing to purchase one must go through the same paperwork and pay the same \$200.00 transfer fee as they would if purchasing a complete M-16. However, once they had the legal lower receiver they could then either build an M-16 from scratch or mate it to an AR-15 upper receiver and substitute

the M-16 internal parts discussed on pages 7-17. While Federal law may not prevent you from carrying a legally registered M-16 in certain areas, state or local laws might. Let's say you live in an area where there are no local restrictions on automatic weapons and you want to compete in a rifle combat match in an area which prohibits them. By re-installing the original AR-15 lower receiver and internal parts you would then be legal in the competition area since the only part of the gun (whether an automatic weapon or a single shot) which is subject to record keeping is the serial numbered receiver. Of course, the "once a machine gun, always a machine gun" philosophy of the BATF applies to that receiver whether it has been mated to other parts to form a complete gun or not.

The same applies to auto sears made after November 1, 1981. They are classified as machine guns and must be registered with the BATF, subject to \$200.00 transfer tax and all. The logic which makes auto sears manufactured or assembled prior to a certain date non-subject to regulation and those after that date subject to it escapes us, but that's bureaucracy for you! One might speculate that the BATF felt a need to take some action against a device which was obviously intended to turn the AR-15 into an automatic weapon, but they didn't want to come down too hard on anyone since most of the auto sears were probably only used to turn their owners' AR-15's into "part-time" automatic weapons or were secreted away in drawers as insurance in the event of any number of survival scenarios actually materializing. Whatever the reason, the fact remains that any auto sear manufactured or assembled today is classified as a machine gun and is subject to regulation.

The pre-November 1, 1981 auto sear manufacturers have either gone out of business or diversified into other lines of

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products under different names. However, one can well imagine that they enjoyed a thriving auto sear market while they had it. No one knows just how many were sold while they were unrestricted, but the number must be into the tens of thousands, judging from the number of firms that offered them and the length of time some of them were in business.

With auto sears now facing the same restrictions as whole machine guns, and a lot less secure (someone could literally walk away with your auto sear "machine gun" in his shirt pocket), the prospect of assembling an M-16 from scratch or substituting an M-16 lower receiver and internal parts on an existing AR-15 becomes a much more viable solution than it was when this volume was first published. The substitution method is certainly cheaper than having *both* an M-16 and an AR-15 and has other advantages as suggested in the example of the rifle combat match previously cited.

As mentioned earlier, some parts bin guns can actually equal or exceed factory built guns in quality. One of the reasons for this is that some parts manufacturers like Essential Arms Co. have made minor changes in their parts to improve their performance. Essential's lower receiver has a redesigned magazine release guard and improved radiusing. This lower receiver is compatible with Colt parts and is sold by the L. L. Baston Co.

A list of suppliers of parts and accessories for the AR-15/M-16 family appears on pages 37-39. While it would be virtually impossible to list every single source of spare parts, etc., every effort has been made to include every reputable firm of which we are aware.

AR-15

Amherst Arms
512 Main Street
Laurel, Maryland
(Replacement parts, accessories)

Assault Systems
826 Horan Drive
St. Louis, Missouri 63026
(Quality rifle cases and related soft gear)

L. L. Baston Co.
2101 N. College
El Dorado, Arkansas 71730
(Lower receiver)

Brock's Surplus, Inc.
Box 33242
Decatur, Georgia 30033
(Bayonets, tools, cleaning gear, etc.)

Cadre Supply
P.O. Box 22074
Memphis, Tennessee 38122
(Spare parts, tubular buttstock)

Crown City Arms
P.O. Box 1126
Cortland, New York 13045
(AR-15, M16 upper & lower receivers, match barrels, flash suppressors, etc.)

E & L Manufacturing Co.
2102 W. Coolbrook
Phoenix, Arizona 85023
(Brass catchers)

Feather Enterprises
2500 Central Avenue
Boulder, Colorado 80301
(Accessories)

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Federal Ordnance, Inc.
1443 Potrero Avenue
South El Monte, California 91733

J & G Sales, Inc.
440 Miller Valley Road
Prescott, Arizona 86301
(The Keeper System, magazines, ect.)

Leadership Keys, Inc.
P.O. Box 2130 A
Farmington Hills, Michigan 48018
(Armson O.E.G. Binocular Combat Gunsight)

Lone Star Ordnance
P.O. Box 121006
Arlington, Texas 76012
(Round fore-ends, combination barrel nut wrench
and disassembly tool, pistol grip)

Nesard
P.O. Box 56
Lake Zurich, Illinois 60047
(CAR stocks, lower receiver parts sets, spare parts)

Numrich Arms Corp.
West Hurley, New York 12491
(Spare Parts)

Rock Island Armory, Inc.
111 E. Exchange Street
Geneseo, Illinois 61254
(XM-15 lower receiver)

Sarco, Inc.
323 Union Street
Stirling, New Jersey 07980
(M16A1 upper receivers, magazines, spare parts, field
accessory kit, etc.)

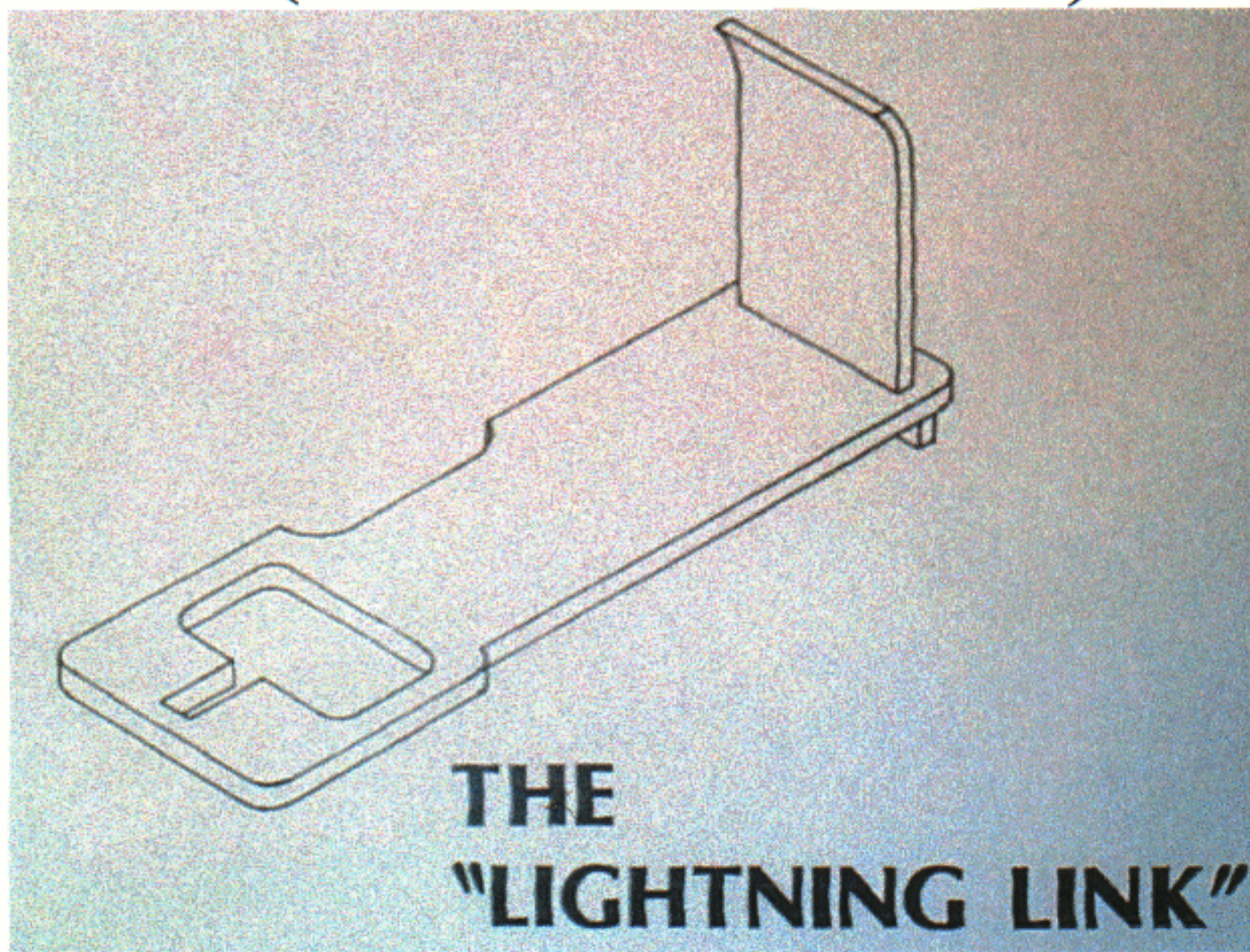
AR-15

SGW, Inc.
624 Old Pacific Highway, S.E.
Olympia, Washington 98503
(Upper & lower receivers made to military specs,
upper & lower receiver assemblies [less receivers],
all AR-15 and M-16 parts)

Sherwood International
18714 Parthenia Street
Northridge, California 91324
(Spare parts, magazines, clip holder to mate two
magazines bottom to bottom, bipods, Colt
scopes & mounts, etc.)

*(*Names and addresses of these advertisers have been deleted
since the status of manufacturers and distributors changes al-
most daily. These ads are shown merely as samples of what
was available at time of publication. For a listing of AR-15
and M-16 parts and accessories which are presently available,
check a current copy of The Shotgun News, Box 669, Has-
tings, Nebraska 68901, published three times a month.
Annual subscription rate in the U.S. is \$15.00.)*

Lightning Link Plans (for the AR-15 rifle)



The parts for the Lightning Link can be made from tool steel, machined with great precision, hardened and tempered with loving care, the polished to a high gloss that your mother would be proud of. On the other hand, using only a couple of pieces of power hacksaw blade to make the parts from, a dremel tool, hand drill and one or two files to do the work, you can cut out the Lightning Link in about an hour.

The first description will make a link that you could most likely pass on to your great grandkids. The second may not last that long, but I know of one made from mild steel, that has never been hardened or

tempered. It's been used to fire over 5,000 rounds, and still going strong. All that ever goes wrong with it is the part of the bolt carrier hits gets peened over after about five or six hundred rounds. When that happens, the woman that owns it drops it out of the gun, puts it on the rear bumper of her jeep and beats it back in shape with a rock. She's then back in business for a few hundred more rounds.

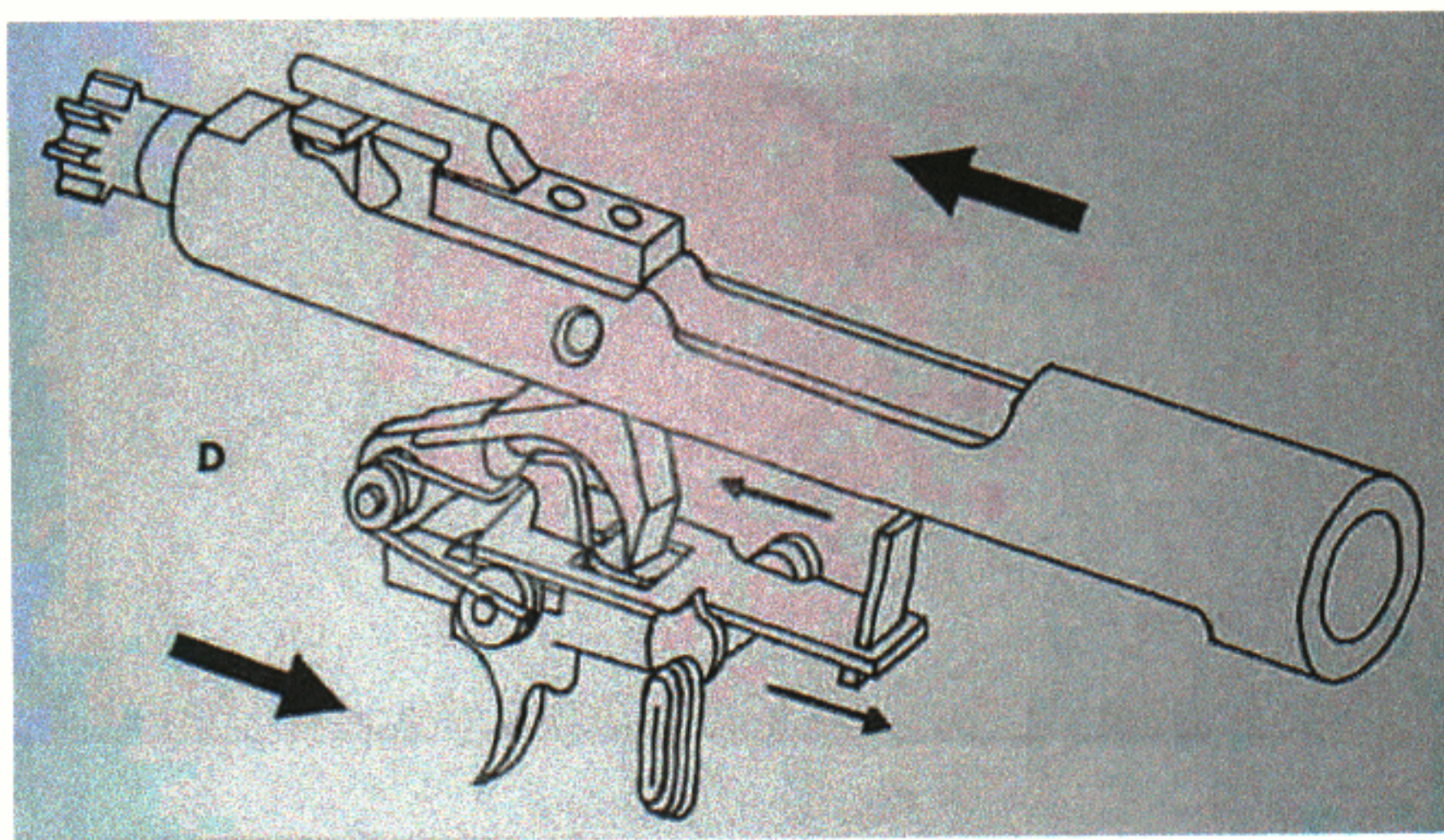
The only complaint I've ever heard about the Lightning Link is it converts the firearm to full auto only. I can't see that's a problem. No one says you have to hold the trigger down until the magazine's empty. I've found with a little practice it's easy to fire two shot bursts using the Link.

Also keep in mind; that it takes only about ten seconds to install the Lightning Link in a standard unaltered AR-15, and only about six seconds to remove it. Going from semi-auto to full and back to semi is only a matter of seconds.

THE WAY IT WORKS

In normal semi-auto operation the hammer is cocked by a rearward movement of the bolt carrier, as the carrier moves forward, the hammer is caught and held in the cocked position by the sear located on the forward part of the trigger catching in the sear notch, on the hammer. If you hold the trigger after a shot's fired the sear will not catch in the hammer's sear notch when the hammer cocks because the sear is depressed below the arc of the hammer notch.

What happens is because the trigger is being held back, the disconnecter hook is tipped forward and in position to catch the hammer, stopping it from following the bolt carrier forward. When the trigger is released, it allows the hammer to slip from under the disconnecter hook and be caught by the trigger sear in the hammer sear notch. Making it necessary to pull the trigger for each shot.



Lightning Link

As long as the trigger is held back, the sear is held below the arc of the hammer notch. The only thing holding the hammer in the cocked position is the disconnecter.

The Lightning Link accomplishes full-auto fire by pullnig the disconnecter to the rear forcing it to release the hammer.

The assembled link lays flat in the lower reciever, with the opening at the front fitting over the hook of the disconnecter, and the upright resting between the upper reciever take-down pinpost, and the bolt carrier.

In operation the take-down pin post acts as a fulcrum point. When the bolt carrier strikes the top of the links upright the lower end is rocked to the rear, moving the body of th elink backward about 1/16 inch, releasing the hammer from under the disconnecter hook. As long as the trigger is held back the rearward movement of the bolt carrier will cock the hammer under the disconnecter hook. The forward movement of the carrier willstrike the upright of the link just as the bolt locks in battery, releasing the hammer, and firing the weapon. When the trigger is released, the sear will stop the hammer in the cocked position negating the operation of the disconnecter and the Lightning Link.

BUILDING LIGHTNING

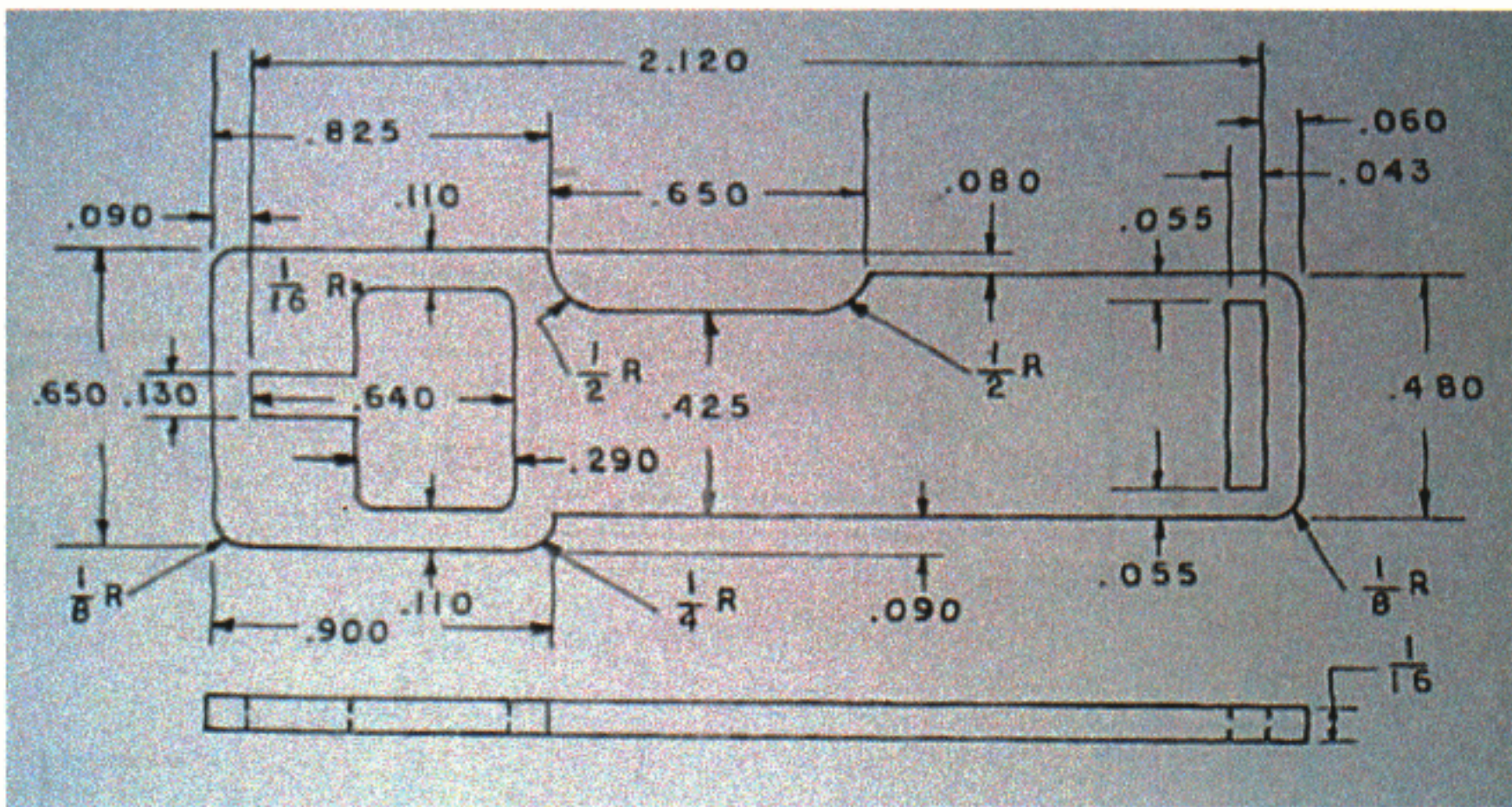
The drawings show the shape and give the dimensions for a Lightning Link that fits in teh Colt AR-15. If it's to fit in an after market lower reciever it may be neccessary to change the outside dimensions. Either way, all that's really important is that it fits inside the reciever and can move back and forth about 1/16 inch.

When building the Lightning Link without a milling machine I find the simpliest way is to cut the long piece to the length and width. Next center punch and drill a 1/8 inch hole at each corner of the large oblong hole at one end. With a dremel tool and banded cutoff wheel cut out the material between the four holes you drilled.

Next center punch and drill a 1/8 inch hole so you can cut out the .130 wide tail that extends out of the oblong you have already cut. NOTE....Do not square off the end of the .130 cut at this time.

Center punch and drill a 1/32 inch hole at each end of the .043 slot at the other end of the part. Cut the slot out with the dremel too and bonded cutoff wheel. Square the ends and finish the slot using a needle file.

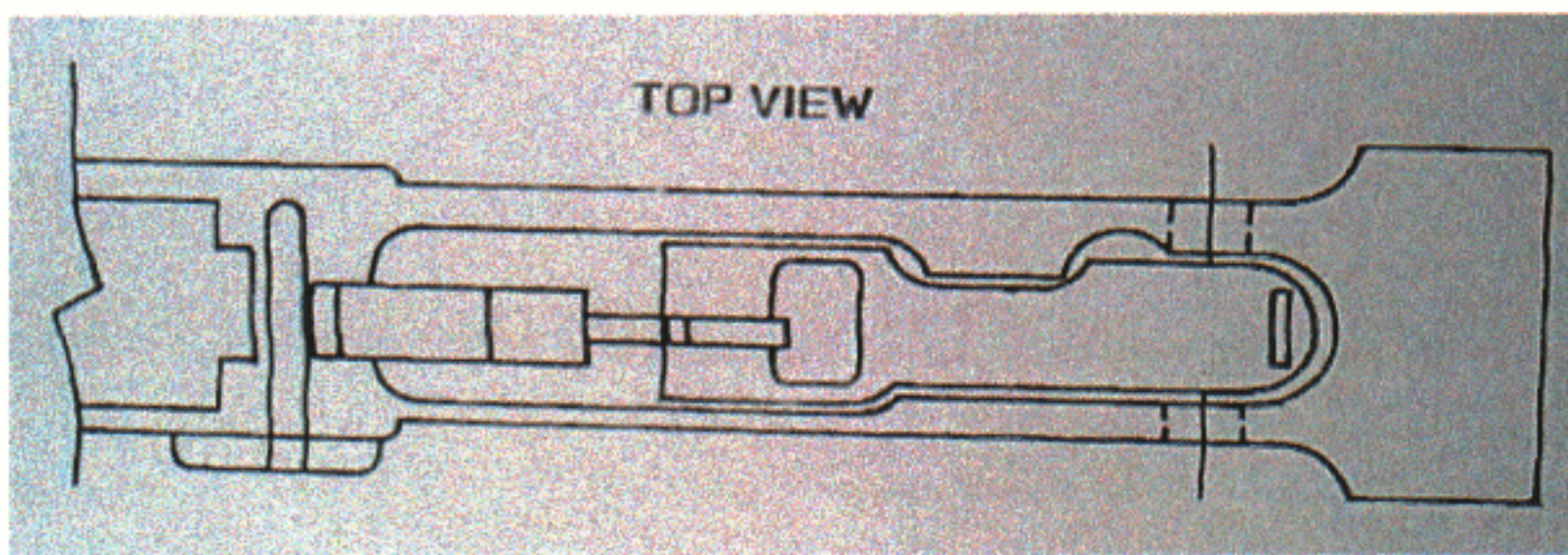
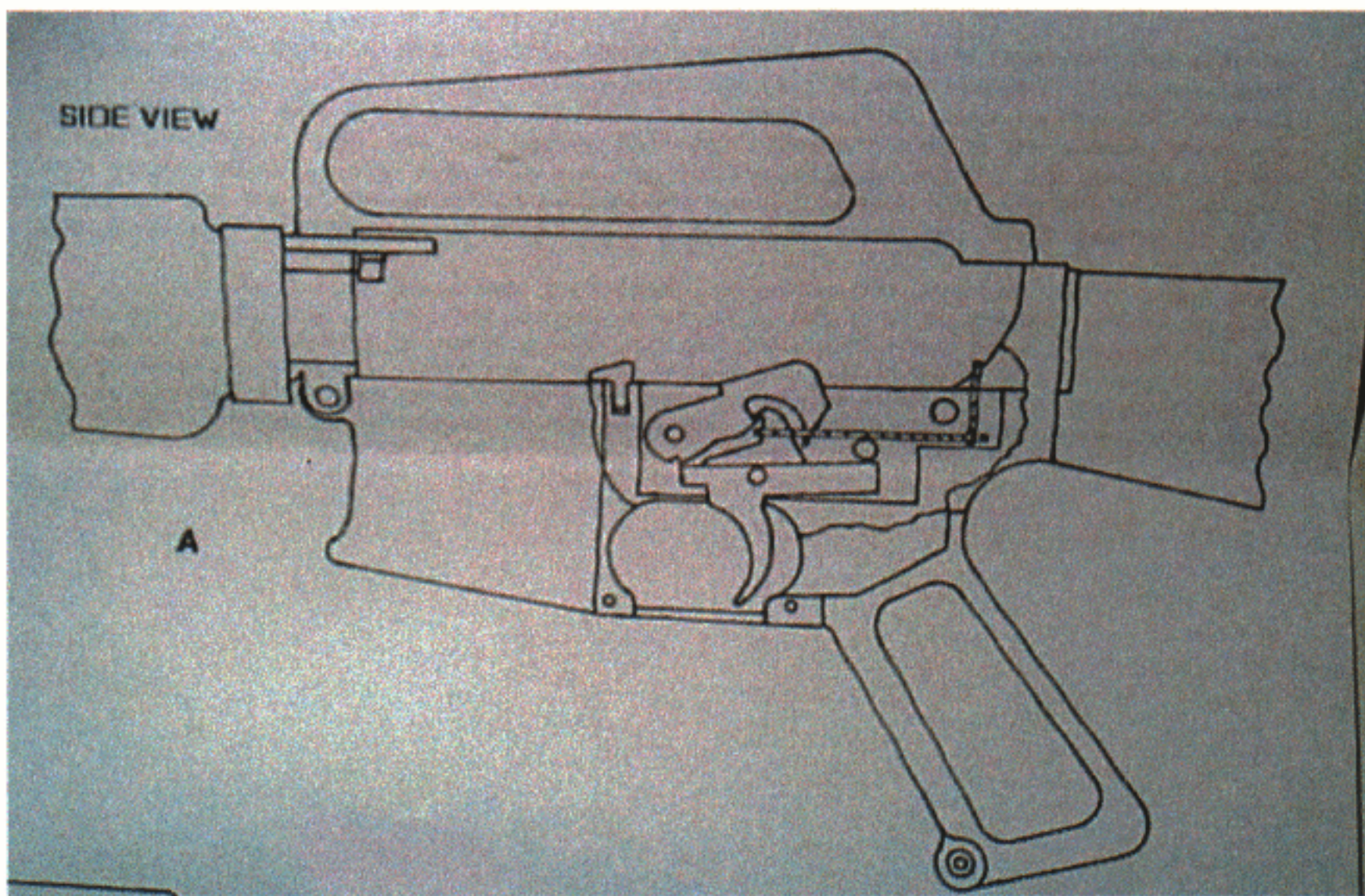
Clean up the oblong hole and .130 wide cut with a small file. NOTE....Now's the time to square the end of the .130 cut. CAREFUL....Don't get carried away. The distance between the front {squared end} of the .130 cut and the rear face of the .043 slot can not be any more that 2.120.



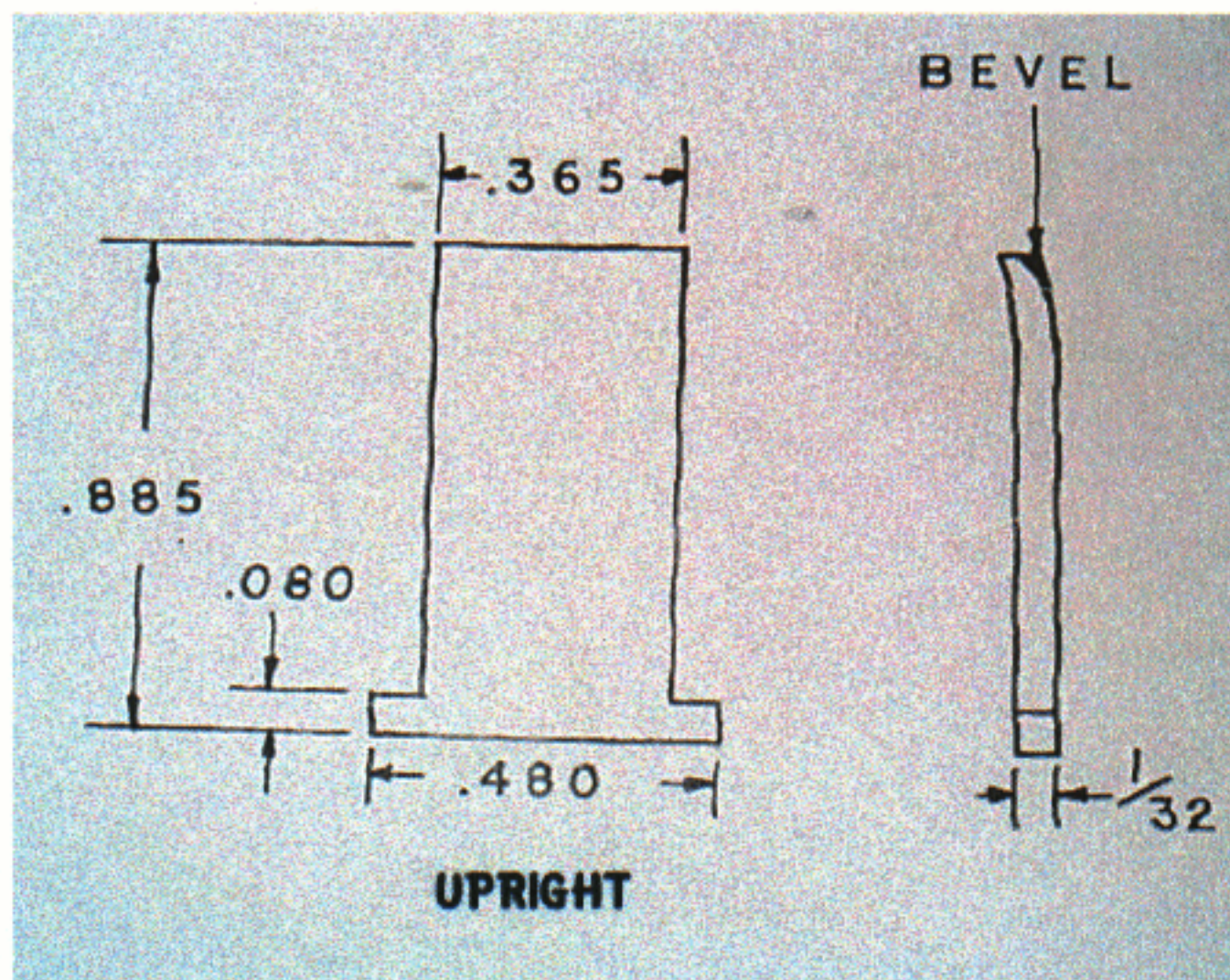
File or grind the outside edges to shape until it fits into the lower receiver without touching the inner receiver walls.

To check the link for fit and function, drop it over the hook on the disconnecter, refer to drawings [A] and [B]. Hold the trigger back and cock the hammer. It will be caught by the disconnecter hook. Now place a scribe or anything that will fit into the slot at the rear of the link and pull it toward the back of the receiver, the hammer should fall. If it did, keep holding the trigger, recock the hammer and do it all again. As long as you hold the trigger back, the link will release the hammer. When you release the trigger, the link can no longer release the hammer from the cocked position.

If the link would not move back far enough to pull the disconnecter hook off the hammer, find out what's stopping it and correct the problem.



Cut the upright part to length and file or grind it to shape. File a slight bevel at the to rear of the upright.



ASSEMBLE THE PARTS

Refer to the first drawing. Install the parts in the lower receiver. See drawing [A]. Tip the weapon so the links upright rests against the rear of the receiver. Close the upper until the take-down pin post is far enough into the lower receiver, that when you tip the firearms muzzle down the links upright can rest against the post. Continue closing the weapon until it's completely closed. NOTE....This first time you may have trouble getting the link upright to slide in place between the rear of the take-down pin post and the bolt carrier. All I can tell you is wiggle and jiggle things until it goes into place. It will fit in place much easier after its shaped by the bolt carrier.

After the take-down pin is in place, hold the trigger back and operate the bolt carrier about five times. The bend in the top of the links upright is formed at this time by the bolt carrier hitting it. See drawing [D]. Be sure to let the bolt slam with full force each time. Now's the time to find out if everything's working right. Cock th weapon, point it in a safe direction and pull the trigger. You should hear the ahmmer fall. Keep holding the trigger, cock the weapon, and release the trigger. Pull the trigger, nothing should happen, the Lightning Link will have released the hammer when the bolt carrier closed.

TEST FIRE

Load two rounds in the magazine. The first will fire when you pull the trigger, the second will fire automatically. Check the brass for any problems. If all's well, load five rounds and fire. If all goes well, load her up and let her rip.