

STG 43

Stemple Takedown Gun (STG)

Owner's Manual



The Stemple Takedown Gun (STG) setups are complete new parts packages installed on unmodified/transferable Stemple 76/45 machine gun receiver tubes.

This setup was designed to be as smooth and controllable as a blow-back SMG can be from either the shoulder or bipod rest. It makes use of an adjustable-weight bolt system to dissipate the energy in the recoiling mass. As such it can shoot high pressure 7.62X25 and relatively weak 9mm ammo at very low cyclic rates. The resulting shooting experience is very smooth and controllable.

Building on John Stemple's & Hugo Schmeisser's work with slow-firing SMGs (pictured below), we have designed a similar parts package for the Stemple 76/45 to enable the reliable and consistent firing of surplus 7.62X25. These new parts are designed to work with the original/unmodified Stemple 76/45 machine-gun receiver.

In 2005 John Stemple took the challenge of slowing-down his 76/45 SMG. In a simple blowback SMG, the following variables control cyclic rate:

- 1) bolt weight
- 2) spring rate
- 3) distance of stroke
- 4) buffer
- 5) power of cartridge
- 6) barrel length / use of suppressor

John designed a slow-firing 45 setup that relied on an extended bolt made possible by the use of an AR stock at the rear of the 76/45 receiver. This longer, heavier bolt that was similar in weight to the M3 Grease Gun bolt and successfully reduced the cyclic rate to approximately 500 to 550 rounds per minute with Wolf 45 ammo. With 'hotter' loads the gun would cycle faster, and with 'lighter' loads the gun would half-cycle and jam. Given the angle of ejection, the bolt must be moving fast enough to eject the spent case 'up' and 'out' of the ejection port unlike many other designs that are assisted by gravity. To compensate for lighter loads and his 9mm conversion, John's bolt extension could be adjusted by adding or removing segments.

Many makes of surplus 7.62X25 are wildly 'hot' cartridges and some 9mm loads only generate half the power of surplus 7.62X25. Therefore, we designed a similarly adjustable bolt system for the 76/45 that uses an AR compatible stock extension. The bolt assembly is comprised of 2 parts: bolt and extension. The system may use the myriad of available AR compatible mainsprings and buffers. The extension and buffer serve as the adjustment points for the overall weight of the moving mass during cycle. The video below shows this system functioning with the heaviest extension and hydraulic buffer, firing Romanian surplus 7.62X25. The resulting cyclic rate was approximately 525 rounds per minute.

To use this setup in 9mm, only the barrel and, possibly, the bolt extension require changing.

The stock and grip are unmodified AR pattern. Any AR compatible stock or grip can be used with our parts. The fire-control unit is M31 and capable of SAFE-SEMI-FULL. It is also available in full-auto-only.

The bolt guide slides into the inner diameter of the 76/45 receiver and contains the buffer mount, ejector and barrel jacket mount. We machined lugs on the front of the bolt guide to accept Suomi barrel shrouds or our newly manufactured shrouds.

The large ejection-port cover holds the 76/45 receiver to the fire control and magazine housing assembly and serves as a safety device to deflect 'port blast' possibly resulting from dirty surplus ammo or squib malfunctions.

The bolt uses AR pattern extractors.

Disassembly View



Weight: 9 lbs unloaded
Caliber: 7.62X25 & 9mm
Magazine: PPS43 - 35 rd
Cyclic Rate: Variable (500-900)
Overall Length: 28" - 36"
Barrel Length: quick-change 12.875" or 8.625"
Sights: Suomi Tangent or Picatinny Rail
Shroud: Suomi with bipod mount added
Fire Control: Suomi SAFE-SEMI-FULL
Stock & Grip: AR compatible
Bolt: AR compatible extractors

Stemple Takedown Gun (STG) Manual

The STG is an open-bolt / blow-black submachinegun that requires knowledgeable operators. Full and complete adherence to the following instructions is an absolute necessity for safe and responsible use of the STG. This system is NOT meant for anyone other than individuals knowledgeable in the safe operation of machineguns who have a thorough understanding of automatic firearms. If you are not such an individual you pose a danger to yourself and those around you by using this system.

Parts List

Receiver
Lower Housing Assembly
Barrel Shroud
Rear Sight or Rail
Bolt and Cocking Handle
Bolt Extractor
Bolt Extension (2 types)
Mainspring (H) Heavy
Mainspring (L) Lite
Barrel (7.62x25)
Lock Nut
Trunion
Rear Takedown Pin
Buffer
Buffer Tube
Stock
Grip
Fire Control Group
Magazine

Maker

JR Stemple
BRP CORP
Suomi
BRP CORP
BRP CORP
AR15/M16
BRP
CAR standard
BRP
BRP
BRP CORP
BRP CORP
BRP CORP
AR-compatible
AR-compatible
AR-compatible
AR-compatible
Suomi
PPS43

The Essentials of Running The STG:

Following these steps will help you use this system reliably and prevent malfunctions, dangerous operation, and damage.

- 1) Following Loading Protocol:** Do not retract the bolt until you intend to fire.
- 2) Correct Ammo:** Use full metal jacketed ammo only to ensure proper feeding.
- 3) Correct Magazines:** Mags are not dimensionally consistent. Make sure that each Magazine locks on the Magazine Latch and does not rock back and forth in the Magazine Housing.
- 4) Lubrication:** Use lubricant sparingly on the outside edges of the Bolt. We recommend Bob Marvel's Custom Oil.
- 5) Cleaning:** When cleaning the STG, pay special attention to cleaning the bolt face, barrel, and feed ramp.
- 6) Inspection:** After cleaning, fully inspect and reassemble the STG.
- 7) Tuning:** Given the variety of ammo this gun can shoot, be sure that the bolt, extension, and buffer setting is correct of the type of ammo you are shooting.

Safety – Your Responsibility

SAFETY MUST BE THE FIRST AND CONSTANT CONSIDERATION OF EVERY PERSON WHO HANDLES FIREARMS AND AMMUNITION. This manual is designed to assist you in learning how to use and care for this system properly.

Only when you are certain you fully understand the manual and can properly carry out its instructions should you practice loading, unloading, etc. with live ammunition.

If you have doubts about your ability to handle or use this particular system safely, seek supervised instruction. Such personalized instruction is often available from gun dealers, gun clubs, and police departments. If none of these sources can help you, contact the National Rifle Association. You are also encouraged to contact BRP CORP for assistance.

The person with a gun in his possession has a full-time job. He cannot guess; he cannot forget. He must know how to use his firearm safely. Do not use any firearm without having a complete understanding of its particular characteristics and safe use. Remember: There is NO such thing as a foolproof gun.

Basic Safety List

- A loaded firearm has the potential to kill. Intelligently handled, it is safe.
- An accident is always the result of basic safety rules neglect.
- Accident prevention is the user's responsibility.
- Never point a firearm at anything you don't want to shoot.
- Before handling a firearm, be sure to use correct and undamaged ammunition.
- Be sure your firearm is clean – before loading, inspect the barrel to insure it is perfectly clean and free of foreign objects. Shooting with an obstruction in the barrel such as dirt, mud, grease, lodged bullet or jacket, residues, etc, can cause barrel bulging and/or rupture.
- Never assume that the chamber is empty – visually inspect it every time you handle the gun.
- Avoid alcoholic beverages and drugs before and during shooting.
- Avoid hard-hitting or dropping of a loaded firearm.
- Store firearms and ammunition separately, beyond the reach of children. Be sure the cartridge chamber is empty.
- Thoroughly clean the firearm to prevent corrosion.
- Wear eye and ear protection.
- A Firearms Safety Course is recommended.
- Handle your firearm with respect, not fear.

History and Design of the Weapon

The Stemple 76/45 is best described as a .45 cal. version of the 9mm Swedish K (Carl Gustav). The Stemple 76/45 was originally developed and produced by John Stemple of Ohio.

This design also shares many characteristics of the Smith & Wesson 76 9mm, which is more or less a copy of the Swedish K. The Swedish K was an updated replacement for the Swedish-Suomi/Husqvarna 37. The Husqvarna 37 is a Swedish-made short-barrel clone of Finnish Suomi 31. Most parts are interchangeable between the 31 and 37. The Swedish-Suomi/Husqvarna 37 barrel was used in the Swedish K. In fact, many of the parts from the Swedish K are compatible with the Suomi 31 & 37. Similarly, the Stemple 76/45 shares a limited compatibility with the Suomi parts. Namely, the bolt diameters as well as the feed and ejection locations are similar for the Stemple 76/45, S&W 76, Swedish K, and Suomi M-31/37.

Stemple has produced the 76/45 in numerous configurations. The main differences are in the 3 parts that are typically welded to the receiver: rear grip / stock mount, mag housing, and trunion. Given that these parts are permanently attached to the receiver, it is difficult to make accessories that are compatible

with all of Stemple's guns. Pictured above is one of the newer versions of the 76/45 that uses a compensated barrel, telescoping stock, M-16 grip, and 'pull-button' magazine release.

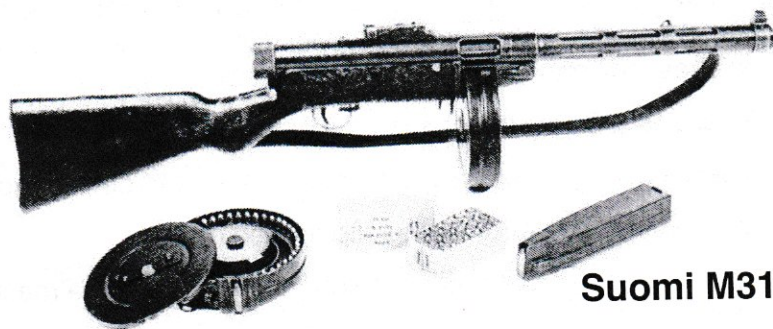
Caliber conversions for the 76/45 have been available in .22 and 9mm. The 9mm conversion uses either Sten mags or Suomi mags and drums, depending on the magazine well that was welded to the receiver. Stemple's latest innovation on the 76/45 is an ultra-slow-firing 'match-grade' version with a refined MP-40-style trigger group, AR plastic stock, and Picatinny rail base.



Stemple 76/45



Swedish K / M45



Suomi M31

Preliminary Remarks

The terms "right-hand" and "left-hand" used in the following description of the assemblies and of the functioning apply to the position of the weapon in firing direction (seen from the gunner).

Operation

1. Loading the Magazines and Drums

a. Magazines

- There are numerous magazines manufactured for the PPS-43. Make sure the magazine fits properly and test its ability to feed using dummy rounds.
- When filling the magazines, make sure the rounds are firmly pressed against the rear of the magazine. This is especially important for shooting the shorter 9mm cartridge from these magazines.

2. Loading the Gun

- With the bolt forward insert the magazine into the magazine housing and push into place making sure the magazine catch lever engages the magazine. Pull down on the magazine to make sure the magazine or drum has properly engaged the magazine catch lever.
- Be careful not to press the magazine catch lever when holding the gun.

3. Firing the Gun

- Retract the Bolt to the end of the cocking track where it engages the sear.
- Pull the Trigger.

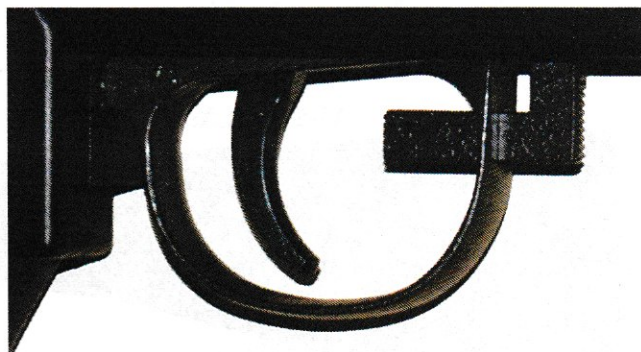
4. Unloading the Gun

- With rounds still in magazine:** The bolt is in the 'open' position. Set the selector fully rearward (SAFE). Push the magazine release lever forward and remove the magazine.
- With empty magazine:** The bolt is in the 'closed' position. Push the magazine release lever forward and remove the magazine. Retract the bolt to verify there is no round in the chamber.

Full-Auto Position



Safe Position



Safety & Selector

Full Auto: fully forward

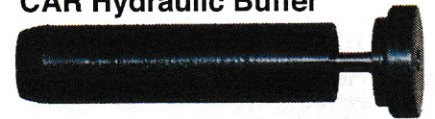
Semi-Auto: 1 'click' rearward

Safe: fully rearward

Resistance Factor Setup Chart

Resistance Factors (RFs) are those that resist the movement of the Bolt as driven from blow-back pressure. This chart shows the different resistance setups available for the STG43 setup. Resistance Factor 1 (RF-1) is the weakest. It provides the least amount of resistance to the action of the gun. This is typically used for 9mm or 7.62X25 (pistol) loads. Higher resistance factors must be used when firing the higher pressure 7.62X25 loads or +P ammo. This must be cross-referenced with the Pressure Factor (PF) variables to achieve the desired cycle properties. The combination of Pressure and Resistance result in the cyclic-rate. This system can use both A2 and CAR stock setups. The mainspring is held constant by using the CAR mainspring for all setups. Cycle properties can also be further adjusted by substituting the hydraulic for spring buffers for the standard A2 or CAR buffers.

CAR Hydraulic Buffer



Replacing the standard CAR Mainspring (Heavy) for the BRP Mainspring (Lite) provides 20% less resistance. Simply switch mainsprings in this system is a quick way to make a quick RF change.

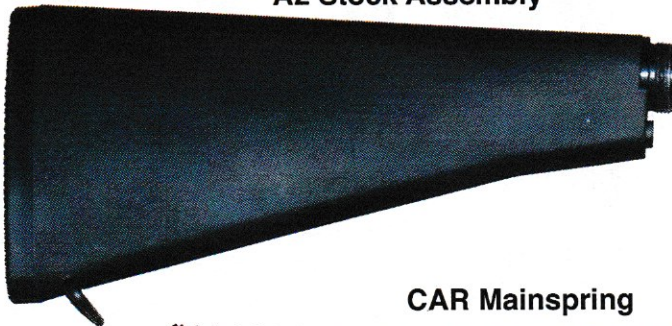


BRP Mainspring (Lite): more coils per inch + thinner wire = Less Resistance



Standard CAR Mainspring (Heavy)

A2 Stock Assembly



CAR Mainspring



A2 Buffer



Short/Lite Bolt Extension



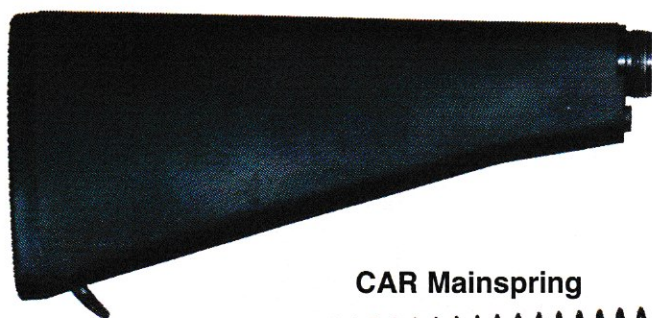
Bolt

RF-1

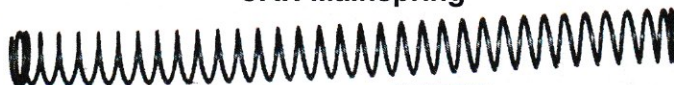
Moving Mass Parts:

Bolt
Extension

A2 Stock Assembly



CAR Mainspring



Spacer



CAR Buffer



Heavy Bolt Extension



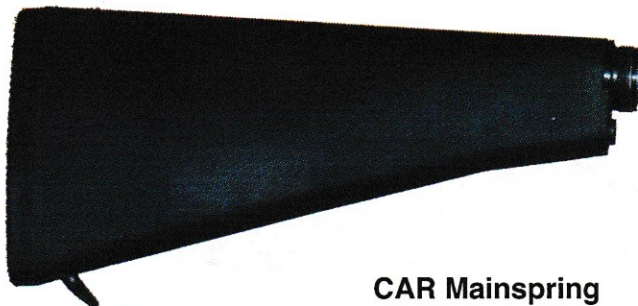
Bolt

RF-3

Moving Mass Parts:

Bolt
Extension
Buffer

A2 Stock Assembly



CAR Mainspring



CAR Buffer



Spacer



Heavy Bolt Extension



Bolt

RF-4

Moving Mass Parts:

Bolt
Extension
Buffer
Spacer

Pressure Factors (PFs) *Factors that increase blow-back pressure*

Ammo

Different types of ammo yield different pressures. The higher the pressure, the higher RF Setup should be used.

Barrels

The longer the barrel, the longer the pressure remains within the system and the higher RF Setup should be used.



12.875" 9mm



8.625" 9mm

threaded 1/2 - 28 for
Suppressor



12.875" 7.62 X25



8.625" 7.62X25

threaded 1/2 - 28 for
Suppressor

Suppressor

The addition of a suppressor can increase blow-back pressure by 25%. A higher RF Setup should be used with addition of a suppressor. The overall quieting effect of the Suppress will be improved by using the highest RF setting possible. This keeps the Bolt closed longer, thereby reducing port noise.

Suppressor



Barrel Extension for using shorter barrels with standard Suomi Shrouds



G3 Flash-Hider for use with threaded barrels

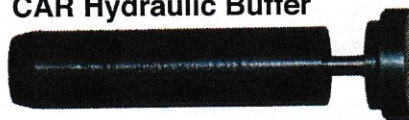


Example Setups

If the STG43 cycles well at a RF setting, moving to a lower setting will yield a faster cyclic-rate. Moving to a higher RF setting will slow the cyclic-rate, however, you must be careful to make sure the system has enough pressure to cycle properly. The best way to test your setting is to only load a few rounds in the magazine with the selector set to 'semi-auto.' If the gun fires more than one round, there's not enough energy for the gun to cycle properly and you would need to move to a lower RF setting or increase one of the PFs.

Substituting the standard buffer with a hydraulic buffer will reduce the cyclic-rate without effecting the RFs or PFs.

CAR Hydraulic Buffer



PF Ammo: 9mm Wolf

PF Barrel: 12.875"

RF Setting: RF-1

Notes: With the shorter barrel without the suppressor there is not enough pressure channeled back into the system to cycle properly. Only the longer barrel will work. However, with the addition of the Suppressor, there's enough blow-back pressure to use up to RF-2 setups.

PF Ammo: 7.62x25 Romanian SMG pressure loads

PF Barrel: 12.875"

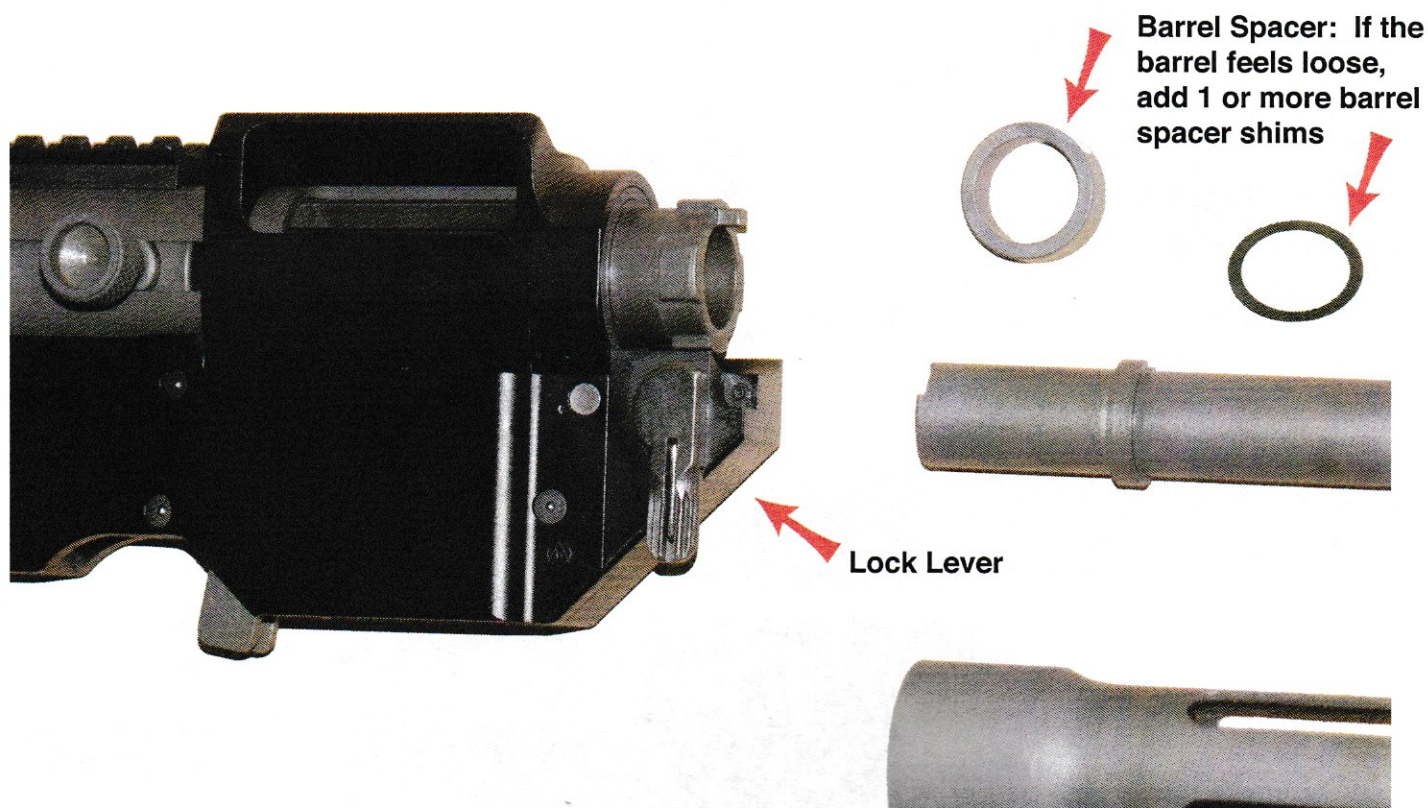
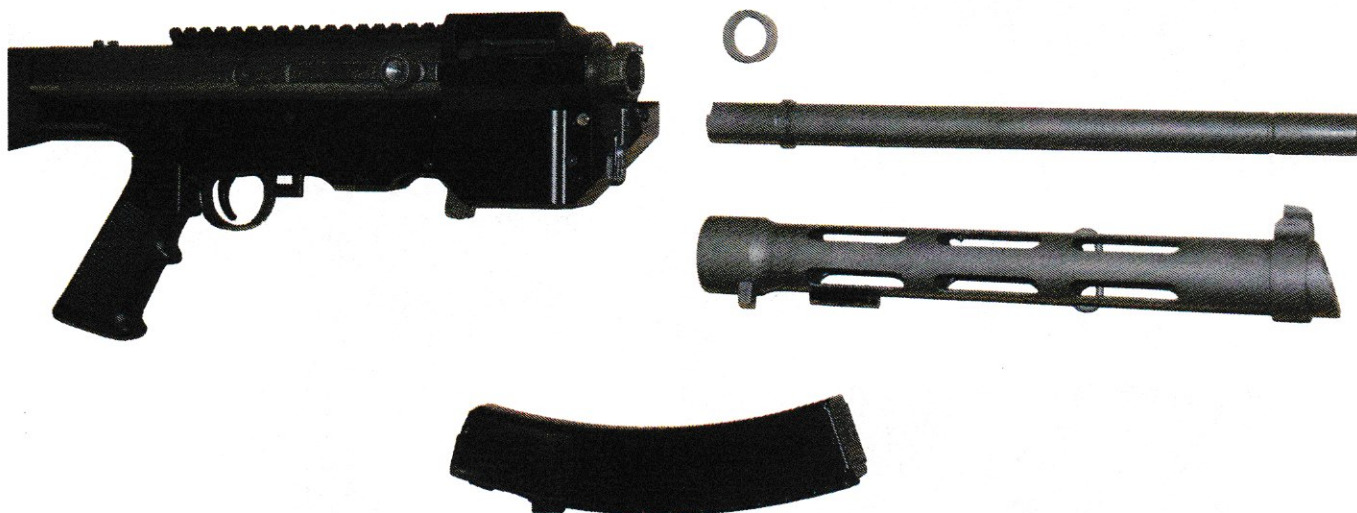
RF Setting: up to RF3

Notes: The RF4 setup can only be used with the increased blow-back pressure from the addition of the Suppressor.

Disassembly Procedure

Step 1: Remove the Barrel and Shroud

- Rotate the Lock Lever, rotate the Barrel Shroud 45 deg counter-clockwise and pull forward to remove
- Pull the Barrel with Barrel Spacer forward and remove



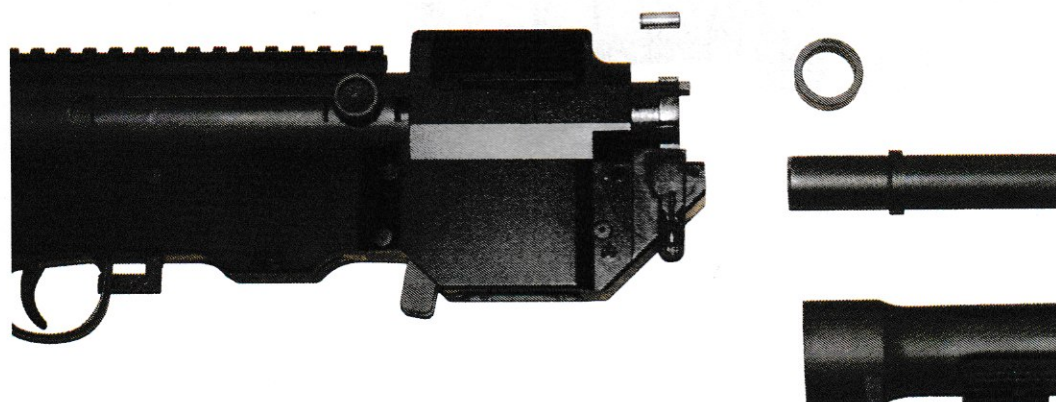
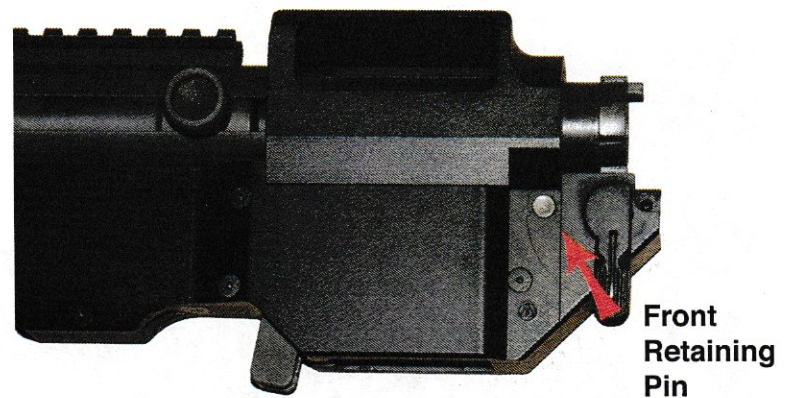
Step 2: Remove the Stock and Buffer Assembly

- CAR: Loosen the Lock Ring and Lock Plate then unscrew the CAR Buffer/Stock
- A2: Unscrew the A2 Stock Screw, remove the A2 Stock, unscrew the A2 Buffer Tube.



Step 3: Remove the Front Retaining Pin

- Drive Out the 1/4" Front Retaining Pin that holds the Deflector to the Lower Housing from left to right.

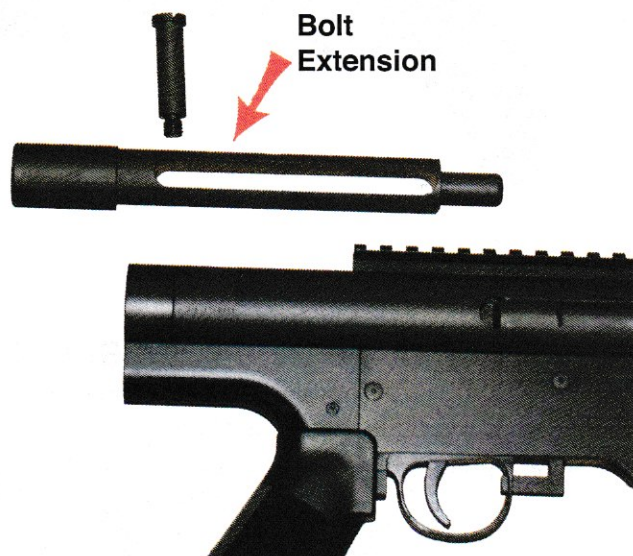


Step 4: Remove the Rear Takedown Screw and Bolt Extension

- Make sure the Bolt is in the forward position. Unscrew the Rear Takedown Pin with the Multi-Tool.
- Pull the Bolt Extension rearward and out of the gun.

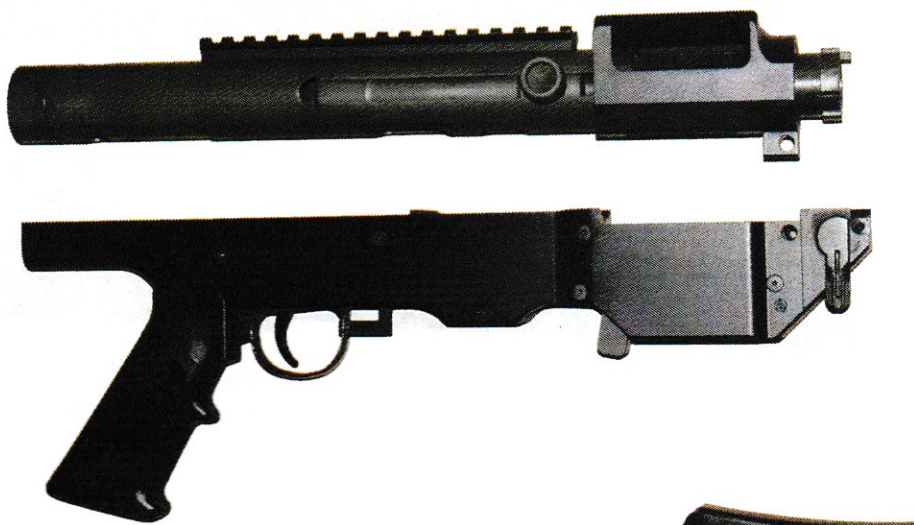


Multi-Tool



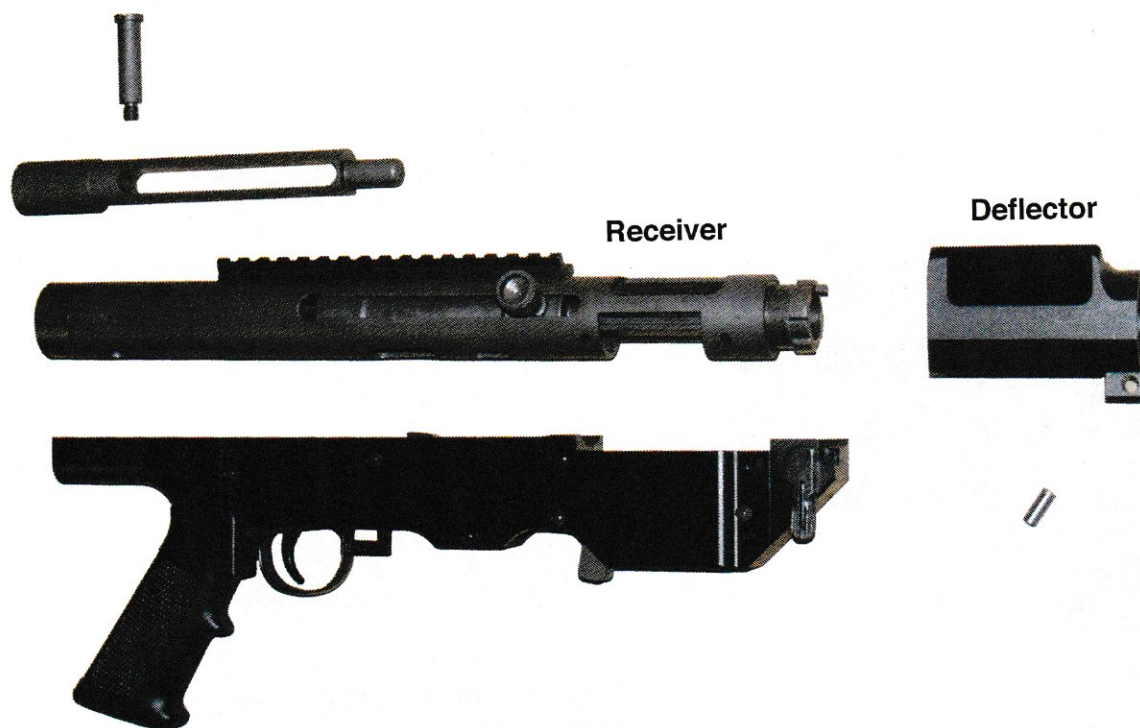
Step 5: Separate the Upper and Lower Assemblies

- Lift the Tube and Deflector assembly straight 'up' away from the Lower Housing Assembly



Step 6: Remove the Deflector

- Pull the Deflector forward off of the receiver.

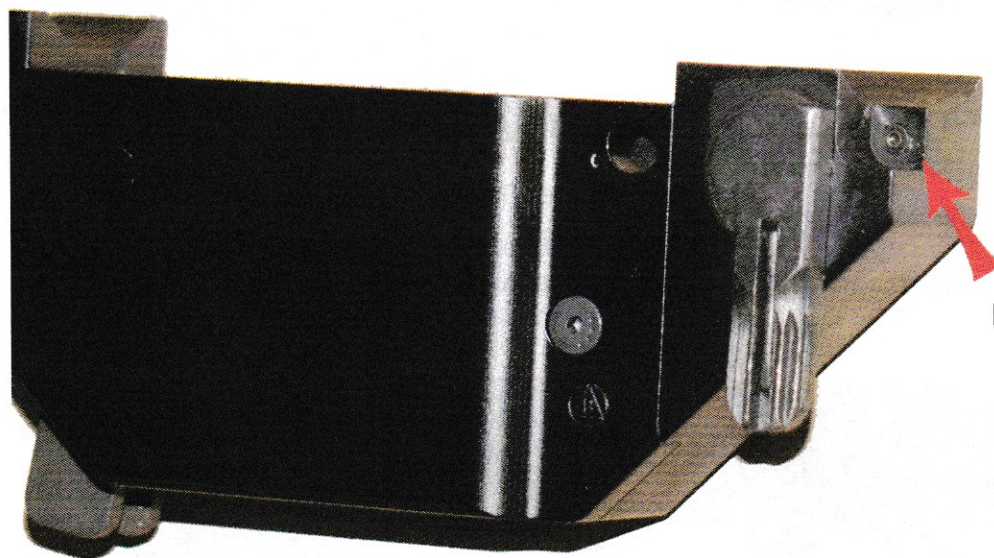


Step 7: Remove the Bolt and Bolt Guide

- Pull the Bolt Guide rearward until the Charging Handle stock on the Receiver cutout.
- Pull the Charging Handle out of the Bolt and Receiver.
- Continue pulling the Bolt Guide rearward to remove it and the Bolt.



- Disassembled view of the Receiver, Bolt Guide, Bolt and Charging Handle



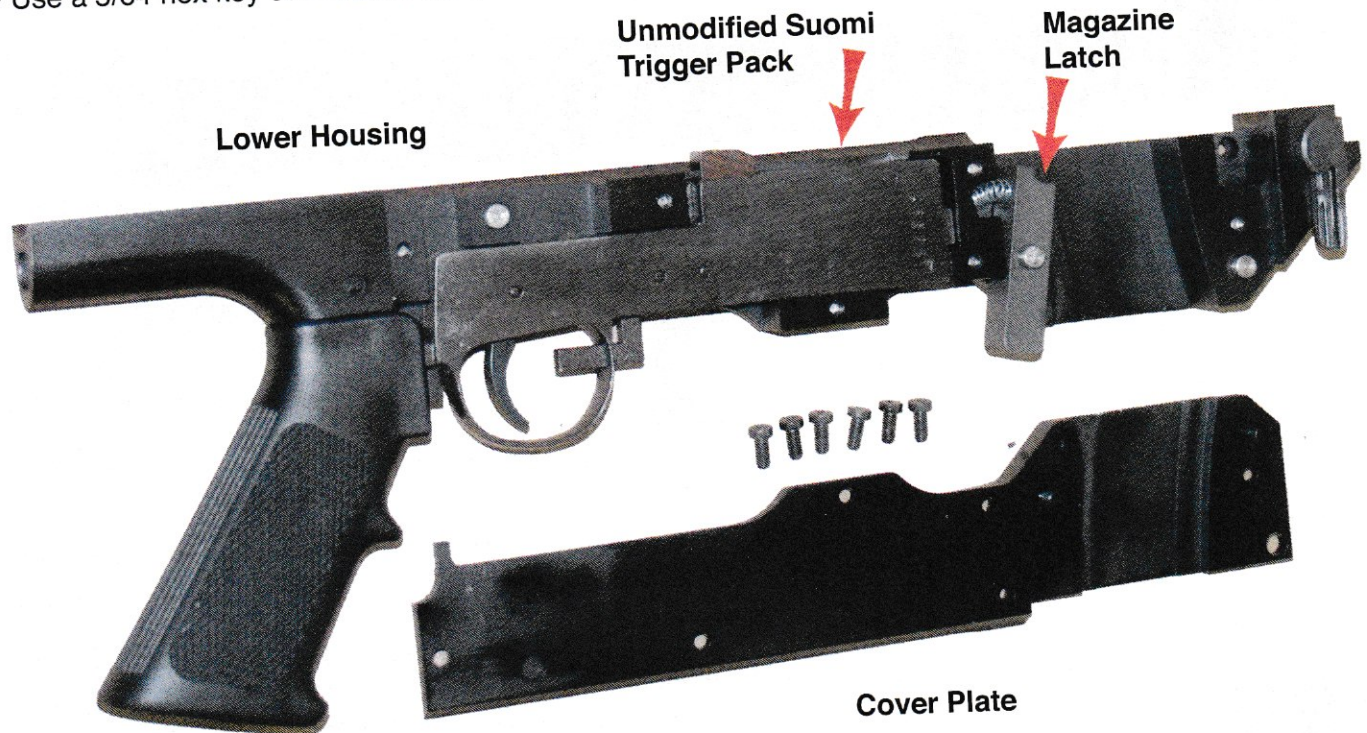
Barrel Jacket Timing Screw

This is used for adjusting the rotation and tightness of the Barrel Jacket to the Barrel Jacket Latch

At this point, no further disassembly is required for regular cleaning.

Lower Housing Dissassembly

- Use a 5/64 hex key to unscrew the six 8-32 screws that hold the Cover Plate on the Lower Housing.



Sear Timing Set Screw:

To remove the Suomi Trigger Pack, the AR Grip must be removed by unscrewing the grip screw.

This is only tightened to lower the sear to improve semi-auto function. If the trigger fails to reengage the sear in semi-auto, tighten this set screw 1/2 turn.



Sear Timing Set Screw:

This is loosened to remove the trigger pack and tightened to keep the trigger pack firmly in place when assembled.

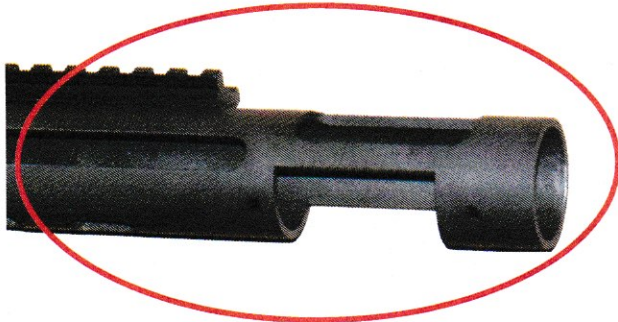
Care After Firing Corrosive Ammo

All surplus 7.62x25 is corrosive

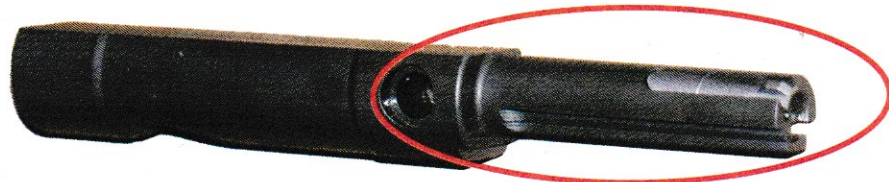
The weapon should be cleaned IMMEDIATELY after each session of firing and not later than the evening of the day on which it was fired. The affected parts must be thoroughly and aggressively cleaned after extended use because the corrosive residue becomes 'baked-on.'

If corrosive ammo was fired, use a standard cleaner/degreaser such as Castrol Super Clean, Simple Green, etc. These 'soapy' cleaners will neutralize the corrosive residue. Oils or solvents will not neutralize the corrosive residue. Spray and scrub the dirty areas of the Bolt, Barrel, Bolt Guide, the Receiver front. An M16 cleaning brush works well for scrubbing. Rinse these parts with water, preferably hot. If you don't have a shop sink, a bucket will work as well. Thoroughly dry the parts with heat and/or compressed air. Pay special attention to 'blowing out' the extractor pocket. Lastly, oil with CLP to prevent rust.

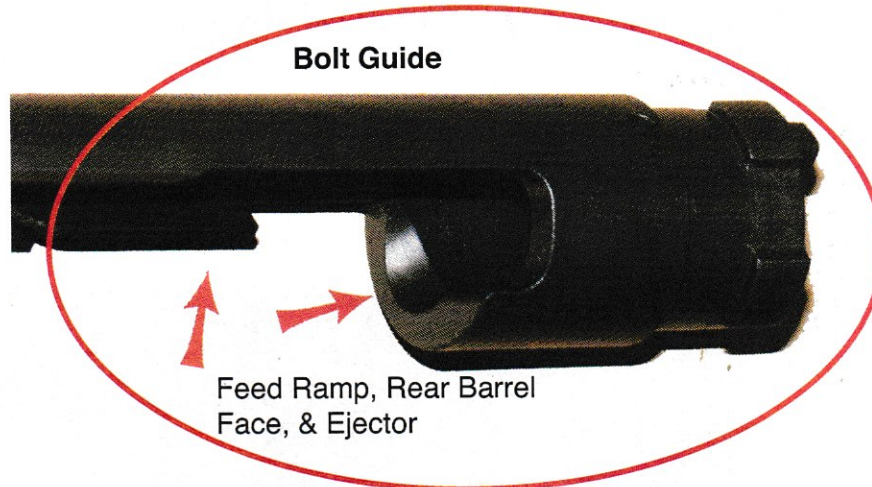
Areas to thoroughly clean are circled. Neglecting any of these areas will result in permanent damage.



Receiver (front 4")



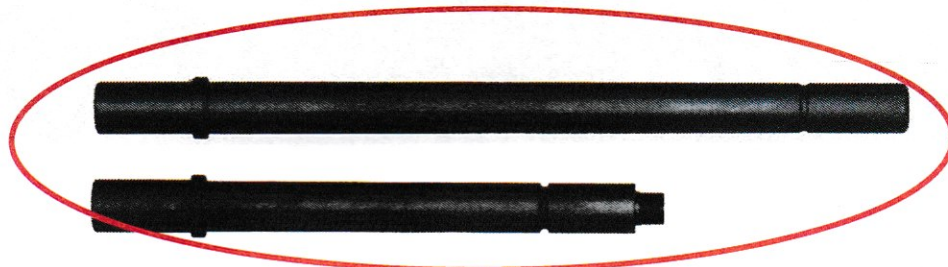
Bolt Face, Extractor Pocket, & Bolt Body



Bolt Guide

Feed Ramp, Rear Barrel Face, & Ejector

Barrel: chamber, bore & face



Assembly Procedure

- Reverse operations 7-1



U.S. Department of Justice

Bureau of Alcohol, Tobacco,
Firearms and Explosives

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3311/2005-168

Mr. Brian R. Polling
BRP CORP
7594 Commerce Lane
Clinton, MD 20735

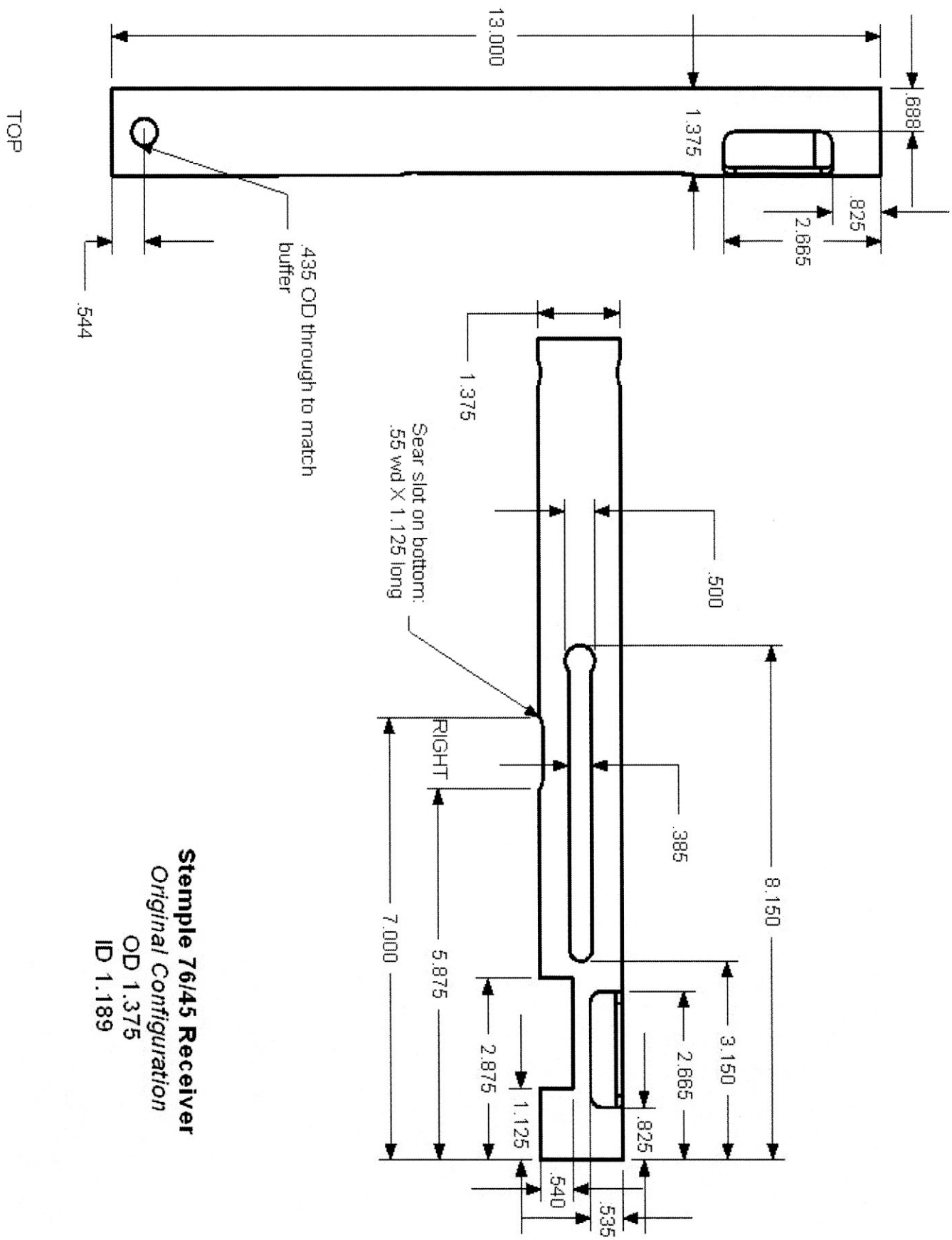
Dear Mr. Polling:

This is in reply to your correspondence to the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Firearms Technology Branch (FTB), in which you asked for an evaluation of your planned modification of a "STEMPLE" model 76/45 receiver. Included with your request are two model 76/45 receivers, one of which has been modified, and a sample letter that references the modification of a registered Sten machinegun into a Sterling configuration.

For your information, FTB has evaluated and approved a previous request to convert tube-type machineguns such as a Sten from one model to a like model machinegun. Our Branch has determined that this conversion would be permitted, provided that there are no major alterations to the receiver tube that would change the design of the machinegun that is to be modified including filling-in, relocating, or altering the general shape of any of the existing cut-outs.

In order to provide some guidance with respect to your project, this reply will address the modification that concerns installing a threaded trunnion instead of the welded trunnion. Again, please note that as long as there is no filling-in, relocating, or altering the general shape of any of the existing cutouts, your planned modification would be lawful.





Stepmple 76/45 Receiver
Original Configuration
 OD 1.375
 ID 1.189

-2-

Mr. Brian R. Polling

Also, FTB has determined that the additional opening that you have described would not change the classification of a Stemple machinegun.

We thank you for your inquiry and trust the foregoing has been responsive.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Sterling Nixon", with a long horizontal stroke extending to the right.

Sterling Nixon
Chief, Firearms Technology Branch

-2-

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