



IES WRK Recoil Kit User Guide

AR-15/M4/M16



Revision 1.0

IES Interactive Training

Introduction

The purpose of the AR-15/M4/M16 recoil kit is to quickly convert a live rifle into an effective training weapon that is both realistic and safe. No live ammunition can be loaded into, or fired from, the weapon when the recoil kit is installed.

When the weapon is fired with the recoil kit installed, an infrared (non-visible) laser clamped to the front of the barrel is fired, allowing interaction with the IES simulator.

ALL FIREARMS SAFETY RULES AND GUIDELINES SHOULD BE FOLLOWED AT ALL TIMES!



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Parts & Components of the Weapon & Kit

There are several parts of the original weapon needed, in addition to the recoil kit components, in order for proper operation.



The following original weapon components are used:

- Upper and Lower Receiver's (and all sub components)

The following recoil kit components are provided as part of the recoil kit:

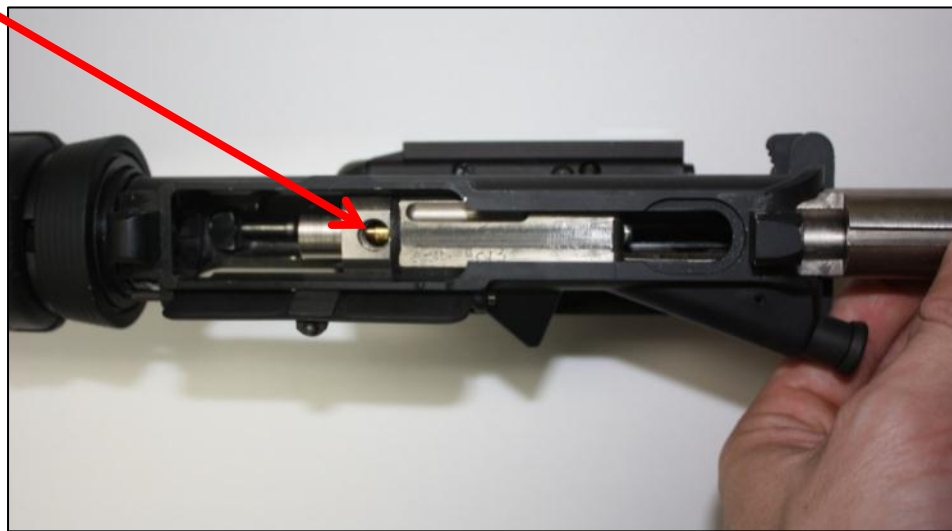
- Recoil Bolt Assembly: Takes the place of the weapon's original bolt assembly.
- Recoil Magazine (2): Takes the place of the weapon's original magazine.
- Bolt Connector Piece: Connects CO2 from recoil magazine to recoil bolt assembly.
- Barrel Mount Clamp: Attaches the laser to the forward end of the outside of the barrel.
- Laser: Installed using the barrel mount clamp. Mount on the outside of the front of the barrel to provide indication of shots fired on an IES simulator. Note the laser is infrared and is not normally visible. The laser is eye safe, but should never be pointed or fired at another person.
- Spare Parts & Tools:
 - Magazine top port gasket (2)
 - Magazine piercing nozzle gasket
 - Recoil Bolt Assembly Large replacement O-ring
 - Bolt Connector O-rings
 - Bolt Connector Installation Tool and Wrench
 - Bolt Oil & Magazine Grease

Recoil Kit Installation

- 1) Remove the original magazine from the weapon and ensure that then weapon is clear and safe.
- 2) Remove the lower receiver following the normal AR-15/M4/M16 rifle disassembly method.
- 3) Remove the original weapon bolt assembly from the upper receiver.

NOTE: Before proceeding, ensure that the weapon is properly cleaned to avoid live ammunition residue and excess weapon oil from entering the recoil kit components and causing degraded performance.

- 4) Install the recoil bolt assembly as shown in the picture below. Note that the small hole on the front end of the bolt assembly is oriented to face down toward the lower receiver. If this is the first time the kit is being assembled, place a small amount of the magazine grease along the outside of the recoil barrel assembly to aid in installation.



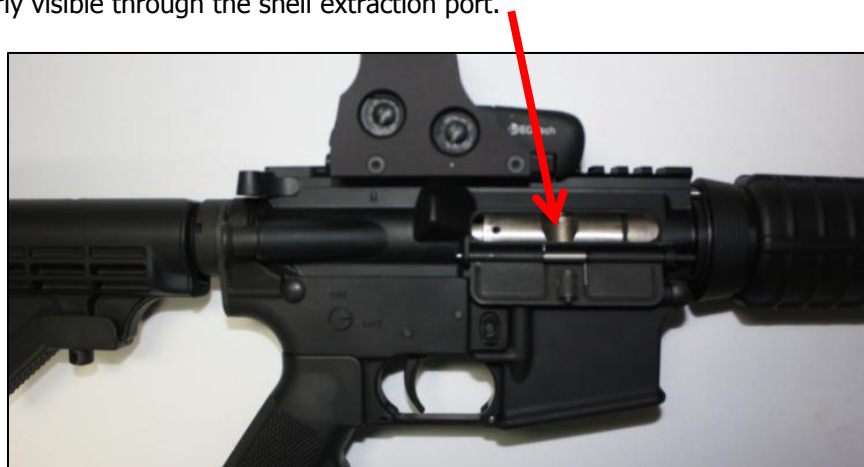
- 5) Ensure that the recoil bolt assembly is fully installed and fits flush against the forward end of the upper receiver assembly.



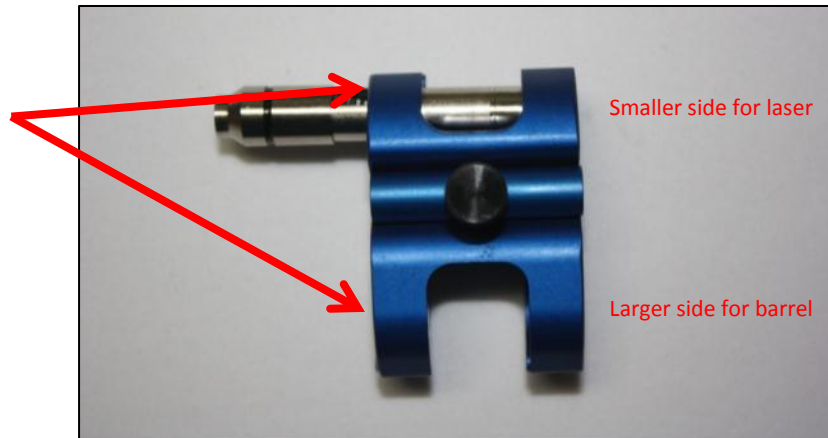
- 6) Install the bolt connector to the now installed recoil bolt assembly using the supplied installation tool and or wrench.



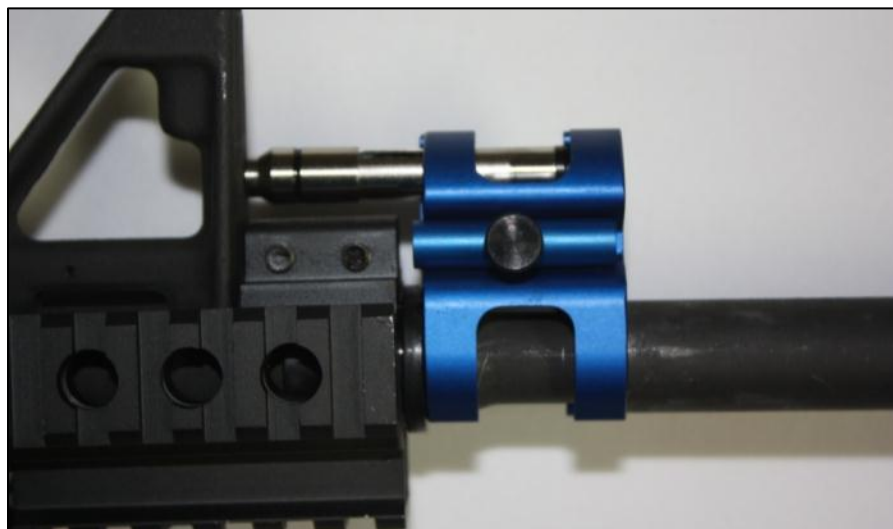
- 7) Install the lower receiver assembly to the upper receiver assembly. The recoil bolt assembly will be clearly visible through the shell extraction port.



- 8) To install the laser to the weapons barrel you must attach it using the supplied barrel mount clamp. There is a clearly visible size difference on opposite ends of barrel mount clamp. Make sure that the laser is installed on the side with the smaller opening, and that the clamp is attached to the rifle barrel using the larger opening.



- 9) The image below shows how the barrel mount clamp should look installed on the barrel with the laser also installed. Note that it is recommended to mount it as shown, with the laser butted against the front sight post.



- 10) To install the CO2 cartridge to the magazine, place the smaller diameter portion of the cartridge into the magazine first and align it with the piercing nozzle at the top of the magazine. Then, firmly tighten the thumb screw at the bottom of the magazine to secure the CO2 cartridge in place and pierce it for use.



11) If charging of the slide is required for this weapon, do so. Test fire the recoil weapon.



Recoil Kit Removal

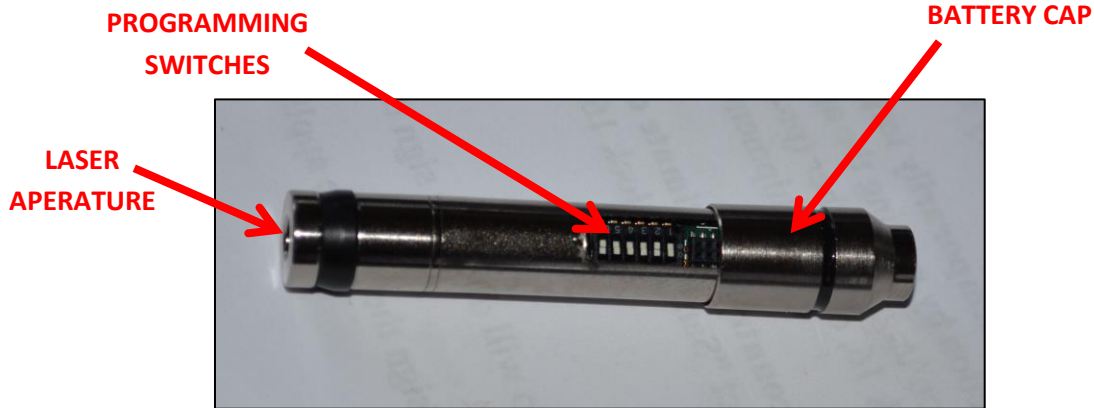
To remove the recoil kit, take out the magazine and fire the weapon once to ensure the recoil bolt is not charged. Note that some recoil kits may require you to release the magazine and manually pull on the magazine to release it.

- 1) Remove and separate the upper receiver from the lower receiver. Place the upper receiver upside down so that the recoil kit components are clearly visible.
- 2) Using the supplied recoil tool and or wrench gently unscrew the bolt connector plate from the recoil bolt assembly and remove.
- 3) Gently pull the recoil bolt assembly out and away from inside the upper receiver.
- 4) Remove the barrel mount clamp with laser by unscrewing the tension screw.

Laser Information

An infrared (IR) laser insert module is provided with each recoil kit. The IR laser emits a pulse of light each time the weapon is fired. The pulse is not visible to the human eye. The laser pulse is detected by the IES simulator and is used to indicate the shot location.

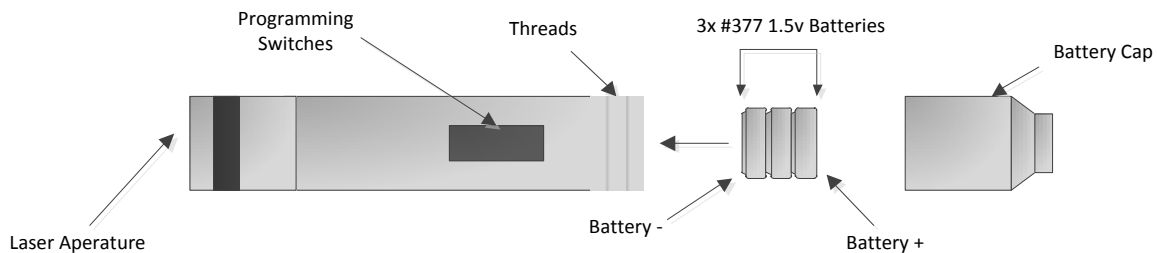
Recoil Rifles use standard IES Laser Insert.



NOTE: If you are setting up a laser for use with a recoil rifle for the first time, or need to change the ID of the laser, please see the IES Laser Programming Guide for proper dip switch settings.

Laser Batteries

To power the laser, 3x #377 batteries are used. A set of batteries should last 100,000 shots or 6 months, whichever occurs first. The batteries should be installed with the negative (-) side facing into the laser.



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INVISIBLE LASER RADIATION
AVOID DIRECT EYE EXPOSURE

Maintenance

Every 5000 shots, or as needed, you should perform the following maintenance on the recoil kit:

Lubrication of weapon

If your weapon normally requires lubrication on slide rails or elsewhere, be sure to apply it.

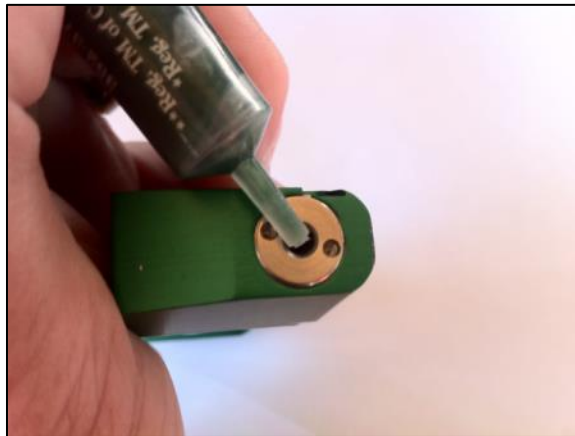
Lubrication of recoil barrel

Place a few drops of oil or grease on the of the recoil bolt assembly.

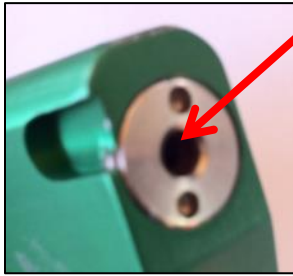


Lubrication of magazine port:

Place a small amount of grease in the top port of the magazine



Troubleshooting



Air leak on top port of magazine when not in weapon

An air leak from the top port of a magazine that is not installed in a recoil weapon is an indication that the magazine itself has a loose coupler or a worn gasket. Tighten the coupler with the provided tool and if the leak persists, follow the repair guide for magazine gasket replacement. If the magazine continues to leak afterwards, contact IES Customer Service.



Air leak at top of CO2 cartridge in magazine when not in weapon

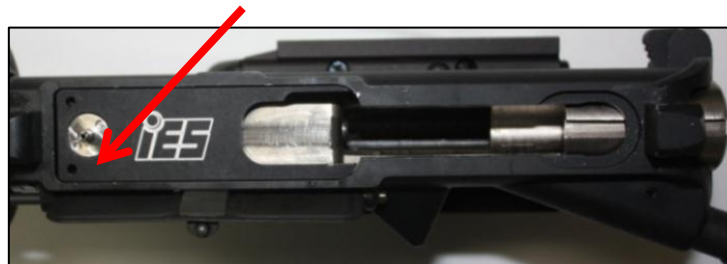
An air leak from the top of the CO2 cartridge is an indication that the gasket around the piercing nozzle of the magazine is worn or missing. Follow the repair guide for piercing nozzle gasket replacement. If the magazine continues to leak afterwards, contact IES Customer Service.

Air leak coming from gun when magazine is installed in weapon

Depending upon the frequency of use of the weapon, there are several places that can leak due to worn O-rings or tolerances being exceeded. There is one large single O-ring installed on the recoil bolt assembly. Remove the bolt from the weapon and inspect this O-ring for damage. If necessary, replace the large O-ring using one of the supplied replacements.



Additionally, there is a single O-ring that is underneath the bolt connector screw, and it is possible for this O-ring to become warped. If this happens the O-ring needs to be replaced. Remove the plate using the supplied recoil tool or wrench and pull the O-ring off. Slide on new O-ring from the supply of replacements and reinstall the bolt connector.



Repair Guide

Magazine CO2 Port Gasket

- 1) Remove any CO2 cartridge in the magazine.
- 2) Hold the magazine and remove the coupler from the top of the magazine using the provided tool.



- 3) Pull the black gasket out of the magazine and discard it. Do not lose the ball bearing.



- 4) Verify that the ball bearing is still in the magazine.



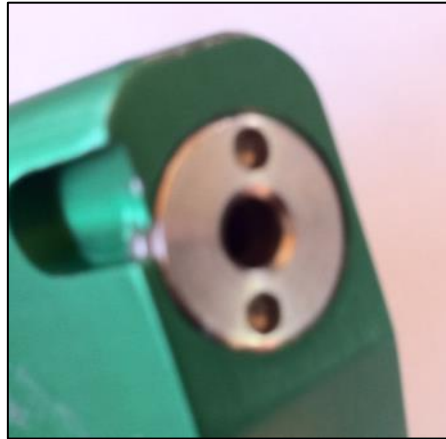
- 5) Place a new gasket into the magazine and secure it firmly in place using the provided gasket installation tool. Make sure that it is seated fully in the recessed area.



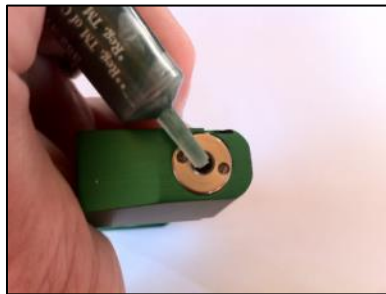
CORRECT

WRONG

- 6) Secure the coupler back onto the magazine.



- 7) Grease the opening at the top of the magazine.



Magazine Piercing Nozzle Gasket

- 1) Remove any CO2 cartridge in the magazine.
- 2) Hold the magazine upside down and pry out the piercing nozzle gasket.
- 3) Place a new gasket on the piercing nozzle and ensure that it is fully seated.

