



IES WRK Recoil Kit User Guide

Smith & Wesson M&P

9 mm/.40/.45



Revision 1.1

IES Interactive Training

Introduction

The purpose of the Smith & Wesson M&P recoil kit is to quickly convert a live pistol 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 at 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:

- Slide
- Receiver (and all sub components)
- Guide Rod & Spring: some recoil kit models may include an alternate/optional guide rod & spring

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

- Recoil Barrel: Takes the place of the weapon's original barrel.
- Recoil Magazine (2): Takes the place of the weapon's original magazine.
- Recoil Piston & Housing: Reacts to firing pin to release CO2 and moves to cause slide to cycle.
- Recoil Coupler: Secures the Tail Piece to the Recoil Barrel.
- Recoil Tail Piece: Connects CO2 from recoil magazine to recoil barrel.
- Recoil Laser: Installed at the front of the recoil 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.
 - S&W 9mm/.40 uses a #56 IES Recoil Laser. S&W .45 uses laser #59

Spare Parts & Tools:

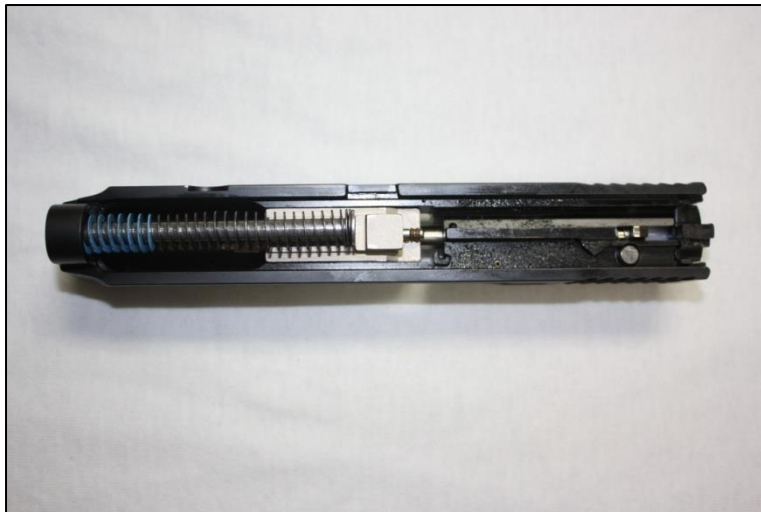
- Magazine top port gasket (2)
- Magazine piercing nozzle gasket
- Laser installation wrench (1/2" or 13mm)
- Barrel Oil & Magazine Grease

Recoil Kit Installation

- 1) Remove the original magazine from the weapon and ensure that then weapon is clear and safe.
- 2) Remove the slide from the receiver following the normal S&W handgun disassembly method.
- 3) Remove the original weapon barrel from the slide.
- 4) Install the white or metal tube to the recoil barrel CO2 inlet. If this is the first time the kit is being assembled, place a small amount of the magazine grease on each of the O-rings on the tube, to help them insert more smoothly.



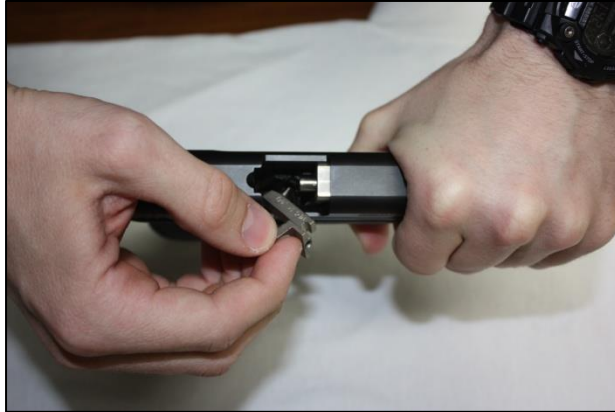
- 5) Install the recoil barrel to the slide and secure it with the guide rod and spring.



- 6) Place thumb through the trigger guard and slightly pull back on slide to hold it



- 6) Insert the tail piece, back end first, with the nipple facing down into the magazine well.



- 7) Gently push the tail piece onto the recoil barrel, taking care not to damage the tube protruding from the barrel.



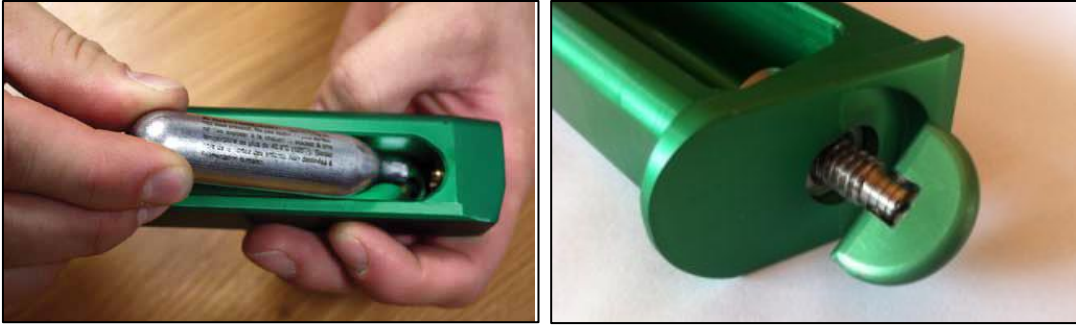
- 8) Gently push the coupler into place in the tail piece. Note that the piston should protrude through the center of the coupler as you do this.



- 9) Gently screw the coupler in using the provide installation wrench.



- 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.



- 10) Insert the magazine into the receiver and ensure that it is seated firmly in place.



- 11) If charging of the slide is required for this weapon, do so.
12) 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 barrel 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) Hold the slide back (like step 9) and unscrew the coupler to remove it.
- 2) Hold the slide back (like step 9) and gently remove the piston from the recoil barrel.
- 3) Hold the slide back (like step 9) and gently remove the tail piece.
- 4) Remove the slide following normal S&W disassembly methods.
- 5) Remove the recoil barrel from the slide.

Recoil Laser Information

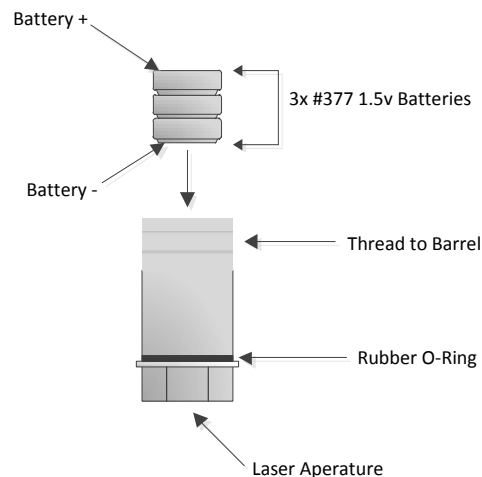
An infrared (IR) laser module is provided with each recoil kit. The IR laser emits a pulse of light each time the weapon is fired. The pulse is not visible to the human eye. The laser pulse is detected by the IES simulator and is used to indicate the shot location.

The S&W requires a #56/#59 IES Recoil Laser



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, as shown below.

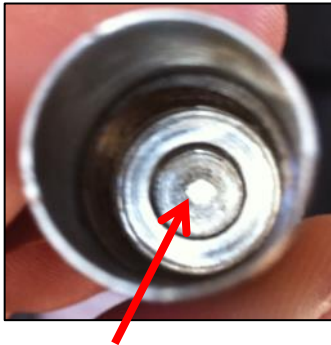


INVISIBLE LASER RADITAION
AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT

Laser Installation & Removal

Battery Spring

For proper functioning, the laser requires that a battery spring be installed in the barrel. This spring completes the battery circuit, in order to energize the laser. Before installing a laser, and after removing a laser, check the recoil barrel to ensure that the battery spring is present and positioned correctly in the barrel. Typically this spring is installed at the factory for you, but in some cases you may need to install it. Note that the battery spring should be fully seated in a recessed area of the barrel and therefore should stay in place when the barrel is pointed at the ground. If not, press the spring into the recess using a flat tool such as a pen cap.



RECESS AREA



CORRECT



WRONG

Laser Installation

- 1) Verify that the recoil kit is installed in the weapon.
- 2) Verify the battery spring is in place in the recoil barrel according to the pictures above.
- 3) Verify that you have 3 batteries properly installed in the laser.
- 4) Remove the magazine from the recoil weapon and fire the weapon once to ensure the recoil barrel is not charged.
- 5) Hold the recoil weapon pointing at the ground.
- 6) Insert the laser into the barrel, battery end first.
- 7) While continuing to hold the recoil weapon pointed at the ground, so that the batteries do not fall out of the laser, screw the laser into the barrel using clockwise motion.
- 8) Once the laser is tightened by hand, use the wrench (1/2" or 13mm) with light torque to tighten the laser until it is completely mated to the barrel. **DO NOT OVERTIGHTEN THE LASER!**

Laser Removal

- 1) Remove the magazine from the recoil weapon and fire the weapon once to ensure the recoil barrel is not charged.
- 2) Aim the recoil weapon at the ground to prevent batteries from falling out during removal.
- 3) Unscrew the laser from the barrel using the wrench (1/2" or 13mm) turning in a counter-clockwise motion.
- 4) Ensure that the battery recoil spring did not come out. If it did, place it back in the recoil barrel and use a screw driver or other tool to press it firmly into position.

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.

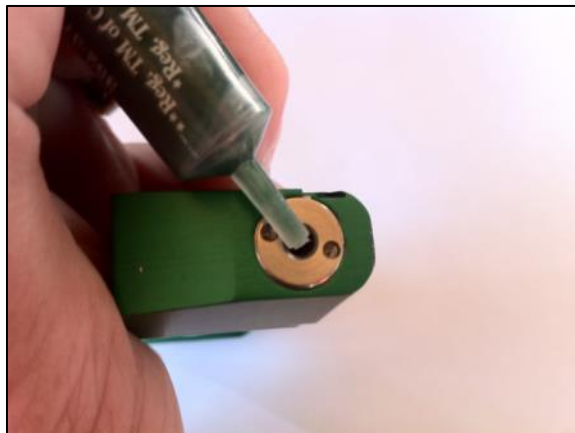
Lubrication of recoil barrel

Place a single drop of oil on the underside of the recoil barrel

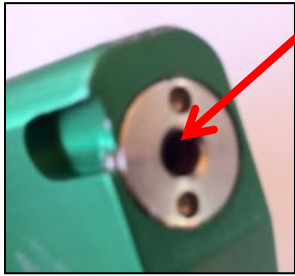


Lubrication of magazine port:

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 worn gasket. 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 in gun when magazine is installed in weapon

Depending upon the model of the weapon, there are several places that can leak due to worn O-rings or post-production tolerances being exceeded. In many cases, it is difficult to tell where the leak may be coming from, so the following list is provided in the order of most-likely. If you are unsure of where the leak is coming from, follow this list in order to resolve the leak.



Leak from barrel-to-tail piece tube (white plastic tube models): The small white tube that passes CO2 from the tail piece to the barrel can wear over time and/or become damaged during installation/removal. When this occurs, the CO2 can escape through a tear or hole in the white tube. Simply replace this tube according to the repair guide.



Leak from barrel-to-tail piece unit tube (metal tube with O-rings): The small metal tube that passes CO2 from the tail piece to the barrel has several small O-rings on it which can wear over time and/or become damaged during installation/removal. When this occurs, the CO2 can escape around the side of the tube. Simply replace this tube according to the repair guide.



Leak from rear of tail piece unit: There is a press-fit ball bearing pushed into a hole at the back of the tail piece unit. On rare occasions, tolerances in the ball and hole can allow for a leak at this position. Follow the repair guide for a leaking tail piece.

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.

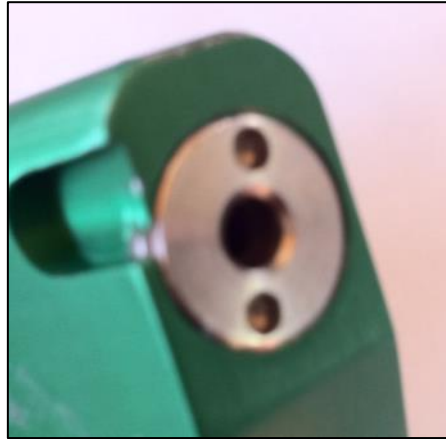


CORRECT



WRONG

- 6) Secure the coupler back onto the magazine.

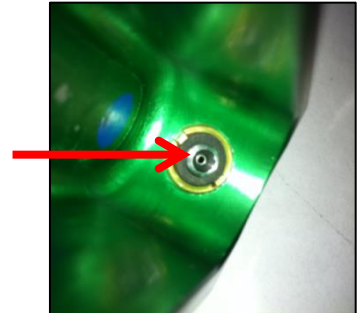


- 7) Grease the opening at the top of the magazine.



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.



Barrel to Tail Piece Unit Tube / O-rings

White Plastic Tube Models: Simply replace this tube using one of the spare tubes provided with the recoil kit. Note that for installation, the tube should be placed in the barrel first. The tail piece should mate to the barrel which has the tube already installed in it.

Metal Tube w/ O-Ring Models: Simply replace the small O-rings on the metal tube using the spare O-rings provided with the recoil kit. Place a small amount of the magazine grease on each of the O-rings on the tube, to help them insert more smoothly. Note that for installation, the metal tube (with O-rings installed) should be placed in the barrel first. The tail piece unit should mate to the barrel which has the tube already installed in it.

Leaking Ball near CO2 Inlet

- 1) Place a small drop of red Loctite directly onto the ball surface.
- 2) Tap lightly on the ball with a screwdriver and hammer to allow the Loctite to fall into any gaps created by the tolerances.
- 3) Allow the Loctite to dry for at least an hour before testing the recoil kit again.

