



WRK Recoil Kit User Guide

Tavor 21



Revision 1.0

MILO Range Training Systems

Introduction

The purpose of the Tavor 21 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 inserted into the barrel is fired, allowing interaction with the MILO Range simulator.

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

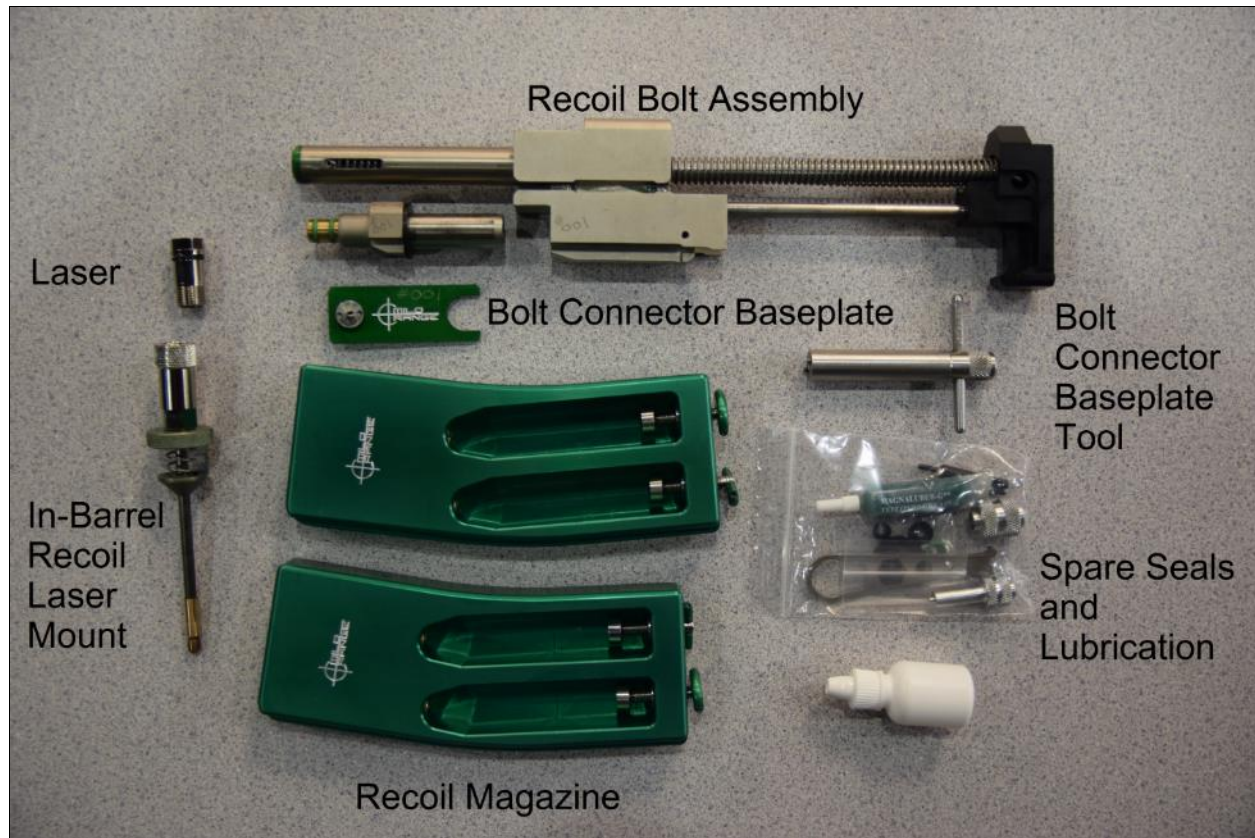


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Parts & Components of the Recoil Kit

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



The following original weapon components are used:

- Receiver (and all sub components minus the original Weapon Bolt Assembly)

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

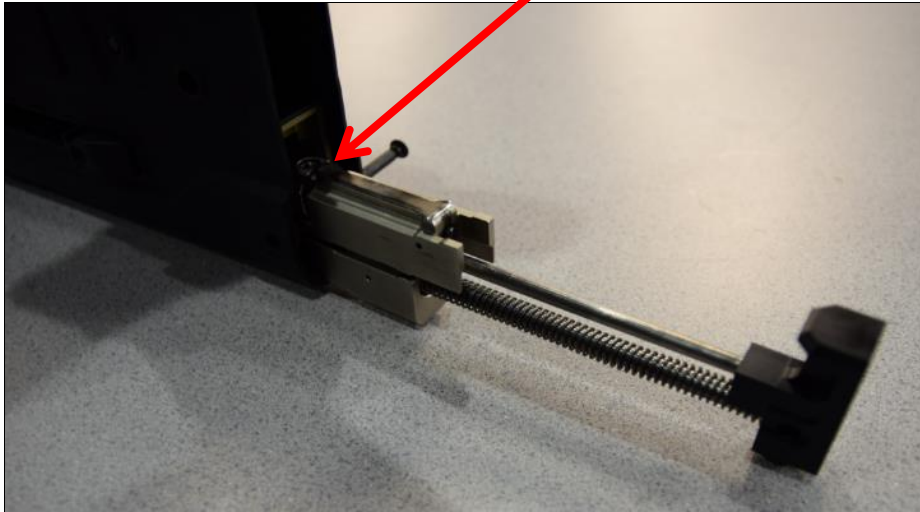
- Recoil Bolt Assembly: Takes the place of the weapon's original bolt assembly.
- Recoil Magazine (2): Takes the place of the weapon's original magazine.
- Bolt Connector Baseplate: Connects CO2 from recoil magazine to recoil bolt assembly.
- In-Barrel Recoil Laser Mount: Inserted into the muzzle of the barrel.
- Laser: Installed using the in-barrel recoil laser mount. 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:
 - Bolt Connector Baseplate Tool
 - 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

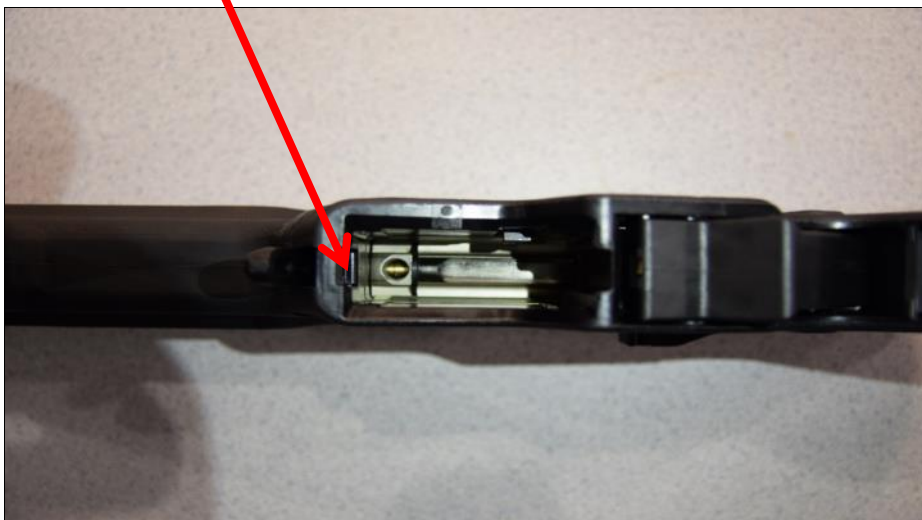
- 1) Remove the original magazine from the weapon and ensure that the weapon is clear and safe.
- 2) Remove the retaining pin holding the butt-pad in place located on the top end of the butt-pad and open up the pad to view the bolt assembly. Note the retaining pin cannot be fully removed from the receiver.
- 3) Remove the original weapon bolt assembly from the 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.

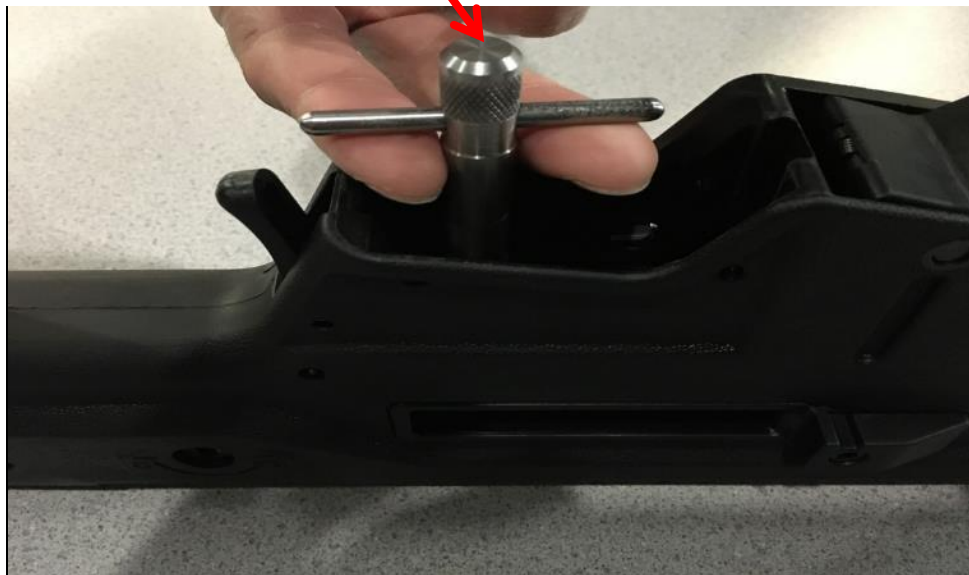
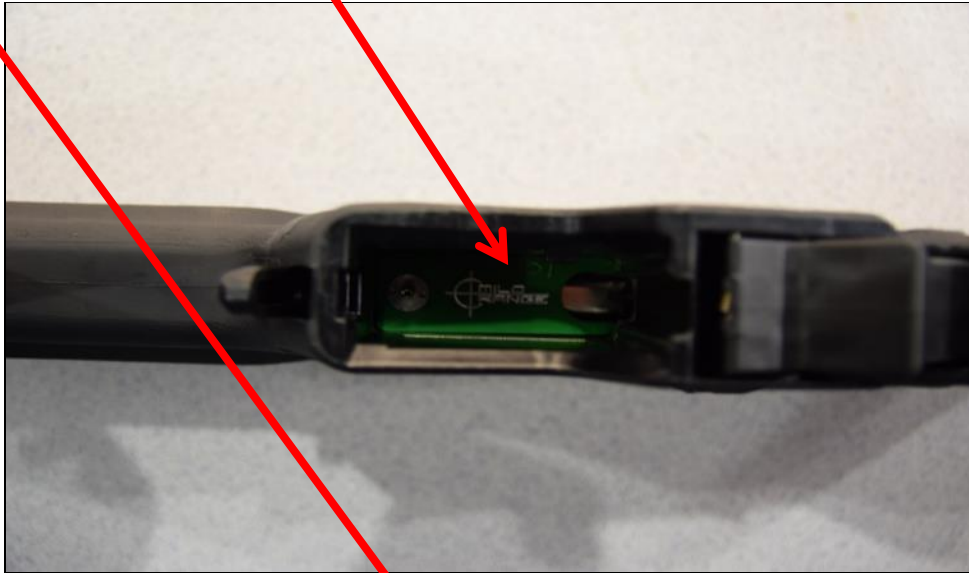
- 4) Lay the weapon upside down on a table or desk to aide in the installation. Install the recoil bolt assembly as shown in the picture below. Note that the small hole on the bottom-front end of the bolt assembly needs to be oriented to face down through the magazine well. If this is the first time 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.



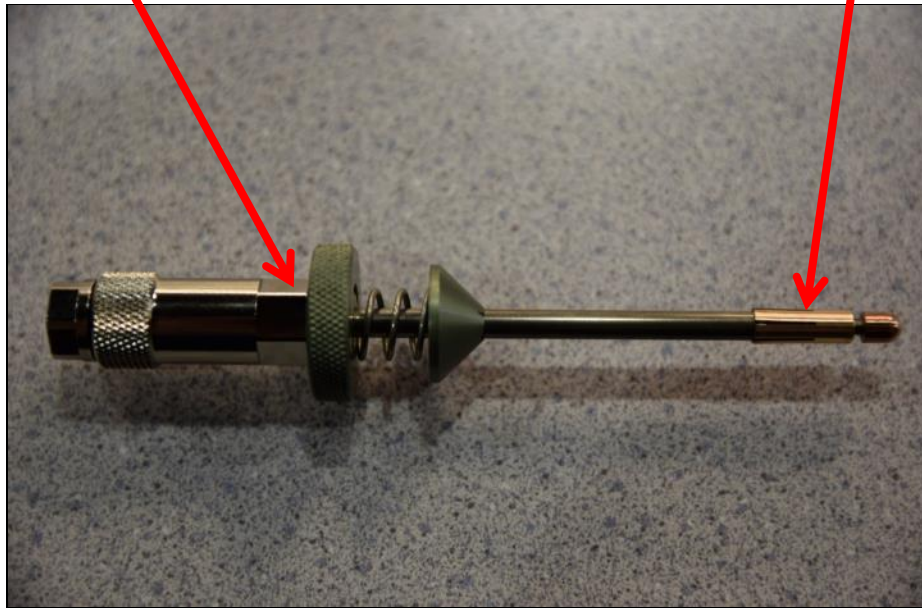
- 5) Ensure that the recoil bolt assembly is fully installed and fits flush against the forward end of the receiver. Close the butt-pad and push the retaining pin back into its slot to secure the recoil bolt assembly.



- 6) Install the bolt connector baseplate to the now installed recoil bolt assembly using the supplied bolt connector baseplate tool. Note that you will want to press and hold the magazine release to easily allow for the connector baseplate to seat correctly. Also, only use the bolt connector baseplate tool to hand tighten the screw (clockwise) on the bolt connector baseplate so that it is snug and **NOT** over-tightened.



- 7) To install the laser into the weapons barrel you must attach it using the supplied in-barrel recoil laser mount. First make sure that the brass end is positioned so that it is wider than the rod, so that when inserted in the barrel it will catch the sides when installed. After the in-barrel recoil laser mount has been inserted all the way into the barrel, you will then need to twist (clockwise) on the silver end while pushing the mount into the barrel to properly secure it. If needed your wrench located in the spare parts and tool kit can be utilized on the base of the silver end to tighten it. Note that you only want to turn it $\frac{1}{4}$ turn when using the wrench after it's been hand tightened to avoid over-tightening.



- 8) The image below shows how the in-barrel recoil laser mount should look when properly installed in the barrel with the laser also installed.



- 9) To install the CO2 cartridge in 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) 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 assembly 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) Place the receiver upside down so that the recoil kit components are clearly visible.
- 2) Using the supplied bolt connector baseplate tool gently unscrew the bolt connector baseplate from the recoil bolt assembly and remove. Note that if you hold the weapon upright the baseplate will fall out for faster removal.
- 3) Remove the butt-pad retaining pin and open the butt-pad.
- 4) Gently pull the recoil bolt assembly out and away from inside the receiver.
- 5) Remove the in-barrel recoil laser mount with laser by unscrewing the silver end either by hand or with the supplied wrench located in your spare parts and tools kit.

Differences between Semi-Auto and Automatic Recoil Bolt Assembly's

There is a difference in the recoil bolt assembly for semi-auto and automatic Tavor 21's. The pictures below depict the differences between the bolt assembly's which are the flanges that extend out for the automatic recoil kit and the flanges being not being present for the semi-automatic kit. Note that you must have the correct kit for the weapon to work properly, since they are not inter-changeable (ex. semi-auto recoil kit will not work with an automatic Tavor 21 and vice versa).

Semi-Automatic Recoil Bolt Assembly without Flange



Automatic Recoil Bolt Assembly with Flange



Laser Information

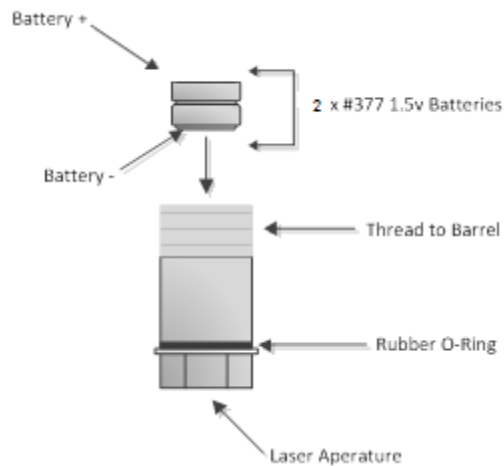
An infrared (IR) laser diode is provided with each recoil kit. The IR laser emits a pulse of light each time the weapon is fired. The pulse is not visible to the human eye. The laser pulse is detected by the MILO Range simulator and is used to indicate the shot location.

Tavor 21 Recoil Kits require a #53 Recoil Laser with the In-Barrel Recoil Laser Mount



Laser Batteries

To power the laser, 2x #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.

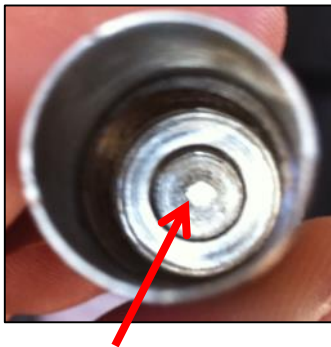


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INVISIBLE LASER RADIATION
AVOID DIRECT EYE EXPOSURE

Laser Installation & Removal

Battery Spring

For proper functioning, the laser requires that a battery spring be installed in the in-barrel recoil laser mount. This spring completes the battery circuit, in order to energize the laser. Before installing a laser, and after removing a laser, check the in-barrel recoil laser mount 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 the recessed area of the in-barrel recoil laser mount 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.



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Laser Installation

- 1) Verify that the recoil kit is installed in the weapon.
- 2) Verify the battery spring is in place in the in-barrel recoil laser mount according to the pictures above.
- 3) Verify that you have 2 batteries properly installed in the laser.
- 4) Remove the magazine from the recoil weapon and fire the weapon once to ensure the recoil weapon is not charged.
- 5) Hold the recoil weapon pointed at the ground.
- 6) Insert the laser into the open end of the in-barrel recoil laser mount, battery end first.
- 7) While continuing to hold the in-barrel recoil laser mount pointed at the ground, so that the batteries do not fall out of the laser, screw the laser into the in-barrel recoil laser mount using a 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 (once installed in the weapons barrel). **DO NOT OVERTIGHTEN THE LASER!**

Laser Removal

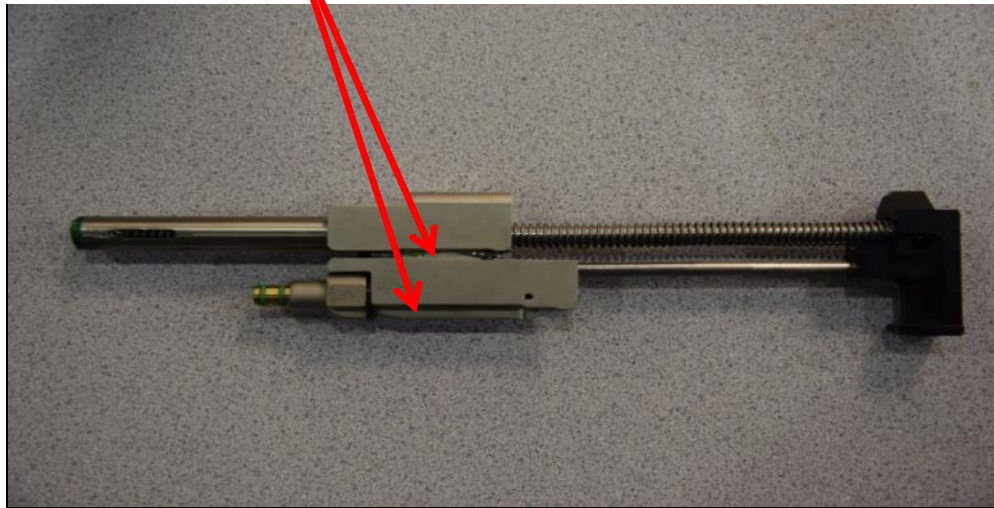
- 1) Remove the magazine from the recoil weapon and fire the weapon once to ensure the recoil weapon is not charged.
- 2) Aim the recoil weapon at the ground to prevent batteries from falling out during removal.
- 3) Unscrew the laser from the barrel using the wrench (1/2" or 13mm) turning in a counter-clockwise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

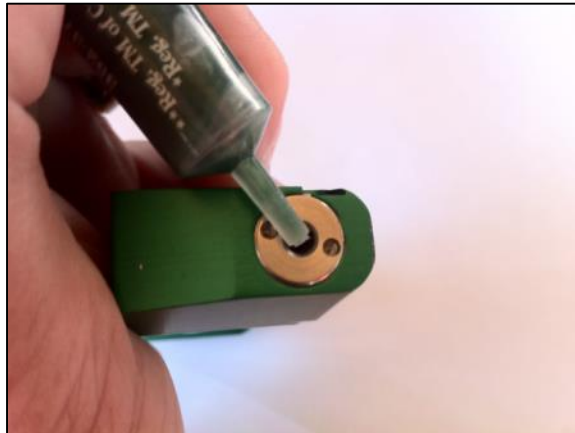
Lubrication of weapon

If your weapon normally requires lubrication on slide rails or elsewhere, be sure to apply it. Place a few drops of oil or grease on the slides of the recoil bolt assembly.

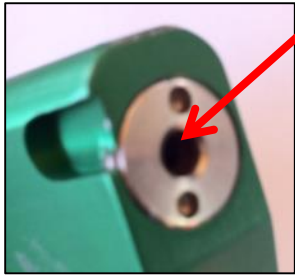


Lubrication of magazine port:

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 Customer Service.

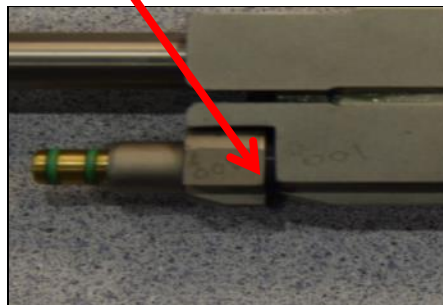


Air leak at top of CO2 cartridge in magazine when not in weapon

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 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 bolt connector baseplate using the supplied bolt connector baseplate tool and pull the O-ring off. Slide on a new O-ring from the supply of replacements and reinstall the bolt connector baseplate.



Repair Guide

Magazine CO2 Port Gasket

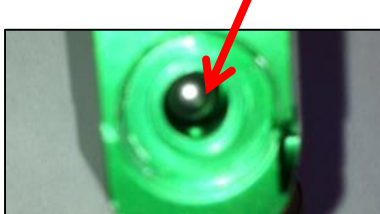
- 1) Remove the CO2 cartridges in the magazine.
- 2) Hold the magazine and remove the coupler from the top of the magazine using the provided tool.



- 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 when reassembling.



- 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.

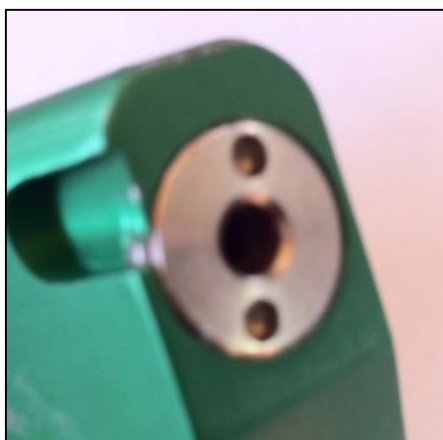
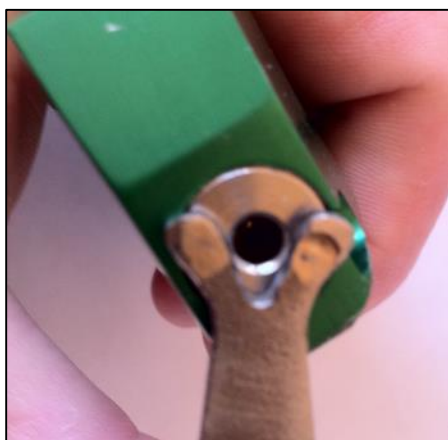


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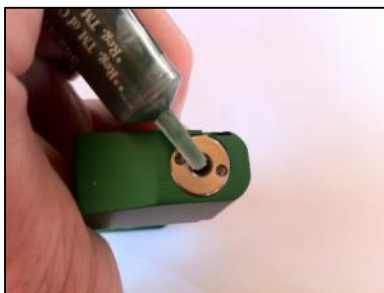


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- 6) Secure the coupler back onto the magazine.



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



Magazine Piercing Nozzle Gasket

- 1) Remove any CO2 cartridges 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.

