



UNIT4[®] TRAINING SYSTEM OPERATOR'S MANUAL

UNIT Solutions[®] | 844-488-8648 | customerservice@unitsolutions.com



TABLE OF CONTENTS

SECTION 1: INTRODUCTION.....	7
1.1 ABOUT UNIT SOLUTIONS	7
1.2 ABOUT THIS MANUAL	7
SECTION 2: SAFETY	8
2.1 WARNINGS, SAFETY CONSIDERATIONS & RULES FOR SAFE SYSTEM HANDLING.....	8
2.2 BEWARE OF DANGEROUS CONDITIONS	10
2.3 LIMITATION ON LIABILITY; INDEMNITY	10
SECTION 3: UNIT4 CHARACTERISTICS	11
3.1 UNIT4 TRAINING SYSTEM	11
3.2 CHARACTERISTICS COMPONENT & CONTROL DETAILS	11
3.2.1 FORWARD ASSIST	11
3.2.2 CHARGING HANDLE	12
3.2.3 FIRE CONTROL SELECTOR	12
3.3 TRAINING RIFLE CHARACTERISTICS	13
3.3.1 COMPONENT & CONTROL DETAILS	13
3.3.1.1 BOLT CATCH	13
3.3.1.2 MAGAZINE CATCH ASSEMBLY	13
3.4 OPERATION CHARACTERISTICS	14
3.5 CYCLE OF OPERATION	14
3.5.1 CLEARING	14
3.5.2 FUNCTION CHECK	16
3.5.2.1 CHECKING SAFE	16
3.5.2.2 CHECKING SEMI	16
3.5.2.3 CHECKING AUTO	17
3.5.2.4 LOADING THE TPAK®	17
3.5.2.5 LOADING	18
3.5.2.6 UNLOADING	19
3.5.2.7 REMOVING THE TPAK.....	20

3.5.2.8	TPAK CONSIDERATIONS	21
3.6	CYCLE OF FIRING	22
3.6.1	CHARGING THE SYSTEM TO LOAD THE FIRST ROUND.....	22
3.6.2	FIRING	22
3.6.2.1	SEMI	23
3.6.2.2	AUTO.....	23
3.6.3	RELEASE OF CO ₂ PROPELLANT	23
3.6.3.1	FORWARD PROPELLANT	24
3.6.3.2	REARWARD PROPELLANT.....	24
3.6.4	BOLT CARRIER REARWARD MOTION.....	24
3.6.5	BOLT CARRIER FORWARD MOTION	25
3.6.6	END OF MAGAZINE	26
3.7	FIELD STRIPPING	27
SECTION 4:	MAINTENANCE	31
4.1	CLEANING, LUBRICATION, MAINTENANCE & STORAGE	31
4.1.1	CLEANING	31
4.1.2	LUBRICATION	31
4.1.3	STORAGE & TRANSPORTATION	32
SECTION 5:	TROUBLESHOOTING	33
5.1	TROUBLESHOOTING DESCRIPTIONS	33
5.2	IMMEDIATE ACTION	33
5.3	REMEDIAL ACTION	34
5.4	TROUBLESHOOTING TABLE	34
SECTION 6:	PRODUCT WARRANTY	36
6.1	WARRANTY	36
6.2	DISCLAIMER	37
6.3	EXCLUSIVE REMEDY.....	37

UNIT SOLUTIONS, UNIT SOLUTIONS TACTICAL TRAINING SYSTEMS LOGO, TPAK, AND UNIT ARE REGISTERED TRADEMARKS OF UNIT SOLUTIONS, INC.

LIST OF FIGURES

FIGURE 3-1 – UNIT4 TRAINING SYSTEM	11
FIGURE 3-2 – FORWARD ASSIST	12
FIGURE 3-3 – CHARGING HANDLE	12
FIGURE 3-4 – FIRE CONTROL SELECTOR	13
FIGURE 3-5 – BOLT CATCH	13
FIGURE 3-6 – MAGAZINE CATCH ASSEMBLY	14
FIGURE 3-7 – RELEASING THE MAGAZINE	15
FIGURE 3-8 – PULLING THE CHARGING HANDLE REARWARD	15
FIGURE 3-9 – FIRE CONTROL SELECTOR - SAFE	16
FIGURE 3-10 – FIRE CONTROL SELECTOR - SEMI	16
FIGURE 3-11 – FIRE CONTROL SELECTOR - AUTO	17
FIGURE 3-12 – LOADING THE TPAK.....	18
FIGURE 3-13 – FIRE CONTROL SELECTOR - SAFE	18
FIGURE 3-14 – LOADING THE MAGAZINE	19
FIGURE 3-15 – FIRE CONTROL SELECTOR - SAFE & MAGAZINE RELEASE	19
FIGURE 3-16 – LOCK BOLT CARRIER GROUP TO REAR	20
FIGURE 3-17 – UNLOADING	21
FIGURE 3-18 – CHARGING THE SYSTEM TO LOAD THE FIRST ROUND	22
FIGURE 3-19 – FIRING	22
FIGURE 3-20 – RELEASE OF CO ₂ PROPELLANT	23
FIGURE 3-21 – BOLT CARRIER REARWARD MOTION	24
FIGURE 3-22 – BOLT CARRIER REARWARD MOTION	25
FIGURE 3-23 – BOLT CARRIER FORWARD MOTION	25
FIGURE 3-24 – BOLT CARRIER FORWARD MOTION	26

FIGURE 3-25 – END OF MAGAZINE 26

FIGURE 3-26 – SAFE POSITION 27

FIGURE 3-27 – UPPER AND LOWER RECEIVER HALVES SEPARATED 27

FIGURE 3-28 – REMOVING THE BOLT CARRIER GROUP 28

FIGURE 3-29 – REMOVING THE BUFFER AND ACTION SPRING 28

FIGURE 3-30 – REMOVING THE BUTTSTOCK 29

FIGURE 3-31 – REMOVING THE PISTON STOP 29

FIGURE 3-32 – FIELD STRIP COMPLETE OVERVIEW 30

THIS PAGE IS INTENTIONALLY BLANK

SECTION 1: INTRODUCTION

1.1 ABOUT UNIT SOLUTIONS

UNIT Solutions, Inc. (“UNIT Solutions”) is dedicated to being the pre-eminent non-lethal training solution for law enforcement and military worldwide. Based on direct feedback from military and law enforcement professionals, we have custom engineered a solution to directly address existing training challenges, and provide the best training system on the market for force-on-force and decision-making training.

Founded in 2016, our staff has spent the past several years researching the existing training systems on the market and identifying the inherent challenges with using each. Feedback from administrators and end users convinced us that our service members and officers needed a better training system. Simunition® and UTM® could be too expensive for some users. Airsoft and paintball lacked the durability and realism required for training. Laser systems provided limited feedback. Thus, UNIT Solutions was born.

UNIT Solutions proudly works with several veterans who have served our country both at home and abroad. We believe the best way to ensure the highest product standards are upheld for our training systems is to work with those who have used them on a daily basis. Our full-time staff is supported by an Advisory Board of experienced professionals which offers guidance on product development, marketing and business opportunities.

1.2 ABOUT THIS MANUAL

This UNIT Solutions manual describes the UNIT4 training system, the system’s unique characteristics, functionality, maintenance, detailed disassembly/reassembly, troubleshooting strategies, and provides complete illustrated parts lists.

READ THIS ENTIRE MANUAL PRIOR TO CLEARING, LOADING, OR IN ANY WAY ATTEMPTING TO OPERATE THE UNIT4 TRAINING SYSTEM. IMPROPER USE CAN CAUSE SERIOUS INJURY OR DEATH. DO NOT DISCARD THIS MANUAL.

This manual is built to support UNIT Solutions’ operator’s training and serve as a guide to normal routine maintenance of the UNIT4 training system.

The most up-to-date version of this manual is available at www.unitsolutions.com/manuals.

SECTION 2: **SAFETY**

2.1 WARNINGS, SAFETY CONSIDERATIONS & RULES FOR SAFE SYSTEM HANDLING

PLEASE READ PRIOR TO OPERATING THE UNIT4 TRAINING SYSTEM.

THE UNIT4 TRAINING SYSTEM IS NOT A TOY. TREAT IT WITH THE SAME RESPECT YOU WOULD A FIREARM. ALWAYS CAREFULLY FOLLOW THE SAFETY DIRECTIONS FOUND IN THIS OPERATOR'S MANUAL AND KEEP THE MANUAL IN A SAFE PLACE FOR FUTURE USE. MISUSE OR CARELESS USE MAY CAUSE SERIOUS INJURY OR DEATH.

INTENDED FOR ADULT USE ONLY. KEEP OUT OF REACH OF CHILDREN.

DO NOT BRANDISH OR DISPLAY THE UNIT4 TRAINING SYSTEM IN PUBLIC. IT MAY BE CONFUSING TO PEOPLE AND MAY BE A CRIME. POLICE AND OTHERS MAY THINK IT IS A FIREARM. DO NOT CHANGE THE COLORATION AND MARKINGS TO MAKE IT LOOK MORE LIKE A FIREARM. THAT IS DANGEROUS AND MAY BE A CRIME. IT IS THE USER'S RESPONSIBILITY TO CONFORM WITH AND FOLLOW ALL LAWS GOVERNING THE USE AND OWNERSHIP OF THE UNIT4 TRAINING SYSTEM.

To safely and properly handle the UNIT4 training system, you must understand that injury or death to you or others may result from unsafe or careless use. Keep in mind that while the general rules of safe gun handling always apply, circumstances or conditions may exist that require additional precautions to be taken. Safe use of the UNIT4 is your personal responsibility. Failure to follow these basic safety rules may result in unintended discharge of the system and/or serious personal injury or death to you or others.

If you feel uncertain about any operational aspects of your UNIT4 training system, please contact UNIT Solutions at 844-488-8648 before proceeding with its operation.

- **TREAT EVERY UNIT4 PRODUCT AS IF IT WERE LOADED.**
- Buyer and user have the duty to obey all laws about the use and ownership of this product.
- Never modify or alter your UNIT4 training system as it such may cause it to malfunction or make it unsafe and will void the warranty. This includes, but is not limited to, coloring or painting any part of the UNIT4 training system.
- When conducting force-on-force training with the UNIT4 training system, always wear appropriate protection including, but not limited to, covering for eyes, mouth, face, ears, exposed skin, and any other sensitive areas.
- Each person within firing range should wear appropriate protection including, but not limited to, covering for eyes, mouth, face, ears, exposed skin, and any other sensitive areas.
- When conducting marksmanship training or static firing with the UNIT4 training system, always adhere to the best practices of safe handling as outlined in this manual.
- Never use drugs or alcohol while handling this product.
- Always keep the muzzle pointed in a safe direction.
- Never point the UNIT4 at anyone or anything you do not intend to shoot regardless of whether or not it is loaded. This is particularly important when loading, unloading, or field stripping the training rifle.
- Always control the direction of the UNIT4.

- Always keep fingers away from the trigger until you are ready to shoot.
- Only load the UNIT4 training rifle when ready to fire.
- Only use the UNIT Solutions' TPAK cartridges with the UNIT4 training rifle.
- Always keep the safety on until ready to fire.
- Never place your finger inside the trigger guard or on the trigger unless you intend to fire.
- Only shoot the UNIT4 when you are sure of your target and backstop.
- Do not shoot the UNIT4 if unsure where the round will travel if the backstop is penetrated.
- Never rely on a mechanical safety as a replacement or substitute for safe gun handling.
- Practice inserting and removing the TPAK cartridges into the magazines and the magazines into the UNIT4, even if you have handled similar systems before.
- Always keep the barrel free of obstructions, dirt, mud, sand and other debris.
- If you suspect that the barrel of the UNIT4 may be obstructed, unload the training rifle, examine the bore, remove any obstruction, and clean before reloading and shooting the system.
- To avoid an accidental discharge, always keep the chamber empty until ready to fire.
- The UNIT4 is only unloaded when the magazine is removed and the chamber, magazine well, and bolt face have been confirmed clear and empty.
- When handing or transferring the UNIT4 to another person or accepting the UNIT4 from another person, ALWAYS first inspect the training rifle. Open the action and inspect the chamber, magazine well, and bolt face to verify that the training rifle is unloaded.
- Always remove magazine and clear the UNIT4 before cleaning.
- Be sure all accessories are compatible with the UNIT4 and that the accessories do not interfere with safe operation of the UNIT4.
- There is no way to predict which direction rounds will travel or ricochet when fired at flat ground surfaces or water. When present, always fire directly into a sufficient backstop.
- Always be certain of what is behind your target. Make sure your target does not conceal a person or some object which could be harmed. Do not shoot at targets which allow ricochets or deflections.
- When not in use, the UNIT4 should always be kept unloaded and stored in a secure area.
- When servicing the UNIT4, only use authorized Unit Solutions approved replacement parts. Failure to use authorized replacement parts will void your product warranty.
- When storing, do not encase the UNIT4 in anything that will attract or hold moisture, such as leather or heavy cloth. Also, do not store the training rifle with anything inserted in the barrel that can contribute to moisture accumulation.
- If the UNIT4 is to be stored for an extended period, the bore, the chambers and internal working mechanism should be oiled with a high quality lubricating oil or preservative. The external working mechanisms, lower receiver, upper receiver, and barrel should be coated with Cleaner, Lubricant, Protectant (CLP). Be sure to clean your UNIT4 before using it again.

ACCIDENTS HAPPEN FAST SO BE CAUTIOUS AND REMEMBER - SAFETY FIRST.



WARNING: THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING LEAD, WHICH IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. FOR MORE INFORMATION, GO TO www.p65warnings.ca.gov.

2.2 BEWARE OF DANGEROUS CONDITIONS:

- If there is water or any other substance or obstruction in the barrel, do not attempt to shoot the UNIT4. It could malfunction, causing damage to you, those around you, or the product.
- If a noticeable difference in sound or recoil is experienced, stop firing. Either condition could indicate an obstruction stuck in the bore of the barrel.
- When the bolt carrier assembly is locked to the rear, a projectile could be chambered if the UNIT4 is dropped or jarred with a loaded magazine in place.

2.3 LIMITATION ON LIABILITY; INDEMNITY

UNIT SOLUTIONS INC. WILL NOT BE RESPONSIBLE FOR ANY PERSONAL INJURY, DEATH OR PROPERTY DAMAGE THAT RESULTS FROM: (1) THE CRIMINAL OR NEGLIGENT USE OF THIS SYSTEM; (2) A DISREGARD OF THE FOREGOING SAFETY INSTRUCTIONS AND WARNINGS; (3) IMPROPER OR CARELESS HANDLING OF THIS SYSTEM; (4) THE USE OF A NON-STANDARD, DEFECTIVE, IMPROPER OR RELOADED ROUNDS; OR (5) IMPROPER OR NEGLIGENT MODIFICATIONS OR REPAIRS TO THE UNIT4 SYSTEM BY ANY PARTY OTHER THAN UNIT SOLUTIONS. YOU AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS UNIT SOLUTIONS AGAINST ANY CLAIMS MADE BY ANY PERSON OR ENTITY FOR INJURY, DEATH OR PROPERTY DAMAGE ARISING FROM YOUR USE OF THE UNIT4 SYSTEM THAT IS NOT THE DIRECT AND SOLE RESULT OF A DEFECT IN THE DESIGN, WORKMANSHIP OR MATERIALS OF THE UNIT4 SYSTEM.

SECTION 3: **UNIT4 CHARACTERISTICS**

3.1 UNIT4 TRAINING SYSTEM



Figure 3-1 – UNIT4 Training System

The UNIT4 is a mil-spec, standalone, M4 training system that uses CO₂ to fire 8mm non-lethal projectiles. The UNIT4 training rifle is magazine fed and utilizes UNIT Solutions' proprietary TPAK cartridge system to deliver the projectiles from magazine to the training rifle.

The TPAK is a low cost, preloaded cartridge containing 30 8mm marking or non-marking projectiles and CO₂ propellant. TPAK cartridges are made from 100% recyclable material and are intended for use exclusively with the UNIT4 training system.

The training rifle is manufactured with a military grade aluminum body and military grade materials by Lewis Machine & Tool in Eldridge, IA.

3.2 CHARACTERISTICS COMPONENT & CONTROL DETAILS

The following entries describe controls of the UNIT4 training rifle, their purpose, and how to operate them.

3.2.1 FORWARD ASSIST

Forward Assist: The purpose of this device is to provide an external method to close the bolt should it fail to close and lock on its own or as a discreet measure for closing the bolt. See Figure 3-2.

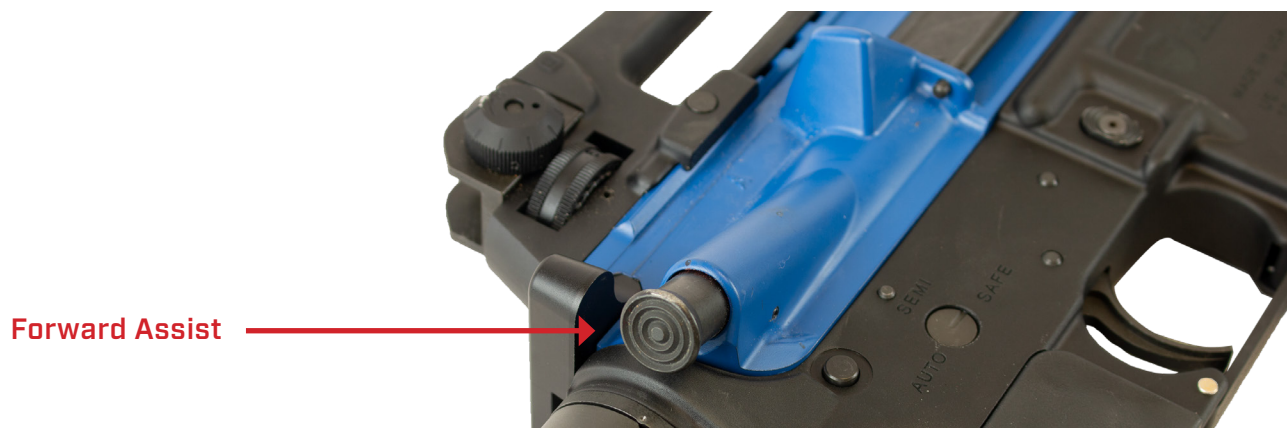


Figure 3-2 – Forward Assist

3.2.2 CHARGING HANDLE

The charging handle acts as a linkage to the bolt carrier to retract it. The charging handle is non-reciprocating and held in place by a latch on the left side of the handle. See Figure 3-3.

The act of pulling the charging handle to the rear then allowing it to travel forward “cocks” the UNIT4. This places the hammer in a ready-to-fire position.



Figure 3-3 – Charging Handle

3.2.3 FIRE CONTROL SELECTOR

The fire control selector acts as a safety device and setting for the desirable rate of fire.

The words SEMI, AUTO, and SAFE serve as fire control settings for the UNIT4 training rifle. Always keep the fire control setting on SAFE until ready to fire. See Figure 3-4.



Figure 3-4 – Fire Control Selector

3.3 TRAINING RIFLE CHARACTERISTICS

3.3.1 COMPONENT & CONTROL DETAILS

3.3.1.1 BOLT CATCH

This control serves two purposes: to hold the bolt carrier to the rear when the last round is fired and to release the bolt carrier from that position to chamber a new round or simply close the action. The lower portion of the bolt catch and release serves as the “catch” whereas the upper portion serves as a release. See Figure 3-5.

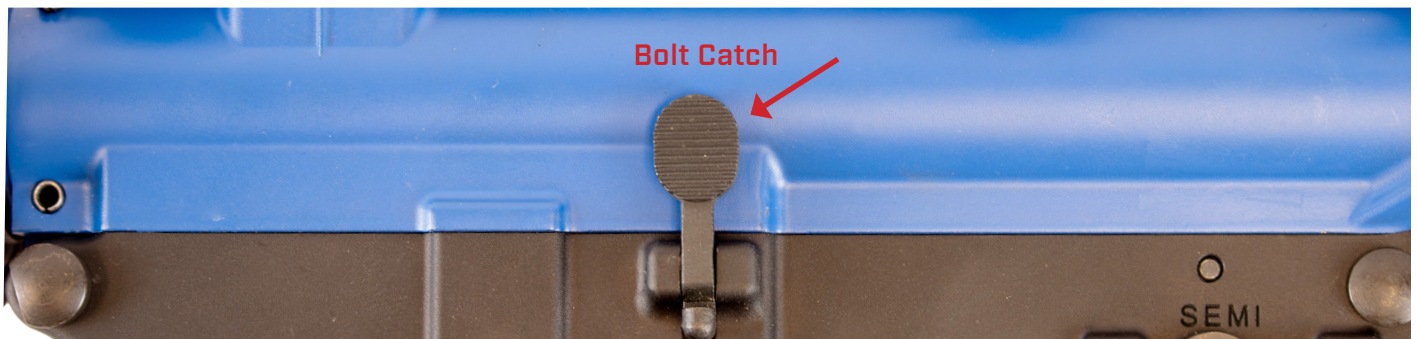


Figure 3-5 – Bolt Catch

3.3.1.2 MAGAZINE CATCH ASSEMBLY

The magazine release button is on the right side of the receiver and is part of the assembly which retains a magazine in place once inserted in the weapon. See Figure 3-6. The right side of the lower receiver has a release button which, when depressed, releases the magazine from the magazine well.



Figure 3-6 – Magazine Release Button

3.4 OPERATION CHARACTERISTICS

This section describes the operational characteristics of the UNIT4 to prepare the operator and ensure the training rifle is safe and ready for use.

CLEARING

This process describes the method by which to ensure the UNIT4 training rifle is unloaded for safe handling or in preparation to be loaded. See Section 3.5.1 CLEARING on page 14.

FUNCTION CHECK

The function check evaluates operation of the fire control selector to ensure the SAFE, SEMI, and AUTO settings function correctly. See Section 3.5.3 FUNCTION CHECK on page 16.

LOADING & UNLOADING

This section outlines the steps to load the UNIT4 in preparation for fire and how to correctly unload the training rifle. See Section 3.5.3.4 loading the TPAK® on page 16.

PROJECTILE CONSIDERATIONS

Safety considerations regarding the projectiles should be observed prior to shooting. This section covers specifications, conditions, and environmental considerations for projectiles used with this training system.

3.5 CYCLE OF OPERATION

This section describes the UNIT4's cycle of operations and illustrates the semi-auto and full-auto/burst functions of the training rifle.

3.5.1 CLEARING

- STEP 1 Always ensure the UNIT4 is pointed in a safe direction and attempt to place the training rifle on SAFE. If the selector switch will not move to the SAFE position, the training rifle is uncocked; proceed to Step 2.
- STEP 2 Eject the magazine by pressing the right side-magazine release.



Figure 3-7 – Releasing the Magazine

STEP 3 Pull the charging handle rearward using the bolt catch to lock the bolt to the rear. Return the charging handle forward to the locked position. See Figure 3-8.

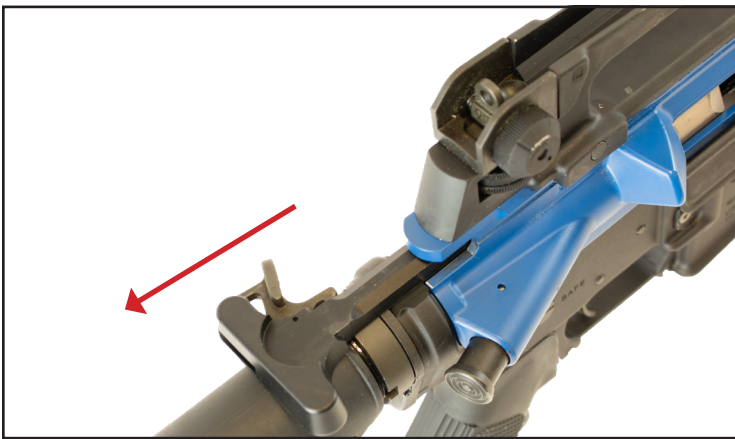


Figure 3-8 – Pulling the Charging Handle Rearward

STEP 4 Visually inspect the chamber, magazine well, and bolt face to ensure the UNIT4 training rifle is completely clear of any projectiles.

STEP 5 If unable to place the UNIT4 on SAFE in step 1, do so now.

STEP 6 Depress the bolt catch and release to return the bolt carrier group to the forward position. The training rifle is now clear.

3.5.2 FUNCTION CHECK



WARNING: Always complete clearing prior to initiating a function check. See Figure 3.5.1.

3.5.2.1 CHECKING SAFE

STEP 1 Set the fire control selector to the SAFE position. See Figure 3-9.



Figure 3-9 – Fire Control Selector - SAFE

STEP 2 Apply normal force to the trigger lever. There should be no substantial movement of the trigger lever and no audible indication that the hammer has fallen.

3.5.2.2 CHECKING SEMI

STEP 1 Move the fire control selector to the SEMI position. See Figure 3-10.



Figure 3-10 – Fire Control Selector - SEMI

STEP 2 Pull and HOLD the trigger lever. You should hear the hammer fall.

STEP 3 With the trigger still held, pull the charging handle all the way to the rear and release to return the bolt carrier group fully forward. The hammer should not fall.

STEP 4 Slowly release the trigger lever. An audible 'click' should be heard to signify the trigger reset.

3.5.2.3 CHECKING AUTO

STEP 1 Move the fire control selector to the AUTO position. See Figure 3-11.

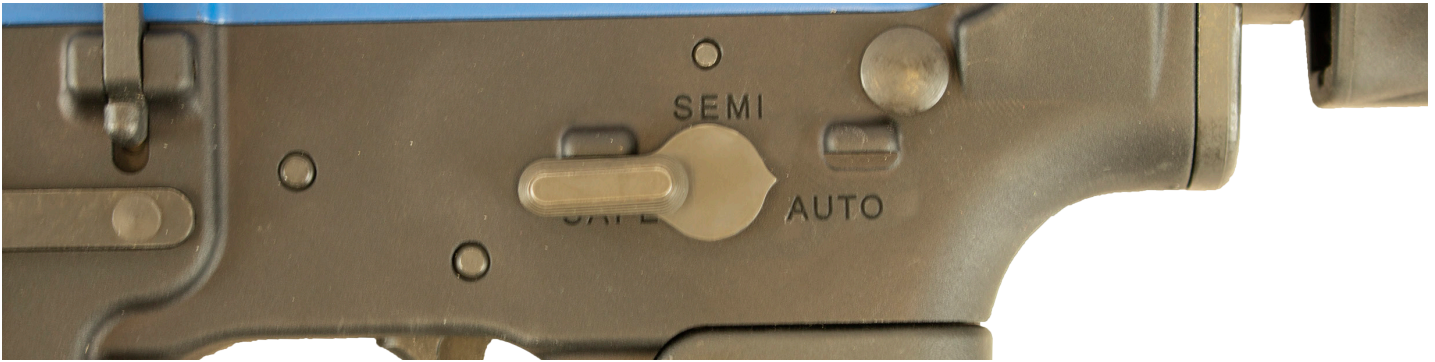


Figure 3-11 – Fire Control Selector - AUTO

STEP 2 Pull and HOLD the trigger lever. You should hear the hammer fall.

STEP 3 With the trigger still held, pull the charging handle all the way to the rear and slowly return the bolt carrier group fully forward. At the end of its travel, the hammer should fall.

STEP 4 Upon releasing the trigger, a 'click' of the trigger reset should NOT be heard.

STEP 5 Pull the trigger. The hammer should not fall.

STEP 6 Charge the UNIT4 and return it to the SAFE position.

3.5.2.4 LOADING THE TPAK



WARNING: The TPAK contains a CO₂ cylinder that can be extremely dangerous if misused or improperly handled. When inserting the TPAK into the magazine, always point the bottom of the magazine in a safe direction and away from your body or another person.

Wear gloves and keep face away from the CO₂ when replacing the TPAK. Escaping CO₂ gas can cause frostbite if it comes in contact with skin. Moreover, be careful when replacing the TPAK, it is possible that some residual gas is left in the cylinder.

Keep the TPAK away from heat and flames. Excessive heat can cause explosion and injury. Never throw a TPAK into a fire. Always wear eye protection when handling a TPAK since there is a risk of injury to the eyes. Do not remove a TPAK unless it is completely empty. Failure to observe this recommendation can result in a dangerous escape of residual gas.

STEP 1 Remove the breakaway tab at the bottom of the TPAK before loading into magazine. See Figure 3-12.

STEP 2 Hold the TPAK vertically. Align the grooves inside the magazine with the CO₂ cylinder.

STEP 3 Insert the TPAK fully into the magazine, using the grooves as a guide until you can no longer push the cartridge forward.

- STEP 4 Swing the bottom door closed.
- STEP 5 Push the latch clip through the bottom door carabiner. Ensure the carabiner snaps back into position, locking the clip into place.
- STEP 6 The bottom of the magazine should be oriented away from your body in a safe direction. Close the draw latch with one fluid motion, applying adequate pressure to fully close the magazine.
- STEP 7 Upon closing the magazine, the CO₂ canister will be punctured and ready for use with the UNIT4 Training Rifle.



Figure 3-12 – Loading the TPAK

3.5.2.5 LOADING

NOTE: Do not load the UNIT4 Training System with the magazine until you feel completely confident with your ability to handle the training rifle safely.

- STEP 1 Ensure the fire control selector is in the SAFE position. See Figure 3-13.

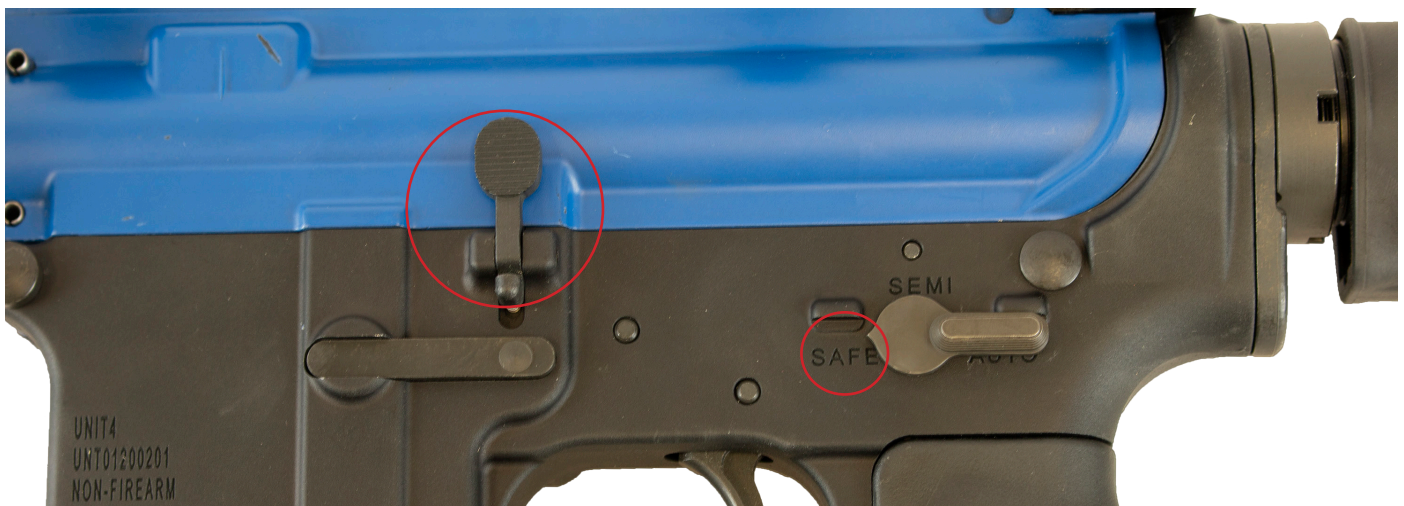


Figure 3-13 – Fire Control Selector - SAFE

- STEP 2 Lock the bolt carrier group to the rear using the bolt catch, and return the charging handle forward to the locked position. See Figures 3-13 and 3-14.



Figure 3-14 – Loading the Magazine

STEP 3 Insert the magazine into the magazine well until the magazine catch secures it in place.

NOTE: Fully inserting a loaded magazine with the carrier group closed requires greater force to effectively seat the magazine.

STEP 4 With the UNIT4 still on SAFE, press the bolt catch and release. Forward movement of the bolt carrier group will send the first round of the magazine into the chamber.

The UNIT4 system is now loaded and prepared to fire. Always leave the fire control selector on SAFE until you are ready to fire.

NOTE: If the UNIT4 is to be carried in a loaded configuration, such as for military use, close the ejection port cover to prevent debris from entering or adversely affecting the training rifle.

3.5.2.6 UNLOADING

Ensure the fire control selector is in the SAFE position. See Figure 3-15



Figure 3-15 – Fire Control Selector - SAFE & Magazine Release

STEP 1 Eject the magazine using the magazine release. See Figure 3-15.

STEP 2 Lock the bolt carrier group to the rear using the bolt catch, and return the charging handle forward to the locked position. *See Figure 3-16.*

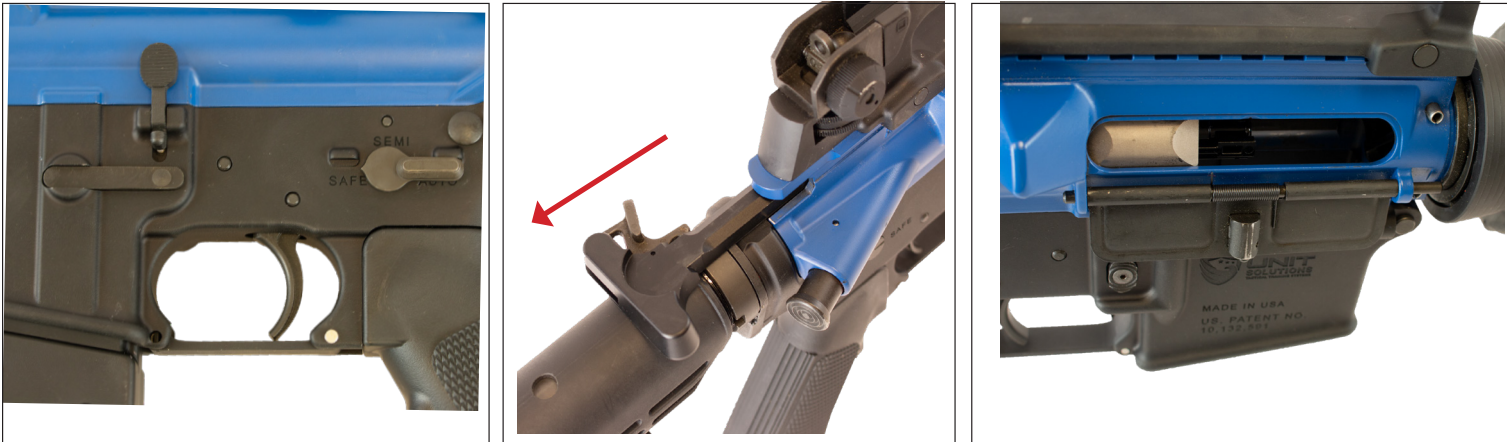


Figure 3-16 – Lock Bolt Carrier Group to Rear

STEP 3 Visually inspect the chamber, magazine well, and bolt face to ensure the UNIT4 is clear of projectiles.

STEP 4 Return the bolt carrier group to the forward position by pushing on the bolt catch release.

3.5.2.7 REMOVING THE TPAK



WARNING: When removing the TPAK from the magazine, always point the bottom of the magazine in a safe direction and away from your body or another person. The TPAK contains a CO₂ cylinder that can be extremely dangerous if misused or improperly handled.

Wear gloves and keep face away from the CO₂ when replacing the TPAK. Escaping CO₂ gas can cause frostbite if it comes in contact with skin. Moreover, be careful when replacing the TPAK, it is possible that some residual gas is left in the cylinder.

Keep the TPAK away from heat and flames. Excessive heat can cause explosion and injury. Never throw a TPAK cartridge into the fire. Always wear eye protection when handling a TPAK since there is a risk of injury to the eyes. Do not remove a TPAK until it is completely empty. Failure to observe this recommendation can result in a dangerous escape of residual gas.

STEP 1 Eject the magazine by pushing the magazine catch button and pulling the magazine downward. *See Figure 3-17.*

STEP 2 Using your finger, depress the latch spring and pull open the draw latch. Remaining gas will expel once the draw latch has been released. If you do not hear the remaining gas expel, or the TPAK remains engaged with the piercer, press downward on the TPAK to release the excess gas.

STEP 3 Press the gas release valve to confirm all remaining gas has been released.

STEP 4 Push the carabiner into the bottom door to release the latch clip. Open the bottom door and remove the TPAK.

Figure 3-17 – UNLOADING



3.5.2.8 TPAK CONSIDERATIONS

- When not in use, always store new TPAK cartridges in a climate-controlled environment between 50°F and 75°F.
- Do not remove the TPAK cartridges from the mylar packaging until ready for use. The mylar bag provides protection against adverse atmospheric conditions that may affect the marking rounds.
- The TPAK cartridges are made from 100% recyclable materials and should be discarded after use.
- Never attempt to reload or reuse the projectiles.
- When training in conditions where humidity is high and/or temperatures are above 90°F, non-marking TPAK cartridges are considered more optimal. Using the marking TPAK cartridges in high humidity and/or at higher temperatures may cause a degradation in performance and the rounds, which possess a risk to burst prematurely.
- When training in conditions where temperatures are below 25°F, the functional performance of the TPAK cartridges may be impacted. Marking rounds could freeze in lower temperatures, and velocity generated by the compressed CO₂ propellant could also slow. The colder the temperature, the more performance will degrade.
- When loading the TPAK into the magazine, be sure the magazine door is facing in a safe direction and away from any people.
- Detailed instructions on TPAK storage and handling are included in each box of TPAK cartridges. Review all instructions and warnings provided prior to use.

3.6 CYCLE OF FIRING

3.6.1 CHARGING THE SYSTEM TO LOAD THE FIRST ROUND

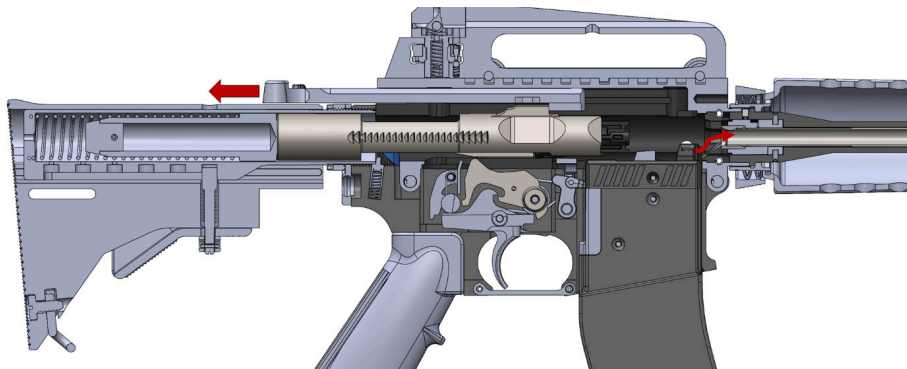


Figure 3-18 – Charging the system to load the first round

With the magazine loaded with a TPAK and securely inserted into the training rifle, the operator must manually cycle the mechanism to load the first round into battery. The operator pulls back on the charging handle, drawing the bolt carrier assembly fully rearward until it contacts the back of the buffer tube inside the stock. The operator then releases the charging handle, allowing it and the bolt carrier assembly to propel forward under the force of the buffer spring. The bolt strips the first round out of the TPAK and pushes it up the barrel assembly block and into position inside the hop-up bucking.

3.6.2 FIRING

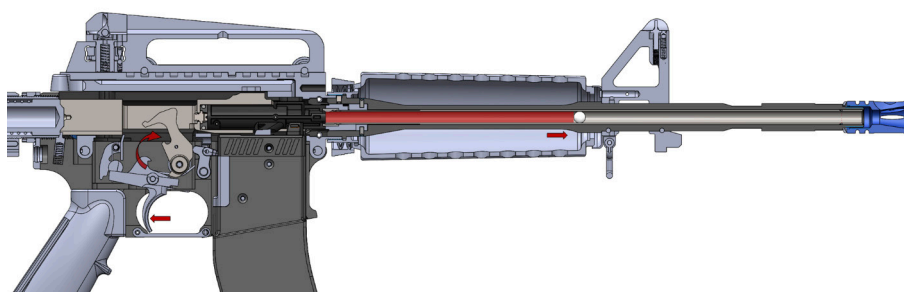


Figure 3-19 – Firing

With the system charged and the fire control selector set to either SEMI or AUTO, the operator can actuate the trigger to fire the round. Pulling back on the trigger rotates it forward, disengaging it from the notch on the underside of the hammer. The hammer is then rotated forward under the force of the hammer spring, causing it to contact the impact hammer and drive it forward. The impact hammer then contacts the poppet valve on the magazine gas block, depressing it and releasing a charge of CO₂ gas propellant. This propellant both drives the round down the barrel and propels the bolt

carrier assembly rearward to charge the next round. Different actions will occur for SEMI and AUTO modes of fire; SEMI fires one round per pull of the trigger, while AUTO fires successive rounds until the trigger is released or the magazine is empty. See Figure 3-19.

3.6.2.1 SEMI

Set the fire control selector to SEMI to have a single round fired with each pull of the trigger. Pulling the trigger rotates both the trigger and disconnecter forward. As the hammer is cocked by the recoil of the bolt carrier assembly, the disconnecter hook engages with the upper notch on the hammer and locks it rearward. Releasing the trigger rotates both the trigger and disconnecter rearward, disengaging the disconnecter from the hammer. The hammer then engages with the trigger sear and the rifle is ready to fire again.

3.6.2.2 AUTO

Set the fire control selector to AUTO to fire successive rounds until either the trigger is released or the magazine is empty. Pulling the trigger rotates the trigger forward, but the disconnecter is held back by a cam on the fire control selector. When the hammer is cocked by the rearward motion of the bolt carrier assembly, the notch on the top of the hammer engages with the auto-sear to lock the hammer rearward. The hammer is held rearward until the auto-sear is contacted by the bolt carrier as it moves back into battery. The bolt carrier pushes the auto-sear forward, rotating it down and releasing the hammer. The trigger, still pulled back, does not contact the hammer. The hammer rotates forward under the force of the hammer spring, contacting the impact hammer and subsequently releases a charge of CO₂ propellant from the magazine gas block to fire the next round. This cycle repeats until the trigger is released, rotating it forward to engage with the hammer, or until the magazine is empty.

3.6.3 RELEASE OF CO₂ PROPELLANT

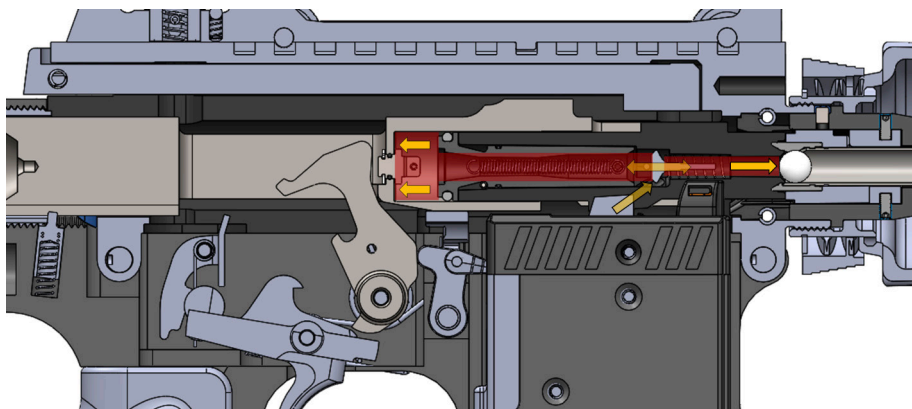


Figure 3-20 – Release of CO₂ Propellant

As the impact hammer strikes the poppet valve on the magazine, the valve is momentarily opened and releases a charge of CO₂ propellant. This propellant travels from the gas block, through the magazine seal and into the bolt. Inside the bolt the propellant is divided into forward and rearward directions. See Figure 3-20.

3.6.3.1 FORWARD PROPELLANT

The forward directed propellant travels past the jet nozzle in the bolt and pushes the round down the barrel. As it travels past the jet nozzle, the jet nozzle is pushed forward until it contacts the ridge of the bolt, sealing the propellant path. The entire remaining propellant charge is then directed rearward.

3.6.3.2 REARWARD PROPELLANT

The rearward directed propellant moves through the bolt and bolt base and into the sealed chamber between the bolt assembly and bolt carrier. Accumulating propellant increases pressure, pushing the bolt carrier away from the bolt and accelerating it rearward.

3.6.4 BOLT CARRIER REARWARD MOTION

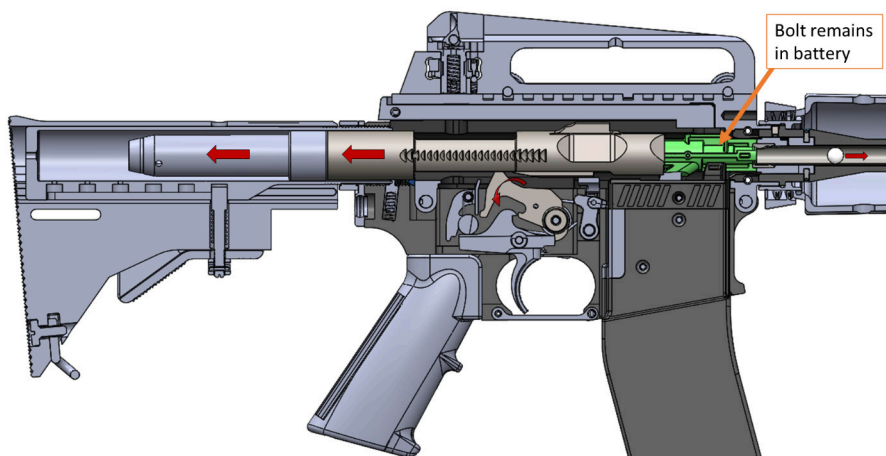


Figure 3-21 – Bolt Carrier Rearward Motion

While the bolt carrier assembly is driven rearward by propellant the bolt remains in battery. When the piston stop on the bolt carrier contacts the ridge on the bolt, it pulls the bolt out of battery. The bolt base return spring draws the bolt back into the bolt carrier assembly. See Figure 3-21.

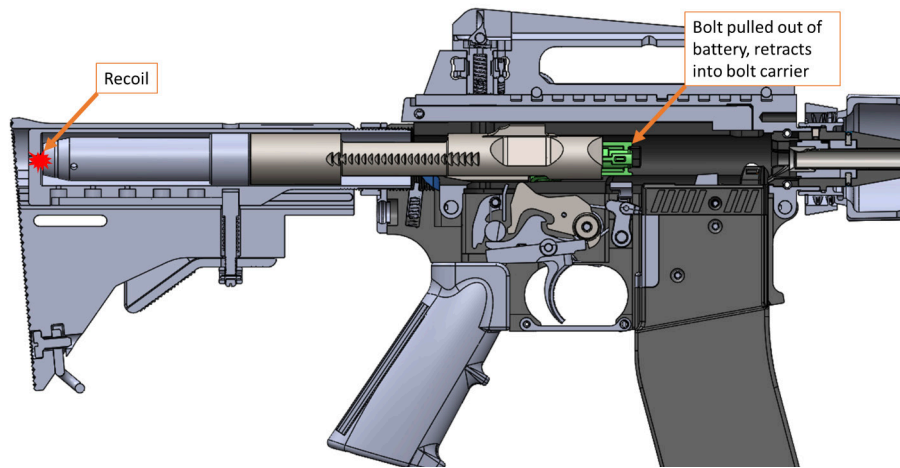


Figure 3-22 – Bolt Carrier Rearward Motion

The rearward-driven bolt carrier assembly pushes the buffer against the buffer spring until the buffer bumper contacts the back of the buffer tube, inside the stock. This contact stops the rearward motion of the bolt carrier assembly and is felt as recoil by the operator. See Figure 3-22.

3.6.5 BOLT CARRIER FORWARD MOTION

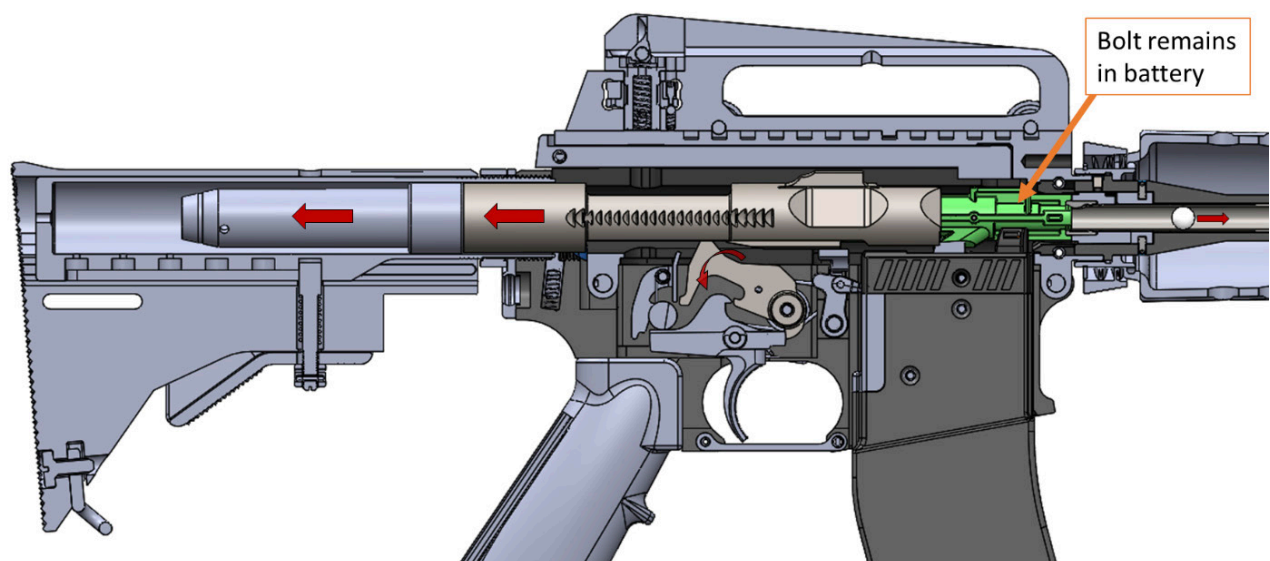


Figure 3-23 – Bolt Carrier Forward Motion

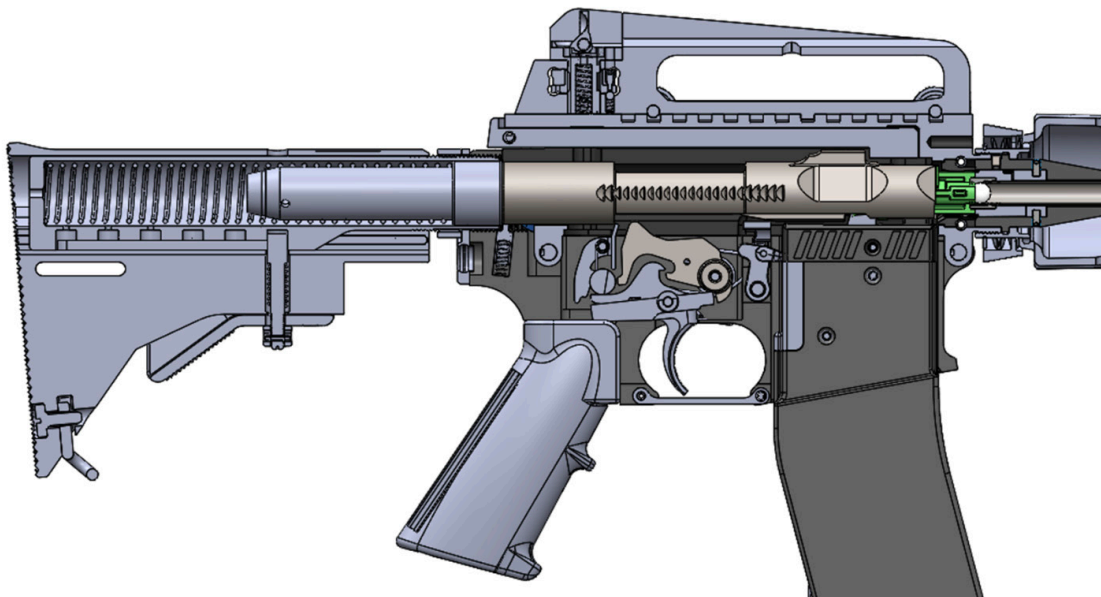


Figure 3-24 – Bolt Carrier Forward Motion

Once the buffer contacts the back of the buffer tube, the buffer spring begins to push the buffer and bolt carrier forward. The forward motion of the carrier assembly strips the next round out of the magazine and pushes it into battery. The rifle is then ready to fire again.

3.6.6 END OF MAGAZINE

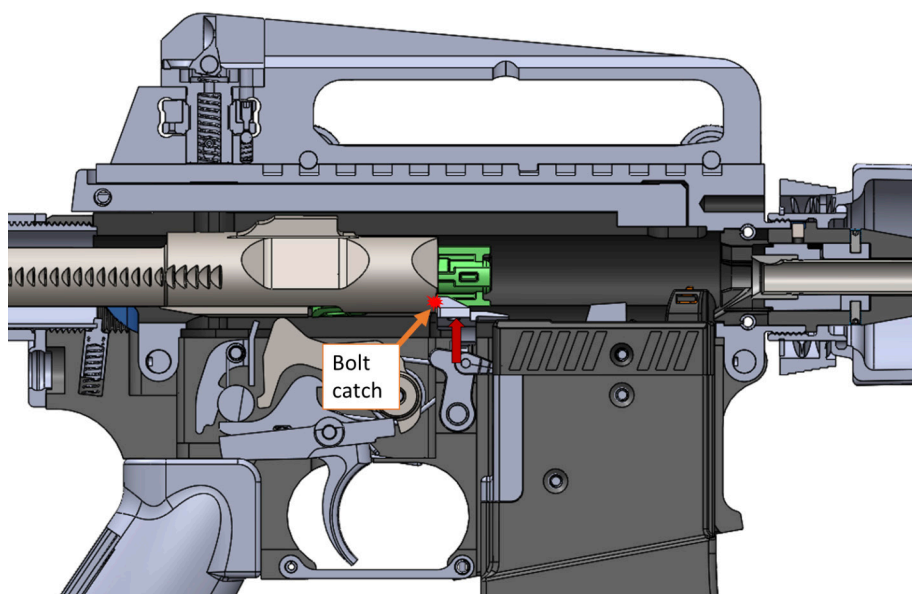


Figure 3-25 – End of Magazine

When the last round is loaded into battery, the tab on the TPAK is pushed into contact with the magazine levers in the

magazine. The follower tab pushes up on the levers, which in turn push up on the bolt latch on the lower receiver. The bolt latch tab is then pushed up and against the bolt carrier. When the bolt carrier retracts as the final round is fired, it clears the bolt latch tab. The bolt latch then fully rotates up. The bolt carrier contacts the back of the raised bolt latch tab and is held inside the buffer tube. This prevents the hammer from being released again and indicates to the operator that the magazine has been depleted. See Figure 3-25.

3.7 FIELD STRIPPING

The UNIT4 training rifle can be field stripped without the use of any special tools.

STEP 1 Execute proper clearing procedures prior to performing a function check, See Section 3.5.1

STEP 2 Ensure the fire control selector is in the SAFE position. See Figure 3-26.



Figure 3-26 – SAFE Position

STEP 3 Remove all accessories attached to the UNIT4.

STEP 4 Disengage the front and rear receiver takedown pins by pressing inward on them from the left side of the UNIT4.

STEP 5 Separate the upper and lower receiver halves. See Figure 3-27.



Figure 3-27 – Upper and Lower Receiver Halves Separated

STEP 6 Grasp the charging handle, and pull it back half way. See Figure 3-28.

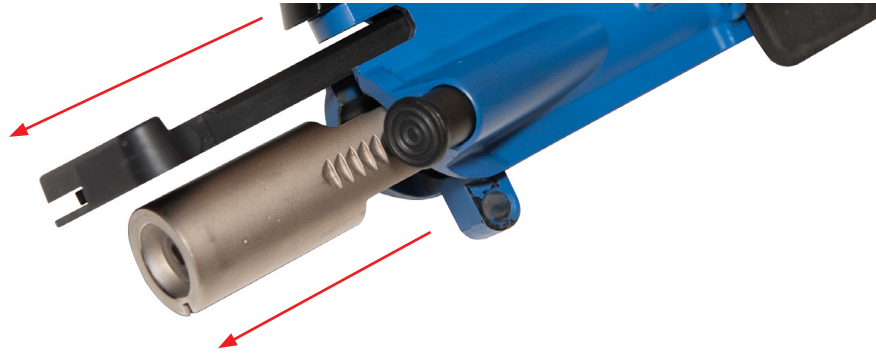


Figure 3-28 – Removing the Bolt Carrier Group

- STEP 7 Pull the bolt carrier group free from the upper receiver.
- STEP 8 Remove the charging handle.
- STEP 9 While maintaining control of the buffer, depress the buffer retaining pin with a suitable tool, such as a flat-head screwdriver.
- STEP 10 Allow the buffer and action spring to slowly exit the receiver extension.



Figure 3-29 – Removing the Buffer and Action Spring

- STEP 11 Pull downward on the rear half of the buttstock latch.



Figure 3-30 - Removing the Buttstock

- STEP 12 While keeping the latch in the downward position, pull rearward on the buttstock to remove it from the extension.
- STEP 13 Press in the bolt inward toward the carrier.
- STEP 14 Remove the piston stop by using your fingernail to pull the stop out from the top right of the stop. See Figure 3-31.



Figure 3-31 - Removing the Piston Stop



Figure 3-32 – Field Strip Complete Overview

SECTION 4: MAINTENANCE

4.1 CLEANING, LUBRICATION, MAINTENANCE & STORAGE

NOTE: Always make sure the fire control selector is in the SAFE position prior to any cleaning, lubrication, maintenance and storage.

4.1.1 CLEANING

- STEP 1 Use a standard M4 cleaning kit when cleaning the UNIT4. Place a cleaning patch on the end of your cleaning rod or snake.
- STEP 2 Take a pinch of the patch, pinching upward, slide it through the slot in the tip and pull tight. Tighten the swab by tugging on the top of the patch.
- STEP 3 Saturate patch with CLP
- STEP 4 Insert the cleaning rod or snake into the muzzle first and push the rod through to the chamber. Pull the patch back through the barrel. Repeat until clean.
- STEP 5 Pull cable through from breech to muzzle.
- STEP 6 Clean the chamber with a cleaning brush or dental tool. Ensure all marking round shell pieces, paint, and debris are removed.
- STEP 7 Wipe down the exterior of the bolt carrier.
- STEP 8 Remove the Piston Stop, then gently pull forward on the bolt, until the bolt o-ring is exposed and remove excess lubrication.
- STEP 9 Wipe down the exterior of the UNIT4 in the same manner you would an M4.

4.1.2 LUBRICATION

- STEP 1 After the parts have been cleaned and inspected, all metal parts should be wiped with cotton wiping cloth or cleaning swabs, which have been lightly oiled with CLP or equivalent lubricant. CLP refers to the current Military Spec MIL-PRF 63460E & NATO S-758. This is used in place of LSA (Lubricant Small Arms) and LAW (Lubricant Arctic Weapons). The E revision CLP works in temperature ranges from -60°F to 160°F.



WARNING: Do NOT use a water base lubricant such as WD-40. This will hold water and cause corrosion. A lightly oiled swab installed in the cleaning rod swab holder shall be run through the barrel bore once.

- STEP 2 Lightly lubricate all springs, detents, moving parts, and pins.
- STEP 3 Lubricate the forward assist.
- STEP 4 Lubricate the ejection port cover latch and ejection port spring.

- STEP 5 Lubricate the charging handle latch and spring.
- STEP 6 Remove the piston stop.
- STEP 7 Pull out the bolt until the large bolt base O-ring is exposed.
- STEP 8 Lubricate the large bolt base O-ring on the back of the bolt.
- STEP 9 Apply one drop of lubricant to the buttstock release lever pin.

4.1.3 STORAGE & TRANSPORTATION

When you are finished using your UNIT4 Training System, it is important that you prepare it for storage. This will not only serve to increase the life of your product, but will assure optimum performance on your next outing and safety during storage.

- **SAFELY ASSURE THE UNIT4 TRAINING SYSTEM IS UNLOADED. DO NOT STORE LOADED.**
- Store your UNIT4 Training System away from children.
- Store your UNIT4 Training System in a cool, dry place.
- Your UNIT4 Training System should not be stored or transported attached to any propellant source.
- Observe and obey all local, state, and federal laws concerning the transport and storage of your UNIT4 Training System. For any questions or information concerning the laws in your area, contact your local law enforcement agency.
- Detailed instructions on TPAK storage and handling are included in each box of TPAK cartridges. Review all instructions and warnings prior to use.
- Always store your UNIT4 Training System in a secure location when not in use so as to prevent access by unauthorized persons.

SECTION 5: **TROUBLESHOOTING**

5.1 TROUBLESHOOTING DESCRIPTIONS

- 5.1.1 Stoppage - A stoppage is any unintentional interruption of operation of the system due to a malfunction. Immediate action must be taken to clear stoppages.
- 5.1.2 Misfire – a misfire is a complete failure to fire, which may be due to a faulty firing mechanism in the system, jammed rounds, excessive paint build-up or defective projectile.

5.2 IMMEDIATE ACTION

Immediate action is a series of steps taken to clear a stoppage without analyzing the cause. Remember the acronym “SPORTS”, which stands for Slap, Pull, Observe, Release, Tap, Shoot. Immediate action is as follows:

- 5.2.1 Slap – Slap upward on the magazine and ensure that it is installed correctly. Tug on the magazine to ensure that it is seated as well.
- 5.2.2 Pull – Pull back on the charging handle and retract the bolt carrier group all the way to the rear.
- 5.2.3 Observe – Check the chamber and chamber area (including bolt face) for any obstruction such as debris, excessive paint, or multiple rounds lodged in the chamber.
- 5.2.4 Release – Release the charging handle to allow the bolt carrier group to move forward, stripping the round off the TPAK, chambering the round and the bolt locking into the barrel extension.
- 5.2.5 Tap – Tap forward assist.
- 5.2.6 Shoot – attempt to fire in a safe direction.

5.3 REMEDIAL ACTION

Remedial action is the series of steps taken to determine the cause of a stoppage or malfunction should immediate action fail to succeed.

5.4 TROUBLESHOOTING TABLE

This section identifies failures in UNIT4 operation to assist the armorer in diagnosing and repairing the system to return it to service.

FAILURE	POSSIBLE PROBLEM	POSSIBLE SOLUTION
Failure of magazine to lock in place	Magazine catch is dirty or rusted	Remove catch and clean. Lubricated with CLP
	Damaged or broken magazine catch spring	Replace spring
	Damaged or broken magazine catch	Replace catch
	Magazine catch is out of adjustment	Adjust magazine catch
	Damaged or broken magazine catch spring	Replace spring
Failure to feed	Incorrect buffer	Check and replace
	Defective magazine/TPAK®	Replace
	Short recoil	See “Short recoil”
Failure to chamber	Weak or broken action spring	Replace action spring
	Defective magazine/TPAK	Replace magazine/TPAK
	Short recoil	See “short recoil”
Failure to fire	Not loaded	Load rifle
	Broken or cracked bolt	Replace Bolt
	Broken hammer or hammer spring	Replace hammer or spring
	Improperly assembled hammer spring	Assemble properly
	Seized selector lever in SAFE	Remove fire selector, clean and lubricate
	Bolt not fully in battery	Check for debris and clean

FAILURE	POSSIBLE PROBLEM	POSSIBLE SOLUTION
Short recoil Magazine leaks CO ₂ gas Failure to zero	Damaged or weak action spring	Replace
	Faulty gas block	Replace magazine
	Loose barrel	Retighten/torque barrel
	Bent barrel	Re-bend or replace barrel
	Barrel out of sight alignment	Align barrel with sights
	Damaged barrel	Replace barrel
Failure to cycle on AUTO	Damaged auto sear or pin	Replace auto sear or pin
	Faulty selector lever	Replace selector lever
	Short recoil	See “Short recoil”
Fires two round with one pull of trigger	Defective semi-auto disconnecter	Replace disconnecter
	Defective sear surface on hammer	Replace hammer
	Defective sear surface on trigger	Replace trigger
	Worn trigger/hammer pin holes	Use trigger pin wear gauge. Replace lower if fails
	Light trigger pull	Firmly pull trigger
Fires with selector on SAFE or with trigger release on SEMI	Worn or broken selector lever	Replace selector lever
Hammer pin “walks”	Hammer spring not assembled properly	Remove and assemble properly
	Hammer J-pin damaged or missing	Replace hammer
Bolt fails to lock back after last round	Damaged TPAK follower	Replace TPAK
	Defective magazine levers	Replace magazine
	Short recoil	See “Short recoil”
	Bolt catch binding	Disassemble and clean
	Bolt catch spring worn or damaged	Replace bolt catch spring
	Bolt catch damaged	Replace bolt catch

SECTION 6: **PRODUCT WARRANTY**

6.1 PRODUCT WARRANTY

Subject to the terms and conditions set forth in this Product Warranty, UNIT Solutions makes the following warranties:

A) UNIT4® Training Rifle:

- i. **Warranty:** Unit Solutions warrants that the UNIT4® Training Rifle (the “Rifle”) will, under normal use and maintenance in accordance with our product specifications and Operator’s Manual, be free of defects in workmanship and materials for a period of twenty-four (24) months following the date of delivery to the customer.

B) UNIT4® TPAK®:

- i. **Warranty:** UNIT Solutions warrants that the UNIT4® TPAK® (the “TPAK”) will, under normal use and maintenance in accordance with our product specifications and Operator’s Manual, be free of defects in workmanship and materials for a period of twelve (12) months following the date of delivery to the customer.
- ii. **Conditions:**
 - a. **Operating Temperature/Humidity (Marking TPAKs):** The warranty on marking TPAKs is voided if used in temperatures outside the operational temperature range of 25°F to 90°F or in conditions where relative humidity exceeds 60%.
 - b. **Operating Temperature/Humidity (Non-Marking TPAKs):** The warranty on non-marking TPAKs is voided if used in temperatures below the operational temperature range of 25°F.
 - c. **Storage:** The warranty on the TPAK is voided if not stored in mylar packaging and in a dry environment within the storage temperature range of 50°F to 75°F.

C) UNIT4® Magazine:

- i. **Warranty:** UNIT Solutions warrants that the UNIT4® Magazine (the “Magazine”) and the projectiles included therein will, under normal use and maintenance in accordance with our product specifications and Operator’s Manual, be free of defects in workmanship and materials for a period of twenty-four (24) months following the date of delivery to the customer.

WHAT IS COVERED: During the warranty period, replacement parts and labor. Transportation charges to consumer for repaired product.

WHAT IS NOT COVERED: Transportation charges to Authorized repair facility for defective product. Damages caused by abuse, modification, or failure to perform normal maintenance as set forth herein. Any other expenses. **CONSEQUENTIAL DAMAGES, INCIDENTAL DAMAGES, OR EXPENSES INCLUDING, BUT NOT LIMITED TO, DAMAGE TO PROPERTY ARE NOT COVERED.**

6.2 DISCLAIMER

EXCEPT AS EXPRESSEDLY SET FORTH HEREIN, THE COMPANY MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING, OR USAGE OF TRADE, OR BY OPERATION OF LAW, OR FROM ADVERTISING, BROCHURES, PROMOTIONAL MATERIALS, PROPOSALS, DOCUMENTATION, PACKAGING, OR OTHER DESCRIPTIVE LITERATURE OR COMMUNICATIONS.

6.2 EXCLUSIVE REMEDY

If a Rifle, TPAK or Magazine does not perform in accordance with the foregoing applicable warranty, we will, at our option, repair or replace the warranted product free of charge and return the repaired or replacement product at the lowest cost shipping method, prepaid. Please contact us at 844.488.UNIT(8648) to receive a Warranty Authorization Number (WAN#) and prepaid shipping number, and then ship the warranted product to:

UNIT Solutions
1340 Home Avenue
Suite E
Akron, Ohio 44310
ATTN: WAN#

The foregoing is the exclusive remedy for a breach of any of the product warranties set forth above.

THIS PAGE IS INTENTIONALLY BLANK.

