

Master Marksmanship Trainer Leader's Book



U.S. Army Marksmanship Unit

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Leader's Book

Purpose

The purpose of this Guide is to assist Master Marksmanship Trainers in diagnosing and training rifle marksmanship deficiencies and skills.

Scope

This Guide has been designed to supplement the field manual and current marksmanship programs of instruction by sharing diagnostic tips and training techniques used by the USAMU's MMTC to improve rifle marksmanship in the Army.

NOTE: The Guide does not serve as a one-stop reference for all marksmanship training or supersede any doctrinal reference. In fact, the information contained in this guide builds upon the knowledge, skills, and abilities each trainer gains from reading, understanding, and applying FM 3-22.9.

Range Personnel and Duties

To provide a safe and efficient range operation and effective instruction, certain duties may be required of personnel. The personnel may include—

- OIC
- RSO
- NCOIC
- Ammunition detail
- Unit armorer
- Assistant instructor
- Medical personnel
- Control tower operators
- Maintenance detail

Range Box

- Hand held radios
- Megaphone
- Range Book
- Range control radios
- Range flag
- Lubrication for rifles
- Front sight tools
- Leatherman
- Ear protection
- Colored markers
- 25 meter zero targets
- Staple gun with extra staples
- Flash light/ head lamp
- Hammer/nails
- Red chem lights
- Fire extinguishers
- Black and white 1" shot pasters
- 3" and 5" spotting disks w/ spindles
- Wall paper brushes

Mission Analysis

Mission analysis includes identifying the following:

- Who will be firing on the range? _____
- Number of personnel _____
- Units _____
- What weapons and course will be used?
Weapons _____ Course _____
- Where will the training be conducted?
Range _____
- When is the range scheduled for operations? Date _____ Opens _____
Closes _____

Range Pre check

<u>DOUBLE CHECK</u>			
	GO	NO GO	REMARKS
1. Has sufficient ammunition been requested for the number of personnel?			
2. Are the range facilities adequate for the type of training to be conducted?			
3. Has enough time been scheduled to complete the training?			
4. Have conflicts that surfaced been resolved?			
<u>BECOME AN EXPERT</u>			
	GO	NO GO	REMARKS
1. Review TMs and FMs on the weapons to be fired.			
2. Talk with the armorer and other personnel experienced with the weapons to be fired.			
3. Review AR 385-63.			
4. Visit range control and read the installation's range instructions.			
5. Reconnoiter the range (preferably while it is in use).			
6. Check ARTEPs to see if training tasks can be integrated into the range training plan.			

Range Safety Brief

- **Treat every rifle as if it were loaded**
- **Never point a rifle at anything you do not intend to shoot**
- **Keep the rifle on safe and your finger off the trigger unless you are ready to shoot and have the target in your sights**
- **Maintain situational awareness of what's going on around you, your target, and beyond your target at all times. Everyone is a range safety, if you see an unsafe act give the verbal command and hand/arm signal to cease fire.**
- **Never handle your weapon with someone down range or in front of the firing line.**
- **All weapons on the firing line have to be cleared before they are removed from the firing line by:**
 - **Removing magazine.**
 - **Locking the bolt to the rear.**
 - **Place the selector on safe.**
- **All weapon barrels must be checked visually from the breach or by inserting a rod in to the barrel by a safety NCO.**
- **Once cleared off the firing line, police up and return all excess live ammo and brass in your care to the ammo supply point.**
- **Smoke only in designated areas. DO NOT smoke in/under the buildings, within 50ft of the ammo supply point, or on the firing line.**

General Range Commands

- The following general commands may be altered when necessary:
 - “Firers, assume the _____ position.”
 - “Issue the firer _____ rounds of ammunition.”
 - “Coach, secure _____ rounds of ammunition.”
 - “Lock and Load.”
 - “Ready on the right?”
 - “Ready on the left?”
 - “Ready on the firing line?”
 - “Commence firing when your targets appear.”
 - “Cease firing. Lock and clear all weapons.”

Grouping Commands

- Grouping commands include the following:
 - “Firers, assume a good supported prone position.”
 - “Lock and Load.”
 - “Ready on the right?”
 - “Ready on the left?”
 - “The firing line is ready.”
 - “Place your selector lever on SEMIAUTOMATIC.”
 - “Commence firing.”
 - “Cease fire. Lock and clear your weapons.”
 - “Clear on the right?”
 - “Clear on the left?”
 - “The firing line is clear.”
 - “Move down to your targets, and locate your shot group.”
 - “After all personnel have located their targets, move back to the firing line.”
 - “At this time, make adjustments to your sights.”
 - “Repeat all firing commands until grouping standards are met.”

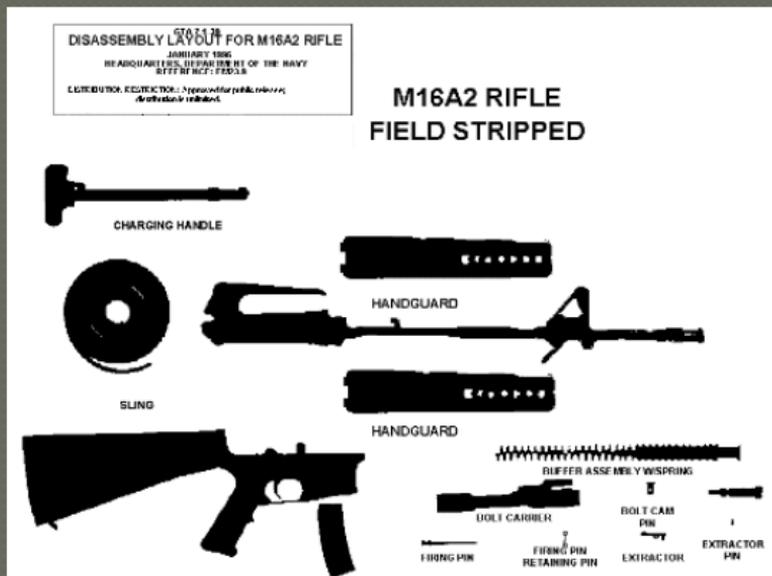
CHARACTERISTICS



CHARACTERISTICS



M16A2/M4 DISASSEMBLY & ASSEMBLY



WARNING:
 REMOVE MAGAZINE AND CLEAR CHAMBER
 BEFORE DISASSEMBLY ENSURE WEAPON IS
 COMPLETELY UNLOADED

M16A2/M4 DISASSEMBLY



1

Remove hand guards

Pull rear takedown pin as far as it will go

2



3

Pull front takedown pin as far as it will go

Separate upper and lower receivers

4



5

Pull back charging handle and bolt carrier

Remove bolt carrier and bolt

6



7

Remove charging handle

Remove firing pin retaining pin

8



M16A2/M4 DISASSEMBLY



Drop firing pin out
rear of bolt carrier

Push in bolt
assembly to locked
position



Turn cam pin $\frac{1}{4}$ turn

Remove cam pin



Remove
bolt from
bolt
carrier

Remove buffer and spring



Disassembly is complete

M16A2/M4 ASSEMBLY



1
Slide bolt into bolt carrier

Insert bolt cam pin



3
Drop and seat firing pin

Pull bolt out and insert firing pin retaining pin



5
Insert charging handle part way

M16A2/M4 ASSEMBLY



Slide in bolt carrier assembly

Push charging handle and bolt carrier assembly together into receiver



Join upper and lower receivers

Engage receiver takedown pins



Press down on slip ring and insert hand guards

PRINCIPLES OF SHOOTING



Eye Dominance Testing

Most Soldiers have a dominant eye, one that is stronger than the other. In order to aim precisely, the Soldier must use their “dominant eye.”



An easy way to teach Soldiers how to determine their “dominant eye” is to have them hold their hands out with the fingers extended and joined, thumbs extended out to the sides. Tell them to overlap their hands at a 90-degree angle until a small window is made with the thumbs. Have them place their hands out at arm’s length and look through the opening in their thumbs at an object. Without squinting or closing either eye, tell them to bring both hands to their faces while maintaining visual contact with the

Eye Dominance Testing

object. The hole will move to their “dominant eye” as their hands reach their faces. If they are still not sure, simply have other Soldiers stand back from them at least 15 feet and look at their faces through the hole in their hands. They will be able to see the “dominant eye” through the hole. After you have tested for the dominant eye of each Soldier, check for cross dominant Soldiers – ask who is right eye dominant and left handed or vice versa. Work with all cross dominant Soldiers to determine if they are holding the rifle with the appropriate firing and non-firing hand or need to switch. Remember, those who must switch the eye they use for firing need some time to get used to the new position.

Checking a Soldier’s Vision

Verify that all Soldiers have been administered a vision test and that those needing glasses either have them or they have been ordered. Pay special attention to ensure they receive their glasses before range procedures and marksmanship fundamentals. Allow the Soldiers to use their issued prescription glasses if the eye protection inserts are not available.

Minute of Angle

A Minute of Angle is simply a measurement unit of an angle. Most people are familiar with the measurement unit "Degree", which is also a measurement of an angle. For example, it is common knowledge there are 90 Degrees in a right angle.

MOA is a much smaller measurement than a Degree. In fact,

1 MOA = 1/60th of 1 Degree

Just like there are 60 Minutes in an Hour, there are 60 Minutes in a Degree.

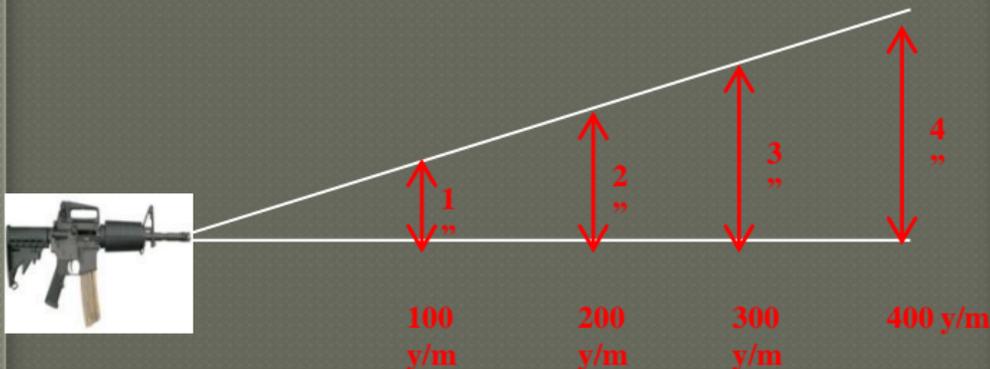
The Minute of Angle unit is useful to shooters because most sights move in minutes of angle. Shot groups are measured in inches. Inches are easily converted to minutes of angle. That is because:

1 MOA = 1" PER 100 Yards

Minute of Angle

Take a look at the diagram below. Assume the white angle I've drawn is 1 MOA. As the angle goes further out in distance from the muzzle, that angle measurement is always 1 MOA. Even going out 100 yards, or 1000 yards 1 MOA is 1 MOA, it never changes.

What does change is the distance (**RED**) between the two white lines that make up the 1 MOA angle.



Fundamentals

The Army separates the fundamentals of shooting into four categories:

- (1) Steady Position
- (2) Aiming
- (3) Breathing
- (4) Trigger Squeeze

To simplify the concepts to the new shooter, we have identified the two major principles of marksmanship. It is these principles, properly applied, that will guarantee success on both the range and on the battlefield, regardless of the weapon system being employed. The two firing tasks are:

1. PROPERLY POINT THE RIFLE AT THE TARGET

2 . FIRE THE RIFLE WITHOUT MOVING IT

Proper sight alignment



TIP OF POST MUST BE CENTERED IN REAR SIGHT CIRCLE



YOUR SIGHTS SHOULD LOOK LIKE THIS

CORRECT

**Front Sight In Focus
Target Out of Focus**



NOTE: Tip of front sight centered in rear sight circle and centered on blurry target.

Notice how blurry the target is while the front sight is clearly focused. This is a photo of correct sight picture with an M16A2. You can see the importance of focusing on the front sight. Although the target is not in focus, we are able to take up our desired point of aim (in this case it is "center-mass"), by placing the front sight post in the desired location.

**Target In Focus
Front Sight Out Of Focus**



NOTE: If you focus on the target you cannot properly see sight alignment and your bullets will not hit in the middle.

INCORRECT

Notice the focal point in this picture. The target is in clear focus, while the front sight post is a blur. This shooter is making a common mistake: he has allowed his focus to shift to the target. Since the definition of sight alignment is the front sight post centered in the rear sight aperture, we will not be sure this is being accomplished while focusing on the target. Hopefully, the last two pictures illustrate the importance of focusing on the front sight post.

Parallax

Parallax in a rifle scope is the apparent movement, or displacement of objects when viewed from different perspectives

Adjusting the parallax knob on the left side of the scope will bring the target and the reticle on the same focal plane

The appropriate adjustments cannot always be made in the heat of combat. This is why consistent head position is important

When parallax is adjusted properly the reticle and the target should not move independently

Stock weld and head position

CORRECT



INCORRECT



FULL WEIGHT OF HEAD ON STOCK. HEAD UPRIGHT AND RELAXED.

CORRECT



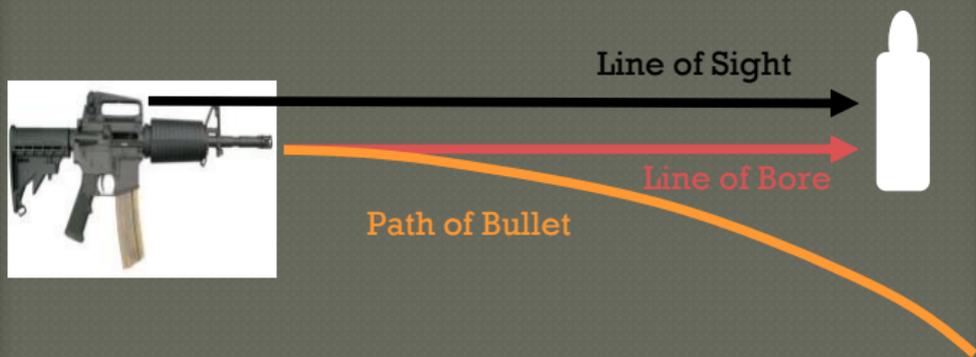
INCORRECT



HEAD UPRIGHT, EYE IN ALIGNMENT WITH REAR SIGHT.

Trajectory

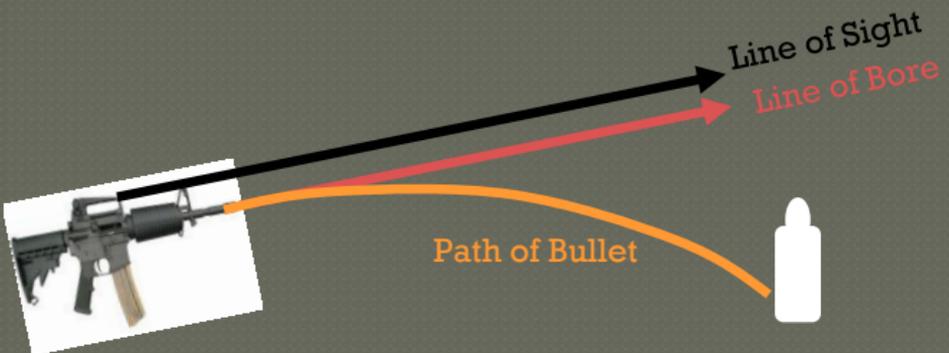
Trajectory is the path of flight that the bullet will take when it is fired from the rifle.



The example above is what happens when a bullet leaves the bore of a rifle in which the barrel is horizontal to the ground and the line of sight is parallel to the line of bore.

Trajectory

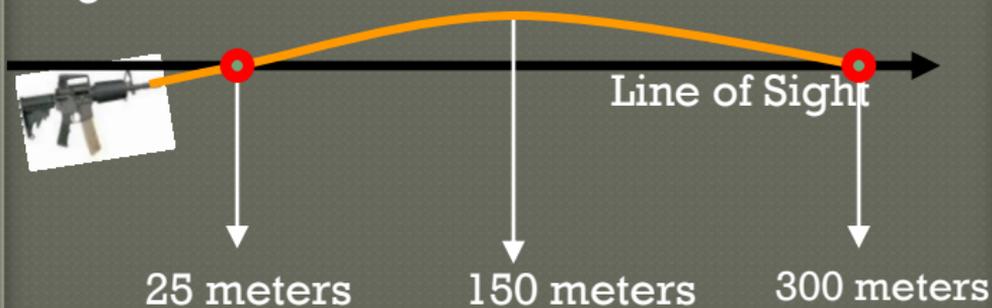
- We counter the drop of the bullet by increasing our angle of departure
- The distance the muzzle is raised may not be noticeable with the naked eye, but even at 25m, the muzzle is slightly elevated



Trajectory

Proper manipulation of adjustable sights allows us to adjust the impact of the bullet without losing view of the target through the sighting system

Adjust
sights



This diagram shows us how the Army is able to zero at 25m and still be center mass on a 300m target.

Proper sight alignment

**Misalignment of the sights causes error.
Error increases with distance.**



Sight alignment is so important because an error in sight alignment is an angular error; that is, shot displacement increases over distance.

The effect of that error is greater the farther you are from the target.

The following slide is an example.

Remember that the front sight is attached to the end of the barrel.

Since we established earlier that the bullet will always go in the direction the barrel is pointed, an error in sight alignment will cause the bullet to move in the direction of the front sight.

In this case, the front sight is grossly misaligned to the right. This will cause the error to be to the right.

Trigger Control

NOTE: Place hand high and firm on pistol grip. Properly placing the finger on the trigger allows you to fire the weapon without moving it.

CORRECT



Positions



The purpose of any good shooting position is to support the two basic principles of marksmanship

Sight Alignment

Trigger Control

Note : People are different sizes and shapes so not everyone will have a text book position. As long as the position supports the two principles, and can consistently be acquired then it's a good position.

Three elements of a steady position:

Support (Artificial & Bone)

Muscular Relaxation

Natural Point of Aim

Support

The most stable platform is the ground.

Transfer the stability of the ground into your position through the use of artificial and bone support.

Bone support is simply using the skeletal structure of the shooter to support the weight of the rifle. Optimally we want the weight of the rifle over the positions' center of gravity.

Muscular Relaxation

If you have good support, your muscles will be relaxed

Less muscle tension means less movement

Comfort equals relaxed

Without some sort of muscle tension we wouldn't be able to hold the rifle in position. Optimally we want to eliminate any undue muscle tension while still being able to control the rifle. A simple way to look at this is when you use your muscles they become fatigued, with fatigue comes instability.

Natural Point of Aim

Where your rifle is naturally pointing when your body is relaxed. Your rifle and body must be adjusted so that your natural point of aim (NPA) is aligned with the target.

Natural point of aim is where your position is naturally pointing. When you assume a firing position if you were to look through your sights with no undue tension on your rifle, the same as if you were going to shoot, you would notice that the rifle is pointed somewhere, not necessarily at your target but it is pointed somewhere. This is the natural point of aim of that position. The goal now is to adjust that position so that the natural point of aim is aligned with the target. This will enable you to engage the target without having to muscle the rifle over, causing undue muscular tension.

We want to adjust our position by moving the center of that particular position. In the prone we adjust at our non firing elbow or belt buckle, moving the entire position.

5 Factors of a solid position

Note: Use these 5 factors to check every part of a position. It will help you identify a problem in the position right away.

Non-Firing Hand

- Hand guards rest in the “V” formed between the forefinger and the thumb. The wrist should remain straight.
- Fingers curled naturally around hand guards.
- Weight of rifle rests on heel of hand.
- Only enough grip pressure to maintain control of rifle.
- Magazine rests against forearm.

Rifle Butt

- Place the rifle butt firmly into the pocket formed in the shoulder.
- Bring the rifle up to your head, not your head down to the rifle.
- The higher the position, the higher the butt is in the shoulder.

Firing Hand

- Placed high on the pistol grip
- Firm grip
- Trigger finger should be placed naturally on the trigger

Stock Weld

- This is where your face contacts the stock
- Head should be vertical and upright
- Consistent from shot to shot
- Purpose is to achieve proper eye-sight alignment. Look for excess skin forming a roll

Elbows

- The non-firing elbow should still be positioned as close to directly underneath the rifle as possible to allow proper bone support
- The firing elbow should be allowed to rest where it naturally falls after the rest of the position is acquired

Position Adjustments

Adjustment	Result
<p>Moving the non-firing hand forward on the hand-guards.</p> <p>Moving the stock higher in the shoulder.</p> <p>Digging the toes in and pushing the body forward.</p>	<p>The sights will settle lower on the target.</p>
<p>Moving the non-firing hand back on the hand-guards.</p> <p>Moving the stock lower in the shoulder.</p> <p>Digging the toes in and pulling the body backward.</p>	<p>The sights will settle higher on the target.</p>
<p>Pivoting the whole body on non-firing elbow or belt buckle (prone position).</p> <p>Pivoting the whole body on forward foot</p>	<p>NPA will be adjusted towards the target.</p>

Prone



Two Leg positions



Kneeling

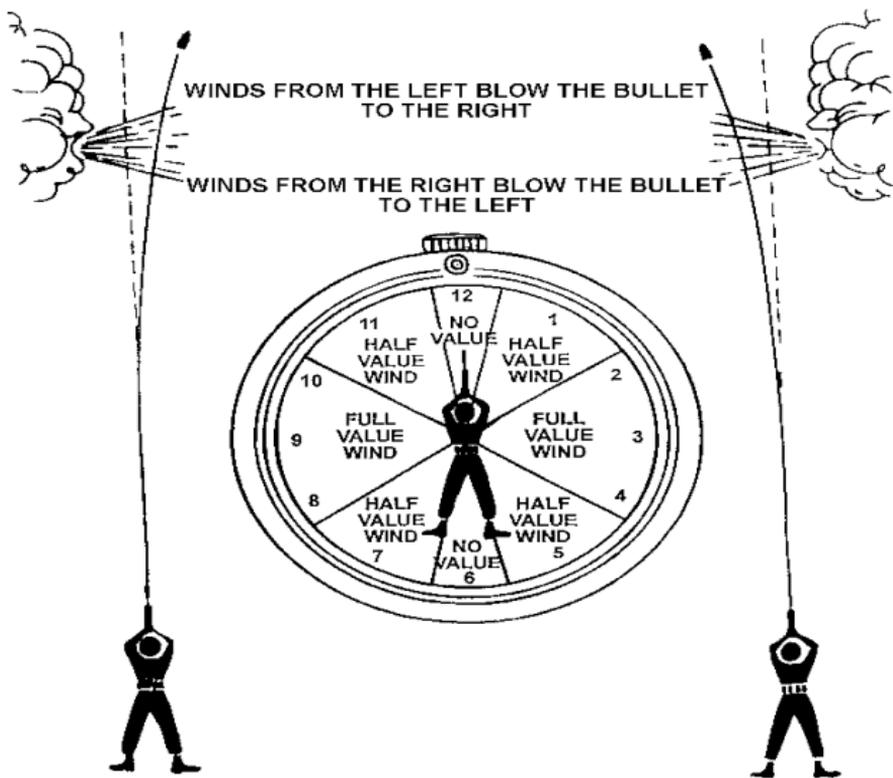


No bone on bone contact

Two foot positions



Wind and Weather



CLOCK SYSTEM

Wind Estimation

- 0-3 mph - Hardly felt, but
smoke drifts
- 3-5 mph - Felt lightly on the
face
- 5-8 mph - Keeps leaves in
constant movement
- 8-12 mph - Raises dust
- 12-15 mph - Causes small trees
to sway

Wind Formula

$$\frac{\text{Range(meters)} \times \text{Velocity(MPH)}}{7} = \text{MOA of Drift}$$

Example

$$\frac{4(00) \text{ meters} \times 7 \text{ mph}}{7} = 4 \text{ MOA}$$

or 16"

Hold Overs



Hold Overs

Hold overs, or holding off, is simply the act of holding your sights into the wind accounting for wind drift. It's much faster than clicking the sights and is a good technique for rapid target engagement. Your hold may simply be the edge of the target, or it can even be off the target as pictured below.



ZEROING SIGHT ADJUSTMENTS AND QUALIFICATION



Windage Adjustment

Turning the windage knob to the rear will make the bullet impact move to the left.

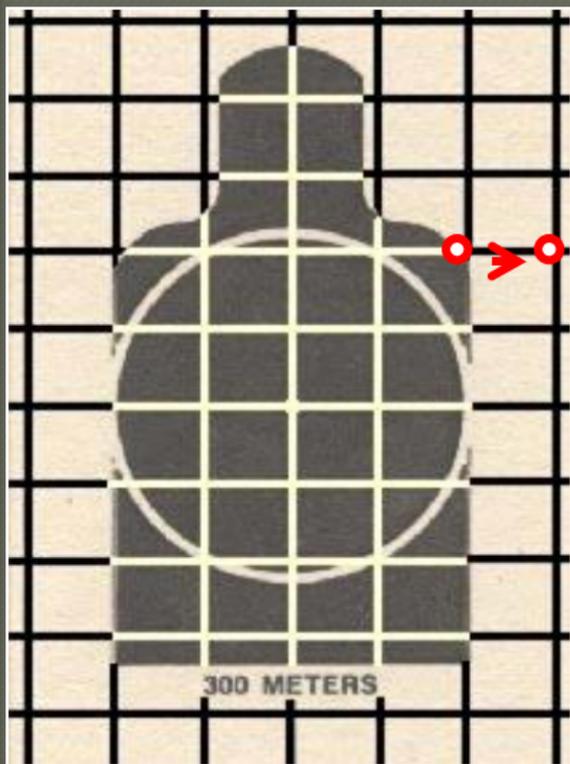


Turning the windage knob forward, or with the arrow will make the bullet impact to the right.

3 Clicks moves bullet 1 square

1 Click M16= 1/2 MOA

1 Click M4= 3/4 MOA



Elevation Adjustment

Use a bullet or a front sight tool to push in the detent and turn the front post.



Turning the front post clockwise, or with the arrow, will cause the bullet to impact up.

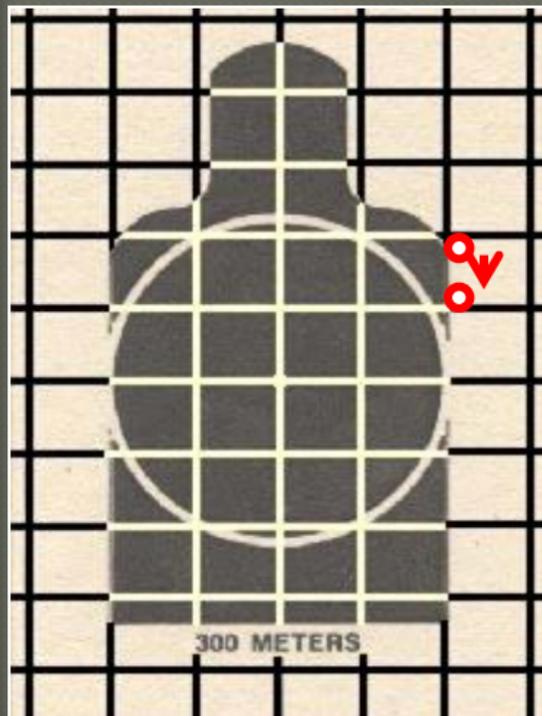
Turning the front post counter-clockwise or the opposite of the arrow will cause the bullet to impact down, or lower.

1 Click moves bullet one square

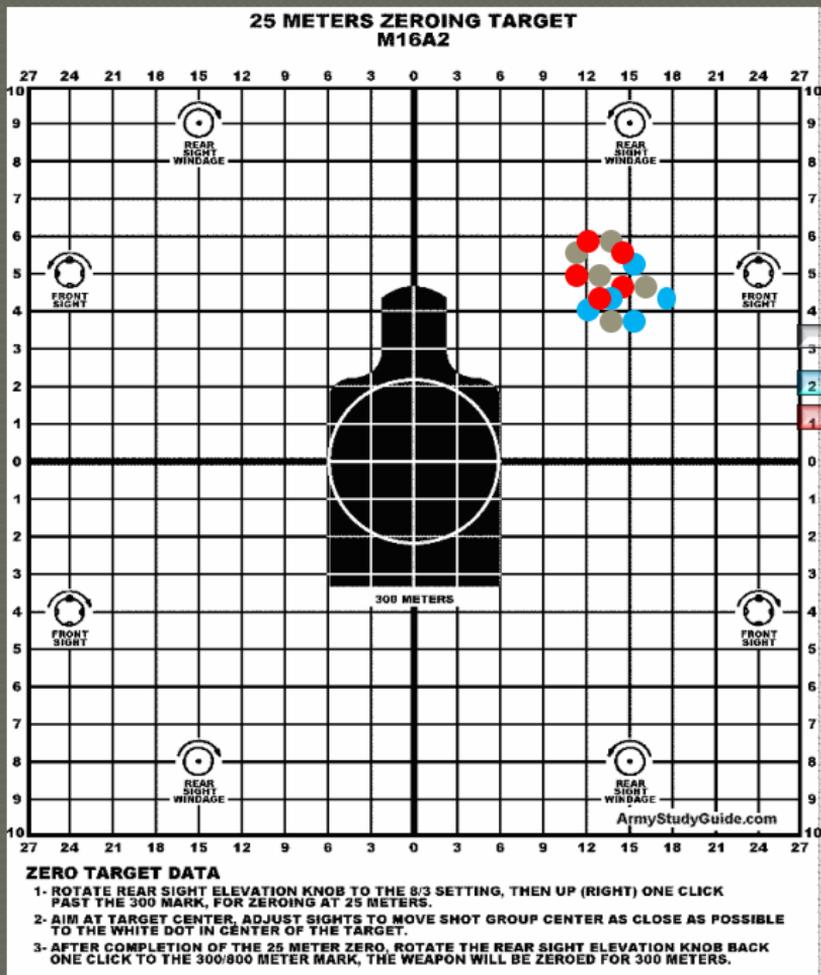
1 Click on the front sight moves the strike of the round;

1 Click M16= 1 and $\frac{1}{4}$ MOA

1 Click M4= 1 and $\frac{3}{4}$ MOA



ZEROING



Note: Mark edges of shot holes with a marker. On right side of the zero target use same color to mark what number group it was. Example: First group was marked in red, on right side of target mark number 1.

BUIS



300m zero at 25m (BDC setting)

- **M16A4 use white line for zeroing**
- **M4 use 300 setting**
- **Point of aim / point of impact zero at 25m**

Windage

M16A4- 1 click=1/2 MOA

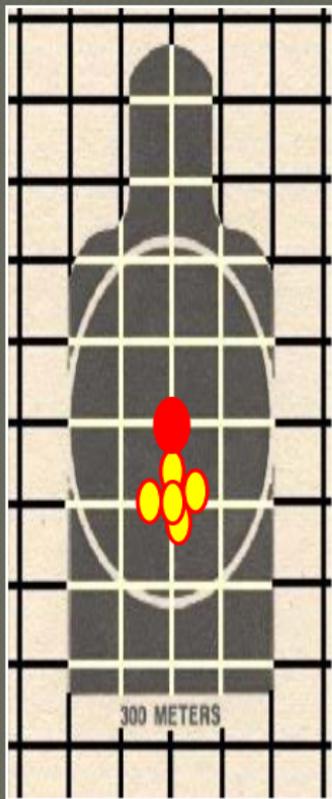
M4- 1 click=3/4 MOA

M68



Non-magnified

**300m zero offset =
approx. 1cm low at 25m
Always confirm optic
zero at actual distance
(300m)**



1 click=1/2 MOA

EOTECH



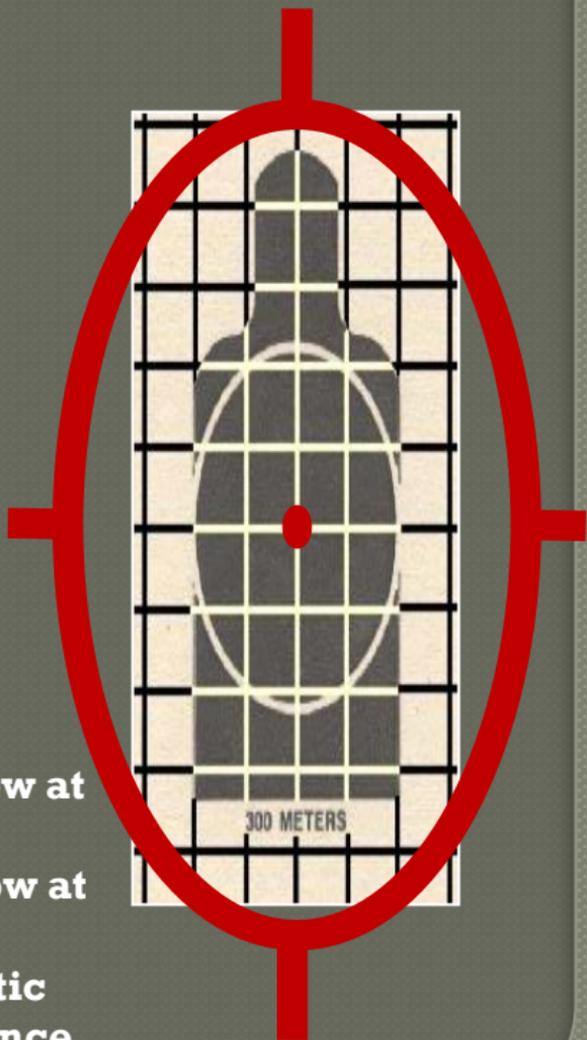
Non-magnified

300m zero offset:

**With riser= 2 cm low at
25m**

**W/O riser= 1 cm low at
25m**

**Always confirm optic
zero at actual distance
(300m)**

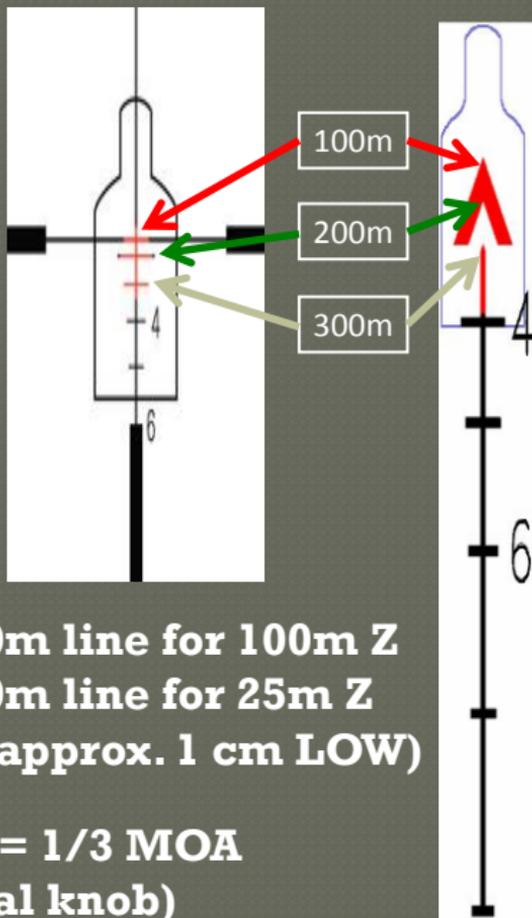


1 click=1/2 MOA

ACOG



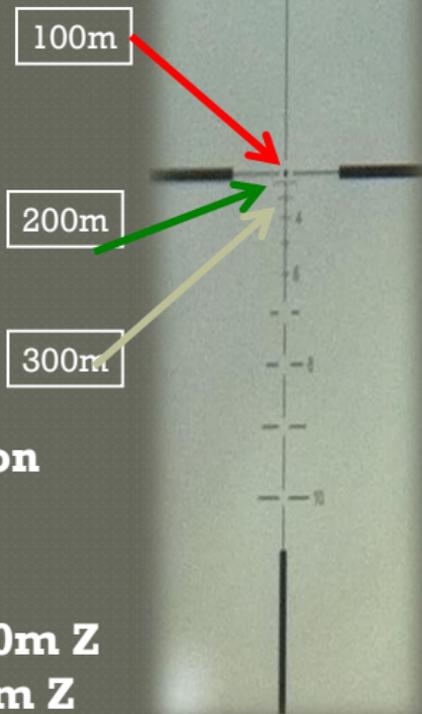
4x magnification



**Use 100m line for 100m Z
Use 300m line for 25m Z
(POI = approx. 1 cm LOW)**

**1 click = 1/3 MOA
(internal knob)
1 click = 1/2 MOA
(external knob)**

ELCAN



1x or 4x magnification

NOTE: Must be zeroed on 4X

Use 100m line for 100m Z

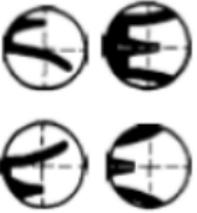
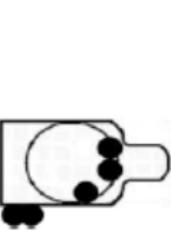
Use 300m line for 25m Z

1 click=1/2 MOA

Target Analysis



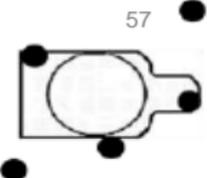
Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	<p>Long vertical or long horizontal shot group</p>	<p>Sight alignment</p> 	<p>Use M16 sighting device to observe. Have the firer draw the sight alignment</p>	<p>Target box exercise, LMTS</p>
<p>55</p> 	<p>Short vertical or short horizontal shot group</p>	<p>Sight picture</p> 	<p>Have the firer draw the sight picture</p>	<p>Use M15A1 aiming card. Target box exercise, LMTS</p>
	<p>Rounds low and right – RH firer Rounds low and left – LH firer</p>	<p>Trigger control</p>	<p>Observe firer</p>	<p>Dry fire, Dime washer exercise, LMTS</p>

Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
 <p style="text-align: center;">56</p>	<p>Misplaced shot group</p>	<p>Natural point of aim</p>	<p>Excessive muscle tension, muscling weapon towards target</p>	<p>Realign firer by talking through the process of adjustment</p>
	<p>Shot group low and left or low and right</p>	<p>Rifle canted</p>	<p>Stand behind firer and observe rifle orientation</p>	<p>Dry fire</p>

Shot Group Analysis

Shot Group	Target Analysis	Error	Observation and Questioning	Proving or Correcting Error
	Scattered shot group	Anticipating the shot	Observe firer for flinching, closing eyes before firing, tenseness of muscles, death grip on handguard or pistol grip	Ball and dummy exercise, dry fire, dime washer drill
		Eye focused on target not front sight post	Firer explain, firer's ability to focus on front sight post, glasses available, eye relief	Change eye relief and mark buttstock (mole skin under cheek bone), target box exercise
Changing eye relief/head position between shots	Observe for consistent cheek-to-stock weld	Mark buttstock (paint pen, mole skin), dry fire		
Unstable position	Observe Soldier while firing	Use "Firing Position Checklist" to determine instability		

Moving Targets



Moving target Base leads

Range in meters X 7 = Lead in inches

(Only for a target moving 3 mph or 4 feet per second with M855)

BASE LEADS

RANGE	INCHES
100m	7
200m	14
300m	21
400m	28
500m	35

Wind Compensation

With Subtract- If the target is moving with the wind you must subtract the wind value from your lead.

Against Add- If your target is moving against the wind you must add the wind value to your base lead.

W - With wind

S – Subtract

A - Against wind

A - Add

Range Estimation



Visible detail method

Observing the amount of detail on the target at various ranges indicates the distance.

A human target at:

100 m- facial features are identifiable

200 m- loss of facial detail, but skin and equipment color identifiable.

300 m- clear body outline, face color visible, but other details blurry.

400 m- body outline is clear but remaining details blurred.

500 m- body shape tapers at ends and the head melds with the shoulders.

600 m- body appears wedge-shaped without appearance of head.

Football Field Method

- Estimate 100 yards, then determine how many of these units will fit between you and the target
- This method's accuracy is limited to the ground visibility
- Accurate to about 800 yards



Bracketing

The viewer estimates the shortest possible distance, then the farthest possible distance.

The average of those distances is the estimated range to the target.



100 yards



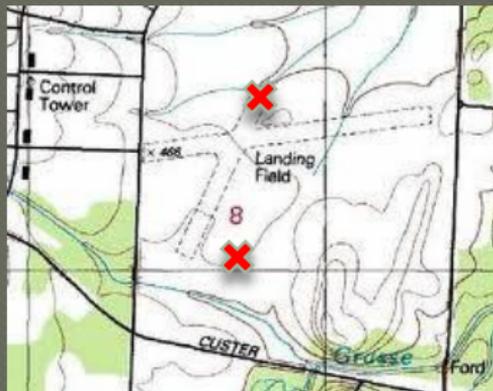
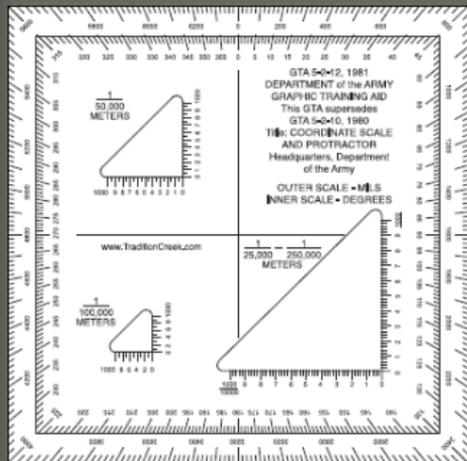
200 yards



300 yards

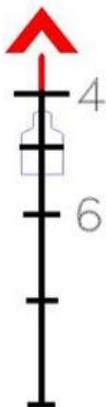
Map Method

1. Plot your location on map
2. Plot the location of the target
3. Measure distance between the two points

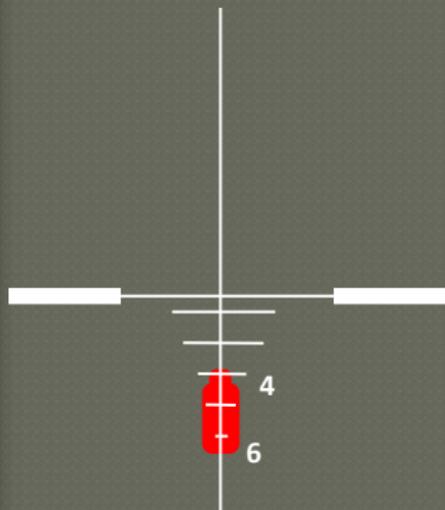


ACOG/ELCAN

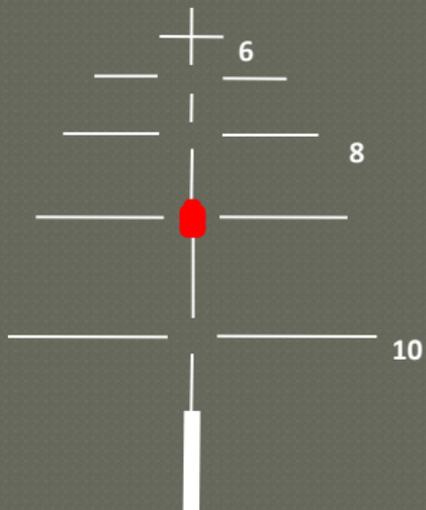
500 m



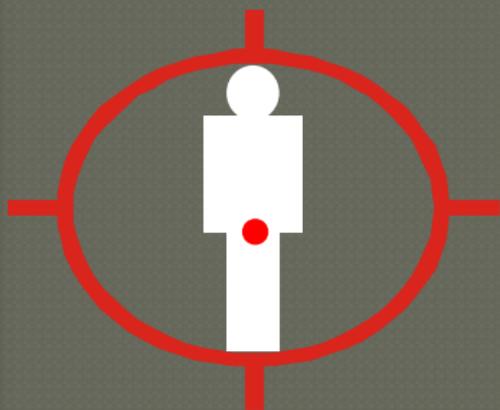
600 m



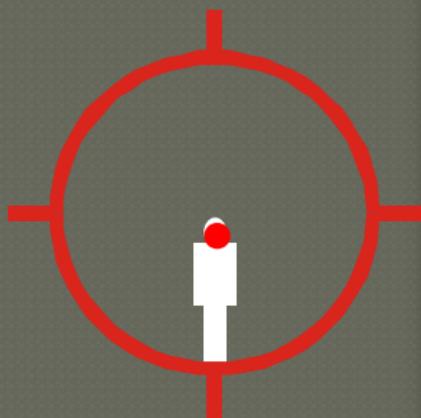
500 m



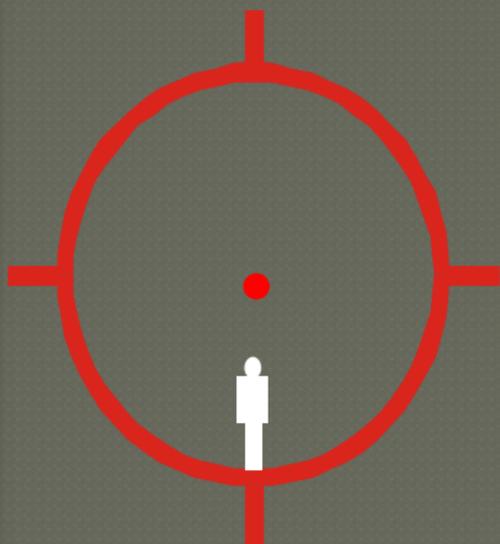
900 m

EOTECH

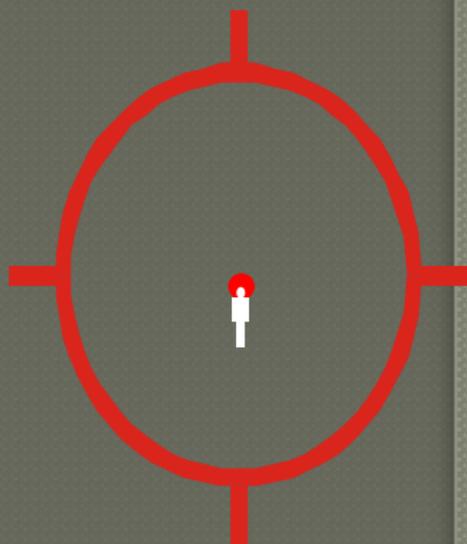
100 m



200 m



300 m



400 m

Training Aids And Malfunctions



Dry Fire Training

- Dry fire training should be done as much as possible before going to the range so that soldiers are familiar with the fundamentals of marksmanship.
- Dry fire training helps instructors identify soldiers who may have trouble firing.
- Dry fire training may also be done while at the range by soldiers who are not on the firing line.
- This section will explain how to use the training aids and give an example of how to set up a training station.
- **NOTE: Ensure there are no live rounds in the weapon or magazines while conducting dry fire training.**

Aiming⁷⁰ Card

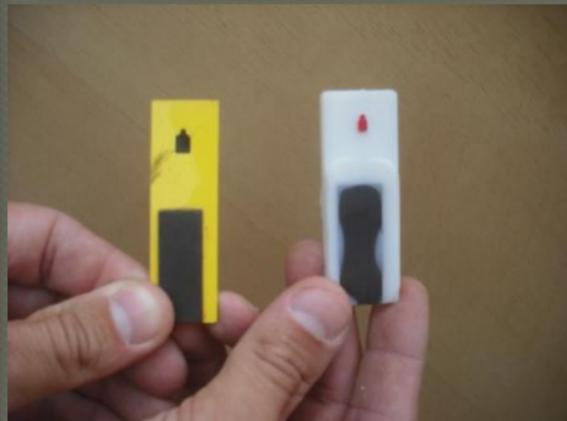


The aiming card can be used to show the soldiers what a proper sight picture looks like. After showing the soldier the correct sight picture, the soldier shows the instructor what a proper sight picture looks like by moving the plastic sheet with a properly aligned front and rear sight to the center mass of the small target.



This is what a correct sight picture should look like when the soldier is done.

Magnetic Aiming Device



The magnetic aiming device is used to show that Soldiers know where to aim on the target.

There are many different types of magnetic aiming devices. Two of them are pictured above.



The device is magnetically attached to the front of the front sight assembly. The Soldier aims down the sights and has a partner move the device until they see a proper sight picture. When they feel they have achieved a correct sight picture they hand the rifle and device to an instructor who checks the sight picture.

Target Box and Target Paddle

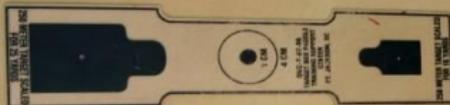


The Target Box exercise is used to show that soldiers can properly align the front and rear sights with the center mass of the target consistently.

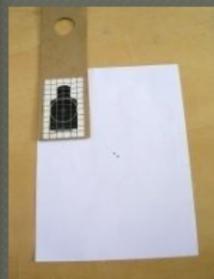
The Target Box exercise consists of a target box, target paddle, blank piece of paper, and a pencil. It requires two soldiers to operate it, a shooter and a target paddle operator.



There are several types of target boxes and paddles. Two types of each are shown on the left. The target box should hold the rifle steady so it does not move, it should allow the soldier to properly and consistently aim down the sights, and it should hold the rifle level. The target paddle should have 200m-300m target on one end as well as a four cm. circle for checking group size.



Target Box and Target Paddle



25 meters apart



The target box, the blank paper and paddle should be 25 meters apart. The paper should be mounted somewhere that it can be aimed at from the target box and where the paper will not be moved. Once the paper has been mounted, the rifle in the target box should be aimed at the paper.

Target Box and Target Paddle



The target paddle soldier should start with the paddle in the corner of the blank paper. The shooter uses hand signals to tell the target paddle soldier which way the target must move in order to have a correct sight picture.

Once the target is properly aligned with the sights the shooter uses hand signals to tell the target paddle soldier to mark the shot. The target soldier places the pencil in the hole in the target and marks the shot.



After the shot is marked the target soldier should place the target back in a different corner of the paper and start the process again. The shooter should do this five times. At the end of the fifth shot the target soldier should place the four cm. circle over the five shots. If all five shots are inside the circle the shooter is correct. If all five shots are not inside the circle the shooter needs more training.

Trigger Drills (washer drill)



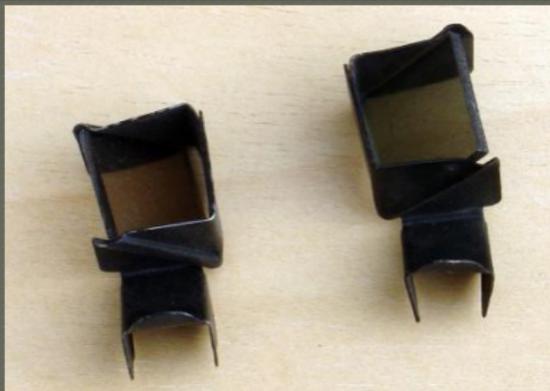
The Trigger Drill is used to train soldiers to pull the trigger straight back to the rear without moving the rifle. The trigger drill can be done using a washer and a cleaning rod section or a trigger drill device. The trigger drill requires two soldiers, one shooter and one soldier to place the washer on the device.

To do the Trigger Drill Insert a cleaning rod part way into the barrel. The shooter should assume a prone unsupported position. The shooter's partner should place the washer on the cleaning rod so that it is balanced. The shooter should place the weapon on semi and slowly squeeze the trigger straight to the rear until the hammer falls (the washer should not fall off).

The shooter should do this exercise until they can fire the weapon five times in a row without the washer falling.

(Having the shooter aim at a zero target 25m away while doing this drill helps them learn to watch the sights)

M16 Sighting Device



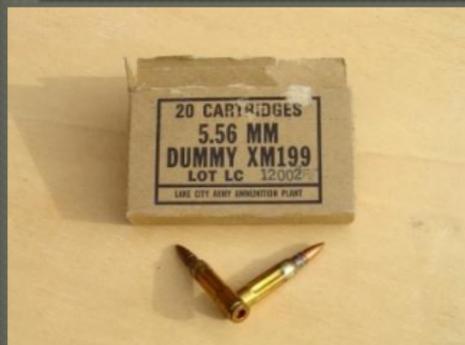
The M16 Sighting Device is used to allow the instructor or coach to see down the sights while the shooter is aiming. The M16 sighting device may be used with the Magnetic Sighting device, the target box, trigger drills, and during live fire training. There are two versions of the M16 sighting device. One is for left side viewing and one is for right side viewing.

M16 Sighting Device



The M16 Sighting device is attached to the back of the M16 rifle directly behind the rear sight (shown above). The coach then lays on the observation side of the device and adjusts the device until they can see down the sights of the rifle.

Dummy Rounds

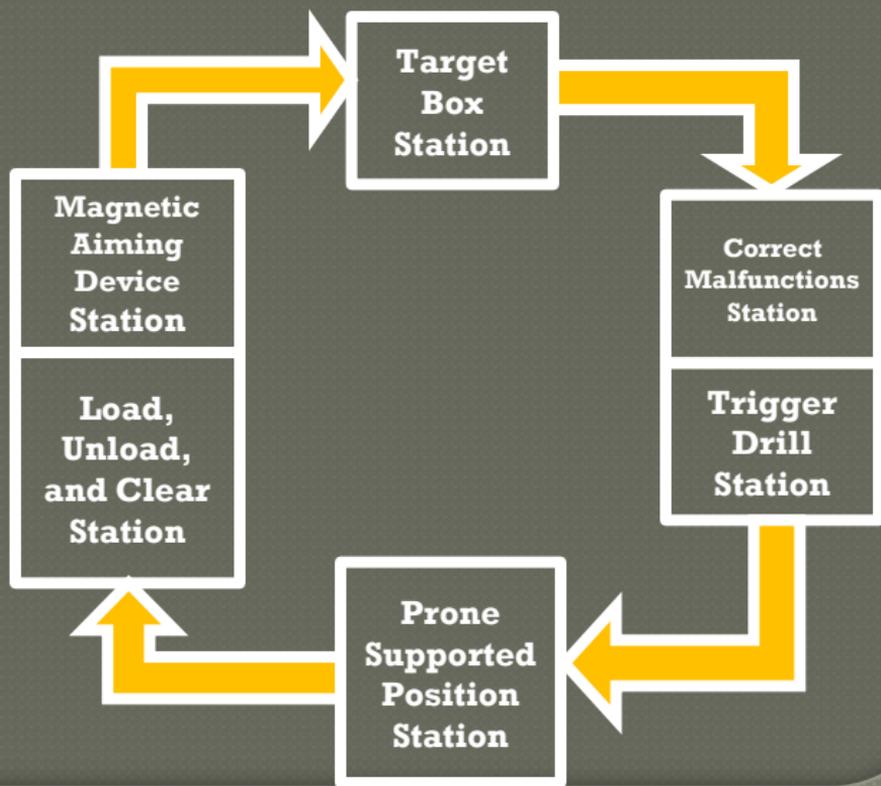


Dummy rounds are 5.56mm rounds that have no powder or primer and have creases in the side of the casing to distinguish them from real bullets. Dummy rounds can be used to simulate malfunctions and to practice loading and clearing the M16 rifle. They can be loaded in a standard M16 magazine.

CAUTION: Extreme care should be used when training with dummy rounds. Dummy rounds should never be stored with live rounds or used near live rounds to avoid confusing live and dummy rounds.

Station Training

Station training is training that is broken down into smaller groups allowing more soldiers to train on different tasks at the same time. This is an effective method of training a large number of Soldiers with minimal instructors. Soldiers should be used as peer coaches when conducting station training in order to have the maximum amount of Soldiers training. Below is an example of how to set up station training.



EST 2000

- The EST 2000, and its associated diagnostic software programs, is a very effective training device that can assist you during BRM.
- Previously identified problems can be verified using this device.
- Previously identified cross-dominant Soldiers are given additional exercises to get comfortable firing with the dominant eye.
- Need for glasses (ability to focus).
- Understanding correct sight picture (target box exercise).
- The diagnostic software available can be used to assist Soldiers who have difficulty grouping.
- Before-the-shot – wobble area.
- During-the-shot - trigger squeeze.
- After-the-shot – follow-through trace.

SPORTS



Slap the bottom of the magazine



Pull the charging handle to the rear and observe the chamber then release the charging handle



Tap the forward assist

DOUBLE FEED



**OBSERVE CHAMBER FOR
BLOCKAGE. TWO ROUNDS
ARE FED INTO CHAMBER**



**PRESS THE BOTTOM OF THE
BOLT CATCH PULL CHARGING
HANDLE, LOCKING BOLT
BACK**



REMOVE MAGAZINE



**INSERT FINGERS THROUGH
MAGAZINE WELL,
REMOVE ROUNDS FROM
CHAMBER**

Bolt Over Ride



OBSERVE CHAMBER FOR
BLOCKAGE. A BULLET IS STUCK ON
TOP OF THE BOLT

REMOVE MAGAZINE, PULL
CHARGING HANDLE AS FAR
AS IT WILL GO, PUT FINGERS
IN MAGAZINE WELL, PUSH
BACK ON BOLT, PUSH
CHARGING HANDLE
FORWARD, BULLET WILL
FALL OUT, LOCK BOLT TO
REAR



CAUTION: Make
sure you hold the
charging handle
back before you
remove your
fingers.

Weapons Maintenance and cleaning



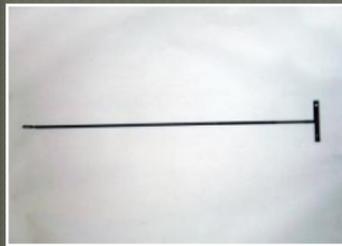
Maintenance and Cleaning



Wipe down all metal parts with a clean rag to remove dirt and carbon



Attach chamber brush to the cleaning rod section with the handle. Apply cleaning oil to the chamber brush. Insert chamber brush into chamber and rotate to clean.



Remove chamber brush from cleaning rod section and attach remaining cleaning rod sections.

From the muzzle end, insert the cleaning rod into the barrel. Place a clean oiled patch into the slot in the cleaning rod end. Gently pull the patch through the barrel and out of the muzzle. Repeat this process ten times.

Maintenance and Cleaning



Now disassemble the cleaning rod and reattach the chamber bush. Wrap a clean dry patch around the brush and dry out the chamber.



Remove chamber brush from cleaning rod section and attach remaining cleaning rod sections.



From the muzzle end, insert the cleaning rod into the barrel. Place a clean dry patch into the slot in the cleaning rod end. Gently pull the patch through the barrel and out of the muzzle. Repeat this process until the patch comes out clean and dry.



Put a light coat of oil on these parts of the bolt carrier assembly (Red Arrows)



Assemble the rifle

Perform a functions check

Make sure front sight is not bent

FUNCTIONS CHECK

The purpose of a functions check is to verify that the mechanical parts of the rifle are working properly . The steps to perform a functions check are as follows:

- 1. Pull the charging handle to the rear and release**
- 2. Place the weapon on safe**
- 3. Attempt to pull trigger (Nothing should happen)**
- 4. Place the weapon on semi**
- 5. Pull the trigger and hold to the rear**
- 6. Pull the charging handle to the rear and release**
- 7. Slowly release the trigger, the hammer should not fall**
- 8. Place the weapon on burst**
- 9. Pull the trigger and hold to the rear**
- 10. Pull the charging handle to the rear and release three times**
- 11. Slowly release the trigger, the hammer should not fall**
- 12. . Place the weapon on safe**

Note: If the weapon fails at any point during the functions check it requires repair

Short Range Marksmanship



HOLD OVER

During Short Range
Marksmanship engagements
closer than 25M it is necessary
to use a hold over to hit exactly
where the shooter wants to on
target.

Closer than 25M the line of
departure for the bullet is
below the line of sight

The shooter will essentially
have to aim higher than the
desired point of impact

This higher aiming point is
called a hold over

STANCE



Knees slightly bent

Hips generally squared to the target

Elbows generally tucked down the sides of the body

Puts you in a position to control the gun and move if necessary

Feet no less than shoulder width apart with the majority of the weight on the balls of the feet

Grip



Firing hand is placed high on the pistol grip

Fingers are naturally wrapped around the pistol grip

This allows the shooter to have better control during recoil and allows the trigger finger to be placed naturally on the trigger

Non Firing Hand placed as far out on the rail system as possible without locking the elbow

Thumb is rotated over the top of the rail system or runs parallel to the rail system

This allows the shooter to have better control of the weapon during recoil as well as being able to drive the weapon more efficiently target to target

Work Space



RELOADS



Shooter is engaging a target and has a completely empty magazine and the bolt locks to the rear

Finger comes off the trigger and weapon goes on safe

Index finger of firing hand presses magazine release while weapon is still vertical to the ground (magazine will fall free)

RELOADS



While the index finger of the firing hand releases the magazine the non firing hand is simultaneously moving to a new magazine on the body armor

Once the old magazine falls from the weapon the shooter immobilizes the weapon into the crease of the elbow or into the pocket under the arm

The magazine well is positioned appropriately in the working space

RELOADS



While maintaining the weapon in the work space the shooter grasps the new magazine using the “coke can” method or by indexing the index finger on the front spine of the new magazine

The shooter “looks” the new magazine into the magazine well

Once the magazine is initially inserted into the magazine well the shooters eyes return to the target, or look for the next target

RELOADS



Once the magazine is fully inserted the shooter pushes/pulls the new magazine to ensure it is fully seated

Non firing hand hits the bolt release with the thumb releasing the bolt (chambering a round)

Non firing hand returns to appropriate position on the rail system

Weapon is placed on fire if the target needs to be re-engaged

Unit Training Management References

IWTS (Integrated Weapons Training Stratagey)

350-38 (STRAC)

3-22.9 (Rifle manual)

3-22.35 (Pistol manual)

NOTES

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References

David R. James, Jean L. Dyer. *Rifle Marksmanship Diagnostic and Training Guide*. U. S. Army Research Institute for the Behavioral & Social Sciences, May 2011

FM 3-22.9, Rifle Marksmanship M16-/M4-Series Weapons, 12 August 2008

This document was prepared by SFC Micholick, Joel of the USAMU Service Rifle team 26 Jan 2015.

