

PREPARE THE MAN



ATC STUDENT STUDY GUIDE 111103/38  
153138/40

Prepared by Laughlin AFB

UNDERGRADUATE PILOT/NAVIGATOR TRAINING

# MARKSMANSHIP TRAINING

April 1964



AIR TRAINING COMMAND

For Instructional Purposes Only

ATC STUDENT STUDY GUIDE  
NUMBER 111103/38/153138-40

HEADQUARTERS AIR TRAINING COMMAND  
RANDOLPH AIR FORCE BASE, TEXAS  
April 1964

### FOREWORD

This student study guide was designed to guide you through your study assignments in the most logical sequence for easy understanding. The supplementary information section contains additional material required to keep you up to date in this subject. Answer the self-evaluation questions so you will better understand and retain the material you have studied.

FOR THE COMMANDER



NEIL D. VAN SICKLE  
Brigadier General, USAF  
DCS/Flying Training

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## MARKSMANSHIP TRAINING

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## Marksmanship Training — 1 - 1 Hour

### WEAPON NOMENCLATURE AND RANGE SAFETY

#### OBJECTIVES:

The student will:

1. Comprehend the basic rules of range safety
2. Identify the basic parts of the weapon used in training
3. Be familiar with the function of each basic part of the weapon used in training
4. Be familiar with the function of the weapon's mechanical safety devices
5. Be able to field-strip and reassemble the weapon

#### INTRODUCTION:

The importance of understanding your small arms weapon and the basic rules of safety in handling this weapon cannot be overemphasized. You must know how your weapon works so that you can handle it safely. A mistake in its operation can result in the accidental firing of the weapon and someone's death. Think of your weapon as you would your aircraft; i.e., a military instrument that through careless or unskillful use, can inflict injury to you and others.

#### STUDY ASSIGNMENT:

1. Read the information presented in the Supplementary Section of this Student Study Guide.
2. Answer and be prepared to discuss all questions asked in this lesson.

#### SUPPLEMENTARY INFORMATION:

##### BASIC RULES OF RANGE SAFETY

Much has been said about weapon safety. You have probably received some marksmanship training and been subjected to an almost tyrannical barrage of rules, do's and don'ts. Unfortunately, however, weapon safety is not a function of intellect and although it may not be necessary to tell you what not to do, it is necessary that you know what to do and that you do

it in the prescribed manner. Most of our emphasis on safety will be placed on adherence to procedures; however, first let's review the most basic rules of range safety.

1. **TREAT EVERY WEAPON AS IF IT WERE LOADED.** Always handle a weapon so that an accidental discharge at any moment (no matter how inconceivable) would cause no bodily harm or property damage. On the range, the only safe direction to have your weapon pointed is down range toward the targets. Everywhere else, keep the muzzle pointed up. Every time you pick up a weapon, you should first check to see if it is loaded.

What precautions should be taken when handling any weapon?

2. **KNOW AND FOLLOW ALL FIRING LINE PROCEDURES.** When you understand all range operations, the Range Officer can regulate your actions in a safe and orderly sequence. Furthermore, you will be more confident and shoot better when you know the proper procedures. Confusion is one of the greatest enemies of range safety.

Since you will only be on the range a few times, why is it necessary to know about its operation?

3. **OBEY INSTANTLY ALL FIRING LINE COMMANDS.** You must be constantly alert to all commands from the Range Officer. He is the only person who may command your actions while on the firing line. The only exception to this rule is that anyone may and should order "CEASE FIRE" if they observe an unsafe condition downrange.

What advantage is there in having only one person in charge of range operations?

4. **MAINTAIN STRICT PERSONAL DISCIPLINE.** Horseplay, loud or irrelevant talking, fits of temper, etc. will distract others, and a shooter who isn't thinking about what he is doing is dangerous.

Can talking to the shooter next to you about how well you may be doing compromise safety?

5. INSURE THAT YOUR WEAPON IS IN GOOD FIRING ORDER. This entails checking for good mechanical condition and working order and insuring that it is clean, lubricated, and that the barrel is free of obstructions.

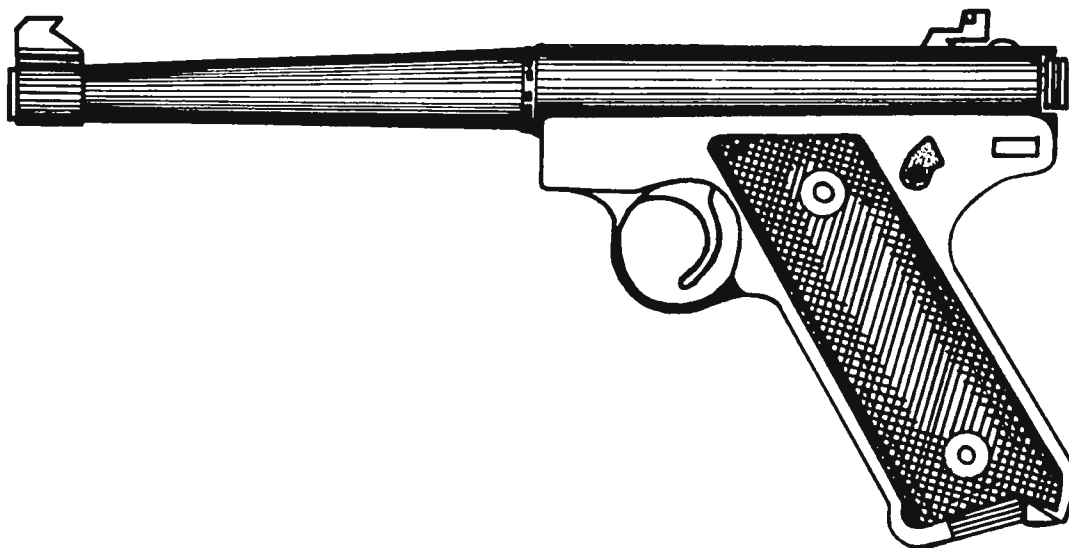
Why is it important to know how to check your weapon before using it?

These are just a few of the rules that exist on the subject of range safety. Perhaps your instructor will add a few of his favorites. Remember, we have tailored these rules to this particular course. If you have not done so, it would be wise to attend one of the many weapon handling courses conducted by The National Rifle Association, or similar organization, to learn all about the safe and efficient handling of your personal firearms. Safety cannot be overstressed and yet, for our purpose, two words can sum up our approach to it: DISCIPLINE and KNOWLEDGE.

#### NOMENCLATURE FUNCTIONING, SAFETY DEVICES, DISASSEMBLY & REASSEMBLY

The Air Force is rapidly replacing the Cal. .45 pistol with the Cal. .38 revolver. As a crew member, if you are issued a weapon, it will probably be a .38 revolver. There are three phases of shooting prescribed in AFR 50-8, Phases I & II are combat types and III is the basic Phase. Only combat crew members will be required to qualify in all three Phases and with the .38, the rest of you will only need to qualify in Phase III and with either a .22, .38, or .45 Cal weapon. Because of the diversity of weapons being used by UPT Bases for Phase III training, all three types of weapons will be discussed whenever there are significant technical differences. YOU SHOULD ONLY STUDY THE INFORMATION THAT IS PERTINENT TO THE WEAPON IN USE AT YOUR BASE.

#### CAL. .22 RUGER MARK I



#### DESCRIPTION

The modern semiautomatic or self loading pistols are very reliable. Modern engineering has eliminated most of their short comings which in the past created doubt as to their reliability. The Cal. .22 Ruger Mark I pistol,

offered in 5 1/4" or 6 7/8" barrel lengths, is a moderately priced target pistol with the following specifications: Blowback-operated; adjustable rear sight; muzzle brake (optional); Cal. .22 long rifle cartridge; magazine-fed.

NOMENCLATURE AND FUNCTIONING -  
CAL. .22 RUGER MARK I

Listed below is the nomenclature and function of each part of the weapon to be covered. Match the nomenclature with the weapon breakdown in Figure 1 on page 31.

1. BARREL—Serves as a guide path for bullet. (Front and rear sights shown installed)
2. RECOIL SPRING SUPPORT—Supports recoil spring.
3. EXTRACTOR—Extracts the empty or live round from the chamber and acts as a pivot upon ejection.
4. RECOIL SPRING—Absorbs recoil, acts as a buffer, and gives counter recoil.
5. EXTRACTOR PLUNGER—Link between extractor and extractor spring and locks extractor into the bolt.
6. EXTRACTOR SPRING—Provides energy for the return of the extractor.
7. REBOUND SPRING SUPPORT—Support for rebound spring.
8. FIRING PIN—Transmits energy from hammer to primer.
9. REBOUND SPRING—Supplies energy to return and hold firing pin to the rear.
10. RECOIL SPRING GUIDE PIN—Retains and positions recoil spring.
11. BOLT—Acts as a breech block, chambers the cartridge, and houses the bolt group.
12. HAMMER BUSHING - Provides bearing surface between hammer and pivot pin.
13. HAMMER—Striker.
14. HAMMER STRUT—Connecting link between hammer and mainspring.
15. HAMMER STRUT PIN—Retains and is pivot for hammer strut.
16. SAFETY CATCH—Locks sear to prevent fire and locks bolt to rear for visual inspection of chamber.
17. BOLT STOP PIN—Stops recoil of bolt, with recoil spring.
18. MAINSPRING HOUSING—Houses mainspring and its parts.
19. HOUSING LATCH—Locks housing in grip frame.
20. MAGAZINE CATCH SPRING—Maintains tension on magazine catch.
21. MAINSPRING PLUNGER—Link between hammer strut and mainspring.
22. MAGAZINE CATCH—Locks the magazine into the grip frame.
23. MAINSPRING—Supplies energy to the hammer through the hammer strut.
24. DETENT BALL—Positions lower end of mainspring.
25. MAGAZINE—Houses parts of magazine group and cartridges.
26. STOCK(S)—Hand hold for weapon.
27. SEAR SPRING—Forces sear to rearward position to lock under hammer.
28. SEAR—Holds hammer to rear and is the release for the hammer.
29. DISCONNECTOR—Prevents full automatic firing, prevents fire when bolt is out of battery, and is the connecting link between trigger and sear.
30. TRIGGER—Item necessary to put all other parts in motion.
31. TRIGGER SPRING—Provides resistance to trigger pull and returns trigger.
32. TRIGGER SPRING PLUNGER—Retains and positions trigger spring.

**OPERATIONAL FUNCTIONING -  
CAL. .22 RUGER MARK I**

The magazine may be loaded with any number of cartridges from one to nine.

The loaded magazine is inserted into the frame and the bolt is drawn to the rear. This movement cocks the hammer, compresses the recoil spring; and, as the bolt reaches the rear position, the magazine follower raises the upper cartridge into the path of the bolt. The bolt, then being released is forced forward by the recoil spring and carries the upper cartridge into the chamber. The pistol is now ready for firing.

When the hammer is cocked, the hammer strut compresses the mainspring in the mainspring housing, thus applying pressure to the hammer. As the hammer moves to the rear, it is held to the rear by the sear.

The safety catch must be down in the unlocked position so that the sear will be unlocked and free to release the hammer, and the bolt will be free to move back as the weapon fires. When the trigger is squeezed, the sear is moved and the released hammer strikes the firing pin which transmits the blow to the primer in the cartridge. The pressure of the gases, generated in the barrel by the burning of the powder in the cartridge, is exerted in a forward direction against the bullet, driving it through the bore; and, in a rearward direction against the face of the bolt, driving the bolt to the rear. The bolt moves to the rear, opening the breech, cocking the hammer, extracting and ejecting the empty shell, and compressing the recoil spring until the bolt reaches its rearmost position. Another cartridge is raised in front of the bolt and forced into the chamber by the return movement of the recoil spring.

This completes a cycle of fire.

**MECHANICAL SAFETIES -  
CAL. .22 RUGER MARK I**

The Cal. .22 Ruger Mark I has one safety device. Reread the preceding information pertaining to the functioning of the safety catch.

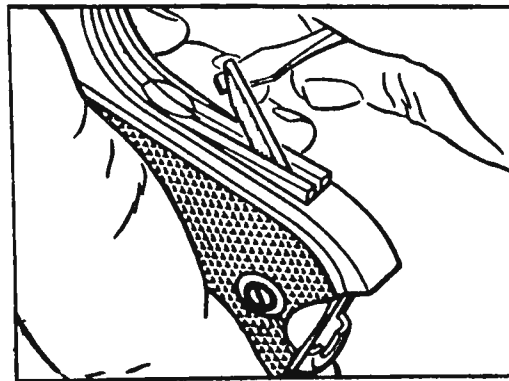
**DISASSEMBLY (Field-Stripping) -  
CAL. .22 RUGER MARK I**

Disassembly is divided into two classes: Field-stripping and complete disassembly. This lesson will only explain field-stripping.

The first step in field-stripping is to "clear

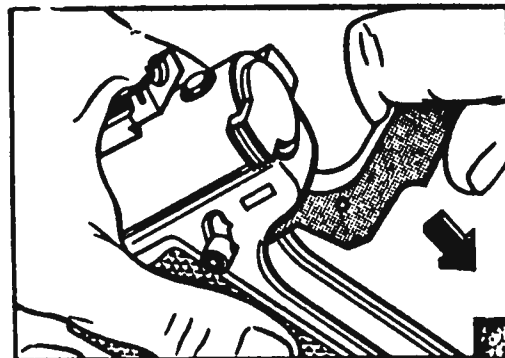
the weapon." Now, separate the weapon's various assemblies in the following manner: remove the magazine by pulling magazine catch to the rear, allowing the magazine to drop into your hand. Next, pull the bolt to the rear with the thumb and forefinger of the right hand. With the left forefinger push up on the safety catch, locking the bolt to the rear. Visually check chamber for a live round. After being sure weapon is clear, press down on the safety catch with left forefinger and allow bolt to go to its forward position. At this point be sure to snap the trigger which will allow the hammer to fall.

**MAINSRING HOUSING ASSEMBLY**



Dissassembly - Step 1  
Figure 2

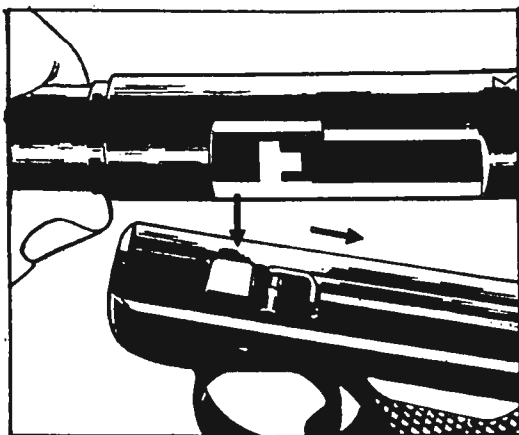
Grasp the weapon in the left hand, point the muzzle down at a 45° angle. Insert a screwdriver into the oval cut between the mainspring housing and mainspring housing latch and pull out on the latch, as shown in Figure 2. Now swing the mainspring housing to the rear.



Dissassembly - Step 2  
Figure 3

Next, pull down on mainspring housing assembly. This will disengage bolt stop pin from the receiver. Now remove mainspring housing assembly, as shown in Figure 3.

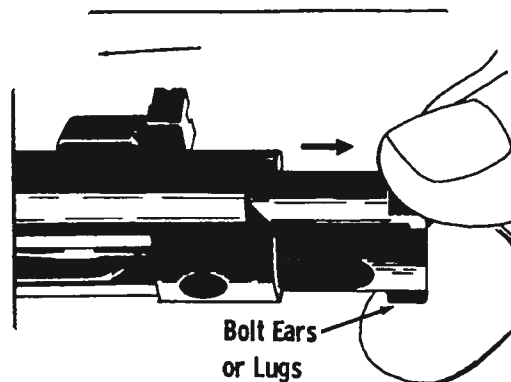
## FRAME, BARREL AND RECEIVER ASSEMBLY



Disassembly - Step 3  
Figure 4

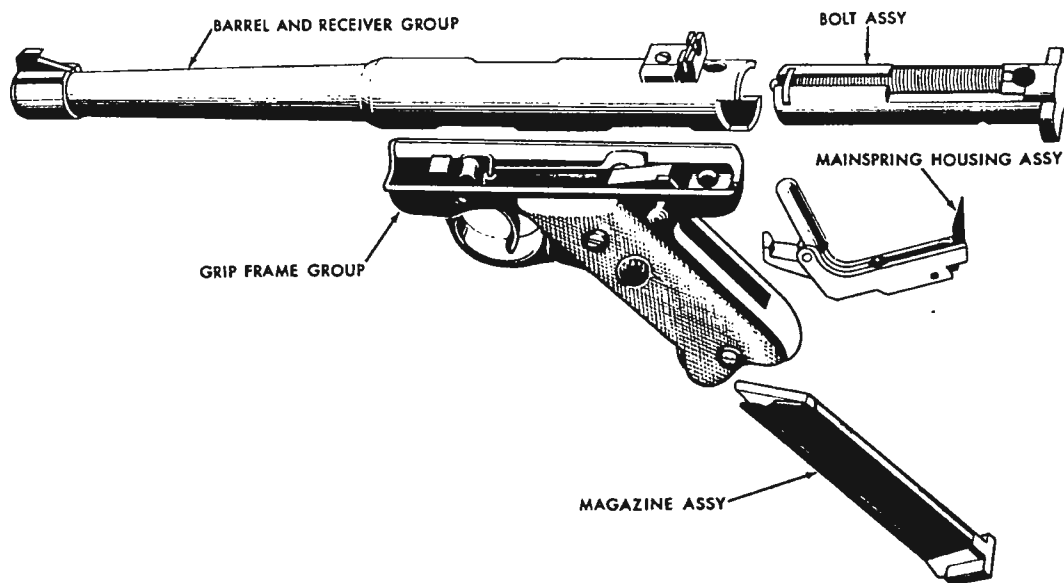
Grasp the barrel with the left hand, pointing muzzle to your left, down at a 45° angle. Holding the grip frame group with the right hand, apply pressure rearward and downward. This will release the grip frame lugs from their recess in the receiver, as shown in Figure 4. Be careful not to let bolt slide to the rear and drop out.

## BOLT ASSEMBLY



Disassembly - Step 4  
Figure 5

Still holding barrel and receiver in the left hand, grasp bolt ears with thumb and forefinger of the right hand. Slide bolt to the rear and out of the receiver, as shown in Figure 5. This now completes field-stripping of the Cal. .22 Ruger Mark I pistol. (Figure 6)



Cal. .22 Ruger Mark I - Field-stripped  
Figure 6

## ASSEMBLY - CAL. .22 RUGER MARK I

### BOLT ASSEMBLY

Pick up barrel and receiver group with left hand. Grasp the bolt by the bolt lugs or ears with forefinger and thumb of right hand, making sure recoil spring is on the top of the barrel

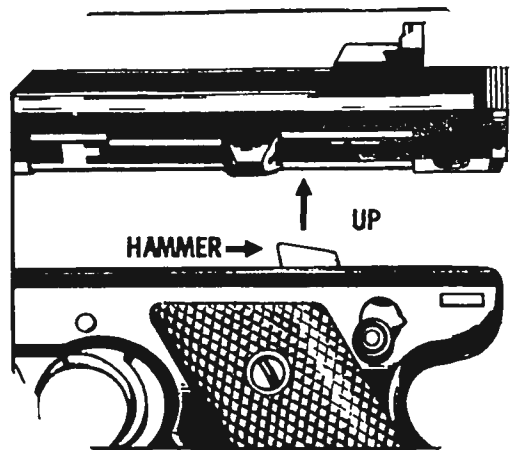
toward the sight. This insures proper reassembly in that the bottom of the bolt has two machine grooves which must fit over the ejector. If the bolt is installed upside down, it will mar the face of the bolt and damage the ejector.



Now insert the bolt into the receiver as far as it will go. Slide bolt back and forth to insure nothing is binding.

#### FRAME, BARREL AND RECEIVER ASSEMBLY

Be sure hammer is pointing straight up when grip frame group is inserted into barrel and receiver group, as shown in Figure 7. Without this precaution the mainspring housing assembly cannot be properly assembled into weapon.



Assembling Barrel and  
Receiver with Grip Frame Group

Figure 7

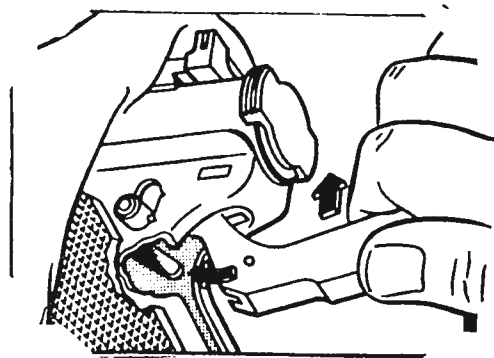
Holding barrel and receiver group in the left hand, grasp grip frame group in the right hand. Insert grip frame lugs into recess located in the receiver. With the right hand, apply pressure forward until the lug locks into its recess.

This completes the mounting of the barrel and receiver group to the grip frame group.

#### MAINSRING HOUSING ASSEMBLY

Grasp the grip frame group and the barrel and receiver group in the left hand, pointing muzzle down with the left hand. Insure that the hammer rests on the firing pin. Pick up mainspring housing assembly and insert the bolt stop pin into its holes as far as it will go. Now rotate mainspring housing forward, as shown in Figure 8, thus locking lugs into the receiver.

Raise the muzzle upward to allow the hammer strut to fall into the mainspring housing recess. As you apply pressure to the mainspring housing, it will have a tendency to spring back. If it doesn't, repeat process until it does. Then,



Installing Mainspring Housing Assembly

Figure 8

with the right thumb, lock the housing latch into place. Next, lock the bolt to rear position by pushing safety catch to "ON" position. Now insert magazine.

#### CORRECT ASSEMBLY - CAL. .22 RUGER MARK I

We must now check for proper assembly of the weapon. This is accomplished by pushing the safety catch to the "OFF" position (down), allowing the bolt to go forward. Then move the safety catch to the "ON" position (up) and pull the trigger (the hammer should not fall). Now place the safety catch to the "OFF" position (down) and pull the trigger (the hammer should fall). Next, remove the magazine, lock the bolt to the rear and ground weapon on the bench.

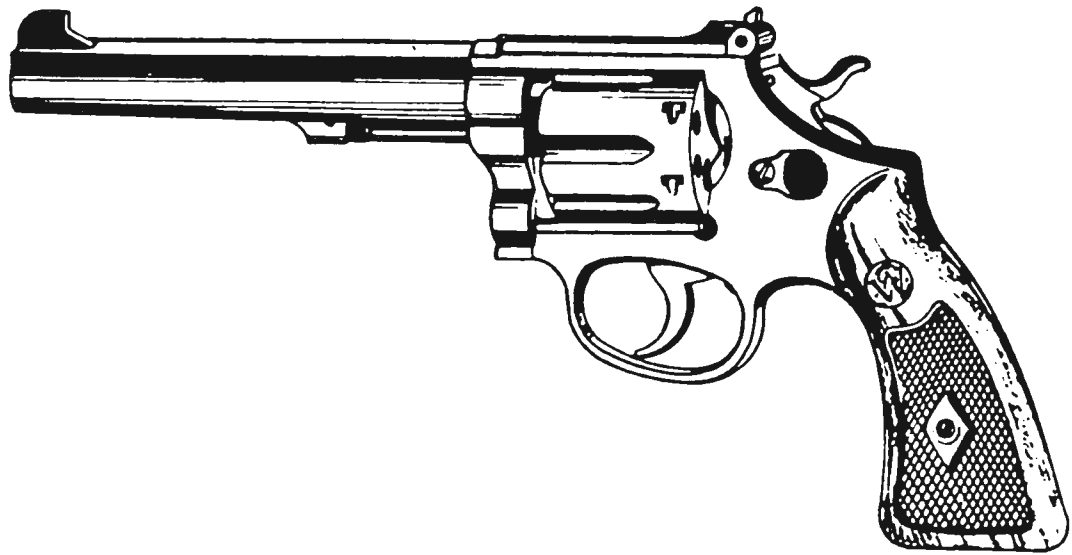
#### QUESTIONS:

1. List the 5 basic rules of range safety.
2. Why should the hammer be placed in the vertical position before reassembling the Ruger Mark I?
3. When reinstalling the bolt, where should the muzzle point?
4. What would be damaged if the bolt was installed upside down?
5. What is the purpose of the two machine grooves in the base of the bolt?
6. Name the mechanical safety device(s).

#### SOURCE REFERENCE:

Air 75330 SSG, Block III, Chapter 3, USAF Marksmanship School.

CAL. .38 SMITH & WESSON REVOLVER



DESCRIPTION

The .38 revolver is a 6-shot breech-loading hand weapon designed to fire single or double action. The rate of fire is limited only by the dexterity of the shooter in reloading and pulling the trigger. Single action is performed by cocking the hammer before each shot. In double action fire, the operator merely squeezes the

trigger to fire the weapon.

The Air Force has purchased several models of the Smith & Wesson revolver which all function in the same manner. For the most part, the different models differ only in finish and use, therefore, a detailed comparison is not within the scope of this course.

**NOMENCLATURE AND FUNCTIONING -  
CAL. .38 REVOLVER**

Listed below is the nomenclature and function of each part of the weapon to be covered. Match the nomenclature with the weapon breakdown in Figure 9 on page 33.

1. EXTRACTOR ROD—Activates the extractor and is a locking device.
2. CENTER PIN SPRING—Holds the center pin in a locked position.
3. CENTER PIN—Serves as a locking device for the cylinder.
4. YOKE—Connecting pivot between the cylinder and frame.
5. EXTRACTOR SPRING—Returns the extractor and holds it within cylinder.
6. CYLINDER—Serves as a chamber and magazine.
7. EXTRACTOR—Pulls the empty cases from the cylinder simultaneously.
8. BARREL—Initiates the path of the bullet.
9. LOCKING BOLT ASSEMBLY—Locks extractor rod in position when cylinder closed.
10. CYLINDER STOP PLUNGER ASSEMBLY—Actuates the cylinder stop.
11. THUMBPIECE—Actuates the bolt to release the cylinder.
12. BOLT—Disengages center pin to allow opening cylinder and blocks hammer.
13. BOLT PLUNGER SPRING—Provides energy to bolt plunger.
14. BOLT PLUNGER—Holds bolt in forward position.
15. FRAME—Houses the parts.
16. STOCK(S)—A hand hold for weapon.
17. STRAIN SCREW—Controls the tension on mainspring.
18. HAMMER—Strikes the blow that ignites the primer.
19. HAMMER STIRRUP—Connecting link between hammer and mainspring.
20. MAINSPRING—Provides energy to the hammer.
21. REBOUND SLIDE—Returns trigger, actuates hammer block, and locks hammer.
22. REBOUND SLIDE SPRING — Provides energy for return movement of rebound slide.
23. HAMMER BLOCK—Safety device that prevents hammer blow to primer.
24. TRIGGER LEVER—Contacts rebound slide to return trigger forward.
25. SEAR SPRING—Insures proper positioning during operation of sear.
26. SEAR—Release mechanism for the hammer and allows double action fire.
27. HAMMER NOSE—(Firing Pin) Transmits energy of hammer to primer.
28. CYLINDER STOP—Stops and holds the cylinder in alignment for firing.
29. TRIGGER—Actuates the parts necessary to fire the weapon.
30. HAND—Rotates the cylinder when the hammer is cocked.
31. SIDE PLATE—Provides access to the internal parts.
32. HAMMER BLOCK—Safety device that prevents hammer blow to primer.

## OPERATIONAL FUNCTIONING - CAL. .38 SMITH & WESSON REVOLVER

The revolver may be fired either single or double action.

### DOUBLE-ACTION CYCLE OF FIRE

In firing double action, the pressure on the trigger causes the upper rear part of the trigger to rise against the bottom part of the double-action sear. As the pressure is increased, the trigger is arched upward and at the same time forces the hammer to the rear and compresses the mainspring.

The cylinder stop is unlocked from the cylinder by the arching movement of the trigger. The continued arching movement of the trigger at the same time forces the hand upward. The tip of the hand catches in one of the extractor notches as it moves upward and rotates the cylinder counterclockwise into firing position.

Just before the trigger reaches its rearmost position, it releases the cylinder stop which is forced upward by the cylinder stop plunger spring and positively locks the cylinder in alignment with the barrel.

The trigger also forces the rebound slide to the rear through the trigger lever at the same time it is actuating the hand and cylinder stop. The rebound slide withdraws the hammer block from between the hammer and frame. (While in position, the hammer block restricts the forward travel of the hammer thus preventing the firing pin from contacting the primer if the hammer were to receive a sharp blow from the rear.)

The hammer is forced to the rear by the upper rear part of the trigger pushing against the sear until the hammer is approximately 3/16 of an inch from the rearmost position. At this point, the lower rear part of the trigger takes over by coming in contact with the toe of the hammer and continues forcing the hammer to the rearmost position. At this point, the hammer is released by the trigger and falls, thereby striking the primer causing ignition of the powder which in turn drives the bullet from the barrel.

The rebound slide has been compressed by the trigger to its rearmost position. After the cartridge fires, the trigger finger pressure is released and the trigger spring, within the rebound slide, forces the rebound slide forward. As the rebound slide moves forward, the ham-

mer is moved rearward a sufficient amount to allow the hammer block to slide up between the hammer and the frame. The trigger is then at the same time forced forward by the rebound slide through the trigger lever. The weapon has now completed a double-action cycle of fire.

### SINGLE-ACTION CYCLE OF FIRE

In single-action fire, the hammer is cocked to the rear by the operator. No pressure is applied to the trigger during this operation. The hammer, in its arching rearward movement, actuates the trigger and compresses the mainspring. The lower front tip of the hammer rides under the upper rear tip of the trigger, swinging it in a rear arching movement.

The trigger, in its arching rear movement, first unlocks the cylinder lock from the cylinder. Then the hand attached to the upper rear part of the trigger moves up and rotates the cylinder counterclockwise into firing position. The trigger, in its continued movement to the rear, releases the cylinder stop which moves up and locks the cylinder in alignment with the barrel.

The trigger also forces the rebound slide to the rear through the trigger lever at the same time it is actuating the hand and cylinder stop. The rebound slide withdraws the hammer block from between the hammer and frame. (While in position, the hammer block restricts the forward travel of the hammer thus preventing the firing pin from contacting the primer if the hammer were to receive a sharp blow from the rear.)

The lower front tip of the hammer and the upper rear tip of the trigger lock the hammer in the cocked position for single-action fire. Pressure to the rear on the trigger releases the hammer which falls and strikes the primer. The primer causes ignition of the power which in turn drives the bullet from the barrel.

The rebound slide has been compressed by the trigger to its rearmost position. After the cartridge fires, the trigger finger pressure is released and the trigger spring within the rebound slide forces the rebound slide forward. As the rebound slide moves forward, the hammer is moved rearward a sufficient amount to allow the hammer block to slide up between the hammer and the frame. The trigger is then at the same time forced forward by the rebound slide through the trigger lever. The weapon has now completed a single-action cycle of fire.

MECHANICAL SAFETIES -  
CAL. .38 REVOLVER

The revolver has two safety devices. These devices are the hammer block and the cylinder bolt. Reread the preceding information concerning the functioning of the rebound slide and the hammer block.

The cylinder bolt restricts movement of the hammer while the cylinder release is forward. Since the hammer must be forward in order to place the cylinder release forward, the hammer block would be performing the function of preventing accidental discharge. For all practical purposes, therefore, the hammer block is the only effective mechanical safety.

DISASSEMBLY (Field-Stripping) -  
CAL. .38 REVOLVER

Disassembly of the .38 is divided into two classes: field-stripping and complete disassembly. This lesson will only explain field-stripping. Complete disassembly will only be performed by qualified personnel.

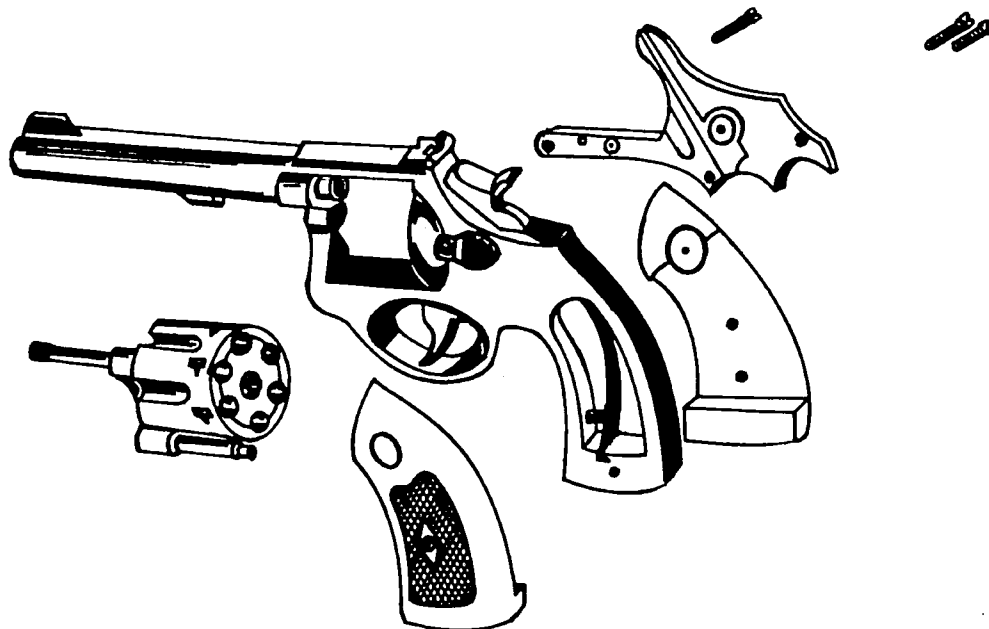
1. The first and most important step in field-stripping is to "clear the weapon." To clear the .38, first point it in a safe direction. Then, with forward pressure on the thumbpiece to disengage the center pin from the frame, swing the cylinder out from right to left. It is now possible to visually check the cylinder for live

cartridges or empty cases. Rearward pressure on the extractor rod will eject cartridges or cases from the cylinder. Now that you have personally cleared the weapon, you are ready to continue.

2. Next take a screwdriver and remove the forward side plate screw (just under the cylinder, right side of frame). This frees the yoke for removal from the frame. Then swing out the yoke and cylinder assembly and ease it forward out of the frame. When removing the cylinder assembly, one of the flutes on the cylinder must be aligned with the frame. After removing the yoke and cylinder assembly, separate the cylinder and yoke.

3. After removal of the cylinder and yoke, the next step is to remove the stocks. Loosen the stock screw, press in firmly on the screw - this will loosen the opposite stock from the frame. Now remove the stock screw and the remaining stock.

4. Remove the remaining side plate screws. Holding the weapon in the palm of the hand, tap the frame sharply where the stocks attach with a small plastic mallet, or suitable substitute to loosen the side plate from the frame. Remove the side plate. The weapon is now field-stripped.



Revolver Field-Stripped (Cal. .38 S&W)

Figure 10

#### ASSEMBLY - CAL. .38 REVOLVER

1. The first step of assembly is to align all the parts in the frame, then carefully replace the side plate and side plate screws with exception of the forward side plate screw.
2. Next, replace the stocks and stock screw.
3. Join the yoke and cylinder assembly and replace onto the frame (align flutes with the frame). Replace the forward side plate screw to hold the yoke and cylinder assembly in place.

#### CORRECT ASSEMBLY - CAL. .38 REVOLVER

Check for correct assembly by testing the weapon for proper functioning.

Check for both double-action and single-action operation.

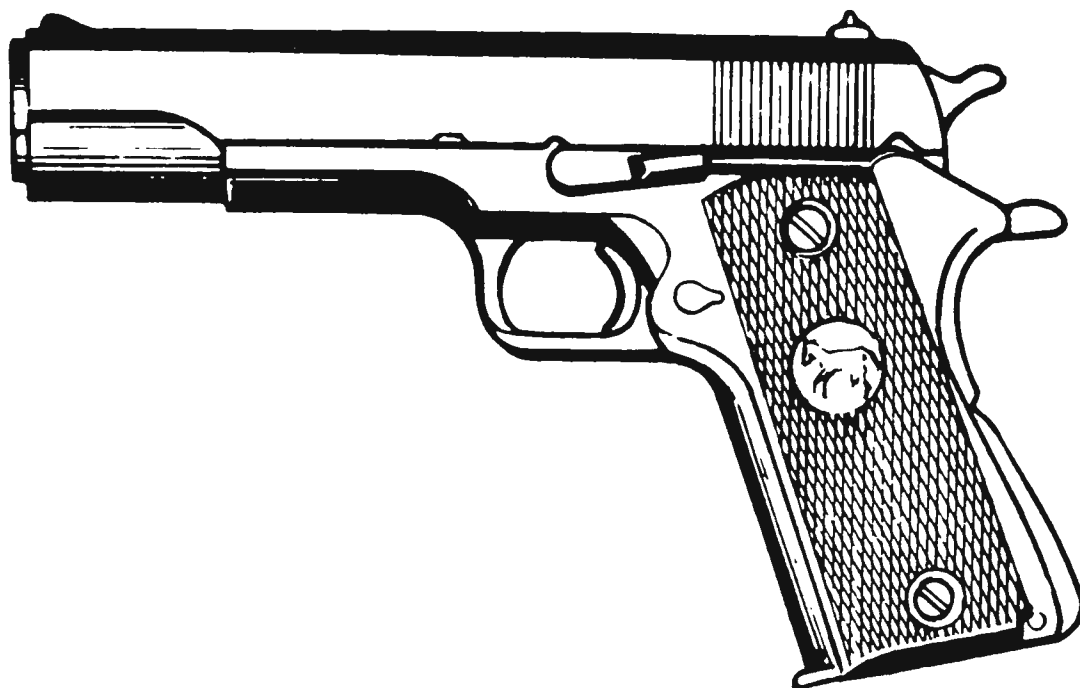
#### QUESTIONS:

1. List the 5 basic rules of range safety.
2. Name the mechanical safety device(s).
3. If the hammer is cocked, can the cylinder be swung out?
4. After firing the revolver, you find you cannot swing out the cylinder to remove the fired rounds. What is the probable cause? How would you correct this malfunction?
5. What is the purpose of the flutes cut around the outside of the cylinder?

#### SOURCE REFERENCE:

Air 75330 SSG, Block III, Chapter 4, USAF Marksmanship School.

#### CAL. .45, M1911/M1911A1 PISTOL



#### DESCRIPTION

The automatic Cal. .45, M1911/M1911A1 Pistol, is a recoil-operated, magazine-fed, self-

loading hand weapon. The pistol is designed to fire cartridge, ball, caliber .45, M1911. It fires but once at each squeeze of the trigger.

NOMENCLATURE AND FUNCTIONING -  
CAL. .45 M1911/M1911A1 PISTOL

Listed below is the nomenclature and functions of each part of the weapon. Match the nomenclature with the weapon breakdown in Figure 11 on page 35.

1. SLIDE—(1) The mass of the slide and barrel locked together partially overcomes the recoil of the weapon. (2) Houses the parts of the slide assembly.

2. EXTRACTOR—Extracts the spent case and/or the live cartridge from the barrel chamber.

3. FIRING PIN—Transmits the energy from the hammer to primer.

4. FIRING PIN SPRING—Returns and holds the firing pin to the rear.

5. FIRING PIN STOP—Retains the firing pin and extractor in slide.

6. BARREL BUSHING—(1) Support for the muzzle end of the barrel in the slide. (2) Serves as a locking device for the recoil spring plug.

7. BARREL—The barrel is the guide path for the bullet.

8. BARREL LINK—(1) Engages and disengages the barrel locking ribs from the slide, by moving the breech end of the barrel up to lock and down to unlock. (2) In conjunction with the slide stop, it locks the slide assembly to the receiver group.

9. BARREL LINK PIN—Acts as a retainer and an axis for the barrel link.

10. RECOIL SPRING PLUG—(1) Retains and acts as a guide for the recoil spring. (2) It serves as a locking device for the barrel bushing.

(NOTE: The recoil spring plug and barrel bushing lock each other in the slide.)

11. RECOIL SPRING—(1) Absorbs recoil. (2) Returns the slide into battery position.

12. RECOIL SPRING GUIDE—Guides the recoil spring in recoil and acts as a buffer in final recoil.

13. RECEIVER—Houses the parts of the receiver group.

14. TRIGGER—A mechanical link between the trigger finger and disconnecter.

15. DISCONNECTOR—(1) A link between the trigger and sear. (2) A safety device in that it will not allow weapon to fire when slide is not in battery position. (3) A safety device in that it prevents weapon from firing automatically.

16. SEAR—Release mechanism for the hammer.

17. GRIP SAFETY—Safety device in that it will not allow weapon to fire when not depressed.

18. SEAR SPRING—(1) The first leaf from the left forces the sear forward; (2) The middle leaf forces the disconnecter up and forward; (3) The middle leaf also forces the trigger forward; (4) The third leaf from the left forces the grip safety to the rear.

19. SEAR PIN—Locks and acts as an axis for the sear and disconnecter in the receiver.

20. HAMMER—Serves as the striker.

21. HAMMER PIN—Locks and acts as an axis for the hammer in the receiver.

22. HAMMER STRUT—A link between the hammer and mainspring.

23. HAMMER STRUT PIN—Locks the hammer strut in hammer and serves as an axis for hammer strut.

24. SAFETY LOCK—(1) A safety in that IN THE LOCKED POSITION it locks the sear in a positive position, not allowing the weapon to fire. (2) Retains and acts as an axis for the grip safety.

25. EJECTOR—Ejects the spent and/or live cartridge from the ejection port.

26. PLUNGER TUBE—Houses the slide stop plunger, plunger spring, and the safety lock plunger.

27. SLIDE STOP PLUNGER—Serves as a locking device for the slide stop.

28. SAFETY LOCK PLUNGER—A locking device for safety lock.

29. PLUNGER SPRING—Supplies energy to the slide stop and safety lock.

30. MAINSPRING CAP—Link between the hammer strut and mainspring.

31. MAINSPRING—Supplies energy to the hammer thru the hammer strut.

32. MAINSPRING HOUSING PIN RETAINER—The downward force of the mainspring on the mainspring housing pin retainer locks the mainspring housing pin in the receiver.

33. MAINSPRING HOUSING—Houses the mainspring and its parts and holds the sear spring in place.

34. MAINSPRING CAP PIN—Locks the mainspring and mainspring cap in the mainspring housing.

35. MAINSPRING HOUSING PIN—Retains the mainspring housing in the receiver.

36. SLIDE STOP—(1) Locks the slide to the rear when the last round has been fired. (2) Locks the slide assembly to the receiver group.

37. MAGAZINE CATCH—Released the magazine from the receiver.

38. MAGAZINE CATCH SPRING — Supplies energy to the magazine catch and magazine catch lock.

39. MAGAZINE CATCH LOCK—Locks the magazine in the receiver.

40. STOCK(S)—Hand hold for weapon.

41. STOCK SCREW BUSHING (4)—A retainer for stock screws.

42. STOCK SCREWS (4)—Used to lock stocks in place on receiver.

43. MAGAZINE—Houses the parts of magazine group and cartridges.

44. MAGAZINE FOLLOWER—Guides the cartridges in the magazine and activates the slide stop.

45. MAGAZINE SPRING—Supplies energy to the magazine follower.

#### OPERATIONAL FUNCTIONING - CAL. .45 M1911/M1911A1 PISTOL

A loaded magazine is inserted in the butt of the receiver and the slide drawn to the rear. This movement cocks the hammer and compresses the recoil spring. When the slide reaches the rear position, the magazine follower raises the top cartridge into the path of the slide. The slide is then released and forced forward by the recoil spring. In its forward movement it carries the top cartridge into the barrel chamber. As the slide approaches its forward position, the rear end of the barrel swings upward on the barrel link; and, when the slide and barrel reach their forward position, they are locked together by the locking ribs on the top of the barrel in conjunction with the locking ribs of the slide. This locking position is held in place by the barrel lug located under the barrel resting on the slide stop pin.

When the hammer is cocked, the hammer strut moves downward, compressing the mainspring in the mainspring housing. The sear,

under the forward pressure of the left and longest leaf of the sear spring, engages in the sear notch of the hammer.

When the trigger is being squeezed, it forces the disconnector to the rear which in turn moves the sear, releasing the hammer. The hammer falls, striking the firing pin which in turn strikes the primer.

The primer ignites the powder creating the gases that force the bullet forward out of the barrel. The gases at the same instant are pushing in a rearward direction against the cartridge case, forcing it to the rear. This in turn forces the slide to the rear, driving it and the barrel to the rear together. The downward swinging movement of the barrel on the barrel link unlocks it from the locking ribs of the slide. The slide continues to move to the rear, opening the breech, cocking the hammer, extracting and ejecting the empty case, forcing the disconnector down which disengages from the sear, and compressing the recoil spring. When the slide reaches its rearmost position, another cartridge is raised up in front of the



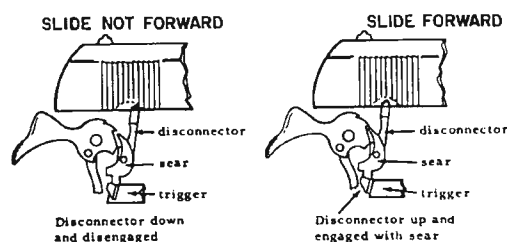
face of the slide by the magazine follower. The cartridge is then forced into the barrel chamber by the return movement of the slide under pressure of the recoil spring. This completes a cycle of fire.

## MECHANICAL SAFETIES - CAL. .45 M1911/M1911A1 PISTOL

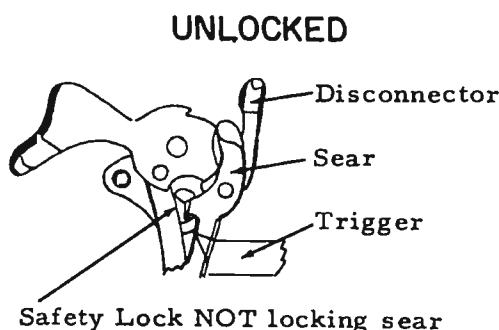
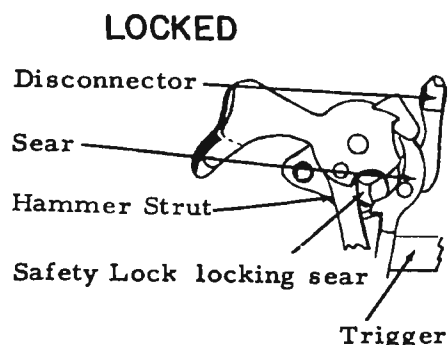
It is impossible for the firing pin to discharge or even touch the primer except on receiving the full blow of the hammer.

The pistol is equipped with AUTOMATIC safeties as below:

1. **Disconnector**—(Figure 12) positively prevents the release of hammer unless the slide and barrel are in the forward position.

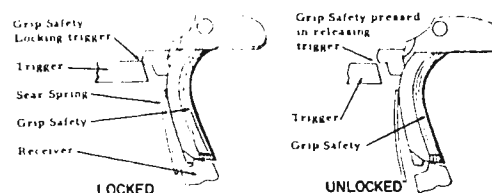


Disconnector  
Figure 12



Safety Lock  
Figure 14

2. **Grip Safety**—(Figure 13) locks the trigger at all times unless the weapon is firmly gripped, pressing the grip safety in.



Grip Safety  
Figure 13

The pistol has two MANUAL safeties as listed below (Figure 14):

1. **Safety Lock**—locks the slide in its forward position and locks the hammer in a cocked position.

2. **Half Cock**—in the halfcock position on the hammer.

## DISASSEMBLY (Field-Stripping) - CAL. .45 M1911/M1911A1 PISTOL

Disassembly is divided into two classes, field-stripping and detailed-stripping. The pistol is detailed-stripped ONLY by qualified personnel, therefore, field-stripping will be the only class explained in this lesson.

1. The first and most important step in disassembling any weapon is to "clear the weapon." To clear the .45 pistol, remove the

magazine by pressing the magazine catch. With the pistol pointed in a safe direction, pull the slide to the rear and visually check the barrel chamber for a live cartridge. Never, under any circumstances, handle a weapon until you have personally "cleared the weapon."

2. With the pistol held muzzle end up, sights away from you, press the recoil spring plug inward and turn the barrel bushing clockwise until the recoil spring plug and the end of the

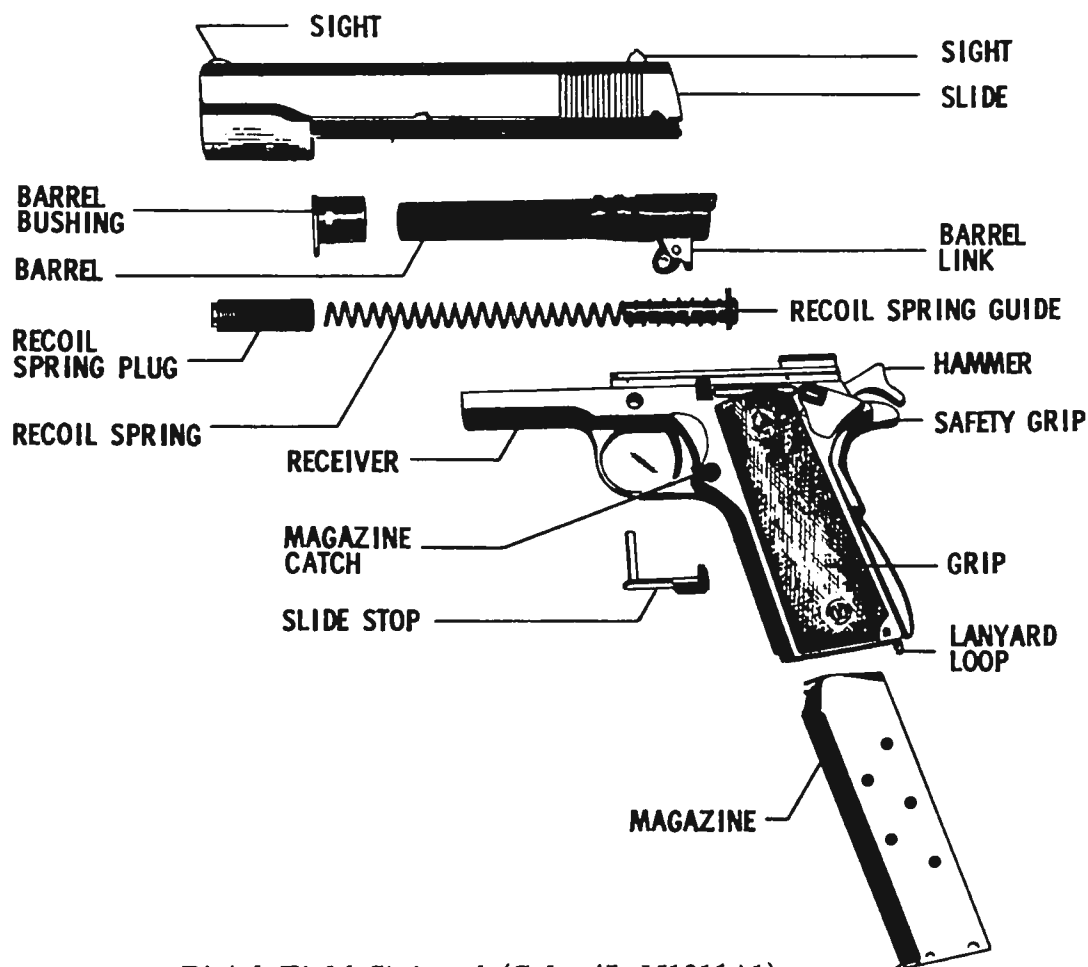
recoil spring protrude from their seat, releasing the tension of the recoil spring. (CAUTION: As the recoil spring plug is allowed to protrude from its seat, the finger or thumb should be kept over it so that it will not jump out or strike the operator.)

3. Draw the slide to the rear until the smaller rear recess in its lower, left edge of the slide aligns with the projection on the rear of the thumb-piece on the slide stop; press against the end of the pin of the slide stop which protrudes from the right side of the receiver above the trigger guard. After pressing the pin of the slide stop as far as possible, you now remove the slide stop from the left side of the weapon.

4. With the muzzle end of the barrel to your left and sights down, pull the receiver to the rear until you have separated the receiver group from the slide group.

5. Remove the parts from the slide by drawing the recoil spring guide and recoil spring from the rear of the slide. Turn the barrel bushing counterclockwise and pull it from the slide and barrel. Lay the barrel link forward along the barrel and pull the barrel from the front end of the slide.

The weapon is now field-stripped, which will enable the operator to clean and inspect the pistol. (Figure 15)



Pistol Field-Stripped (Cal. .45, M1911A1)  
Figure 15

#### ASSEMBLY -

##### CAL. .45 M1911/M1911A1 PISTOL

Assembly of this weapon is in reverse order.

1. With the barrel link forward, replace the barrel in the slide from the muzzle end of the slide. Replace the barrel bushing and turn it clockwise so that it is locked in the slide. Now replace the recoil spring plug and recoil spring from the muzzle end of the slide and join it with the recoil spring guide.

2. With the sights down, muzzle to your left, replace the receiver group and push it all the way forward on the slide. When replacing the receiver to the slide, make sure the barrel link is lying forward on the barrel.

3. Turn the weapon upright with the muzzle to your left, sights up, to replace the slide stop, making sure the pin on the slide stop went through the lower hole on the barrel link. Now move the slide to the rear until you have aligned the smaller rear recess with the rear of the thumb-piece on the slide stop. Snap the slide stop into position, and move your slide forward.

4. Rest the weapon muzzle on the table, depress recoil spring plug into the slide and rotate the barrel bushing in place.

#### CORRECT ASSEMBLY -

##### CAL. .45 M1911/M1911A1 PISTOL

Now that the weapon has been reassembled, check the weapon for functioning. Draw the slide to the rear, let it go forward, and snap the trigger. Then check all the safeties, the safety lock, grip safety, the disconnect, and the half cock on the hammer.

#### QUESTIONS:

1. List the 5 basic rules of range safety.
2. Name the part whose function it is to prevent the weapon from firing until the slide is fully forward.
3. What governs the rate of fire of the weapon?
4. What system is used to lock the barrel in position?
5. What will happen if the slide is released and allowed to go into battery while holding a firm pressure on the trigger?

#### SOURCE REFERENCE:

AIR 75330 SSG, Block III, Chapter 5, USAF Marksmanship School.

## Marksmanship Training — 2 - 1 Hour

### RANGE OPERATION AND SAFETY

#### OBJECTIVES:

The student will:

1. Know how to respond to all firing line commands for Phase III, AFQC, AFR 50-8
2. Recognize all firing line procedures as safety procedures

#### INTRODUCTION:

In order for you to shoot well, you must be at ease and devote all your conscious effort to the problems of shooting. A thorough knowledge of all range procedures will not only curtail your anxieties on the firing line but will also direct your thoughts and actions toward better shooting.

Range operation and range safety are so closely related, it is difficult to discuss either separately. We have already discussed the 5 basic rules of safety, now you will see how we apply these rules on the range. Always remember why firearms were invented — TO KILL. We only want to learn the fundamentals of this art while on our range.

#### STUDY ASSIGNMENT:

1. Read the Supplementary Information in this Student Study Guide.
2. Answer questions at end of this chapter.

#### SUPPLEMENTARY INFORMATION:

##### PHASE III AIR FORCE

##### QUALIFICATION COURSE (AFQC)

The AFQC you will fire here is the same course you will complete yearly.

Thirty rounds are fired at a target from 25 yards, maximum possible score is 300. You must qualify as a marksman or better. Scores and classifications are as follows:

| SCORE ACHIEVED | CLASSIFICATION |
|----------------|----------------|
| 0-179          | UNQUALIFIED    |
| 180-209        | MARKSMAN       |
| 210-239        | SHARPSHOOTER   |
| 240-300        | EXPERT         |

The three stages of fire in the AFQC are:

- a. SLOW FIRE: 10 shots in 10 minutes.
- b. TIMED FIRE: Two 5-shot strings with 20 seconds allowed for each string.
- c. RAPID FIRE: Two 5-shot strings with 15 seconds allowed for each string.

#### THE RANGE OPERATION

The Range Officer is in charge of the range. His primary job is to insure maximum safety for all range participants. When the Range Officer gives a command you are to obey INSTANTLY! REMEMBER you will handle your weapon only on the command of the Range Officer. Other qualified personnel could be assigned to other tasks, such as target operator, instructor, coach, etc., however; this will vary in accordance with size of the firing range and the number of qualified personnel available.

Following is the proper sequence of commands given by the Range Officer:

1. "IS THE LINE CLEAR?" ANYONE seeing a potentially dangerous situation should speak out. Commands 1, 2 & 3 are to ascertain that nobody is downrange of the firing line.

2. "IS THE LINE CLEAR ON THE RIGHT?"

3. "IS THE LINE CLEAR ON THE LEFT?"

4. "THE LINE IS CLEAR! RELAY ONE, ON THE FIRING LINE."

5. The course to be fired will now be explained. Example: "THIS WILL BE TIMED FIRE, TWO 5-SHOT STRINGS, 20 SECONDS PER STRING."

6. "YOU MAY HANDLE YOUR WEAPONS." Do not touch your weapon until this command.

7. You will now be commanded to load. Example: "FOR YOUR FIRST STRING OF TIMED FIRE, WITH FIVE ROUNDS LOAD." Until this command, you may not have any rounds in a revolver chamber or magazines in any way inserted in a pistol. It IS proper to have already loaded your magazine however.

8. "IS THE LINE READY?" If you are not ready to fire, call out "NOT READY." Silence means you are ready.

9. "THE LINE IS READY." From this point, all commands will proceed without interruption. Steps 10 through 12 are spaced at approximately 3 second intervals.

10. "READY ON THE RIGHT."

11. "READY ON THE LEFT."

12. "READY ON THE FIRING LINE." In timed and rapid fire, the targets will be edgewise to you throughout the preceding commands. Approximately 3 seconds after this command, they will be turned toward you. You may begin firing as soon as you see your target face. In slow fire, the targets will already be facing you and you must wait for the command "COMMENCE FIRING," at which time you may start to shoot.

13. "CEASE FIRING." Upon this command, STOP FIRING INSTANTLY. In timed and rapid fire, the targets will automatically turn away from you.

14. "UNLOAD, WEAPONS ON THE BENCH, MAKE THE LINE SAFE." For revolvers, this means extract all rounds and leave the cylinder open. For pistols, withdraw the magazine and lock the slide or bolt back.

15. "IS THE LINE SAFE ON THE RIGHT?"

16. "IS THE LINE SAFE ON THE LEFT?" After determining that all weapons are "SAFE," the following command will be given.

17. "THE LINE IS SAFE. GO FORWARD, SCORE, AND REPAIR YOUR TARGETS." After this command, NO ONE may touch a weapon until the Range Officer gives permission to do so.

In the event your weapon malfunctions, you will be allowed to fire an "alibi" string. Your instructor will explain this procedure.

What constitutes a loaded weapon?

## RANGE SAFETY

A great deal has been said about safety already and it is obvious why. No intelligent person would point a deadly weapon at himself or another person. Nevertheless, thousands of otherwise intelligent people DO shoot themselves or others annually.

For the sake of emphasis and importance let's review the basic rules of range safety.

1. Treat every weapon as if it were loaded.
2. Know and follow all firing line procedures.
3. Obey instantly all firing line commands.
4. Maintain strict personal discipline.
5. Insure that your weapon is in good firing order.

Now, combine these basic rules with the precisely controlled and executed firing line procedures you have just studied. You can see that each command is a safety command. You must discipline yourself to do only what you are told and do it correctly. Once again we say that the degree of safety on your range is directly proportional to your degree of KNOWLEDGE (of this course) and (personal) DISCIPLINE.

## QUESTIONS:

1. When may you touch your weapon on the line?
2. Who may give the command to "Commence Fire"? "Cease Fire"?
3. When may you commence firing in slow fire? Timed fire? Rapid fire?
4. Why do we insist on a standardized firing line procedure?
5. Name the firing line commands which in no way are concerned with safety. Explain.

## SOURCE REFERENCES:

1. AFR 50-8
2. AFM 50-17

## FUNDAMENTALS OF FIRING AND TARGET ANALYSIS

### OBJECTIVES:

The student will:

1. Demonstrate the proper techniques of position, grip, breath control, trigger control, sight alignment, sight picture, and follow-through
2. Demonstrate proper techniques for slow, timed and rapid fire
3. Be able to care for and clean his weapon
4. Be able to score a target, analyze shooting errors, and apply corrective measures

### INTRODUCTION:

When the Air Force became a separate service, it was not felt that our personnel needed to know how to use small arms; our fighting would be done with aircraft. Korea taught us that we do need training in close combat. When the front is moving toward your airfield at 10 miles per hour, there is the chance you will need to know how to shoot. With the present world situation of brushfire wars and insurgency operations, it becomes obvious that everyone in the Air Force should know how to use a weapon and how to use it effectively. The intelligent guerilla fighter realizes that a highly trained technician is a greater loss to the enemy than the average soldier. You, as an officer in the Air Force, will have one of the highest levels of technical training in our military force. Knowing how to shoot your weapon accurately may well save your life one day.

### STUDY ASSIGNMENT:

1. Read the Supplementary Section of this Student Study Guide.
2. Practice assuming proper body position prior to coming to class.

### SUPPLEMENTARY INFORMATION:

Shooting a pistol is hard to learn because a number of things must be done in exactly the proper manner—AND ALL AT THE SAME TIME. An error in any aspect of shooting will

be magnified a hundred times on your target. It is important that you learn each fundamental step and apply it in your shooting.

We will discuss each fundamental in the order in which it is actually applied when firing the weapon. These are:

- a. Position
- b. Grip
- c. Breath Control
- d. Trigger Control
- e. Sight Alignment
- f. Sight Picture
- g. Follow Through

This material is written for right-handed shooters. If you are left-handed, simply reverse the procedure.

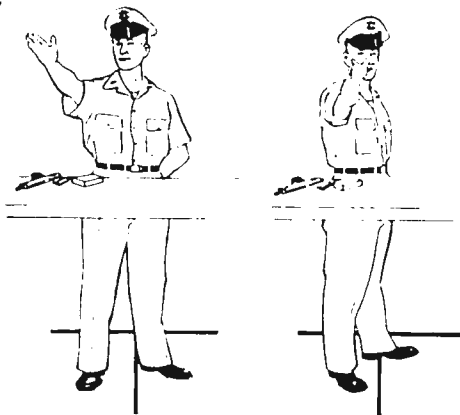
### POSITION

A good position is one in which the shooter's NATURAL POINT OF AIM is oriented directly toward the target. This is the position in which you can point your weapon toward the target with the least amount of muscular tension.

Your natural point of aim may be found in the following manner:

1. Stand so that your feet and body are at about a 45 degree angle with the target. The body should be erect, as in the position of parade rest.
2. Without looking at the target, raise your shooting arm to what you think is eye level, keeping it straight and LOCKED at the wrist and elbow. Move your arm in a circular motion from the shoulder and let it settle into the most comfortable position.
3. Turn your head and look down your arm to see where it is pointing. If you are pointing at the center of the bull's-eye, you have found your natural point of aim. If you are pointing to the right or left of the bull's-eye, change your BODY POSITION so you are pointing at the center of the target. DO NOT MOVE YOUR ARM TO BRING IT INTO ALIGNMENT. Simply change your stance by shifting your left foot to the front or back.

4. Drop your arm, rest a few seconds and bring your arm up again without looking at it. Do this until you can bring your arm up and point directly at the bull's-eye several times in a row.



TO ATTAIN CORRECT POSITION, SHIFT YOUR FEET; DO NOT SHIFT YOUR ARM

Finding the Correct Position  
Figure 16

Uniformity is very important. Find your correct position and assume it every time you step up to the firing line. (Figure 16)

How does finding your natural point of aim help you in shooting?

Now let us consider some other aspects of a correct position. The body should be erect and relaxed, with the weight evenly distributed on both feet. Head and neck should also be erect. The free hand should be placed in an empty pocket to keep it relaxed and out of the way.

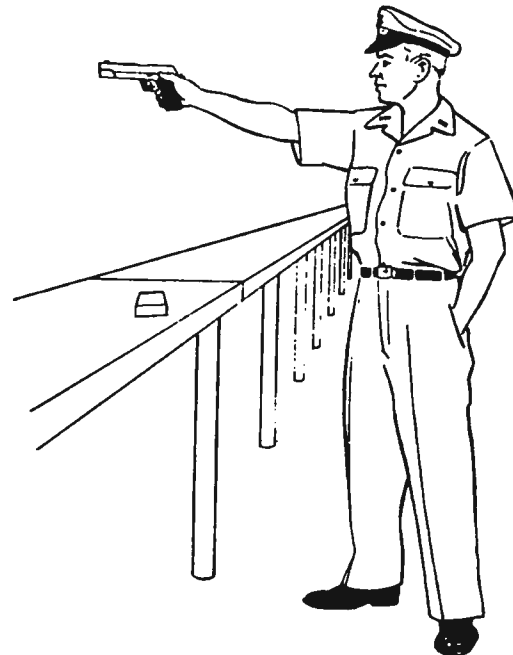
The shooting arm should be locked at the wrist and elbow to allow the body to absorb the recoil of the weapon. Do this by stretching your arm toward the target from the shoulder. Your shoulder should not move from its original position. Maintain this locked, but not rigid, position throughout the firing of a shot or series of shots. Allow the recoil to be absorbed by the shoulder. This is very important since it allows you to realign your sights much sooner. It insures the same amount of movement in recoil for every shot, giving you more control over your weapon.

To repeat this another way, you should have a solid column of bones to transmit the recoil STRAIGHT back to the shoulder. This lets the whole body absorb the recoil, and quickly settle your sight back in the direction of the target. If your wrist or elbow bends under the recoil, you have lost your position, and it takes precious time to get it back. This will cause you a

great deal of trouble in rapid fire, where you fire five rounds in 15 seconds. KEEP YOUR WRIST AND ELBOW LOCKED.

The proper shooting position for you is the one which allows you the greatest stability with the least amount of muscle tension.

Why is it important that your muscles not be tensed up?



Correct Position  
Figure 17

Once you have assumed the correct position, notice it, in relation to the target or firing line and practice getting the position several times to establish it in your mind. Make a habit of it so you can assume it from day to day. People come in all sizes and shapes, so everyone will not have the exact same position. Differences in body angle, distance between the feet, and others will occur. Find the position best suited to your own comfort and stick to it.

#### GRIP

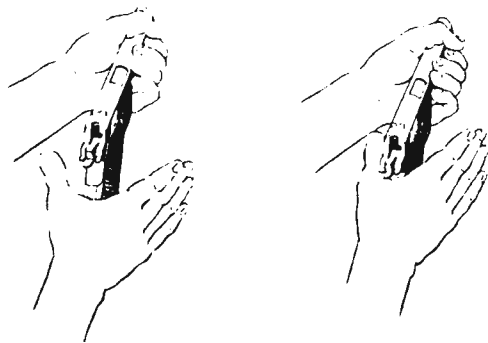
The second fundamental which must be applied after position is "grip." After assuming the correct position on the firing line, the shooter awaits the command "LOAD." Then, after loading the weapon, the shooter applies the fundamental of grip.

The basic rule is uniformity. Once you find the best grip for your hand, stick to it. Getting the proper grip requires a little practice and

you will have a chance to work on this in class. It is an essential step on the road to effective shooting.

When fitting the grip to the .22 Ruger or the .45 Automatic, the following sequence will be used:

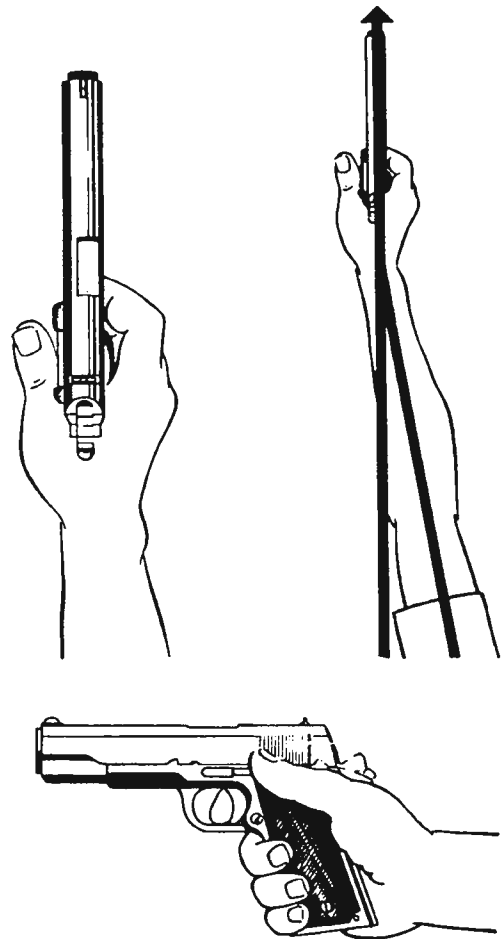
1. Make sure that the SAFETY LOCK is "ON."
2. Hold the weapon with the free hand and roll the loose flesh between the thumb and forefinger of the shooting hand down and under, into the crotch formed between the thumb and forefinger, here it is held in place as the tang portion is forced down and back into the heel of the hand. (Figure 18)
3. The middle finger is then placed around the stocks up as close to the trigger guard as possible. With the other two fingers snug up against the middle finger, grasp the stock firmly to prevent the recoil from twisting the weapon in the hand and causing you to lose your grip. The hand should be as high as possible on the frame and the thumb is held forward and up with no pressure on the slide.



Fitting Automatic Weapon to Hand  
Figure 18

4. Do not position your finger on the trigger until after the safety lock has been released and you are about ready to begin firing.
5. An important factor in gripping the weapon is to have the grip straight to the rear in a uniform manner each time it is gripped. Never, under any circumstances, grip a weapon sideways, always have your grip coming straight back between the middle of the lower three fingers and into the heel of the hand. You should grip your weapon as tight as a firm

handshake as gripping the weapon too tight will cause the shooting arm to tremble and make it impossible to correctly align the sights.



Automatic Pistol Grip  
Figure 19

6. After gripping the weapon raise the shooting arm, with the wrist and elbow locked, then look and make sure the sights of the weapon are aligned straight back through the little dip in the top of your wrist. Also insure your grip is straight back to the rear into the heel of the hand. (Figure 19)

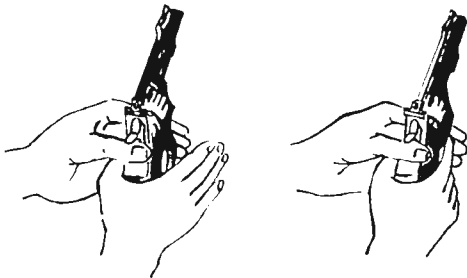
When fitting the grip to the .38 Revolver the following sequence will be used:

1. Holding the uncocked revolver in the left hand, force the frame of the weapon straight back into the heel of the hand. There should be as much contact between the hand and the rear of the frame as possible.
2. The thumb should lie close to the side of the frame and there should be no pressure by the thumb against the side of the frame. The



thumb is there for only one reason; to cock the hammer. A grip must be taken that can be maintained, even while using the thumb to cock the hammer, especially in timed and rapid fire stages.

3. The trigger finger should be entirely free from the frame or stock and kept off the trigger until after the weapon is cocked. (Figure 20)



Fitting Revolver to Hand  
Figure 20

4. Grip the weapon about as firm as a good handshake. Gripping too tight will cause the muscles in the arm to tremble. It is essential that a uniform grip be used each time a shot is fired and that this grip does not change between shots in timed and rapid fire stages.

After gripping the weapon raise the shooting arm with the wrist and elbow locked and check to make sure that the sights are aligned straight back through the dip in the top of the wrist. (Figure 21)

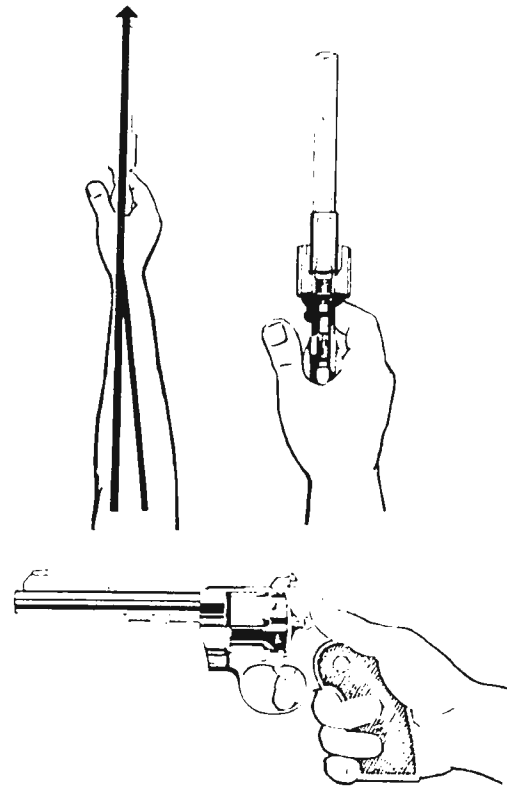
Once you have succeeded in gripping the weapon correctly, notice just exactly how it is laying in your hand and just how comfortable it is. Make a habit of gripping your weapon the very same way each time you pick it up, thus insuring uniformity.

What is the most important feature of a good grip?

#### BREATH CONTROL

The third fundamental which must be applied before firing a round in slow fire or a string of timed or rapid is "breath control." Breath control is an important factor in the development of a good shooter.

Breath control is the ability to breathe properly just prior to firing a shot or a string of shots. Its purpose is to build up a supply of oxygen in the blood stream, enabling the shooter to hold his breath comfortably for the few seconds it takes to fire that shot or string of shots.



Revolver Grip  
Figure 21

It also aids the shooter in other ways, such as reducing fatigue during a course of fire and it CLEARS THE EYESIGHT by sending a generous supply of oxygen to the brain. However, it should not be overdone, as this can cause hypoxia.

The correct method is as follows:

1. After you have loaded, assumed the correct position, gripped the weapon and are waiting for the firing order, take two or three slightly deeper than normal breaths. Do not hurry them, as breathing deep and slow helps to relax the shooter.

2. On the command, "READY ON THE LEFT," take your last breath, let it out to where it is comfortable, and hold it for the period of time it takes to fire the shot or string of shots. NOTE. . . . When letting out that last breath, let the shooting arm settle into position and let the muscular tension of the body relax completely, primarily in the abdomen and chest. Holding of the breath should be accomplished in as much of a relaxed state as possible.

Can breath control effect your ability to see?

### TRIGGER CONTROL

Most experienced shooters agree that there is a distinct difference between pulling a pistol trigger and a rifle trigger. Although the movement is identical; i.e., straight to the rear, the RATE must be faster for the pistol than for the rifle. The term "mash" will be used to identify the faster RATE of movement of the pistol trigger. The familiar term "squeeze" refers to the slower RATE of movement of the rifle trigger. Although the rates differ, each accomplishes its purpose best. Remember, the purpose of any trigger movement is to discharge the weapon without disturbing sight alignment.

Generally speaking, all of the fundamentals of pistol shooting are concerned with either proper aiming techniques or trigger control. As you will learn, you will not be able to aim well for very long at a time; therefore, your mash must be both correct and timely. We define the trigger mash as "a steadily increasing pressure which does not disturb sight alignment." Even in slow fire, you should be able to mash the trigger in approximately two seconds. Now that you know what a mash is, you must learn to execute it properly.

The trigger should contact the forefinger somewhere on the meaty pad between the end of the finger and the first joint. To insure that you can mash the trigger straight to the rear, use this process:

1. Insure that the weapon is absolutely SAFE.
2. Take the proper firing position and get your uniform grip.
3. Raise the weapon and place the trigger finger on the trigger.
4. Now concentrate on the sights and at the same time mash the trigger straight to the rear. If you are mashing the trigger straight to the rear, the sights will remain aligned. If the front sight wants to move to the right or left, simply adjust your trigger finger placement until this fault is corrected. The very same trigger mash is used for slow, timed, and rapid fire. The only difference is the initial pressure

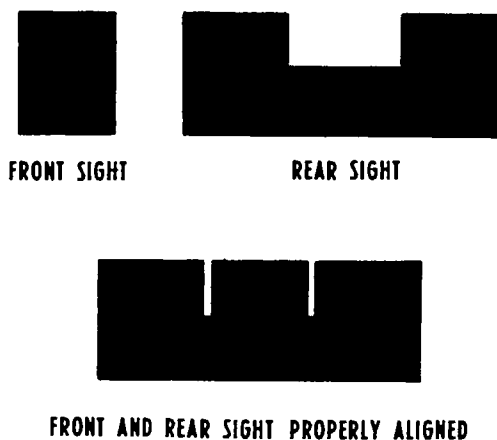
is applied more rapidly in timed and rapid fire permitting each shot to be fired quicker. Once you have perfected this very important fundamental, you are ready to study THE MOST IMPORTANT fundamental of all "sight alignment."

What is the best rate of trigger movement to use when firing a pistol?

### SIGHT ALIGNMENT

Sight alignment is the relationship of the front sight to the rear sight as it appears to the eye. Perfect sight alignment occurs when the front sight is aligned in relation to the rear sight, so that you see equal amounts of light on both sides of the front sight, and the top of the front sight is level with the top of the rear sight. Notice that the target is not involved in this process. (Figure 22)

Sight alignment is the most important part of pistol shooting. For a weapon with a six inch sight radius (distance from front to rear sight) any error you make in alignment will be magnified 150 times at the distance you will be shooting.



Sight Alignment  
Figure 22

To make sure your sights are aligned, YOU MUST KEEP YOUR EYE FOCUSED ON THE FRONT SIGHT. Focusing on the front sight accomplishes two very important functions. First, you will only be able to see a very small amount of light on either side of the front sight; therefore, almost any misalignment would immediately be detected because the front sight would be partially hidden. The second reason for stressing focus on the front sight is the short depth of field of the human eye. To better under-

stand this, let's look at the way the eye functions.

The eye is much like a camera in that it has a depth of field. This means it will see the object it is focused on and things close to it clearly, but objects in front or back of the point of focus will be blurred. (Figure 23) You can adjust cameras to increase this field of clarity, but you cannot adjust your eye that same way. We must, therefore, concentrate on the thing

which does us the most good, and that is your front sight.

Let's try an experiment! Extend your arm towards the window and focus your eye on your upraised thumb. You will notice that you cannot distinguish another object clearly, even as close as ten feet away. How can you expect to see two things as greatly removed from each other as your sights and the bull's-eye, which are 25 yards apart? Obviously, you can't.



Depth of Field  
Figure 23

Since the weapon is the primary factor in controlling the path of the bullet, how well the sights are aligned will determine whether your shots hit the target. "Sight picture" will be introduced next, but let's jump ahead for a moment and show you a perfect sight picture as you will see it. (Figure 24)



Sight Picture as Seen by the Eye  
Figure 24

Why is it impossible to see both the target and your sights clearly at the same time?

As we pointed out before, an error in sight alignment with a six inch sight radius is multiplied 150 times at 25 yards. So with an error of 1/16 of an inch on your sight alignment, the strike of the bullet would be almost 10 inches off at 25 yards. You can readily see that if your eye was focused on the target instead of the front sight you could not see a 1/16 of an inch error in sight alignment.

How far off would the strike of your bullet be with a sight alignment error of 1/10 of an inch?

Never forget that sight alignment is more important than sight picture. The most common error that beginners make is to start looking at the target. Now that we have mentioned sight picture, let's read on and find out just what it is.

#### SIGHT PICTURE

We define sight picture as the target's relationship to sight alignment. There are two positions that the front sight can be held on the target. One is the 6 o'clock position shown in Figure 25; the other is called center hold, which is the front sight held half way into the

black of the target. In the Air Force, the 6 o'clock hold is the standard method of aiming because it has certain advantages in a combat situation.



Perfect Sight Picture  
Figure 25

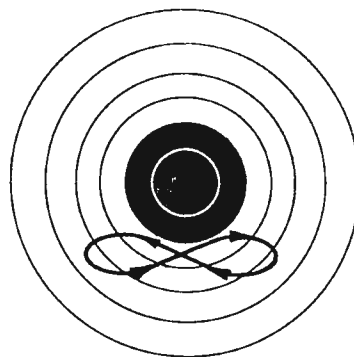
The above sight picture is correct and desirable; but it is physically impossible to hold, because a person cannot hold his body that still in the standing position. So do the next best thing; use "area aiming."

When an experienced shooter states that he aims at "6 o'clock," he does not mean that he holds a point exactly at 6 o'clock. He means only that he tries to hold as close as possible to such a point which is "area aiming."

Why is it impossible to hold a perfect 6 o'clock aim?

#### AREA AIMING

The shooter tries to hold perfect sight alignment on the target, so that when the weapon fires and the sights are aligned, the strike of the bullet will be in or very close to the bull's-eye.



Area Aiming  
Figure 26

A beginning shooter must realize that he cannot hold a gun perfectly steady, but that he can hold it steadily enough to confine the movement of his sights to an area. A novice can or should be able to hold well within a 10 or 12 inch circle at 25 yards. If you will align your sights properly and mash the trigger carefully so as not to interrupt sight alignment, all your shots will be within your area of aim on the target. (Figure 26)

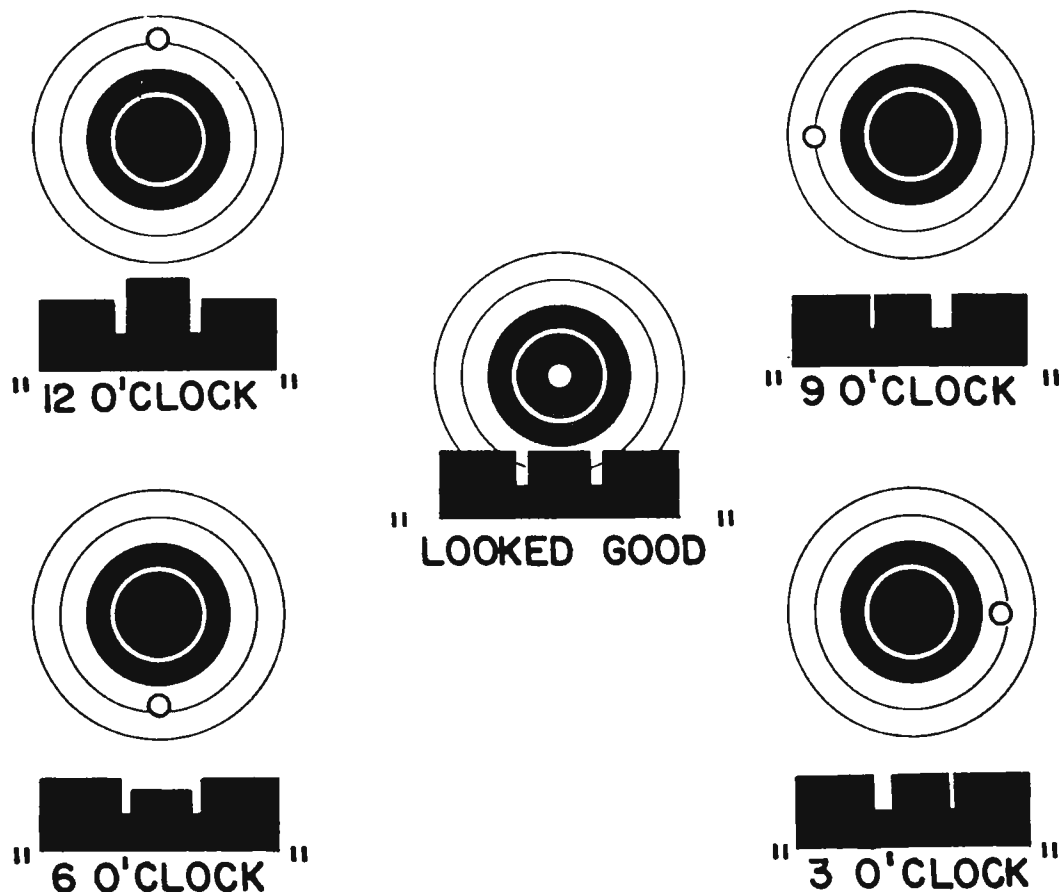
#### CALLING SHOTS

"Calling shots" is used to train a shooter to concentrate on sight alignment. Calling shots is the process of calling the strike of the bullet on the target. The clock system is used for this. (Figure 27)

Where was the front sight when you shot at 3 o'clock? 12 o'clock? 6 o'clock?

After gaining some shooting experience you will learn that the eye will naturally tell you where your sights were aligned on the target when the weapon fired. Your eyes, however, will not naturally align the sights, and because of this, you must concentrate on your sight alignment if you expect to know where the shot went.

Define the sight alignment and sight pic-



The Clock System of Calling Shots  
Figure 27

ture and explain how they relate to each other.

Now you should understand why sight alignment is so important in pistol shooting. Sight picture is what you want to achieve, but sight alignment must be perfect in order to achieve it. There is one last fundamental that you must practice—that is “follow-through.”

#### FOLLOW-THROUGH

If the bullet is to travel from the barrel chamber to the muzzle and on its way to the target in the location that the sights were aligned, you must continue to hold your sight alignment and sight picture until after the weapon fires. The recoil of the weapon is the only thing which should disturb this.

Follow-through is simply the process of holding the wrist and elbow locked, and concentrating on the front sight all the way through the firing of the weapon. So many shooters commonly “quit their sights” just before the weapon fires. Remember, the most important time to have perfect sight alignment is when the bullet

is traveling down the barrel. To best accomplish follow-through, concentrate on sight alignment so hard that when the weapon fires, the bullet has left the barrel before you realize it.

#### TECHNIQUES FOR SLOW, TIMED, AND RAPID FIRE

##### SLOW FIRE

In slow fire you will have 10 minutes in which to fire 10 rounds. Your actions will be guided through the command, “COMMENCE FIRE,” just as they are in timed and rapid fire. Once the time has begun, however, you are your own guide as to rate of fire and employment of the fundamentals. You will have more than enough time in which to fire and should plan and execute each shot carefully.

##### TIMED AND RAPID FIRE

In timed and rapid fire you will only have 20 and 15 seconds, respectively, in which to fire five rounds. It is now that you must CON-

CENTRATE on the fundamentals you have been taught. You must have a "PLAN." That is, plan a mental course of action that will take you through ALL five rounds. If you break this concentration on the first or second round, you will just be "throwing lead" for the remaining rounds. You should develop the best plan for yourselves. Following is a good example of a plan:

1. Assume your correct stance and grip and load on the command "... WITH FIVE ROUNDS, LOAD." (Cock the revolver after assuming stance and grip.)
2. Breathe in rhythm with the command, "READY ON THE RIGHT, READY ON THE LEFT, READY ON THE FIRING LINE."
3. As you exhale on the last command, start focusing on the front sight and move your perfectly aligned sights in line with the edge of the turned target.
4. After the last command, start applying your mash so that the first shot will "break" as the targets start to turn. You'll probably get a "slider" - this leaves you the full time to fire the remaining 4 rounds.
5. Mash and follow-through.
6. Each time the recoil interrupts your sight alignment, mash and follow-through, begin again as soon as possible. Forget about score for now.

This is just one plan. Develop one you like best but HAVE A PLAN.

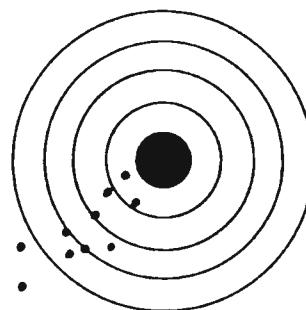
#### TARGET ANALYSIS

There are two methods of recognizing your errors; someone can observe you as you shoot or, you can analyze your target. Of these two methods, the latter is much more accurate, objective, and you can do it yourself.

Each round you fire should tell you something. You should "call your shots." If the round strikes where you called it, you are doing fine and should keep it up. If the round hits the target somewhere else, compare the actual point of impact with the point at which you thought your weapon was aimed when it went off. This will give you a clue to help you

determine the error you are making. Analyze each shot and try to make the next one better.

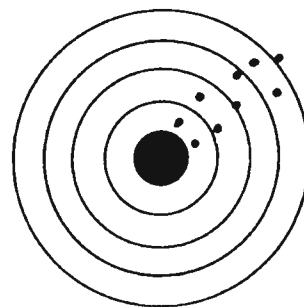
Now let us look at some common errors and how they appear on the target. The illustrations are for a right-handed shooter; the patterns would be horizontally reversed for a left-handed shooter.



Jerking  
Figure 28

This is the most common fault in shooting. "Jerking, pulling, or pushing the trigger." This will result in your weapon being pulled down and to the left. The only way to correct this is to practice mashing the trigger, applying an even, ever increasing pressure until the weapon surprises you by going off. You should always be slightly surprised when your round goes off; if not, you made it fire at a particular instant by jerking the trigger. You can see this for yourself by firing some "ball and dummy," which will be explained later.

Where would the pattern of hits appear for a left-handed shooter?

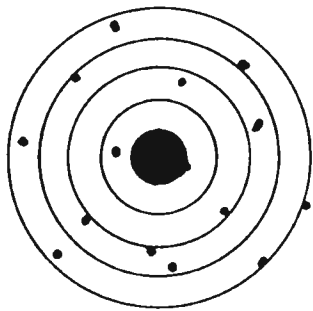


Heeling  
Figure 29

The pattern above is caused by gripping the weapon improperly and consistently pushing the heel of the hand against it. Usually, the shooter is subconsciously anticipating the recoil and

“pushing” on the back of the handle of the weapon to compensate for it. This causes the barrel of the weapon to move up and to the right. Here again, the remedy is to apply a steadily increasing pressure on the trigger and at NO OTHER POINT ON your weapon. You can readily see what you are doing in ball and dummy exercises.

How would this pattern look for a left-handed shooter?



Not Watching Front Sight  
Figure 30

When your target looks like it has been hit with a shotgun blast, you are probably committing the error most common among novice shooters, being more interested in what you have just finished doing than in what you are doing right now. If you focus on the target you cannot see your sight alignment and will lose control of your weapon. If you get this type of target, check yourself frequently while mashing a shot to see what you have in sharp focus. Is it your front sight or the target? You should see the front sight clearly. The bull's-eye should appear to be a fuzzy ball in the background. (Figure 24)

A less frequent reason for this type of pattern is changing your grip on the weapon frequently. Find a grip which is comfortable for you and stick to it. The man who gets a grip and then changes it while holding the weapon up to shoot will not do well.

There are a number of other patterns which show errors in shooting, but these are more specialized and are only reliable when you have learned the basic rules of shooting to the point where they become second nature. If you are having trouble and cannot determine the cause, check with your marksmanship instructor as soon as possible. If you delay too long, you may establish a habit which will be hard to

break.

Which is the first thing to consider before using these patterns in evaluating your target?

#### BALL AND DUMMY EXERCISES

On your first trip to the range, you will team up with another student and will act as his coach while he fires. He, in turn, will do the same for you.

The Ball and Dummy exercise is one of the best aids to show you what you are doing wrong. In this exercise, you will not know whether or not a live round is in the chamber. After the coach has “loaded” your weapon, you will step up to the line and practice firing on command. The coach stands to your left watching you fire. You should call every shot. If the hammer falls on a dummy round or empty chamber, both the coach and student will be able to see any movement of the barrel and see what the shooter did. In a perfect shot, the barrel should not move before, during, or after the fall of the hammer. If it dips, you jerked the trigger. If it rises, you are anticipating the recoil and heeling the weapon.

Assuming your job as a coach seriously will insure greater learning and effectiveness. It is also very possible that you will supervise range firing at some time during your career as an officer. Knowing some of the techniques of coaching will help you to do a better job.

What is the main responsibility of the coach?

#### QUESTIONS:

1. Why is sight alignment stressed so strongly?
2. What is the purpose of ball and dummy exercises?
3. How long do you have to shoot a string of rapid fire?
4. What is the minimum percentage required for an “expert” classification?
5. Why should you call your shots?
6. Explain follow-through.
7. Describe how you see a perfect sight picture.

8. Define a perfect "mash."

9. Why is good breath control so important during timed and rapid fire?

10. What is the most essential feature of a good stance and grip?

SOURCE REFERENCES:

1. AIR 75330 SSG, Block III, Chapters 7, 8, 9, 10, and 11.

2. AFR 50-8.



## Marksanship — 4 and 5 - 5 Hours

### DRY FIRE, PRACTICE AND RECORD FIRE

#### OBJECTIVES:

The student will:

1. Apply the proper techniques and fundamentals of shooting the weapon
2. Know and comply with all range procedures
3. Qualify as a marksman on the 25 yard range as outlined in the basic Phase III Course of AFR 50-8

#### INTRODUCTION:

You will now practice all of the material previously discussed. You will first demonstrate a thorough understanding of the fundamentals of firing and then become proficient in employing them in conjunction with range commands. This practice will be conducted in the classroom during "dry fire."

Dry fire practice can be handled in many ways. Originally, it consisted of dry snapping the trigger on a safe weapon. Now, however, several technical advances allow more realistic and objective practice. Plastic bullets, pellet guns and pencil drills are a few of the more popular methods of effectively augmenting practice firing.

When you have perfected the techniques and

fundamentals of firing, in the classroom, you will proceed to the firing range. There you will team up with a classmate and perform as coach and pupil alternately. After shooting several drills, you will shoot a practice AFQC. By this time you will be expected to know and apply all the principles of marksmanship and safety while on the range.

Finally you will shoot a record AFQC. You must qualify as marksman or better (180 points or more).

You will be afforded a reasonable number of attempts to qualify consistent with the ammunition supply. Notation of failure to qualify will be included in the remarks section of ATC Form 240A.

#### STUDY ASSIGNMENT:

Read the Supplementary Information in MT-1, MT-2, and MT-3 of this Student Study Guide.

#### SUPPLEMENTARY INFORMATION:

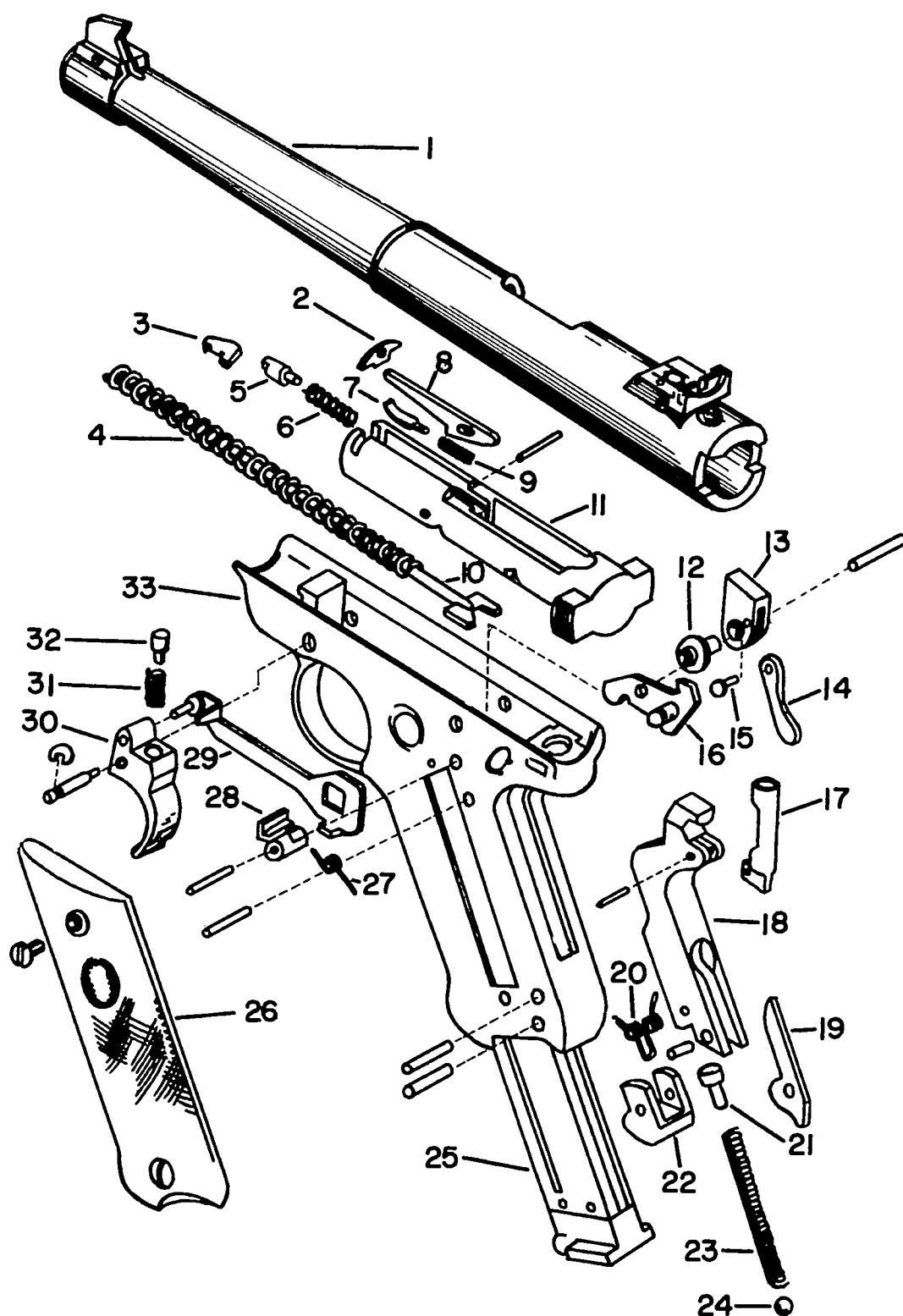
None

#### QUESTIONS:

None

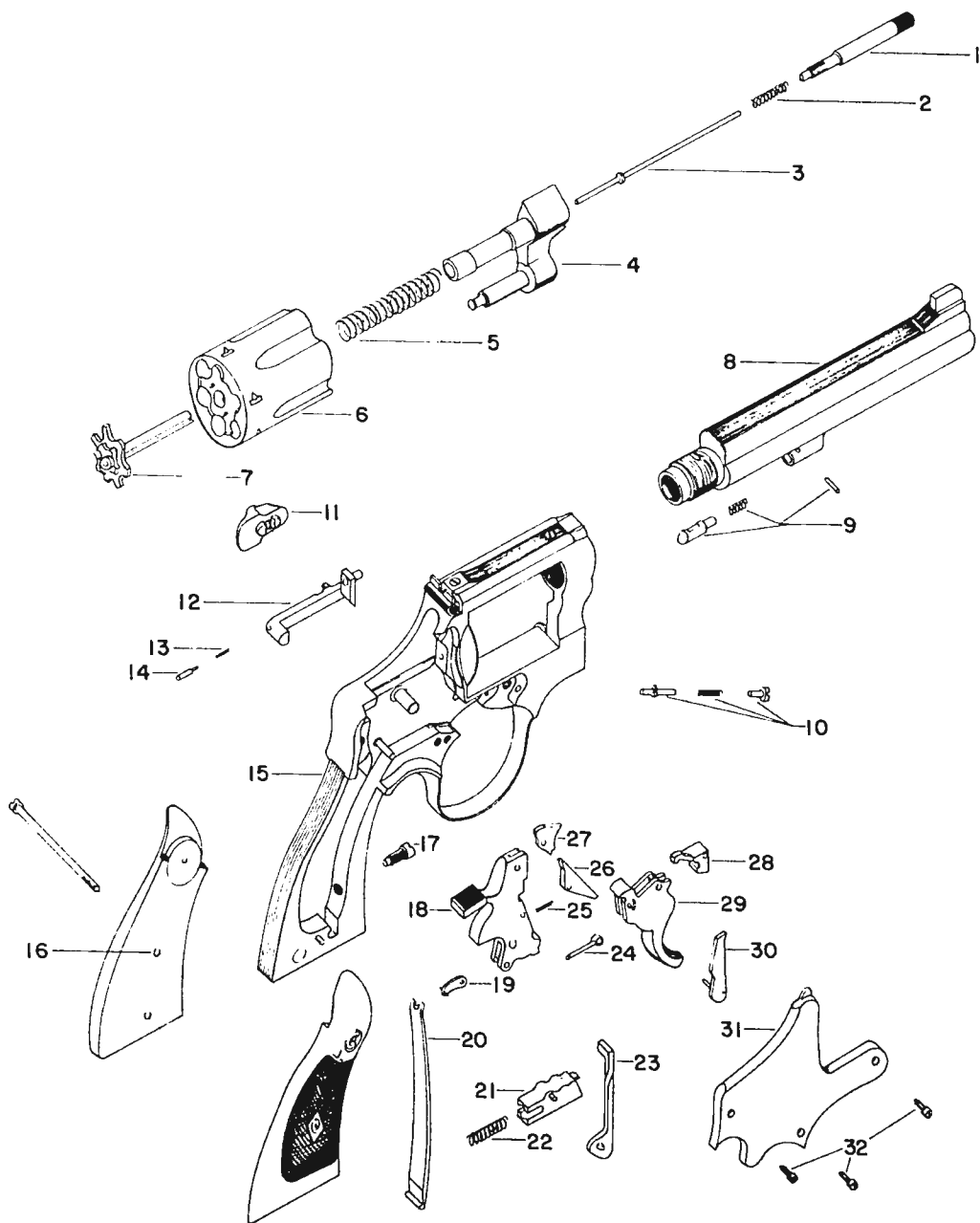
#### SOURCE REFERENCE:

AFR 50-8



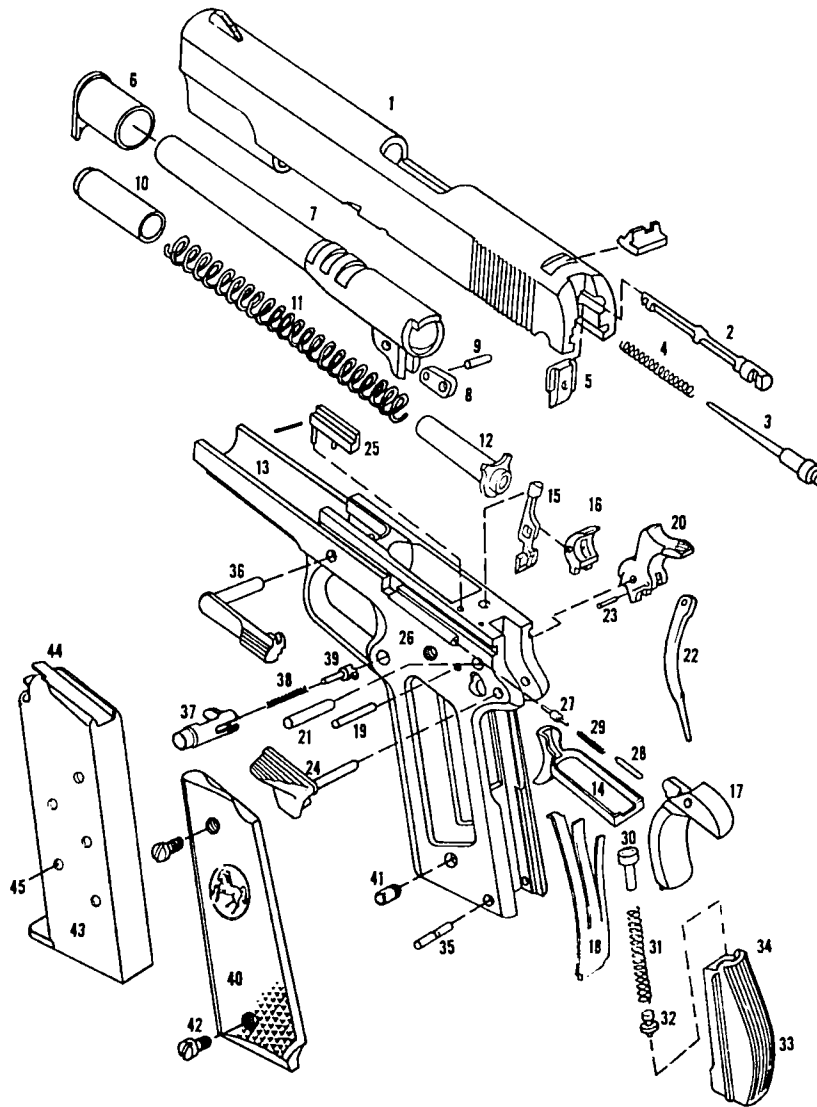
Exploded View - Cal. .22 Ruger Mark I

Figure 1



Exploded View - Cal. .38 Smith & Wesson Revolver

Figure 9



Exploded View - Cal. .45 M1911A1 Pistol

Figure 11



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