

# *AIR GUN SHOOTING SPORTS SAFETY GUIDE*

*Developed by the Education & Training  
and  
Competitive Shooting Divisions*

*A Publication of the National Rifle Association of America*



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## INTRODUCTION

Welcome to the AIR RIFLE SHOOTING SPORTS SAFETY GUIDE. This guide has been developed by the National Rifle Association to support shooting sports programs around the country, and is a safety orientation for those adult leaders and parents who are responsible for marksmanship instruction and or competition.

Anyone who is interested in conducting air rifle live-firing practices should read this guide. This guide deals with safe air rifle handling, range safety criteria, supervising a safe range, including range personnel and range clean-up, compressed air and CO<sub>2</sub> handling safety, and individual hygiene.

The most important goal of this guide is to develop in you the specific attitude, knowledge, and skills needed to safely conduct shooting training. The safety rules are the core of safe shooting, but you also need adult supervision at all times along with continuous enforcement of those rules.

Just like shooting, these skills require regular practice. Your specific situation may be different from that shown in the pictures used in this guide. When this difference occurs, you must use the attitude, knowledge, and skills you learn in this guide to safely adapt your procedures, policies, and practices. A great place to start is the owner's manual for the air guns found in your program.

This guide teaches only the most basic skills needed to handle the common types of air rifles commonly found in shooting programs, and also teaches how to run a safe range.

The NRA encourages you to obtain additional training, such as becoming an NRA Certified Range Safety Officer, Instructor, and/or a Shooting Coach. This additional training will benefit you by reinforcing what you learn here and increasing your knowledge of the shooting sports.

There are questions printed in *italic type* scattered throughout the following discussions. These questions are designed to stimulate your thought process concerning safety, but they can also be used with your shooters to guide their understanding of air gun safety.

One last thing. You will notice that we will refer to the guns shown in this guide as "guns," "air guns," "rifles," etc., but never as "weapons". The term has negative

connotations, especially when used with the news media. Words mean things. We use rifles as a piece of sporting equipment to shoot at paper targets. Enough said.



## BASIC AIR GUN SAFETY

### Safety

Safety is the number one priority on and off the range, so everyone must do their part to prevent accidents. In this sport, the majority of incidents are caused by the ignorance of proper rifle operating procedures or by mishandling. Marksmanship can be an enjoyable, challenging, and exciting sport when done safely.

An air gun is not a toy. Air guns must be treated with the same respect and safety considerations given all guns.

*What do you think is the primary concern when handling any kind of gun?*

Safety is always the primary concern when handling guns, whether they are located on the range, at home, or in the field.

*What do you think are the major causes of gun accidents?*

Ignorance and carelessness are the primary causes. Ignorance is a lack of knowledge of gun safety or operation. Carelessness is the failure to apply one's knowledge when handling guns. A very real concern, especially among those who are around guns frequently, is complacency. Complacency leads to carelessness.

### The Safe Gun Handling Rules

The NRA has developed three basic rules that should always be applied simultaneously when handling or using guns. The fundamental NRA rules for safe gun handling are:

#### **1. ALWAYS keep the gun pointed in a safe direction.**

This rule is the primary rule of gun safety.

*What do you think is meant by a "safe direction"?*

A safe direction means that the gun is pointed so that even if it were to go off, it would not cause injury or damage. The key to this rule is to control where the muzzle or front

end of the barrel is pointed at all times. Common sense dictates the safest direction, depending on different circumstances.

*If you had a gun in your hands now, what would be the safe direction(s)?*

**2. ALWAYS keep your finger off the trigger until ready to shoot.**

*If the finger is kept off the trigger, where should it be?*

When holding a gun, rest your finger along the side of the gun and outside the trigger guard. Until you are actually ready to fire, do not touch the trigger.

**3. ALWAYS keep the gun unloaded until ready to use.**

Whenever you pick up a gun, always point it in a safe direction, keeping your finger off the trigger and then immediately engage the mechanical safety if possible, and, if the gun has a magazine, remove it before opening the action and looking into the chamber(s) which should be clear of any projectiles. If you do not know how to open the action or inspect the chamber(s), leave the gun alone and get help from someone who does.

*How do you know whether or not a gun is unloaded?*

You check whether a gun is unloaded by removing the magazine (if any), opening the action, and visually inspecting the chamber.

Set the example with your shooters. Each time you pick up a gun, model the correct behavior by practicing the three rules of safe gun handling: make sure the gun is pointed in a safe direction, the finger is off the trigger, and the gun is unloaded. You should then involve the shooters in the safety process by having one of them verify that the gun is unloaded.

When handing a gun to another person, the three rules of gun safety must be observed simultaneously, *i.e.*, gun pointed in a safe direction, finger off the trigger, safety engaged, magazine out (if possible), action open, and empty chamber visible. The gun should not be accepted from another person unless its magazine is out, its action open, and its chamber empty.

You and your shooters must be thoroughly familiar with the NRA Gun Safety Rules brochure. You can see an online version of the brochure at <http://www.nrahq.org/education/guide.asp> or you can order them at the link provided. The three rules for safe gun handling must always be followed. Injury will not occur if the gun is pointed in a safe direction, even if the gun is fired. The gun cannot discharge if the shooter keeps all fingers away from the trigger. The trigger finger should remain outside the trigger guard alongside the frame or receiver until ready to shoot. Keeping the gun unloaded until ready to use further enhances safety. The phrase “ready to use”

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requires a little explanation. When target shooting, the gun should be loaded *only* at the firing line and *only* when authorized to load.

When using or storing a gun, always follow these NRA rules as well:

**Know your target and what is beyond.** The range Standing Operating Procedures (SOPs) specify what targets may be used, at what distances targets may be placed, the types and calibers of guns that may be used, and the types of shooting activities permitted. Violations of the SOPs could cause a hazardous condition. Shooters must check their targets and what is beyond every time they shoot.

**Be sure the gun is safe to operate.** Shooters must ensure that their guns are safe to operate, which is often done during regular cleaning and maintenance. Shooters must also be aware of changes in sound, recoil, and operation that occur during firing. The operator's manual is the best source of information on a particular gun. The public library is another excellent source of information on guns.

**Know how to use the gun safely.** The shooter must know how his rifle operates – its major parts, how to load and unload it, and how to clean it. Similarly, the Range Officer (RO) should know how a rifle operates prior to giving assistance. In the event an RO encounters a gun with which he is unfamiliar, he should seek assistance from another knowledgeable RO or read the owners manual. An excellent way to expand knowledge, when not supervising a range, is to ask users of unique guns to demonstrate how their firearms operate.

**Use only the correct projectile for your gun.** Shooters should only use projectiles that match their gun. To ensure the correct projectiles are used, check the owner's manual or the projectile type and size stamped on the gun. The range SOPs should specify what types of calibers can and cannot be used. Violations of the SOPs could result in a hazardous condition.

**Wear eye and ear protection as appropriate.** Guns make sound that can cause hearing damage. Guns can also emit debris and gas that could cause eye injuries. For these reasons, shooters and spectators should wear shooting glasses and hearing protectors. The range SOPs should specify that all range users, including spectators, should wear eye and ear protection. Sound travels beyond the immediate firing point. All range users, including spectators, should also wear eye protection on air gun ranges to prevent injuries.

*Hearing protectors should always be worn. Although air rifles have a considerably reduced amount of noise pressure and pulse than do firearms, hearing protectors should be worn at all times when on the range or on the firing line to ensure that no hearing damage occurs. Hearing protection also enhances concentration on the line by reducing distracting noises during shooting.*

*The wearing of safety glasses or shatterproof eyeglasses when firing is highly recommended, and may be required by local range policy. All range staff should also wear safety glasses.*

**Never use alcohol or drugs before or while shooting.** Avoid alcohol, as well as any other substance likely to impair normal mental or physical bodily functions, before or while handling or shooting guns. Examples include prescription and non-prescription drugs, such as cold medicines, that may cause drowsiness, nervousness, balance problems, or other side effects. Anyone taking any medication or substances that may impair normal mental or physical bodily functions should be prohibited from the range.

**Always store guns so they are not accessible to unauthorized persons.** Safe and secure storage requires that untrained individuals (especially children) be denied access to guns. A variety of safes, cases, and other security devices are available to securely store guns. The gun owner is responsible for the safekeeping of his guns.

**Certain types of guns and many shooting activities require additional safety precautions.** For example, some air guns are significantly different from many modern firearms and other types of air guns and require special procedures for using, unloading, etc. **SAFETY PRECAUTIONS AND PROCEDURES**

### **Mechanical Safety**

The safety is a mechanism that, once engaged, is designed to prevent a rifle from firing by locking its trigger into place. It is usually located near the trigger or on the trigger guard. The safety may be located in a different place on various models of guns. It is the user's responsibility to know how the safety operates. Some air guns may not have a safety. See the specific owner's manual for the gun.

For example, to engage the safety of a Daisy 888, it must be pushed towards the right so no red can be seen (ON Position). To fire, the safety must be pushed towards the left (the OFF position). A red marking will be visible on it, indicating the gun is ready to fire.



Safety  
engaged  
Daisy 888



Safety  
disengaged  
Daisy 888  
Red line is  
visible.

**Keep the safety engaged until ready to shoot.**

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**Remember:** A safety is a mechanical device that can wear and fail. The safety must never be substituted for the practice of safe gun handling rules at all times.

- ON = **engaged** = no red (safe)
- OFF = **disengaged** = red (ready)

### Safety Enhancers

The use of any of the following systems to enhance safety is up to the individual program. These safety enhancers are only a supplement to good training.

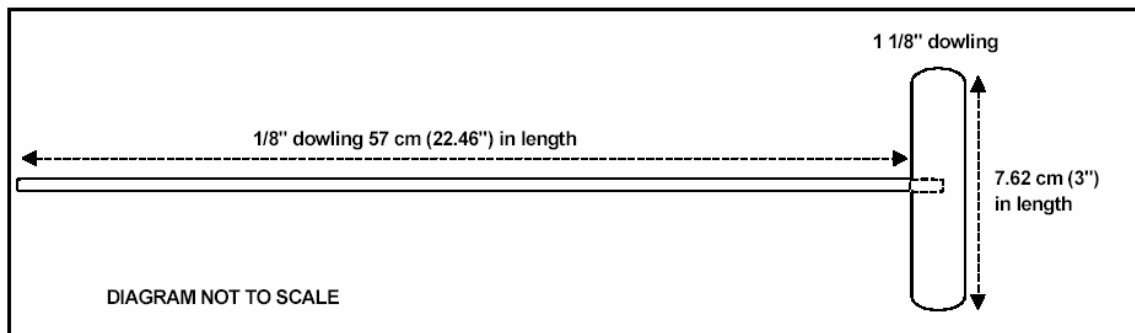
The use of safety rods, Open Bolt Indicators (OBIs), and Empty Chamber Indicators (ECIs) has become more of an issue for range users, both on the shooters' side and the range control side. Open Bolt Indicators are commonly used in some forms of competitive shooting. A real concern with using an OBI, however, is that it does not necessarily indicate that the chamber or barrel is empty. A pellet could still be in the chamber even with an OBI in place. A better solution is an Empty Chamber Indicator. An ECI is actually inserted into the barrel as proof that there is no pellet in the barrel. As a secondary check, they cannot be inserted without having the bolt open. These ECIs are easy to make and can be adapted to a wide range of air guns.

### Safety Rod

To ensure that air rifles are not removed from the firing point or stored with a pellet in the chamber or barrel, a safety rod can be inserted in the barrel from the muzzle end. It consists of two sections of wooden doweling joined together in a "T" shape. (It can also be made of other materials.) Dimensions are detailed in the diagram below. The tip of the safety rod is to be colored red using an ink marker. Use of wood doweling will not damage the rifling in the barrel.

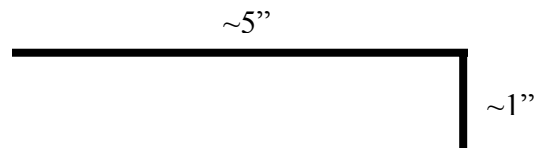
DIAGRAM NOT TO SCALE

- 1/8" doweling 57 cm (~22.5") in length.
- Broom handle or 1 1/8" doweling 7.5 cm (~3") in length.



## Empty Chamber Indicator (ECI) for Air Guns

- Nylon Weed Eater®/Trimmer Line, .060" - .070" diameter, bright color.
  - Propane torch or other heat source.
  - Wire cutters.
1. For each ECI, cut a 6" (approximate) piece of trimmer line using the wire cutters.
  2. Make sure that each end of the line is a cut cleanly, with no burrs.
  3. Light the propane torch and adjust to a very low flame.
  4. Wave one end of the line above the flame until the nylon softens.
  5. Form the heated line in the shape of an "L".
  6. Allow line to cool.
  7. Insert long end into the empty breech/chamber to indicate no pellet is in the chamber.



An option to this short ECI would be a full barrel-length version that absolutely proves that there is no pellet in the barrel. Make the line about 6 inches longer than the total barrel length. Warm one end with the propane torch to soften the line and form into an "L" shape as above. Insert the long end fully into the empty breech/chamber to indicate no pellet is in the chamber. The remaining extra length should protrude from the muzzle indicating that there is no pellet anywhere in the barrel.

Commercial ECIs are also available. These versions work well in rifles that have exposed breeches. This type of ECI will not work in rifles like the Daisy 853 Series or 888 due to the shroud covering the breech.



### Removing a Rifle From the Case

Another good safety idea is to clearly mark the outside of a gun case with an arrow indicating which direction the rifle inside is pointing. This marking will help ensure that when the case is opened, the rifle will already be pointing in a safe direction. On some gun cases, it is obvious which end is the muzzle, but in others it is unclear which end is the muzzle end. The following steps must be followed in removing a rifle from its case:

Place the rifle case on a flat surface and ensure the rifle inside is pointing in a safe direction, then

- Open the case.
- Keeping your finger off the trigger, immediately engage the mechanical safety, if possible.
- If the gun has a magazine, remove it.
- Cock the action (leave the bolt to the rear), and look and feel (if possible) into the chamber.
- Confirm that the safety is engaged (in the ON position).
- Confirm that the pumping lever is partially open (if Daisy 853 series rifle).
- Slide the safety rod (if used) in the barrel towards the bolt until it can be seen in the feed track.
- Remove the rifle from the case.
- Remove the safety rod (if used) if you are on the firing line.

### Removing a Pistol From a Case

As mentioned in the rifle section above, a great safety idea is to clearly mark the outside of a gun case with an arrow indicating which direction the pistol inside is pointing. This marking will help ensure that when the case is opened, the pistol will already be pointing in a safe direction. On some gun cases, it is obvious which end is the muzzle, but in others, it is unclear which end is the muzzle end. The following steps must be followed in removing a pistol from its case:

Most pistol ranges have table or benches for the guns to rest on, therefore place the gun case on the table or bench with pistol pointed in a safe direction.

- Open case
- Keeping your finger OFF the trigger, immediately engage the mechanical safety, if possible.
- Open the action, and look and feel (if possible) into chamber.
- Confirm that safety is engaged, if possible
- Place ECI or Safety Rod into barrel
- Remove pistol from case and place on table or bench with muzzle still pointed in a safe direction.
- Remove case from table or bench.

## Removing Multiple Guns From One Case

- Open the case.
- Without touching the other guns in the case, the first gun is immediately pointed in a safe direction, finger off the trigger, immediately engaging the mechanical safety, if possible.
- If the gun has a magazine, remove it.
- Cock the action (leave the bolt to the rear), and look into the chamber.
- Confirm that the safety is engaged (in the ON position).
- Confirm that the pumping lever is partially open (if Daisy 853 series rifle).
- Slide the safety rod (if used) in the barrel towards the bolt until it can be seen in the feed track.
- Remove the rifle from the case.
- Remove the safety rod (if used) if you are on the firing line.
- Immediately follow the same procedure for the second and/or subsequent rifles.

## Individual Safety Precautions

Upon receiving a gun or when the gun's safety condition is uncertain, individual safety precautions must be taken to confirm that the gun is safe. An individual must ensure that:

- The gun is pointed in a safe direction, finger off the trigger.
- The safety is engaged (in the ON position).
- The bolt is open fully to the rear.
- The pump lever is partially open.
- A safety rod (if used) is inserted in the barrel.

## NOTES

Instructors/coaches must ensure that all rifles and pistols to be used for instruction or firing on the range are in a safe condition before allowing shooters to handle the guns, as well as before allowing guns to be removed from the firing line.

*Safe gun handling rules are all common sense and are easy to apply when people understand why they are necessary to help prevent accidents.*

*A gun should always point in a safe direction. In the firing position on a range, it should always point downrange toward the targets.*

*A gun should never be pointed at anyone.*

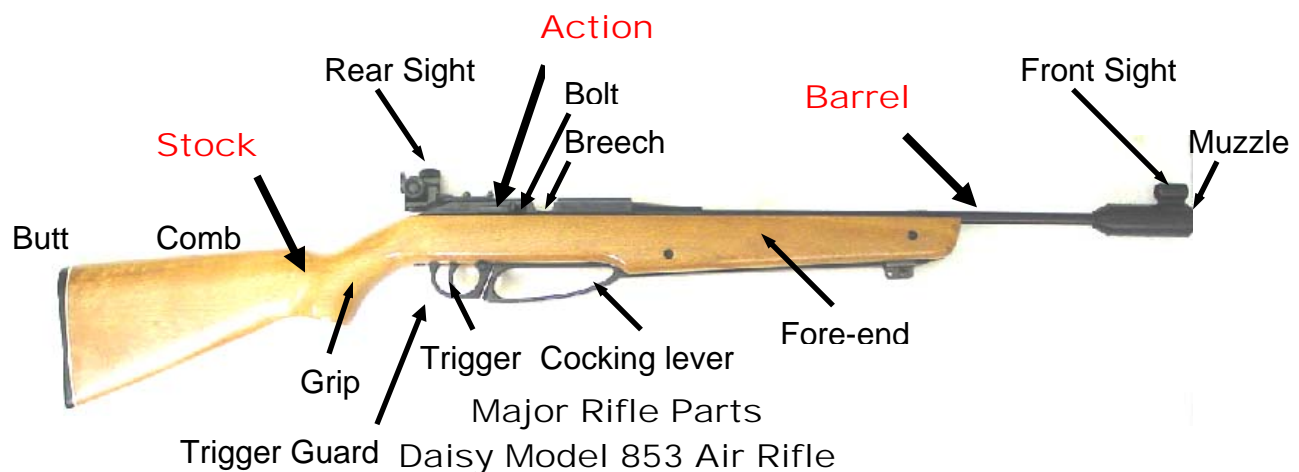
*A gun should be held in the vertical position with the muzzle pointing up and above head level when transporting it to and from the firing point and/or range.*

*Fingers should be kept off the trigger unless the shooter is ready to fire.*



## RIFLE NOMENCLATURE AND SAFE LOADING AND UNLOADING

All rifles consist of three major components: the **stock**, the **barrel** and the **action**.



### The Stock

Besides being the most visually pleasing part of the gun, the stock has special design features that afford the shooter comfort, ease of handling and maximum shooting accuracy. Most stocks are made of wood, but many modern stocks are now made of synthetic materials or even aluminum on some high-end target rifles. The stock is divided further into four parts:

- The *butt* is the rear portion of the stock. It is generally contoured or slightly curved to fit comfortably against the shoulder.
- The *comb* is the top portion of the stock, upon which the shooter rests his or her cheek. For this reason, this part is often referred to as the *cheek piece*.
- The *grip*, sometimes called the pistol grip or small of the stock, is the area where the hand grasps the stock when squeezing the trigger.
- The *fore-end* is the part of the stock that extends underneath the barrel. This is the area where the non-trigger hand holds the rifle to support it. In some rifles, the fore-end is separate from the rest of the stock and often referred to as the forearm.

## The Barrel

There is more to this simple-looking tube than meets the eye. The barrel has several different parts, and all have specific jobs that work together to cause the projectile to pass accurately to the target.

- The hollow inside of the barrel—the hole through which the pellet passes—is called the bore. The bore is measured in hundredths of an inch or in millimeters. This measurement is called the caliber of the rifle. The size of the bore for typical air guns is .177 inches or 4.5 millimeters.
- The opening through which the pellet leaves the barrel is called the muzzle. The rear of the barrel is called the breech.
- The chamber is located at the breech end of the barrel, and is the portion of the bore into which one pellet is placed for firing.
- For the entire length, the bore is lined with a series of spiral grooves. The flat raised ridges of metal between the grooves are called the lands. When a pellet passes through the barrel, the lands cut into the pellet and cause it to spin. This spinning makes the pellet more stable and accurate in its flight towards the target, much like a spinning football. Taken together, the lands and grooves inside the barrel are known as rifling, which is, of course, how the rifle got its name.

## The Action

The action allows the shooter to load, shoot, and unload the rifle. Several different designs or types of actions have been developed to accomplish the action's purpose.

Loading is achieved by first opening the action. This step allows the shooter to place a pellet either directly into the chamber or onto a loading ramp or platform. With the pellet in place, the bolt or breechblock is then closed. In most rifles, opening the action cocks the firing pin, thus readying the rifle for firing.

Firing takes place when the shooter squeezes the trigger. This step allows the firing pin to be driven forward, releasing the stored air or gas to propel the pellet down the barrel.

The safety is a mechanical device. When activated or placed in the "ON" position, it is designed to block the operation of the trigger or firing pin, thus preventing the rifle from firing. To fire, the safety is disengaged or placed in the "OFF" position. Remember, the safety is a mechanical device and, therefore, subject to malfunction. It must never be depended on as a substitute for following the safety rules.

*Do safeties create a false sense of security for the user?*

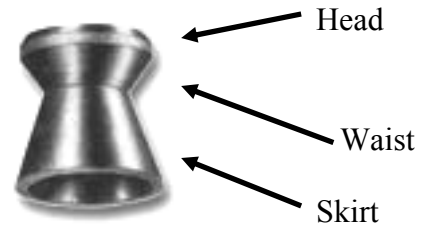
"I thought the safety was on," is a common excuse for those involved in shooting accidents. Nothing ever takes the place of **always** pointing the muzzle in a safe direction. At best, a safety is only extra insurance. Get the point—the shooter is the best safety.

### Pellets

The projectile for most air guns target shooting is a pellet made from lead, or lead alloy, that weighs about 0.50 grams (about 8 grains or 0.018 ounces). The shape of the pellet best suited to target shooting is the Diabolo shape shown in the picture to the right. The pellets have a flat head, sometimes



referred to as a wad-cutter shape, because it punches a nice round hole with clean edges, making the shot hole much easier to score. The skirt is the part that seals the pellet as it travels down the bore. Match pellets (for competition) are available in different head diameters (ranging from 4.48 mm to 4.51 mm), but practice pellets are usually 4.50 mm.



### COCKING AND LOADING AIR RIFLES

#### Daisy 853 Series Cocking and Loading

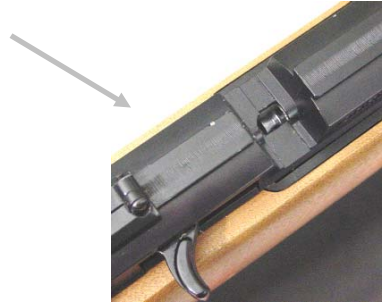
This series of air rifles (753, 853, and 953) is referred to as single-stroke pneumatic air rifles. This means that the pellet is propelled by air that is compressed with one stroke of the pumping handle. This air is held in a small chamber until the trigger is pulled. The speed of the pellet as it leaves the muzzle depends upon the amount of air compressed in the chamber. How the rifle is pumped may affect how much air is compressed. Failure to fully extend the pump handle or to pause for a full second may result in only a partial charge of air for the next shot.

**Step 1.** Open the bolt.



**Step 2.** With the rifle pointed in a safe direction, fully extend the pump handle, pause for one second, and then close the pump handle in one smooth motion.

**Step 3.** Place a .177 cal. (4.5 mm) pellet into the pellet channel with the solid end (head) toward the muzzle and the skirt end toward the rear.



**Step 4.** Close the bolt by pushing the bolt handle forward, locking it into firing position.

**Step 5.** The rifle is now loaded, cocked, and ready to fire.

### **Daisy 888 Cocking and Loading**

**Step 1.**  
Open the  
bolt.



**Step 2.** Place a .177 cal. (4.5 mm) pellet into the pellet channel with the solid end (head) toward the muzzle and the skirt end toward the rear.



**Step 3.** Close the bolt by pushing the bolt handle forward, locking it into firing position.

**Step 4.** The rifle is now loaded, cocked, and ready to fire.

### **Rifle Conditions for Daisy 853 Series Air Rifles**

The Daisy 853 series single-stroke pneumatic air rifles, because of their design and operation method, can be in a variety of conditions or states of readiness to fire. One important thing to note is that in an uncharged (air not pressurized) rifle, the pump handle

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

will easily open about 5-8 cm before some force is required to open it further. This condition indicates to the user that the rifle has not been charged. A charged (air pressurized) rifle will force the pump handle to open much further as the stored air pressure works against the compression piston. This condition indicates to the user that the rifle has been pumped and is charged.

When not being handled on the range or in a training environment, the air rifle must be in a safe condition. (See condition 1, 2, or 3 below. Conditions 4 and 5 are not considered safe because the rifle is being handled or is ready to shoot.)

### Air Rifle Conditions Code

**Condition 1.** Example of use: storage, transporting into and from range in the rifle case.

- Safety engaged.
- Bolt forward (not cocked).
- Chamber empty.
- Pump lever is closed.
- Safety rod is in the case, but not in the barrel.

**Condition 2.** Example of use: rifle in gun rack, or on the firing line when not being loaded or fired.

- Safety engaged.
- Bolt open and to the rear.
- Chamber empty.
- Pump lever is partially open (5-8 cm).
- Safety rod is in the barrel (visible in the feed track).



**Condition 3.** Example of use: on the firing line when not being loaded or fired.

- Safety engaged.
- Bolt open and to the rear.
- Chamber empty.
- Pump lever is partially open (5-8 cm).



**Condition 4.** Example of use: on the firing line checking natural point of aim or dry

firing.

- Safety disengaged.
- Bolt forward and locked.
- Chamber empty.
- Pump lever is closed.

**Condition 5.** Example of use: on the firing line checking natural point of aim or shooting.

- Safety disengaged.
- Bolt forward and locked.
- Pellet in chamber.
- Pump lever is closed.

### **Crosman Challenger 2000 Cocking and Loading**

The Crosman Challenger 2000 uses 12 gram CO<sub>2</sub> capsules to provide the energy to propel the pellet. These small containers of CO<sub>2</sub> are good for about 50-60 shots.



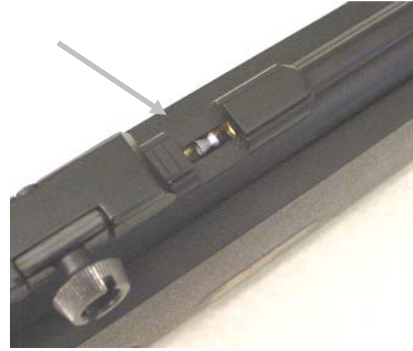
**Step 1.** Open the bolt.



12 gram  
CO<sub>2</sub>  
capsule

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

**Step 2.** Place a .177 cal. (4.5 mm) pellet into the pellet channel with the solid end (head) toward the muzzle and the skirt end toward the rear.



**Step 3.** Close the bolt by pushing the cocking handle forward, locking it into firing position.



**Step 4.** The rifle is now loaded, cocked, and ready to fire.

### Avanti XS40 Valiant Cocking and Loading



The XS40 Valiant is not equipped with a safety. Keep your fingers out of the trigger guard during the cocking and loading procedure.



Before shooting, ensure the air cylinder (reservoir) is filled by checking the air pressure meter. According to the users manual, it is safe to test-fire this rifle without a pellet loaded. They do warn strongly against cocking and firing with an empty or removed air cylinder. If it needs filling, refill with SCUBA air or high-pressure hand pump.



**Step 1.** Holding the gun with the left hand and pointed in a safe direction, grasp the bolt handle firmly, rotate it counterclockwise and pull toward the rear of the gun. The bolt will remain open when it reaches the full rearward position.



**Step 2.** Insert a .177 cal. (4.5 mm) pellet into the pellet channel with the solid end (head) toward the muzzle and the skirt end toward the rear.





## AIR GUN SHOOTING SPORTS SAFETY GUIDE

**Step 3.** Push the bolt handle forward and lock into firing position by rotating clockwise.



**Step 4.** The rifle is now loaded, cocked, and ready to fire.

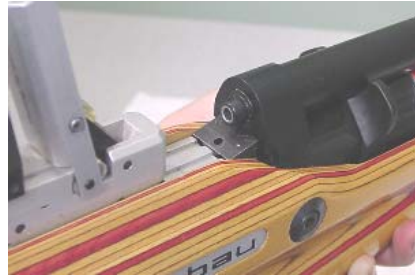
### Feinwerkbau P70 Series Precision Air Rifle Cocking and Loading

This rifle is in the precision air rifle class. All previously shown air rifles were sporter class air rifles. The Feinwerkbau air rifles are not equipped with a safety. Keep your fingers out of the trigger guard during the cocking and loading procedure.



**Step 1.** Push the charging lever forward toward the muzzle until it stops (about 4 cm or 1.5 inches). This step opens the breechblock, cocks the gun, and pressurizes the system from the cylinder attached to the gun.

**Step 2.** Place the pellet directly into the exposed breech of the barrel.



**Step 3.** Close the breechblock.



**Step 4.** The rifle is now loaded, cocked, and ready to fire.

### **Walther Precision Air Rifle Cocking and Loading**

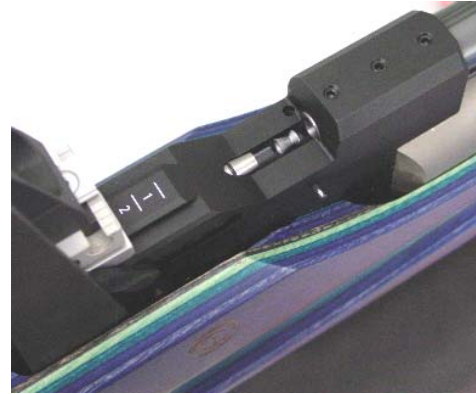
This rifle is in the precision air rifle class. The Walther air rifles are not equipped with a safety. Keep your fingers out of the trigger guard during the cocking and loading procedure.

**Step 1.** Lift the charging handle upward and to the rear until it stops. This step opens the sliding bolt, cocks the gun, and pressurizes the system from the cylinder attached to the gun



## AIR GUN SHOOTING SPORTS SAFETY GUIDE

**Step 2.** Place the pellet directly into the loading channel.



**Step 3.** Close the bolt by pressing the cocking lever forward and down until it locks.

**Step 4.** The rifle is now loaded, cocked and ready to fire.



The Walther has a dry-firing switch. The shooter can change from live-fire (F) to dry-fire (T from the German word *Trocken* meaning dry) by pressing the rocker switch.

### Pellet Discharge Container (PDC)

To make a Pellet Discharge Container (PDC), use a metal can or other small container filled with shredded paper, rags, or other soft material. Cover the open end of the container with a lid or cardboard and duct tape. Tape a handle about 1 meter long to the side of the container. The long handle allows the range officer to hold the PDC in front of the muzzle of the air rifle while standing in a safe position beside the shooter.

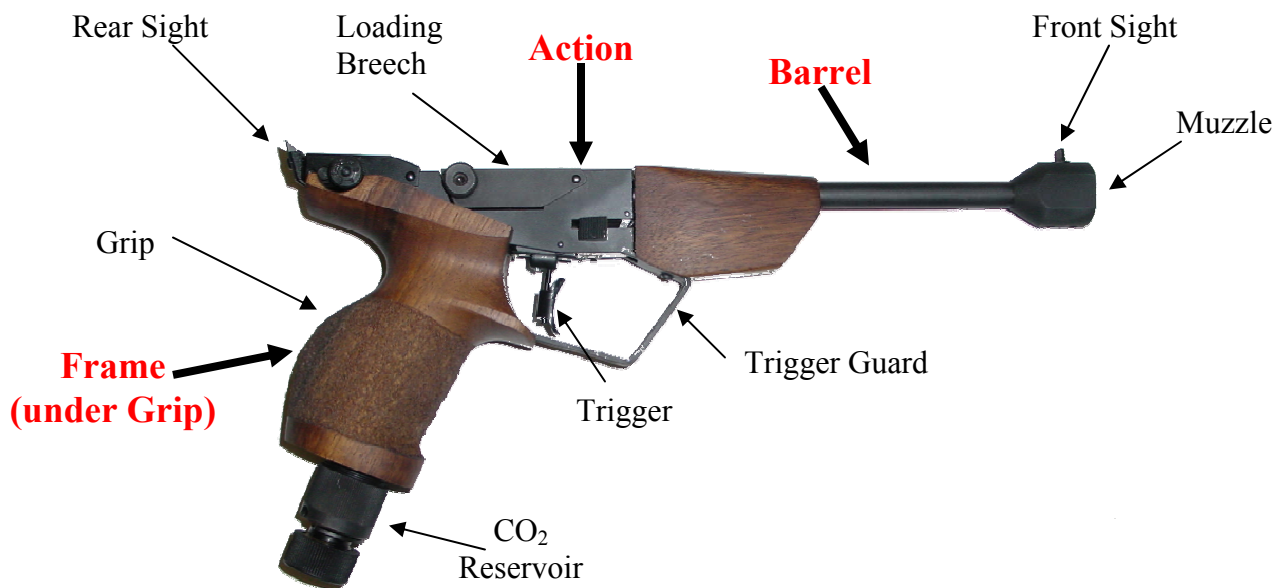
If a shooter has a loaded rifle after the range time has expired, or if a shooter has a question as to whether his or her rifle is properly loaded, they can discharge the rifle into the PDC.





## PISTOL NOMENCLATURE AND SAFE LOADING AND UNLOADING

All pistols consist of three major components: the **frame**, the **barrel** and the **action**.



### The Frame

The frame serves as the backbone to which all other parts are attached. It is usually made of metal, but may be made of plastic.

- The **trigger guard** protects the trigger.
- The **mechanical safety**, which, when engaged, blocks trigger movement.
- The **rear sight** that is used in the aiming process.
- The **grip**, which is the part that is held by the shooting hand.

## The Barrel

The barrel is a hollow metal tube through which the pellet passes on its way to the target.

- The **barrel**
- The **muzzle** end of the barrel, stressing the importance of keeping it pointed in a safe direction.
- The **front sight**, which is mounted near the muzzle end of the barrel.

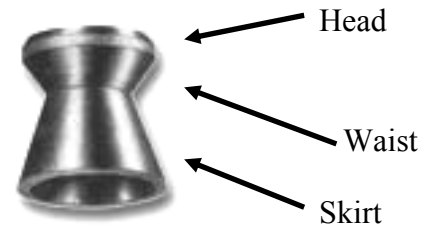
## The Action

The action is the group of moving parts used to cock, compress air (in some models), load, fire, and unload the gun.

- The **trigger** which activates the mechanism that releases the air that pushes the pellet out of the barrel.
- The **bolt/load breech**, which cocks the gun and loads the pellet.
- The **CO<sub>2</sub>, Compressed Air, or Cocking Lever** that provides the propellant or stores the air.

## Pellets

The projectile for most air guns target shooting is a pellet made from lead, or lead alloy, that weighs about 0.50 grams (about 8 grains or 0.018 ounces). The shape of the pellet best suited to target shooting is the Diabolo shape shown in the picture to the right. The pellets have a flat



head, sometimes referred to as a wad-cutter shape, because it punches a nice round hole with clean edges, making the shot hole much easier to score. The skirt is the part that seals the pellet as it travels down the bore. Match pellets (for competition) are available in different head diameters (ranging from 4.48 mm to 4.51 mm), but practice pellets are usually 4.50 mm.

## COCKING AND LOADING AIR PISTOLS

As with any air gun, there are many different methods and procedures for cocking and loading these air pistol. The detailed steps for operating the gun is listed in the owner's manual included with each gun. Methods of cocking air pistol used in modern competition include: Spring Piston, Single or Multi-Pump, CO<sub>2</sub> & Compressed Air.

## Spring Piston Break Barrel –

**Step 1.** If equipped with a safety, place safety on.



**Step 2.** Firmly grip muzzle end and pistol grip



**Step 3.** With the muzzle pointed in a safe direction, “break” the barrel and bend until spring “clicks” in place.

**Step 4.** Place pellet into the breech area of barrel making sure to press the pellet in flush to the edge of the barrel. The flat head of the pellet should be toward the muzzle and the skirt end toward the rear.



**Step 5.** Firmly grip the muzzle end and pistol grip and “snap” barrel back into place.



**Step 6.** Place safety switch to fire. Pistol is now ready to fire.



## Spring Piston Side Cocking (FWB 65) –



**Step 1.** If equipped with a safety, place safety on

**Step 2.** Firmly grip pistol with finger **off** the trigger

**Step 3.** With other hand, depress locking button and pull lever back until level locks back and breech area is open. Keep the muzzle pointed in a safe direction.



**Step 4.** Place pellet into the breech area of barrel making sure to press the pellet in flush to the edge of the barrel. The flat head of the pellet should be toward the muzzle and the skirt end toward the rear.



**Step 5.** Fold lever back and clip in place.



**Step 6.** Pistol is now ready to fire.



## Single or Multi-Pump (Pneumatic) –



**Step 1.** If equipped with a safety, place safety on.



**Step 2.** Open the bolt.



**Step 3.** With the pistol pointed in a safe direction, extend cocking lever/handle fully until air is sucked in, pause 2 seconds, and close the handle until it is locked back in place.



Multi-pumps will take several additional pumps of the cocking lever to charge the amount of pressure needed for the shot.



**Step 4.** Place pellet into the breech area of barrel. The flat head of the pellet should be toward the muzzle and the skirt end toward the rear.



## AIR GUN SHOOTING SPORTS SAFETY GUIDE

**Step 5.** Close the bolt. Some bolts may need to be rotated to lock into place.



**Step 6.** On some pistols, you may need to pull a plunger or firing pin type device to cock.



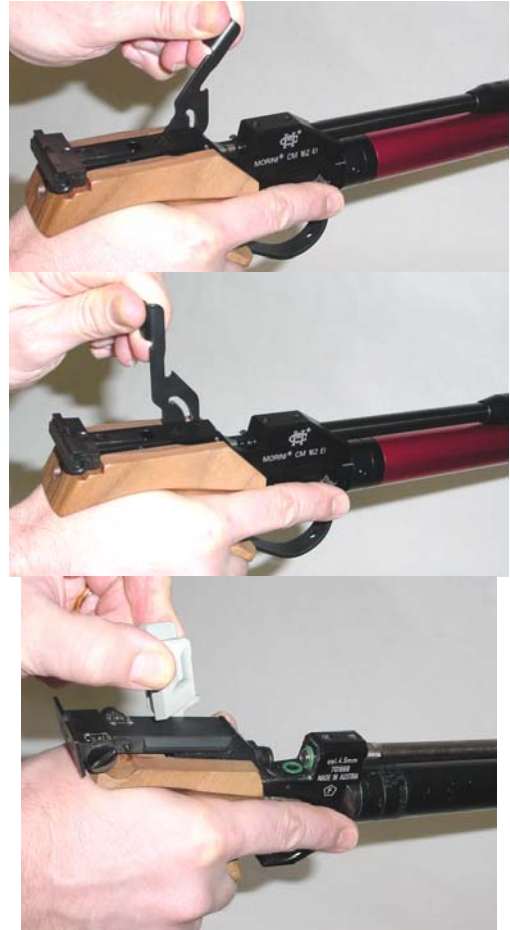
**Step 7.** Pistol is now ready to shoot.

### **Pre-charged pneumatic (PCP) or CO<sub>2</sub>—**



**Step 1.** If equipped with a safety, place safety on.

**Step 2.** Open the bolt/action/loading gate. You may have to operate a release button(s)



**Step 3.** Place pellet into the breech area of barrel. The flat head of the pellet should be toward the muzzle and the skirt end toward the rear.



## AIR GUN SHOOTING SPORTS SAFETY GUIDE

**Step 4.** Close the bolt/action/loading gate.



**Step 5.** On some pistols, you may need to pull a plunger or firing pin type device to cock.



**Step 6.** Pistol is now ready to shoot.



## Safety Conditions for Air Pistols

This section will be broken up into several sections due to the many varieties of air pistol actions. Certain models of air pistol may have slight modifications to meet the conditions. **It is very important to remember that Conditions 1 & 2 are considered SAFE conditions and Conditions 3 & 4 are not considered safe because the pistol is being handled in preparation to fire a shot.**

### Spring Piston Break Barrel

**Condition 1.** Example of use: storage, transporting to and from the range in a case.

- Safety engaged
- Barrel broken open **BUT** the spring has not been compressed OR
- Barrel is closed with the spring not being compressed
- Chamber/breech is empty
- Empty Chamber Indicator (ECI) or safety rod **may be** in barrel if open



**Condition 2.** Example of use: on a table or bench, on the firing line when not being loaded or fired (range is cold, or between relays).

- Safety engaged
- Barrel broken open **BUT** the spring has not been compressed
- Chamber/breech is empty
- An ECI or safety rod **may be** in the barrel

**Condition 3.** Example of use: on the firing line, checking natural point of aim, dry firing, or handing the rifle, but not in the act of firing.

- Safety disengaged.
- Barrel closed into place
- Breech or chamber empty

**Condition 4.** Example of use: on the firing line, checking natural point of aim, in the process of shooting, between the commands “**Commence Fire & Cease Fire**”

- Safety disengaged
- Barrel closed, spring compressed – ready to fire
- Pellet in the chamber

### Spring Piston Side Cocking (FWB 65)

**Condition 1.** Example of use: storage, transporting to and from the range in a case.

- Safety engaged
- Cocking lever unlocked and partially open **BUT** the spring has not been compressed OR
- Cocking lever closed with the spring not being compressed
- Chamber/breech is empty
- Empty Chamber Indicator (ECI) or safety rod **may be** in barrel if open



**Condition 2.** Example of use: on a table or bench, on the firing line when not being loaded or fired (range is cold, or between relays).

- Safety engaged
- Cocking lever unlocked and partially open **BUT** the spring has not been compressed
- Chamber/breech is empty
- An ECI or safety rod **may be** in the barrel

**Condition 3.** Example of use: on the firing line, checking natural point of aim,



dry firing, or handling the rifle, but not in the act of firing.

- Safety disengaged.
- Cocking lever closed and locked in place
- Breech or chamber empty

**Condition 4.** Example of use: on the firing line, checking natural point of aim, in the process of shooting, between the commands “**Commence Fire & Cease Fire**”

- Safety disengaged
- Cocking lever closed, spring compressed – ready to fire
- Pellet in the chamber



## COMPRESSED AIR/CO<sub>2</sub> SAFETY

Handling of compressed air and CO<sub>2</sub>, just like the handling of guns, requires training and adult supervision. The amount of energy stored in a typical Self Contained Underwater Breathing Apparatus (SCUBA) tank is enough to lift a 20-ton truck off the ground! Without adequate training and appropriate supervision, shooters can become complacent in their use of compressed gas. As we know from the first lesson on safety, when people become careless or don't know the proper precautions, that's when accidents happen.

For our discussion below, a tank is the large bulk source, and the cylinder is the storage vessel that is mounted on the gun. Make sure all tanks are inspected and certified in accordance with industry standards. Never allow untrained individuals to operate SCUBA air or CO<sub>2</sub> tanks. Check cylinders for damage and undue wear. Remove them from service if you suspect that they are damaged.

Dive shops that refill SCUBA tanks fill them to a pressure of 200 bar (about 2900 psi). Yes, you can get 300 bar (about 4350 psi) air. This system is more commonly found in fire department Self Contained Breathing Apparatus (SCBA). You will get fewer shots than if you use a 300 bar system, but many compressed air gun cylinders are only rated for 200 bar, and those guns that are certified to use 300 bar air work just fine when using 200 bar refills. Therefore, you should use a 200 bar SCUBA air system for compressed air. It just makes it easier and safer for all concerned.

### Definitions

**psi**—pounds per square inch, a more common unit of pressure. Most car tires are inflated to about 32 psi.

**bar**—a unit of pressure. One bar equals 14.504 psi.

**K-valve**—this is the most common type of SCUBA valve in the US, rated for 3000 pounds per square inch (psi), using a D-shaped yoke to clamp over the valve head. Unfortunately, all the European air guns use a different type of fitting called DIN.

**Yoke**—a D-shaped clamp that interfaces between a K-valve and an air gun cylinder adapter.

**DIN fitting**—these are the European SCUBA fittings, as opposed to the American system referred to as yokes and K-valves. “DIN” is a German acronym for *Deutsches Institut für Normung*, a body that sets standards. It is similar to the CGA (Compressed Gas Association) in the United States.

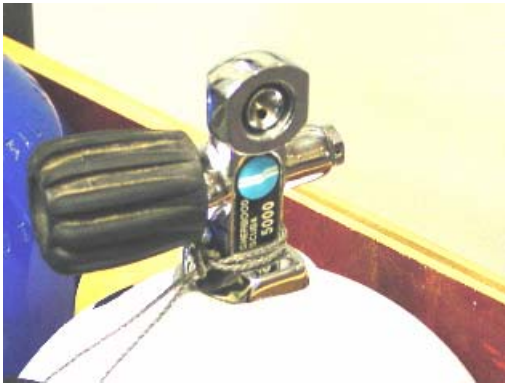
**200 DIN fitting**—a SCUBA connection fitting rated for 200 bar (or 2900 psi). It is the

most common type of DIN fitting used by air gun manufacturers. It is the LEAST common available in U.S. dive shops.

**300 DIN fitting**—these are more common in the U.S. diving industry, although still not common in comparison to K-valves. These are rated for 300 bar of pressure (4350 psi). Because of the higher pressures involved, the 300 DIN “fill side” (the female threads on the tank) will not seal to 200 DIN adapters.

### Safety Guidelines for Using Compressed Air

- SCUBA tanks should be set up for 200 DIN and only filled at certified dive shops.
- Air tanks should be secured to a wall or cart to prevent tipping over. Damage to a valve system could result in a dangerous missile! A full tank contains about 80 cubic feet of air at 3,000 psi.
- When transporting air tanks, secure them to prevent damage to valve system or tank body in case of sudden stops or direction changes.
- Never use petroleum-based solvents or lubricants anywhere near airflow connections, *e.g.*, valves, cylinder connection points, or breech of the air gun.
- Never carry air tanks on your shoulder.
- If the SCUBA tank is equipped with a K-valve, a specially designed D-shaped yoke must be used.



SCUBA tank with K-valve



D-yoke with air cylinder adapter

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D-yoke and adapter installed on a SCUBA tank with a K-valve



### Filling Compressed Air Gun Cylinders

- Check that brass adapter and air tank value assembly are compatible (200 DIN).
- Inspect threads on the cylinder, tank valve, and adapters for burrs, dirt, oil, etc. Either clean or do not use them.
- Most cylinders are designed for hand tightening only. Using a wrench/pliers may damage the cylinder or adapter.
- Follow ALL manufacturers' current guidelines for filling cylinders. Example:



- Screw the adapter onto the tank.

- Screw the compressed air cylinder onto the adapter.



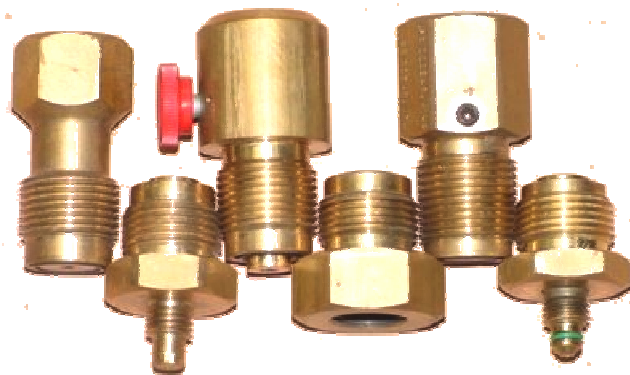
- Open the valve of the tank very slowly.
- Close the valve of the air tank after about 30 seconds for air rifle cylinders to allow the cylinder to cool and the pressure to equilibrate.



- Release blow-off valve.



- Remove the cylinder and hand-tighten it on the gun.
- Once the cylinder is safely attached to air tank valve system, **SLOWLY** open tank valve and fill cylinder. If opened quickly, the increase of pressure in the cylinder will generate a lot of heat, which will lead to premature failure of the rubber O-rings and cylinder wall. If you hold the air cylinder in one hand and open the tank valve with the other, you can feel the cylinder get warm. Control the amount of air entering the cylinder.
- When filling, point the cylinder in a safe direction.
- Never look directly at the manometer (gauge) when filling.
- If the valve adapter is equipped with a small blow-off port, release air pressure after closing the main air tank valve, but before attempting to remove the cylinder.



### **Various manufacturer adapters.**

Top row: 300 bar adapters.

Bottom row: 200 bar adapters.

### **Two-Tank Filling or Cascading**

Many clubs and teams use a two-tank or cascading compressed air cylinders filling system. This allows shooters to get the most air pressure into their air cylinder without the club having to refill tanks as frequently. Make sure everyone follows all the safety guidelines for filling air cylinders. Unless a club has a special setup of several tanks, most two-tank filling is done following these steps:

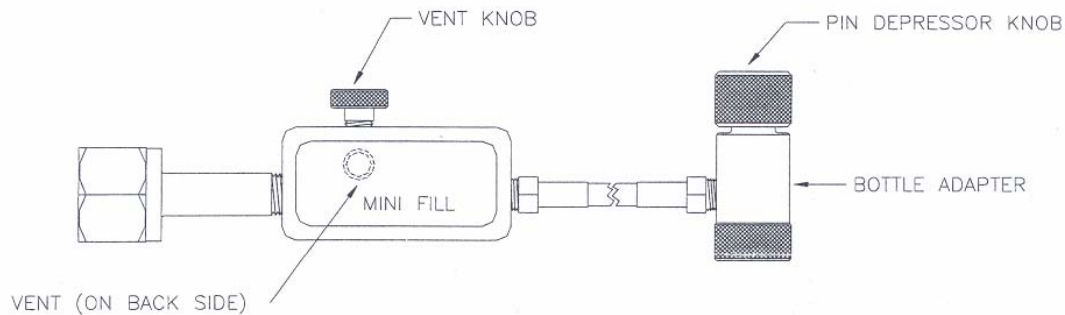
1. One tank will be identified as the “Fill” or “First” tank. This tank usually has a lower pressure than the other tank.
2. A second tank will be identified as the “Top-off” or “Second” tank. This tank should contain higher pressure air than the fill tank.
3. Since the air cylinder from the gun is near empty, bulk fill the cylinder from the Fill tank. This is strictly a volume fill and the shooter should not be too concerned how high the air pressure reads on the manometer.
4. Connect the cylinder to the Top-off or second tank and allow air from the tank into the cylinder. This fill is not a large volume of air, but rather for increasing air pressure.
5. The air cylinder is now ready to be attached to the gun.

When the first tank gets too low it can be refilled and become the Top-off tank, while the second tank becomes the Fill tank. This method of filling air cylinders and rotation allows a club to get the best use of tanks and the most air out of tanks.

### **Safety Guidelines for Using Carbon Dioxide (CO<sub>2</sub>)**

- At room temperature (70°F), a CO<sub>2</sub> tank with liquid in the tank is at 855 psi.
- The pressure of CO<sub>2</sub> varies depending on temperature (at 60°F = 750 psi, at 90°F = 1100 psi)
- CO<sub>2</sub> tanks should be stored in a ventilated area.
- Transfer valve assemblies should be inspected regularly. Tanks should have a standard CGA 320 fitting on the input side. Tanks and cylinders should be inspected regularly for external corrosion, dents, cuts, gouges, bulges, and thread damage.
- Every CO<sub>2</sub> filling station should have a small scale to weigh each cylinder.
- CO<sub>2</sub> tanks should be secured to a wall or cart to prevent tipping over. Damage to a valve system could result in a dangerous missile!

- When transporting CO<sub>2</sub> tanks, they should be secured to prevent damage to the valve system or tank body in case of sudden stops or direction changes.
- CO<sub>2</sub> can cause severe frostbite and protective gloves should be worn when filling CO<sub>2</sub> cylinders.
- CO<sub>2</sub> is filled by weight and not pressure. CO<sub>2</sub>, when compressed, is a liquid. As long as there is liquid CO<sub>2</sub> in a tank or cylinder, the same pressure of gas is given off. Know the weight of an empty cylinder and a full cylinder. [For example: Daisy 888 CO<sub>2</sub> tank weight empty = 402.5 grams (14.2 oz.), full = 473.5 grams (16.7 oz.)]. The weight may be stamped by the manufacturer on the cylinder body.
- Never use petroleum-based solvents or lubricants anywhere near connections, *e.g.*, valves, cylinder connection points, or breech of the air gun.
- CO<sub>2</sub> tanks will either be a siphon-type or gas supply type (most common type).
  - Gas supply type tanks must be inverted to properly fill air gun CO<sub>2</sub> cylinders. Invert the tank using a safe inverting rack.
  - Siphon or dip tube type tanks must remain upright to fill properly. When refilling Siphon tanks, make certain you tell the vendor that your tank has an internal eductor tube.



## Filling CO<sub>2</sub>Cylinders

- Check that the adapter and CO<sub>2</sub> tank valve assembly are compatible (standard connection CGA320). Make sure a sealing washer is also used.
- Inspect threads on the cylinder, tank valve, and adapters for burrs, dirt, oil, etc. Either clean or do not use them.
- Most cylinders are designed for hand tightening only. Using a wrench or pliers may damage the cylinder or adapter.
- Always wear eye protection to protect eyes from venting gas and gloves to protect hands from extreme cold.
- If possible, chill cylinder in a freezer or ice cooler for at least 10 minutes before filling. If that is not possible, chill the cylinder using the gas chilling method (see note on gas chilling below).





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- Attach the cylinder to the fill adapter. Once the cylinder is attached, turn the pin depressor knob (also called the blow-down valve) clockwise to depress the pin that opens the cylinder valve.



- Vent cylinder by opening the vent knob until no more gas comes out.



- Close vent knob.

- Slowly open tank valve.



- When the frost (ice) disappears from the cylinder, close the tank valve. This usually takes about ten seconds for the system to equilibrate.

- Turn the pin depressor knob on the bottle adapter counterclockwise to allow the pin valve in the cylinder to close.



- Vent any CO<sub>2</sub> in hose lines by opening the vent knob, and then disconnect cylinder from the CO<sub>2</sub> valve assembly.



- Never store CO<sub>2</sub> cylinders where they would be exposed to high temperatures (over 80 F).
- After filling, make certain that it contains the correct amount of liquid CO<sub>2</sub>. If it weighs too much, bleed-off some CO<sub>2</sub> until it weighs the correct amount.



## Gas chilling the Cylinder

If you cannot cool the cylinder in a freezer, or if you need to fill it immediately without waiting the appropriate time to cool the cylinder for efficient transfer of gas from the tank to the cylinder, you can gas chill the cylinder by rapidly releasing some of the contained



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gas. This action has the effect of cooling the cylinder. Be extremely careful and wear appropriate protective gloves when releasing the gas. The temperature of the cylinder can drop to well below 0°F in only a few seconds. Frostbite can result!

1. Attach the cylinder to the fill adapter. Once the cylinder is attached, turn the pin depressor knob (also called the blow-down valve) clockwise to depress the pin that opens the cylinder valve.
2. Vent cylinder by opening the vent knob until no more gas comes out.
3. Close vent knob.
4. Open tank valve and allow liquid to transfer for a few seconds,
5. Close tank valve and then open pin depressor knob valve quickly.
6. Usually one cycle will chill the cylinder sufficiently to allow efficient transfer of liquid CO<sub>2</sub> from the tank to the cylinder.

### References:

- Pilkington Competition Equipment—Article: *A Guide to Compressed Air Usage* – <http://www.pilkguns.com/scuba.htm>.
- Compasseco Inc.—Article: *Warning about Compressed Air Guns* <http://www.compassco.com/technical.html>.
- PADI Americas, 30151 Tomas Street, Rancho Santa Margarita, CA 92688-2125 <http://www.padi.com/english/default.asp?o=am>.
- Compressed Gas Association, Inc. 4221 Walney Road, 5<sup>th</sup> Floor, Chantilly, VA 20151, phone (703)-788-2700—Publication: CGA G-6.8---2004, *Transfilling and Safe Handling of Small Carbon Dioxide Cylinders, First Edition*.
- Pilkington Competition Equipment—Article: *Shooting CO<sub>2</sub> Match Pistols*—<http://www.pilkguns.com/coach/co2.htm>.
- Daisy Outdoor Products, Rogers, AR.

*Internet sources valid as of November 15, 2005*

# SAFE RANGE CONSTRUCTION AND OPERATION

## Constructing an Air Gun Range

Some things to consider when constructing an air gun range are discussed below:

### Location

Safety is the primary consideration when establishing a site for any shooting sports activity. Any air gun range, either formal or informal, should provide sufficient space for the activities planned or anticipated, have controlled and limited access, and be located away from regular activity areas.

On indoor ranges, ensure that any door or access forward of the firing line is blocked and posted with warning signs and alternate points of entry. Cover any windows. Make certain no one can approach the range between the firing line and the target line, or from the downrange area around or over the backstop/impact area. Ensure that no one can wander into the area without meeting warning signs or safety barriers alerting them to the danger zone—the more warnings, the better.

Access to the range should be limited to one controlled point of entry.

### Distance requirements

Ten-meter air rifle ranges need 10 meters (32 feet, 9¾ inches) from the edge of the firing line closest to the shooter to the target line. Additional space must be allocated behind the firing line for the firing points and a walkway. Additional space will also be necessary behind the target line for the primary backstop (and secondary backstop, if needed).

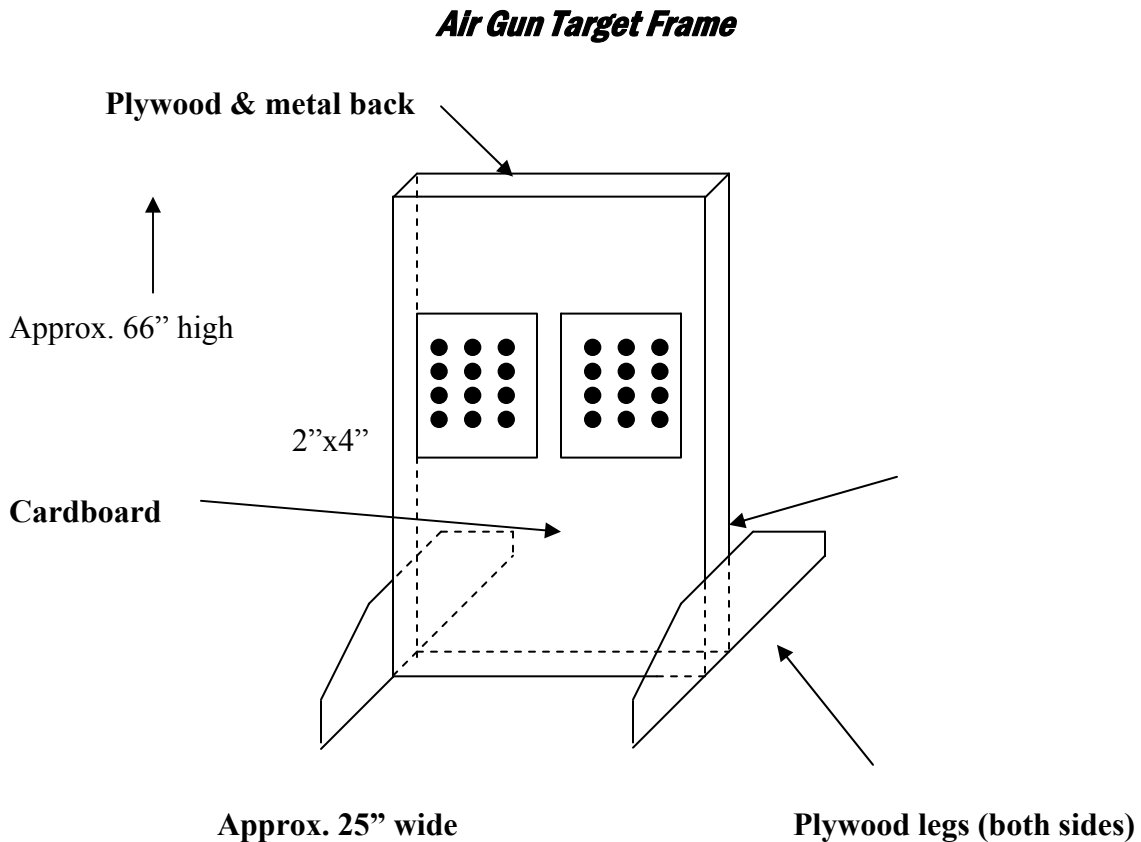
### Backstops

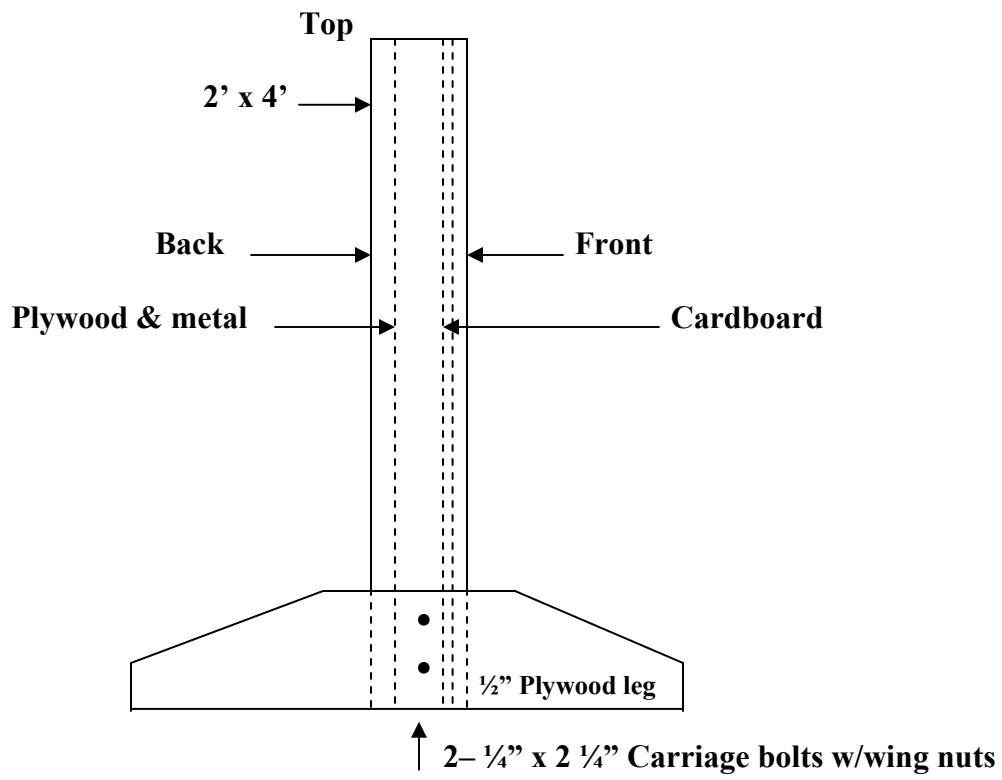
The primary backstop for air gun shooting needs to stop the pellet, hold the target, and be durable. The quickest way to set up an air gun range is to use commercially available pellet traps. They are lightweight, easy to use, and capture the fired pellets inside the trap for easy cleanup. Pellet traps can be placed on top of a stack of milk crates or lightweight wooden boxes for quick and easy target height adjustments.

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

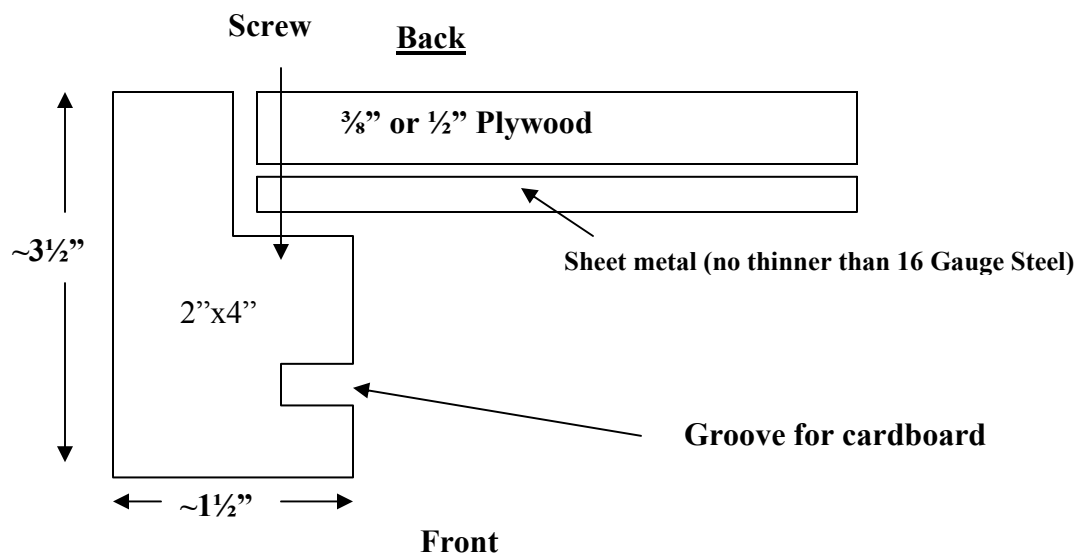
Metal pellet traps can also be purchased as part of a target retrieval system using single bull targets. While they eliminate the need for shooters to go downrange and change targets, they require a fixed mounting position on the wall, thus sacrificing flexibility in target height adjustment.

Target frames should be wide enough to mount two targets side-by-side.





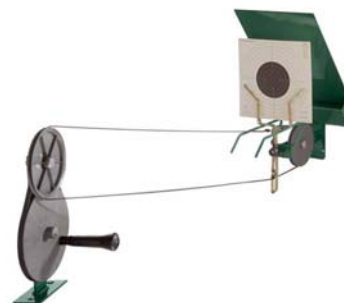
## AIR GUN SHOOTING SPORTS SAFETY GUIDE



A secondary backstop may be required to further protect areas, walls, or buildings against pellets that miss the primary backstop. The secondary backstop can be constructed by hanging tarpaulin, canvas, carpet, or multiple layers of strong cloth behind the pellet traps. Take care to ensure that the material hangs loosely so the energy of the pellet is absorbed instead of bouncing back toward the firing line.

### Single shot target changers/pellet catchers

Air pistols require a very similar range as air rifles. Distance requirements, backstops, and traps are the same. Because many shooters use single bull air pistol targets (B-40) a smaller trap area can be used once the shooter has become proficient with the air pistol. The air gun target frame shown on pages 45-47 can be used for air pistol targets and can accommodate two rows of 3 B-40 targets. Many ranges with a primary use of air pistol will use single bull target carrier systems such as the one pictured below. Other ranges use a simple metal pellet trap.



In normal international style competition, the target is placed so that the center of the target is 1.4 meters (about 55 inches) off the floor. A table or bench should also be

provided at the firing line. A table between 2.3 ft to 2.6 ft tall and wide enough to hold the shooter's equipment is ideal. At least one meter (39.4 inches) wide firing point should be allowed for each shooter.

If you are participating in the Progressive Position Pistol Program, the seated positions should have targets placed at 36 inches above the floor. The standing positions would use the 55-inch height for the target. Range commands are the same for Air Rifle as Air Pistol. Time limits are at least 1.5 minutes per record shot with all sighting shots taken before the first record shot. **Special care must be taken by the shooters and range officers during the firing process to make sure that the pistol muzzles are always pointed in a safe direction.**

The strength required to cock a spring piston or single/multi-pump pistol may be more than a young shooter can handle easily and may lead to the pistol being pointed in an unsafe direction as the shooter struggles to cock it. The coach/range staff must be ever vigilant for these unsafe actions and identify those shooters who will need adult help in cocking the pistol or provide the shooter with a PCP/CO2 pistol that does not require the large cocking force to use.

### **Traffic Patterns**

Efficient ranges are designed with efficient traffic patterns that complete a flow from entry to exit without retracing steps.

The firing line is a distinct two- or three-inch wide line (either painted or tape) established across the range, encompassing all of the firing points.

### **Firing Points**

The number of firing points in a given area will be defined by the amount of space you want to have for each firing point. Firing points should be sized to hold the shooter in the various shooting positions, his or her equipment, and the instructor or coach. Four feet wide and six feet long is ideal. In order to have a few more firing points in a given space, some rulebooks for competitive shooting allow a width of 40 inches.

### **Walkway**

Immediately behind the firing points, there should be a walkway to accommodate instructors and range personnel when firing is in progress.

### **Ready Line/Ready Area**

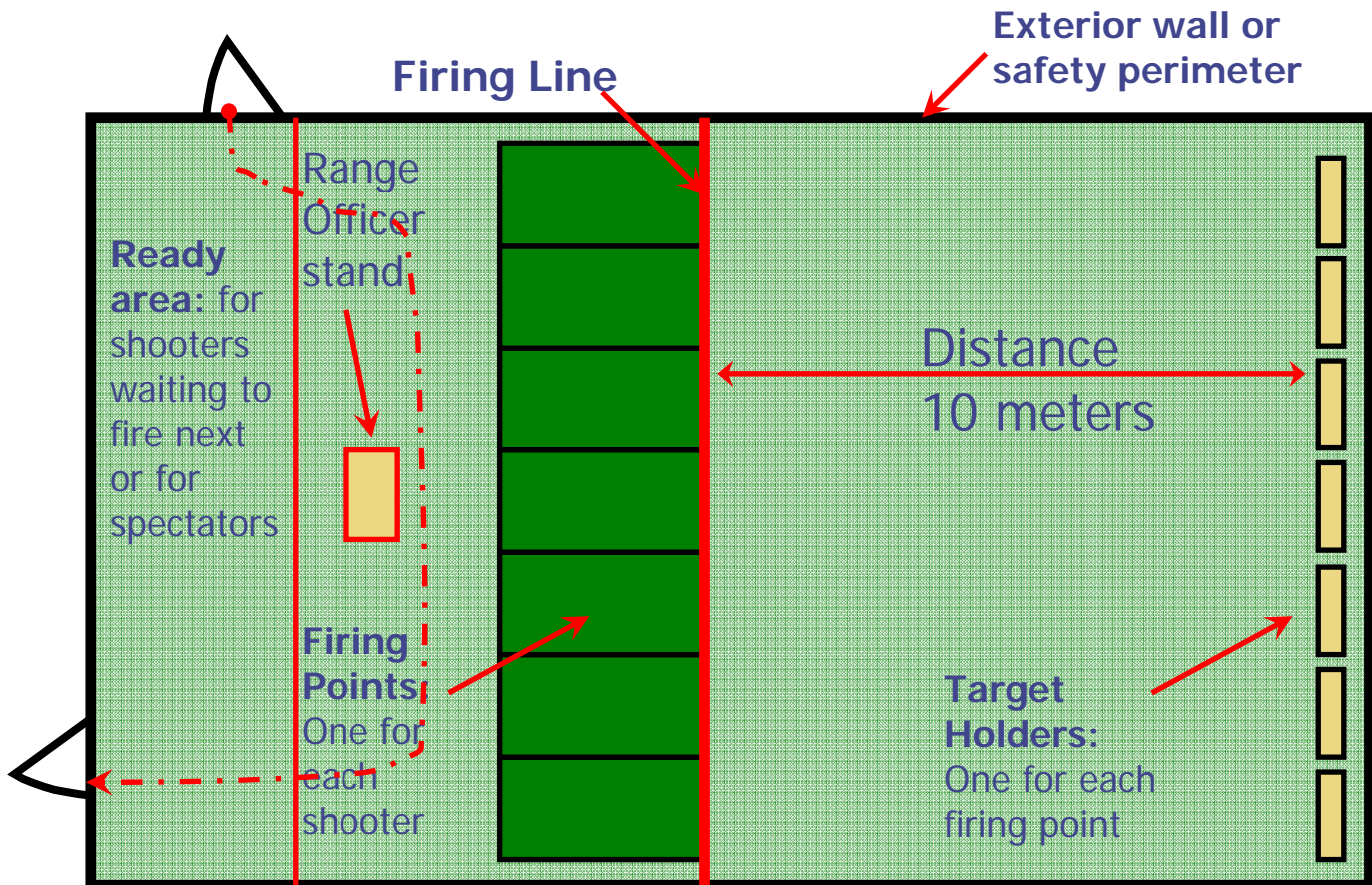
The ready line is an established line located approximately six to eight feet behind the firing points. This distance is arbitrary, but represents ample room to maintain a non-congested thoroughfare behind the firing points. The immediate area behind the ready

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

line is designated the ready area. The ready area is designed to keep non-firing personnel away from the firing line while they wait their turn to shoot.

### Spectator Area

The spectator area is a designated space away from the main traffic thoroughfare that is reserved for guests and spectators visiting the range. If space is limited, spectators can share the ready area with the waiting shooters.



### Firing Point and Target Identification

Each firing point and corresponding target should be clearly identified to keep accidental cross-firing to a minimum. Large number boards with contrasting colors are customary. For example, black numbers on white background and then white numbers on black background.

### Lighting

Even illumination across the target line is required. There are several options available to accomplish this lighting depending on your budget and the type of target system in use.

## Range Officer

A range officer is the person in charge of firing on every range. All commands and instructions given by the range officer must be obeyed. Range officers must check all rifles brought onto the range to make certain that the actions are open and the guns are unloaded. Likewise, when shooting is finished, range officers must check rifles to be sure that the guns are again unloaded and the actions are open before anyone moves forward of the firing line or rifles are removed from the range. The range officer should be a different person than the coach. When a coach is working with a shooter, all of his or her attention is focused on the shooter, not the rest of the range. Assign a responsible person (who may be a shooter on another relay) to be the range officer. Their only responsibility must be the safe conduct of the range. Line officers are the assistants to the range officer on large ranges. The most targets that a line officer would be responsible for is 10.

A range checklist can be found at Appendix 1.

## Range Commands

Be sure you know the range commands that you use on your range, and train your shooters so they understand exactly what each command means. The common range commands used today have developed over a century of both military and civilian shooting. They are relatively simple, but there are a few hard and fast rules concerning actions taken by the shooter and the commands given by the range officer. No shooter may load a rifle until after the command “**Load**” or “**Start**” is given. No shooting may begin until after the command “**Start!**” or “**Commence Firing!**” is given. When the command “**Stop!**” or “**Cease Firing!**” is given, the rifle must be taken down immediately and the action opened. No further attempt to fire a shot is to be made. If a pellet remains in the rifle, or if the rifle is charged with air or CO<sub>2</sub>, the shooter will immediately notify the range officer who will determine how best to unload the gun or make it safe.

## Loading

All rifles must remain pointed downrange or up toward the ceiling whenever the rifle is cocked and loaded. **Special care must be taken during cocking and loading to ensure that the rifle muzzle is always pointed in a safe direction and never pointed at a neighboring shooter or behind the firing line.**

## Going Downrange

Before anyone goes downrange to hang or retrieve targets, or for any other purpose, all rifles must be in Condition 2 or equivalent and laid on the floor or shooting bench. No one may go downrange until authorized by the range officer after ensuring the guns are unloaded and actions are open. Rifles must never be handled if anyone is downrange. Allow equal time for preparation for all relays, especially when running ranges for



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competition. Usually the first relay gets the opportunity to get ready at a more relaxed pace than subsequent relays.

Command	Meaning or Action
<b>“Relay No. __, Match No. __ (or naming the match), on the firing line.”</b>	Shooters are to move to their firing points. Rifles may be handled.
<b>“The preparation period starts now.”</b>	Shooters may occupy their firing points, prepare, and dry fire at the targets. This period generally lasts three minutes for competition shooting. Rifles may be handled.
<b>“The preparation period has ended.”</b>	The end of the preparation period.
<b>“Is the line ready?”</b>	Is announced by the Range Officer so that a shooter who experiences a problem may raise an arm and call <b>“Not ready on target ____”</b> (In the event of a “not ready” signal, the Range Officer would announce <b>“The line is not ready,”</b> investigate and assist the shooter, or remove the shooter from the firing line.)
<b>“The line is ready.”</b>	Is announced when the Range Officer observes that the line is ready, or after a difficulty has been corrected.
<b>“Load.”</b>	Shooters are allowed to load the rifle and prepare for the shooting event.
<b>“Commence firing!” or “Start!”</b>	Is announced after <b>“Load”</b> and informs shooters that they may begin shooting. This command is usually signaled verbally, but may also be signaled by a whistle or horn blast, or by moving the targets into view.
<b>“Cease firing!” or “Stop!”</b>	Is announced by the Range Officer when time expires or at any other time that firing is to cease. The Range Officer notifies shooters to stop firing immediately, remain in position, and await further instructions. <b>“Cease firing!”</b> or <b>“Stop!”</b> may be signaled verbally, by a whistle or horn blast, or by moving the targets out of view. Additional commands to unload, open the action, and bench or ground the air rifle may follow. During range safety briefings, the Range Officer should emphasize that <b>“Cease firing!”</b> or <b>“Stop!”</b> can be announced by anyone observing an unsafe condition.

<b>“Unload!” “Make the line safe”</b>	Directs the shooter to unload the air rifle and to ensure the rifle is in a safe.
<b>“Is the line clear on the right?”; “Is the line clear on the left?”</b>	Signals that the Range Officer or the line officers check that all air rifles are unloaded with the actions open and chambers empty. Upon verifying (or receiving signals) that all air rifles are unloaded, the Range Officer announces: <b>“The line is clear!”</b> Additional commands may follow.
<b>“Go forward, and change targets” or “Go forward, and retrieve targets.”</b>	Shooters must go forward of the line to change targets. The Range Officer ensures all air rifles are unloaded and grounded or benched before allowing anyone to go forward of the firing line. While shooters are changing targets, no air rifles are handled. When all shooters have returned and no personnel are downrange, the Range Officer states: “Range is clear, you may handle your rifles.” This statement informs shooters that they may prepare for the next course of fire or get ready to depart the firing line.
<b>“Move out of position and remove your equipment from the firing line.”</b>	Authorizes shooters to remove their gear from the firing line.
<b>“Police your firing point.”</b>	Shooters should clean their firing points of discarded items and place them in the appropriate containers. The Range Officer and shooters must follow the SOPs because indoor ranges often have specific policies on handling pellets and cleaning firing points.
<b>Other Range Commands</b>	
<b>“Ready on the right!”...“Ready on the left!”...“Ready on the firing line!”</b>	On large ranges, you may need to check both halves of the range. This sequence of preparatory commands, announced by the Range Officer with a three-second interval between commands, gives shooters their last chance to signal “Not ready.” “Ready on the firing line!” means that the range is ready.
<b>“As you were.”</b>	Disregard the command just given.
<b>“Carry on.”</b>	Proceed with whatever was being done before an interruption occurred.

# AIR GUN SHOOTING SPORTS SAFETY GUIDE

## LEAD CONTAMINATION

### **Personal Hygiene During and After Shooting**

Although there have only been a few authenticated cases of lead poisoning from air rifle firing, all air rifle marksmen should take precautions to reduce any potential for lead contamination. Firearms that use cartridges generate most of the lead contamination found on shooting ranges as a result of burning propellants and primers. Obviously, this is not a consideration in the air gun disciplines. However, each time someone handles pellets, a small trace of lead is left on their hands and can be transferred to other parts of their body or to food. Over time, this contact could increase lead levels in the body. It is therefore recommended that hands be washed thoroughly with cold water and soap following any contact with pellets. A Range Officer, who spends more time on the range may be more susceptible to increased blood lead levels and need to be monitored periodically.

Tell shooters and spectators to wash with cold water after leaving the range/cleaning area before eating, drinking and etc. The use of cold water minimizes the possibility of lead compounds entering the skin through enlarged pores that warm or hot water might cause.

Hygiene guidelines are intended to minimize users' exposure to airborne particulate lead and cleaning product residues. Everybody should follow these guidelines at the range or cleaning area, even if he or she did not participate in the shooting session. Range Officers should inform/remind range users of these guidelines prior to and immediately after occupying the range or cleaning area.

Airborne particulates landing on your skin will transmit only minute amounts of foreign substances into your blood stream. The areas of the body that let in the most germs and foreign substances are the nose and mouth. The foreign substances in larger amounts are transmitted to the face by the hand that contacted contaminated surfaces. That is why refraining from eating, drinking, smoking, applying makeup, or placing your hands in proximity to your mouth or nose while on the range or cleaning guns is highly recommended.

In addition to following the hygiene guidelines, range users should read and follow manufacturers' guidelines when using cleaning products. Manufacturers of cleaning products often suggest using eye protection, avoiding contact with the skin, and using

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

well-ventilated areas. Shooters should always follow the directions specified on their cleaning products.

Pregnant women should follow their physician's guidance concerning exposure to lead and their presence on shooting ranges. Likewise, parents of children under age seven should follow their pediatrician's guidance concerning their children's presence on shooting ranges. Physicians may have concerns about exposure to airborne particulate lead and other factors in young children.

### **Disposal of Lead**

Spent pellets may be regarded as hazardous waste depending upon your location, and must be disposed of in accordance with local regulations.

Generally speaking, airborne lead particulate is created when the primer and powder in the shell of a powder firearm is ignited. Further, when the lead bullet from a powder firearm strikes the bullet trap, some particulate can become airborne. Ranges where powder firearms are used employ an air ventilation system that moves the particulate downrange, away from the shooter and through a filtering system that removes the particulate from the air.

Since air guns do not use powders or primers to propel pellets and the pellets strike the traps with much lower energy than do powder-driven firearm bullets, the concern for airborne lead particulate is not a concern. Pellets do create some lead pieces of varying sizes, and periodic cleaning of traps and floor areas at the backstop require either wet vacuum or a damping of materials before removal. Gloves should be worn during cleanup and transfer of spent pellets from the traps to a larger storage container with a lid.

Pellets recovered from the traps are recyclable. Local recyclers will generally purchase the lead scrap. Handloaders in your local area may also be interested in your lead scrap. They can melt it down to cast bullets for muzzleloading guns. Contact them for specific requirements.

Pellet trap maintenance is a simple but important task. Set up a checklist that includes emptying and cleaning the traps and cleaning the floors in the backstop area on a regular basis. How often you clean depends mostly upon the amount of use the range receives. As part of your inspection process, you should determine when cleaning is needed.

## OVERVIEW OF ADDITIONAL TRAINING OPPORTUNITIES

### The NRA

The NRA developed this guide.

The NRA conducts training through a team of more than 50,000 NRA Certified Instructors and Coaches nationwide.

### Programs

What other programs are available for shooter and leader development?

NRA Basic Firearm Training Programs are available for a myriad of interests, including rifle, pistol, shotgun, and muzzleloading firearms, personal protection, reloading ammunition, and Home Firearm Safety, as well as Range Safety Officer. Contact (703) 267-1496.

NRA Certified Instructor and Training Counselor training. NRA Instructors are experienced shooters who wish to share their knowledge and skills with others. If you are interested in becoming an instructor, contact [training@nrahq.org](mailto:training@nrahq.org) or (703)-267-1428.

Training Counselors are experienced instructors who are appointed to train new instructors. To become a training counselor, contact [trainingcounselor@nrahq.org](mailto:trainingcounselor@nrahq.org) or (703) 267-1422.

NRA Coaches train shooters to participate in competitive shooting programs. If you are interested in becoming a Coach contact [coaching@nrahq.org](mailto:coaching@nrahq.org) or (703) 267-1401.

NRA Range Safety Officer. If you are interested in becoming an NRA Range Safety Officer, contact

## AIR GUN SHOOTING SPORTS SAFETY GUIDE

*training@nrahq.org* or (703) 267-1428.

Youth programs and activities, including the NRA Marksmanship Qualification Program, Youth Hunter Education Challenge, air gun events, NRA Youth SportsFests, and cooperative youth programs which include 4-H, Boy Scouts of America, American Legion, VFW, Royal Rangers, and FFA. Contact *youth\_programs@nrahq.org* or (703) 267-1505.

Organized competitions in every state, including NCAA tournaments, club, high school leagues, and the National Matches held annually at Camp Perry, Ohio. Contact *tournops@nrahq.org* or (703) 267-1459.

The NRA Foundation, which supports grants for education, training, recreational land use, and habitat protection. For more information on the NRA Foundation, visit [www.nrafoundation.org](http://www.nrafoundation.org), or contact *nraf@nrahq.org* or (800) 423-6894

Like no other institution, the National Firearms Museum, located at NRA headquarters in Fairfax, Virginia, proudly illustrates America's priceless heritage of firearms, freedom, and the American experience. Through its many galleries are the actual artifacts that were with the Pilgrims as they left the good ship *Mayflower*, marched with the American militiamen at Lexington and Concord, camped near Gettysburg with Robert E. Lee, helped a young Annie Oakley put food on her family's table, or stood on the winner's platform at the Olympic Games. The tapestry of America has been woven by people, places, and things, and so in the National Firearms Museum, each of the threads of the past bears a familiar name like Beretta, Browning, Colt, Marlin, Remington, Ruger, Savage, and Winchester. For more information on the museum, visit <http://nra.nationalfirearms.museum/>

Youth Education Summit, which brings high school students to Washington, D.C., to learn about the operation of the U.S. government and to meet with members of Congress. For more information, contact (703) 267-1345.

Technical assistance and safety advice for new ranges

and for upgrading existing ones can be obtained by contacting [rtta@nrahq.org](mailto:rtta@nrahq.org) or (703) 267-1278.

And much more!

### **NRA Marksmanship Qualification Program**

The NRA Marksmanship Qualification Program is a self-paced, honor-based program that does not require you to enter any formal matches or competitive events. But you can if you want to! Awards are available at the completion of each level. It is an excellent way to progress and challenge your shooter skills. Contact [dconni@nrahq.org](mailto:dconni@nrahq.org) or (703) 267-1505

Find more information at:

<http://www.nrahq.org/education/training/marksmanship/index.asp>

A booklet is also available from NRA Program Materials Center, Phone 800-336-7402. Ask for item number EQ 09525

### **Excellent Performance Awards**

NRA Excellent Performance Awards offer competitive shooters incentives to develop their skills in competition using various courses of fire for Sporter Air Rifle, Precision Air Rifle, and International Air Rifle. The EPA program is the logical extension of the popular NRA Qualification Awards programs that has been around since the early 1920s. The EPA is a program that shooters can use as a reward for developing their competitive shooting skills.

The Excellent Performance Awards are open to all shooters. The EPA program offers six very nice looking pins (Small Bronze through the Large Gold) to shooters as they complete the requirements for each of the six levels. Qualifying scores for these awards must be fired during competition under appropriate rules as defined in the competition program. Any NRA trainer or competition official can verify qualifying scores. Only competition scores fired in competition or in a sanctioned league may be used. Scores fired for one award may not



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be used for another.

All program brochures and pins are ordered directly through NRA National Coach Trainer at [coaching@nrahq.org](mailto:coaching@nrahq.org) or (703) 267-1401.

### **Postal Match Shooting Activities**

#### **NRA Junior Air Rifle 3-Position Indoor Postal Match**

Conducted annually, September 1 through May 5. Open to all junior shooters. The option of Sporter or Precision Air Rifle is offered in this match. The course of fire is 30 shots. This match is an individual and team event. Each competitor must enter as an individual, and the team match is an unfired match generated by the fired scores of four participating individuals.

#### **NRA National JROTC SPORTER Air Rifle Postal Match:**

Conducted annually, August through February. This match is open to all members of a JROTC team. Only sporter air rifles may be used. Choice of course of fire is 30 shots for 3-position or 40 shots for 4-position. This match is an individual and team event. Each competitor must enter as an individual, and the team will consist of four shooters.

#### **NRA National JROTC PRECISION Air Rifle Postal Match:**

Conducted annually, August through February. This match is open to all members of a JROTC team. Only precision air rifles may be used. Course of fire is 30 shots for 3-position. This match is an individual and team event. Each competitor must enter as an individual, and the team will consist of four shooters.

For postal match information, contact [postals@nrahq.org](mailto:postals@nrahq.org) or (703) 267-1482.

### **NRA-affiliated clubs**

NRA-affiliated clubs are an excellent resource for a wide variety of skill-enhancing opportunities. Many offer the opportunity to practice at your own pace, as well as a

### **Competitive shooting events**

myriad of sport shooting and training activities.

Visit local clubs and become an active member of at least one club, or start your own! Call (800)NRA-CLUB

There are various types of air rifle shooting competitions, including NRA Sporter Air Rifle Shooting and NRA Precision Air Rifle Shooting. There is also the International style of air rifle tournaments (shot all standing). Sectional Matches, from which scores are combined into a National Indoor Championship, are also an option.

The NRA conducts an annual National Air Gun Championship and Training Summit at changing locations around the country in the summer. This match draws hundreds of air gun shooters from across the country. Be part of it! Contact *rifle@nrahq.org* or (703) 267-1477.

### **Other Shooting Organizations**

**USA Shooting** is the National Governing Body for the Olympic and international shooting sports in the United States. Find out more about USA Shooting online at *www.usashooting.org*

**Civilian Marksmanship Program (CMP)** is a federally chartered not-for-profit corporation whose mission is to train U.S. citizens in marksmanship and firearm safety with an emphasis on youth. Visit CMP online at *www.odcmp.com*

Both organizations are involved in air gun shooting, sponsoring both matches and training.



APPENDIX 2

Air Gun Inspection Checklist

Inspected by \_\_\_\_\_ Date \_\_\_\_\_

Model	Rifle Rack Number	Serial Number	Passed		Comments
			Yes	No	
_____	_____	_____	—	—	_____
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Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## APPENDIX 3

The following is a sample release from liability that dive shops may require in order to fill your compressed air tanks. Because of the many variances and nuances of state and local law, please consult with an attorney licensed to practice law in your jurisdiction to prepare a release similar to the one below.

### Release from Liability

I certify that the compressed air purchased from \_\_\_\_\_  
on \_\_\_\_\_, 20\_\_ shall be used solely for the purpose of  
charging pneumatic air guns and for no other purpose whatsoever  
including but not limited to any breathing purposes.

I hereby release the business or individual(s) named above from any and  
all liability arising from providing me with compressed air for this  
purpose.

_____
Signature
_____
Printed Name
_____
Street Address
_____
City, State and Zip
_____
Date

**Please Retain this Release for your Files**





# The **NRA** Foundation

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## *Teach Freedom.™*

The NRA Coach Program  
is made possible, in part, thanks to a  
grant from the NRA Foundation and its generous donors.  
Visit [www.nrafoundation.org](http://www.nrafoundation.org)

For more information  
**National Rifle Association**  
Coach Education Program  
11250 Waples Mill Road  
Fairfax, VA 22030  
(703) 267-1401  
[coaching@nrahq.org](mailto:coaching@nrahq.org)  
[www.nrahq.org](http://www.nrahq.org)

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membership, please call (800) NRA-3888. Annual membership  
dues can be charged to Visa, MasterCard, Discover and  
American Express.**

