

# Section 1: Firearms

## Chapter 4: Muzzleloaders

### STUDENT PERFORMANCE OBJECTIVES

In this section, the student should learn:

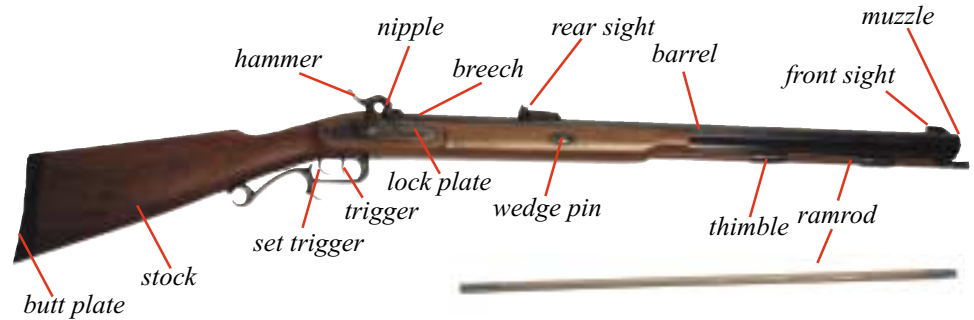
1. The differences between muzzleloaders and other firearms
2. The three common actions of a muzzleloader and how they work
3. The different grades or types of blackpowder, and which firearms they are used in
4. The name of common projectiles used in muzzle-loading firearms
5. The importance of understanding the owner's manual

### Safety First

The same four primary safety rules that apply to shotguns, rifles, and handguns also apply to muzzleloaders.

1. **Keep the muzzle pointed in a safe direction.**
2. **Treat every gun as if it is loaded.**
3. **Always be sure of your target and beyond.**
4. **Keep your finger off of the trigger until you are ready to fire.**

### Parts of a Percussion Cap Muzzleloader



### Muzzleloading

Muzzleloaders are a very early type of firearm. Our forefathers used this type of firearm in many of our country's early wars, such as the Revolutionary War.

Today, the use of muzzleloading rifles for hunting or target shooting is a rapidly growing sport. Other muzzleloader owners enjoy gun collecting or gun building.

Because of the time and difficulty of loading the projectile, hunting with muzzleloaders emphasizes the value of the first shot, which may be the hunter's only shot at any single target. There are many differences between modern firearms and muzzleloaders; you must spend time learning how to use them safely.



### MUZZLELOADING KEY TERMS

Flintlock  
In-line Percussion  
Flint  
Frizzen  
Touchhole  
Percussion Cap  
Blackpowder  
Lock or action  
Set Trigger  
Nipple  
Ball Starter  
Ramrod  
Capper

## What is a Muzzleloader?

Until now all the firearms we have discussed were breech-loaders. These firearms are loaded through their actions. Early firearms were loaded by pouring a measured charge of powder and a bullet or shot into the front end of the barrel, or the muzzle end. These early firearms are called muzzleloaders.

### Nipples and Caps No. 11 Musket 209 Primer



Capper



The two basic types of muzzleloaders used today are the sidelocks and in-lines. The hammer is on the side of the barrel of a sidelock. An in-line has the firing pin or hammer in-line with the barrel.

## Parts of a Muzzleloader

Like modern firearms, the three main parts of a muzzleloader are:

1. Barrel
2. **Lock or action** (*the firing assembly*)
3. Stock

## Types of Muzzleloaders

### Flintlock

The **flint**, or sharp-edged piece of stone, is held in the jaws of the hammer. When you squeeze the trigger, the hammer falls causing the flint to strike against a steel plate called a **frizzen**. The frizzen then moves forward, uncovering the priming pan. Sparks created by the flint striking the frizzen ignite the powder in the priming pan. The burning priming powder sends a spark through the **touchhole**, or a small hole in the side of the barrel that allows a small flame through, lighting the main powder charge.



## Percussion Cap

This type of firearm uses a priming cap that is placed on the



**nipple**, a part of the barrel that holds the percussion cap. When the trigger is pulled, the hammer hits the cap sending a spark through the nipple lighting the main powder charge.

## In-line Percussion

This firearm uses the same ignition system as the percus-



sion cap firearm. The only difference is that in an **in-line percussion ignition system**, the hammer and nipple are **in-line** with the barrel and powder charge.

## Muzzleloading Shotgun

Muzzleloading shotguns use the same ignition system as rifles, but the barrel has no rifling and is identified by gauge instead of caliber. It fires shot like a modern shotgun, but is loaded through the muzzle. Muzzleloading shotguns use a



ramrod

card and a wad of felt over the powder to cushion the shot and provide a more even shot pattern. Another card is placed over the shot to hold it in place. Muzzleloading shotguns are available in both sidelock and in-line designs.

## Safety

You can find the safety on an in-line muzzleloader on the breech end of the barrel or next to the trigger guard, just like on modern rifles. The “half cock” position on flintlock or percussion cap muzzleloaders is designed to act as a safety. Because the safety lock is merely a mechanical device and may fail, you should place more trust in your training and safety habits.

When crossing a fence or other obstruction, you should remove the cap or empty the priming pan on a flintlock for safety. Unload at the end of the hunting day or before entering your vehicle or house.

## Sights

Muzzleloaders use the same sighting systems as modern firearms. They are open sights, peep sights, telescopic, and electronic.

## Trigger

The trigger is a mechanical device that releases the hammer. Some muzzleloaders have two triggers, a firing trigger and a **set trigger**. *Set triggers (with a very light trigger pull) were designed for target shooting.* Be careful when using this kind of trigger for hunting!

## Stock

The **stock** is the part that you use to point or aim the firearm. It consists of two main parts: the butt which is held against the shoulder and the forestock, or forend, which is the section under the barrel.

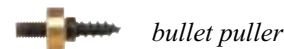
## Barrel

The **barrel** is a tube extending from the action that the bullet or shot passes through when a firearm is fired. Rifle barrels have spiral grooves cut in them to spin the bullet, but the bore of a muzzleloading shotgun is smooth.

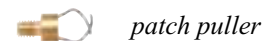
ramrod extension



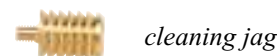
bullet puller



bullet puller



patch puller



cleaning jag



thread adapter



bronze brush



bore swab

## Ramrod

A **ramrod** is a long rod used to push the ball against the powder. The ramrod should be marked by placing it in the barrel before the firearm is loaded. Mark the rod with a permanent line to record its position when the gun is unloaded. This will help determine if the muzzleloader is loaded or unloaded. This also will reveal if there is an obstruction in the barrel.

After loading the muzzleloader, you should place the ramrod in the barrel again and rest it against the full load. Mark the ramrod to show the level of a full load in your muzzleloader. Making sure there is a full load each time will ensure that the muzzleloader fires properly.

## Black powder

**Black powder** is the fuel that drives the projectile. Only black powder or an approved substitute may be used in a muzzleloader. **NEVER USE MODERN, SMOKELESS POWDER BECAUSE IT CREATES TOO MUCH PRESSURE AND MAY CAUSE THE FIREARM TO EXPLODE. BLACK POWDER EXPLODES. SMOKELESS POWDER BURNS.** There are many modern black powder substitutes including pellets that can be used in place of black powder; consult the owner's manual for your particular muzzleloader.

## Grades of Black powder

1. **Fg** is the coarsest. Use it in large bore muskets.
2. **FFg** is not as coarse as Fg. It is used in big-bore rifles, muzzleloading shotguns, and single-shot pistols .45 caliber and larger.
3. **FFFg** is finer and is commonly used in nearly all cap-and-ball revolvers and rifles smaller than .45 caliber.
4. **FFFFg** is the most fine. It is used **ONLY** in the priming pan of flintlocks.

5. **Black Powder Substitues and Pellets** consult your owner's manual to determine if these are appropriate for your muzzleloader.

## Projectiles

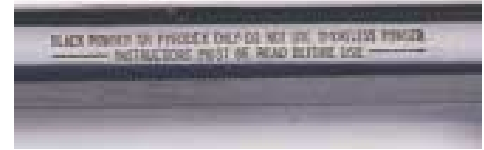
Muzzleloading rifles use three types of projectiles.

1. The **round ball** that is always loaded with a patch.
2. The **maxi ball**, a conical bullet that has lube applied to seal the gas pressure.
3. The **sabot**, which uses a modern bullet surrounded by a plastic sleeve to provide a gas seal.

## Loading a Muzzleloader

Always read and follow the manufacturer's recommendations when loading your fire-arm, and remember that moderate loads are usually more accurate. Always use a powder measure to load a muzzleloader. **Never pour powder from a powder container, flask, or powder horn, directly into the barrel.** A hot ember could still be in the barrel, and pouring too much powder in could cause an explosion, leading to serious injury.

## Muzzleloader Barrel Use Black Powder or Appropriate Substitute ONLY



## Black Powder Black Powder Substitute



## Black Powder Substitute Pellets



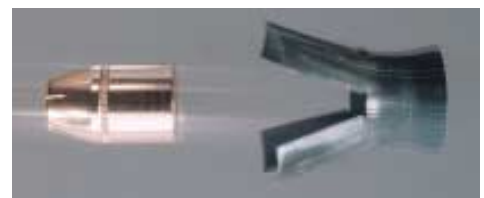
## Powder Measure



## Muzzleloader Projectiles Round ball & Cloth Patch Maxi ball



## Bullet and Sabot



## Why Didn't it Fire?

If the muzzleloader fails to fire when the trigger is pulled, keep the muzzle pointed in a safe direction, wait one minute, and then remove the cap from the nipple. Run a nipple pick through the nipple to clear it. Re-seat the projectile with your ramrod and try another cap. If it still does not fire, a CO<sub>2</sub> discharge device may be used to clear the barrel.

## Safe Shooting

1. Always point the muzzle in a safe direction.
2. Treat every gun as if it were loaded.
3. Be sure of you target and beyond.
4. Keep your finger off of the trigger until you are ready to fire.
5. Match the ball and patch to your firearm.
6. Know where your companions, bystanders, and other shooters are.
7. Never smoke while loading and shooting black powder.
8. Know how your firearm operates.
9. Make sure your firearms are unloaded at home, while transporting, and in the camp.
10. Never drink alcohol or take drugs while shooting or hunting.
11. Never blow down the barrel of a muzzleloader.

12. Never pour powder directly from a flask into the barrel.

## Possibles Bag

Many muzzleloaders use a “possibles bag.” This is a collection of equipment for safe operation and field maintenance. It may include:

- ✓ **Ball starter:** *allows the ball to be started down the barrel before using the ramrod*
- ✓ **Capper:** *allows a percussion cap to be easily placed on the nipple*
- ✓ Nipple pick
- ✓ Cleaning jag
- ✓ Powder flask(s)
- ✓ Powder measure
- ✓ Nipple wrench
- ✓ Balls or shot
- ✓ Lube
- ✓ Spare flint
- ✓ Extra caps
- ✓ Patch knife
- ✓ Loading block
- ✓ Patches or cards and wads



**REMEMBER:**  
If you shoot it you must clean it.  
Black powder and substitutes are corrosive.

## Possibles Bag



## Components of a Possibles Bag

