

FIREARMS

Introduction

The purpose of this section is to provide essential, sound information on the rudiments of handling and caring for firearms. The text and illustrations are to aid the Site Manager to identify the more basic types of firearms and handle a weapon collection with care, preventing senseless accidents to the individual as well as to the artifact.

The handling of firearms by a knowledgeable arms conservator is a generally safe operation. Handling of firearms by those ignorant of their disposition is an extremely dangerous operation. The art of gunsmithing can be traced back over four hundred years. During this time, many types of weapons have been developed with more than a few of the sundry firing mechanisms being found in the average museum arms collection. Years of study and practical experience are required to handle safely the vast range of antique and modern arms safely, with experts often asking for the help of a specialist.

Firearms were designed with one purpose in mind: an efficient tool for killing. A musket used in the American Revolution can kill as quickly and thoroughly as a modern rifle or shotgun and should be treated with the same respect. It is not unusual for a firearm to arrive at a museum in operating order and fully loaded. Grandfather did not keep his Civil War musket leaning in the corner because he thought it was pretty. He kept it for uninvited guests; loaded and ready to fire. With his passing, no one gave the old musket a second look. Then, years later, it is on display in your museum with an old, unstable charge of powder and a double load of buckshot. It is the responsibility of the site manager to keep a weapon secure until it can be examined by a trained conservator and certified safe.

Remember: to fool with a firing mechanism that is not understood is a form of Russian roulette. An ignorant examiner can work the action of a weapon to look for a load and, by doing so, load the weapon from a concealed magazine containing a stray cartridge. The C. C. Center has trained people who can quickly and safely check out a weapons collection. When in doubt, lock the weapon away carefully until it can be examined by an expert.

Evaluation Form

The evaluation form must be completed with knowledge and care. Do not attempt completion if totally ignorant of weapons. Contact the C. C. Center and you will receive competent help. Those with some experience, who are familiar with firearms, should be able to complete the form without much difficulty. The following information, in conjunction with the nomenclature and illustrations, will aid in the completion of the form. Review this material carefully and use the correct vocabulary where it is called for.

1. Accession Number: Assigned in accordance with the procedures set down in registration section.
2. Catalog Number: Issued by a qualified cataloger assigned by the Collection Care Center.
3. Condition Rating:
 - a. Factory New (Mint) - All original parts; 100% finish; in perfect condition in every respect.
 - b. Excellent - All original parts; over 80% original finish; sharp lettering, numerals, and design on metal and wood; unmarred wood; fine bore.
 - c. Fine - All original parts; over 30% original finish; sharp lettering, numerals, and designs on metal and wood; minor marks in wood; good bore.
 - d. Very Good - All original parts; zero to 30% original finish; original metal surfaces smooth with all edges sharp; clear lettering, numerals; and design on metal; wood slightly scratched or bruised; bore disregarded for collection firearms.
 - e. Fair - Some major parts replaced; minor replacement parts may be required; metal rusted, may be lightly pitted all over; vigorously cleaned or rubbed; rounded edges of metal and wood; principal lettering, numerals, and design on metal partly obliterated; wood scratched, bruised, cracked, or repaired; in fair working order or can be easily repaired and placed in working order.
 - f. Poor - Major and minor parts replaced; major replacement parts required and extensive restoration needed; metal deeply pitted; principal lettering, numerals, and design obliterated; wood badly scratched, bruised, cracked, or broken; mechanically inoperative; generally undesirable as a collection firearm.
4. Type: Designate whether the piece is a handgun, shoulder gun, machine gun, etc. This includes designations such as smooth bore, muzzle-loader, breech-loader, automatic, semi-automatic, single shot, etc. Example of type would be: Semi-automatic, gas-operated, clip-fed, air-cooled, bolt-action rifle.
5. Make: Make refers to the manufacturer's name, if known. This is often written on the lock

plate, top of the barrel, top of receiver, or on the side of the action. If the make is not known, state so. If the condition is poor and the maker's marks are obliterated, state the make if it is a common one that you are familiar with. Also, check any existing records for information.

6. Model: This information can only be filled in if the exact model is known. If model is known to handler, state so. If not look in records or reference books, or call the Division staff and have a firearms expert examine the piece and make a correct identification.

7. Number: A number is usually written or stamped in the barrel, receiver, or along the piece, if no number is apparent, state so. Be sure to record number accurately, as it is one of the few sure methods of identifying a stolen piece.

8. Name: A piece often has a name as well as a make and model designation. For example a model M-1 rifle is also known as a "Garand." Although this is generally true, there are many instances when a piece has no special name.

9. Caliber: A caliber is 1/100 of an inch and is the American unit measurement for the diameter of the bore. Revolutionary War muskets were 75 and 69 caliber, Civil War muskets were generally 58 caliber, while the small shoulder arms of World War I and World War II were 30 caliber. If caliber is not known, check the receiver, action, or barrel; often it has been stamped next to the model number and maker's name. If not sure of caliber, leave blank until piece can be checked by an expert.

10. Barrel Length: The barrel is measured from the muzzle (front) to the breech (rear). The measurement does not include the breech plug or the receiver. If you are not sure where the barrel ends and the breech plug or receiver begins, take general measurement and put a question mark after it.

11. Overall Length: Measure from the tip of the buttstock to the end of the barrel at the muzzle.

12. Finish: This concerns the manner in which the metal portion of a weapon has been treated. When evaluating finish, judgment is important. "Bright" means the metal is polished and free from color; "Blued" means the metal is deep blue or black; "Parkerized" means the metal is green-grey; "Brown" can be a light coat of protective inactive rust or patina or it can be a browning finish put on by the manufacturer as a protective coating. "Pitted rust" means the metal has oxidized and is disintegrating the surface. This

kind of rust hurts the value of the piece and destroys markings, engraving, and other outstanding features. If any weapons are in this condition, note this in the comments portion of the form. Be sure to note all engraving or other art work on a firearm. Also note if the metal parts have been painted, which is not unusual.

13. Wood Finish: This concerns the type of finish and condition of the stock or wood portion of the weapon. Be sure to note all carving, checkering, or engraving. Examine wood for dents, cracks, parts removed, severe wear, and type of finish. If a piece has been completely painted, be sure to note this on the form.

14. Markings on Metal and Wood: Carefully examine all parts of the weapon for markings. These marks, depending on the type of piece, will be apparent. On military pieces look for inspector's marks, barrel proof marks, numbers, etc. These will appear on both metal and wood. On civilian pieces examine the barrel and receiver. If markings are not visible, do not disassemble the piece to hunt for them. This should only be done by a trained conservator appointed by the C. C. Center, Record all markings and, if necessary, make sketches of unusual marks and attach to the form.

15. Accessories: List all additional equipment that is found with a weapon. Each accessory must have its own accession number and be kept with the piece it came with. Accessories can be stored in different places but accession numbers must be kept together in the records. These supportive tools add greater interpretive value to the piece and must be carefully recorded. If an accessory is unusual, fill in details in the general comments section; also check accessories for markings.

16. General Comments: This section is to be used to explain any of the above sections in detail and supply additional information concerning the weapon. Attach as many additional pages to the form as necessary. Give as much information as possible.

Handling

1. When weapons are first received, unless extremely knowledgeable with each type of action encountered, treat as though loaded and ready to fire. Do not touch the trigger under any circumstances. Never snap the hammer or firing pin as this can discharge the piece if loaded and damage it if unloaded.

Never, under any circumstances, point or aim a weapon at another individual. Many people have been maimed or killed by an “unloaded” firearm.

2. Many antique weapons are manufactured from soft, malleable metals that are highly susceptible to rusting and pitting. It is a good practice to keep several pairs of cheap white cotton gloves handy for personnel and special visitors to wear while handling metal artifacts. Gloves keep acrid perspiration from being placed in contact and reduces the chance of rusting and pitting always wipe metal parts with a clean dust cloth treated to pick up dust and moisture.

3. When examining a weapon, always do so on a padded work surface. A large worktable covered with foam rubber or a thin rubber pad is excellent. Even a plywood sheet secured on sawhorses and covered with a good felt is a satisfactory work surface.

4. Always be sure a weapon is secure when handling, holding, passing, or putting down. Never lean a weapon where it can be tripped over or can fall down.

5. Never slam a gun butt on the floor. Although this is done in many drill exercises, it is a poor practice. There have been many instances when the shock transmitted through the piece has cracked the wood and broken internal parts. Never shock an antique or modern weapon in any way.

6. When handling a hammer weapon, never place fingers between hammer and striking surface. A flint can cut a finger off and a percussion hammer can break bones.

7. Extreme care must always be taken when handling flint weapons. The flint is usually very sharp and capable of cutting to the bone. A bad cut received from a flint can go undetected until blood is noticed.

8. If a weapon has a bayonet, keep it with the weapon but unfixed. Extreme care should be taken when handling bayonets for reasons of safety as well as historic value.

9. Any weapons received with tampions (wood plugs) or rags in the muzzle should not be left in this state. Plugs should be removed and kept with the piece. They do not allow the metal to breathe and are gathering places for moisture, which causes pitting and rusting.

10. If a weapon has a sling, it should be treated with great care as slings are quite valuable and

easily damaged when old. If a leather sling is stiff or cracked, coat it with lexol, especially around swivel and clasps, until it softens enough to attempt removal. (See Leather section.) Always make a sketch of the manner in which a sling has been put on before removing it. If the sling is poor and seems very fragile, do not attempt removal but call the C. C. Center for help so as not to damage or destroy the artifact.

11. Some weapons have a cleaning kit in the buttstock or cleaning tools in the case. Do not use these artifacts as tools and do not separate them from the weapon. Make careful notes on how the tools are placed before moving them and return them to the right place.

Cleaning and Repair

The cleaning, repair, and restoration of firearms is a complex process. A gun can be a simple tool with a plain finish or an ornate work of art. A trained conservator must study each weapon to determine the extent of damage and type of treatment, if any. If a weapon has been certified in good condition and known to be unloaded, simple cleaning may be attempted as follows:

1. Never under any circumstances use a wire wheel, grindstone, buffer, or strong abrasive when cleaning a firearm or any other metal or wood artifact.
2. Do not strip a gun to its component parts unless under the supervision of a conservator appointed by the C. C. Center,
3. Never force parts that are rusted or frozen together. Such force can strip or break the metal or wood,
4. A weapon may receive gentle cleaning by being wiped off with a clean cloth that has been treated to pick up dust and leave a slight protective coating over the piece. This could be an ordinary treated dust cloth or a silicone treated cloth.
5. At times, it may be wiser to use a soft brush rather than a cloth. If a weapon has ornate engraving or relief work, a snag on a cloth could do serious damage.
6. When cleaning a weapon, always be on the alert for new damages or the spreading of old ones.

Storage

1. Keep the relative humidity at about 50% and the temperature at about 65°F.
2. Never seal a weapon in plastic or other nonporous material. Wood and metal “breathe” and require air to circulate freely around them. If moisture is trapped between the plastic and the object, the object will create its own atmosphere within the plastic, and take in and give off moisture according to the temperature around the plastic. Under certain conditions, droplets of water will form on the inside of the plastic covering. Always use wool or cotton muslin when storing in individual gun cases.
3. In most cases, weapons can be stored on open racks within the storage area. These racks are composed of unpainted pine or fir. They consist of vertical supports from floor to ceiling located approximately 16” on center. These supports can be made of 1” x 2” stock lumber with peg holes located at approximate intervals (see diagram). These storage racks can run along a wall, or can be free-standing units in order to conserve wall space.
4. Pegboard can be used for storing weapons as long as the metal hooks used to hold items on the pegboard are wrapped in adhesive tape or cloth to prevent scratching.
5. All shelving used in the weapons storage room should be of wood covered with wool felt. This includes drawers, table tops, and all other storage and work surfaces.
6. No cleaning or packing materials should be kept in the storage area. All work on the weapons is done in the conservation or work lab.
7. This room should be subject to maximum security precautions at all times. Only those personnel trained for handling collections, and more specifically’ weapons, should have access.

Nomenclature

The development of weaponry was accompanied by the development of a specialized vocabulary. It would be impossible in this brief section to discuss the complex terminology that surrounds the development of firearms. In spite of the change and complexity of weaponry throughout history, certain terms have remained constant and are more than familiar to the average person. The illustrations and labels are to aid in the identification of the ignition system and basic parts of the weapon.

The first weapon illustrated is the flintlock musket that, was used in the French and Indian War, Revolutionary War, War of 1812, Mexican War and in small quantity in the Civil War. The second weapon shown is the percussion musket, which was used in the Mexican War, Civil War, and in the wars with the American Indian on the plains. These two types are the most commonly found in museum collections. As stated before, there are many other types of actions that are completely different from the two illustrated. Included in the illustrations is a chronological explanation of ignition systems to give the Site Manager an idea of the range of actions and types of ammunition. When filling out the evaluation form, use the vocabulary given in the illustrations and explanation.

Firearms

Accession Number: _____ Catalogue Number _____

Condition: Factory New _____ Excellent _____ Fine _____
 Very Good _____ Fair _____ Poor _____

Type: _____

Make: _____ Model: _____

Name: _____ Number: _____

Caliber: _____ Barrel Length _____ Overall Length: _____

Metal Finish: Engraved ___ Bright ___ Blued
 Parkerized _____ Browned _____ Pitted Rust _____

Wood Finish: Engraved _____ Dented _____ Cracked _____
 Cut Down _____ Worn _____ Painted _____

Markings on Metal or Wood: _____

_____ (Continue on next page if necessary.)

Accessories: Bayonet _____ Scabbard _____ Sling _____ Ramrod _____

 Tools _____ Case _____ Other Accessories _____

General Comments:

SAMPLE

ONLY

IGNITING AGENTS

METHODS USED IN IGNITING THE POWDER CHARGE

FIRE

*BURNING
STICK,
were*

HEATED WIRE

*cord
SLOW BURNING
CORD or 'MATCH'*

*HAND CANNON – A burning stick,
a red-hot iron, or a live cinder*

*The agents used to fire the hand
cannons of the 14th century.*

*MATCHLOCK - A handmade
of hemp fiber, treated with salt
peter and other substances for
slow burning, served as firing
agent for the matchlock, first to use
a lock
mechanism.*

SPARKS FROM PYRIRNINGTE OR FLINT

*PYRITE
brought into
serrated
bottom
ignite*

*WHEEL LOCK – Pyrite,
contact with a fast revolving
wheel protruding through the
of the pan, threw off sparks to
the priming powder*

POWDER

flint

blow

sparks and

FLINT
outside

piece

was

sparks

principle

SNAPHAUNCE – Released by trigger
action, the cock, with a piece of

in its jaws, struck a glancing

against the frizzen to throw

kindle the priming powder

MIQUELET – As the flint in the
spring-driven cock struck the one-
frizzen and pan cover, the latter
thrown backwards permitting the
to set off the priming charge

FLINTLOCK – Employed the
of “flint striking against steel and
producing sparks”.

DETONATING POWDER
TINY PELLETS

OF
detonating
DETONATING
the
POWDER
to

PILL LOCK – Tiny pellets of
powder, when crushed by the fall of
hammer into the flash pan, exploded
fire the main charge of powder in the
gun barrel.

PERCUSSION

SEPARATE
PRIMED

PERCUSSION

CAPS

ignited

PERCUSSION CAP – Small copper caps
containing a bit of fulminate of mercury,
when placed over a hollow nipple and
struck by the descending hammer,

the main charge in the barrel. Capt.
Joshua Shaw of Philadelphia brought
this device to U.S. in 1814

TUBES

threw

TUBE LOCK – Filled with fulminate of
mercury, this little tube, 5/8 inch in length,
when crushed by the falling hammer,

fire into the main charge in the barrel.
It was the patent of the English gunmaker
Joseph Manton, about 1816

*TAPE
PRIMER*

*regular
paper,*

*TAPE PRIMER—Fulminate spaced at
intervals, and encased between two strips of
was fed to firing position over the nipple by
a ratchet wheel revolved by hammer action.
Dr. invented it in 1845.*

*DISC
PRIMERS
action of
containing*

*DISC PRIMERS - Thrown forward by
the hammer, these tiny copper discs,
fulminate, exploded when crushed by the
hammer. Resulting sparks ignited the main
charge. Christian Sharps of Sharps rifle
fame was the inventor, in 1852.*

*SELF-CONTAINED
WITHIN THE
CARTRIDGE*

*VOLCANIC—Leading the parade of self-
self-contained cartridges (though an-
ticipated
Britain
base in
speck of
this
unusual item, which came out in 1856*

VOLCANIC

FULMINATE IN CARTRIDGE

NEEDLE

NEEDLE FIRE – To explode the primer in this odd system it was necessary for the needle to penetrate through the main powder charge, also contained within the paper cartridge case. It was one of the first to be self-contained.

PIN

PIN-FIRE – A blow from the hammer drove the small pin in to the cap containing fulminate, which ignited the powder in this earliest of successful self-contained cartridges, invented in 1836 by M. Lefauchaux of Paris.

RIMFIRE - Containing fulminate in its rim, this cartridge has undergone but little change in outward appearance since it was developed by Smith & Wesson nearly a century ago.

RIM

LIP FIRE - A small lip, protruding beyond the circumference of the case, contained the fulminating charge for this 1860 invention by Ethan Allen.

LIP

CUP

CUP PRIMER - A hooked-nose hammer crushed the rim of this cartridge, one of several attempts to circumvent the Rollin White patent of a

cylinder

bored through from end to end which was held by

Smith & Wesson.

*ANNULAR
RIM*

ANNULAR RIM—Serving as a container for the fulminate, this 1865 Crispin cartridge also acted as a gas check when the charge was ignited by fire from the hammer crushing any point on the rim.

TEAT

TEAT FIRE - Another of the front-loading cartridges, this 1864 invention contained the fulminate in a round, or sometimes flat-shaped, teat which was crushed by a chisel-nosed hammer.

PIN INSIDE

INSIDE PIN-FIRE - Detonation of this unique and rare cartridge, patented by Gallager & Gladding (1859) for use in the Schubarth rifle, was by means of the hammer striking the blister-like hump on its case. This in turn drove the inside pin in to the percussion cap to explode the fulminate.

ANVIL PRIMER INTERNAL - EXTERNAL

INSIDE ANVILS EARLY

EARLY CENTER-FIRES

MORSE - A percussion cap was exploded when crushed against the heavy wire anvil attached to the inside of the case of this early metallic cartridge patented by George W. Morse in 1858

MORSE

MARTIN - Employing a primer pocket formed out of one continuous fold of the metal case, and containing the fulminate and a tiny anvil, this was one of the early metallic center-fires

MARTIN

RELOADABLE CENTER-FIRES

CUP ANVIL

BAR ANVIL

RIMMED—This early, solid head, rimmed case (which itself contained the detonating anvil) made use of a Berdan-type primer. In this type of primer the priming compound is sealed in the cap by a thin sheet of silver foil paper

EXTERNAL PRIMERS

BERDAN

SELF-CONTAINED ANVIL TYPES

RIMLESS—Utilizing a modern primer embodying the action of both explosive compound and anvil, the present-day center-fire cartridges are the result of centuries of gradual development

CROSS SECTIONS

FIREARMS STORAGE RACK

16"

Adjustable wood pegs

1" x 2" stock

(pine or fir)