

ARTILLERY MATCHES (CANNON)

IMPORTANT NOTICE

The use of the term "approved" by the ACWSA or its designated representative(s) shall mean that the artillery piece in question has been found to meet the dimension, configuration, mechanical function, and authenticity criteria of the ACWSA. It *does not* in any way imply, or infer, or guarantee the safety or the integrity of any particular artillery piece.

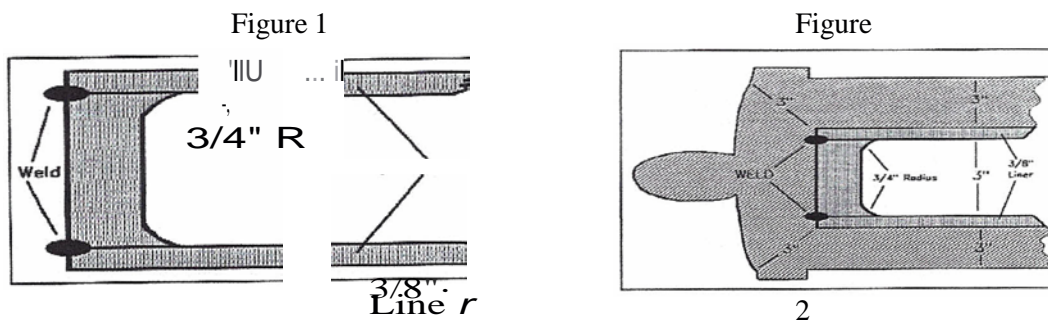
1. PARTICIPATION

Member and probationary organizations may fire field artillery pieces in a skirmish.

2. ELIGIBILITY

Actual or actual scale replicas of Civil War artillery pieces may be fired. The term "Civil War" applies to any artillery piece whose model antedates April 26, 1865. Replicas of artillery pieces must duplicate original pieces. *Minimum size requirement: barrels 30 inches long, and wheel height 32 inch diameter.* All cannon, either full size or scaled replicas, must maintain the same construction and ratio to the original in all components, including the carriage, bore, rifling in rifled guns, and exterior of the barrel. All reproduction barrels must be made of iron, steel or bronze. All cast iron reproduction barrels, reproduction barrels failing inspection, and those original barrels failing inspection must be lined with a bore liner of extruded seamless steel tubing (DOM) of a minimum ANSI standard and of a minimum 3/8-inch wall thickness.

3.



The liner must be closed at the breech end with a steel plug, shrink or press fit into the liner and welded to it. The breech plug must have a radius of at least 25 percent of the bore radius and be at least 1 inch thick at its thinnest point. (See figure 1). No reproduction barrel shall be approved that does not have one caliber's thickness of metal surrounding the bore at the breech (See figure 2 for example). Liner may be affixed by casting barrel around the liner or by other approved methods such as bonding with high strength adhesives. The method of locking the liner in the barrel shall be approved by the Artillery Officer. Cannon with rough or cracked bores, suspicious barrels, and faulty vents, faulty firing mechanisms, defective mountings and carriages or any condition that might render them hazardous to fire, shall be barred from use. The vent must provide a continuous smooth unbroken passage from the exterior to the chamber.

3. REGISTRATION OF ARTILLERY PIECES

All artillery pieces must be registered with the Artillery Officer, using the artillery registration form, and be approved in order to participate at any skirmish. Two copies of the artillery registration form shall be kept on file, one with the Artillery Officer, and one to be kept by the owner of the gun. Registration of artillery pieces shall consist of a complete inspection by the Artillery Officer of the gun, necessary tools, projectiles, powder charges, and gun crew. Each artillery piece is to be re-inspected when the piece is modified, altered, rebuilt, or transferred to another unit. It is the responsibility of the unit owning the gun to make the arrangements with the Artillery Officer or his deputies for the inspection of the piece. The Artillery Officer shall maintain a record of all inspections.

4A. MUZZLE LOADING CANNON CREW

Crews shall consist of no fewer than five artillery crew members for all classes of full scale muzzle loading guns except as noted in **4B or 4C** below.

- Gunner:** Commands the gun, and is responsible for the discipline of the crew, the direction and safe operation of the piece, and shall obey the commands of the range officials. He aims the gun and issues the commands to the crew.
- No.1:** Worms and sponges the bore thoroughly after the gun is fired, and rams powder charge and projectile.
- No.2:** Receives the ammunition from No.4 and inserts it in barrel.
- No.3:** Stops the vent while the gun is being sponged and loaded, and may fire the gun on the command of the gunner.
- No.4:** Tends ammunition chest, and delivers ammunition to No.2. He shall retire to gun trail, and lay gun at direction of gunner, and may fire the gun on the command of the gunner.

4B. MUZZLE LOADING CANNON CREW FOR MOUNTAIN HOWIZTERS, MOUNTAIN RIFLES, AND SIMULAR SIZE ARTILLERY PIECES.

Crews shall consist of no fewer than four artillery crew members.

- Gunner:** Commands the gun, and is responsible for the discipline of the crew, the direction and safe operation of the piece, and shall obey the commands of the range officials. He aims the gun and issues the commands to the crew.
- No.1:** Worms and sponges the bore thoroughly after the gun is fired, and rams powder powder charge and projectile.
- No.2:** Tends ammunition chest, and delivers ammunition to the gun and inserts it in the bore. He shall retire to gun trail, and lay gun at direction of gunner.
- No.3:** Clears and stops the vent while the gun is being sponged and loaded. He primes, and fires the gun on the command of the gunner.

4C. A FULL SCALE MUZZLE LOADING CANNON THAT DOES NOT HAVE FIVE CREW MEMBERS AVAILABLE MAY OPERATE WITH FOUR AS DESCRIBED IN 4B ABOVE WITH THE PERMISSION OF THE ARTILLERY OR DEPUTY ARTILLERY OFFICER.

5. MUZZLE LOADING CANNON MUST HAVE THE FOLLOWING TOOLS:

All tools shall approximate originals in size and shape as appropriate for the gun.

- A. Each muzzle loading piece shall be equipped with a tubular projectile gauge with a minimum length of 2-112 calibers, and of the same diameter as the bore of the cannon. Projectiles must pass freely through this tube gauge.
- B. Water bucket.

- C. Two sponges of sheep's wool or carpeting, which fills the bore and fit the chamber. One sponge for wetting and one sponge for drying bore. The staff of each sponge shall be marked to show length of full insertion.
- D. Rammer staffs shall have two marks to distinguish seating of charge and projectile, charge line yellow, and projectile line red.
- E. Vent tools: vent brush, brass vent pick, gimlet, or device for removing primers.
- F. Thumb stall or suitable vent stop.
- G. Ammunition box, with a stopping device to prevent the lid from remaining open. Ammunition box or chest shall be either an original limber chest or a reasonable copy thereof, fitted with a lock.
- H. Gunner's haversack and primer box.
- I. Lanyard or linstock of a length that shall permit the cannon to be fired while standing outside the wheel.
- J. Worm.
- K. Stopwatch.

6. BREECHLOADING CANNON CREW

Crews shall consist of no fewer than three artillery crew members.

Gunner - Commands the gun. Is responsible for the discipline of the crew, the direction and safe operation of the serving of the piece and shall obey the commands of the range officials. Aims the gun and issues the commands to the crew.

No. 1 - Opens the breech and sponges the bore thoroughly after the gun is fired. He shall retire to the gun trail and lay the gun at the direction of the gunner. He may fire the gun on the command of the gunner.

No.2 - Tends the ammunition chest. Delivers ammunition to the gun, inserts it and closes the breech. He may fire the gun on the command of the gunner.

7. BREECHLOADING CANNON MUST HAVE THE FOLLOWING TOOLS:

- A. Stopwatch.
- B. Water bucket.
- C. Two sponges of sheep's wool or carpeting that fill the bore and fit the chamber. One sponge for wetting and one sponge for drying bore. An alternative method is to use a bore brush that fits the bore and chamber.
- D. A vent brush if a quill, friction primer or firecracker fuse is used for ignition. The vent brush is not needed when using a percussion primer.
- E. Vent pick.
- F. Gimlet or device for removing primers.

- G. Friction primers, percussion primers, quills or firecracker fuse. The use of torches or any other open flame to ignite priming is prohibited.
- H. Ammunition box, with a stopping device to prevent the lid from remaining open. Ammunition box or chest shall be either an original limber chest or a reasonable copy thereof, fitted with a functional lock.
- I. Gunner's haversack and primer box, or infantry cartridge box and primer pouch.
- J. Lanyard or linstock of a length that shall permit the cannon to be fired while standing outside the wheel.
- K. All tools shall approximate originals in size and shape for the gun.

8. ARTILLERY SIGHTS

Only "as issued" sights antedating April 26, 1865, or authentic reproductions, other than optical, may be used.

9. AMMUNITION

Ammunition may not be fixed. The powder charge and projectile must be loaded individually in separate motions. **Exceptions may be made with the written approval of the Artillery Officer.** Breech loading cannons may use fixed ammunition. The use of wadding and patches is prohibited.

10. POWDER CHARGES

- A. Maximum powder charges for all cannon shall be limited to the amount permitted by the chart as published in Table 1. Only commercially manufactured black powder of American standard Fg granulation (150,000 granules per pound or 220 granules per 10 gr. wt. (avdp.) sample), or a coarser granulation, may be used.
- B. Charges must be wrapped in a powder "bag" fabricated of at least one complete layer of heavy-duty aluminum foil. For each match, the ammunition chest shall contain two more charges than the number of rounds scheduled for that match; e.g., 14 charges are required for a 12-round match. Powder charges shall not be prepared at the site of the skirmish. Breech loading cannon may use a metallic cartridge.
- C. All powder charges shall be transported and handled in closed individual containers that protects them from punctures and leakage. In use, the powder charge shall remain in the container until the charge is received by the #2 cannoneer. The containers should be of a size that shall not permit them to be inadvertently loaded into the cannon tube, yet they must have an inside diameter that shall cause the foil bag to retain its shape for easy loading.
- D. Cannons shall not be loaded with loose powder.
- E. Filled powder charges shall be kept in a limber chest. Ammunition chests shall be kept locked at all times except during artillery matches.

11. PROJECTILES

- A. Projectiles shall not be of a configuration or material that may cause unsafe pressures. Weight of projectiles shall be limited to that amount permitted by **Table 1**.
Exception: Smoothbore cannons that have a 2.25 inch or smaller bore may use solid lead round ball projectiles.
- B. Combustible, explosive or pyrotechnic projectiles are prohibited. This applies to the demonstration of artillery as well as competitive matches. Loose sand, soft clay or other malleable material is prohibited for use in cored projectiles.
- C. Saboted balls are not permitted to be used in any ACWSA artillery match, unless approved in writing by the Artillery Officer.
- D. Projectiles designed to separate in flight to produce additional hits, or which fragment in flight, are prohibited.

Table 1 describes the maximum powder charge and projectile weight for any cannon of the caliber listed. Further, if special dispensations to exceed the limits stated on the chart are granted by the Artillery Officer, it shall be done in writing and posted on the inside of the ammunition box lid.

12. ARTILLERY MATCH

A recommended match shall consist of no less than 10 rounds and no more than 12 rounds fired within one hour. Matches of more than 12 rounds shall have 5 additional minutes for each additional round added to the program.

On paper targets, the best 10 shots shall be counted for score (maximum of 50 points). If a combination of bulls eye and silhouette or breakable targets is used in a match, or for a match of more than 10 rounds for score, the Skirmish Director or Match Officer will determine point values for targets. It is suggested that breakable targets be counted as 5 points for each hit.

13. ARTILLERY FIRING REGULATIONS

Artillery pieces shall be fired in the following manner:

- A. Cannon shall compete by classes.
- B. The interval between the cannon tubes shall be approximately 16 feet.
- C. The target line shall remain static and the firing line shall be adjusted to accommodate the match program.
- D. Ammunition chests shall be placed at least 25 feet to the rear of the trail of gun. Powder charges shall be kept in ammunition chest except those delivered to the piece. Projectiles may be stored outside but adjacent to the chest for easy handling by No.4. The lid of the ammunition chest shall be closed at all times except when removing powder charges.
- E. The range forward of the artillery safety line shall be restricted to all except cannon crews and persons authorized by the Skirmish Director or Artillery Officer.

- F. The program shall specify the number of rounds to be fired. The Artillery Officer or his deputies, or the Skirmish Director shall direct the individual artillery matches and provide targets for each cannon. Artillery pieces shall be formed on the line by the Skirmish Director, or the Artillery Officer. Each class must have at least two pieces to compete as its own class. Artillery matches shall be fired in one or more relays at a range of between 100 and 200 yards. Longer ranges can be used provided that it can be safely done. A match shall consist of no less than 10 rounds and no more than 12 rounds fired within one hour.

14. CLASSES OF ARTILLERY

CLASS A: All rifled guns

CLASS B: All smoothbores

CLASS H: All howitzers

CLASS M: All mortars.

15. TARGETS AND SCORING

Drywall or plywood is recommended target backer for all artillery matches. All target backers should be a minimum 4' x 4' supported by the basic target frame. In most cases targets should be placed as close as possible to the backstop. Exceptions would be when there is adequate clear down range space such as on a military range.

16. TARGET SIZES

Recommended bulls eye targets for 100 yard competition:

Rifled Guns: "A" Target

Smoothbores: "B" Target

Howitzers: "B" Target

Recommended bulls eye targets for 200 yard competition:

Rifled Guns: "B" Target

Smoothbores: "C" Target

Howitzers: "C" Target

Bulls eye target dimensions.

The 3 ring could be eliminated and all hits outside the 4 ring would count as 3 points.

"A" Target	"B" Target	"C" Target
X Ring 4" (black)	X Ring 12" (black)	X Ring 20" (black)
5 Ring 12" (black)	5 Ring 20" (black)	5 Ring 36" (black)
4 Ring 24" (white)	4 Ring 40" (white)	4 Ring 54" (white)
3 Ring 36" (white)	3 Ring 60" (white)	3 Ring 72" (white)

17. ALTERNATE TARGETS

Any suitable target that does not create a hazardous condition may be used as an alternate target. Scoring will be determined by the Skirmish Director or Match Officer.

18. SCORING A, B, C TARGETS

Hits shall be scored by determining the center point of the projectile hole.

19. TIES

Ties shall be broken using the results from the bull's eye targets.

- A.** All being equal, the award goes to gun with the greatest number of hits in the bull's eye.
- B.** This being equal, the gun with the farthest hit from the bull's eye is the loser.
- C.** To determine relative distances, the measurements shall be from the center of the bull's eye to the center of the hit. If (a) and (b) are equal, the cannon with the second farthest hits from the center of the bull is the loser. If the tie is still not broken, the process continues to the third farthest hit, etc. The maximum number of hits to consider in breaking a tie shall be five hits.

20. EXCESSIVE HITS

When more than the required number of hits appears on a target, the following procedure shall be followed:

- A.** The score shall be penalized by the deduction of the highest hit value for each hit in excess of the required number.
- B.** Hits that can be identified as a different caliber from those fired by the assigned competitor or hits that were noted by the line judge as coming from another cannon, shall be disregarded; and shall not be counted as hits.

21. CONTROLS AND COMMANDS

In artillery firing, the cannon shall be loaded and fired on gunners' command until the match officer commands "*CEASE FIRING!*", "*DISCHARGE ALL LOADED GUNS*", "*SECURE GUNS*". Pieces shall be fired if loaded, wormed, and sponged.

22. DISABLED CANNONS

Loaded pieces that cannot be unloaded by discharge shall have the vent and bore flooded with water and the load shall be pulled via the muzzle. Loads shall be removed while the piece is on the firing line, if it is possible to do so without delaying the end of the relay. Otherwise, the piece shall be removed to a secure position until it can be unloaded.

23. LOADING MANUAL (Muzzle loading)

In general, the loading manual shall be performed in accordance with the artillery practices used in the Civil War. The following precautions shall be observed:

- A.** All members of the crew shall perform their duties while serving the piece at a walk. Running is prohibited.
- B.** The gunner shall regulate the rate and correctness by which the crew serves the piece. He shall halt and correct any improper movements or sequence in loading.
- C.** The vent shall be brushed before the bore is wormed and sponged.

- D. After firing each round, the piece shall be wormed, and thoroughly sponged with water. Care must be exercised not to sponge in such a way as to leave a pool of water in the chamber to soak the powder charge and form a glowing coal which might pre-ignite a subsequent charge. This shall be done by using one sponge to wet the bore and another sponge to dry the bore. During sponging, the sponge must be given two turns while held firmly against the rear of the chamber. After the second sponging, a visual examination of the bore shall be made to ensure that nothing has been left in the bore. This may be accomplished by using flashlight or by using a mirror to reflect the sunlight.
- E. The vent shall be stopped with a proper thumb stall from the time the sponge enters the muzzle until the rammer is removed from the bore after the projectile has been rammed.
- F. When a primer fails to discharge the piece, the gunner shall command, "**DO NOT ADVANCE, THE PRIMER HAS FAILED!**" Removal of the old primer and replacement shall be done by working in front of the carriage axle with big cannon, or over the wheel with small guns.
- G. The man inserting the powder "bag" shall not stand in front of the bore.
- H. The person ramming the cartridge or its components shall not stand with his/her body in line of the axis of the bore. He/she shall not ram the charge in such a way as to break the foil nor shall the thumb be placed over the rammer while ramming.

24. ARTILLERY SAFETY OFFICERS

Each cannon being fired, either in competition or demonstration, shall have a safety officer in uniform that is familiar with artillery safety requirements.

- A. The safety officer shall inspect implements, powder charges and ammunition prior to match and make certain that all comply with the rules. Any violation shall be reported to the Match Officer or Skirmish Director.
- B. Observe the loading and firing procedures. He shall have full authority to order "**CEASE FIRE**" should any member or members of a crew persist in unsafe practices.
- C. Observe target for hits, particularly when projectiles go through previously made holes.

25. TIMING PROCEDURES FOR SAFETY OFFICERS AND GUNNERS

The safety officer, who shall be equipped with a stopwatch, and shall regulate the rate of fire to no less than one minute between the time that the gun is fired and the next powder charge is placed in the muzzle or breech of the piece. The gunner shall follow the same procedure with his stop watch to set this safe time pace. Any rate of fire in excess of this time shall be considered an unsafe practice and shall be cause for disqualification for that skirmish.

26. INSPECTION AT SKIRMISHES

At any skirmish, the Artillery Officer may select at random one charge and inspect its weight and composition to determine compliance with the rules. Spot inspections of the cannon, the crew, and/or the equipment may be conducted at any time. Cannons, crews, equipment, and ammunition found not in compliance may cause the disqualification of the pieces from further competition at that skirmish.

Revised February 18, 2012.

TABLE 1 MAXIMUM POWDER CHARGES AND PROJECTILE WEIGHTS

RIFLES---Group 1 *		
Caliber (inches)	Powder (ounces)	Projectile (ounces)
2.0	3.00	32
2.1	3.25	38
2.2	3.50	44
2.3	3.75	50
2.4	4.00	56
2.5	4.25	62
2.6	4.50	68
2.7	4.75	74
2.8	5.00	80
2.9	5.25	86
3.0	5.50	92
3.1	5.75	98
3.2	6.00	104
3.3	6.25	110
3.4	6.50	116
3.5	6.75	122
3.6	7.00	128
3.7	7.00	134

RIFLES---Group 2**		
Caliber (inches)	Powder (ounces)	Projectile (ounces)
2.2	3.50	44
2.3	3.75	50
2.4	4.00	56
2.5	4.25	62
2.6	5.00	74
2.7	5.25	80
2.8	5.50	86
2.9	6.00	92
3.0	6.50	100
3.1	6.75	108
3.2	7.00	110
3.3	7.40	116
3.4	7.80	120
3.5	7.90	126
3.6	9.00	138
3.7	9.00	144

SMOOTHBORES---Group 1*		
Caliber (inches)	Powder (ounces)	Projectile (ounces)
2.0	4.00	16
2.1	4.20	18
2.2	4.40	21
2.3	4.60	24
2.4	4.80	28
2.5	5.00	32
2.6	5.20	37
2.7	5.40	42
2.8	5.60	48
2.9	5.80	52
3.0	6.00	56
3.1	6.20	61
3.2	6.40	67
3.3	6.60	72
3.4	6.80	78
3.5	7.00	86
3.6	7.20	96
3.7	10.00	99

SMOOTHBORES--Group 2**		
Caliber (inches)	Powder (ounces)	Projectile (ounces)
2.9	6.80	52
3.0	7.00	56
3.1	7.20	61
3.2	7.40	67
3.3	7.60	72
3.4	7.80	78
3.5	8.20	86
3.6	8.60	96
3.7	10.00	99
4.6	20.00	192

*Fg American Standard Granulation

** Goex Cannon Grade Powder only.

Field pieces designed as **howitzers** shall use a powder charge based on their **chamber diameter**, not on their bore diameter. **Heavier projectiles and powder charges may be used in artillery pieces that are properly constructed for heavier charges with the written approval of the Artillery Officer.**