

Society for Creative Anachronism



Target Siege
Siege Engine Handbook addendum
July 2024

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Revision History

Summary of changes from previous version

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Introduction

This document is designed to provide a basic structure for the safe and effective administration of target siege engine activities within the SCA. It is designed to provide a common structure for target siege activities while giving the individual Kingdoms as much freedom as possible to develop their own structure for the support of these activities.

This document is an addendum to the Siege Engine Handbook. The Siege Engine Handbook includes general rules for siege engine classifications, equipment standards, and safety procedures, along with the requirements for Combat siege engineers and marshals. This addendum includes the requirements for Target siege engineers and marshals, which have some differences from combat siege, along with additional target siege specific equipment rules and safety check requirements.

This current ruleset is intended as a starting point, leveraging existing Combat Siege engines and established SCA standards and safety guidelines. This enables siege crews to use their current Combat Siege Engines for Target Siege, and includes safety features already built in such as maximum range adjustments. This fosters joint use of typical SCA Target archery ranges and procedures, and provides a new participation avenue for the siege community that normally can only participate in large war type events. We hope this new activity will include more people in the fun of siege.

Planned future updates to these rules include guidelines for Target Only Engines.

V/r
Arabella da Siena
Society Marshal

Target Siege Rules

I. Marshalling

A. Reporting

Each Kingdom shall report its activities involving target siege to their Kingdom Earl Marshal and the Society Marshal's Deputy for Siege on a quarterly basis. Any injury resulting from siege activities and requiring professional medical attention will be reported to the KEM and Society Marshal immediately after the event where it occurred. It is recommended that each Kingdom Earl Marshal appoint a deputy to fulfill these duties and to oversee the Kingdom Siege Program.

B. Target Siege Engineer Authorizations

1. Each Kingdom will have a separate authorization procedure for any person wishing to operate or crew a siege engine.
2. Target Siege Engineer: This authorization at a minimum shall include:
 - a. Demonstration of understanding the rules for target siege
 - b. Demonstration of ability to safely operate an engine
 - c. Demonstration of ability to inspect engine for safety
 - d. Demonstration of ability to render an engine safe, should the need arise
 - e. It is RECOMMENDED that engineers be observed for at least 1 practice/event before authorizations are made final.

C. Target Siege Marshal Authorizations

Target Siege Marshal is a separate authorization from Combat Siege Marshal. All Target Siege Marshals must be members of the Society for Creative Anachronism and warranted by the Kingdom Earl Marshal or designated deputy.

To qualify as a Target Siege Marshal one must:

- Be authorized as a Target Siege Engineer or Combat Siege Engineer
- Demonstrate a thorough familiarity with the safety rules for Target Siege engines and range activities.
- Demonstrate an ability to fully inspect a variety of siege engines and ammunition for safety compliance.
- Demonstrate the ability to safely run a Target Siege range in a variety of contests.
- Demonstrate the ability to safely set up a Target Siege range.
- Have the ability to work well with other marshals, engineers and operators in the Target Siege community.
- Exhibit a willingness and ability to interact with marshals and archers from the Target Archery community. (This is important. There will likely be a good deal of overlap between the communities.)

Target Siege Marshal authorizations should not be considered to be completed until the prospect has run the range at an event or scheduled practice twice.

II. SCA Target Siege Engines and Range Layouts

A. Types of Siege Devices allowed for Target Siege activities

The types of engines allowed in target siege at this first stage are:

- Type A Direct Fire (engines that have a minimum footprint of 18 sqft (1.67 sq meters) and are capable of firing multiple Type B projectiles). (Examples: ballista, arbalest, scorpions, etc).
- Type B Direct Fire (engines are ones that have a minimum footprint of 12 sqft (1.11 sq meters) and is capable of firing a single Type B projectile)

Engines must be capable of throwing a 2ft to 4ft bolt. More engine types will be added as this activity matures.

B. Range Layout and Safety Zones

The layout is very similar to Archery ranges. At a minimum:

1. The safety zone behind the farthest target should extend at least 40 yards back, further if possible.
2. From both ends of the shooting line, the safety zone should extend outward at a 30- to 45-degree angle to a line even with the nearest target, and continue straight back from there to the required distance.

III. Target Siege Ammunition

Requirements for target siege ammunition:

- Wood Bolts with a diameter from .75 inches to 1.25 inches. Wood must have a straight grain, such as - hickory, oak, ash, or other hardwood with straight grains.
- Length: Minimum wood shaft length of 24 in (0.61 meters). Maximum length of overall bolt (shaft plus tip) not to exceed 48 in (1.22 meters).
- Metal tips: Any type of metal can be used. It must be firmly attached to the shaft so that it does not separate upon impact. Examples include conduit flattened and cut to a point, to forged broad head options. (See Appendix B for examples)
- Fletchings: Can be made of any material. This is necessary to keep the bolts flying true.

All Siege ammunition will be labeled with the name of owner and kingdom, for the purpose of identification.

IV. Engine Inspection

Siege engines shall be inspected before use (see main Combat Siege Handbook for engine equipment standards).

Target Engine inspection procedures shall include at least the following:

- A. Preliminary inspection of the engine shall be made before any shots are fired. The marshal will check for structural integrity of the components of the engine. Siege Engines shall not have any bolts, or other projections (which may reasonably be expected to contact persons should they fall on the engine) extend more than 1/2" (1.3cm). Any items such as this must be covered with sufficient rigid material, a tennis ball, or a suitable rubber stopper, to prevent injury should someone fall against them.
Triggers, release hooks, or other firing mechanism components, that would not normally be in a position that could cause injury should someone accidentally fall on the engine, are exempt from this.
- B. The operational demonstration phase of the inspection shall, at minimum, consist of 3 shots from the engine configured for the maximum power it will use. The 20 yard target is a preferable target for this.
- C. Static inspection for stability of the engine and mechanical observation of the framework and the mechanism shall be made after the firing.
- D. The overall power for the engine should be set to not shoot a bolt over 80 yards. Higher power engines and ammo combinations that shoot over 80 yards can be used at the approval and discretion of the Siege Marshal in Charge, according to range size and safety parameters.

V. Siege Engine Operation

- A. Siege engine crews shall inspect their engine for wear, stress, and fatigue before each set of shots.
- B. Siege engine crews shall immediately secure their engine should it become unsafe. They will

remove the engine from the line at their earliest opportunity.

- C. Siege engine crews are responsible for the safe operation of their engine during use. They are to make sure that crew members are clear of moving parts and that non-crew personnel are not within 5 feet (1.52 meters) of the engine before discharging their weapon, Bystanders should be at least 20 feet (6 meters) behind the engine.
- D. Siege engine crews are responsible for the safety and condition of their ammunition, and shall visually inspect each round for damage before it is fired.

It is recommended that siege engine crews give verbal commands for each phase of engine operation.

VI. Target Construction and Use

A. Target Design

Targets should be robust enough to withstand the force of the bolts, and reduce scatter or breakthrough. The current recommendation for the construction of a siege target is:

- A stack of hay bales (3 to 4 high) with a target on a thin sheet of cardboard with an archery target or other visual target (such as window shoots, etc).

B. Scoring

Scoring can be as determined as desired for the scenario. Examples of common scoring methods include:

- Same scoring as target archery
- 6 points for yellow, 3 points for red and blue, 1 point for the remaining colors inside of the outer ring.

VII. Miscellaneous

The metric conversions in this handbook are mathematically derived and do not necessarily reflect the dimensions of materials available in countries where the metric system is prevalent. The Earl Marshals of SCA Kingdoms with chapters in such countries are authorized to round these converted dimensions for use in their Kingdom's rules, and to minimally revise the dimensions based on the materials available, provided that any such rounding or revision may not diminish the safety of any participant or spectator. The measurement system used for Siege activities at an event shall be that which is native to the host group's Kingdom, unless otherwise published in advance.

Appendix A

Glossary

Arbalest: A tension-powered ballista (giant crossbow)

Ballista: A two-armed, torsion-or tension-powered, arrow-or rock-throwing, direct-fire siege engine

Ballista bolt: A spear-like projectile shot from a ballista

Catapult: A single-armed, torsion-or tension-powered, rock-throwing, indirect-fire siege engine.

Closed-cell foam: Stiff, resilient foam similar to sleeping pads

Direct fire: Delivery of a missile in a straight, flat trajectory directly into the target

Effect weapons: Novelty missiles, such as simulated animal parts, usually with no real damaging ability

Eyebolts: Hardware resembling a bolt formed into a circle on the non-threaded end

Footprint: Ground area covered by an engine as viewed from directly above, measured as length times width for engines with a square base and length times half the width for engines with a triangular or diamond-shaped footprint

Indirect fire: Delivery of a missile in a high, arcing trajectory ending at the target

Light-density foam: Foam weighing up to ½ pound per cubic foot (0.23 kilograms per 0.03 cubic meters)

Mangonel: A man-powered trebuchet

Man Powered: An engine in which the mechanical energy to launch the projectile or ammunition is supplied directly by people, pulling on ropes for example, rather than being stored mechanically (i.e. by a spring or raised counterweight) for later release.

Mechanical trigger device: A device used to hold the engine in a braced or cocked state and to activate (shoot) the weapon

Medium-density foam: Foam weighing between ½ and 4 pounds per cubic foot (0.23 to 1.8 kilograms per 0.03 cubic meters)

Onager: See catapult

Open-cell foam: Light, sponge-like foam, such as upholstery or pillow foam

Perrier: A man-powered trebuchet Siege engine

Siege Engines: Missile-launching devices designed to deliver missiles larger than already established small arms ammunition

Trebuchet: A gravity-or man-powered, sling-type, rock-throwing, indirect-fire siege engine

Turnbuckle: Hardware consisting of 2 eyebolts fitted to a threaded barrel, used for adjusting the length of cables

Winch: A winding device, usually geared and equipped with a ratchet

Windlass: A winding device, usually consisting of a spool with double crank handles, a set of pulleys, and hooks, but not normally equipped with a ratcheting device.

Appendix B

Target Siege Ammunition examples

It is not the purpose of this document to prescribe a particular projectile for use in Target Siege. Rather, a few designs that have been tested and shown to be worthwhile are presented for consideration. As each engine and crew are unique, so will be the munitions. The Target Siege Marshals

A. Example: A minimum standard target siege munition

This projectile has been tested and shown to be effective and safe when deployed properly. Additionally, it is easy to manufacture, and cost is low. It is suitable for use on soft targets only such as paper or cardboard targets pinned to a stack of hay bales.



Materials:

- 3/4" EMT (electrical metal tubing) thin-wall. It has a nominal inside diameter of about 7/8".
- 1" diameter dowel. Generally comes in 4 foot lengths.
- 2" wide "Gorilla" tape. It holds up better than duct tape and is stiffer.

Tools:

- Hack saw

- Wood saw
- Heavy hammer
- Anvil or heavy wood block
- Scissors
- Razor knife
- Marker

1. Cut the dowels to the length you want. The examples shown are 2 feet long, so you can get two out of a 4 foot length of dowel.
2. Cut the conduit into as many 4" sections as you will need for tips. It is recommended that you have at least six finished bolts for a typical competition. More is better as they may get lost or damaged.
3. Mark each 4" section of conduit at the 2" mark.
4. Begin hammering the conduit flat to close it off. Start closer to the mark and work to the end.
5. Continue hammering the conduit flat. Flip it over and work from the other side to keep the flattening even.
6. Keep hammering until you have about 1" of fully flat and 1" tapering back up to full diameter. This results in having about a 2" length socket.



7. You may need to get the "socket" end back to round. You can do this by squeezing it in a vise.
8. You will need to taper the dowel for the head to go on. Hammer the tip onto the shaft. It should be a VERY tight fit. You may want to consider pinning and/or hot glue to secure the head to the shaft.
9. Cut the corners off the flat part of the tip at about a 45 degree angle. This results in a nice 90 degree "field point" that has been shown to work well for target shooting. They are NOT suitable for plywood backed targets.
10. Be sure to monitor the condition of these heads as you are shooting. They can weaken and bend over time. It would be advisable to have several spares on hand to replace any heads that get damaged through use.



11. Put the Gorilla tape fletches on. About 5” total length and leave 1” of dowel showing at the tail end. This allows for better string engagement. If you want to take the time to do it, “rifle” the fletches so that the bolt spins during flight for better stability. The examples shown are offset by 1/4” from one end to the other over the 5” length of the fletch.
12. Cut the fletches to an even shape and size. It can be helpful to use a template to ensure all fletches are the same. Trim off any extra tape.
13. Sand and finish the shafts. Oil or paint as you see fit. A unique color scheme can make it easier to identify your own bolts if more than one engine is shooting at the same target.

B. Example: Rebar Head munitions

These projectiles have become the development team's preferred munition for soft targets. They're simple and relatively easy to make and cost is still low. And they're considerably more durable than the conduit heads.



Materials:

- Hardwood dowel of desired size (3/4” used in example)
- Rebar of desired size (3/8” used in example)
- Gorilla tape and thin cardboard or plastic (for fletching)

Tools:

- Hand held drill motor with chuck that can accept your rebar of choice
- Drill bit the size of your rebar of choice
- Bench grinder

- Hack saw
- Disk Sander
- Scissors and razor knife (for fletching as in first example)

1. Cut the rebar to the desired length. In the example, the rebar pieces are 3 1/2" long. 2" are in the shaft and they extend 1 1/2".
2. Grind off any sharp burs on the ends using the bench grinder.
3. Chuck the rebar in the drill motor.
4. Use the bench grinder to grind a point on one end of the rebar as you spin it using the drill motor. This makes for a nice even tip.
5. Use the drill motor and drill bit to bore a hole in one end of the dowel to a depth of 2". Take extra care to ensure the bore is parallel to the dowel.
6. Use the disk sander to sand down the drilled end of the dowel to within 1/8" of the drilled hole. Make a smooth taper to the full size of the dowel, about 1" long should be adequate.
7. Press fit the rebar into the bored hole in the dowel.**
8. Fletch and finish as in the first example. In development, it was found to be beneficial to have a thin layer of cardboard or thin plastic sheet between the two layers of Gorilla tape.

** The examples were done on a horizontal drill press with the shafts anchored to the table and clamped parallel. If this is not available, an acceptable alternative is to drill the holes a bit oversized and secure the rebar with hot glue.

C. Example: Forged Head Munitions

These are the only heads the development team used against hard targets such as plywood or sheet metal. They're also suitable for soft targets. The down side is they're considerably more expensive. These examples were made to specifications by a supplier in Pakistan.

