

# Pumpkin Blast Construction & Safety Rules

Welcome Pumpkin Blaster! In this document, you will find the safety rules and building parameters for competing in Pumpkin Blast. Please read the rules carefully. Failure to comply with construction and safety rules may lead to disqualification. If you have questions that are not addressed here, please email us at [rules@pumpkinblast.com](mailto:rules@pumpkinblast.com).

Access to the launching area may include a dirt path into the field. Please ensure that you have adequate and safe transportation for your device!

Also, please note that all pumpkins for the event will be provided at Tate Farms, on the day of the event, as part of your registration fee.

As Pumpkin Blast draws closer, we will post more details on device drop-off, event-day registration and pumpkin pick-up. Keep checking back on our Facebook page at <http://www.facebook.com/pumpkinblast> for updates. Team Captains will also receive emails from the organizers with important updates as the competition draws closer.

## 1.0 Primary Rules

- 1.1 Safety of all involved is the primary concern. In all cases the judge's decisions on safe design or operating conditions shall prevail. Any questions involving approvals or best practices in design or use of materials are subject to judges' decisions.
- 1.2 Secondary are the intended rules and guidelines meant to allow the competition to occur in the manner of good sportsmanship. Deviations in design or use of materials seen by the judges as an attempt to circumvent the rules in any manner will be grounds for handicapping, denial of competing, or disqualification – at the judge's discretions

**These two rules supersede all other rules below.**

## 2.0 Teams

- 2.1 There will be two competition areas with prizes awarded within each:
  - 2.1.1 The Main Competition is for larger devices, with a greater distance to the target. Teams in this category may have up to 4 members on the firing line.
  - 2.1.2 The Short Range Competition is for smaller devices, with a shorter distance to the target. Teams in this category may have no more than 2 members on the firing line.
- 2.2 Main Competition: Within each competitive category of the Main Competition, the divisions will be based on the age of the competitors. These divisions are:
  - 2.2.1 Adult – includes all competitors above the age of 18 not enrolled in college or university and all competitors that are part of a corporate-sponsored team.

- 2.2.2 Collegiate – all members of the team must be currently enrolled in a college, university, community college, trade school, or similar institution. No more than half of the team members may be graduate students.
  - 2.2.3 Youth – all members of the team must be at least 14-years old but no older than 18-years old. No members of the team may be currently enrolled in college, etc.
  - 2.2.4 Teams should consist of no more than 4 competitors, and all team members must meet the qualifications of the division, as deemed appropriate by the organizers.
  - 2.2.5 Note – Collegiate and Youth teams may have an adult advisor / coach who does not count as one of their 4 team members. Actual construction and firing of the device must be done by the youth/student members of the team. All teams may have additional team members involved in the design and construction of the device. During competition, however, only the 4 registered team members will be allowed in the pit at one time.
  - 2.2.6 Based on the number of entrants in each age-group, the organizers reserve the right to combine 2 or more of these divisions for competition with appropriate adjustments made to the scoring.
- 2.3 Short Range Competition: This includes all teams entering the Short Range Competition, regardless of the age of competitors. Competitors in the Short Range Competition must be at least 12 years old. Short Range Competition teams must include at least one adult over age 19, or, if both team members are under age 19, must have an adult advisor or coach. Teams are comprised of only 2 competitors.

### **3.0 Pumpkins**

- 3.1 Pumpkin Blast organizers shall provide all pumpkins for the event. Competitors will have access exclusively to pumpkins known as “Field Trip Variety Pumpkins” which average between 5-7 pounds with an average approximate diameter of 7”. **Please be aware that our ammunition is a PLANT! It is subject to climate and crop conditions each season and the will of Nature. The organizers and Tate Farms make no promises as to the actual size and weight of pumpkins which grow in the field. Competitors should be prepared for variance in the actual size and weight of available pumpkins.**

### **4.0 Device Construction**

- 4.1 Devices that fit into the following categories shall be permitted:
- 4.1.1 Air Cannon (Main Competition Only)
  - 4.1.2 Mechanical (consisting of):
    - Catapult
    - Trebuchet
    - Sling Shot
    - Human Powered or Other Devices (at the discretion of the Judges)

- 4.2 All pumpkins fired must remain intact until they impact the ground to obtain an official measurement.
- 4.3 No part of the machine shall cross the firing line.
- 4.4 No Wadding (including bean chaff, straw, foam, metal, or any other object.)
- 4.5 No explosives or liquid propellants are allowed.
- 4.6 Air cannons may NOT use PVC to contain pressurized air / gas.
- 4.7 Pumpkins are not to be altered in any way, excluding marker paints. All pumpkins must be in their natural state. Pumpkins fired from machines during competition will be measured from the judges' designated point of measurement.
- 4.8 Devices that require fuel/engine for the primary actuation will NOT BE ALLOWED (for example, generator/AC power for air compressor to charge is allowed – but must be turned off during shoot. Not allowed will be gasoline or similar fueled motor driving any sort of kinetic motion). Powered devices may be used to “crank down” the launching mechanism on mechanical devices. Teams should plan to bring a generator if power is needed as organizers may not have the ability to provide power.
- 4.9 There are no direct size/weight restrictions for the machines; however, setup for each team MUST be accomplished manually and by hand/hand operated tools (powered hand tools allowed). Devices may be hauled by trailer to near the launch site, but may not be fired from the trailer or maneuvered into final location via trailer. The final move (approximately 20 feet), setup and assembly MUST be accomplished by no more than 4 team members for devices in the Main Competition or 2 team members in the case of Short Range teams (an adult advisor / coach may be present to observe in the case of the youth and collegiate division teams or Short Range teams consisting of 2 youth members). Each team must accomplish the final move and setup within 45 minutes (again without aid of hoist, crane, forklift, dolly, etc). Failure to meet these guidelines will incur a 20 point penalty, and depending on the infraction may result in judges' decision to disqualify.
- 4.10 Devices may be staked to the ground if the teams deem it necessary.

## **5.0 Safety Rules**

- 5.1 All team members are to follow Pumpkin Blast Rules. In case of an infraction, the team will be penalized or disqualified, depending on the nature of the rule broken at the discretion of the judges. If you are penalized, you will forfeit one of your allocated shots. **There will be Zero Tolerance for those who break safety rules.**
- 5.2 Machines may not fire until the judges inspect and approve them to be safe by the Pumpkin Blast Safety Rules. Any alterations after being inspected will require another inspection to be able to fire. If your machine has been altered after firing, you will need to be re-inspected by a safety inspector official in order to fire again. The safety committee may require the team captain to fire their machine during the inspection process to ensure the machine is safe enough to compete.

- 5.3 It is at the discretion of the Safety Inspector to require a 15 min. fully cocked stress test and test fire to ensure public safety.
- 5.4 Ceasefire: No machine is to fire when a cease fire has been ordered. If you are locked and loaded or pressurized at this time, contact judges so you can safely discharge or bleed off air pressure.
- 5.5 All members and / or captains are to contact an official judge before climbing any machine during competition and must have clearance from the safety committee. No one is to climb any machine while it is cocked, elevated or in a dangerous situation. Teams using ladders to assemble, load, repair, or dismantle equipment must have a spotter to hold the ladder and/or a tie-off to the ladder to prevent injury. Teams are recommended to use a safety harness when climbing over 10 feet above the ground.
- 5.6 The judges reserve the right to request a team captain to dismantle his or her machine to inspect for foul play. For example, use of any propellant other than compressed air. If you are caught using any chemicals (NITROGEN, HELIUM, HYDROGEN or any illegal substances other than compressed air) you will be banned.
- 5.7 All team captains must sign the field roster stating that they have received, read, and understand the rules. This sheet will be on the field and given to the judges. If it is not signed, you do not fire. All team members must sign the liability waiver. Youth team members must have an appropriate adult sign the waiver.
- 5.8 Hard hats and eye protection are to be worn by all fire line personnel in the pit when firing. It is the team's responsibility to provide these for each member.
- 5.9 All cables and cable clamps must be sized and installed properly. Any shackles on a machine must have a safety tie on the pin to prevent them from loosening.
- 5.10 No Lag bolts or wood screws should be used in critical load bearing applications (Such as: member to member connections, automatic brake, dog lock, cocking device, or any application in which excessive tension to the bolt/screw may occur). Lag bolts and wood screws are considered low end load bearing components and will not be approved in any application where stress can fatigue the lag or the hole made for it. The approved method of attachment in these areas is with carriage, shoulder, or hex head bolts with washers and backing plates.
- 5.11 All winches and cocking devices will need safety cages. Winch operators must be protected at all times when cocking their machine or throwing device. This is for any team who is placed in the line of fire during winch operation. If you are in the line of fire of the winch, the machine must have a safety cage installed between the team member in the line of fire and the winch in case of winch or cable failure.
- 5.12 Inspect all hydraulic lines each time you cock or lift your machine. Make sure winches can handle the load and cables are in good condition. Make sure your release mechanisms are heavy enough to handle the load. Make sure you have an automatic brake or a dog lock on the winch or cocking device.

- 5.13 All cannons must be secured to prevent upward recoil. It is the machine designer's responsibility to make sure winches and cables can handle the load put on them.
- 5.14 Compressed air machines must have a bleed off device (valve) to allow for safely removing the air if the machine cannot be fired. This device should be installed so that it does not blow directly to the dirt or face level to prevent eye injury. If the device is exposed to the body level it should have a shield installed to deflect the air. All air inlets on tank must have a Check Valve installed.
- 5.15 All sections of your cannon barrel must be properly secured so that they will not separate and will stay stationary. Make sure you do not pinch or collapse your barrel when using an aluminum barrel. All cannons not using an actuated valve powered by air or some other mechanical device must have a spring-loaded, normally-open valve. The use of Plastic Polyvinyl Chloride (PVC) will not be allowed for air cannon barrels due to the safety hazard of this type of pipe. This pipe is not for compressed air. The manufacturer of the pipe states it is unsafe to transport air in PVC pipe no matter what schedule you use. Air vessels made of PVC will be illegal. No PVC or plastic is allowed in pressurized areas of the vessel. A smaller A.S.M.E. relief valve can be placed on the vessel when the operation requires the tank to be filled from a cylinder tank. This valve will be set at or below the allowable working pressure of the vessel. All relief valves must be maintained in proper working order during operation of the machine.
- 5.16 Aluminum barrels suspended by cables must have the cables anchored to a substantial base to prevent whipping around. Plastic coated cable will not be allowed.
- 5.17 All portable air storage vessels used to fill their cannon must be stood upright and secured to a stationary device. No tanks or vessels may be stored lying down on the ground or transported lying down in any vehicle. Every vessel must have a safety cap on it when not in use. All nipples, fittings, manifolds, or airlines must be capable of handling the pressure of air on them. This is your responsibility.
- 5.18 Any air vessel is the responsibility of the owner or team captain to make sure it is safe to use. If the safety committee feels your vessel is not safe due to rust, pitting or damage, you will have to correct the problem before the vessel can be used.
- 5.19 Hoses must be in good operating condition. Chafed or cut hoses must not be used. If using Chicago type quick connects, safety pins must be installed in each of the two holes. Any recommended safety equipment designed for any type of coupler must be used! All air lines 1" in diameter and larger must be cabled to a stationary device.
- 5.20 All catapult and trebuchet machines must have a safety strap or mechanism to hold the throwing arm or boom in case of misfire when loading. You are responsible for making sure everyone stays clear of your machine, in case of a misfire. Personnel handling ropes or cable should wear gloves such as a sailing or repelling type to prevent burns.

- 5.21 All Team Captains are responsible for clearing the areas around and behind their machines while cocking or firing machines at all times.
- 5.22 All machines must be fully relieved before being loaded. (Example: Do not load cannon while pressurizing tank)
- 5.23 No machine may fire or discharge without sounding a horn or warning device.
- 5.24 Structural soundness and safety of all materials used are the responsibility of the team. Judges will perform onsite inspection and any machine deemed unsound will not be allowed to compete.

Additional rules form a guide for the various device categories . These are NOT complete. These present a guide for safe design and operations. Build it safe, operate it properly and there will be no problem. Final decisions will reside SOLEY with the judges.

## **6.0 Safety Rules**

- 6.1 All pressure vessels shall be built to the American Society of Mechanical Engineers (A.S.M.E.) construction codes. The vessels will have a manufacturer's nameplate with proper (A.S.M.E.) stamping and will be marked with the vessel's allowable working pressure.
- 6.2 All pressure vessels shall be equipped with an A.S.M.E. approved and sealed relief valve set at or below the allowable working vessel. The owner/user shall assure that the relief valve(s) is functional at all times. The relief valve(s) shall be tested by the owner/user at the time of inspection.
- 6.3 Each device shall be inspected by the approved judges or representatives for safety before it can enter the field.