Rampaging Chariots – Luton Competition Rules 2025

Definition of a Rampaging Chariot

A Rampaging Chariot is a radio controlled sporting vehicle designed to undertake the Assault Course, Sumo, Tug-of-War and Two-a-Side Football events of the Rampaging Chariots Robotic Games.

A Rampaging Chariot must conform to the following characteristics:

1. Powered by cordless electric drill motors fitted with epicyclic gearboxes.

2. Energised by battery power.

3. Two motor control boards built by students to a standard design and containing a PIC microcontroller loaded with standard software issued by the Rampaging Chariots Guild.

4. Radio controlled.

Construction and Use Regulations

The below are general rules or guidance, which will be applied at the discretion of the technical support team during the competition.

General

- Entries must be largely built by students although assistance from parents or teachers is permitted.

- Modifications to standard Rampaging Chariots within the rules are encouraged, but the aims and spirit of the Rampaging Chariots Project is paramount. Our aims are to interest young people in engineering and provide a fair and fun competition.

- Prior to the competition, all robots will be inspected by Leonardo engineers to confirm the construction is within the spirit of the competition, and commensurate with that expected from school pupils below the age of 18 with access to normal school workshop tools and facilities.

- If you wish to confirm the legitimacy of a possible modification prior to the competition, please contact the organisers by email for guidance: schools.outreach@leonardo.com

Weight & Dimensions

- Maximum weight: 18Kg.

- Maximum dimensions:
  - Length 600mm
  - Width 400mm
  - Height 350mm (to enable passage under assault course cat-flap)

- For the Sumo Competition, an additional protrusion of up to 100mm from the chassis is permitted but must be detachable within 1 minute.

- Chariots may have one pair of football ball guides that project up to 50mm from the chassis. A scoop or bucket that can hold the football off the ground is not permitted.

- No spinning arms or weapons of any type are permitted. Sharp edges are not permitted.

Motors

- Motive power must be provided by cordless electric drill motors fitted with epicyclic gearboxes.
- Additional motors, servos or springs are permitted to power a football kicker or similar.
- The use of kinetic energy storage devices such as a flywheel is encouraged.

Batteries

- Maximum battery voltage: 20V
- Each battery pack must be protected using a 15A fuse in series with the positive output terminal.
- Batteries must be firmly attached to the chassis during competition. (Velcro is used in the standard kit)
- Chariots must have a means of quickly and easily removing power from the motive system. Battery connectors, on/off switches or removable plugs are examples. This must be visible and easy to access.
- Use of the following battery technology is permitted:
  - NiCd
  - NiMH
  - Sealed Lead Acid (SLA)
  - Lithium-Ion batteries designed specifically for cordless power tools

    Other battery types may be acceptable – please contact schools.outreach@leonardo.com
- Charging
  - Cordless drill or power tool batteries must be charged using the matching charger supplied with the tool.
  - Other battery types must be charged using commercially available chargers suited to the battery technology and capacity used.

Wiring

- Rampaging Chariots must be fitted with at least one visible red power indicator per battery pack, that illuminates when the power is connected.
- All power connections must be of an adequate grade and adequately insulated.
- Cables must be routed so that they are not at risk of being cut or damaged.

Radio Control

- Rampaging chariots should use the 2.4GHz frequency band.
- 27MHz or 40MHz frequency bands are permitted, subject to the selected frequency not being in use by any other competitors.

- Use of the 35MHz is not permitted.

- Radio transmission devices that interfere with the operation of other Rampaging Chariots are prohibited.

The Games

- Each Team may enter one chariot into each Game.
- Prior to being allowed to compete, all entered Rampaging Chariots must pass an “MOT” inspection on the day of the Competition. This will cover general safety and compliance with these rules.
- Competitors must be 18 years old or less.
- Only authorised staff and referees may touch the Rampaging Chariots during a match or bout.
- Intentional collisions are prohibited.
- If a team experiences a technical problem that cannot be resolved quickly, the organisers may, at their discretion, allow rescheduling to complete repairs.

Assault Course

Competition:

- Rampaging Chariots race side by side through a timed 20m assault course consisting of a series of obstacles designed to test both robot and driver.
- The eight robots completing in the fasted time go forward to a head-to-head knockout competition comprising Quarter-finals, Semi-finals and Finals.
- There is a 5 second time penalty for each pole knocked over and a 15 second penalty for each obstacle not completed.

If the course is not completed within 4 minutes the distance travelled is recorded.

Sumo

Competition:

- Two Rampaging Chariots compete against each other and attempt to push each other off a raised circular platform or “dohoy” (1.85m / 6ft diameter).
- The winner is the first to push their opponent off the platform.
- If both robots fall off, the winner is the last to touch the floor.
- Three successive bouts are played in each game. The winner must win 2 or 3 of these.

Specific Rules:

- No devices are allowed to anchor the machine to the floor.

Tug of War

Competition:

- Two Rampaging Chariots are attached by a rope and attempt to pull each other into a chasm.
- The winner is the Chariot that pulls its opponent into the chasm.
- If neither machine is pulled into the chasm within 30 seconds, the machine farthest from the chasm will be declared the winner.

- Three successive pulls are played in each game. The winner must win 2 or 3 of these.

Specific Rules:

- No devices are allowed to anchor the machine to the floor.
- An 8mm eyebolt or similar must be fitted to the rear of each participating Chariot

Football

Competition:

- Football teams of 2-a-side play football on a pitch 5m wide and 5m long with 2 nets at opposite corners.
- Teams with a single chariot will be paired with another team for this event (competitors may formed teams themselves if officials are informed in advance).
- A random order of teams compete in a Knockout Competition.
- Winner is the team that scores the most goals within 3 minutes.
- If after 3 minutes the result is a draw, 1 minute of extra time will be played and the 'golden goal' rule applies.
- If after a total of 4 minutes the result is a draw, simultaneous penalties will be taken with an inert goalkeeper facing towards the centre. The team to score the first goal wins.
- Competitors must not tackle an opponent who is not in possession of the ball.
- Two Yellow cards = Red card which results in the offending robot being sent off the pitch for 30 seconds or 1 minute. (Referee's Decision)

Specific Rules:

- A device to "kick" the football is permitted.

Safety Notes

Building and operating robots can be hazardous if basic safety precautions are not taken. We will take all reasonable precautions to ensure that the on-site event is conducted in such a manner that safety of all personnel is our highest priority. When building and testing robots at home, school etc., you should take the same approach of safety first. If you have any concerns regarding safety issues, you are encouraged to contact The Rampaging Chariots Guild for guidance.

- Sharp edges on the exterior of the robot are prohibited.
- No spinning arms or weapons of any type are permitted.
- Maintenance within the pits area will be limited to basic hand tools, the supply and safe use of which is the responsibility of the Team Supervisor.
- No grinding or welding will be permitted.
- A staffed Technical Support facility is available to assist with larger maintenance / repair tasks.
- The supplied Radio receivers will maintain the last valid signal received in the event of a transmitter power failure (unless otherwise programmed). If a false signal is received outside the normal control range the motor driver board will stop the Rampaging Chariot from moving.
- At the event Rampaging Chariots not competing within an arena are only be powered on in the Pits area if the robot is off the ground with its wheels free to rotate.
- In the Arena, the person connecting the power must stand to the side of the robot.

NOTE: No practice area is available at the event and Rampaging Chariots are NOT permitted to be driven unless competing within one of the areas.