

UKROC 2025 Mission

1. ROCKET REQUIREMENTS

Rockets must not exceed 650 grams gross weight at liftoff. The overall length of the rocket must be no less than 650 millimeters (25.6 inches) as measured from the lowest to the highest points of the airframe structure (including fins) in launch configuration. They must use body tubes of two different diameters in their external structure, the upper one of which must have sufficient inside diameter to hold an egg of up to 60mm length sideways and the lower one of which must be no greater than 57 millimetres in outer diameter (T-70 tubing). Each of these body tubes must be no less than 150 millimetres (6 inches) long. *The rocket must separate into two non-connected parts for recovery, with one piece containing eggs and altimeter (this component will be timed) and the other containing the rocket motor. Each piece must recover safely by parachute.* Rockets must have the team name and address to aid recovery. Rockets flown at the Finals will be required to have a painted surface, 3D printed items may be self-coloured or painted. Non-compliant rockets will incur a 5-point flight score penalty on their first flight at the National Finals. Rockets may not be commercially-made kits designed to carry egg payloads with the only modification being the addition of an altimeter compartment. They must have only one stage ie the motor(s) must ignite at take-off.

2. PAYLOAD

Rockets must contain and completely enclose two raw hen's eggs of 57 to 63 grams mass and a length of up to 60 millimetres. These eggs must be oriented "sideways" for flight, i.e. with the long axis of the eggs perpendicular to the long axis of the rocket. The eggs must both return from the flight without any cracks or other external damage. The eggs will be issued to the teams by event officials during the Regional Qualifying events and National Finals, but teams must provide their own eggs for Testing or self-qualifying flights (if allowed). The eggs and altimeter must be removed from the rocket at the end of a Regional Qualifying event and National Finals flight in the presence of a designated UKROC official and presented to that official, who will inspect the eggs for damage after their removal and will read the altimeter score. All coatings, padding, or other materials used to protect the eggs must be removed by the team prior to this inspection. Any external damage to the eggs noted after its flight and removal from the rocket by the team will lead to disqualification.

3. DURATION SCORING

The duration score for each flight shall be measured from first motion at lift-off from the launch pad until the moment that the section of the rocket containing the eggs touches the ground (or a tree) or until it can no longer be seen due to distance or to an obstacle. Times must be measured independently by two people not on the team, one of whom will be an official UKROC observer, using separate electronic stopwatches that are accurate to 0.01 seconds. The official duration will

be the average of the two times, rounded to the nearest 0.01 second, with .005 seconds being rounded up to the next highest 0.01 seconds. If one stopwatch malfunctions, the remaining single time will be used. The flight duration goal is a range of 41 to 44 seconds. Flights with duration in the range of 41 to 44 seconds get a perfect duration score of zero. Duration scores for flights with duration below 41 seconds will be computed by taking the absolute difference between 41 seconds and the measured average flight duration to the nearest 1/100 second and multiplying this by 4. Duration scores for flights with durations above 44 seconds will be computed by taking the absolute difference between 44 seconds and the measured average flight duration to the nearest 1/100 second and multiplying this by 4. These duration scores are always a positive number or zero. The target duration range for flights at the Finals will be the same regardless of the altitude target.

4. ALTITUDE SCORING

Rockets must contain one electronic altimeter approved for use in UKROC regional finals. This must only be a commercially available altimeter, including Perfectflite APRA (no longer available but still allowable) pnut or firefly, estes altimeter, or Jolly logic one and two. Other commercial altimeters may be considered. The altimeter bay must be able to accommodate the APRA. The altitude performance goal for qualification flights is 790 feet (241 metres). The altitude score will be the absolute difference in feet between the altitude performance goal in feet and the altimeter-reported actual flight altitude in feet (always a positive number or zero). At the international final altimeters are provided by the organisers.

5. ROCKET MOTORS

See [UKROC rules](#), paragraph 3 for details. View approved motor list [here](#).