

## ELASTIC LAUNCH GLIDER

1. **DESCRIPTION:** Prior to the tournament teams design, construct, and test elastic-launched gliders to achieve the maximum time aloft.

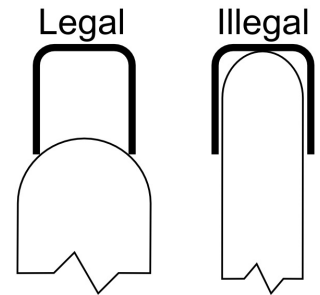
**A TEAM OF UP TO:** 2      **EYE PROTECTION:** #5      **IMPOUND:** No      **TIME:** 5 minutes

2. **EVENT PARAMETERS:**

- Teams bring up to 2 gliders and flight log(s). Teams may bring any tools and their flight log.
- Competitors must wear eye protection rated ANSI Z87+ **at all times** while in the cordoned area of the competition. Teams without proper eye protection must be immediately informed and given a chance to obtain eye protection if time allows, otherwise they must not be allowed to compete.
- Event Supervisors must provide all measurement tools and timing devices.

3. **CONSTRUCTION PARAMETERS:**

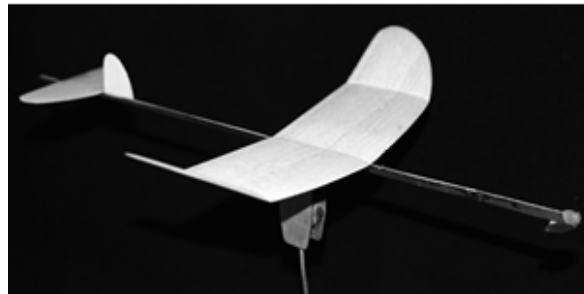
- Gliders may be constructed from published plan(s), commercial kits and/or student designs.
- Competitors must not use any components with** pre-glued joints or pre-covered surfaces.
- The glider must be constructed only from any types of the following materials: wood, foam, paper, plastic film, carbon fiber, **tape**, and/or glue. Ballast may be any malleable non-metallic substance. The functional components may be attached to each other using tape, thread or glue.
- The mass of the glider throughout the flight must be **more than 3.0 g** and less than **10.0 g**.
- Wingspan must not exceed **28.0 cm** at any time.
- The blunt nose of the fuselage, when inserted into a lip balm cap with inside dimensions of ~1.57 cm deep and ~1.37 cm wide must not touch the end.
- Launch handle(s), **excluding elastic, must be less than 1 m long in any orientation** and be of a safe configuration. **The elastic used in the launch handle must be non-metallic and must be in contact with the glider throughout the launch.**
- Each glider must be labeled so the Event Supervisor can easily identify the team to which it belongs.



4. **THE COMPETITION:**

- The event must be held indoors. Tournament officials must announce the room dimensions (approximate length, width and ceiling height) in advance of the competition. Tournament officials and the Event Supervisor are urged to minimize the effects of environmental factors such as air currents.
- Once competitors enter the cordoned off competition area to trim, practice, or compete they must wear **eye protection at all times** and not receive outside assistance, materials, or communication. Teams violating these rules must be ranked below all other teams. Spectators must be in a separate area.
- During inspection each team must present a flight log of recorded data. Data must include 4 or more parameters (3 required and at least 1 additional) for 10 or more test flights prior to the competition. The required parameters are: 1) estimated/recorded peak flight height after launch, 2) approximate length of elastic (relaxed), and 3) Flight Time. The team must choose an additional parameter beyond those required (e.g., orbit diameter, cross section of elastic launch loop, height at transition to glide pattern, launch angle, etc.)
- At the Event Supervisor's discretion:
  - Multiple official flights may occur simultaneously according to the Event Supervisor's direction.
  - Test flights may occur throughout the contest but must yield to any official flight.
  - No test flights will occur in the final half-hour of the event's last period, except for teams that declare a trim flight during their 5-minute flight period.
- A self-check inspection station may be made available to competitors for checking their glider and launch handle dimensions prior to being measured by the officials.

- f. Competitors must present their glider(s), **launch handle(s)**, and flight log for inspection immediately prior to their 5 official flights. Event Supervisors are strongly urged to return flight logs after inspection. Timers will follow teams as they prepare and launch their gliders.
  - g. **Gliders must be launched from a launch handle by a single competitor who must be at floor level.**
  - h. Teams may make up to a total of **5** official flights using 1 or 2 gliders.
  - i. After check-in teams must be given a **5-minute** Flight Period, starting when their first flight (trim or official) begins. Any flight beginning within the **5-minute** period must be permitted to fly to completion. Competitors may make any adjustments/repairs/trim flights and may switch gliders or launch handles during their **5-minute** Flight Period.
  - j. Competitors must declare to the Timers before any launches during their Flight Period whether it is an official flight or trim flight. If teams do not indicate the flight type before the launch, it must be considered official. Teams must not be given extra time to recover or repair their gliders.
  - k. Time Aloft for each flight starts when the glider leaves the **launch handle** and stops when any part of the glider touches the floor, stops moving due to an obstruction (such as a glider landing on a girder or basketball hoop), or the judges otherwise determine the flight to be over.
  - l. Event Supervisors are strongly encouraged to utilize 3 Timers on all flights. The middle value of the 3 Timers must be the official Time Aloft for that flight, recorded in seconds to the precision of the device used.
  - m. Gliders must only be launched while aimed at any point on the ceiling. Competitors must not aim for the walls, spectators, low obstructions, etc.
  - n. Competitors must not steer their gliders during the flight.
  - o. In the unlikely event of a collision with another glider, a team may elect a re-flight. The decision to re-fly may be made after the glider lands. Timers are allowed to delay a launch to avoid a possible collision. The 5-minute period does not apply to such situations.
5. **SCORING:**
- a. A Team's Score is the sum of their **three** longest Times Aloft. High Score wins.
  - b. **At State and National Tournaments only a glider in a canard configuration must receive a 30% bonus added to its Time Aloft.**
  - c. Teams with incomplete flight logs must have 10% deducted from their Score.
  - d. Teams without flight logs must have 30% deducted from their Score.
  - e. Teams with Construction or Competition must be ranked after all teams that do not violate those rules.
  - f. Ties must be broken by the longest non-scored Time Aloft.



**Recommended Resources:** Reference and training resources including the **Elastic Launched Glider DVD** and the **Problem Solving /Technology CD (PTCD)** are available on the Official Science Olympiad Store or Website at <http://www.soinc.org>

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