LIFT OFF

Event Description

LIFT OFF is a premier, fast-paced multirotor racing tournament designed to test pilot responsiveness, vehicle control, speed, and hardware agility under highly competitive flight conditions. The event demands a synthesis of engineering capability and acute reflexes.

Pilots operate their custom-built multirotors through a rigorous obstacle circuit, an intense Figure-8 time attack, and a tactical special challenge that evaluates on-the- spot adaptability. With every round, the margins for error shrink, requiring pilots to maintain extreme focus and precision.

Total Championship Prize Pool: ₹50,000/-

Official rule set for the Aerophilia LIFT OFF competition. All participating teams are required to read, understand, and abide by the regulations outlined in this document.

1. Eligibility, Roster & Registration Protocols

1.1 Team Composition & Eligibility

- **Team Size:** Each team must consist of a minimum of 1 member and a maximum of 3 members.
- **Open Registration:** There are no restrictive academic or institutional prerequisites for team members. Hobbyists, school students, and university students are all welcome.
- **Identification Requirements:** Every participant must bring and present valid photo identification (such as a college ID, driver's license, or Aadhar card) during reporting on the event day. Access to the flight line and pit area is strictly denied without valid identification.

1.2 Role Nominations

Each team must clearly designate roles to ensure organized communication with event staff:

- **Team Captain:** The sole point of contact for the team. Only the captain may approach officials for clarifications or to lodge formal protests.
- **Designated Pilot:** The only individual permitted to hold and operate the radio transmitter during an official scoring heat.
- **Spotter / Pit Crew:** Assists the pilot with visual tracking, battery management, and technical troubleshooting on the flight line.

1.3 Registration Process

- **Online Portal:** Teams must complete the registration process via the official website at aerophilia.in
- **Entry Fee:** Teams must pay an entry fee of ₹1,000/- per team. Registration is only confirmed once payment is verified.
- **Lock-in Period:** Rosters are locked 24 hours prior to the event. No pilot substitutions are allowed after this period.

1.4 Pilot Code of Conduct

Competitors are expected to conduct themselves with high levels of sportsmanship. Unsportsmanlike behavior, including shouting at judges, sabotaging other teams' equipment, or aggressive conduct, will result in immediate ejection from the tournament without a refund.

2. Aircraft & Hardware Specifications

All multirotors must strictly adhere to the technical parameters listed below. Failing any single parameter during the technical inspection will result in the aircraft being grounded.

Technical Parameter	Specification / Limit	Constraint Level
Airframe Size (Wheelbase)	Minimum 5 Inches to Maximum 15 Inches	Mandatory Range
Maximum Battery Limit	Maximum 6S LiPo / LiHV pack	Strict Limit
Control Mode	Line of Sight (LOS) ONLY	Mandatory
Radio Telemetry Spectrum	900MHz to 2.4 GHz Band	Authorized Range
Commercial Assembly (RTF)	Ready-made / Pre-assembled drones PROHIBITED	Assembly Required
Propeller Material	Carbon Fibre Propellers STRICTLY PROHIBITED	Banned

Note: Teams must custom-build or assemble their drones from components. Purchasing a commercially available Ready-to-Fly (RTF) drone and entering it into the competition is explicitly forbidden and will lead to automatic disqualification.

3. Technical Inspection Procedures

Mandatory Technical Inspection: Prior to entering the flight line for any official attempt, every drone must pass a rigorous 4-step hardware and safety inspection conducted by the Chief Technical Marshal.

1. **Dimensional & Material Verification:** The wheelbase is measured diagonally motor-to-motor (must be 180mm - 500mm). Propellers are physically checked to ensure they are plastic/polycarbonate and not carbon fibre.
2. **Power System Check:** The battery cell count is verified to ensure it does not exceed 6S.
3. **Fail-Safe Demonstration:** The drone is powered on without propellers. The pilot throttles up, and the transmitter is switched off. Motors must disarm instantly.
4. **Final Tagging:** Once cleared, the drone receives a tamper-proof inspection sticker. If a team repairs or swaps a major component (like a motor or ESC) after a crash, the drone must be re-inspected.

4. Competition Rounds Breakdown

The tournament is divided into three distinct phases, each testing a different pillar of multirotor piloting.

4.1 Round 1: Obstacle Navigation Course

Pilots must navigate a designated 3D flight track consisting of elevated gates, tunnel arches, and slalom markers within a strict 5-minute flight window. Accuracy and fluid motion are heavily rewarded over raw speed.

- **Standard Gate Clearance:** Traditional racing gates. Worth **10 Skill Points** per successful pass.
- **Narrow Elevated Hoop:** Suspended rings that require precise altitude control. Worth **20 Skill Points** per successful pass.
- **Slalom Chicane Clearance:** A zig-zag section of vertical flags. Worth **25 Skill Points** for a complete clean clearance without clipping flags.
- **Inverted Arch Gate:** A low-to-the-ground semi-circle requiring a sharp dive. Worth **30 Skill Points** per successful pass.

Pilots may attempt multiple laps within their 5-minute window. A gate only scores once per lap, but missed gates can be circled back and re-attempted.

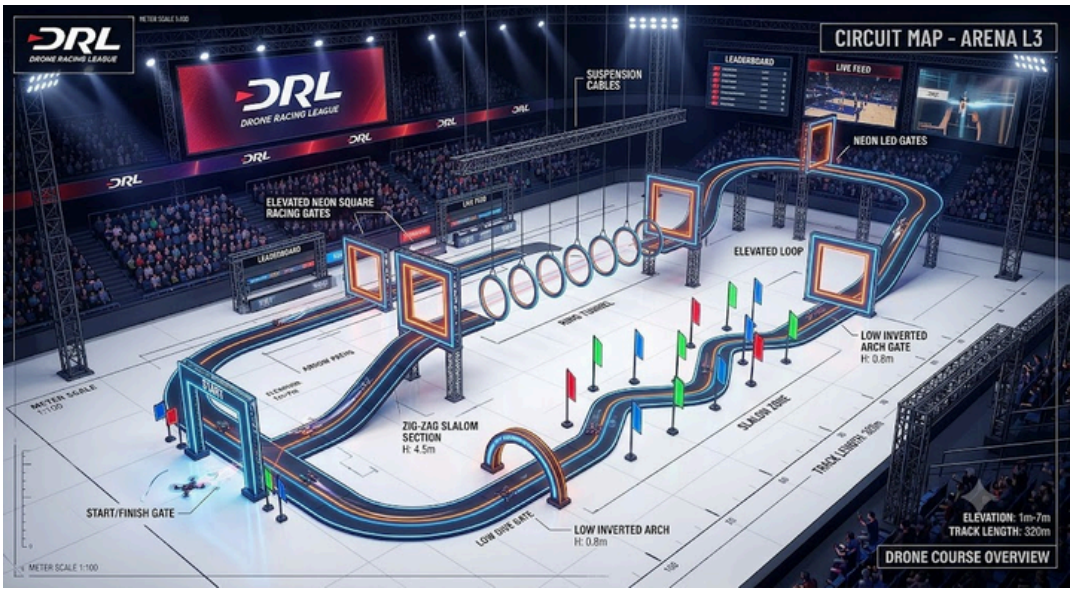


Image shown is for illustration purposes only.
Final Arena will vary.

4.2 Round 2: Figure-8 Time Attack

A precision sprint evaluating cornering agility, yaw control, and throttle discipline through a continuous Figure-8 circuit.

- **The Track:** A Figure-8 layout spanning an 8 to 12-meter flight path with a designated track width of 1.5 to 2 meters.
- **Format:** This round operates as a timed trial. Pilots must maintain extreme precision within the designated boundaries.
- **Execution:** On the starting signal, pilots must complete a set number of continuous Figure-8 laps. The aircraft must cross the center intersection cleanly to complete a valid loop.
- **Timing:** Electronic or manual precision timing records elapsed time to 0.01s. Drifting outside the designated track boundaries results in an immediate fault or time penalty.

4.3 Round 3: Special Tactical Challenge

This round is an on-the-spot tactical challenge revealed fully during the event briefing to evaluate operational adaptability. It combines precision landing with rapid ground handling.

- **Precision Touchdown:** After completing a shortened flight circuit, pilots must perform a controlled landing inside a marked 1.0m x 1.0m target zone.
- **Pit-Stop Battery Swap:** Once landed, the pilot disarms the drone. The Pit Crew spotter rushes in, unplugs the battery, plugs in a fresh battery, and steps back.
- **Relaunch:** The pilot re-arms and blasts through a final finish gate to stop the clock. This tests both pilot accuracy and engineering accessibility (how easily the drone can be serviced).

5. Point Scoring & Penalty System

A team's final rank is determined by combining skill points, time efficiency factors, and penalty deductions.

Final Score = Total Skill Points - Penalty Deductions

5.1 Round-Specific Scoring

The scoring system is designed to reward both precision and speed. The breakdown is as follows:

- **Round 1 (Obstacle Course):** Teams accumulate base points for every gate and obstacle successfully cleared. An additional **Time Bonus** is awarded based on how quickly the drone completes the track. The faster the completion, the higher the bonus.
- **Round 2 (Figure-8 Time Attack):** Points are awarded based strictly on the speed of completing the required laps while maintaining the track boundary. Shorter completion times yield proportionally higher scores.

- **Round 3 (Special Challenge):** Points are awarded for landing accuracy and the speed of the pit-stop battery swap.
- **Final Landing Incentive:** A special **Bullseye Bonus (20 Points)** is awarded for a flawless, dead-center landing on the target pad at the conclusion of a flight (applicable in Rounds 1 and 3), provided the drone comes to a complete stop without bouncing or skidding outside the designated zone.

5.2 Penalty Deduction Schedule

To ensure fair play and strict adherence to the course, the following point deductions will be applied directly to a team's total score. Deductions are cumulative.

Infringement / Incident	Penalty Deduction	Operational Impact
Clipping a Gate Frame or Obstacle	-5 Points	Run continues; points still awarded for pass
Missing / Bypassing a Gate Entirely	-15 Points	No skill points awarded for that gate
Powered Belly Landing (Throttle Not Cut)	-10 Points	Official warning issued to pilot
Pilot Stepping Outside Stand Box	-10 Points	Must re-position immediately
Encroachment on Arena Boundar y	-15 Points	Direction adjustment mandated by Marshal

6. Disqualification & Administration

6.1 Immediate Disqualification (DQ)

A team will be immediately disqualified from the tournament without a refund for the following severe infringements:

- **Throttle Compliance:** Refusing or failing to cut the throttle immediately upon the Flight Marshal's command.
- **Technical Cheating:** Using carbon fibre props, a commercial RTF drone, or exceeding the 6S battery limit after passing inspection.
- **Unsafe Flight:** Reckless flying or deliberately crashing into opponent drones.

6.2 Appeals & Protests

- **Authority:** Only the designated Team Captain may lodge a formal protest.
- **Timeframe:** Protests must be submitted in writing to the judging desk within 15 minutes of the round's score publication.
- **Scope:** Judgment calls regarding whether a drone clipped a gate or passed cleanly are final and cannot be protested. Only mathematical scoring errors or explicit rule misapplications are subject to review.
- **Final Verdict:** The Chief Judge's ruling on any submitted protest is absolute and binding.

7. Glossary of Terms

- **LOS (Line of Sight):** Flying the drone by looking directly at the aircraft from the pilot stand, without the use of onboard cameras or FPV goggles.
- **RTF (Ready-To-Fly):** A drone bought from a store that is already assembled and tuned (e.g., DJI drones). These are banned in this competition.
- **Wheelbase:** The diagonal distance measured from the center of one motor to the center of the opposite diagonal motor.
- **Fail-Safe:** A crucial radio setting that ensures the drone's motors immediately stop spinning if it loses connection to the pilot's remote.

8. Contact Information

For queries regarding rules, venue access, or technical clarifications, please reach out to the organizing team:

- **Event Leads:**
  Ashwin (+91 7019760303)
  Neil (+91 7760861967)
- **Official Website :** aerophilia.in

Note: The rules and regulations outlined in this document are subject to change at the discretion of the organizers. Updates will be communicated to registered teams.