IPSC IT FEST 2026

Inspection and Safety

Half-Life

Version 2 · 5 November 2026 · changes highlighted

The Doon School

DEHRADUN

This document is part of the Half-Life document pack. It sets out the inspection checklist against the Robot Specification and the safety rules that apply during a run. Robot limits are set out in the Robot Specification, the arena and object composition in the Arena Specification, run and disqualification rules in the Rulebook and scoring in the Judging Rubric. They are not repeated here. Terms used here are defined in the Rulebook, Terminology.

Version 2, 5 November 2026. Text highlighted in yellow is new or changed since the version of 9 October 2026. Every change is listed in the table "Changes in this version" at the end of this document.

1. Inspection checklist

Every item below must pass before a robot is cleared to run. Each item references the corresponding requirement in the Robot Specification. Items marked "Pre-run" are checked again at the arena before every run (§2.1).

#	Check	Pass condition	Reference	When
1.1	Dimensions at starting position	Robot measures no more than 250 mm × 250 mm × 250 mm (a reading of up to 250.5 mm passes), measured powered on in standby mode with all arms and extensions retracted and all cables stowed.	Robot Specification §1.1, §1.3	Pre-run
1.2	Total mass	Robot, including its battery, weighs no more than 1500 g with a tolerance of +10% (a reading of up to 1650 g passes).	Robot Specification §2.1	Pre-run
1.3	Battery, voltage and fuse compliance	Battery energy does not exceed 84 Wh (equal to 6,000 mAh at 14 V). Voltage across all electric and electronic components does not exceed 14 V. The main power line includes a fuse rated at no more than 4 A. Cells show no damage or swelling. The battery is used and charged per the manufacturer's specification.	Robot Specification §3.2, §3.3, §3.4	
1.4	Drive and steering motors	Exactly one DC motor performs driving and exactly one servo motor performs steering. No additional motor performs either function.	Robot Specification §4.1	
1.5	Pullback motors (if fitted)	Any pullback motor is wound up by the robot itself, never by hand.	Robot Specification §4.1	
1.6	Additional actuators	Any actuator other than the drive motor, the steering servo and the additional motors or servos permitted at Robot Specification §4.1 is limited to an electromagnet used only to attach parts, or a solenoid of no more than 20 N force and 20 mm travel.	Robot Specification §4.1, §4.2	
1.7	Camera arm or extension	Any arm or extension used to position a camera has no more than 2 degrees of freedom.	Robot Specification §4.1, §5.1	

1.8	LIDAR	No LIDAR sensor is fitted anywhere on the robot.	Robot Specification §5.1, §8.5	
1.9	Sensor independence	No sensor on the robot depends on an off-board wireless link to function.	Robot Specification §5.2	
1.10	Autonomy	The robot is fully autonomous, with no tele-operation hardware or manual-drive capability present or connected.	Robot Specification §6.1, §6.2	
1.11	On-board processing	All computation runs on board. No link to any off-board computation exists.	Robot Specification §6.3	
1.12	Start and stop button	Exactly one physical button starts and stops the robot. It is labelled "START/STOP", is mounted on the outer surface (never underneath) and is accessible.	Robot Specification §6.4	Pre-run
1.13	Standby and stop behaviour	The robot enters and holds standby mode, with all actuators inactive, until the button is first pressed. A second press halts every movement immediately.	Robot Specification §6.4	Pre-run
1.14	Wired-only communication	Only wired connections are used on board. No Wi-Fi, Bluetooth or other RF signal is active. Any radio built into a multi-purpose microcontroller is confirmed disabled in code.	Robot Specification §7.1, §7.2, §7.4	Pre-run
1.15	Pneumatics and hydraulics	No pneumatic or hydraulic system of any kind is fitted.	Robot Specification §8.1, §8.2	
1.16	Liquids	No free or dispensable liquid is present on the robot. Only lubrication fully sealed within a mechanism (for example a bearing or gearbox) is permitted.	Robot Specification §8.3	
1.17	Destructive mechanisms	The robot carries no mechanism capable of damaging the arena, an object or a bin.	Robot Specification §8.4	
1.18	Lasers	Any laser fitted is a Class 1 laser, or forms part of a commercial time-of-flight sensor. A standalone Class 1 laser is accompanied by a valid safety certificate on file with the Event Head.	Robot Specification §8.5	

2. Procedure

2.1 Who inspects, and when

Inspection session. The inspection team appointed by the Event Head carries out the full checklist at §1 once, at one of the robot inspection sessions in the Fest schedule: 7 December 17:15 to 18:45, 8 December 08:00 to 08:30, or 8 December 10:00 to 10:30. At this session the inspection team scores the design and build quality criteria at Judging Rubric §2.1 and checks the basic rules, which are not scored (Judging Rubric §2.2).

Pre-run check. Immediately before each run, in both qualification rounds and in the final, a member of the inspection team at the arena repeats checks 1.1, 1.2, 1.12, 1.13 and 1.14. The pre-run check takes no more than 3 minutes and is held beside the arena while the previous team is running.

Between rounds, a team may replace or recharge the battery, repair the robot back to its inspected configuration and recalibrate sensors without any inspection beyond the pre-run check before its next run, provided no change alters the dimensions, mass or actuator configuration set at Robot Specification §1, §2 and §4.1 (Robot Specification §9.1, §9.2). A change that alters any of these requires the robot to pass the full checklist at §1 again, at the arena, before its next run, and the design and build quality score from that inspection counts from that run.

2.2 Consequence of a failed inspection

A robot that fails any checklist item at the inspection session or at the pre-run check must not compete in any round until it passes inspection (Robot Specification §10.1).

The team may correct the fault and return for re-inspection at any point before its scheduled run slot for that round (see §2.3). If the robot has not passed by the start of that slot, the run is forfeited for that round.

A team that competes in a run without having passed inspection or its pre-run check is disqualified from the event under Rulebook §6.3.

2.3 Re-inspection

Re-inspection is permitted. Neither the Rulebook nor the Robot Specification caps the number of attempts, so a team may return for re-inspection as many times as it can fit within the time remaining before its scheduled run slot for that round (Robot Specification §10.1).

Each re-inspection attempt is limited to re-checking the items that previously failed. The inspection team is not obliged to re-verify items that already passed.

Once the team's scheduled run slot begins, no further re-inspection is possible until the team's next scheduled round, and §2.2 applies.

3. During runs

3.1 Safety requirements

The prohibitions in Rulebook §4.4 apply during every run. They cover assisting the robot, touching objects, pushing objects, wireless control, damaging objects, bins or the arena, and removing placed objects. Their consequences are set out in Rulebook §4.9.

3.2 Spectator boundary distance, and how it is marked

A minimum clearance of 1.5 m is maintained between the outer edge of the arena and the nearest spectator or non-competing participant. The arena footprint is 2 m × 2 m (Arena Specification §2).

This boundary is marked with a continuous line around the full perimeter of the arena. Spectators and non-competing team members must remain outside this line for the duration of every run.

Only the two competing team members, the inspection team, the judge panel, the bin marshal and the Event Head are permitted inside the marked boundary while a run is in progress. The arena reset crew enters only between runs.

3.3 Emergency stop

Who may call it: a competing team member may stop the robot at any point via the single start and stop button (Rulebook §4.3; Robot Specification §6.4). The inspection team, the judge panel or the Event Head may also call an all-stop for safety reasons at any time.

How: a team member presses the same start and stop button to halt the robot immediately. An all-stop called by the inspection team, the judge panel or the Event Head is given by clearly instructing the team to press its button immediately, and the team must comply without delay.

Before any team member enters the playing zone, for any reason and at any point during a run, they must inform the Event Head and receive the Event Head's clearance. No team member may enter the playing zone without this clearance.

3.4 Bin marshal

One bin marshal is on duty for every run. The marshal stands outside the boundary wall behind the bins and empties each bin as set out in Arena Specification §9.2 and §9.3. The marshal never touches the robot and waits whenever any part of the robot is within 100 mm of the bin being emptied.

Changes in this version

Version 2 of 5 November 2026 replaces the version of 9 October 2026. Every change is listed below and highlighted in the text.

Clause	Was (9 October 2026)	Now (5 November 2026)
§1, introduction and "When" column	Not covered	Items 1.1, 1.2, 1.12, 1.13 and 1.14 marked "Pre-run": checked again before every run
§2.1	Full inspection and design scoring immediately before each run, in every round	Full inspection and design scoring once, at a scheduled robot inspection session (7 Dec 17:15–18:45, 8 Dec 08:00–08:30 or 10:00–10:30); a pre-run check of 5 items, at most 3 minutes, beside the arena before every run
§2.1, between rounds	No inspection beyond the session before the next run; a changed robot passes inspection again	No inspection beyond the pre-run check; a changed robot passes the full checklist again at the arena, and its new design score counts from that run
§2.2	Fails any checklist item	Fails any item at the inspection session or the pre-run check; competing without passing either disqualifies
§3.1	Prohibitions apply	Adds: consequences in Rulebook §4.9
§3.2	Team members, inspection team, judge panel and Event Head inside the boundary	Adds the bin marshal during runs, and the reset crew between runs
§3.4 (new)	Not covered	Bin marshal on duty for every run; where they stand; never touch the robot; wait within 100 mm