

10 INSPECTION & ELIGIBILITY RULES



This section describes the rules governing MATCH participation. A team has participated in a MATCH if any member of their DRIVE TEAM is in the ALLIANCE STATION, with or without the ROBOT on the FIELD, at the start of the MATCH.

At each event, the Lead ROBOT Inspector (LRI) has final authority on the legality of any COMPONENT, MECHANISM, or ROBOT. Inspectors may re-Inspect ROBOTS at any time to ensure compliance with the rules. Teams are encouraged to consult with Inspectors or the LRI if they have any questions regarding the legality of a ROBOT or about how to make a ROBOT legal.

While there is no specific defined procedure in place for teams to be re-inspected prior to Playoff MATCHES, it is typical for Inspectors to use the re-Inspection discretion described above to do a limited re-Inspection on all ROBOTS near the end of Qualification MATCHES or beginning of Playoff MATCHES to help identify any modifications that should be re-Inspected per I4.

Prior to the start of a MATCH, any ROBOT which is unable or ineligible to participate in that MATCH as determined by the FIRST Technical Advisor (FTA), LRI, or Head REFEREE is declared to be BYPASSED and is DISABLED. A team whose ROBOT is BYPASSED remains eligible to receive Qualification Ranking Points or Playoff MATCH points provided that its ROBOT has passed Inspection, per I2.

I1. It's your team's ROBOT. The ROBOT and its MAJOR MECHANISMS must be built by the FIRST Robotics Competition team.

A MAJOR MECHANISM is a group of COMPONENTS and/or MECHANISMS assembled together to address at least one (1) game challenge: robot movement, game piece control, FIELD element manipulation, or performance of a scorable task without the assistance of another ROBOT.

I1 requires that the ROBOT and its MAJOR MECHANISMS were built by its team, but isn't intended to prohibit or discourage assistance from other teams (e.g. fabricating elements, supporting construction, writing software, developing game strategy, contributing COMPONENTS and/or MECHANISMS, etc.)

Examples of MAJOR MECHANISMS include, but are not limited to, assemblies listed below:

- a. an assembly used to manipulate a game piece
- b. an assembly used to position a ROBOT for an end game task
- c. an assembly used to manipulate a FIELD element
- d. an assembly used to move the ROBOT around the FIELD

Examples that would generally not be considered MAJOR MECHANISMS, and thus probably aren't subject to I1 include, but are not limited to, the following:

- a. a gearbox assembly
- b. a COMPONENT or MECHANISM that's part of a MAJOR MECHANISM
- c. COTS items

Neither I1 nor the language in its Blue Box define specific thresholds for how much of a MAJOR MECHANISM must be the result of the team's effort. I1 expects and requires the team's honest assessment of whether they built the MAJOR MECHANISMS of their ROBOT.

Attempts to exploit loopholes in the definition of MAJOR MECHANISM in order to bypass this requirement are not in the spirit of I1 or the FIRST Robotics Competition. Examples of exploitation include:

- a. assembling pieces of a MAJOR MECHANISM provided by another team, except COTS kits
- b. receiving a mostly complete MAJOR MECHANISM from another team and providing a small piece

- 12. Get inspected before playing a Qualification/Playoff MATCH.** A team is only permitted to participate in a Qualification or Playoff MATCH and receive Ranking or MATCH Points respectively if their ROBOT has passed an initial, complete Inspection.

Violation: If prior to the start of the MATCH, the team is DISQUALIFIED and not eligible to participate in the MATCH. If after the start of the MATCH, the entire ALLIANCE receives a RED CARD for that MATCH.

Please take note of this rule. It is important that FIRST Robotics Competition teams ensure their ALLIANCE partners have passed Inspection. Allowing a partner that has not passed Inspection to play puts the ALLIANCE at risk of RED CARDS. Teams should check with their ALLIANCE partners early and help them pass Inspection before competing.

- 13. Bring it all to Inspection.** At the time of Inspection, the OPERATOR CONSOLE and the ROBOT must be presented with all MECHANISMS (including all COMPONENTS of each MECHANISM), configurations, and decorations that will be used on the ROBOT in MATCHES without re-Inspection (per I4) and may not exceed 150 lbs. (~68kg) (note that while up to 150 lbs. of ROBOT MECHANISMS may be inspected together, the ROBOT configuration used in a MATCH may not violate R5). The OPERATOR CONSOLE and exceptions listed in R5 are not included in this weight.

- 14. Unless the change is listed below, any change to a ROBOT must get re-Inspected.** A ROBOT may play MATCHES with a subset of the MECHANISMS that were present during Inspection provided the reconfigured ROBOT still meets all ROBOT Rules. Only MECHANISMS that were present during the Inspection may be added, removed, or reconfigured between MATCHES without re-Inspection per I4. If a ROBOT is modified after its most recent passed Inspection, it must be re-Inspected before it is eligible to participate in a MATCH. A ROBOT that plays in a MATCH with an un-Inspected modification is subject to retro-active DISQUALIFICATION at the discretion of the LRI and Head REFEREE.

Exceptions are listed in A through F (unless they result in a significant change to the ROBOT'S size, weight, legality, or safety).

- A. addition, relocation, or removal of fasteners (e.g. cable ties, tape, and rivets)
- B. addition, relocation, or removal of labeling or marking
- C. revision of ROBOT code
- D. replacement of a COTS COMPONENT with an identical COTS COMPONENT
- E. replacement of a MECHANISM with an identical MECHANISM (size, weight, material)
- F. additions, removals, or reconfiguration of ROBOT with a subset of MECHANISMS already inspected per I3

- 15. Don't exploit I4.** Teams may not use the re-Inspection process in I4 to circumvent the weight limit in I3.

This restriction is not intended to prevent a team from returning to a previous configuration (e.g. due to an unsuccessful upgrade or failure of a new component). If a

team is believed to be violating this rule, the LRI will discuss the situation with the team to understand the changes and, if appropriate, the LRI in conjunction with the team will select a single configuration with which the team will compete for the duration of the event.

Example 1: A ROBOT passes initial Inspection (which includes MECHANISM A). Its team then decides they want to use MECHANISM B, which was not Inspected. The weight of the ROBOT, A, and B is less than the weight limit in I3, but more than that in R5. I4 requires the ROBOT be re-Inspected, and I5 allows the ROBOT, A, and B to be inspected collectively. If passed, the ROBOT may then compete in subsequent MATCHES with A or B.

Example 2: A ROBOT passes initial Inspection (which includes MECHANISM A). Its team then decides they want to use MECHANISM B, which was not Inspected. The weight of the ROBOT, A, and B is greater than the weight limit in I3. This requires re-Inspection per I4 and A is excluded to satisfy I3. B breaks, and the team decides to switch back to A. The ROBOT must be re-Inspected per I4, and the team is not violating I5.

Example 3: A team arrives at an event with a ROBOT, MECHANISM A, and MECHANISM B, which collectively weigh 175 lbs. The ROBOT passes initial Inspection with A and plays a MATCH. The team switches to B, gets re-Inspected, and plays again. The team switches back to A, gets re-Inspected, and plays again. The team switches back to B and asks to be re-Inspected. At this point, the LRI suspects the team may be violating I5 and has a discussion with the team to understand the changes being made. The team reveals that I5 has been violated, and the LRI works with them to select A or B for use for the remainder of the event.

16. This rule has been removed for the 2021 season.

17. **ROBOTS are off for Inspection, mostly.** For the safety of all those involved, ROBOTS, must be presented for Inspection with the ROBOT powered off, pneumatics unpressurized, and springs or other stored energy devices in their lowest potential energy states (e.g. battery removed).

Power and air pressure should only be enabled on the ROBOT during those portions of the Inspection process where it is absolutely required to validate certain system functionality and compliance with specific rules (firmware check, etc.). Inspectors may allow the ROBOT to be powered beyond the parameters above if both criteria below are met.

- A. The ROBOT design requires power or a charged stored energy device in order to confirm that the ROBOT meets volume requirements, and
- B. The team has included safety interlocks that mitigate unexpected release of such stored energy.

The team may be asked to demonstrate these interlocks during the inspection process.

18. **No student, no Inspection.** At least one student team member must accompany the ROBOT for any Inspection efforts.

Exceptions may be made for major conflicts, e.g. religious holidays, major testing, transportation issues, etc.



