

11 Game Rules (G)

11.1 Personal Safety

G101 *Humans, stay off the FIELD during the MATCH. Other than actions explicitly allowed in sections [SCORING ELEMENTS](#), [SCORING ELEMENTS](#) and [11.4.6 Human](#) a DRIVE TEAM member may only enter the FIELD during pre-MATCH set-up to place their ROBOT or after a MATCH is over to collect their ROBOT when instructed to do so by the Head REFEREE or their designee.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

G102 *Be careful when interacting with ARENA elements. A team member is prohibited from the following actions with regards to interaction with ARENA elements:

- A. climbing on
- B. hanging from
- C. manipulating such that it does not return to its original shape without human intervention, and
- D. damaging

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

11.2 Conduct

G201 *Be a good person. All teams must be civil toward everyone and respectful of team and event equipment while at a FIRST Tech Challenge event. Please review the FIRST [Code of Conduct](#) and [Core Values](#) for more information.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event. Further violations of this rule are addressed in rule [G211](#).

Examples of inappropriate behavior include, but are not limited to, the use of offensive language or other uncivil conduct.

Examples of particularly contemptible behavior that is likely to result in ARENA ejection include, but are not limited to, the following:

- A. assault, e.g., throwing something that hits another person (even if unintended),
- B. threat, e.g., saying something like “if you don’t reverse that call, I’ll make you regret it,”
- C. harassment, e.g., badgering someone with no new information after a decision has been made or a question has been answered,
- D. bullying, e.g., using body or verbal language to cause another person to feel inadequate,
- E. insulting, e.g., telling someone they don’t deserve to be on a DRIVE TEAM,
- F. swearing at another person (versus swearing under one’s breath or at oneself), and
- G. yelling at another person(s) in anger or frustration.

G202 *DRIVE TEAM Interactions. Opposing ALLIANCES' DRIVE TEAM members cannot distract/interfere with the opposing ALLIANCE. This includes taunting or other disruptive behavior.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

G203 *Asking other teams to throw a MATCH – not cool. A team may not encourage an ALLIANCE of which it is not a member to play beneath its ability.

NOTE: This rule is not intended to prevent an ALLIANCE from planning and/or executing its own strategy in a specific MATCH in which all the teams are members of the ALLIANCE.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

Example 1: A MATCH is being played by teams A and B, in which team B is encouraged by team D to not achieve a LEVEL 3 ASCENT, resulting in teams A and B losing the MATCH. Team D's motivation for this behavior is to prevent team A from rising in the tournament rankings and negatively affecting team D's ranking. Team D has violated this rule.

Example 2: A MATCH is being played by teams A and B, in which team A is assigned to participate as a SURROGATE. Team D encourages team A not to participate in the MATCH so that team D gains ranking position over team B. Team D has violated this rule.

Example 3: Asking a team to "no show" for a MATCH.

FIRST considers the action of a team influencing another team to throw a MATCH, to deliberately lower their tie breaker scores, etc. incompatible with FIRST values and not a strategy any team should employ.

G204 *Letting someone coerce you into throwing a MATCH – also not cool. A team, as the result of encouragement by a team not on their ALLIANCE, may not play beneath its ability.

NOTE: This rule is not intended to prevent an ALLIANCE from planning and/or executing its own strategy in a specific MATCH in which all the ALLIANCE members are participants.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

Example 1: A MATCH is being played by Teams A and B, in which Team B is encouraged by Team D to not achieve a LEVEL 3 ASCENT. Team B accepts this request. Team D's motivation for this behavior is to prevent Team A from rising in the tournament rankings and negatively affecting Team D's ranking. Team B has violated this rule.

Example 2: A MATCH is being played by Teams A and B, in which Team A is assigned to participate as a SURROGATE. Team A accepts Team D's request to not participate in the MATCH so that Team D gains ranking position over Team B. Team A has violated this rule.

FIRST considers the action of a team influencing another team to throw a MATCH, to deliberately miss RANKING POINTS, etc. incompatible with FIRST values and not a strategy any team should employ.

- G205 *Throwing your own MATCH is bad.** A team may not intentionally lose a MATCH in an effort to lower their own ranking and/or manipulate the rankings of other teams.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

The intent of this rule is not to punish teams who are employing alternate strategies, but rather to ensure that it is clear that throwing MATCHES to negatively affect your own rankings, or to manipulate the rankings of other teams (e.g., throw a MATCH to lower a partner's ranking, and/or increase the ranking of another team not in the MATCH) is incompatible with *FIRST* values and not a strategy any team should employ.

- G206 *Do not abuse ARENA access.** A team member (except those DRIVERS, HUMAN PLAYERS, and DRIVE COACHES on the DRIVE TEAM for the MATCH) granted access to restricted areas in and around the ARENA (e.g., via event issued media badges) may not assist, coach, or use signaling devices during the MATCH. Exceptions will be granted for inconsequential infractions and in cases concerning safety.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

Team members in open-access spectator seating areas are not considered to be in a restricted area and are not prevented from assisting or using signaling devices. See [E102](#) for related details.

- G207 *Show up to your MATCHES.** If a ROBOT has passed initial, complete inspection, at least 1 member of its DRIVE TEAM must report to the ARENA and participate in each of their assigned qualification MATCHES.

Violation: DISQUALIFIED from the current MATCH.

The team should inform the lead Queuer if the team's ROBOT is not able to participate.

- G208 *Enter only 1 ROBOT.** Each registered *FIRST* Tech Challenge team may enter only 1 ROBOT (or "robot," a ROBOT-like assembly equipped with most of its CHASSIS, i.e., A ROBOT'S MAJOR MECHANISM that enables it to move around a FIELD) into a *FIRST* Tech Challenge event. Each registered *FIRST* Tech Challenge team may only participate in one concurrent event at a time.

Violation: Verbal warning, RED CARD if not corrected.

"Entering" a ROBOT (or robot) into a *FIRST* Tech Challenge means bringing it to or using it at the event such that it is an aid to your team (e.g., for spare parts, judging material, or for practice).

While "most of its drive base" is a subjective assessment, for the purposes of this rule, an assembly whose drive base is missing all wheels/treads, gearboxes, and belts/chains is not considered a "ROBOT." If any of those COMPONENTS are incorporated, the assembly is now considered a "ROBOT."

This rule does not prohibit teams from bringing in ROBOTS from other *FIRST* programs for the purposes of awards presentations or pit displays.

It is expected that teams will update, make changes and may even build multiple ROBOTS in the course of a season, this rule only applies to bringing multiple different ROBOTS to a single event.

G209 *Keep your ROBOT together. A ROBOT may not intentionally detach or leave a part on the FIELD. Tethered elements of the ROBOT are considered detached if either can move independently of the other.

Violation: RED CARD.

G210 *Do not expect to gain by doing others harm. Actions clearly aimed at forcing the opponent ALLIANCE to violate a rule are not in the spirit of FIRST Tech Challenge and not allowed. Rule violations forced in this manner will not result in an assignment of a penalty to the targeted ALLIANCE.

Violation: MINOR FOUL, plus MAJOR FOUL if REPEATED. The ALLIANCE that was forced to break a rule will not incur a FOUL.

This rule does not apply for strategies consistent with standard gameplay, for example:

- A. a red ALLIANCE ROBOT in their ASCENT ZONE in the final 30 seconds of the MATCH contacts a blue ALLIANCE ROBOT
- B. a red ROBOT attempts to enter their NET ZONE to place a SPECIMEN and pushes a blue ROBOT that was less than 1 TILE away into the NET ZONE.

This rule requires an intentional act with limited or no opportunity for the team being acted on to avoid the penalty, such as:

- A. trapping an opposing ALLIANCE ROBOT in your ALLIANCE'S ASCENT ZONE during the last 30 seconds of the MATCH.
- B. pushing an opposing ALLIANCE ROBOT into your ALLIANCE'S OBSERVATION ZONE intentionally or from more than 1 TILE away.
- C. placing your ALLIANCE SPECIFIC SAMPLE or SPECIMEN in an opposing ALLIANCE'S ROBOT.
- D. a ROBOT becomes pinned in their opposing ALLIANCE'S OBSERVATION ZONE by the opposing ALLIANCE ROBOT

G211 *Egregious or exceptional violations. Egregious behavior beyond what is listed in the rules or subsequent violations of any rule or procedure during the event is prohibited.

In addition to rule violations explicitly listed in this manual and witnessed by a REFEREE, the Head REFEREE may assign a YELLOW or RED CARD for egregious ROBOT actions or team member behavior at any time during the event.

Continued violations will be brought to FIRST Headquarters' attention. FIRST Headquarters will work with event staff to determine if further escalations are necessary, which can include removal from award consideration and removal from the event.

Please see section [10.6.1 YELLOW and RED CARDS](#) for additional detail.

Violation: YELLOW or RED CARD.

The intent of this rule is to provide the Head REFEREES with the flexibility necessary to keep the event running smoothly, as well as keep the safety of all

the participants as the highest priority. There are certain behaviors that automatically result in a YELLOW or RED CARD because this behavior puts the FIRST community at risk. Those behaviors include, but are not limited to the list below:

- A. inappropriate behavior as outlined in the orange box of [G201](#),
- B. reaching into the FIELD and grabbing a ROBOT during a MATCH,
- C. PINNING in excess of 15 seconds,

The Head REFEREE may assign a YELLOW or RED CARD for a single instance of a rule violation such as the examples given in items above, or for multiple instances of any single rule violation. Teams should be aware that any rule in this manual could escalate to a YELLOW or RED CARD. The Head REFEREE has final authority on all rules and violations at an event.

11.3 Pre-MATCH

G301 *Be prompt. A DRIVE TEAM member may not cause significant delays to the start of their MATCH. Causing a significant delay requires both of the following to be true:

- A. The expected MATCH start time has passed, and

During Qualification MATCHES, the expected start time of the MATCH is the time indicated on the MATCH schedule or ~3 minutes from the end of the previous MATCH on the same FIELD, whichever is later. If [T206](#) is in effect, the expected MATCH start time is the later of the end of the [T206](#) time or the time indicated on the schedule.

During playoff MATCHES, the expected start time of the MATCH is the time indicated on the MATCH schedule or 8 minutes from either ALLIANCE'S previous MATCH, whichever is later.

- B. The DRIVE TEAM has access to the ARENA and is neither MATCH ready nor making a good faith effort, as perceived by the Head REFEREE, to quickly become MATCH ready.

Teams that have violated [G207](#) or have 1 DRIVE TEAM member present and have informed event staff that their ROBOT will not be participating in the MATCH are considered MATCH ready and not in violation of this rule.

Violation: Verbal warning, or if a subsequent violation within the tournament phase (e.g., qualifications or playoffs), MAJOR FOUL applied to their upcoming MATCH. If the DRIVE TEAM is not MATCH ready within 2 minutes of the verbal warning/MAJOR FOUL and the Head REFEREE perceives no good faith effort by the DRIVE TEAM to quickly become MATCH ready, DISABLED.

The intent of this rule is to provide an equitable amount of time for both ALLIANCES to prepare for each MATCH and give DRIVE TEAMS grace given extenuating circumstances that cause them to be late.

Once a verbal warning/MAJOR FOUL is issued, the Head REFEREE starts a 2-minute timer and makes a good faith effort to share the timer's status with the delaying DRIVE TEAM.

Being “MATCH ready” requires that the ROBOT is on the FIELD, in its STARTING CONFIGURATION, and turned on. Additionally, the DRIVE TEAM members must be in their starting positions.

In general, good faith efforts to quickly become MATCH ready are entirely for the purposes of transitioning the ROBOT into a MATCH ready state (i.e., not attempts to significantly alter a ROBOT’S capabilities.) Examples of good faith efforts to quickly become MATCH ready include but are not limited to:

- A. walking safely towards the FIELD with a ROBOT that a team is not actively modifying.
- B. applying quick fixes such as tape or cable ties to make the ROBOT compliant with STARTING CONFIGURATION requirements.
- C. waiting for a DRIVER STATION device to boot.

G302 *You can only bring/use specific items to the MATCH. The only equipment that may be brought to the ARENA for a MATCH is listed below. Regardless of if equipment fits criteria below, it may not be employed in a way that breaks any other rules, introduces a safety hazard, blocks visibility for FIELD STAFF or audience members, or jams or interferes with the remote sensing capabilities of another team or the FIELD.

- A. the ROBOT
- B. the OPERATOR CONSOLE
- C. ROBOT carts (which may contain basic tools and supplies to maintain the ROBOT)
- D. non-powered signaling devices
- E. reasonable decorative items
- F. special clothing and/or equipment required due to a disability
- G. devices (e.g., laptop, tablet, phone) used solely for planning, tracking, and communicating strategy within the same designated area (e.g., ALLIANCE AREA)
- H. devices used solely to record gameplay
- I. non-powered Personal Protective Equipment (examples include, but aren’t limited to, gloves, eye protection, and hearing protection)

Items brought to the ARENA under allowances D-I must meet all following conditions:

- I. does not connect or attach to another ALLIANCE member (other than items in category I).
- II. does not communicate with anything or anyone outside of the ARENA.
- III. does not include any form of enabled wireless electronic communication with the exception of medically required equipment.
- IV. does not in any way affect the outcome of a MATCH, other than by allowing the DRIVE TEAM to
 - a. plan or track strategy for the purposes of communication of that strategy to other ALLIANCE members or
 - b. use items allowed per D to communicate with the ROBOT.

Violation: MATCH will not start until the situation is remedied. If discovered or used inappropriately during a MATCH, YELLOW CARD.

Use of imagery that, to a reasonably astute observer, mimics the AprilTags employed on the FIELD is a violation of this rule.

Examples of wireless communication include, but are not limited to, radios, walkie-talkies, cell phones, Bluetooth communications, and Wi-Fi.

G303 ***ROBOTS on the FIELD must be set up to play a MATCH.** A ROBOT must meet all following MATCH-start requirements:

- A. does not pose a hazard to humans, FIELD elements, or other ROBOTS.
- B. has passed inspection, i.e., it is compliant with all ROBOT rules.
- C. if modified after initial Inspection, it is compliant with [I304](#).
- D. is the only team-provided item left on the FIELD.
- E. is fully contained within the FIELD and not in the NET ZONE or OBSERVATION ZONE.
- F. touching the FIELD wall adjacent to the ALLIANCE AREA.
- G. not attached to, entangled with, or suspended from any FIELD element.
- H. confined to its STARTING CONFIGURATION (see [R101](#) and [R102](#)).
- I. in contact with no more than the allowed pre-load possession limit as described in section [10.3.1 SCORING ELEMENTS](#).
- J. ROBOT SIGNS must indicate the correct ALLIANCE color (see [R101](#)).

If a ROBOT is DISABLED prior to the start of the MATCH, the DRIVE TEAM may not remove the ROBOT from the FIELD without permission from the Head REFEREE or the FTA.

For assessment of many of the items listed above, the Head REFEREE is likely to consult with the LRI.

Violation: If there is a quick remedy, the MATCH will not start until all requirements are met. If it is not a quick remedy, DISABLED and, at the discretion of the Head REFEREE, ROBOT must be re-inspected. If a ROBOT not compliant with part [B](#) or [C](#) participates, its team receives a RED CARD.

G304 ***Teams must select an OpMode.** An OpMode must be selected on the DRIVER STATION app and initialized by pressing the INIT button. If this OpMode is an AUTO OpMode, the 30 second AUTO timer must be enabled.

Violation: MATCH will not start until the situation is remedied. If ROBOT cannot initialize an OpMode or the situation cannot be remedied quickly, DISABLED.

This rule requires all teams to select and INIT an OpMode regardless of whether or not an AUTO OpMode is planned to be used during AUTO. FIELD STAFF will use this as an indication that a team is ready to start the MATCH.

Teams without an AUTO OpMode should consider creating a default AUTO OpMode using the BasicOpMode sample and use the [auto-loading feature](#) to automatically queue up their TELEOP OpMode.

11.4 In-MATCH

Rules in this section pertain to gameplay once a MATCH begins.

11.4.1 AUTO

The AUTO period is the first 30 seconds of the MATCH, during which DRIVERS may not provide input to their ROBOTS, so ROBOTS operate with only their pre-programmed instructions. Rules in this section apply only during the AUTO period.

G401 *Let the ROBOT do its thing. In AUTO, a DRIVE TEAM member may not directly or indirectly interact with a ROBOT or an OPERATOR CONSOLE, with the following exceptions:

- A. to press the (▶) start button at the start of the MATCH.
- B. to press the (■) stop button before the end of AUTO either at the team's discretion or instruction of the Head REFEREE per [T202](#).
- C. for personal safety or OPERATOR CONSOLE safety.

Violation: MAJOR FOUL

G402 *Start AUTO on time. If a team chooses to run an AUTO OpMode during the AUTO period, a DRIVE TEAM member must press the (▶) start button on their DRIVER STATION app within a MOMENTARY delay of the start of the MATCH. This rule does not apply if the (▶) start button is not pressed during AUTO.

Violation: MAJOR FOUL, plus YELLOW CARD if subsequent violations during the event.

G403 *OpModes are stopped by the end of AUTO. ROBOTS must no longer be running an AUTO OpMode by the end of the AUTO period. This can be done by a DRIVE TEAM member pressing the (■) stop button on the DRIVER STATION app, allowing the OpMode to naturally end, or allowing the 30 second AUTO timer to end the OpMode.

Violation: MINOR FOUL, MAJOR FOUL if actions result in a scoring achievement by the offending ROBOT

G404 No AUTO opponent interference. FIELD columns A, B, C constitute the blue side of the FIELD, and columns D, E, F (Figure 9-4) constitute the red side of the FIELD. During AUTO ROBOTS may not:

- A. contact an opposing ALLIANCE'S ROBOT which is completely within the opposing ALLIANCE'S half of the FIELD.
- B. contact a pre-set SAMPLE on the opposing ALLIANCE'S half of the FIELD.
- C. move SCORING ELEMENTS onto the opposing ALLIANCE'S half of the FIELD outside of the SUBMERSIBLE ZONE.

Violation: MAJOR FOUL each occurrence.

The intent of this rule is to protect ROBOT actions performed while completely in their ALLIANCE'S side of the FIELD. Navigating into the opposing ALLIANCE'S side of the FIELD during AUTO is a risky gameplay strategy.

11.4.2 TELEOP

G405 ***ROBOTS are motionless between AUTO and TELEOP.** Any powered movement of the ROBOT or any of its MECHANISMS is not allowed during the transition period between AUTO and TELEOP.

Violation: MAJOR FOUL, plus YELLOW CARD if subsequent violations during the event.

Movement that occurs following the conclusion of an AUTO OpMode (due to inertia, gravity, or de-energizing of actuators, etc.) is not a violation of this rule.

Teams may press buttons on their DRIVER STATION app to initialize or start a TELEOP OpMode during the AUTO to TELEOP transition period. If the INIT portion of the OpMode causes the ROBOT to violate this rule (actuators moving or twitching in any way) then the team should wait until the TELEOP period begins before pressing INIT.

G406 ***ROBOTS are motionless at the end of TELEOP.** ROBOTS must no longer be actively controlled by DRIVERS after the end of the TELEOP period. This can be done by a DRIVE TEAM member pressing the (■) stop button on the DRIVER STATION app or by discontinuing any operation of the ROBOT by the end of the MATCH period.

Violation: MINOR FOUL, MAJOR FOUL if actions result in a scoring achievement by the offending ROBOT

DRIVE TEAMS should make their best effort to stop gameplay immediately at the end of the MATCH period. The end of MATCH period buzzer audio cue is approximately 3 seconds long and is used as an unofficial indicator to teams and REFEREES that the MATCH has ended.

11.4.3 SCORING ELEMENT

G407 ***ROBOTS use SCORING ELEMENT as directed.** A ROBOT may not deliberately use a SCORING ELEMENT in an attempt to ease or amplify a challenge associated with a FIELD element other than as intended.

Violation: MAJOR FOUL per SCORING ELEMENT.

Examples include, but are not limited to:

- A. placing SCORING ELEMENTS on other ROBOTS,
- B. using SCORING ELEMENTS to elevate ROBOTS in an attempt to ASCEND the RUNGS of the SUBMERSIBLE, and
- C. positioning SCORING ELEMENTS to impede opponent access to FIELD elements.

G408 ***Keep SCORING ELEMENTS in bounds.** A ROBOT may not intentionally eject a SCORING ELEMENT from the FIELD (either directly or by bouncing off a FIELD element or another ROBOT). SCORING ELEMENTS that leave the FIELD are not returned to gameplay except as allowed in rule [G431](#).

Violation: MAJOR FOUL per SCORING ELEMENT.

SCORING ELEMENTS removed from the FIELD while attempting to score are not a violation of this rule, however, are not returned to the FIELD.

G409 ***Do not damage SCORING ELEMENTS.** Neither a ROBOT nor a HUMAN PLAYER may damage a SCORING ELEMENT.

Violation: Verbal warning, plus MAJOR FOUL if REPEATED. If the damage is caused by a ROBOT, and the Head REFEREE determines that further damage is likely to occur, DISABLED. The ROBOT will then be required to pass reinspection before competing in subsequent MATCHES.

SCORING ELEMENTS are expected to undergo a reasonable amount of wear and tear as they are handled by ROBOTS and humans, such as scratching, marking, and eventually damage due to fatigue. Routinely gouging, tearing off pieces, or marking SCORING ELEMENTS are violations of this rule.

G410 **1 SAMPLE or SPECIMEN at a time.** A ROBOT may not CONTROL more than 1 SAMPLE or 1 SPECIMEN at a time, either directly or transitively through other objects. There is no limit to the number of CLIPS a ROBOT may possess.

A ROBOT is in CONTROL of a SAMPLE or SPECIMEN if:

- A. the SAMPLE or SPECIMEN is fully supported by the ROBOT or
- B. it intentionally pushes a SAMPLE or SPECIMEN to a desired location or in a preferred direction (i.e., herding, often with a concave surface)

Exceptions to this rule are as follows:

- C. ROBOTS may MOMENTARILY exceed CONTROL limits while collecting SAMPLES that are in the SUBMERSIBLE ZONE.
- D. scored SAMPLES or SPECIMENS for the corresponding ALLIANCE are exempt from the CONTROL limit.

Violation: MINOR FOUL per additional SAMPLE and/or SPECIMEN, plus YELLOW CARD if excessive.

Examples of interaction with a SAMPLE or SPECIMEN that are not "CONTROL" include, but are not limited to:

- A. PLOWING or "bulldozing" (inadvertent contact with a SAMPLE or SPECIMEN, typically via a flat or convex surface, while in the path of the ROBOT moving about the FIELD).
- B. "deflecting" (being hit by a SAMPLE or SPECIMEN that bounces off a ROBOT).

Excessive violations of CONTROL limits include, but are not limited to, simultaneous CONTROL of 3 or more SAMPLES and/or SPECIMENS, or frequent, greater-than MOMENTARY CONTROL (i.e., more than twice in a MATCH) of 2 or more SAMPLES and/or SPECIMENS. REPEATED excessive violations of this rule do not result in additional YELLOW CARDS unless the violation reaches the level of egregious to trigger a [G201](#) violation.

G411 **ROBOTS may not CONTROL the opposing ALLIANCE'S SPECIFIC SAMPLES or SPECIMENS.** ROBOTS may only have MOMENTARY CONTROL of opposing ALLIANCE SPECIFIC SAMPLES or SPECIMENS.

Violation: MINOR FOUL per SCORING ELEMENT, plus an additional MINOR FOUL per opposing SCORING ELEMENT for each 5-second interval that the situation continues. A MAJOR FOUL is applied for each SCORING ELEMENT that is scored while in CONTROL.

G412 **ROBOTS may not de-score opposing ALLIANCE SCORING ELEMENTS.** ROBOTS may not affect the following opposing ALLIANCE achievements.

- A. removal of SAMPLES from the NET ZONE
- B. removal of SAMPLES from the BASKETS
- C. removal of SPECIMENS that are fully clipped onto the CHAMBERS.

SPECIMENS that are not fully clipped onto a CHAMBER and are de-scored from a CHAMBER during normal ROBOT interactions with the SUBMERSIBLE are not penalized.

A SPECIMEN that is taken apart while scored onto the CHAMBER is a violation of this rule and does incur a FOUL.

Violation: MAJOR FOUL per SCORING ELEMENT that is de-scored.

11.4.4 ROBOT

G413 ***ROBOTS must be safe.** A ROBOT may not pose an undue hazard to a human, an ARENA element, or another ROBOT in the following ways:

- A. the ROBOT or anything it CONTROLS, i.e., a SCORING ELEMENT, contacts anything outside the FIELD.
- B. its operation or design is dangerous or unsafe.

Violation: YELLOW CARD and DISABLED if unsafe or CONTINUOUS.

Examples of dangerous operation or designs that likely pose undue hazards include, but are not limited to:

- A. uncontrolled motion that cannot be stopped by the DRIVE TEAM,
- B. ROBOT parts “flailing” outside of the FIELD,
- C. ROBOTS dragging their battery, and
- D. ROBOTS that consistently extend outside the FIELD.

Please be conscious of REFEREES and FIELD STAFF working around the ARENA who may be in close proximity to your ROBOT.

G414 ***ROBOTS must stop when instructed.** If a team is instructed to DISABLE their ROBOT by a REFEREE per [T202](#), a DRIVE TEAM member must press the (■) stop button on the DRIVER STATION app.

Violation: if more than MOMENTARY delay MAJOR FOUL, plus RED CARD if CONTINUOUS

G415 ***ROBOTS must be identifiable.** A ROBOT’S team number and ALLIANCE color must not become indeterminate by determination of the Head REFEREE.

Violation: Verbal warning, plus YELLOW CARD if subsequent violations during the event.

Teams are encouraged to robustly affix their ROBOT SIGNS to their ROBOT in highly visible locations such that they do not easily fall off or become obscured during normal gameplay.

G416 ***Watch your ARENA interaction.** With the exception of SCORING ELEMENTS (per [G409](#)), ROBOTS may not damage any ARENA elements.

ROBOTS are also prohibited from the following interactions with an ARENA element, except for SCORING ELEMENTS and their ALLIANCE'S RUNGS:

- A. grabbing
- B. grasping
- C. attaching to
- D. becoming entangled with, and
- E. suspending from

Scoring SPECIMENS on CHAMBERS does not constitute a violation of this rule.

Violation: Verbal warning, plus YELLOW CARD if REPEATED or longer than MOMENTARY, and for any subsequent damage during the MATCH or event. If the Head REFEREE infers that damage is likely, DISABLED. Corrective action (such as eliminating sharp edges, removing the damaging MECHANISM, and/or reinspection) may be required before the ROBOT will be allowed to compete in subsequent MATCHES.

G417 **Stay in CONTROL of your SCORING ELEMENTS.** SCORING ELEMENTS may not be LAUNCHED.

Violation: MINOR FOUL per SCORING ELEMENT LAUNCHED.

This rule is intended to prevent designs which use LAUNCHING to strategically play the game. This is not intended to penalize teams with active manipulators which are expelling SCORING ELEMENTS through normal operation.

G418 **Horizontal expansion limit.** After the MATCH has started, ROBOTS may expand beyond the STARTING CONFIGURATION but are still subject to sizing constraints. The sizing constraints are specified in [R104](#).

Violation: if more than MOMENTARY, MINOR FOUL, or MAJOR FOUL if the over-expansion is used for strategic benefit, including if it impedes or enables a scoring action.

This rule is intended to limit the amount of floor area each ROBOT can cover with the maximum range of motion of all extensions. All possible movement of extensions outside the STARTING CONFIGURATION must be constrained as described in [R104](#).

During the MATCH REFEREES may use ARENA elements to help gauge ROBOT expansion during the MATCH. For example:

- A. TILES are approximately 24 in. (~61 cm)
- B. The RUNGS on the SUBMERSIBLE are 44.5 in. (~113 cm) wide

G419 **Watch out for Humans.** A ROBOT may not:

- A. enter the OBSERVATION ZONE while a HUMAN PLAYER is in the OBSERVATION ZONE.
- B. contact a SCORING ELEMENT, either directly or transitively, that is controlled/possessed by a HUMAN PLAYER.

Violation: MINOR FOUL per occurrence. YELLOW CARD if the ROBOT contacts the HUMAN PLAYER.

[G419](#), [G431](#), and [G432](#) do not stack. One FOUL should be called per occurrence of the violation per ALLIANCE. For example, two FOULS would be called in the case where the ROBOT and HUMAN PLAYER are on separate ALLIANCES.

G420 **No climbing on the inside.** ROBOTS must start their ASCENT with their CHASSIS completely outside the SUBMERSIBLE ZONE.

Violation: MAJOR FOUL, and team will not receive credit for ASCENT scoring outlined in section 10.5.3

The purpose of this rule is to limit how much of the ROBOT may be inside the SUBMERSIBLE ZONE before the ASCENT begins. ROBOT elements are allowed to reach into the SUBMERSIBLE ZONE while attempting to ASCEND, as long as the ROBOT CHASSIS remains completely outside the SUBMERSIBLE ZONE. It is expected that there will be some contact between opponent ROBOTS within the SUBMERSIBLE ZONE, and this is intended to minimize the extent of that contact.

11.4.5 Opponent Interaction

Note, [G421](#) and [G422](#) are mutually exclusive. A single ROBOT to ROBOT interaction which violates more than one of these rules results in the most punitive penalty, and only the most punitive penalty, being assessed.

G421 ***This is not combat robotics.** A ROBOT may not deliberately damage or deliberately functionally impair an opponent ROBOT as perceived by a REFEREE.

Damage or functional impairment because of contact with a tipped-over or DISABLED opponent ROBOT, which is not perceived by a REFEREE to be deliberate, is not a violation of this rule.

Violation: MAJOR FOUL and YELLOW CARD, or if opponent ROBOT is unable to drive, then MAJOR FOUL and RED CARD.

FIRST Tech Challenge can be a high-contact competition and may include rigorous gameplay. While this rule aims to limit severe damage to ROBOTS, teams should design their ROBOTS to be robust. Teams are expected to act responsibly.

Examples of violations of this rule include, but are not limited to:

- A. A ROBOT high-speed rams and/or REPEATEDLY smashes an opponent ROBOT and causes damage. The REFEREE infers that the ROBOT was deliberately trying to damage the opponent's ROBOT.

At the conclusion of the MATCH, the Head REFEREE may elect to visually inspect a ROBOT to confirm violations of this rule made during a MATCH and remove the violation if the damage cannot be verified.

"Unable to drive" means that because of the incident, the DRIVER can no longer drive to a desired location in a reasonable time (generally). For example, if a ROBOT can only move in circles, or can only move extremely slowly, the ROBOT is considered unable to drive.

G422 ***Do not tip or entangle.** A ROBOT may not deliberately, as perceived by a REFEREE, attach to, tip, or entangle an opponent ROBOT.

Violation: MAJOR FOUL and YELLOW CARD, or if CONTINUOUS or opponent ROBOT is unable to drive, then MAJOR FOUL and RED CARD.

Examples of violations of this rule include, but are not limited to:

- A. using a wedge-like MECHANISM to tip over an opponent ROBOT
- B. making frame-to-frame contact with an opponent ROBOT that is attempting to right itself after previously falling over and causing them to fall over.
- C. causing an opponent ROBOT to tip over by contacting the ROBOT after it starts to tip if, in the judgement of the REFEREE, that contact could have been avoided.

Tipping as an unintended consequence of normal ROBOT-to-ROBOT interaction, including single frame-to-frame hits that result in a ROBOT tipping, as perceived by the REFEREE, is not a violation of this rule.

"Unable to drive" means that because of the incident, the DRIVER can no longer drive to a desired location in a reasonable time (generally). For example, if a ROBOT can only move in circles, or can only move extremely slowly, the ROBOT is considered unable to drive.

G423 *There is a 5-count on PINS. A ROBOT may not PIN an opponent's ROBOT for more than 5 seconds. A ROBOT is PINNING if it is preventing the movement of an opponent ROBOT by contact, either direct or transitive (such as against a FIELD element) and the opponent ROBOT is attempting to move. A PIN count ends once any of the following criteria below are met:

- A. the ROBOTS have separated by at least 2 ft. (~61 cm) from each other for more than 5 seconds,
- B. either ROBOT has moved 2 ft. from where the PIN initiated for more than 5 seconds, or
- C. the PINNING ROBOT gets PINNED.

For criteria A, the PIN count pauses once ROBOTS are separated by 2 ft. until either the PIN ends or the PINNING ROBOT moves back within 2 ft., at which point the PIN count is resumed.

For criteria B, the PIN count pauses once either ROBOT has moved 2ft from where the PIN initiated until the PIN ends or until both ROBOTS move back within 2ft., at which point the PIN count is resumed.

Violation: MINOR FOUL, plus an additional MINOR FOUL for every 5 seconds in which the situation is not corrected.

G424 *Do not use strategies intended to shut down major parts of gameplay. A ROBOT or ROBOTS may not, in the judgment of a REFEREE, isolate or close off any major element of MATCH play for a greater-than-MOMENTARY duration.

Violation: MINOR FOUL, plus an additional MINOR FOUL for every 5 seconds in which the situation is not corrected.

Examples of violations of this rule include, but are not limited to:

- A. shutting down access to all SCORING ELEMENTS,
- B. quarantining an opponent to a small area of the FIELD,
- C. quarantining SCORING ELEMENTS out of the opposing ALLIANCE'S reach,
- D. blocking all access to the opponent's BASKETS, NET ZONE, CHAMBERS, or OBSERVATION ZONE, and
- E. blocking all access to SCORING ELEMENTS in the SUBMERSIBLE ZONE

G425 NET ZONE Protection. A ROBOT may not contact (either directly or transitively through a SCORING ELEMENT CONTROLLED by either ROBOT, regardless of who initiates contact) an opponent ROBOT if any part of either ROBOT is in the opponent's NET ZONE.

Violation: MAJOR FOUL per occurrence.

G426 OBSERVATION ZONE Protection. A ROBOT may not be in the opposing ALLIANCE'S OBSERVATION ZONE. A ROBOT that is being PINNED is exempt from this rule.

Violation: MINOR FOUL, MINOR FOUL for every 5 seconds the violation continues. Additional MINOR FOUL for every SCORING ELEMENT contacted inside the OBSERVATION ZONE.

In the scenario where a ROBOT is being PINNED in their opponent's OBSERVATION ZONE, REFEREES are instructed to disregard [G426](#) and focus on the PINNING.

G427 Climbing ROBOTS are protected. In the last 30 seconds of the MATCH, a ROBOT may not contact (either directly or transitively through a SCORING ELEMENT CONTROLLED by either ROBOT and regardless of who initiates contact) an opponent ROBOT if any part of either ROBOT is in the opponent's ASCENT ZONE. Exceptions to this rule are as follows:

- A. Contact occurring while both ROBOTS have achieved LEVEL 2 or LEVEL 3 ASCENT.

Violation: MAJOR FOUL plus the affected ALLIANCE ROBOT is awarded a LEVEL 3 ASCENT.

Teams should be aware that the SUBMERSIBLE ZONE is a constrained space and ROBOTS swinging during their ASCENT may contact each other and teams should design their ROBOTS to be resilient to incidental contact.

ROBOTS that are attempting to play defense within the SUBMERSIBLE ZONE or the ASCENT ZONES during the last 30 seconds of the MATCH are likely to incur penalties.

11.4.6 Human

G428 *No wandering. DRIVE TEAM members must remain in their designated ALLIANCE AREA.

- A. DRIVE TEAMS may be anywhere in their respective ALLIANCE AREA during a MATCH.
- B. DRIVE TEAM members must be staged inside their respective ALLIANCE AREA prior to MATCH start.

The intent of this rule is to prevent DRIVE TEAM members from leaving their assigned AREA during a MATCH to gain a competitive advantage. For example, moving to another part of the FIELD for better viewing, reaching into the FIELD, etc. Simply breaking the plane of the AREA during normal MATCH play is not a FOUL.

Exceptions are granted in cases concerning safety and for actions that are inadvertent, MOMENTARY, and inconsequential.

Violation: Verbal warning, subsequent violations receive a MINOR FOUL per occurrence.

G429 *DRIVE COACHES and other teams: hands off the controls. A ROBOT shall be operated only by the DRIVERS of that team, DRIVE COACHES may not handle the gamepads. DRIVE COACHES, if desired, may help the DRIVERS in the following ways:

- A. holding the DRIVER STATION device,
- B. troubleshooting the DRIVER STATION device,
- C. selecting OpModes on the DRIVER STATION app,
- D. pressing the INIT button on the DRIVER STATION app,
- E. pressing the (▶) start button on the DRIVER STATION app, or
- F. pressing the (■) stop button on the DRIVER STATION app.

Violation: MAJOR FOUL, plus YELLOW CARD if greater-than-MOMENTARY.

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

G430 *DRIVE TEAMS, watch your reach. Once a MATCH starts, a DRIVE TEAM member may not extend into the FIELD except as specifically allowed by [G431](#) and [G432](#).

Violation: MAJOR FOUL per occurrence, YELLOW CARD if the DRIVE TEAM member contacts the ROBOT

Exceptions are granted in cases concerning safety and for actions that are inadvertent, MOMENTARY, and inconsequential.

G431 HUMAN PLAYERS manipulate SCORING ELEMENTS within limits. Only the HUMAN PLAYER may introduce SCORING ELEMENTS into or retrieve SCORING ELEMENTS from the OBSERVATION ZONE.

- A. any number of SCORING ELEMENTS can be manipulated by the HUMAN PLAYER at a time.
- B. SCORING ELEMENTS may be placed in any orientation and/or in contact with other SCORING ELEMENTS.
- C. HUMAN PLAYERS may only place SCORING ELEMENTS into the OBSERVATION ZONE during the AUTO and TELEOP periods of the MATCH.
- D. HUMAN PLAYERS may not be in contact with a SCORING ELEMENT, either directly or transitively, that is possessed/controlled by a ROBOT.
- E. HUMAN PLAYERS may reintroduce SCORING ELEMENTS to the OBSERVATION ZONE that have left the FIELD as a result of a ROBOT attempting to collect it from the OBSERVATION ZONE or FIELD wall within the OBSERVATION ZONE, as long as no other rules are violated (e.g. rule G428).
- F. HUMAN PLAYERS may manipulate opposing ALLIANCE SCORING ELEMENTS that have been placed into their ALLIANCE'S OBSERVATION ZONE. The opposing ALLIANCE SCORING ELEMENTS may not be removed from the OBSERVATION ZONE, but may be moved within the OBSERVATION ZONE.

Violation: MINOR FOUL per occurrence. YELLOW CARD if the HUMAN PLAYER contacts the ROBOT.

SPECIMENS hung from the FIELD wall in the OBSERVATION ZONE are still considered in the OBSERVATION ZONE and may be manipulated by the HUMAN PLAYER.

[G419](#) and [G431](#) do not stack. One FOUL should be called per occurrence of the violation per ALLIANCE. For example, two FOULS would be called in the case where the ROBOT and HUMAN PLAYER are on separate ALLIANCES.

G432 Watch out for ROBOTS. A HUMAN PLAYER cannot break the vertical plane of the FIELD wall when a ROBOT is in the OBSERVATION ZONE. The only exceptions are:

- A. The ROBOT in the OBSERVATION ZONE has been declared DISABLED by a REFEREE.

Violation: MINOR FOUL per occurrence. YELLOW CARD if the HUMAN PLAYER contacts the ROBOT.

[G419](#), [G431](#), and [G432](#) do not stack. One FOUL should be called per occurrence of the violation per ALLIANCE. For example, two FOULS would be called in the case where the ROBOT and HUMAN PLAYER are on separate ALLIANCES.

G433 HUMAN PLAYERS may not yeet SCORING ELEMENTS. HUMAN PLAYERS may not cause SCORING ELEMENTS to exit the OBSERVATION ZONE into the remainder of the FIELD.

HUMAN PLAYERS should take care when releasing SCORING ELEMENTS into the OBSERVATION ZONE. The final resting place of the SCORING ELEMENTS is the responsibility of the HUMAN PLAYER, regardless of what the SCORING ELEMENTS hits as it is released.

Violation: MAJOR FOUL per SCORING ELEMENT.

G434 No tools to introduce or retrieve SCORING ELEMENTS. The HUMAN PLAYER may not use a tool to manipulate a SCORING ELEMENT.

Violation: MINOR FOUL per occurrence

Accommodations and/or exceptions for HUMAN PLAYERS with a disability and/or an extenuating circumstance will be made at the discretion of the head REFEREE and/or Event Director.

11.5 Post-MATCH

G501 *Leave promptly. A DRIVE TEAM member may not cause significant or multiple post-MATCH delays.

Violation: Verbal warning plus YELLOW CARD if subsequent violations at any point during the event.

G502 *Stop ROBOTS before entering the FIELD. DRIVE TEAM members may not enter the FIELD to recover ROBOTS until:

- A. the Head REFEREE has signaled it is okay to enter the field and
B. the DRIVE TEAM has pressed the (■) stop button on their DRIVER STATION app

Violation: Verbal warning plus YELLOW CARD if subsequent violations at any point during the event.

