

7 Game Rules

7.1 Personal Safety

- G101** ***Humans, stay off the FIELD until green.** A team member may only enter the FIELD if FIELD lighting (SUBWOOFER and FIELD facing side of the team signs and timers) is green, unless explicitly instructed by a REFEREE or an FTA.

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

Violations of this rule apply to the entire team, not specifically to any 1 individual. For example, a member of Team 9999 enters the FIELD prior to lights going green after MATCH 3, and a different member enters the FIELD prior to lights going green after MATCH 25. The team receives a verbal warning for the first violation and a YELLOW CARD for the second.

- G102** ***Never step over the guardrail.** A team member may only enter or exit the FIELD through open gates.

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

Teams are encouraged to ensure that all members of their DRIVE TEAM are aware of this rule. It's easy to violate, particularly when teams are doing their best to move on and off the FIELD quickly. The violations of this rule are intended to avoid nuisance penalties, but still enforce safety requirements around the FIELD. There is the potential for injury when stepping over the guardrail.

Violations of this rule apply to the entire team, not specifically to any 1 individual. For example, a member of Team 9999 steps over the guardrail prior to MATCH 3, and a different member steps over the guardrail prior to MATCH 25. The team receives a verbal warning for the first violation and a YELLOW CARD for the second.

- G103** ***Be careful what you interact with.** A team member is prohibited from the following actions with regards to interaction with ARENA elements.
- climbing on or inside,
 - hanging from,
 - manipulating such that it doesn't return to its original shape without human intervention, and
 - damaging.

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

- G104** ***Teams may not enable their ROBOTS on the FIELD.** Teams may not tether to the ROBOT while on the FIELD except in special circumstances (e.g. after Opening Ceremonies, before an immediate MATCH replay, etc.) and with the express permission from the FTA or a REFEREE.

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

Teams are encouraged to consider this rule when developing their ROBOTS. FMS will not enable ROBOTS after the conclusion of the MATCH. For the purposes of this rule, tethering includes any wired or wireless connection used to electrically energize and/or control elements on the ROBOT. The safety of teams and volunteers in close proximity to ROBOTS and ARENA elements on

the FIELD is of the utmost importance, therefore ROBOTS or ROBOT COMPONENTS may not be enabled in any way on the FIELD before or after the MATCH.

ROBOTS need to be safely transported off the FIELD and back to the pits after the MATCH, and there may be bystanders, doorways, or height restrictions along the route.

7.2 Conduct

G201 *Be a good person. All teams must be civil toward everyone and respectful of team and event equipment while at a FIRST Robotics Competition event.

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

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’s been made or a question’s 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 *Don’t bang on the glass. A team member may never strike or hit the DRIVER STATION plastic windows.

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, B, and C, in which Team C is encouraged by Team D to not get ONSTAGE at the end of the MATCH, resulting in Teams A, B, and C not earning a Ranking Point. 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, B, and C, in which Team A is assigned to participate as a SURROGATE. Team D encourages Team A to not

participate in the MATCH so that Team D gains ranking position over Teams B and C. 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 miss Ranking Points, 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, B, and C. Team D requests Team C ignore the STAGE at the end of the MATCH, resulting in Teams A, B, and C not being able to earn the ENSEMBLE. Team C accepts this request from Team D. Team D’s motivation for this behavior is to prevent Team A from rising in the Tournament rankings negatively affecting Team D’s ranking. Team C has violated this rule.

Example 2: A MATCH is being played by Teams A, B, and C, 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 Teams B and C. 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 or sacrifice Ranking Points in an effort to lower their own ranking 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 (i.e. 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** *Don’t violate rules for RPs. A team or ALLIANCE may not collude with their opponent to each purposefully violate a rule in an attempt to earn each ALLIANCE a Ranking Point.

Violation: YELLOW CARD and the ALLIANCE is ineligible for MELODY and ENSEMBLE RPs.

For example, if Team A on the blue ALLIANCE agrees with Team F on the red ALLIANCE to enter the blue STAGE ZONE during the last 20 seconds of a Qualification MATCH and wait to be contacted by Team F, and then both ROBOTS drive to the red STAGE ZONE so that Team A can contact Team F in their STAGE ZONE leading in both ALLIANCES being awarded the ENSEMBLE RP.

G207 *Don't abuse ARENA access. A team member (except DRIVERS, HUMAN PLAYERS, and COACHES) granted access to restricted areas in and around the ARENA (e.g. via TECHNICIAN button, event issued Media badges, etc.) may not assist or use signaling devices during the MATCH. Exceptions will be granted for inconsequential infractions and in cases concerning safety.

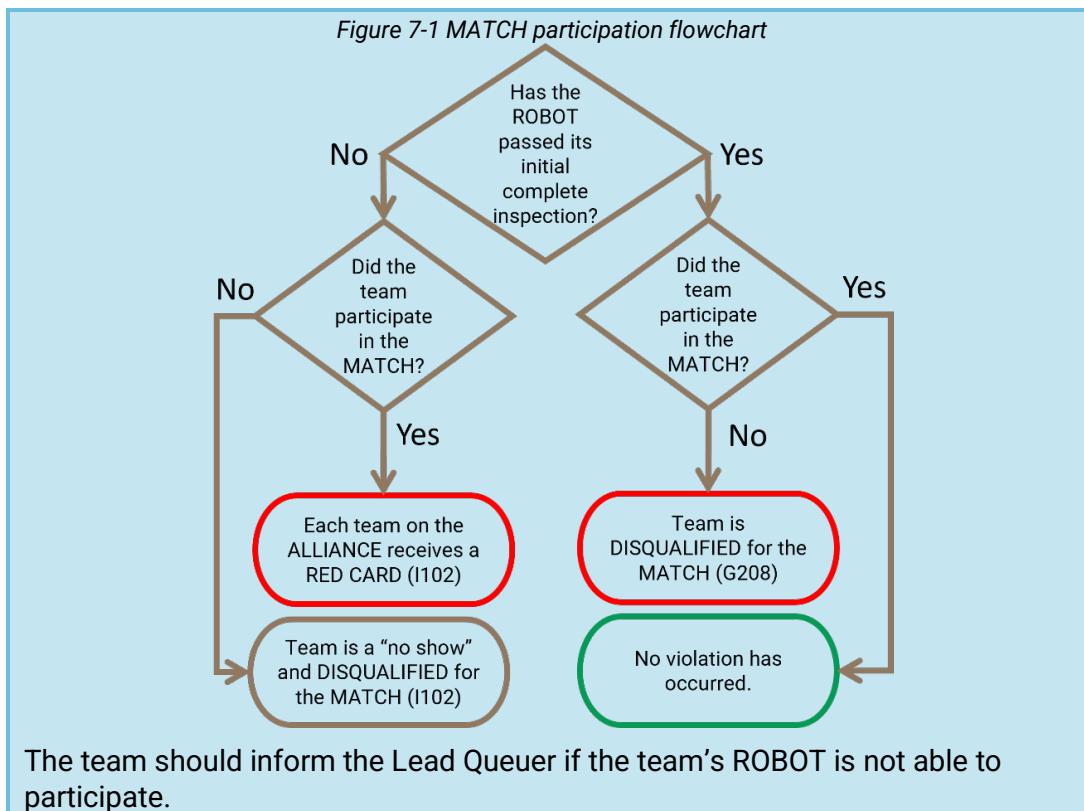
Violation: *YELLOW CARD.*

The TECHNICIAN'S role is to help the team prepare the ROBOT so it can perform at its full potential during a MATCH. The TECHNICIAN, except as described at the end of [Section 6.2 DRIVE TEAM](#), is not an additional COACH, DRIVER, or HUMAN PLAYER.

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.

G208 *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 and Playoff MATCHES.

Violation: *DISQUALIFIED.*



G209 *Enter only 1 ROBOT. Each registered FIRST Robotics Competition team may enter only 1 ROBOT (or "robot," a ROBOT-like assembly equipped with most of its drive base, i.e. its MAJOR MECHANISM that enables it to move around a FIELD) into a 2024 FIRST Robotics Competition Event.

Violation: *Verbal warning.*

“Entering” a ROBOT (or robot) into a *FIRST* Robotics Competition means bringing it to or using it at the event such that it’s 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.

G210 ***Keep it together.** A ROBOT may not intentionally detach or leave a part on the FIELD.

Violation: RED CARD.

G211 ***Don’t expect to gain by doing others harm.** A strategy clearly aimed at forcing the opponent ALLIANCE to violate a rule is not in the spirit of *FIRST* Robotics Competition and not allowed. Rule violations forced in this manner will not result in an assignment of a penalty to the targeted ALLIANCE.

Violation: FOUL, plus TECH FOUL if REPEATED.

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

- A. a red ALLIANCE ROBOT in their STAGE ZONE in the final 20 seconds of the MATCH contacts a blue ALLIANCE ROBOT.
- B. a blue ROBOT attempts to cut between the red AMP ZONE and the red STAGE, and a nearby red ROBOT tries to impede it via a defensive bump and, as a result, the blue ROBOT crosses into the red AMP ZONE.
- C. a blue ROBOT attempts to enter their SOURCE ZONE to retrieve a NOTE and pushes a red ROBOT just outside the blue SOURCE ZONE into it.

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

- D. forcing an opponent ROBOT to have greater than MOMENTARY CONTROL of more than 1 NOTE.
- E. a blue ALLIANCE ROBOT, already in CONTROL of a NOTE, pushing a red ALLIANCE ROBOT from fully outside and far from (i.e. more than 4 ft. (~121 cm)) the blue SOURCE ZONE into the blue SOURCE ZONE and the REFEREE perceiving that the blue ROBOT is deliberately making the red ROBOT violate [G423](#).
- F. a blue ALLIANCE ROBOT pushes a red ALLIANCE ROBOT from the red WING into the blue STAGE ZONE. The REFEREE infers that the blue ROBOT’S strategy is to force the red ALLIANCE ROBOT to violate [G424](#) via contact with blue ALLIANCE ROBOTS in their STAGE ZONE during the last 20 seconds of the MATCH. This is a violation of this rule, will not result in an assignment of the [G424](#) penalty, and, because severity of the action and magnitude of the attempted outcome, is likely egregious as described in [G212](#).

G212 ***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.

Please see [Section 6.6.1 YELLOW and RED CARDS](#) for additional detail.

Violation: YELLOW or RED CARD.

The intent of this rule is to provide the Head REFEREES 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 or integrity of the game at risk. Those behaviors include, but are not limited to the list below:

- A. inappropriate behavior as outlined in the blue box of [G201](#),
- B. jumping over the guardrail,
- C. pushing past the FIELD reset person blocking an open gate to get on the FIELD,
- D. reaching into the FIELD and grabbing a ROBOT during a MATCH,
- E. PINNING in excess of 15 seconds,
- F. exploiting the 5-second window after a MATCH described in Section 6.5 Scoring to avoid rule violations (e.g. triggering an over-extension that enables ONSTAGE points or using a ROBOT'S residual energy to impact an opponent ROBOT on their STAGE),
- G. triggering scoring sensors or otherwise interfering with FMS or FIELD operation,
- H. feeding a NOTE to a ROBOT from behind the AMP, violating [G429](#), to increase rate of scoring and accelerate progress toward the MELODY RP, and
- I. climbing on a STAGE.

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.

7.3 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

Event volunteers communicate schedule delays with teams to the best of their ability. The Pit Display (which is typically located near the Pit Administration desk) shows any event timing delay. Announcements on the FIELD and in the pits also provide information on delays, and any team uncertain of when to queue for a MATCH should communicate with queuing volunteers.

During Qualification MATCHES, the expected start time of the MATCH is the time indicated on the MATCH schedule or the cycle time for current round minus 3 minutes from the end of the previous MATCH (which is reflected on the schedule on the Pit Display), whichever is later.

During Playoff MATCHES, the expected start time of the MATCH is the time indicated on the MATCH schedule or 15 minutes from either ALLIANCE'S previous MATCH, whichever is later.

- B. The DRIVE TEAM has access to the FIELD 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 [G208](#) 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: If a Qualification MATCH, verbal warning, or if a subsequent violation within the tournament phase, TECH FOUL applied to their upcoming MATCH. If the DRIVE TEAM is not MATCH ready within 2 minutes of the verbal warning/TECH FOUL and the Head REFEREE perceives no good faith effort by the DRIVE TEAM to quickly become MATCH ready, DISABLED. If a Playoff MATCH, verbal warning issued the ALLIANCE, or if an ALLIANCE'S subsequent violation within the tournament phase, TECH FOUL applied to their upcoming MATCH. If the ALLIANCE is not MATCH ready within 2 minutes of the verbal warning having been issued to all 3 teams/TECH FOUL and the Head REFEREE perceives no good faith effort by the DRIVE TEAM to quickly become MATCH ready, their ROBOT is 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/TECH 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 an OPERATOR CONSOLE computer to boot, and
- D. working with FIELD STAFF to get the ROBOT connected to the FIELD.

Examples that are not considered good faith efforts to quickly become MATCH ready include but are not limited to:

- E. a ROBOT not moving to the FIELD,
- F. a ROBOT moving to the FIELD but being actively modified while doing so,
- G. a DRIVE TEAM member remaining on the FIELD once a MATCH is ready to begin (indicated by the green LEDs having turned off),
- H. installing BUMPERS, charging pneumatic systems, or any other ROBOT maintenance not considered a quick fix as described in item B above once on the FIELD,

- I. time-consuming use of alignment devices that are external to the ROBOT (e.g. a DRIVE TEAM could bring and use a measuring tape, as long as there is no delay to the MATCH by doing so), and
- J. repairs more substantial than those described in B.

There are no rules that prohibit use of hand tools (including battery operated tools) while setting up ROBOTS from the FIELD, provided they do not cause significant delay or cause safety concerns.

- G302 *You can't bring/use anything you want.** 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 OPERATOR CONSOLE,
 - B. non-powered signaling devices,
 - C. reasonable decorative items,
 - D. special clothing and/or equipment required due to a disability,
 - E. devices used solely for planning, tracking, and communicating strategy within the same designated area (e.g. ALLIANCE AREA),
 - F. devices used solely to record gameplay, and
 - G. 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 B-G must meet all following conditions:

- I. do not connect or attach to the OPERATOR CONSOLE, FIELD, or ARENA,
- II. do not connect or attach to another ALLIANCE member (other than items in category G),
- III. do not communicate with anything or anyone outside of the ARENA,
- IV. do not communicate with the TECHNICIAN,
- V. do not include any form of enabled wireless electronic communication with the exception of medically required equipment, and
- VI. do 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 B 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.

Examples of equipment that may be considered a safety hazard in the confined space of the ALLIANCE AREA include, but are not limited to, a step stool or a large signaling device.

Examples of remote sensing capabilities include, but are not limited to, vision systems, acoustic range finders, sonars, and infrared proximity sensors.

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 *Start your ROBOTS.** A ROBOT must meet all following MATCH-start requirements:

- A. it does not pose a hazard to humans, FIELD elements, or other ROBOTS,
- B. has passed initial, complete inspection, i.e. it's compliant with all ROBOT rules (for exceptions regarding Practice MATCHES, see Section 10.4 Practice MATCHES),
- C. if modified after initial Inspection, it's compliant with I104,
- D. its BUMPERS are fully contained in their ROBOT STARTING ZONE,
- E. it's the only team-provided item left on the FIELD,
- F. it's not attached to, entangled with, or suspended from any FIELD element,
- G. it's confined to its STARTING CONFIGURATION (reference R102 and R104), and
- H. it fully and solely supports not more than 1 NOTE (as described in [Section 6.3.4 GAME PIECES](#)).

If a ROBOT is BYPASSED 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.

Please take note of this rule. It is important that teams ensure 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.

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

Violation: If fix is a quick remedy, the MATCH won't start until all requirements are met. If it is not a quick remedy, DISABLED and, at the discretion of the Head REFEREE, must be re-inspected. If a ROBOT not compliant with part B participates, its ALLIANCE receives a RED CARD. If a ROBOT not compliant with part C participates, its team receives a RED CARD.

7.4 In-MATCH

Rules in this section pertain to game play once a MATCH begins.

7.4.1 AUTO

The AUTO period is the first 15 seconds of the MATCH, and the FMS blocks any DRIVER control, so ROBOTS operate with only their pre-programmed instructions. Rules in this section apply only during the AUTO period.

- G401** ***Behind the lines.** In AUTO, a DRIVE TEAM member staged behind a STARTING LINE may not contact anything in front of that STARTING LINE, unless for personal or equipment safety, to press the E-Stop or A-Stop, or granted permission by a Head REFEREE or FTA.

Violation: FOUL regardless of the number of items contacted.

Pointing, gesturing, or otherwise extending across the STARTING LINE such that contact is not made with carpet or other ARENA elements is not a violation of this rule.

An example of an exception for equipment safety is if an OPERATOR CONSOLE starts to fall from, or has already fallen off of, the DRIVER STATION shelf. In that circumstance, DRIVE TEAM members may step forward to catch it or pick it up off the ground and return it to the shelf.

- G402** ***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 unless for personal safety, OPERATOR CONSOLE safety, or pressing an E-Stop or A-Stop.

Violation: FOUL and YELLOW CARD

G403 1 NOTE at a time. In AUTO, a ROBOT may not CONTROL more than 1 NOTE at a time, either directly or transitively through other objects.

A ROBOT is in CONTROL of a NOTE if:

- A. the NOTE is fully supported by or stuck in, on, or under the ROBOT or
- B. it intentionally pushes a NOTE to a desired location or in a preferred direction (i.e. herding).

Examples of interaction with a NOTE that are not “CONTROL” include, but are not limited to:

- A. “bulldozing” (inadvertent contact with a NOTE while in the path of the ROBOT moving about the FIELD)
- B. “deflecting” (being hit by a NOTE that bounces into or off a ROBOT).

It is important to design your ROBOT so that it is impossible to inadvertently or unintentionally CONTROL more than the limit.

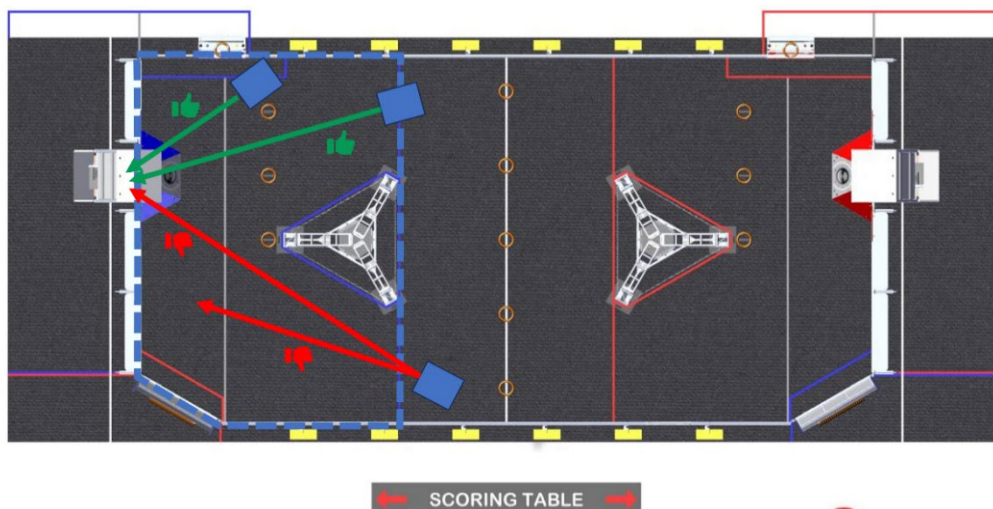
A ROBOT that pushes a NOTE from its staged location as described in [Section 6.3.4 GAME PIECES](#) may be considered herding that NOTE per [G403-B](#). A ROBOT that pushes a NOTE that is no longer in its staged location is likely considered having bulldozed the NOTE per part A of this Blue Box.

Violation: TECH FOUL per additional NOTE.

G404 Only close shots in AUTO. In AUTO, a ROBOT whose BUMPERS are completely outside their WING may not cause a NOTE to travel into or through their WING such that the NOTE enters the WING while not in contact with that ROBOT.

Violation: TECH FOUL.

Figure 7-2 NOTE movement limitations in AUTO



G405 Limited AUTO opponent interaction. In AUTO, a ROBOT whose BUMPERS are completely across the CENTER LINE (i.e. to the opposite side of the CENTER LINE from its ROBOT STARTING ZONE) may contact neither an opponent ROBOT nor a NOTE staged in the opponent’s WING (regardless of who initiates the contact).

Violation: *TECH FOUL*.

7.4.2 GAME PIECES

G406 ***ROBOTS: use GAME PIECES as directed.** A ROBOT may not deliberately use a GAME PIECE in an attempt to ease or amplify a challenge associated with a FIELD element.

Violation: *TECH FOUL per NOTE*

Examples include, but are not limited to:

- A. launching NOTES at ROBOTS,
- B. using GAME PIECES to elevate ROBOTS in an attempt to get ONSTAGE, and
- C. positioning NOTES to impede opponent access to their AMP.

G407 ***Keep NOTES in bounds.** A ROBOT may not intentionally eject a NOTE from the FIELD (either directly or by bouncing off a FIELD element or other ROBOT) other than through a SPEAKER or AMP.

Violation: *TECH FOUL per NOTE*

G408 **ROBOTS, no HIGH NOTES.** A ROBOT may not cause a HIGH NOTE to leave the FIELD (including through an AMP or SPEAKER), score on a MICROPHONE, or enter a TRAP.

Violation: *TECH FOUL per HIGH NOTE. If a ROBOT scores a HIGH NOTE on a MICROPHONE, its ALLIANCE is ineligible for the ENSEMBLE RP.*

G409 **1 NOTE at a time.** In TELEOP, a ROBOT may neither

- A. leave its SOURCE ZONE with CONTROL of more than 1 NOTE nor
- B. have greater-than-MOMENTARY CONTROL of more than 1 NOTE, either directly or transitively through other objects, while outside their SOURCE ZONE.

Violation: *FOUL per additional NOTE, plus YELLOW CARD if excessive.*

Excessive violations of CONTROL limits include, but are not limited to, simultaneous CONTROL of 3 or more NOTES or frequent, greater-than-MOMENTARY CONTROL (i.e. more than twice in a MATCH) of 2 or more NOTES.

G410 **Don't abuse GAME PIECES.** Neither a ROBOT nor a HUMAN PLAYER may damage a GAME PIECE.

Violation: *Verbal warning. TECH FOUL if REPEATED in any subsequent MATCHES during the event. If via a ROBOT and the Head REFEREE determines that further damage is likely to occur, DISABLED. Corrective action (such as eliminating sharp edges, removing the damaging MECHANISM, and/or re-inspection) may be required before the ROBOT may compete in subsequent MATCHES.*

NOTES are expected to undergo a reasonable amount of wear and tear as they are handled by ROBOTS, such as scratching or marking. Routinely gouging, tearing off pieces, or marking NOTES are violations of this rule.

7.4.3 ROBOT

G411 ***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, e.g. a NOTE, contacts anything outside the FIELD except for either of the following:
 - a. MOMENTARY contact inside the CHUTE and
 - b. contact with a surface inside the AMP via a NOTE

- B. its BUMPERS fail such that a segment completely detaches,
- C. a corner (as defined in [R401](#)) of its FRAME PERIMETER is exposed,
- D. its team number or ALLIANCE color are indeterminate,
- E. its BUMPERS leave the BUMPER ZONE REPEATEDLY or for more than a MOMENTARY amount of time, or
- F. its operation or design is dangerous or unsafe.

Violation: *DISABLED*.

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.

G412 ***Keep your BUMPERS low.** BUMPERS must be in the BUMPER ZONE (see [R402](#)).

Violation: *FOUL*.

G413 **Expansion limits.** A ROBOT may not expand beyond either of the following limits:

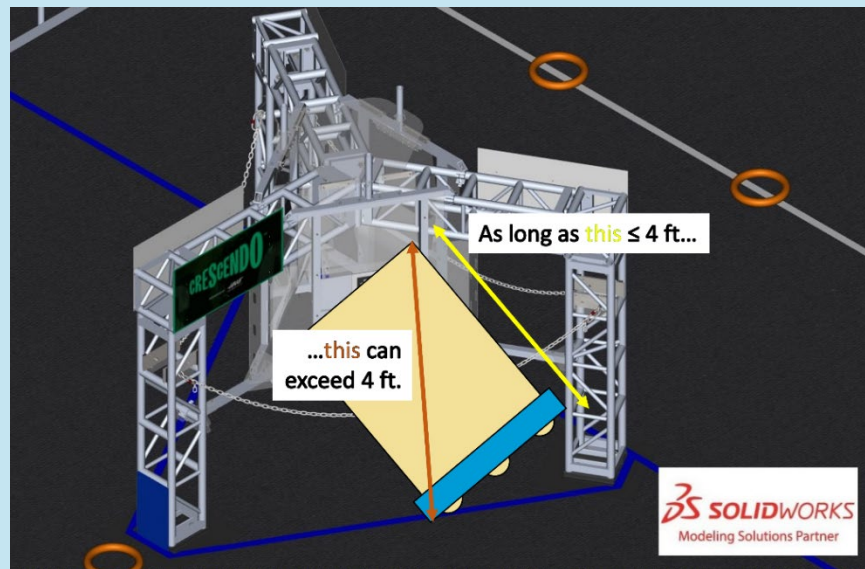
- A. its height, as measured when it’s resting normally on a flat floor, may not exceed 4 ft. (~122 cm) or
- B. it may not extend more than 1 ft. (~30 cm) from its FRAME PERIMETER.

If the over-expansion is due to damage and not used for strategic benefit, as perceived by a REFEREE, it is an exception to this rule, and no penalty is imposed.

Violation: *FOUL*, or *TECH FOUL* if the over-expansion is used for strategic benefit, including if it impedes or enables a scoring action.

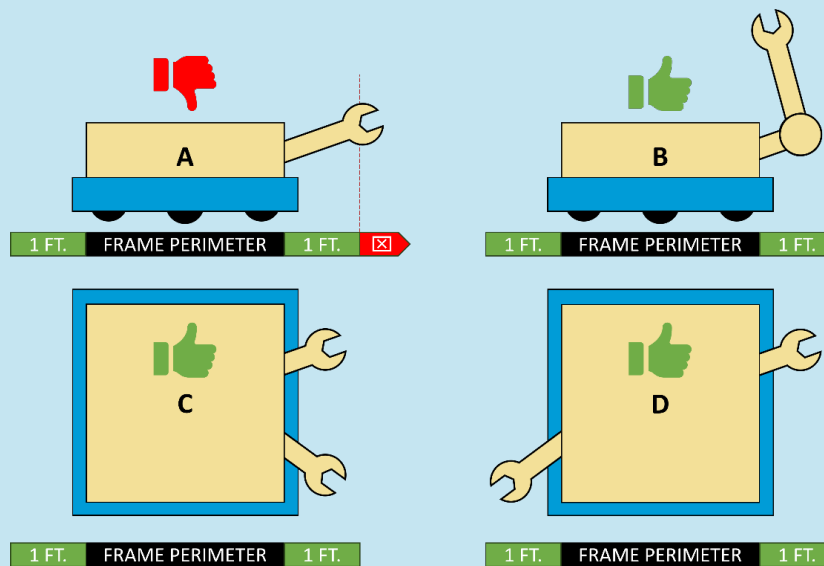
Height is intended to be measured as if the ROBOT is resting on a flat floor, not relative to the height of the ROBOT from the FIELD carpet. For example, a ROBOT that is attempting to get ONSTAGE may actually exceed the height limit when compared to the carpet of the FIELD.

Figure 7-3 ROBOT height elaboration



Examples of compliant and non-compliant extensions are shown in Figure 7-4. ROBOT A violates this rule for having an extension that is too long, while ROBOTS B, C, and D do not violate this rule.

Figure 7-4 Examples of compliance and non-compliance of this rule (examples A and B are side views, examples C and D are top views)



The intent of this rule is to prevent piling a punitive response to a ROBOT that's already experienced hardship and not leveraging that hardship for gain.

Examples for this rule include the following:

- A. a physical device on a team's ROBOT, whose purpose is to restrain their TRAP scoring arm from extending beyond the limit defined in B, breaks after a collision with another ROBOT. Provided the ROBOT does not use the now-too-long extension to score in the AMP, no violation is assigned.
- B. a vertical structural member of a ROBOT breaks at the bottom and rotates out such that it breaches the limit imposed in part B. The ROBOT then parks

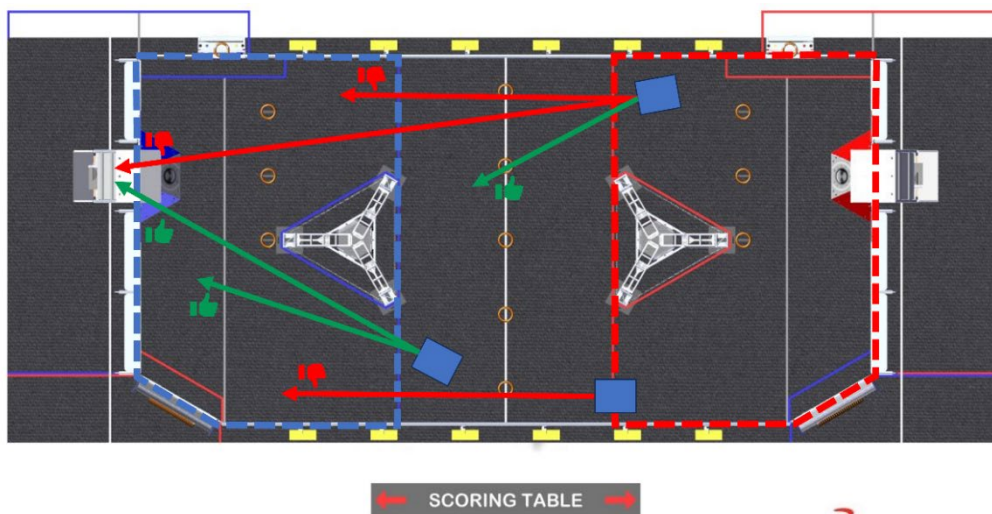
such that its extension blocks opponent ROBOTS from reaching their PODIUM. A TECH FOUL is issued.

C. a latch restraining a shooter MECHANISM from extending above the limit defined in A breaks, allowing the MECHANISM to shift such that it's above the plane of other ROBOTS. The ROBOT uses this new height to get above a defender and score NOTES in their SPEAKER. A TECH FOUL is issued.

G414 **No full-court shots.** A ROBOT with any part of its BUMPERS in their opponent's WING may not cause a NOTE to travel into or through their WING.

Violation: FOUL, plus TECH FOUL if REPEATED.

Figure 7-5 NOTE movement limitations in TELEOP



G415 **Watch your ARENA interaction.** With the exception of GAME PIECES, addressed by [G410](#), a ROBOT may not damage an ARENA element. A ROBOT is prohibited from the following interactions with an ARENA element, except chain (see [G416](#)) and a GAME PIECE (see [Section 7.4.2 GAME PIECES](#)).

- A. grabbing,
- B. grasping,
- C. attaching to (including the use of a vacuum or hook fastener to anchor to the FIELD carpet),
- D. becoming entangled with, and
- E. suspending from.

Violation: TECH FOUL, plus YELLOW CARD if REPEATED, longer than MOMENTARY, or 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 re-inspection) may be required before the ROBOT will be allowed to compete in subsequent MATCHES.

G416 **Don't choke up on the chain.** A ROBOT may not reduce the working length of chain. Incidental actions such as minor twisting due to ROBOT imbalance or ROBOT-to-ROBOT interaction are not considered violations of this rule.

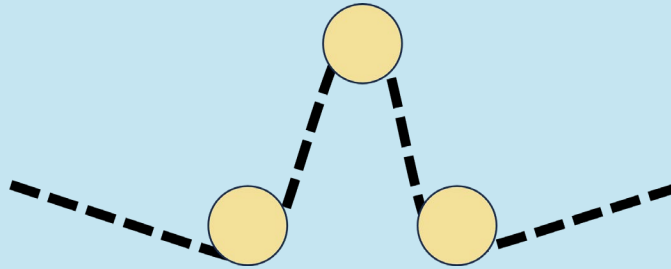
Violation: 2 TECH FOULS and, at the discretion of the Head REFEREE, must be re-inspected.

The intent of this rule is to present the chain as a dynamic version of a rigid bar, and the rule is intended to limit ROBOTS to interaction with the chain as if it were

a bar, i.e. engaging via 1 or more contact points and pushing down on the chain to raise the ROBOT.

Implementations that increase the length of chain between 2 outer ROBOT contact points are reducing the working length of the chain and prohibited. An example includes using opposing MECHANISMS to absorb chain slack, as illustrated in Figure 7-6.

Figure 7-6 Example of reducing the working length of chain



7.4.4 Opponent Interaction

Note, [G417](#), [G418](#), and [G419](#) are mutually exclusive. A single ROBOT to ROBOT interaction which violates more than 1 of these rules results in the most punitive penalty, and only the most punitive penalty, being assessed.

G417 ***Stay out of other ROBOTS.** A ROBOT may not use a COMPONENT outside its FRAME PERIMETER (except its BUMPERS) to initiate contact with an opponent ROBOT inside the vertical projection of that opponent ROBOT'S FRAME PERIMETER.

Violation: FOUL.

For the purposes of this rule, "initiate contact" requires movement towards an opponent ROBOT.

In a collision, it's possible for both ROBOTS to initiate contact.

G418 ***This isn't combat robotics.** A ROBOT may not damage or functionally impair an opponent ROBOT in either of the following ways:

- A. deliberately, as perceived by a REFEREE.
- B. regardless of intent, by initiating contact, either directly or transitively via a GAME PIECE CONTROLLED by the ROBOT, inside the vertical projection of an opponent ROBOT'S FRAME PERIMETER.

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

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

FIRST Robotics Competition can be a full-contact competition and may include rigorous game play. While this rule aims to limit severe damage to ROBOTS, teams should design their ROBOTS to be robust.

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

- A. A ROBOT leaves an arm extended, spins around to change course, and unintentionally hits and damages a COMPONENT inside the FRAME PERIMETER of a nearby opponent ROBOT.

- B. A ROBOT, in the process of trying to quickly reverse direction, tips up on a single pair of wheels, lands atop an opponent ROBOT, and damages a COMPONENT inside that opponent's FRAME PERIMETER.
- C. 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.

Examples of functionally impairing another ROBOT include, but are not limited to:

- D. opening an opponent's relief valve such that the opponent's air pressure drops and
- E. powering off an opponent's ROBOT (this example also clearly results in a RED CARD because the ROBOT is no longer able to drive).

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.

For the purposes of this rule, "initiating contact" requires movement towards an opponent ROBOT.

In a collision, it's possible for both ROBOTS to initiate contact.

"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.

- G419 *Don't tip or entangle.** A ROBOT may not deliberately, as perceived by a REFEREE, attach to, tip, or entangle with an opponent ROBOT.

Violation: TECH FOUL and YELLOW CARD, or if CONTINUOUS or opponent ROBOT is unable to drive, then TECH 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 opponent ROBOTS,
- B. making BUMPER-to-BUMPER contact with an opponent ROBOT that is attempting to right itself after previously falling over and causing them to fall over again, and
- 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 BUMPER to BUMPER 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.

- G420 *There's 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). A PIN count ends once any of the following criteria below are met:

- A. the ROBOTS have separated by at least 6 ft. (~183 cm) from each other for more than 5 seconds,
- B. either ROBOT has moved 6 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 6 ft. until either the PIN ends or the PINNING ROBOT moves back within 6 ft., at which point the PIN count is resumed.

For criteria B, the PIN count pauses once either ROBOT has moved 6ft from where the PIN initiated until the PIN ends or until both ROBOTS move back within 6ft., at which point the PIN count is resumed.

Violation: FOUL, and for every 5 seconds in which the situation is not corrected, a TECH FOUL is assessed.

A team's desired direction of travel is not a consideration when determining if a ROBOT is PINNED.

- G421** ***Don't collude with your partners to shut down major parts of game play.** 2 or more ROBOTS that appear to a REFEREE to be working together may not isolate or close off any major element of MATCH play.

Violation: TECH FOUL, and for every 5 seconds in which the situation is not corrected, a TECH FOUL is assessed.

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

- A. shutting down access to all NOTES,
- B. quarantining all opponents to a small area of the FIELD,
- C. blocking all access to the opponent's SOURCE ZONE, and
- D. blocking all access to the opponent's AMP.

A single ROBOT blocking access to a particular area of the FIELD is not a violation of this rule.

2 ROBOTS independently playing defense on 2 opponent ROBOTS is not a violation of this rule.

- G422** **PODIUM protection.** Prior to the last 20 seconds of a MATCH, a ROBOT may not contact (either directly or transitively through a GAME PIECE CONTROLLED by either ROBOT and regardless of who initiates contact) an opponent ROBOT whose BUMPERS are in contact with their PODIUM.

Violation: TECH FOUL.

- G423** **SOURCE/AMP ZONE protection.** A ROBOT may not contact (either directly or transitively through a GAME PIECE CONTROLLED by either ROBOT and regardless of who initiates contact) an opponent ROBOT if any part of either ROBOT'S BUMPERS are in the opponent's SOURCE ZONE or AMP ZONE.

Violation: TECH FOUL.

- G424** **STAGE protection.** A ROBOT may not contact (either directly or transitively through a GAME PIECE CONTROLLED by either ROBOT and regardless of who initiates contact) an opponent ROBOT if either of the following criteria are met:

- A. the opponent ROBOT has any part of its BUMPERS in its STAGE ZONE and it is not in contact with the carpet or
- B. any part of either ROBOT'S BUMPERS are in the opponent's STAGE ZONE during the last 20 seconds of the MATCH.

Violation: 2 TECH FOULS plus the opponent ALLIANCE is awarded the ENSEMBLE RP if a Qualification MATCH.

7.4.5 Human

G425 ***No wandering.** A DRIVE TEAM member must remain in their designated area as follows:

- A. a DRIVER may not contact anything outside the area in which they started the MATCH (i.e. the ALLIANCE AREA or SOURCE AREA),
- B. a DRIVER must use the OPERATOR CONSOLE in the DRIVER STATION to which they are assigned, as indicated on the team sign,
- C. a HUMAN PLAYER may not contact anything outside the area in which they started the MATCH (i.e. the ALLIANCE AREA or SOURCE AREA),
- D. a COACH may not contact anything outside the ALLIANCE AREA or in front of their COACH LINE, and
- E. a TECHNICIAN may not contact anything outside their designated area.

Exceptions are granted for a HUMAN PLAYER partially outside the ALLIANCE or SOURCE AREA (but not in the opponent ALLIANCE or SOURCE AREA), in cases concerning safety, and for actions that are inadvertent, MOMENTARY, and inconsequential.

Violation: FOUL

An intent of item B is to prevent unsafe situations where long tethers to OPERATOR CONSOLE devices increase tripping hazards as the operator moves about the ALLIANCE AREA. In the interest of avoiding nuisance penalties associated with a DRIVE TEAM member stepping outside of a prescribed area, we prefer to offer a general guideline as to what it means to use the OPERATOR CONSOLE in the ALLIANCE AREA. Provided the DRIVE TEAM member is within close proximity of their DRIVER STATION, there will be no repercussions. However, a DRIVE TEAM member located more than approximately half a DRIVER STATION width away from their own DRIVER STATION while using their OPERATOR CONSOLE is likely violating this rule.

G426 ***COACHES and other teams: hands off the controls.** A ROBOT shall be operated only by the DRIVERS and/or HUMAN PLAYERS of that team. A COACH activating their E-Stop or A-Stop is the exception to this rule.

Violation: TECH FOUL, plus RED CARD if greater-than-MOMENTARY.

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

G427 ***DRIVE TEAMS, watch your reach.** A DRIVE TEAM member may not extend into the CHUTE.

Violation: FOUL.

G428 ***Humans: use GAME PIECES as directed.** A DRIVE TEAM member may not deliberately use a GAME PIECE in an attempt to ease or amplify a challenge associated with a FIELD element.

Violation: TECH FOUL.

An example of a violation of this rule is if a HUMAN PLAYER uses a HIGH NOTE to disrupt an opponent ROBOT.

G429 *NOTE delivery. A NOTE may only be introduced to the FIELD through the SOURCE.

Violation: TECH FOUL.

G430 HIGH NOTE delivery. A HIGH NOTE may only be entered on to the FIELD during the last 20 seconds of the MATCH by a HUMAN PLAYER in front of the COACH LINE.

Violation: FOUL.

7.5 Post-MATCH

G501 *Leave promptly. A DRIVE TEAM member may not cause significant or multiple delays to the start of a subsequent MATCH, scheduled break content, or other FIELD activities.

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

