

## 11 Game Rules (G)

### 11.1 Personal Safety

**G101 \*Humans, stay off the FIELD during the MATCH.** Other than actions explicitly allowed in section [11.4.6 Human](#), a DRIVE TEAM member may only enter the FIELD during the following times:

- A. pre-MATCH set-up in order to place their ROBOT and pre-loaded SCORING ELEMENTS per [G301](#), [G303](#), and [G304](#), and
- B. after a MATCH is over to stop and collect their ROBOT in a reasonable amount of time when instructed to do so by the Head REFEREE or their designee.

Violation: VERBAL WARNING.

A team may not delay the FIELD reset process through an excessively lengthy process to remove the ROBOT from the FIELD.

It is not a violation of this rule if DRIVE TEAM members contribute to FIELD reset by placing SCORING ELEMENTS that they inadvertently move while setting up their ROBOT or placing removed SCORING ELEMENTS on the FIELD.

Egregious violations of this rule, such as entering the FIELD during a MATCH, are covered by [G211](#).

**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. YELLOW CARD if subsequent violations occur during the event.

DRIVE TEAM members may brace the FIELD perimeter at any point during the MATCH. DRIVE TEAM members should not cause the FIELD perimeter to deflect while bracing.

### 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. YELLOW CARD if subsequent violations occur 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 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.** DRIVE TEAM members cannot distract/interfere with the opposing ALLIANCE. This includes taunting or other disruptive behavior.

*Violation: VERBAL WARNING. YELLOW CARD if subsequent violations occur 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. RED CARD if subsequent violations occur during the event.*

Example 1: A MATCH is being played by Teams A and B. Team C requests Team A to open the GATE at the end of the MATCH in order resulting in teams A and B not earning the PATTERN RP. Team A accepts this request from team C. Team C’s motivation for this behavior is to prevent Team B from rising in the Tournament rankings and negatively affect Team C’s ranking. Team C 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.

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. RED CARD if subsequent violations occur during the event.*

Example 1: A MATCH is being played by Teams A and B. Team C requests Team A to open the GATE at the end of the MATCH in order resulting in teams A and B not earning the PATTERN RP. Team A accepts this request from team C. Team C's motivation for this behavior is to prevent Team B from rising in the Tournament rankings and negatively affect Team C's ranking. Team A 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 or sacrifice RANKING POINTS in an effort to lower their own ranking and/or manipulate the rankings of other teams.

*Violation: VERBAL WARNING. RED CARD if subsequent violations occur 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** **\*Don't violate rules for RPs.** A team or ALLIANCE may not collude with another team to each purposefully violate a rule in an attempt to influence RANKING POINTS.

*Violation: YELLOW CARD and the ALLIANCE is ineligible for PATTERN and GOAL RPs*

For example, if Team A on the blue ALLIANCE agrees with Team D on the red ALLIANCE to disrupt each other's GATE in violation of [G417](#) resulting in both ALLIANCES being awarded the PATTERN RP.

- G207** **\*Do not abuse ARENA access.** A team member (except those DRIVE TEAM members 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. YELLOW CARD if subsequent violations occur 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.

- 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 MATCHES.

*Violation: DISQUALIFIED from the current MATCH.*

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

- G209 \*Keep your ROBOT together.** A ROBOT may not intentionally detach or leave a part on the FIELD.

*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. MAJOR FOUL if REPEATED. The ALLIANCE that was forced to break a rule will not be assessed a penalty.*

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

- A. a red ROBOT attempting to access its GATE pushes a blue ROBOT into an ARTIFACT on the red RAMP.

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

- B. a blue ALLIANCE ROBOT pushing a red ALLIANCE ROBOT from "far away" (more than one TILE distance away) into the blue ALLIANCE LOADING ZONE.  
C. Placing an ARTIFACT into an opponent ROBOT such that it is in violation of

[G408](#).

- 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. a single PIN in excess of 15 seconds,
- D. descoring SCORING ELEMENTS strategically or REPEATEDLY

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.

**G212 \*All teams can play.** A team may not encourage another team to exclude their ROBOT or be DISQUALIFIED from a Qualification MATCH for any reason.

*Violation: YELLOW CARD. RED CARD if the ROBOT does not participate in the MATCH*

### 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 [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. MAJOR FOUL for the upcoming MATCH if a subsequent violation occurs within the tournament phase. 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.*

*If a Playoff MATCH: a VERBAL WARNING is issued to the ALLIANCE. MAJOR FOUL for the ALLIANCE'S upcoming MATCH if a subsequent violation occurs within the tournament phase. If the ALLIANCE is not MATCH ready within 2 minutes of the VERBAL WARNING/MAJOR FOUL having been issued, and the Head REFEREE perceives no good faith effort by the DRIVE TEAM(s) to quickly become MATCH ready, the offending team's 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/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.
- D. actively working with field technical staff, including the FTA, to resolve an issue in a reasonable amount of time.
- E. performing a MOMENTARY "wiggle test" to confirm communication between the DRIVER STATION and the ROBOT CONTROLLER. The ROBOT should not drive or interact with SCORING ELEMENTS (except contact with pre-loaded ARTIFACTS) while performing this test.

**G302** **\*Limit what you bring to the FIELD.** Items brought to the FIELD to be used for a MATCH, in addition to the ROBOT, OPERATOR CONSOLE, must fit in the team's designated ALLIANCE AREA, be worn or held by members of the DRIVE TEAM, or be an item used as an accommodation (e.g., single-step stools that do not roll/fold, crutches, cushion, kneeling mat,). Regardless of if the equipment fits the criteria above, it may not:

- A. be employed in a way that introduces a safety hazard,
- B. extend more than 6 ft. 6 in. (~198 cm) above the TILES,
- C. communicate with anything or anyone outside of the ARENA with the exception of medically required equipment,
- D. block visibility for FIELD STAFF or audience members, or
- E. jam or interfere with anything in the ARENA.



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

It is not a violation of this rule to bring an alignment device to the FIELD to aid pre-MATCH ROBOT set-up and alignment. The use of any alignment devices should not delay MATCH start in violation of [G301](#).

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 folding step stool, ladder, or a large signaling device.

Using an item that has wireless communications disabled complies with [G302.C](#) above.

Examples of jamming or interfering with remote sensing capabilities include, but are not limited to, mimicking the FIELD AprilTags and shining bright lighting or laser pointers onto the FIELD.

**G303** **\*ROBOTS on the FIELD must come ready 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 [I305](#).
- D. is the only team-provided item left in the FIELD.
- E. ROBOT SIGNS must indicate the correct ALLIANCE color (see [R101](#)).
- F. ROBOT must be motionless following completion of OpMode initialization.

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

**G304** **\*ROBOTS must be set up correctly on the FIELD.** A ROBOT must be positioned on the FIELD such that it meets all of the following requirements:

- A. is over a LAUNCH LINE,
- B. is either touching its own ALLIANCE's GOAL or the FIELD perimeter,
- C. is fully contained on its own ALLIANCE's side of the FIELD (FIELD columns A, B, C for blue, or FIELD columns D, E, F for red) (Figure 9-4),
- D. not attached to, entangled with, or suspended from any FIELD element,
- E. confined to its STARTING CONFIGURATION (see [R101](#) and [R102](#)), and
- F. in contact with no more than the allowed pre-load possession limit as described in section [10.3.1 SCORING ELEMENTS](#).

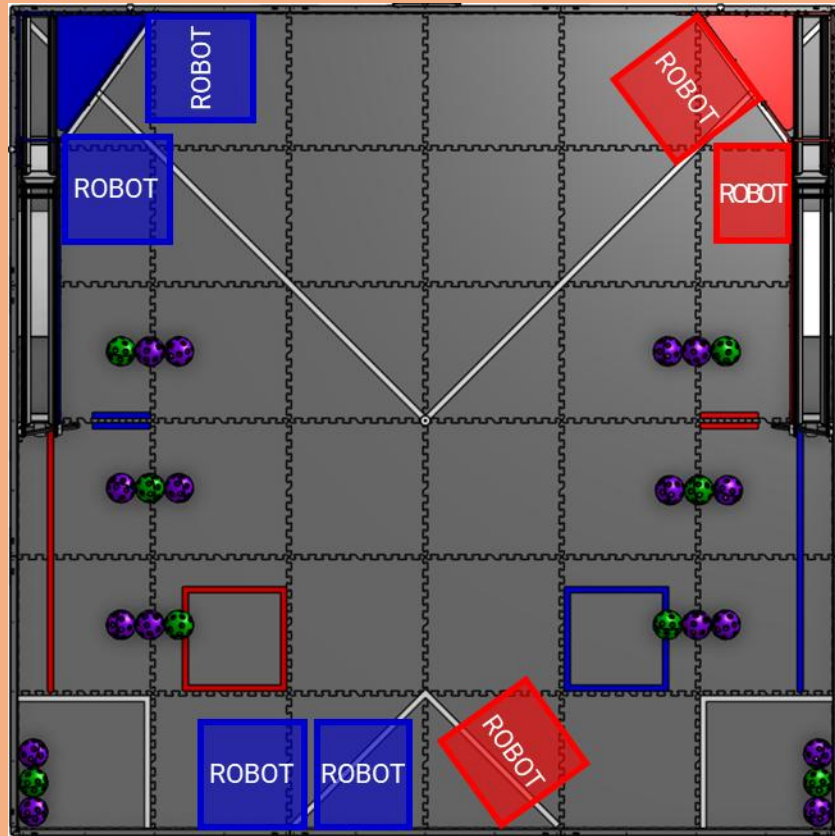
*Violation: The MATCH will not start until all requirements are met if there is a quick remedy. DISABLED if it is not a quick remedy.*

[G304.C](#) requires the ROBOT to be fully contained within the FIELD perimeter and not overhang the FIELD perimeter wall.

Figure 11-1 shows examples of several possible legal ROBOT starting locations.



Figure 11-1: Examples of allowed ROBOT starting locations



**G305 \*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. DISABLED if ROBOT cannot initialize an OpMode or the situation cannot be remedied quickly.*

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

AUTO 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.

**G401 \*Let the ROBOT do its thing.** As soon as FIELD STAFF begins the randomization process and until the end of AUTO, DRIVE TEAM members may not directly or indirectly interact with a ROBOT or an OPERATOR CONSOLE, with the following exceptions:

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

*Violation: MAJOR FOUL plus the ALLIANCE is not eligible for PATTERN points in AUTO if the ROBOT LAUNCHES an ARTIFACT such that it enters the open top of the GOAL after the interaction and before the end of AUTO.*

FIELD STAFF will not re-randomize the OBELISK due to violations of this rule prior to MATCH start.

Teams do not have to start an OpMode if they choose not to run an AUTO OpMode.

The intent of [G401.A](#) is for teams to start AUTO on time, accounting for the variability in human factors. Strategic violations of [G401.A](#) will be considered egregious behavior under [G211](#).

**G402 No AUTO opponent interference.** During AUTO, FIELD columns A, B, C constitute the blue side of the FIELD, and columns D, E, F (Figure 9-5) constitute the red side of the FIELD. During AUTO, a ROBOT may not:

- A. contact an opposing ALLIANCE'S ROBOT which is completely within the opposing ALLIANCE'S side of the FIELD either directly or transitively through an ARTIFACT, or
- B. disrupt an ARTIFACT from its pre-staged location on the opposing ALLIANCE'S side of the FIELD either directly or transitively through contact with an ARTIFACT, or by LAUNCHING or rolling an ARTIFACT directly into it.

*Violation: MAJOR FOUL per instance of ROBOT contact in [G402.A](#) and MAJOR FOUL per ARTIFACT in [G402.B](#).*

Navigating into the opposing ALLIANCE'S side of the FIELD during AUTO is a risky gameplay strategy.

LAUNCHED ARTIFACTS which happen to enter the other side of the FIELD after being deflected by another object in the FIELD (e.g., FIELD element, ROBOT) will not be penalized.

Example 1: A red ROBOT LAUNCHES 1 ARTIFACT onto the opponent side of the FIELD. The LAUNCHED ARTIFACT disrupts 2 pre-staged ARTIFACTS on the blue side of the FIELD. Red is assessed 2 MAJOR FOULS under [G402](#).

Example 2: A red ROBOT LAUNCHES 1 ARTIFACT at their GOAL in an attempt to score, but the ARTIFACT misses the open top of the GOAL, deflects off the GOAL structure and rolls into the blue side of the FIELD, disrupting 2 pre-staged ARTIFACTS. No [G402](#) penalties are assessed.

### 11.4.2 TELEOP

**G403** **\*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.*

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 stop the AUTO OpMode, 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 TELEOP begins before pressing INIT.

A ROBOT LAUNCHING an ARTIFACT during the transition period is considered a violation of this rule.

Strategic violations of this rule will be considered egregious behavior under [G211](#). Strategic violations include, but are not limited to:

- LAUNCHING multiple SCORING ELEMENTS,
- operating the GATE, and
- moving the ROBOT a substantial distance in a preferred direction.

**G404** **\*ROBOTS are motionless at the end of TELEOP.** ROBOTS must no longer have powered movement after the end of TELEOP until the Head REFEREE or their designee signals that teams may retrieve their ROBOTS.

*Violation: MINOR FOUL. MAJOR FOUL per ARTIFACT if ROBOT LAUNCHES an ARTIFACT such that it enters the open top of a GOAL at the end of TELEOP. MAJOR FOUL if ROBOT contacts a GATE after the end of TELEOP.*

DRIVE TEAMS should make it obvious that the ROBOTS are no longer being controlled by pressing the (■) stop button on the DRIVER STATION app or by discontinuing any operation of the ROBOT by the end of the MATCH period and setting down their controllers.

Movement due to inertia, gravity, or de-energizing of actuators, etc. is not considered powered movement.

### 11.4.3 SCORING ELEMENT

**G405** **\*ROBOTS use SCORING ELEMENTS 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. Intentionally positioning SCORING ELEMENTS to impede opponent access to FIELD elements.
- B. Placing SCORING ELEMENTS into inaccessible locations on the FIELD such as under the RAMP or GOAL
- C. Intentionally using a SCORING ELEMENT to hold open the GATE

**G406 \*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).

*Violation: MAJOR FOUL per SCORING ELEMENT.*

SCORING ELEMENTS that leave the FIELD during scoring attempts are not considered intentional ejections.

**G407 \*Do not damage SCORING ELEMENTS.** Neither a ROBOT nor a DRIVE TEAM member may damage a SCORING ELEMENT.

*Violation: VERBAL WARNING. MAJOR FOUL if REPEATED. DISABLED if the damage is caused by a ROBOT, and the Head REFEREE determines that further damage is likely to occur. Corrective action (such as eliminating sharp edges, removing the damaging MECHANISM, and/or reinspection) may be required before the ROBOT may compete 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.

**G408 No more than 3 at a time.** A ROBOT may not simultaneously CONTROL more than 3 ARTIFACTS.

*Violation: MINOR FOUL per SCORING ELEMENT over the limit. YELLOW CARD if excessive.*

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

- A. “bulldozing” (inadvertent contact with a SCORING ELEMENT while in the path of the ROBOT moving about the FIELD)
- B. “deflecting” (being hit by a SCORING ELEMENT that bounces into or off a ROBOT)
- C. inadvertent contact with a SCORING ELEMENT while attempting to acquire a SCORING ELEMENT from the LOADING ZONE.
- D. SCORING ELEMENTS that have been LAUNCHED by a ROBOT that are no longer in contact with the ROBOT.

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

Excessive violations of CONTROL limits include, but are not limited to:

- A. simultaneous CONTROL of 5 or more ARTIFACTS, or
- B. frequent (i.e., 3 or more separate violations in a MATCH), greater-than-MOMENTARY CONTROL of 4 or more ARTIFACTS.

#### 11.4.4 ROBOT

**G409** **\*ROBOTS must be under control.** A ROBOT must not pose an undue hazard to a human or an ARENA element during a MATCH in the following ways:

- A. the ROBOT or anything it CONTROLS, i.e., a SCORING ELEMENT, disrupts anything outside the FIELD or contacts a human that is outside the FIELD.
- B. the ROBOT operation is dangerous.

*Violation: DISABLED and VERBAL WARNING. YELLOW CARD if REPEATED or if subsequent violations occur during the event.*

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

Examples of violations include, but are not limited to:

- A. Wildly flailing outside the FIELD
- B. Knocking over a DRIVER STATION stand
- C. Moving/damaging the FIELD timer display
- D. Contacting FIELD STAFF or a DRIVE TEAM member outside the FIELD

ROBOT contact with ARENA elements outside the FIELD, such as a DRIVER STATION stand, the floor outside the FIELD, or the FIELD wall perimeter outside of the FIELD is not a violation of this rule.

**G410** **\*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: MAJOR FOUL if greater-than-MOMENTARY delay plus RED CARD if CONTINUOUS.*

**G411** **\*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. MINOR FOUL if subsequent violations occur 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.

**G412** **\*Don't damage the FIELD.** A ROBOT may not damage FIELD elements.

*Violation: VERBAL WARNING. DISABLED if the Head REFEREE infers that additional damage is likely. YELLOW CARD for any subsequent damage during the event. 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.*

SCORING ELEMENT damage is specifically covered in [G407](#), [G407](#) and [G412](#) do not stack.

FIELD damage includes, but is not limited to:

- contaminating the FIELD with a liquid or fine solid as in [R205](#),
- damaging TILE in [R201](#),



- causing the GATE to no longer function

**G413** **\*Watch your ARENA interaction.** A ROBOT is prohibited from the following interactions with an ARENA element, except for SCORING ELEMENTS (per [G407](#)):

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

*Violation: MAJOR FOUL plus YELLOW CARD if REPEATED or if greater-than-MOMENTARY. DISABLED if the Head REFEREE infers that damage is likely. Corrective action (such as removing the offending MECHANISM, and/or re-inspection) may be required before the ROBOT will be allowed to compete in subsequent MATCHES.*

ROBOTS operating the GATE should make it clear that they do not violate this rule. ROBOTS are expected to push the GATE lever down to open, but no closing force (e.g., pulling) should be applied.

**G414** **ROBOTS have horizontal expansion limits.** ROBOTS must comply with the horizontal expansion limits outlined in [R105.A](#) during the MATCH. Exceptions:

- A. If the over-expansion is due to damage and not used for strategic benefit.

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

ROBOTS are allowed to have moving parts that extend outside its STARTING CONFIGURATION, but these extensions must stay within the expansion limit as described in [R105](#).

**G415** **ROBOTS have vertical expansion limits, with exceptions.** ROBOTS must comply with the vertical expansion limits outlined in [R105](#). ROBOTS may only expand above 18 in. (45.70 cm) up to 38 in. (96.50 cm) if both of the following conditions are true:

- A. during the final 20 seconds of the MATCH, and
- B. when not in any LAUNCH ZONES.

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

ROBOTS are allowed to have moving parts that extend outside its STARTING CONFIGURATION, but these extensions must stay within the expansion limit as described in [R105](#).

**G416** **LAUNCHING in the LAUNCH ZONE only.** ROBOTS may only LAUNCH SCORING ELEMENTS when inside a LAUNCH ZONE or overlapping a LAUNCH LINE.

*Violation: MINOR FOUL per LAUNCHED SCORING ELEMENT. MAJOR FOUL per LAUNCHED SCORING ELEMENT if the SCORING ELEMENT enters the open top of the GOAL.*

A SCORING ELEMENT is considered LAUNCHED if it is shot into the air, propelled across the floor to a desired location or in a preferred direction, or thrown in a forceful way.

“Bulldozing” (inadvertent contact with a SCORING ELEMENT while in the path of the ROBOT moving about the FIELD) is not considered LAUNCHING

This is not intended to penalize teams with active manipulators which are expelling SCORING ELEMENTS through normal operation, such as:

- A. Running an intake in reverse causing a SCORING ELEMENT to travel a short distance from the ROBOT.
- B. A ROBOT pushing a SCORING ELEMENT a short distance away in the process of herding it across the FIELD.

**G417 ROBOTS only operate GATES as directed.** ROBOTS may not:

- A. contact, either directly or transitively through a SCORING ELEMENT, an opposing ALLIANCE’S GATE, or
- B. apply any closing force to either GATE.

*Violation: MAJOR FOUL and the opposing ALLIANCE is awarded the PATTERN RP if [G417.A](#).*

**G418 ROBOTS may not meddle with ARTIFACTS on RAMPS.** ROBOTS may not contact, either directly or transitively through a SCORING ELEMENT CONTROLLED by the ROBOT, ARTIFACTS on a RAMP, including their own RAMP. Additionally, ROBOTS may not:

- A. remove an ARTIFACT from their own RAMP except by operating the GATE, or
- B. remove an ARTIFACT from the opponent’s RAMP by any means.

*Violation: MAJOR FOUL per ARTIFACT, and the ALLIANCE is ineligible for the PATTERN RP if [G418.A](#), or the opposing ALLIANCE is awarded the PATTERN RP if [G418.B](#).*

Exceptions are granted for inconsequential and inadvertent contact made by a ROBOT while operating a GATE.

Example 1: A red ROBOT that contacts an ARTIFACT on the blue RAMP is in violation of this rule and is assessed 1 MAJOR FOUL under [G418](#).

Example 2: A red ROBOT that LAUNCHES an ARTIFACT at an ARTIFACT on the red RAMP, removing it from the RAMP is in violation of this rule. The red ALLIANCE is assessed 1 MAJOR FOUL and is ineligible for the PATTERN RP under [G418.A](#).

Example 3: A red ROBOT contacts and opens the blue GATE, causing 5 ARTIFACTS that were on the blue RAMP to leave the RAMP and return to the FIELD. Red is assessed a total of 6 MAJOR FOULS – 1 under G417.A and 5 under G418.B – in addition to blue being awarded PATTERN RP under G417.A/G418.B.

**G419 ROBOTS LAUNCH into their own GOAL.** ROBOTS may not:

- A. intentionally place or LAUNCH ARTIFACTS directly onto their own RAMP, or
- B. place or LAUNCH ARTIFACTS into the opponent’s GOAL or onto the opponent’s RAMP.



Violation: MAJOR FOUL and the opposing ALLIANCE is awarded the PATTERN RP if [G419.B](#).

The intent is for ROBOTS to score by LAUNCHING into the open top of their own GOAL. Attempts to intentionally score points with actions that enter the ARTIFACT further down on the RAMP are considered violations of this rule.

Attempts to score points for the opponent either through the opponent GOAL or with actions that enter an ARTIFACT further down on the opponent RAMP are also considered violations of this rule.

There is no violation for scoring in an opponent's DEPOT.

#### 11.4.5 Opponent Interaction

Note, [G420](#) and [G421](#) 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.

**G420** \*This is not combat robotics. A ROBOT may not deliberately functionally impair an opponent ROBOT. 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. MAJOR FOUL and RED CARD if opponent ROBOT is unable to drive.

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.

An example of a violation of this rule includes, but is 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.

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

- B. disconnecting wires for operation of a component inside the ROBOT CHASSIS.
- C. disconnecting the opponent ROBOT'S battery (this example also clearly results in a RED CARD because the ROBOT is no longer able to drive).
- D. powering off an opponent's ROBOT using their reasonably well-protected power switch (This example also clearly results in a RED CARD because the ROBOT is no longer able to drive).

Teams should mount their main power switch so it is protected per [R609](#). A team that mounts their ROBOT'S power switch in an exposed location puts themselves at high risk of incidental contact. Powering off an opponent's ROBOT by their exposed power switch during normal interactive gameplay will be considered incidental and not deliberate.

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.

**G421 \*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. MAJOR FOUL and RED CARD if CONTINUOUS or opponent ROBOT is unable to drive.*

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.

**G422 \*There is a 3-count on PINS.** A ROBOT may not PIN an opponent's ROBOT for more than 3 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 3 seconds,
- B. either ROBOT has moved 2 ft. from where the PIN initiated for more than 3 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 and an additional MINOR FOUL for every 3 seconds in which the situation is not corrected.*

**G423** **\*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 and an additional MINOR FOUL for every 3 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, or
- D. completely blocking access to the opponent's GATE.

**G424** **GATE ZONE is OFF LIMITS.** A ROBOT may not contact, directly or transitively through a SCORING ELEMENT, an opponent ROBOT if either ROBOT is in the opponent's GATE ZONE, regardless of who initiates contact. Exceptions:

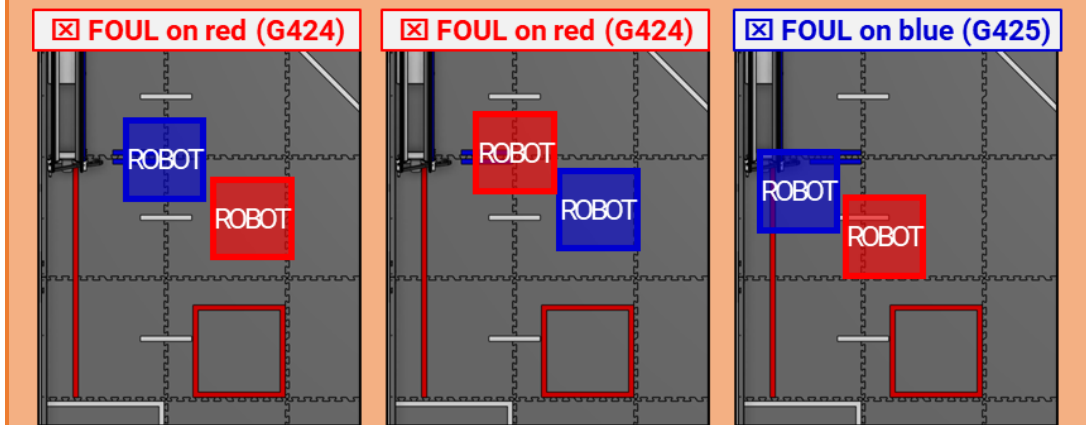
- A. A ROBOT in their own ALLIANCE'S GATE ZONE and in their opponent's SECRET TUNNEL ZONE is not protected under [G424](#).

*Violation: MINOR FOUL.*

For the exception in [G424.A](#), [G425](#) would apply instead.

Figure 11-2 shows some examples of typically protected and non-protected contact in the GATE ZONE. The intent of this rule is to ensure an ALLIANCE has access to their own GATE. Some of the actions shown below may also fall under other penalties including [G423](#) or escalate to [G211](#).

Figure 11-2: [G424](#) Examples

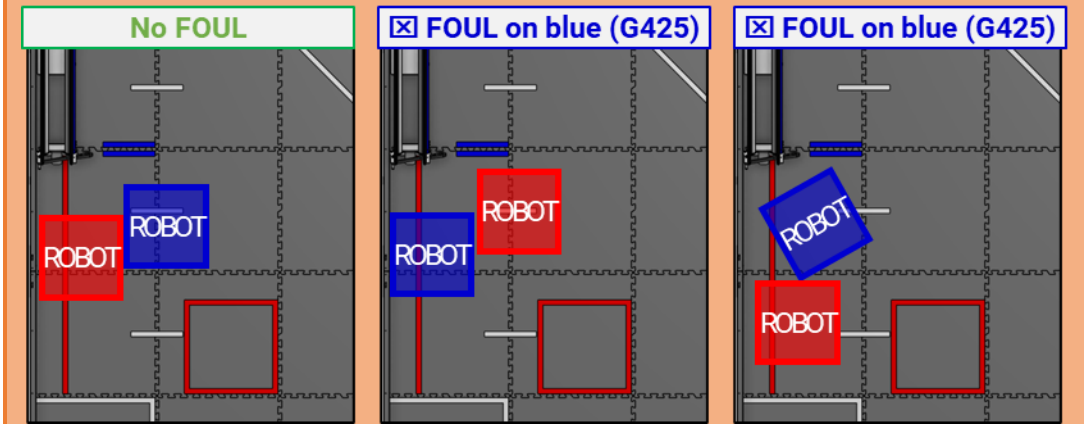


**G425** **Keep out of opponent's SECRET TUNNEL** A ROBOT in the opponent's SECRET TUNNEL ZONE may not contact, directly or transitively through a SCORING ELEMENT, an opponent ROBOT regardless of who initiates contact.

*Violation: MINOR FOUL.*

Figure 11-3 shows some examples of typically protected and non-protected contact in the SECRET TUNNEL ZONE. The intent of this rule is to ensure an ALLIANCE has access to ARTIFACTS exiting from the opponent's GATE, but still allow the opponent the opportunity to also access ARTIFACTS if there is no defender present.

Figure 11-3: [G425](#) Examples



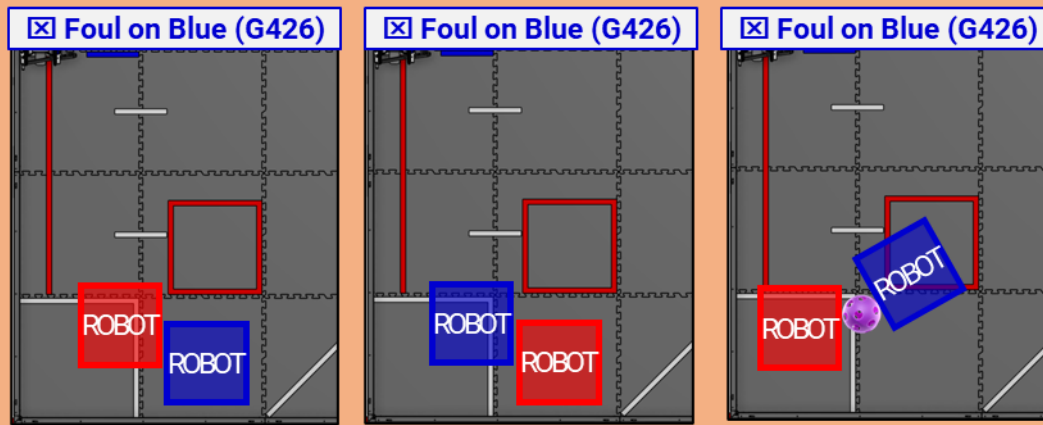
**G426 LOADING ZONE protection.** A ROBOT may not contact, directly or transitively through a SCORING ELEMENT, an opponent ROBOT while either ROBOT is in the opponent's LOADING ZONE, regardless of who initiates contact.

*Violation: MINOR FOUL.*

Figure 11-4 shows some examples of typically protected and non-protected contact in the LOADING ZONE. The intent of this rule is to ensure an ALLIANCE has access to ARTIFACTS exiting from the opponent's GATE but still allows the opponent the opportunity to also access ARTIFACTS if there is no defender present.

Some of the actions shown below may also fall under other penalties including [G423](#).

Figure 11-4: [G426](#) Examples (before the last 20 seconds of the match)



**G427 BASE ZONE protection.** During the last 20 seconds of the MATCH, a ROBOT may not contact, directly or transitively through a SCORING ELEMENT, an opponent ROBOT while either ROBOT is in the opponent's BASE ZONE, regardless of who initiates contact.

*Violation: MAJOR FOUL and opponent ROBOT is awarded fully returned to BASE points.*

#### 11.4.6 Human

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

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

*Violation: VERBAL WARNING. MINOR FOUL if subsequent violations occur during the event.*

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 or reaching into the FIELD. Simply breaking the plane of the AREA during normal MATCH play is not a FOUL.

DRIVE TEAM members may retrieve SCORING ELEMENTS that have left the FIELD if they are able to do so without violating [G428](#), [G430](#), and [G434](#). Reintroduction of SCORING ELEMENTS must follow rule [G433](#).

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

**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. YELLOW CARD if greater-than-MOMENTARY.*

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

**G430 \*DRIVE COACHES, SCORING ELEMENTS are off limits.** DRIVE COACHES may not contact SCORING ELEMENTS, unless for safety purposes.

*Violation: MINOR FOUL.*

**G431 \*DRIVE TEAMS, watch your reach.** Once a MATCH starts, a DRIVE TEAM member inside the FIELD may not:

- A. directly contact a ROBOT,
- B. contact a SCORING ELEMENT in contact with a ROBOT,
- C. disrupt SCORING ELEMENT scoring, or
- D. contact a FIELD element.

*Violation: MAJOR FOUL plus YELLOW CARD if [G431.A](#). RED CARD and the opposing ALLIANCE is awarded the PATTERN RP if [G431.C](#).*

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

For [G431.A](#), the penalty is applied to the DRIVE TEAM member regardless of whether the DRIVE TEAM member or ROBOT initiates contact.

Impacting ARTIFACT scoring includes, but is not limited to:

- A. Contacting an ARTIFACT LAUNCHED by the opponent within the FIELD
- B. Contacting an ARTIFACT in the opponent's GOAL
- C. Disrupting the scoring of an ARTIFACT on the opponent's RAMP or by operating the opponent's GATE
- D. A DRIVE TEAM member LAUNCHING an ARTIFACT into a GOAL





**G432 Humans, only meddle with ARTIFACTS in the LOADING ZONE.** DRIVE TEAM members may only retrieve ARTIFACTS from the FIELD or move ARTIFACTS within the FIELD as follows:

- A. only ARTIFACTS that are in the LOADING ZONE, and
- B. only during TELEOP, and
- C. without causing any ARTIFACTS to leave the LOADING ZONE and enter the rest of the FIELD unless fully supported either directly or transitively by a ROBOT.

*Violation: MINOR FOUL per ARTIFACT.*

DECODE is a fast-paced game and teams should practice coordination and communication between the DRIVE TEAM members to avoid unintentional contact between the ROBOT and any humans in violation of [G431.A](#).

**G433 Humans may not yeet SCORING ELEMENTS.** DRIVE TEAM members may only enter ARTIFACTS onto the FIELD and only as follows:

- A. only during TELEOP,
- B. without LAUNCHING, bouncing, or rolling,
- C. without using a tool, and
- D. only via the LOADING ZONE by either:
  - i. directly placing the ARTIFACT into the LOADING ZONE such that it does not leave the LOADING ZONE before coming to rest, or
  - ii. into a ROBOT that is in the LOADING ZONE such that the ARTIFACT is fully supported either directly or transitively by the ROBOT.

*Violation: MINOR FOUL per ARTIFACT or non-ARTIFACT item entered onto the FIELD. MAJOR FOUL per ARTIFACT that enters the top of the GOAL.*

DRIVE TEAM members may load SCORING ELEMENTS into a ROBOT. DECODE is a fast-paced game and teams should practice coordination and communication between the DRIVE TEAM members to avoid unintentional contact between the ROBOT and any humans, in violation of [G431.A](#).

**G434 The ALLIANCE AREA has a storage limit.** During TELEOP, each ALLIANCE may not store more than 6 ARTIFACTS out of play. DRIVE TEAM members making a good-faith effort to immediately enter additional ARTIFACTS back into play is an exception to this rule.

*Violation: MINOR FOUL per ARTIFACT over the limit and an additional MINOR FOUL per ARTIFACT over the limit for every 3 seconds in which the situation is not corrected.*

The intent of this rule is to prevent an ALLIANCE from starving the FIELD of ARTIFACTS during TELEOP.

Examples of “out of play” include, but are not limited to:

- A. A DRIVE TEAM member holding an ARTIFACT inside or outside of the FIELD
- B. DRIVE TEAM member storing an ARTIFACT outside the FIELD

During AUTO and transition, this rule is not enforced. Upon the start of TELEOP, DRIVE TEAM members must make a good-faith effort to immediately enter ARTIFACTS into the FIELD until compliant with [G434](#).

Teams will not be in violation of this rule if FIELD STAFF return ARTIFACTS to the DRIVE TEAM that have left the FIELD per section [10.8 Other Logistics](#) such that the ALLIANCE holds a number of ARTIFACTS over the limit. However, if the DRIVE TEAM does not then make a good-faith effort to immediately enter ARTIFACTS into the FIELD until compliant with [G434](#), they will be in violation of this rule.

DRIVE TEAM members must keep ARTIFACTS accessible. DRIVE TEAM members intentionally losing access to ARTIFACTS, e.g., by purposefully removing them from the FIELD and ALLIANCE AREA, will be considered egregious behavior and handled per [G211](#).

