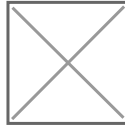


Q&A

VRC 2019-2020: Tower Takeover



Welcome to the official VEX Robotics Competition Question & Answer system, where all registered teams have the opportunity to ask for official rules interpretations and clarifications. This Q&A system is the only source for official VRC Tower Takeover rules clarifications, and the clarifications made here from the Game Design Committee (GDC) are considered as official and binding as the written [Game Manual](#) itself.

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441: Inconsistent interpretation of G12d

5-Dec-2019

G12 G13 Cubes

I am an Event Partner and have a question about rule G12d, after a discussion and concern with an area Head Ref.

<G12> Don't destroy other Robots. But, be prepared to encounter defense. d. Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

Our head ref has seen a lot of game play from around the USA on YouTube that is alarming. It seems there is a strategy where teams will ram, or spin into other tray-bots in an attempt to knock cubes out of the trays of the other robot. This seems to be a direct violation of G12d, and G13 would also be in effect since offensive robots get benefit of doubt. So, if a red robot is near the unprotected goal zone and is trying to score a stack and a blue robot rams them and knocks cubes out of the tray, we believe this would be violating G12d and G13 since red is clearly trying to score.

Our biggest issue is the inconsistencies of Head Refs calling this type of game play. We are trying to prepare teams for Worlds but we seem to play different versions of these games state by state, depending on interpretation of the rules by Head Refs and EP's. As a Head Ref, he wants to be able to have teams ready for the game when they get to Worlds, but based on past experiences, the game is played much more defensively at Worlds than what we played in our region throughout the season. When this happens, as a volunteer he feels as though he let the kids down and did not properly prepare them for the Worlds in which they qualify for.

Could you please clarify G12d, especially as it pertains to robots in possession of cubes and trying to score while encountering these defensive actions?

Answered by Game Design Committee

We are not going to be able to provide a blanket answer that encompasses all hypothetical Robot-to-Robot interactions of this type. The best way to approach this question is going to be to look at the broader context of G12 beyond the portion that was quoted.

<G12>Don't destroy other Robots. But, be prepared to encounter defense. Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of opposing Robots are not part of the ethos of the VEX Robotics Competition and are not allowed. If the tipping, Entanglement, or damage is ruled to be intentional or egregious, the offending Team may be Disqualified from that Match. Repeated offenses could result in Disqualification from the entirety of the competition.

c. A Team is responsible for the actions of its Robot at all times, including the Autonomous Period. This applies both to Teams that are driving recklessly or potentially causing damage, and to Teams that drive around with a small wheel base. A Team should design its Robot such that it is not easily tipped over or damaged by minor contact.

d. Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

G12 is not intended to be a "don't play defense" rule; it is a "don't destroy other Robots" rule. This core principle should be obvious - VRC is not Battlebots. However, VRC games are designed to encourage Robot-to-Robot interactions, so there is always a possibility of an interaction which results in a Robot being destroyed, damaged, tipped, or Entangled. G12 then exists to provide guidance for a Head Referee to walk through when determining whether that damage should result in a violation.

It seems there is a strategy where teams will ram, or spin into other tray-bots in an attempt to knock cubes out of the trays of the other robot. This seems to be a direct violation of G12d, and G13 would

also be in effect since offensive robots get benefit of doubt.

Since Entanglement is not occurring, G12d should only be used as the general guideline that Cubes are an extension of their Robot. So, picture this interaction as if the Cubes were just square metal mechanisms resting on a Robot.

- Bumping into opponents is not illegal in itself. However, there is a threshold where bumping becomes reckless ramming, and could be considered a violation of G12, S1, or G1.
- Dislodging parts of your opponent's robot (without Entangling them) is not illegal in itself, because part (c) puts some responsibility on the opponent to design their robot such that it is not easily damaged by minor contact. However, there is a threshold where incidental damage becomes intentional/egregious destruction, and could be considered a violation of G12, S1, or G1.

The only pure grounds provided in the Game Manual for a G12 violation are "destruction, damage, tipping over, or Entanglement [...] ruled to be intentional or egregious". Ultimately, whether something is "intentional or egregious" is a line that cannot be drawn rigidly in black-and-white; the need for contextualized interpretation of this threshold is why VRC relies upon the in-Match judgment of human Head Referees. We cannot make rulings from afar or provide answers for every possible hypothetical scenario; we can only implore Head Referees to make their best personal judgments based on the rules as written, and provide as many guidelines as possible via the Q&A.

As a Head Ref, he wants to be able to have teams ready for the game when they get to Worlds, but based on past experiences, the game is played much more defensively at Worlds than what we played in our region throughout the season. When this happens, as a volunteer he feels as though he let the kids down and did not properly prepare them for the Worlds in which they qualify for.

A volunteer Head Referees' primary responsibility should be to interpret the rules as written and as the context of their event necessitates. If a game is played more defensively at a different event, then it would stand to reason that the judgment calls would be handled accordingly in the context of that event.

405: Indirect Cube movement while Autonomous

2-Nov-2019

G11 SG2 SG7

During the Autonomous period, if a red robot causes a cube from the vertical stack of four to fall while trying to get cubes from that stack and one or more of the cubes in that stack crosses the autonomous line and causes the other vertical blue alliance stack of four to fall is that a violation of any rule?

Additionally, if the other team is not running autonomous, is the answer the same?

The robot is not directly touching the cube that crosses the line-e.g. trying to get the bottom 2 cubes of the stack.

Answered by Game Design Committee

It is impossible to issue a blanket ruling based on a snapshot description of a hypothetical Match. In general, SG7 and SG2 would be the primary rules that a Head Referee would have to look at in this case:

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

Causing Cubes to interact with foam tiles, Towers, or Cubes on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Per SG2, violations could range from the Autonomous Bonus being awarded to the opposing Alliance, to a Disqualification, depending on the context of the interaction.

447: Autonomous bonus - both alliance commit a violation

9-Dec-2019

G11

<G11> All rules still apply in the Autonomous Period. Any infractions committed during the Autonomous Period that are not Match Affecting, but do affect the outcome of the Autonomous Bonus, will result in the Autonomous Bonus being automatically awarded to the opposing Alliance. a. Teams are responsible for the actions of their Robots at all times, including during the Autonomous Period. Any infractions committed during the Autonomous Period that are Match Affecting can result in a Disqualification, if warranted by the rule. b. If both Alliances cause infractions during the Autonomous Period that would have affected the outcome of the Autonomous Bonus, then no Autonomous Bonus will be awarded.

Autonomous Bonus - A bonus awarded to the Alliance that has earned the most points at the end of the Autonomous Period. The Autonomous Bonus consists of six (6) points added to the score at the end of the Match, and two (2) Match Loads that may be entered any time during the Driver Controlled Period. Note: If the Autonomous Period ends in a tie, each Alliance will receive an Autonomous Bonus of three (3) points and one (1) Match Load.

If both alliance commit a violation in autonomous, it would result in no autonomous bonus being awarded. In this case, does each alliance receive one match load (same as tie) or will no alliance receive match load(0 match load given out) (since there is no autonomous winner)

Answered by Game Design Committee

Per the definition that you quoted, the Autonomous Bonus includes both the six points *and* the Match Load Cubes.

If no Autonomous Bonus is awarded due to G11-b, then no points are awarded, and no Match Load Cubes are distributed.

305: Clarification on Intent of Rule G12 d

18-Jun-2019

G12

Is the intent of G12d to (1) avoid entanglement that includes cubes in possession of a robot and/or (2) rule illegal the removable of cubes from a robot's possession? To expand on (2): if a robot has cubes in its possession and an opposing robot removes one or more cubes without becoming entangled (grasping, hooking, attaching), is that legal? As an extension, is it OK to grasp, hook or attach to a cube in possession of a robot if it is for the sole purpose of removing the cube from the robot's possession?

Answered by Game Design Committee

G12d states the following:

d. Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

(in the future, please remember to quote the applicable rule in your question)

if a robot has cubes in its possession and an opposing robot removes one or more cubes without becoming entangled (grasping, hooking, attaching), is that legal?

It is always difficult to issue a blanket ruling based on a snapshot description of a hypothetical scenario and/or robot design. With that said, G12d only explicitly prohibits grasping, hooking, or attaching to Cubes that are possessed by an opposing Robot. Therefore, there is nothing prohibiting indirect removal of Cubes from an opponent Robot (such as by bumping into them).

As a note, "grasping", "hooking", "attaching", and "possession" are not defined terms in the VRC Tower Takeover Game Manual, so standard English definitions/interpretations would apply. Therefore, in this hypothetical scenario, it will be at the Head Referee's discretion to determine whether the opposing robot has Entangled with the Cube or not.

As an extension, is it OK to grasp, hook or attach to a cube in possession of a robot if it is for the sole purpose of removing the cube from the robot's possession?

No. G12d prohibits Entangling (i.e. grasping, hooking, or attaching to) Cubes that are in possession of an opposing Robot.

366: cube in possession of a robot is an extension of the robot (G12)

30-Sep-2019

G12 SG7

Could the update, G12 which states "game elements in possession of a robot are an extension of the robot" be clarified? It has been defined in defensive moves such as holding a cube to knock down stacks, etc. What about in an offensive situation like scoring of stacks at the end of a match? A referee questioned this at a tournament this weekend. Red had 1 stack of 6 scored. Their robot was in possession (not just touching) of a cube and that cube was touching the base cube of that stack. He felt that the way the rule is written, the stack should not be considered scored since the robot (through that cube in its possession) was touching the base of the stack. If the possession of a cube is an extension of the robot, referee felt the robot was touching the base cube of the stack since it possessed the cube that was touching it. We were referred to Figure 13 in the game manual where a robot is "touching" (not possessing a cube) and said cube was touching a stacked cube. All of the cubes of that second stack that that cube was touching were still considered scored. There is no other reference to a cube being an extension of the robot in the rules for offensive situations so either G12 only applies in defensive situations if the cubes are considered scored or it applies at all times, which mean some of the stacked cubes would not be considered scored. Hope I made his point clear. Please clarify. Thank you.

Answered by Game Design Committee

G12d states the following:

Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

SG7, a similar rule that utilizes the same principle, states the following:

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

Although both of these rules reference defensive interactions as their examples, they are intended to be applications of an overall principle that Robots and any Cubes they are possessing should be considered as one entity.

Their robot was in possession (not just touching) of a cube and that cube was touching the base cube of that stack. He felt that the way the rule is written, the stack should not be considered scored since the robot (through that cube in its possession) was touching the base of the stack. If the possession of a cube is an extension of the robot, referee felt the robot was touching the base cube of the stack since it possessed the cube that was touching it.

This is a correct interpretation (assuming that the Robot possessing the Cube was a Red robot). The Cube being contacted would not be considered a Base Cube, and the Scored status of all other Cubes in the Goal Zone would be affected accordingly.

367: Playing offense while a part of your robot is playing defense

30-Sep-2019

G12 G13 G14

Hello my team was wondering what rules could and could not be used on a possible design, a design that has a big defensive strategy (a part of the robot) and an offensive strategy (a cube staker). So if a robot got in tangled, flipped over, or stuck on the defensive part of our robot while we were playing offense and not moving or forcing the defensive part of our robot to do such things would that count as our fault or would the team that got stuck on us be their fault. I was wondering this because some of the defense rules use words like solely, only, and purely defensive strategies will pretty much always be at fault but this design is not a purely, solely or only a defensive robot it is both. Sent from my iPhone

Answered by Game Design Committee

It is impossible to issue a blanket ruling that would cover all hypothetical interactions or Robot designs. This is the type of question that is why VRC utilizes human Head Referees who can observe the context of a specific Robot and/or Match to provide a judgment call when needed.

G13 states the following:

< G13 > Offensive Robots get the "benefit of the doubt". In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot.

The Note in G12 states the following:

Note: A Robot which has expanded horizontally in an effort to obstruct the field, or is legally covering the top of a Tower in a solely defensive manner, should expect vigorous interactions from opponent Robots. Damage that is caused by opponent Robots pushing, tipping, or Entangling with them would not be considered a violation of <G12>. Gratuitous damage or dangerous mechanisms may still be considered a violation of <R3>, <S1>, or <G1> at the Head Referee's discretion.

The first portion of this Note does not require a "solely defensive manner", it simply requires the Robot to have expanded horizontally in an effort to obstruct the field.

In the context of these rules, specific mechanisms or Robots are not assigned "defensive" or "offensive" roles. It is interactions and strategies that are assigned "defensive" and "offensive" roles.

There are scenarios where a primarily offensive mechanism is used defensively (e.g. an intake being used to entangle an opponent). There are scenarios where a primarily defensive mechanism is found on a Robot playing offense at any given moment (e.g. [this video](#) which has now been referenced on the Q&A three times).

When making a G12 or G13 judgment call, Head Referees will need to look at the specific interaction at the moment it occurred, alongside any relevant context (such as previous interactions or strategies of those two Robots).

399: Definition of Possession and Cube Starting Positions

28-Oct-2019

G12 SG1

Rule SG1 Section E states that at the beginning of a match a robot must be "Contacting a Preload. 1. The Preload must be contacting exactly one (1) Robot. 2. The Preload must be fully within the field perimeter." Recently at an event, a team had brought up that the way this rule is written, it would allow teams to place their preload inside of a goal zone so long as the robot is contacting the cube and not contacting the goal zone as defined as "the inner edges of the Barriers and the field perimeter" or the barrier (both of which as per SG1 section f).

The only rule that we see that may contradict this is G12 section d which states "Game elements in possession of a Robot are an extension of that Robot." Because possession is not defined in the current game manual, without looking back at the Turning Point or In the Zone game manuals (which as it is known, previous rules do not apply to current game rules), it is difficult to properly rule whether the cube is in possession. This is question number 1 and 2: Is there anything that we are missing when coming to the conclusion of the starting position mentioned above, and can you define possession?

Now, once you define possession, if a cube is considered in possession of a robot, while the robot is in its starting position and if this cube is contacting either the barrier or the goal zone; would this be in violation of SG1 as per G12 "Game elements in possession of a robot are an extension of that robot," because technically the robot through the extension of the cube is contacting the barrier/ goal zone? Would we also be correct to assume that this same violation would apply if the cube in possession of the robot were contacting any other items covered by SG1 (such as another cube or Tower) then this would be a violation due to G12? Thank you.

Answered by Game Design Committee

First - the rules and definitions quoted in your question are incomplete, and have a strong impact on how to interpret this situation.

The full text of SG1 is as follows:

<SG1> Starting a Match. Prior to the start of each Match, the Robot must be placed such that it is:

- a. Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zone and Alliance Station.
- b. Contacting a foam field tile.
- c. Not contacting a Tower.
- d. Not contacting any Cubes other than the Preload.
- e. Contacting a Preload.

1. The Preload must be contacting exactly one (1) Robot.

2. The Preload must be fully within the field perimeter.

f. Not contacting a Goal Zone or a Barrier.

g. Not contacting another Robot.

Note: If a Robot is not present for their Match, then their Preload will instead be placed randomly by the Head Referee such that it satisfies all conditions 1-7 laid out above (contacting the field perimeter wall, not contacting a Robot, etc).

The full definition of Goal Zone is as follows:

Goal Zone - One of four (4) areas of foam field tiles defined by the inner edges of the Barriers and the field perimeter in which Robots can Score Cubes. The Barrier and field perimeter are not considered part of the Goal Zone.

The Goal Zones are explicitly defined as the foam tiles, not the 3-dimensional volumes above them.

With that in mind, rule SG7 is the rule that directly applies to this situation, not G12:

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

Therefore, a definition of possession is not necessary in the context of this question. Starting with a Preload Cube that is contacting the Goal Zone (foam tiles, not the space above it) would be considered a violation of SG1 via SG7, and would not be a legal starting configuration.

411: Possession versus contact, regarding cube being an extension of the robot (G12)

8-Nov-2019

G12

In an earlier Q&A (cube in possession of a robot is an extension of the robot), it was specified that a cube in possession of the robot was an extension of that robot, and therefore that cube would invalidate another stack where it was contacting the base cube.

For the specific example in the original Q&A (<https://events.vex.com/VRC/2019-2020/QA/366>): what defines "possession?"

Is a cube that is being touched on two opposing sides considered possessed? Does the quantity of touching matter (for example, only the flaps on an intake are touching opposing faces of the cube)?

Answered by Game Design Committee

what defines "possession?"

When a VRC-specific definition of a word is not presented in the Game Manual, a dictionary definition should be used. The [Oxford dictionary definition](#) of "possession" is "the state of having, owning, or controlling something".

It is important to remember that the only mention of the word "possession" in the VRC Tower Takeover is in rule G12d:

G12> Don't destroy other Robots. But, be prepared to encounter defense. Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of opposing Robots are not part of the ethos of

the VEX Robotics Competition and are not allowed. If the tipping, Entanglement, or damage is ruled to be intentional or egregious, the offending Team may be Disqualified from that Match. Repeated offenses could result in Disqualification from the entirety of the competition.

d. Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

As noted in the Q&A that you linked, the primary intent of this rule is to provide a specific interpretation of SG7 as it should be applied to G12:

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

When a Head Referee is making a G12 judgment call, their primary concern should be determining whether the destruction, damage, tipping over, or Entanglement was intentional, incidental, egregious, etc. The nuances of the definition of the word "possession" should ultimately be irrelevant in this evaluation. If a scenario does present itself where the Head Referee's decision hinges solely upon determining whether the Robot in question was "having, owning, or controlling" the Cube, then we would direct them to rule G3, "Use common sense".

423: G12d Game elements in possession of a Robot are an extension of that Robot.

14-Nov-2019

G12

G12d states:

Game elements in possession of a Robot are an extension of that Robot. Therefore, Entanglement (e.g., grasping, hooking, attaching) with Cubes that are in the possession of an opposing Robot is a violation of this rule.

From the context of subrule d (talking about grabbing onto cubes that another robot are possessing), as well as the general nature of G12 (limiting defense and destructive behavior), it would make sense that this concept was meant to apply to such situations only.

However, [in a recent Q&A answer](#), the scope of this rule was demonstrated to be significantly larger:

Their robot was in possession (not just touching) of a cube and that cube was touching the base cube of that stack. He felt that the way the rule is written, the stack should not be considered scored since the robot (through that cube in its possession) was touching the base of the stack. If the possession of a cube is an extension of the robot, referee felt the robot was touching the base cube of the stack since it possessed the cube that was touching it.

This is a correct interpretation (assuming that the Robot possessing the Cube was a Red robot). The Cube being contacted would not be considered a Base Cube, and the Scored status of all other Cubes in the Goal Zone would be affected accordingly.

...[these rules] are intended to be applications of an overall principle that Robots and any Cubes they are possessing should be considered as one entity.

With this expansion of the rule, it seems that the cube would be considered a part of the robot in many more situations than appears at first glance. This brings up several questions:

For clarity, a cube which is possessed by a robot will be referred to as a *possessed cube*

1. SG3: Would it be illegal for a *possessed cube* to perform any of the actions under SG3?
 - a. In particular, if a *possessed cube* contacts an opponent's *Inner Protected Zone*, would the offending robot be disqualified?
2. G4: Is it illegal to have a *preload* which counts as a *possessed cube* extend outside of the starting volume?
3. G5: Is it illegal to intentionally detach a *possessed cube* from a robot?
4. SG3a: Is a *possessed cube* considered part of the robot for the purpose of determining whether a *Robot* is considered to be "fully contained" within its *Protected Zone*?

Answered by Game Design Committee

First - please see [this similar Q&A](#), and remember to always bear in mind rule G3 when looking for edge-case interpretations of rules and Q&A responses:

<G3> Use common sense. When reading and applying the various rules in this document, please remember that common sense always applies in the VEX Robotics Competition.

The primary rule in question is SG7:

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

SG7 intentionally does not include the word "possess", it includes the word "use". The following are all examples of "using" a Cube:

- A Robot satisfying the [dictionary definition of possessing](#) a Cube ("the state of having, owning, or controlling something")
- A Robot launching a Cube across the field
- A human Drive Team Member holding a Match Load Cube

The intent of G12-d is to provide a specific interpretation of SG7 as it applies to G12-esque interactions such as damage, tipping, or Entanglement. The intent of G12-d is not to hinge upon the word "possession"; it was simply used because in a G12 interaction involving a Cube, it is most likely that the Robot is holding a Cube, and the word "possession" is more concise than "having, owning, or controlling". While we would hope this is unlikely, G12 would still be violated if a Team launched a Cube at an opposing Robot such that it damaged and/or tipped the opponent, even though it was not "possessing" the Cube at the time of the damage.

With that all said - because your questions do not involved destruction, damage, tipping, or Entanglement, G12 is irrelevant. SG7 and G3 are the only rules that should be considered.

1. SG3: Would it be illegal for a *possessed cube* to perform any of the actions under SG3?

- a. In particular, if a *possessed cube* contacts an opponent's *Inner Protected Zone*, would the offending robot be disqualified?

Yes, this is correct.

2. G4: Is it illegal to have a *preload* which counts as a *possessed cube* extend outside of the starting volume?
3. G5: Is it illegal to intentionally detach a *possessed cube* from a robot?

No, neither of these are illegal. These would both ultimately be G3 edge-case interpretations of SG7.

452: <G12> How to determine if incidental entanglement is egregious

10-Dec-2019

G12 R3 G13

<G12> Don't destroy other Robots. But, be prepared to encounter defense. Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of opposing Robots are not part of the ethos of the VEX Robotics Competition and are not allowed. If the tipping, Entanglement, or damage is ruled to be intentional or **egregious**, the offending Team may be Disqualified from that Match. Repeated offenses could result in Disqualification from the entirety of the competition. b. VEX Robotics Competition Tower Takeover is an interactive game. Some incidental tipping, Entanglement, and damage may occur as a part of normal gameplay without violation. It will be up to the Head Referee's discretion whether the interaction was incidental or intentional.

<R3> Robots must be safe. The following types of mechanisms and components are NOT allowed: c. Those that pose an unnecessary risk of Entanglement.

<G13> Offensive Robots get the "benefit of the doubt". In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot.

Egregious is not defined in the game manual, by Oxford Dictionary
<https://www.oxfordlearnersdictionaries.com/us/definition/english/egregious>

extremely bad

the definition of extremely

to a very high degree

extremely is a very subjective adjective, how should one determine if the incidental tipping is egregious? Does the duration of the entanglement(usually starts from the time of entanglement to the end of the game) matter? Does the scoring capability of the robots that are entangled matter(how much points would they score if they are not entangled)? Does the context when the entanglement happened(whether the robot was playing defense or offense) matter? Does R3 come into play as well, and we need to determine whether there was unnecessary risk of entanglement?

Two reference videos:

<https://youtu.be/AGJUpDCF0nQ?t=25953>

at 7:12:33 the blue robot was playing defense and has entangled with the red robot. Red won the match so the entanglement is not match affecting.

<https://youtu.be/EXhWerDR03w?t=187>

at 3:07 the red robot was playing defense and has entangled with the blue robot. Red was DQed for that match, I couldn't find any other violations in this game other than the entanglement, so I believe red is DQed for "egregious entanglement" since it was not intentional.

Answered by Game Design Committee

extremely is a very subjective adjective, how should one determine if the incidental tipping is egregious?

As you noted, this is a very subjective question. If it was possible to provide a black-and-white definition, then human Head Referees would not be necessary. It is the judgment and discretion of these Head Referees which determines if a given interaction is egregious or not.

We are not going to be able to provide a point-by-point checklist to determine where to draw this line. The answer to all of your specific questions is, "it could". In general, we would provide the following overarching guidelines:

- Context matters. As noted in [this similar Q&A](#), if a game is played more defensively at a different event, then it would stand to reason that the judgment calls would be handled differently in the context of that event.
- Offense vs defense matters. Per G13, offensive Robots usually get the "benefit of the doubt".
- On-field performance of the tipped/Entangled/damaged Robot generally does not matter. This is why G12 is one of the only rules in the Game Manual that does not hinge upon Match Affecting verbiage, and instead uses "egregious".

468: G12d Clarification

20-Dec-2019

G12

I'm posting this question in reference to G12d for a head referee. The interpretation of this rule and the amount of defense tolerated is different everywhere we go! In the non protected floor goal, if a robot is stacking cubes and is contacted by the other alliance and causes either cubes from the stack to fall out of the field or out of the robot that is trying to score, is that a potential match effecting disqualification scenario? The cubes are not scored yet but are being descored with this action. Please clarify if this a violation of G12d?

Answered by Game Design Committee

Although the scenario being described is in a different location on the field, this question appears to be the similar to this related Q&A:

<https://events.vex.com/VRC/2019-2020/QA/441>

Since Entanglement is not occurring, G12d should only be used as the general guideline that Cubes are an extension of their Robot. So, picture this interaction as if the Cubes were just square metal mechanisms resting on a Robot.

- Bumping into opponents is not illegal in itself. However, there is a threshold where bumping becomes reckless ramming, and could be considered a violation of G12, S1, or G1.
- Dislodging parts of your opponent's robot (without Entangling them) is not illegal in itself, because part (c) puts some responsibility on the opponent to design their robot such that it is not easily damaged by minor contact. However, there is a threshold where incidental damage becomes intentional/egregious destruction, and could be considered a violation of G12, S1, or G1.

With regard to the following portion of your question:

The cubes are not scored yet but are being descored with this action.

Match Affecting verbiage should only come into effect when a Head Referee has called a rules violation, and the rule in question requires them to determine whether the Robot should receive a warning or a Disqualification via Match Affecting verbiage.

The scenario described in this question is not, in itself, a violation, provided no other rules are being violated. If the Head Referee does determine that G12 has been violated in an egregious manner, then Match Affecting verbiage wouldn't apply anyway, since G12 is one of the only rules which does not hinge upon "Match Affecting".

The interpretation of this rule and the amount of defense tolerated is different everywhere we go!

Ultimately, we must again refer to the previously linked Q&A:

A volunteer Head Referees' primary responsibility should be to interpret the rules as written and as the context of their event necessitates. If a game is played more defensively at a different event, then it would stand to reason that the judgment calls would be handled accordingly in the context of that event.

We would add that the dynamic sport of competitive robotics inherently includes "gray area" situations that cannot rely on black-and-white rules, as do many other sports, and must therefore rely upon the in-context and on-the-spot judgment of human referees in these cases. Any time an on-the-spot judgment is needed by a volunteer Head Referee, there is a possibility that two different volunteers may interpret the situation differently.

Our best advice to Teams who are struggling with this variance would be to compete in a manner which minimizes the risk of relying on a judgment call (especially a G12 one).

449: Wallbot/Protected Zone Clarifications

9-Dec-2019

G13 G14 SG3

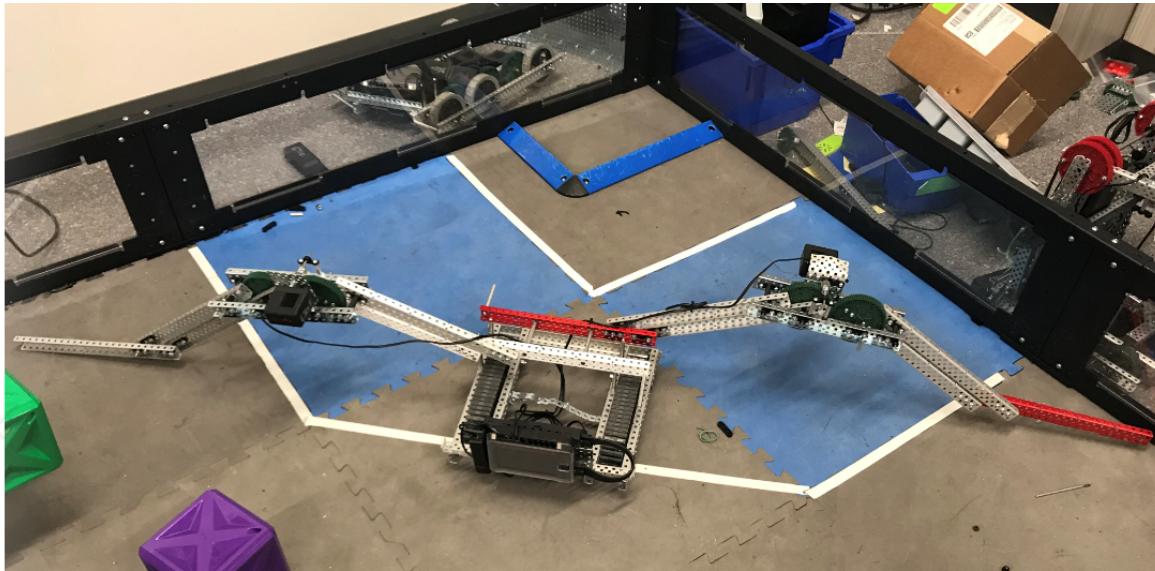
At our previous tournament, one of our teams took a wallbot and the referees were making some calls that we did not understand. While my students came with the rulebook highlighted, and met with the referees before the first round to discuss rules, they disagreed with our interpretation. Normally I would let it go, but these referees will also be judging our state event and they recommended posting on the Q&A to get an official ruling. We realize that in the heat of the moment these minute decisions are tough for a referee to make. This was more a case of after the tournament was over that we could not agree on definitions in the rules.

Relevant rules for reference: **SG3 A** (robots may not) Contact an opponent Robot which is fully contained within their Protected Zone **SG3 E** (robots may not) Contact an opposing Alliance's Inner Protected Zone

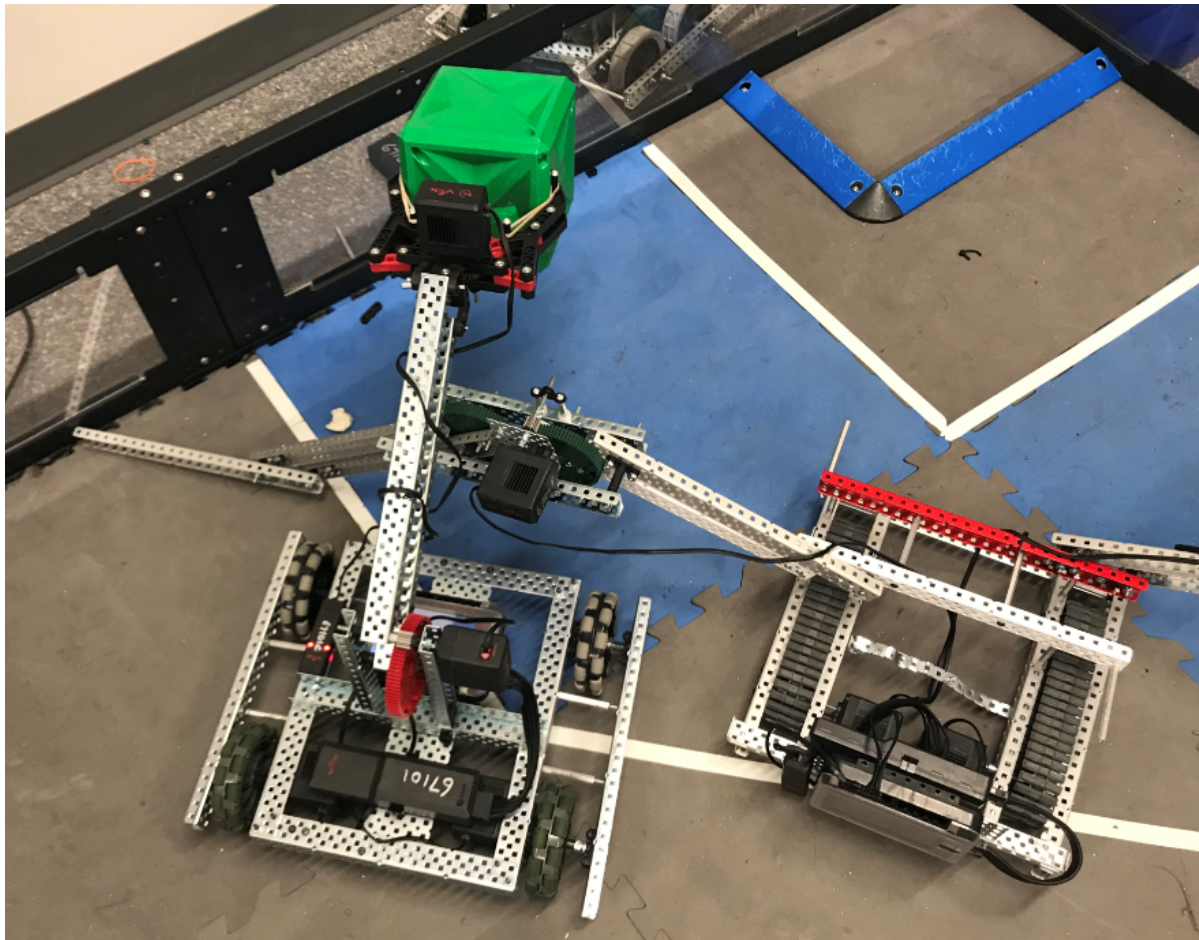
Definition of outer protected Zone: The 3-dimensional volume extending upwards from the foam tiles and bound by the field perimeter, outer edge of the Protected Zone tape line, and the inner edge of the Inner Protected Zone tape line.

G13 Offensive Robots get the "benefit of the doubt". In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot. **G14** You can't force an opponent into a penalty. Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance. Minor violations of this rule that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

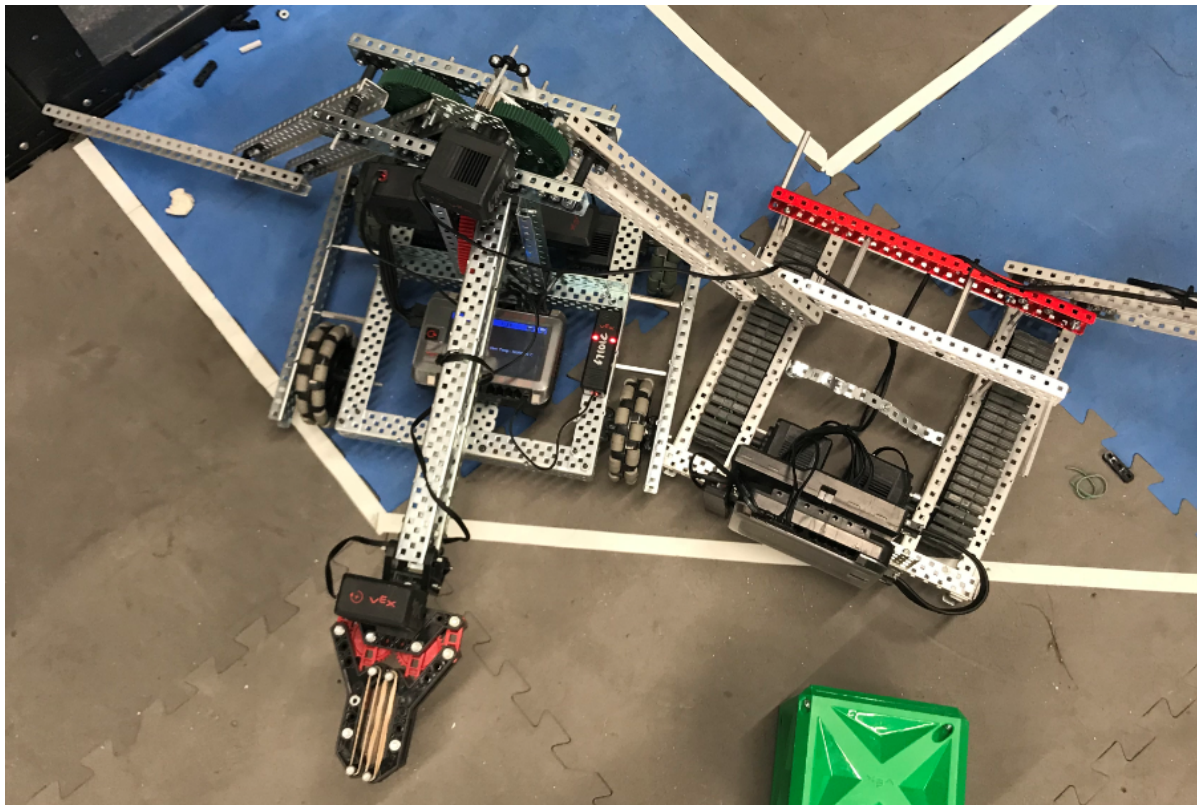
Here is what our robot looks like fully deployed. I will lay out 3 scenarios with pictures. Take a look at each of the scenarios before answering as I tried to cover the different ways it could play out.



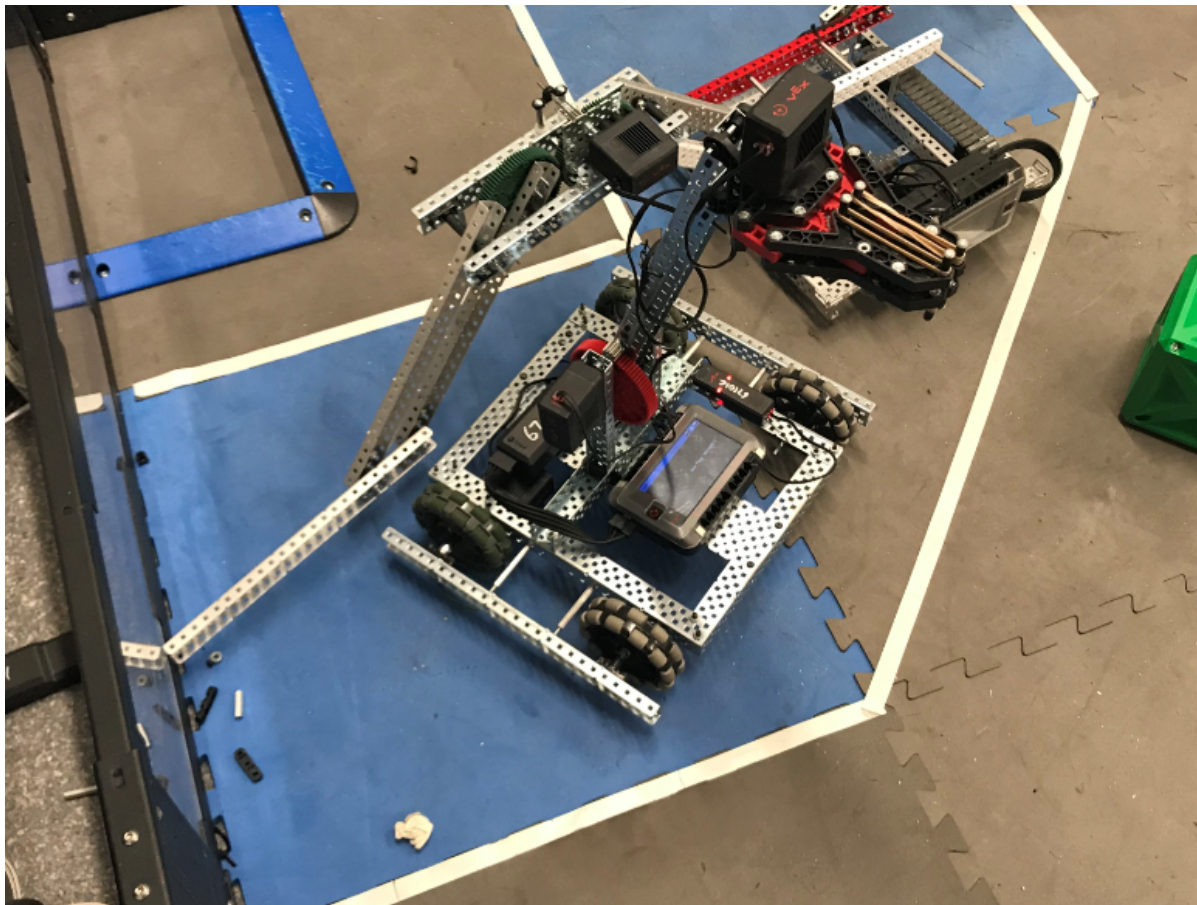
Scenario 1: A robot possessing a cube comes to score against our deployed wallbot. When part of the offensive robot entered the outer protected zone we were warned that we must move our robot because of rule G13. While we were definitely playing defense and they were on offense, there were no rules being broken, so we did not see why our robot should have to move. In the picture below, is the wallbot under any obligation to move/retract at this point?



Scenario 2: A robot attempts to push us out of the way, and all 4 of their wheels are in the outer protected zone, but part of their robot was in the vertical space outside the zone. We were told to move because they met the definition of a "protected robot" under SG3 A. We argued that because the protected zone is a volume, not an area (per definition of the outer protected zone), that their robot was not fully contained within the outer protected zone. In the picture below, is the clawbot (offensive) protected? Is the wallbot under obligation to move/retract?



Scenario 3: A robot attempts to push us out of the way and forces our robot deep into the protected zone. The offensive robot is now fully in the outer protected zone and/or our robot is now contacting the inner protected zone and we are in violation of SG3 A and/or E. The referees recognized that we should not be DQ'ed because we were forced there, but they then said that we had to retract and move because of rule G13 gives the benefit of the doubt to the offensive robot. I recognize that if the offensive robot backed away that our defensive robot should drive out of the zone and get in legal position, my questions are assuming that they continue to push on us. In the picture below, where the defensive robot has been forced into an illegal position under SG3 A or E, does the wallbot have to retract and exit the protected zone? Or may they simply sit still? Or may they push back on the robot pushing them into the protected zones?



Goodness! Just writing these questions I have a new appreciation for your job to answer them. Thanks in advance!

Answered by Game Design Committee

Thank you for quoting the relevant rules, providing photos to help understand the scenarios, and being patient with the Head Referee who volunteered at your event.

Scenario 1: A robot possessing a cube comes to score against our deployed wallbot. When part of the offensive robot entered the outer protected zone we were warned that we must move our robot because of rule G13. While we were definitely playing defense and they were on offense, there were no rules being broken, so we did not see why our robot should have to move. In the picture below, is the wallbot under any obligation to move/retract at this point?

SG3 does not contain any restrictions on a Robot encroaching on an opponent's Outer Protected Zone. One intent is for it to be a "warning" zone for Head Referees, since a Robot that is in an opponent's Outer Protected Zone is very likely about to violate SG3-B, D, or E.

In the instant captured by the attached photo, the defensive Robot is not under any obligation from SG3 or G13 to move, provided that no other rules are being violated.

Scenario 2: A robot attempts to push us out of the way, and all 4 of their wheels are in the outer protected zone, but part of their robot was in the vertical space outside the zone. We were told to move because they met the definition of a "protected robot" under SG3 A. We argued that because the protected zone is a volume, not an area (per definition of the outer protected zone), that their robot was not fully contained within the outer protected zone. In the picture below, is the clawbot (offensive) protected? Is the wallbot under obligation to move/retract?

Your interpretation of the Outer Protected Zone as a volume, not an area, is correct. In the instant captured by the attached photo, the defensive Robot is not under any obligation from SG3 or G13 to move, provided that no other rules are being violated.

Scenario 3: A robot attempts to push us out of the way and forces our robot deep into the protected zone. The offensive robot is now fully in the outer protected zone and/or our robot is now contacting the inner protected zone and we are in violation of SG3 A and/or E. The referees recognized that we should not be DQ'ed because we were forced there, but they then said that we had to retract and move because of rule G13 gives the benefit of the doubt to the offensive robot. I recognize that if the offensive robot backed away that our defensive robot should drive out of the zone and get in legal position, my questions are assuming that they continue to push on us. In the picture below, where the defensive robot has been forced into an illegal position under SG3 A or E, does the wallbot have to retract and exit the protected zone? Or may they simply sit still? Or may they push back on the robot pushing them into the protected zones?

This question is more context-sensitive, and it is impossible to provide a blanket answer that would cover all hypothetical interactions. In general:

- All Robots are responsible for their own actions. An offensive Robot who pushes a defensive Robot into any SG3 violation, as the result of offensive maneuvers, should be considered a G13 interaction. Therefore, the offensive Robot should receive the "benefit of the doubt", and the defensive Robot should receive the appropriate penalty for whichever portion of SG3 was violated (B, D, E, or F).
- However, in order to be considered a G13 interaction, the Head Referee must judge that the offensive Robot is actually acting "offensively", not just trying to draw a penalty. An example of "offensive intent" could mean a traditionally offensive Robot carrying Cubes towards an empty Goal Zone.
- If the Head Referee determines that the Robot in question is not acting offensively, then the interaction would be considered a G14 violation on the non-defensive Robot.
- However, in either case, if the defensive Robot does not make an immediate and visible attempt to escape upon landing in their violation, this interaction could then return to an SG3 violation. The defensive Robot is still responsible for their actions, and is now using their position for a defensive advantage.

With the above points in mind, the instant captured by the attached photo would likely be considered a G14 violation on the Clawbot. It is not carrying any Cubes and therefore not capable of acting offensively. "Defending a defender" does not equal "offense".

451: <SG3> indirectly contacting scored stack

10-Dec-2019

G13 G14 SG3

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or **accidentally**, directly or **indirectly**, perform the following actions:

A> Contact an opponent Robot which is fully contained within their Protected Zone.

B> Contact any Scored Cubes in either of opposing Alliance's Goal Zones.

D> Contact either of the opposing Alliance's Goal Zones or Barriers.

Minor violations of points A, B, C, or D that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

E> Contact an opposing Alliance's Inner Protected Zone

F> Cause Scored Cubes within the opponent's Protected Zone to no longer meet the definition of Scored (i.e. "knock over their stack"). Any violation of points E, F, or G will result in a Disqualification, whether the interaction was Match Affecting or not.

<G13> Offensive Robots get the "benefit of the doubt". In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot.

<G14> You can't force an opponent into a penalty. Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance. from QA 376, <https://events.vex.com/VEXU/2019-2020/QA/376> , "one Robot pushing another into causing some action is considered "indirect contact" by the first Robot."

<https://youtu.be/66ef8Nk3NsM?t=109> At 1:55, one blue robot bumped into another blue robot, causing cubes from one of the blue robot's tray to hit the stacked cube and descored the stack.

Now, if, in the case where the robot got hit was a **red** robot, would this fall under the case of SG3 case F, since the robot that was hit "accidentally, indirectly" caused the blue scored stack to no longer meet the definition of scored? G14 only considers **intentional strategies**, where in this case, it is clearly not a intentional strategy, the intention of the robot is clearly trying to score, Thus G14 would not apply in this case.

To summarize it, if a red robot is hit by a blue robot, and the end result is blue's scored stack is no longer scored, will the red robot be DQed for violating SG3 case F, provided that the blue robot didn't intentionally try to force red into a penalty?

Thanks for taking your time to answer this question!

Answered by Game Design Committee

It is impossible to issue a blanket ruling to this question that would cover all hypothetical interactions without the context of a Match.

If all contact was completely incidental, such as two Robots driving past each other in the middle of the field, a Head Referee would likely make the judgment call that no G14 or SG3 violation has occurred.

There are context factors that could lead a Head Referee to make the judgment call that the actions of the Blue Robot were intentional (and therefore a G14 violation). One example would be driving directly into an opponent near the Blue Goal Zone with a Cube precariously balanced on the edge of their (Blue) Robot.

There are context factors that could lead a Head Referee to make the judgment call that the actions of the Red Robot were intentional (and therefore an SG3 violation). One example would be playing defense around the Blue Goal Zone for an entire Match, therefore forcing the Blue Robot into some Robot-to-Robot interaction.

548: Applicability of Rule G14

13-Feb-2020

G14

The game manual has the following entires for rules G13 and G14:

G13 Offensive Robots get the “benefit of the doubt”. In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot. **G14 You can't force an opponent into a penalty.** Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance. Minor violations of this rule that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

In [Q&A 449](#), it was ruled that, in one of the presented scenarios, a robot may be forced into a penalty by their opponent, notwithstanding rule G14. The explanation cited G13 as the reasoning, and explicitly indicated that G14's protection from being forced into a penalty does not apply in the given situation; we read that as indicating that G13 can, in some (but not necessarily all) scenarios, overrule G14.

The game manual does not appear to place any limits on the application of first clause of G14, however this ruling does. Our question is: What are the limits of G14? In what scenarios is it overruled by G13? Are there other rules that can overrule it or scenarios in which it does not apply, and if so, under what conditions?

Thank you for taking the time to answer our question.

Answered by Game Design Committee

We cannot provide a blanket response for this question that would encompass all hypothetical Robot interactions, Match contexts, and Head Referee judgment calls.

Q&A 449 provided a specific and detailed scenario that uniquely placed SG3, G13, and G14 in conflict. Therefore, we were able to answer in the context of that specific instance (and provide some guidelines for similar interactions).

328: <G15> Trapping Clarification

4-Aug-2019

G15

So with the release of NorCal's wall-bot, a few others and I brainstormed ways to negate its defensive effect. We came up with the idea of after autonomous (since wall-bots can't deploy till after autonomous) keeping one robot in the protected zone to secure access to that scoring zone. We thought that since we are in that corner the wall-bot can't deploy without trapping us but after reading the rules again we noticed trapping states:

A Robot is considered *Trapped* if an opposing Robot has restricted it into a small, confined area of the field, approximately the size of one foam tile or less and has not provided an avenue for escape. Trapping can be direct (pinning) or indirect (preventing a Robot from escaping the corner of the field).

So the approximately one foam tile or less means we can be trapped in the corner, our protected zone, by their bot based off the rule. However, in In The Zone's ref training it showed an example of trapping and the trapped robot was moving around between three tiles. Could you clarify if this would be trapping or not?

If it is ruled as trapping someone stated that the robot sitting in the protected zone violates <G14> which I believe is incorrect. The robot in the corner isn't forcing the wall-bot to come to the corner and trap it, it is strategically holding open the avenue so their partner can score in the area. Does this fall under G14?

Here are the videos I talked about for reference: [NorCal's Wall-bot ITZ Ref Training, 1:10 is the example](#)

There's two links here, formatting is being weird

Answered by Game Design Committee

So the approximately one foam tile or less means we can be trapped in the corner, our protected zone, by their bot based off the rule. However, in In The Zone's ref training it showed an example of trapping and the trapped robot was moving around between three tiles.

First, please remember that support materials from previous seasons do not apply to the current competition season, as rules, interpretations, or game-specific contexts may have changed.

Could you clarify if this would be trapping or not?

Indirect trapping is one of the more difficult calls for a Head Referee to interpret, and is largely dependent upon in-match context. The video clip that you referenced (if we were to assume that we are now interpreting it using Tower Takeover rules, not In the Zone rules) would be considered Trapping.

In this clip, the red Robot was very clearly intending to hold the blue Robot to a small, confined area, without providing any avenues for escape. The definition of Trapping does include the word "approximately" to imply that the Robot being Trapped may not always neatly line up into a specific foam tile without crossing any seams. Head Referees should not need to (and are not expected to) measure the precise area in which the Robot is being held to confirm if it is exactly 24" wide or not. Similarly, the blue Robot is clearly attempting to escape, which is another key

thing that Head Referees will look for when determining if a given interaction is a Trap or not.

If it is ruled as trapping someone stated that the robot sitting in the protected zone violates <G14> which I believe is incorrect. The robot in the corner isn't forcing the wall-bot to come to the corner and trap it, it is strategically holding open the avenue so their partner can score in the area. Does this fall under G14?

It is impossible to issue a blanket ruling based on a snapshot description of a hypothetical match. The Head Referee would need to take into account the context of previous matches, the offensive Robot's intent for being in the corner, if they were attempting to escape, etc.

353: Attempting to score in the non-protected goal zone

9-Sep-2019

G15 SG3

At a recent tournament, when teams were trying to score in their non-protected goal zone faced near-constant defense (bumping, etc.) before any of the cubes were released and met the definition of scored. Many teams complained that this was a violation and said that it had been called as a disqualification at previous events. We were unable to find anywhere in the rules that this was illegal. The closest two rules that were argued was that it could have constituted trapping

G15 No Trapping for more than 5 seconds

Or that it could be a violation of the second clause of SG3

"Robots may not intentionally or accidentally, directly or indirectly, perform the following actions: B Contact any Scored Cubes in either of opposing Alliance's Goal Zones"

Neither of these arguments seemed to be valid to us, but we didn't know if there was something we were missing.

So to summarize, can you bump a robot that is in the process of scoring in the non-protected goal zone before its cubes have met the definition of scored?

Answered by Game Design Committee

can you bump a robot that is in the process of scoring in the non-protected goal zone before its cubes have met the definition of scored?

Please see these two similar Q&A's for reference:

<https://events.vex.com/VRC/2019-2020/QA/288>

<https://events.vex.com/VRC/2019-2020/QA/296>

As well as the Referee Training video that discusses Protected Zone interactions:

<https://www.youtube.com/watch?v=Y4nziGzN9ik>

These three links all refer to the full text of SG3, so we would advise reviewing that as well, taking note of which parts refer to Goal Zones vs Protected Zones. The only parts of SG3 that refer to the non-protected Goal Zones are B and D:

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

B - Contact any Scored Cubes in either of opposing Alliance's Goal Zones.

D - Contact either of the opposing Alliance's Goal Zones or Barriers.

It is impossible to issue a blanket ruling that would cover all hypothetical robot-to-robot interactions. In most cases, if parts B and/or D have not been violated, then no violation of SG3 has occurred. You are correct that whether or not a given Cube is Scored is the key point to determining if SG3-B is being violated. Other rules, such as G14, G15, or SG6 may still apply, as they do in all robot-to-robot interactions; there is nothing special about them with regard to the hypothetical scenario being asked about here (i.e. "bumping a robot in the process of scoring").

514: Entanglement during a trapping call.

29-Jan-2020

G15

During a trapping count, if the bots become entangled, what is the right call?

Here is a scenario that played out this past weekend, more than once.

Blue alliance is trying to score in their goal zone, and gets rammed by red alliance.

Blue does not make an action to leave, continuing to attempt to stack.

However they then try to fight off the defending robot by backing up to push them off, thus causing a trapping count to begin from the referee. It is apparent that in the process of backing up the robots have become entangled, with the anti-tip mechanism of the defensive red robot getting caught on the frame of the blue bot. Blue still has a set of cubes and is attempting to score, but cannot disconnect from the red robot. As a result their movement is restricted for roughly 25 seconds, but at the same time, blue has been trying to score the whole time.

The training videos stress that even if the offending robot becomes stalled during a trap, the trapping count continues. Is this true for entanglement as well, assuming it to be accidental in nature? What is the proper way to respond to a robot that becomes entangled while trapped.

Additionally if a trapping count starts, and the trapped robot stops trying to escape and attempts to score, is the count continued, paused, or canceled?

Answered by Game Design Committee

In the specific scenario you have described, G13 would take precedence:

<G13> Offensive Robots get the "benefit of the doubt". In the case where referees are forced to make a judgment call regarding a destructive interaction between a defensive and offensive Robot, or an interaction which results in a questionable rules violation, the referees will err on the side of the offensive Robot.

The snapshot description implied that Blue was clearly playing offensively, and Red was clearly playing defensively (Trapping is, by definition, a defensive interaction). A Team is responsible for the actions of its Robot at all times; a Robot which has engaged in objectively defensive behavior has assumed an element of risk under G13.

The training videos stress that even if the offending robot becomes stalled during a trap, the trapping count continues. Is this true for entanglement as well, assuming it to be accidental in nature? What is the proper way to respond to a robot that becomes entangled while trapped.

Entanglement during Trapping should be handled similarly to a stall. Again, because a Robot is responsible for its own actions at all times, a Robot which chooses to engage in this strategy should be prepared to minimize the risk of any Entanglement, stalling, or other situations which could turn the legal Trap into a G15 violation.

Additionally if a trapping count starts, and the trapped robot stops trying to escape and attempts to score, is the count continued, paused, or canceled?

This question is answered in the [associated Referee Training video](#), around the 2:00 time.

534: Clarification on Trapping: Game Manual vs. Referee Training Video

3-Feb-2020

G15

Is a robot considered trapped while not attempting to escape? There is a major discrepancy between the referee video on trapping and the game manual. In the referee training video, it is stated multiple times that for a robot to be considered trapped it must be actively trying to get out of the trap. However, in the game manual trapping is defined as "A Robot is considered Trapped if an opposing Robot has restricted it into a small, confined area of the field, approximately the size of one foam field tile or less, and has not provided an avenue for escape. Trapping can be direct (e.g. pinning an opponent to a field wall) or indirect (e.g. preventing a Robot from escaping a corner of the field)." By definition, a robot is trapped whether or not it is attempting to get out of the trap. This training video causes the referees to rule trapping incorrectly as it would be believed that the training videos would be accurate to the game manual. However, it is stated in the game manual that "The 2019 - 2020 Q&A is the ONLY official source for rulings besides the Game Manual. If there are any conflicts between the Game Manual and other supplemental materials (e.g. Referee Training videos, VRC Hub app, etc), the most current version of the Game Manual takes precedent." Useful info Game Manual Link:

<https://content.vexrobotics.com/docs/vrc-tower-takeover/GameManual-20190816.pdf>

Referee Video Link: <https://www.youtube.com/watch?v=UsFRgTlkQVg>

Answered by Game Design Committee

To emphasize a few specific portions of the Trapping definition:

A Robot is considered Trapped if an opposing Robot has restricted it into a small, confined area of the field, approximately the size of one foam field tile or less, and **has not provided an avenue for escape**. Trapping can be direct (e.g. pinning an opponent to a field wall) or indirect (e.g. **preventing a Robot from escaping** a corner of the field).

In order to know whether "an avenue for escape" has been provided, the opponent must be attempting to escape. In order to "prevent" an opponent from "escaping", they must be attempting to escape.

The Referee Training video intentionally goes into additional detail on this point to help make the distinction clear, and there was not intended to be any discrepancy. We will be sure to take this into consideration for future Game Manuals.

568: <G15> Clarification on when trapping is official over.

23-Feb-2020

G15

<G15> "A Trap is officially over once the Trapping Robot has moved away and the Robots are separated by at least two (2) feet (approximately one (1) foam tile). Should the "two (2) feet" be interpreted as a 3-dimensional volume extending upwards? We've had a few matches where a robot base does separate by at least two (2) feet, but the the arms, tray anglers, etc. do not.

Answered by Game Design Committee

Thank you for quoting the relevant rule in your question.

The intent of the 2-foot reference in G15 is to ensure that Robots being Trapped are provided with an ample avenue for escape. If a Trapping Robot has a mechanism that is causing an opponent Robot to be restricted to a small space without an avenue for escape, then the Trapping count should continue.

However, it would not be feasible to expect a Head Referee to visualize four moving 3D volumes and measure their exact distances apart at any given instant. There are situations which may technically result in less than two feet separating two Robot mechanisms, but would not be restricting one Robot to a confined area (such as a tall "tray" hanging over a Clawbot-sized Robot).

Therefore, we cannot provide an overarching blanket statement that would encompass all hypothetical Robot interactions, while being realistic for a Head Referee to judge during a Match. We are going to use G3 to assist in Head Referee judgments involving this scenario:

<G3> Use common sense. When reading and applying the various rules in this document, please remember that common sense always applies in the VEX Robotics Competition.

373: Clarification on <G16>

10-Oct-2019

G16

Our team is seeking clarification regarding <G16> which states:

"Robots may not intentionally grasp, grapple or attach to any Field Elements. Strategies with mechanisms that react against multiple sides of a Field Element in an effort to latch or clamp onto said Field Element are prohibited."

Regarding the field perimeter, would touching both the metal frame and the polycarbonate sheet on the exterior of the field perimeter at the same time be considered legal, given that the robot is not contacting the interior of the field perimeter?

Answered by Game Design Committee

Regarding the field perimeter, would touching both the metal frame and the polycarbonate sheet on the exterior of the field perimeter at the same time be considered legal, given that the robot is not contacting the interior of the field perimeter?

We cannot provide a blanket ruling based on a the information provided of one possible hypothetical mechanism interaction.

In addition to "grasp, grapple, or attach to", you can also look towards the key words "latch onto" and "anchor" to help understand the intent of this rule. Some additional synonyms that are covered by the intent of this rule are "grip", "pinch", or "clamp". These are all terms that describe active retention of the Field Element, such that a robot mechanism is actively exhibiting force on multiple sides of it.

If this guidance is not enough to answer your question, please feel free to re-submit with further explanation, such as a photo or diagram, so that we can provide a more clear answer.

342: Student Definition

31-Aug-2019

G2

I was wondering about the legality of gap year participants. They have already graduated but aren't taking any university classes which doesn't allow them to compete in VexU. I was just wondering if they took a class to get a GED would that qualify as working up to the equivalent of a high school diploma? Or since they had already gotten their high school diploma, they can never meet the student definition?

Answered by Game Design Committee

The definition of "Student" in the VRC Game Manual is as follows:

Student - A person is considered a Student if he or she meets both of the following criteria:

1. Anyone who is earning or has earned credit toward a high school diploma/certificate or its equivalent during the six (6) months preceding the VEX Robotics World Championship. Courses earning credits leading up to high school would satisfy this requirement.
2. Anyone born after May 1, 2000 (i.e. who will be 19 or younger at VEX Worlds 2020). Eligibility may also be granted based on a disability that has delayed education by at least one year.

We will assume that the hypothetical individual in question satisfies criteria 2.

Although the definition does not explicitly include the words "provided that the student has not already achieved a high school diploma", this is supposed to be implied.

The intent of the "earning credit toward a high school diploma" verbiage in criteria 1 is to permit eligibility for both traditional and non-traditional students. This could mean those attending homeschool, who are enrolled in remote learning programs, or who are otherwise unable to participate within a "standard" school system.

To be clear: Graduating from high school, and then re-enrolling in high-school-equivalent courses for the sole purpose of competing in VRC is not within the intent of the rules, and this student would not be considered eligible to compete as a High School Student.

Now, because the question is being asked by a VEX U team, and we have established above that this hypothetical individual is not eligible for VRC HS, we should also look at VEX U rule VUG6:

<VUG6> Each Robot is allowed up to three (3) Drive Team Members, as stated in <G6>.

- a. Drive Team Members MUST be post-secondary school individuals. Any matriculated individual enrolled in post-secondary school is eligible to be a Drive Team Member.
- b. Professionals not enrolled in post-secondary education are not eligible to be Drive Team Members or participate on a VEX U Team.
- c. Students that are dual-enrolled in both a secondary school and in post-secondary courses are not eligible to be Drive Team Members or participate on a VEX U Team.

As you noted, a GED in the US is typically considered equivalent to a secondary school diploma, not post-secondary school. Therefore, an individual pursuing a GED would not be considered "matriculated" or "enrolled in post-secondary education". Therefore, they would not be eligible to participate on a VEX U team.

The VEX Robotics Competition is intended to be an educational competition for students enrolled in educational institutions. For an individual who is not enrolled in formal education but still wishes to participate, we would advise mentoring a VRC team or volunteering at local events until they become eligible again.

281: Do previous Q&A answers carry over to current season? Archiving RobotEvents Q&A from past season

19-May-2019

G22

In past seasons, Q&A answers were considered precedent for interpretation for current Game Manual rules. Is this still the case? Or do we start with a blank slate each season?

With the new robotEvents Q&A it is difficult to find the past season, Turning Point, Q&A. Will there be an archive of Turning Point Q&A answered questions?

thanks!

Answered by Game Design Committee

In past seasons, Q&A answers were considered precedent for interpretation for current Game Manual rules. Is this still the case? Or do we start with a blank slate each season?

Q&A answers from previous seasons have never applied to the current season's game; it has always been a "blank slate". Yes, previous season's Q&A answers or rules may sometimes be used to influence a new Q&A answer from the GDC. However, they should never be used as an official precedent to make a ruling decision in a current year's game. Context matters - for example, Hoarding interpretations shifted slightly between In the Zone and Turning Point, despite the term remaining the same.

When in doubt, feel free to ask a new Q&A, and we will be happy to re-clarify.

With the new robotEvents Q&A it is difficult to find the past season, Turning Point, Q&A. Will there be an archive of Turning Point Q&A answered questions?

The VRC Turning Point Q&A can be accessed via this archival link: <https://events.vex.com/VRC/2018-2019/QA>

439: Starting Match With the Preload in the Robot

3-Dec-2019

G4 R4

Good evening,

I have a question regarding the preload and how it may affect sizing at the beginning of the match. While reading R4 and G4, the rules state that the robot must be in the 18x18x18 constraint at the beginning of the match without mention of the preload. In Virginia tournaments, however, teams who are resized on the field are allowed to remove their preload and be measured. Is it legal for the robot itself to be out of size with the preload in the robot in the beginning of the match?

Thank you, Korvex Robotics

Answered by Game Design Committee

Good morning. Please see [this similar Q&A](#), which states that the Preload is not intended to be used when considering Robot size as it pertains to G4 and R4.

512: Robot oversized before elimination match

28-Jan-2020

G4 R2

at a previous event we ran into an issue where a robot had passed inspection, and after competing all day, the robot was over sized, it was minimal, but still over sized. during the elimination rounds a sizing inspection was requested. So, how should this handled Is the robot DQ'd Per R2e, or as discussed in R2d, the robot sits out, until it can be fixed. R2e states "During" the match. this was caught before match started.

G4 States: Robots in violation of this limit will be removed from the field prior to the start of the Match, at the Head Referee's discretion. This is what was done. But during elimination match if it is a DQ, then the whole alliance is DQ'd.

Answered by Game Design Committee

Please review the [Q&A Usage Guidelines](#), specifically point 3, "Quote the applicable rule from the latest version of the manual in your question."

Rule R2 reads as follows, with the relevant portions bolded for emphasis:

<R2> Robots must pass inspection. Every Robot will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all robot rules and regulations are met. Initial inspections will take place during team registration/practice time. a. Significant changes to a Robot, such as a partial or full swap of Subsystem 3, must be re-inspected before the Robot may compete again.

b. All possible functional Robot configurations must be inspected before being used in competition.

c. Teams may be requested to submit to random spot-inspections by event personnel. Refusal to submit will result in Disqualification.

d. Robots which have not passed inspection (i.e. who are in violation of one or more Robot rules) will not be permitted to play in any Matches until they have done so. <T2> will apply to any Matches that occur until the Robot has passed inspection.

e. If a Robot has passed inspection, but is later found to be in violation of a Robot rule during a Match, then they will be Disqualified from that Match and <R2d> will apply until the violation is remedied and the Team is re-inspected.

G4 reads as follows:

<G4> Robots begin the Match in the starting volume. At the beginning of a Match, each Robot must be smaller than a volume of 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2 mm) tall. Using Field Elements, such as the field perimeter wall, to maintain starting size is only acceptable if the Robot would still satisfy the constraints of <R4> and pass inspection without the Field Element. Robots in violation of this limit will be removed from the field prior to the start of the Match, at the Head Referee's discretion.

The scenario as you have described would be considered a G4 violation, because it occurred prior to a Match starting. R2-e explicitly only references a violation that is caught during a Match. Therefore, this would not be considered a Disqualification, and R2-d would then apply for that Match and any subsequent Matches. R2 and G4 apply regardless if the Matches are Qualification Matches or Elimination Matches.

580: Important Starting Size Clarification

26-Feb-2020

G4 R4

<G4> Robots begin the Match in the starting volume. At the beginning of a Match, each Robot must be smaller than a volume of 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2 mm) tall. Using Field Elements, such as the field perimeter wall, to maintain starting size is only acceptable if the Robot would still satisfy the constraints of and pass inspection without the Field Element. Robots in violation of this limit will be removed from the field prior to the start of the Match, at the Head Referee's discretion.

<R4> Robots must fit in a sizing box. At the beginning of any Match, Robots must be smaller than 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2 mm) tall.

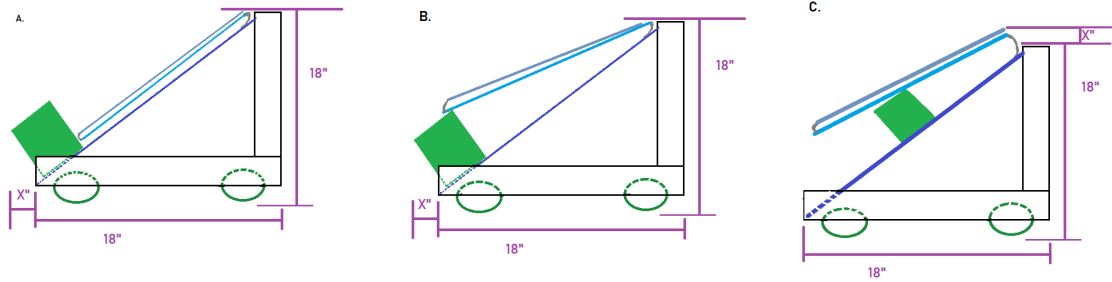
Q&A 439 <https://events.vex.com/VRC/2019-2020/QA/439> Q&A 423 <https://events.vex.com/VRC/2019-2020/QA/423>

Although you have answered questions about starting size in the past (see q&a's listed above), we are still a bit confused on the legality of the situations drawn below.

A & B: The robot itself is in size, but the preload is out of 18" (length wise)

C : The robot itself is out of size (height wise because of its tray), while the preload is inside of the robot

We are mainly concerned with this: if you were to put the preload into your robot and by doing so it forces a section of your robot to be a leg



Thank you!

Answered by Game Design Committee

First, thank you for quoting the relevant rules, searching for similar Q&A posts, and providing a clarifying image.

A & B: The robot itself is in size, but the preload is out of 18" (length wise)

These would both be legal. These are both scenarios that were intended to be covered by Q&A 439, as linked.

C : The robot itself is out of size (height wise because of its tray), while the preload is inside of the robot

This would not be legal.

Another way to word the response from Q&A 439 would be as follows:

G4 and R4 are intended to refer to Robot size only. The word 'Robot' refers to the VEX definition of 'Robot': "Anything that has passed inspection that a Team places on the field prior to the start of a Match." An inspection-passing Robot consists of VEX metal, wheels, gears, electronics, etc.

The hypothetical Robot C may have passed inspection (and therefore satisfied R4). Once it is placed on the field, the Head Referee is now checking its compliance with G4. Since some portion of the metal, wheels, gears, and electronics that make up the 'Robot' are now outside of the 18" x 18" x 18" size restriction, it is now in violation of G4.

348: Detaching robots and entanglement

4-Sep-2019

G5 R3

One of my students wants to build a robot similar to this design to the ones featured in the following video but wants to make sure the design is legal before building it. Specifically in the video we are looking at designs that build a wall that detaches from the robot and the only connection is rope/string. <https://www.youtube.com/watch?v=Rznndditly0>

They are concerned firstly that rule G5 is being violated.

<G5> Keep your Robots together. Robots may not intentionally detach parts during the Match or leave mechanisms on the field.

The designers of these robots have defended at length on forums that their designs don't detach mechanisms on the field."

Secondly if this sort of design is allowable within G5 they are also concerned that it would viol

<R3> Robots must be safe. The following types of mechanisms and components are NOT allowed: c. Those that pose an unnecessary risk of Entanglement.

Would leaving behind a trail of 20 feet of rope/string be considered an unnecessary risk of entan

Thanks in advance!

Answered by Game Design Committee

The designers of these robots have defended at length on forums that their designs don't detach because they are connected by rope/string. Is that enough to consider your robot parts still attached?

When there is no VRC-specific definition for a term, a dictionary definition should be used. The Oxford dictionary definition for "attached" is "joined, fastened, or connected to something".

Parts connected by rope/string are, by definition, considered "attached" to the Robot. Therefore, G5 is not being violated if a mechanism is attached solely via rope/string.

Would leaving behind a trail of 20 feet of rope/string be considered an unnecessary risk of entanglement?

In addition to R3, Entanglement is also referenced in G12 (i.e. it is possible for a Robot to pass R3 in inspection, but still violate G12 during a Match).

< G12 > Don't destroy other Robots. But, be prepared to encounter defense. Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of opposing Robots are not part of the ethos of the VEX Robotics Competition and are not allowed. If the tipping, Entanglement, or damage is ruled to be intentional or egregious, the offending Team may be Disqualified from that Match. Repeated offenses could result in Disqualification from the entirety of the competition.

< G12b > VEX Robotics Competition Tower Takeover is an interactive game. Some incidental tipping, Entanglement, and damage may occur as a part of normal gameplay without violation. It will be up to the Head Referee's discretion whether the interaction was incidental or intentional.

Note: A Robot which has expanded horizontally in an effort to obstruct the field, or is legally covering the top of a Tower in a solely defensive manner, should expect vigorous interactions from opponent Robots. Damage that is caused by opponent Robots pushing, tipping, or Entangling with them would not be considered a violation of < G12 >. Gratuitous damage or dangerous mechanisms may still be considered a violation of <R3>, <S1>, or <G1> at the Head Referee's discretion.

Bearing both R3 and G12 in mind, it is impossible to provide a blanket ruling that would cover all possible hypothetical Robot designs and/or on-field interactions. This is the type of question that requires a human observing the context of a specific Robot and/or Match to provide a judgment call.

So, we will provide the following overarching guidelines as starting points for Head Referees, inspectors, and Teams to use when determining whether a given design/interaction is legal.

1. When inspecting for R3, has the Team done their due diligence in the engineering design process to mitigate the risks of unnecessary Entanglement? While it is outside the scope of this Q&A to provide specific design advice, we would recommend that Teams wishing to utilize this strategy test different thicknesses, attachment methods, lengths, etc in different types of robot-to-robot interactions to minimize unnecessary, egregious, or intentional Entanglement.
2. Does the string on the field pose a likely or strategic possibility of Entangling another Robot? That is to say - is Entangling a primary function of the string (is it a "dragnet" mechanism), or is it simply a means-to-an-end?
3. Any Robot with a mechanism such as the one in the linked video would be taking on some risk of incidental Entanglement. Therefore, if incidental Entanglement occurs, was the Entanglement egregious or intentional? If it was not egregious or intentional, was it the result of vigorous interactions from opponent Robots (per the

469: Leaving Parts on the Field

23-Dec-2019

G5

<G5> Keep your Robots together. Robots may not intentionally detach parts during the Match or leave mechanisms on the field. Minor violations of this rule that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion. Multiple intentional infractions may result in Disqualification for the entire competition.

At an event I watched teams that had a slide out mechanism that would release using rubber bands and the rubber bands would fly off the robot and fall on the field. Would this be a concern of G5?

Answered by Game Design Committee

A Robot intentionally detaching a part and leaving it on the field is always considered a violation of G5. The specific scenario you have described would likely be considered a minor (non-Match-Affecting) violation, and result in a warning. Teams that receive multiple warnings may receive a Disqualification at the Head Referee's discretion.

290: Does <G6> the "Drive your own Robot" rule apply to scrimmages?

29-May-2019

G6

Regarding rule <G6> "Drive your own Robot. Each Team shall include up to three Drive Team Members. No Drive Team Member may fulfill this role for more than one Team in a given competition season."

In general does this rule apply to scrimmages? If so, then when does the "competition season" start? In our region there are many summer camps, and scrimmages that occur before school starts, and before any qualifying events. Teams that attend summer scrimmages may or may not intend on staying together when school starts. Do they need to be concerned about violating <G6>?

Answered by Game Design Committee

The Game Manual describes a set of rules used to play Tower Takeover. It is up to any given tournament organizer to determine the application of that ruleset that best fits their tournament structure. In this context, "tournament organizer" does not mean "Event Partner", it means "governing organization", such as the REC Foundation, SkillsUSA, CREATE, TSA, or any other organization that utilizes Tower Takeover as their game.

For the purposes of this answer, in the context of this Q&A system, it is a fair assumption that you are referring to official VEX Robotics Competition events governed by the REC Foundation. So, the [VRC Qualifying Criteria document](#) defines the way in which VRC Tower Takeover rules are applied to official REC Foundation tournaments.

VRC official qualifying events (Tournaments and Leagues) must meet the following criteria:

[...]

Qualifying events must follow the rules and guidelines in these documents and manuals:

1. Official Game Manual including tournament/alliance selection guidelines.

Scrimmages, internal practices, or other non-REC-Foundation-sanctioned gatherings are not considered official Tournaments by this document. Therefore, there is no expectation by the GDC that an unofficial event has rigidly followed the Game Manual as an official qualifying Tournament would.

To be more explicit - in the context of G6, a rule which spans multiple events, there is no expectation by the GDC that unofficial events should factor into its enforcement at an official Tournament.

306: Participation in VRC and VEX IQ.

18-Jun-2019

G6

Is a student allowed to be on both a VRC and VEX IQ team?

and

Is a student allowed to be on a drive team for VRC and a drive team for VEX IQ in the same season?

There are applicable rules in both manuals but neither of them say anything about the other game.

Answered by Game Design Committee

Is a student allowed to be on both a VRC and VEX IQ team?

Is a student allowed to be on a drive team for VRC and a drive team for VEX IQ in the same season?

There are no rules prohibiting either of these scenarios, thus they are legal, provided that no other rules are violated (i.e. provided that the definition of Student is met for each program).

312: <G6> Drive Team Definition Clarification

28-Jun-2019

G6

Rule <G6> states "Drive your own Robot. Each Team shall include up to three (3) Drive Team Members." and details that drivers and programmers may not be shared between teams. If a team has 5 team members that want to actively drive during season, can all 5 members drive during a competition as long as they follow the Game Definition that states "Drive Team Member(s) - Up to three (3) Students who are allowed in the Alliance Station during a Match for each Team. " ?

Answered by Game Design Committee

If a team has 5 team members that want to actively drive during season, can all 5 members drive during a competition as long as they follow the Game Definition that states "Drive Team Member(s) - Up to three (3) Students who are allowed in the Alliance Station during a Match for each Team."

Yes, this would be legal.

352: Moving to a new school from China

9-Sep-2019

G6

We have a new student who has moved to the USA from China. The student competed as a VEX drive team member in China before coming to the USA. Now that the student has moved to our district, can the student be a member of one of our school's VEX teams?

Answered by Game Design Committee

Please remember to quote the applicable rule from the Game Manual in your question. Rule G6 states the following:

<G6>Drive your own Robot. Each Team shall include up to three (3) Drive Team Members. No Drive Team Member may fulfill this role for more than one Team in a given competition season.

When a Team qualifies for a Championship event (e.g., States, Nationals, Worlds, etc.) the Students on the Team attending the Championship event are expected to be the Students on the Team that was awarded the spot. Students can be added as support to the Team but should not be added as Drive-Team Members or programmers for the Team.

An exception is allowed if one (1) Student on the drive team or a programmer on the Team cannot attend the event. The Team can make a single substitution of a Drive Team Member or programmer for the Championship event with another Student, even if that Student has competed on a different Team. This Student will now be on this new Team and may not substitute back to the original Team.

Violations of this rule will be reviewed by the REC Foundation and may result in one or both Teams being disqualified for the event or the remainder of the season with all trophies and awards won that season being nullified.

As with all rules, this rule should be read with <G3> ("use common sense") in mind. The intent of <G6> is to prevent the same Student driver to operate / compete with multiple Robots across multiple Teams simultaneously. If a Student permanently changes Teams for reasons including (but not limited to) illness, changing schools, or conflicts within a Team, then that Student may drive the new Team's Robot, regardless of whether or not the Student drove the previous Team's Robot.

422: G6 Clarification

13-Nov-2019

G6

G6 states "Each team shall include up to three Drive Team Members. No Drive Team Member may fulfill this role for more than one Team in a given competition season." We have two of our three members not available for a tournament. From what I understand, another member from our organization (that is on another team not competing in the tournament) is not allowed to come to a tournament and coach our driver, but I wanted to make sure. Does this just apply to the driver? Or does this mean even the coaches. Thanks!

Answered by Game Design Committee

The definition of Drive Team Member is as follows:

Drive Team Member(s) - Up to three (3) Students who are allowed in the Alliance Station during a Match for each Team. Only Drive Team Members are allowed to touch the controls at any time during the Match or interact with the Robot as per <G9>. Adults are not allowed to be Drive Team Members. Per <G6>, Drive Team Members may only fulfill this role for one Team.

From a rules (G6) perspective, there is no difference between a Drive Team Member who touches the controls, and a Drive Team Member who coaches another Drive Team Member. Therefore, what you are describing would not be legal.

557: Drive Team Roles

19-Feb-2020

G6

<G6>Drive your own Robot. Each Team shall include up to three (3) Drive Team Members. No Drive Team Member may fulfill this role for more than one Team in a given competition season.

When a Team qualifies for a Championship event (e.g., States, Nationals, Worlds, etc.) the Student

the Team attending the Championship event are expected to be the Students on the Team that was awarded the spot. Students can be added as support to the Team but should not be added as DriveTeam Members or programmers for the Team.

Would a student programmer be allowed to assist another programmer on a team? Also would a drive team member be able to fulfill the requirement for a programmer while still being a drive team member. Finally what are the restrictions on programmers on what they can, be, or do as the rules are vague on their role with a team. I am a little confused if programmers have any restrictions like drive team members.

Answered by Game Design Committee

Would a student programmer be allowed to assist another programmer on a team?

Yes, this would be legal.

Also would a drive team member be able to fulfill the requirement for a programmer while still being a drive team member.

Yes, this would be legal.

Finally what are the restrictions on programmers on what they can, be, or do as the rules are vague on their role with a team

Programmers are the ones who write the code that gets downloaded onto the Robot. They may not be adults.

278: <G7> Scoring application use at Alliance Station

18-May-2019

G7

I was told teams were prohibited from using scoring application on their mobile device at Worlds this year by the head referee in HS divisions. This is bizarre since nothing prohibits the use of mobile device other than prohibiting wireless communication:

<G7>Drive Team Members are not allowed to use any sort of communication devices during their Match. Devices with communication features turned off (e.g. a phone in airplane mode) are allowed.

Given the complexity of scoring for this game, my teams would like to know for sure if they will be permitted to use a scoring application during the game at qualifying events and at Worlds. If they are permitted to use scoring application on their mobile device, may they use a custom mobile scoring application as long as it meets the requirements of <G7> as excerpted above?

Thank you for your kind consideration!

Yes, this would be legal.

445: G7 Confusion

7-Dec-2019

G7

G7 States:

Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to): • Encroaching upon an opponent's Protected Zone per SG3. • Interfering with an opponent's Autonomous Period per SG2.

The two main rulings that I am considering to be in conflict are these:

<https://events.vex.com/VEXU/2019-2020/QA/423>

<https://events.vex.com/VEXU/2019-2020/QA/366>

The ruling in Q&A 423 states (in part):

because your questions do not involved destruction, damage, tipping, or Entanglement, G12 is irrelevant. SG7 and G3 are the only rules that should be considered. No, neither of these are illegal. These would both ultimately be G3 edge-case interpretations of SG7.

This ruling seems perfectly in line with the wording of G7, which specifically notes "actions that would be otherwise illegal". However, the previous ruling does not seem to follow this reasoning. It (Q&A 366) states:

SG7, a similar rule that utilizes the same principle, states the following:

"SG7 Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to): • Encroaching upon an opponent's Protected Zone per SG3. • Interfering with an opponent's Autonomous Period per SG2."

Although both of these rules reference defensive interactions as their examples, they are intended to be applications of an overall principle that Robots and any Cubes they are possessing should be considered as one entity.

"Their robot was in possession (not just touching) of a cube and that cube was touching the base cube of that stack. He felt that the way the rule is written, the stack should not be considered scored since the robot (through that cube in its possession) was touching the base of the stack. If the possession of a cube is an extension of the robot, referee felt the robot was touching the base cube of the stack since it possessed the cube that was touching it."

This is a correct interpretation (assuming that the Robot possessing the Cube was a Red robot). The Cube being contacted would not be considered a Base Cube, and the Scored status of all other Cubes in the Goal Zone would be affected accordingly.

Since in Q&A 423 G12d was not deemed to be relevant due to the considered actions not involving "destruction, damage, tipping, or Entanglement", then it would seem to follow that in Q&A 366 SG7 would also not be relevant due to the considered action not involving "actions that would be otherwise illegal", as it would not seem to be in the spirit of G3 for it to be illegal to touch one's own stack. In spite of this, Q&A 366 still appears to apply SG7.

Additionally, in Q&A 423 it was stated

SG7 intentionally does not include the word "possess", it includes the word "use".

In my question, I was not referring to the word "possess" as written in any particular game rule, but rather Q&A 366's answer which again states (in part):

Although both of these rules reference defensive interactions as their examples, they are intended to be applications of an overall principle that Robots and any Cubes they are **possessing** should be considered as one entity.

Is it intended that the wording of SG7 take precedence over the wording of Q&A 366 or vice versa?

Overall, it just doesn't seem that the overall principle of "Robots and any Cubes they are possessing should be considered as one entity." is explicitly defined by any rule found in the manual and is thus very difficult to consistently apply across a single tournament, let alone different regions. Would the GDC consider adding a rule explicitly defining this concept to the manual or at least posting such a definition on this forum? The clarification would be greatly appreciated.

Answered by Game Design Committee

Is it intended that the wording of SG7 take precedence over the wording of Q&A 366 or vice versa?

Overall, it just doesn't seem that the overall principle of "Robots and any Cubes they are possessing should be considered as one entity." is explicitly defined by any rule found in the manual and is thus very difficult to consistently apply across a single tournament, let alone different regions. Would the GDC consider adding a rule explicitly defining this concept to the manual or at least posting such a definition on this forum? The clarification would be greatly appreciated.

We apologize for the confusion. Q&A 366 was intended to serve as the explicit clarification that SG7 is an overarching principle that should apply to most Robot interactions. G12 is intended to apply specifically to interactions that involve damage, tipping, or Entanglement.

360: Using Flags from Turning Point

20-Sep-2019

G9

In an earlier question it was confirmed that parts from the IQ game Bankshot would be deemed legal to use as Lexan. I wanted to verify that the Flags and the platform fit under the same ruling.

Answered by Game Design Committee

In an earlier question it was confirmed that parts from the IQ game Bankshot would be deemed legal to use as Lexan. I wanted to verify that the Flags and the platform fit under the same ruling.

This is the Q&A that you are referring to:

<https://events.vex.com/VRC/2019-2020/QA/325>

The response references R9, quoted here and bolded for emphasis:

<R9> A limited amount of custom plastic is allowed. Robots may use non-shattering plastic from the following list; polycarbonate (Lexan), acetel monopolymer (Delrin), acetal copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP; **as cut from a single 12" x 24" sheet up to 0.070" thick.**

The Turning Point Flags are made of polycarbonate, and have a thickness of 1.6mm (0.063"). Therefore, they meet the constraints listed in this rule, and would be legal.

The Turning Point Platforms are made of polycarbonate, but are 2.4mm (0.094") thick. Therefore, they do not meet the constraints listed in this rule, and would not be legal.

309: VEX U Custom Electronics Clarification

24-Jun-2019

Other

In the past, it has been [ruled legal](#) to connect custom electronics to the controller for use during the driver controlled period in VEX U. Is this still the case (both in regards to the USB port and partner port)?

Answered by Game Design Committee

In the past, it has been [ruled legal](#) to connect custom electronics to the controller for use during the driver controlled period in VEX U. Is this still the case (both in regards to the USB port and partner port)?

No, this is not legal. Please see VUR6:

<VUR6> There is no restriction on sensors and other additional electronics that Robots may use for sensing and processing, except as follows:

a. Sensors and electronics MUST be connected to the V5 Robot Brain via any of the externally accessible ports (i.e. without any modification to the microcontroller).

Any custom electronics connected to the Controller would, by definition, not be connected to the Robot Brain, and therefore would not be within VUR6.

The only permissible exception would be an external power source into the micro USB port, as noted in R19-b:

Teams are permitted to have an external power source (such as a rechargeable battery pack) plugged into their V5 Controller during a Match, provided that this power source is connected safely and does not violate any other rules, such as <G7>, <R21>, or <R22>.

319: New Scoring Rubric

15-Jul-2019

Other

Hello, Our question is regarding the change in the scoring rubric. When do you expect to release the new rubric? Will the expert scoring requirements of 5 be similar to the high score of 3 for the current rubric? Our team has set some crazy goals to do well in this area and we are in the middle of our first build iteration process. We have concerns about not being scored as high if the rubric is changed.

Thank you 41091A

Answered by Game Design Committee

Per the [Q&A Usage Guidelines](#), the Q&A system is intended for VRC game rule clarifications only. Please direct any questions related to awards or judging to the official [Judging Q&A](#).

421: Shoulder Screws

12-Nov-2019

R11 Other

Would commercially available shoulder screws, 8-32 thread, up to 2" long, for VRC be legal by R11? How about shoulder screws 1/4-20 thread, unlimited length, for VEX-U be legal by VUR8?

Thanks for you time!

Answered by Game Design Committee

In the future, please separate questions for VRC / VEX U into separate threads.

Would commercially available shoulder screws, 8-32 thread, up to 2" long, for VRC be legal by R11?

Rule R11 states the following, with a portion bolded for emphasis:

<R11> Certain non-VEX screws, nuts, and washers are allowed. Robots may use any commercially available #4, #6, #8, M3, M3.5, or M4 screw up to 2" (50.8mm) long (nominal), and any commercially available nut, washer, and/or spacer (up to 2" / 50.8mm long) to fit these screws.

The intent of the rule is to allow teams to purchase their own commodity hardware **without introducing additional functionality not found in standard VEX equipment**. It is up to inspectors to determine whether the non-VEX hardware has introduced additional functionality or not.

A shoulder bolt is a good example of a fastener that could introduce additional functionality in some cases, and could not in others. It is impossible to issue a blanket ruling that would apply to all use cases based on a snapshot description of a hypothetical Robot; therefore, it will be at the inspectors' discretion whether it has introduced additional functionality.

Examples of additional functionality could include (but are not limited to) using the shoulder as an attachment point for something else, using the shoulder to provide an additional bearing surface that a standard VEX screw would not provide.

How about shoulder screws 1/4-20 thread, unlimited length, for VEX-U be legal by VUR8?

Rule VUR8 states the following:

<VUR8> Teams may use the following fasteners on their Robot:

- a. Any commercially available #4, #6, #8, #10, M2, M2.5, M3, M4, or 1/4-20 screw (of any length), and any commercially available nut, washer and/or spacer to fit these screws.
- b. Any commercially available aluminum or steel rivet, up to 1/4" nominal diameter.

Therefore, yes, this would be legal.

Thanks for you time!

You're welcome.

443: Unanswered VEXU Q&As?

7-Dec-2019

Other

There are number of VEXU Q&As that have remained unanswered for months, with some being over 6 months old. Here are links to the ones that I could find: <https://events.vex.com/VEXU/2019-2020/QA/292>

<https://events.vex.com/VEXU/2019-2020/QA/310>

<https://events.vex.com/VEXU/2019-2020/QA/301>

<https://events.vex.com/VEXU/2019-2020/QA/300>

<https://events.vex.com/VEXU/2019-2020/QA/340>

<https://events.vex.com/VEXU/2019-2020/QA/350>

<https://events.vex.com/VEXU/2019-2020/QA/351>

<https://events.vex.com/VEXU/2019-2020/QA/400>

I suspect that the reason may be due to a quirk in the way that the Q&A software works this year; for some reason, questions which are posted in the VEXU Q&A (<https://events.vex.com/VEXU/2019-2020/QA>) do not show up in the VRC Q&A (<https://events.vex.com/VRC/2019-2020/QA>).

Indeed, as I am writing this there is one question on the front page of the VEXU forum (<https://events.vex.com/VEXU/2019-2020/QA/431>) which is not present on the VRC forum.

Would it be possible for these questions to be addressed? Thanks!

(Sorry for not posting this in the VEXU Q&A, but I'm pretty sure it wouldn't get seen if it were there because of the above reason)

Answered by Game Design Committee

Thank you for bringing this to our attention. Please see [this post on the VEX Forum](#) that addresses this concern; we will work to address these delays moving forward.

470: Multiple Intentional Infractions

23-Dec-2019

Other

Is there a metric to quantify what the GDC considers 'multiple' when it relates to the game manual? Two, three, 33% of qualification matches for example?

Answered by Game Design Committee

"Multiple" is usually used in circumstances that rely upon a Head Referee judgment call in the context of a specific Match or event. We cannot provide a specific metric that would apply to all hypothetical scenarios, rulings, or conditions.

284: R11 Clarification

22-May-2019

R11

Could we get clarification of rule R11 Certain non VEX screws, nuts, and washers are allowed. It says "Robots may useand any commercially available nut, washer, and/or spacer... The intent of the rule is to allow teams to purchase their own..... without introducing additional functionality not found in standard VEX equipment." Last year, commercial spacers had to be the same diameter as official VEX spacers. ie: to make cascade slides, the VEX spacers could be ground down but commercially available spacers with a smaller diameter could not be used. Does this fall under "introducing additional functionality" and therefore cannot be used again under this years rule? Need to know for inspection purposes as expect to see elevator slides this year again. Thank you.

Answered by Game Design Committee

Last year, commercial spacers had to be the same diameter as official VEX spacers. ie: to make cascade slides, the VEX spacers could be ground down but commercially available spacers with a smaller diameter could not be used. Does this fall under "introducing additional functionality" and therefore cannot be used again under this years rule?

First, please see this Q&A regarding previous rulings: <https://events.vex.com/VRC/2019-2020/QA/281>

R11 is a good rule to demonstrate the principle explained by that post. 2019-2020 is the first year that "spacers" have been explicitly included in this rule. Therefore, it should not be assumed that any previous rulings regarding spacers would apply.

Please also see R5d:

Any parts which are identical to legal VEX parts are permitted. For the purposes of this rule, products which are identical in all ways except for color are permissible. It is up to inspectors to determine whether a component is "identical" to an official VEX component.

In the context of this specific question, the following is a valid interpretation of R11 and R5d: "commercially available spacers that are functionally equivalent to spacers that could theoretically be made from legal VEX spacers are legal".

Therefore, yes, a spacer with a smaller outer diameter (i.e. "ground down") or a larger inner diameter (i.e. drilled out) would be legal.

277: <R12> f - Do LED strips still need to be powered by brain/cortex

14-May-2019

R12

In the past, if teams used powered decorations such as LED light strips they needed to be powered by the brain or cortex. With the new wording in <R12> part f, where it states:

Internal power sources (e.g. for a small blinking light) are permitted, provided that no other rules are violated and this source only provides power to the non-functional decoration (e.g. does not directly or indirectly influence any functional portions of the Robot)

Does this mean that teams can use external power for LED strips, or do they exceed the example of the "small blinking light"?

Answered by Game Design Committee

Does this mean that teams can use external power for LED strips, or do they exceed the example of the "small blinking light"?

Yes, using a small external power source to power a [standard LED strip](#) would be permitted, provided that no other rules are violated, such as R12e, R12g, or G10.

337: Scuff controller add-on legality update

23-Aug-2019

R12

Because the Q&A's do not carry over from last season, I must ask this again to ensure your ruling has not changed on the previously-legal 3D printed V5 scuff controller add-on.

Rule <R21> States "Motors (including the internal PTC or Smart Motor firmware), microcontrollers (including V5 Robot Brain firmware), extension cords, sensors, controllers, battery packs, reservoirs, solenoids, pneumatic cylinders, and any other electrical component or pneumatics component of the VEX EDR platform may NOT be altered from their original state in ANY way.

Provided this add-on is easily removable, does not modify electrical components in any way, and was completely legal to use last year, would this add-on count as an illegal modification, or would last year's ruling carry on to this season?



Answered by Game Design Committee

Yes, the attachment shown in the attached photo would be legal, provided it is easily removable and does not modify electrical components in any way.

357: Painting Robots in a Similar Color as the Game/ Field Elements

11-Sep-2019

R12

Rule R12 states: "a. Anodizing and painting of parts is considered a legal nonfunctional decoration" and "e. Decorations that visually mimic field elements or could otherwise interfere with an opponent's Vision Sensor are considered functional and are not permitted. This includes lights, such as the VEX Flashlight. The Head Inspector and Head Referee will make

the final decision on whether a given decoration or mechanism violates this rule.”

Our question is, can you paint your robot in a color that is similar to those of game and field elements (including but not limited to green, orange, purple, red, blue, black, gray)?

For example, if your school colors are green and black, could you paint your robot these colors, or would this be considered illegal because those colors may mimic field and game elements, thus violating section e? Another example, if your school colors again were green and black, could you paint the robot a darker shade of green than that of the cubes; or would this be considered illegal because of section e?

Answered by Game Design Committee

Our question is, can you paint your robot in a color that is similar to those of game and field elements (including but not limited to green, orange, purple, red, blue, black, gray)?

It is impossible to issue a blanket ruling that would cover all hypothetical decorative styles and color shades. We would advise Teams and Head Referees to refer to G3 ("Use common sense") when determining whether a given decoration is trackable way by another Team's Vision Sensor (under realistic, Match Affecting circumstances). The intent of G12 is not to prohibit all teams with green, orange, purple, black, gray, blue, or red themes from decorating their Robot; it is to protect (within a reasonable extent) Teams attempting to take their VRC experience to the next level through Vision Sensor programming.

One way to think about decorative color choices is to view them the same way you would a typical non-functional decoration, such as a giant decal. By itself, a giant decal is considered a nonfunctional decoration. However, if used to hold metal parts together or to hold game objects, it has become functional, and is no longer legal.

That being said, just as teams are responsible for the decorations on their own robots, teams utilizing the Vision Sensor should be conscious of the possibility for inadvertent or incidental visual interference. It will be up to the inspector and Head Referee to determine if a given Robot's decoration or design acts as a "Vision Sensor distraction"; to assist in reducing the frequency of these judgment calls, we would advise Vision Sensor Teams to take advantage of the engineering design process to investigate programming solutions that mitigate the impact of undesirable conditions.

To summarize more colloquially / bluntly: yes you can paint your robot green, just don't hold up a giant green sign if playing against a team that you know tracks green cubes, and if you're going to use a Vision Sensor, remember that there may be some green things in the arena that you have to account for.

427: 3d Printed License Plate Holders

19-Nov-2019

R12 R28

On the vex forum there are discussions of 3D Printed License Plate Holders. But, "Anything written on the forum is just chit-chat and can't be used to prove anything to EPs or tournament hosts." I find this to be confusing because many teams are posting their designs online and are not distinguishing whether they are VRC or VEXU. I can see a team showing up at a tournament with a 3D Printed License Plate Holder and trying to prove to the EP it is legal by showing discussions that it is allowed because "Team A" is doing it, and "Team A" happens to be a VEXU team.

I would like to officially ask if 3D Printed License Plate holders are allowed on the VRC robot (Middle School & High School) as long as it "would be considered a non-functional decoration as described" by <R12> & <R28> or are 3D Printed License Plate Holders only allowed on the VEXU robots due to the abundance of resources allowed for them to use (including 3D printed materials)?

Answered by Game Design Committee

3D printed non-functional decorations are permitted in VRC, provided that they satisfy the constraints of R12. R12 is partially quoted below:

<R12> Decorations are allowed. Teams may add non-functional decorations, provided that they do not affect Robot performance in any significant way or affect the outcome of the Match. These decorations must be in the spirit of the competition. Inspectors will have final say in what is considered “non-functional”. Unless otherwise specified below, non-functional decorations are governed by all standard Robot rules.

In order to be “non-functional,” any guards, decals, or other decorations must be backed by legal materials that provide the same functionality. For example, if your Robot has a giant decal that prevents Cubes from falling out of the Robot, the decal must be backed by VEX material that would also prevent the Cubes from falling out.

It is impossible to issue a blanket ruling that would apply to all hypothetical decorations and Robot designs; inspectors will have the final say in what is considered “non-functional”. The most common thought experiment used in this determination is to ask what would happen if the decoration were removed from the Robot. Is the hypothetical License Plate holder being used to join structural pieces together, to guide Cubes, etc?

We would also ask teams to bear in mind [this similar Q&A](#), specifically the following point:

Teams wishing to utilize custom-made license plates should be prepared for the possibility of this judgment, and ensure that they are prepared to replace any custom parts with official VEX License Plates if requested. Not bringing official replacement plates to an event will not be an acceptable reason for overlooking a violation of one or more points in R28.

429: R12: Carbon Fiber on Cube Tray Inspection Warning

21-Nov-2019

R12

At our recent competition, we were strictly warned about putting carbon fiber (the contact paper kind) on the Lexan we use in the middle of the cube tray. The basis of the argument is that it changes the surface that the cube slides on. Upon further investigation, I thought I'd seen other teams do the same thing, primarily for decoration. I understand where it could look like a rule violation, as tape isn't allowed for anything except wiring and decor (nonfunctional). Is this a violation of R12, or is it just an overly cautious inspector?

** We also realize that inspectors have the final say, but I would like to get a response on this to know for sure how to handle things at our next tournament

Answered by Game Design Committee

It is impossible to issue a blanket ruling based on a snapshot description of a hypothetical Robot design. Furthermore, please review the [Q&A Usage Guidelines](#), specifically point 3, “Quote the applicable rule from the latest version of the manual in your question.”

The rule in question is R10, quoted here for reference:

<R10> A limited amount of tape is allowed. Robots may use a small amount of tape when used for the following purposes:

- For the sole purpose of securing any connection between the ends of two (2) VEX cables.
- For labeling wires and motors.
- For covering the back of License Plates (i.e. the “wrong color”).
- For the purposes of preventing leaks on the threaded portions of pneumatic fittings. This is the only acceptable use of Teflon tape.

e. For securing and retaining a VEXnet Key 2.0 to the VEX ARM® Cortex®-based Microcontroller. Using tape in this manner is highly recommended to ensure a robust connection.

f. In any other application that would be considered a "non-functional decoration" per <R12>

As your description does not sound like it would fit into points "a" through "e", the question that a Head Referee/inspector would then ask themselves is whether the contact paper is a "non-functional decoration". R12 is partially quoted below:

<R12> Decorations are allowed. Teams may add non-functional decorations, provided that they do not affect Robot performance in any significant way or affect the outcome of the Match. These decorations must be in the spirit of the competition. Inspectors will have final say in what is considered "non-functional". Unless otherwise specified below, non-functional decorations are governed by all standard Robot rules.

In order to be "non-functional," any guards, decals, or other decorations must be backed by legal materials that provide the same functionality. For example, if your Robot has a giant decal that prevents Cubes from falling out of the Robot, the decal must be backed by VEX material that would also prevent the Cubes from falling out.

It is ultimately at the inspector's discretion whether or not a given decoration is affecting Robot performance. A decal which provides more (or less) grip than standard legal materials would likely be considered to be affecting Robot performance, and would not be legal.

435: <R12> Non-functional decoration.

27-Nov-2019

R12 T1

In the Game Manual it states in <R12> that the Inspector will have final say as to whether as to what is considered non-functional decoration. Given that Inspectors do not go through the same training as many Head Referees, what happens when a Head Referee deems something as functional? <T1> says the Head Referee has the ultimate say about what is permissible in matches.

Which has precedent? <R12> or <T1>?

Answered by Game Design Committee

This scenario is covered by rule R2-e, which states the following:

If a Robot has passed inspection, but is later found to be in violation of a Robot rule during a Match, then they will be Disqualified from that Match and <R2d> will apply until the violation is remedied and the Team is re-inspected.

R2-e is primarily intended for a scenario where a Robot has been modified since inspection. However, it is also intended as a "catch" for a scenario where a Head Referee identifies a violation that an inspector may have missed.

Most Robot rules can be considered as "inspection rules", in the context that there may not be a Head Referee present during inspection. So, statements such as "inspectors have the final say" imply that this is being questioned during inspection. Once a Robot passes inspection, R2-e and T1 come into effect for the duration of the Tournament.

472: Cortex Non-Functional Decorations

2-Jan-2020

R12 R16 R17

Under rules <R12>, <R16>, <R17>, may teams using the V5 Control System use a Cortex VEXNET 2.0 Key as a non-functional decoration?

Answered by Game Design Committee

No, this is not legal.

490: <R5>, <R14>Is it Legal to Use 393 Motor Refurb Gears and V5 Cartridges as Mechanical Components?

17-Jan-2020

R5 R14

Legality of part usage from 393 motor refurb kit and V5 Motor Cartridges as mechanical components?

In previous years it was ruled legal that 393 motor internal gears, sold in refurb kits, can be used outside of a motor as mechanical components, since they are sold as a separate item. <https://www.vexforum.com/t/answered-further-question-about-r15/23896/2> <https://www.vexforum.com/t/answered-is-it-legal-to-re-use-internal-motor-parts-outside-of-motors/30764>

Questions for the Tower Takeover Season: A. (R5) Does the above positive ruling still stand regarding the legal use of refurb kit gears? B. (R14) Additionally, are V5 Motor Cartridges legal to use as mechanical components external to the V5 motor?

Thank you from Vexmen Team 81K Magik

Answered by Game Design Committee

A. (R5) Does the above positive ruling still stand regarding the legal use of refurb kit gears?

Yes, this is legal.

B. (R14) Additionally, are V5 Motor Cartridges legal to use as mechanical components external to the V5 motor?

There are no rules prohibiting this, thus it is legal. However, any modifications to the cartridge would be considered a violation of R22. Also, please bear in mind that there are no VEX-legal components that can interface with the internal half of the cartridge. Removing parts from a V5 Smart Motor to do so would also be considered a violation of R22.

448: Pneumatics and Motor Counts

9-Dec-2019

R17

If, using a v5 system, if a team were to directly attach the pneumatic tank to the actuator, without using the solenoids (or any electrical device) to control them, would it still count against their motor count, reducing it to 6 instead of 8? The reason for asking is that a team wanted to use a constant pressure output which never needed to change throughout the round.

Answered by Game Design Committee

The full text of rule R17 reads as follows, with a portion bolded for emphasis:

<R17> Robots use one control system. Robots may use either:

Option 1: A VEX ARM® Cortex®-based Microcontroller, up to ten (10) 2-Wire Motors or VEX Servos (in any combination up to ten) and a legal VRC pneumatic system per <R19>.

Option 2: A VEX ARM® Cortex®-based Microcontroller, up to twelve (12) 2-Wire Motors or VEX Servos (in any combination up to 12) and no pneumatic components, excluding pneumatic tubing.

Option 3: A V5 Robot Brain, up to six (6) V5 Smart Motors, and a legal VRC pneumatic system per <R19>.

Option 4: A V5 Robot Brain, up to eight (8) V5 Smart Motors, **and no pneumatic components**, excluding pneumatic tubing.

It sounds like you are attempting to utilize Option 4 (eight motors). In this case, no pneumatic components are permitted, whether connected to a solenoid or not. Therefore, any time a pneumatic tank or actuator is present on a VRC Robot, they are exercising Option 3 (or Option 1).

567: Replacing Wheels after Inspection

23-Feb-2020

R2

I would like to know if it is legal to replace 2 of the wheels out of 4, from Omni to Rubber (or vice versa)? We would like to have 2 of the rubber wheels for the autonomous driving challenge, and replace those 2 Omni for rest of our sessions. We are will not make any changes to our drivetrain, not even a single bushing. We are not entirely swapping the entire subsystem.

Does this need to be reinspected?

Thank you in advance

Answered by Game Design Committee

Yes, this is legal.

In general, any time significant modifications are made to a Robot other than simple repairs, it is a good practice to re-inspect, per R2, quoted below with a portion bolded for emphasis:

<R2> Robots must pass inspection. Every Robot will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all robot rules and regulations are met. Initial inspections will take place during team registration/practice time.

a. Significant changes to a Robot, such as a partial or full swap of Subsystem 3, must be re-inspected before the Robot may compete again.

b. All possible functional Robot configurations must be inspected before being used in competition.

c. Teams may be requested to submit to random spot-inspections by event personnel. Refusal to submit will result in Disqualification.

d. Robots which have not passed inspection (i.e. who are in violation of one or more Robot rules) will not be permitted to play in any Matches until they have done so. <T2> will apply to any Matches that occur until the Robot has passed inspection.

e. If a Robot has passed inspection, but is later found to be in violation of a Robot rule during a Match, then they will be Disqualified from that Match and <R2d> will apply until the violation is remedied and the Team is re-inspected.

276: Rules moved from <R16> to <R22>

14-May-2019

R22

For the past few years, <R16> covered the rules on allowed modifications. This year, many but not all of those rules moved to <R22>. One rule that did not move was last year's <R16>g regarding the allowed use of Loctite or other threads locking solutions. Since this rule did not move to any other part of the document, does that mean that Loctite is no longer allowed? Or is this a possible oversight which will be added in a future revision?

Answered by Game Design Committee

Thank you for pointing this out. This was an error, and will be fixed in the June 14th Game Manual update. The use of Loctite for securing hardware, such as screws and nuts, is permitted.

349: Ramming the towers

4-Sep-2019

R3

<R3> Robots must be safe. The following types of mechanisms and components are NOT allowed: a. Those that could potentially damage playing field components such as the field perimeter or Field Elements.

My teams noticed that it is possible to remove a cube placed in a tower by ramming the tower at full speed. This causes the tower to bend and then whiplash back, often dislodging the cube. As an EP my initial thought is that at the drivers meeting I will announce that this strategy is a violation of R3 because of the potential damage it would cause to the towers over the course of a tournament (or even more so over the course of a season). That drivers will be given a warning if it is done intentionally and be disqualified if they continue.

I just completed the referee certification, however, and it mentioned ramming several times in the final test that made it seem like an allowable strategy. My concern is that a pole may take a lot of damage before it breaks/becomes unusable. If ramming is allowed it would hardly be fair to the 20th team who bends the pole to give them a penalty simply because the pole was weakened by the preceding teams.

Are teams allowed to ram the towers intentionally? (obviously if a cube is barely in there and it

Answered by Game Design Committee

Please see this similar Q&A, which appears to be asking the same question: <https://events.vex.com/VRC/2019-2020/QA/293>

If this does not answer your question, please feel free to rephrase and re-submit.

My concern is that a pole may take a lot of damage before it breaks/becomes unusable. If ramming is allowed it would hardly be fair to the 20th team who bends the pole to give them a penalty simply because the pole was weakened by the preceding teams.

During development of VRC Tower Takeover, this specific scenario was tested by driving a VRC robot into a Tower several thousand times until the Tower failed. We are confident, based on this testing, that the number and severity of impacts needed to cause failure exceeds the realistic number of impacts that any given Tower will see throughout

the competition season. Therefore, if a Tower does break as the result of a specific single Robot impact, it is highly likely that Robot has violated some other rule in order to cause that failure (e.g. S1 or G16).

331: Use of Vex Gray Tinted polycarbonate sheets

20-Aug-2019

R5 R9

Now that VEX sells the Gray Tinted Polycarbonate sheets, does the use of this product fall under <R5>? This would imply a team could use as much of the tinted polycarbonate sheets as they want provided they still abide by the 18 x 18 x 18 size requirements. Or will it still fall under <R9>? This would imply a team can still only use a single piece or combination of pieces with initial overall dimension of 12" x 24". How shall I instruct my teams this year regarding the Tinted Polycarbonate sheets (p/n: 217-6626 and 217-6627)? Thank you.

Answered by Game Design Committee

This is a good question! Let's take a look at a few rules which work together here:

<R9> is the rule which covers polycarbonate legality:

<R9> A limited amount of custom plastic is allowed. Robots may use non-shattering plastic from the following list; polycarbonate (Lexan), acetel monopolymer (Delrin), acetel copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP; as cut from a single 12" x 24" sheet up to 0.070" thick.

However, <R5a> explicitly states that VEXpro products cannot be used.

<R5> Robots are built from the VEX EDR system. Robots may be built ONLY using official VEX EDR components, unless otherwise specifically noted within these rules. Teams are responsible for providing documentation proving a part's legality in the event of a question. Examples of documentation include receipts, part numbers, official VEX websites, or other printed documentation.

a. Products from the VEXpro, VEX IQ, or VEX Robotics by HEXBUG product line cannot be used for Robot construction, **unless specifically allowed by a clause of <R7>** or cross-listed as part of the VEX EDR product line.

However, the bolded portion above does point us to R7 for a possible exception:

d. **Any parts which are identical to legal VEX parts are permitted.** For the purposes of this rule, products which are identical in all ways except for color are permissible. It is up to inspectors to determine whether a component is "identical" to an official VEX component.

The gray polycarbonate you refer to would fall under <R9>, because even though it happened to be purchased from VEXpro, it is functionally similar to any other vendor's legal polycarbonate, per <R5d>. Therefore, it is legal (provided no other rules are violated, such as the 12" x24" restriction in <R9>).

287: <R7e>. is Paracord still legal?

25-May-2019

R7

With the question of prior Q&A rulings in the air, we would like to know if paracord still meets the definition of unlimited 1/8" braided nylon rope?

<https://www.vexforum.com/t/answered-alternate-rope/30162>

Thank you!

Answered by Game Design Committee

Please see rule R7e, quoted here for reference:

<R7> Certain non-VEX EDR components are allowed. Robots are allowed the following additional "non-VEX" components:

- e. An unlimited amount of 1/8" (or local metric equivalent), braided, nylon rope

The term "paracord" describes neither diameter nor material type.

There are some ropes branded as "paracord" which would be legal, as they are made of braided nylon and are 1/8" in diameter:

- <https://paracord.com/collections/550-solids/products/acid-brown-1>
- <https://www.homedepot.com/p/Everbilt-1-8-in-x-500-ft-Black-Premium-Nylon-Paracord-70070/206192268>

There are also ropes branded as "paracord" which would not be legal, as they either have materials other than braided nylon, or are larger than 1/8".

- <https://paracord.com/collections/paramax/products/black-paramax>
- <https://paracord.com/collections/1-8-shock-cord/products/1-8-shock-cord-acid-purple>

368: Use of Color Filter for Vision Sensor

1-Oct-2019

R7

Under R7a color filters are allowable for Light Sensors, is it an option to use color filters for the VEX Vision sensor? A color filter could be employed to assist in the more accurate detection of a single color--i.e. green, orange, etc. This is important given the fact that the flashlight is not compatible with V5.

Answered by Game Design Committee

This would be permissible if the hypothetical filter satisfied all other Robot rules, such as R9:

< R9 > A limited amount of custom plastic is allowed. Robots may use non-shattering plastic from the following list; polycarbonate (Lexan), acetel monopolymer (Delrin), acetal copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP; as cut from a single 12" x 24" sheet up to 0.070" thick.

- a. Shattering plastic, such as PMMA (also called Plexiglass, Acrylic, or Perspex), is prohibited.
- b. Plastic may be mechanically altered by cutting, drilling, bending etc. It cannot be chemically treated, melted, or cast. Heating polycarbonate to aid in bending is acceptable.

325: Use of VEX IQ Bankshot ramp on robot

24-Jul-2019

R9

Hello!

Is it ok for my teams to use the plastic ramp from the VEX IQ Bankshot game as lexan/plastic on their robot? We are not sure what material it is made out of. Thank you!

Answered by Game Design Committee

Rule R9 is quoted below for reference:

<R9> A limited amount of custom plastic is allowed. Robots may use non-shattering plastic from the following list; polycarbonate (Lexan), acetel monopolymer (Delrin), acetal copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP; as cut from a single 12" x 24" sheet up to 0.070" thick.

The ramp from VIQC Bank Shot is made of 1.6mm thick polycarbonate, so it would fall within this list of permitted materials, provided that no other rules are violated (such as the 12"x24" overall dimension limit).

389: Attaching plastic sheet pieces to each other

21-Oct-2019

R9

I'm not clear about whether it is permissible to attach Lexan pieces to each other using glue. Would that be considered "chemically treated" per R9 and therefore prohibited?

Answered by Game Design Committee

R22f states the following:

Welding, soldering, brazing, gluing, or attaching in any way that is not provided within the VEX EDR platform is NOT permitted.

Therefore, gluing plastic sheets to each other would not be legal.

279: Skills deadlines

18-May-2019

Robot Skills Challenge

on RobotEvents it indicates that season global skills will be closed March 12, 2020:

2020-03-12: Season Standings Finalized

Yet, in the VRC Qualifying Criteria it indicates that last Championship events will be no later than March 15, 2020:

All Championship events within the US must be held no later than March 15, 2020. All Championship events outside of the US must be held no later than March 8, 2020.

Does this mean that skills results at a Championship event held March 13, 14, or 15 will not be considered as part of the season results for multi-qualification for spots to Worlds?

Answered by Game Design Committee

Thank you for bringing this to our attention. This has been fixed, and the new deadlines listed on RobotEvents.com are:

- 2020-03-02: Qualification for Regional/State Championship
- 2020-03-16: Season Standings Finalized

As a reminder, per the [Q&A Usage Guidelines](#), non-rule-specific questions such as this can always be directed to GDC@vex.com, support@robotevents.com, or your [REC Foundation Regional Support Manager](#).

321: VEX U Robot skills preload(s)

20-Jul-2019

Robot Skills Challenge

Preloads are not addressed in the VEX U appendix. The following definition of Preload and rule <RSC3> seem to be in contradiction.

Preload – The Cube, one (1) per Robot, that must be placed on the field such it satisfies the conditions in <SG1> prior to the start of the Match.

<RSC3> Prior to the start of Robot Skills Matches, the Robot must use its one (1) Cube available as a Preload, per <SG1>. The other three (3) Preloads, and the two purple Match Loads, are not used in a Robot Skills Match.

<RSC3> references three cubes, instead of 2, and that it refers to "the" robot, as opposed to "each" robot. The definition of Preload is that there is one per robot.

So, for VEX U skills matches, does each robot get a Preload?

(While I'm here, can you add the robot skills rules and vex u rules to the tags? Thanks!)

Answered by Game Design Committee

Thank you for bringing this to our attention, and for your well-formatted question with quotes from the relevant portions of the game manual.

Prior to the start of a VEX U Robot Skills Match, each Robot must use its one (1) Cube available as a Preload. The other two (2) Preloads, and the two purple Match Loads, are not used in a VEX U Robot Skills Match.

This will be clarified in the August Game Manual update.

408: Clarification of Alliance Station in Skills Challenge

7-Nov-2019

Robot Skills Challenge

According to RSC1, robots may start on either side of the field as long as the robot meets the criteria for Starting Position. <RSC1> In Robot Skills Matches, all Goal Zones and Alliance Towers considered to be the same color for the purposes of any Alliance-specific rules or definitions. a. Robots may start on either side of the field, as long as they fulfill the constraints set forth in <SG1> and <G7> for the chosen Alliance's side. However there is no mention about which side the drive team must stand. In the past, if the robot starts on the red side, the drive team stands on the red side and vice versa for blue. Could you please clarify if the drive team must stand in the alliance station that matches the side the robot starts

or if the drive team can start on the opposite side from where the robot starts if they so choose. In other words, robot placed on red side but drivers stand in Blue Alliance Station. Thank you.

Answered by Game Design Committee

Drive Team Members may utilize either Alliance Station during a Robot Skills Match, regardless of which side their Robot starts on.

409: (VEXU) Can two robots start on opposite sides of the field in a skills match?

7-Nov-2019

Robot Skills Challenge

<RSC1a> says:

Robots may start on either side of the field, as long as they fulfill the constraints set forth in <SG1> and <G7> for the chosen Alliance's side.

Appendix E says:

VEX U Teams are permitted to use both Robots in their Robot Skills Challenge Matches, per <VUG1>, <VUG6>, and <VUR1>.

Given the above rules, is it allowed for the two robots used in a VEXU skills run to start the match on different sides of the field?

If yes, must the drive team members associated with a particular robot be on the same side of the field as that robot? For example, would it be OK for a VEXU team to compete in a skills match with the following combination of robot starting locations and drive team locations:

- One robot starting on each side of the field
- Four drive team members in the red alliance station
- Two drive team members in the blue alliance station

Answered by Game Design Committee

We apologize for the delayed response to this question.

Given the above rules, is it allowed for the two robots used in a VEXU skills run to start the match on different sides of the field?

Yes, this is legal.

If yes, must the drive team members associated with a particular robot be on the same side of the field as that robot?

[This similar Q&A](#) will also apply to VEX U; no, there is no requirement for Drive Team Members associated with a given Robot to be in the same Alliance Station as that Robot.

417: Skills standings

11-Nov-2019

Robot Skills Challenge

how does the ranking work for teams with the same score? what are the tie breaker protocol?

Answered by Game Design Committee

how does the ranking work for teams with the same score? what are the tie breaker protocol?

Robot Skills Challenge tiebreakers within a given event are explained in the [VRC Tower Takeover Robot Skills Challenge Appendix](#), under the section titled "Robot Skills Challenge Ranking".

- In the case where two Teams are tied for the highest score, the tie will be broken by looking at both Teams' next highest Programming Skills Matches score. If the Teams remain tied, the tie will be broken by looking at both Teams' next highest Driving Skills Matches score. This process will repeat until the tie is broken.

- If the tie cannot be broken (i.e. both Teams have the exact same scores for each Programming Skills Matches and Driving Skills Matches), then the following ordered criteria will be used to determine which Team had the "best" Programming Skills Matches.

1. Number of Placed Cubes.

2. Number of Scored Cubes.

- If the tie still cannot be broken, the same process in the step above will be applied to the Teams' best Driving Skills Match.

- If the tie still isn't broken, events may choose to allow Teams to have one more deciding Driving Skills Matches, or declare both Teams the Robot Skills Challenge Winner.

454: Skills - Field Set up

12-Dec-2019

Robot Skills Challenge

Since all cubes count the same for scoring purposes, does the skills field need to be set up with cube colors in the "correct" location?

Answered by Game Design Committee

Per the Skills Challenge Appendix:

The playing field will be set up exactly the same as a normal VEX Robotics Competition Tower Takeover Match.

Therefore, yes, the playing field should be set up with Cubes in their "correct" locations for all Skills Matches.

465: Further Clarification of Alliance Station in Skills Challenge

18-Dec-2019

Robot Skills Challenge

I see <https://events.vex.com/VRC/2019-2020/QA/408> where it was ruled that "Drive Team Members may utilize either Alliance Station during a Robot Skills Match, regardless of which side their Robot starts on."

It is very clear that Drive Team Members may place their robot on the blue side and stand in the red drivers station (and vice versa).

My question is can Drive Teams utilize **both** Alliance drivers stations during a Robot Skills Match? Ex. Can they have two Drive Team Members in the red alliance station and one Drive Team Member in the blue alliance station? Or should all Drive Team Members pick one of the alliance stations to stand?

Answered by Game Design Committee

Can they have two Drive Team Members in the red alliance station and one Drive Team Member in the blue alliance station?

This would be fine, provided that G8 is kept in mind.

<G8> Controllers must stay connected to the field towers. Prior to the beginning of each Match, Drive Team Members must plug their VEXnet Joystick or V5 Controller into the VEXnet Field Controller's Cat-5 cable via their controller's competition port. This cable must remain plugged in for the duration of the Match, and may not be removed until the "all-clear" has been given for Drive Team Members to retrieve their Robots.

491: Skills utilization of alliance towers

20-Jan-2020

Robot Skills Challenge Scoring Towers

[QA 365](#) asked if both alliance towers may be used. The answer given just repeated the rules. To be more specific, RSC1.c states that robots may utilize **either** alliance tower. In Tournament Manager, skills scores are allowed to have 7 towers, indicating that **both** towers were used. Which is the correct interpretation? How many towers are allowed to be utilized by a team during a skills run?

< RSC1 > In Robot Skills Matches, all Goal Zones and Alliance Towers considered to be the same color for the purposes of any Alliance-specific rules or definitions.

- a. Robots may start on either side of the field, as long as they fulfill the constraints set forth in <SG1> and <G7> for the chosen Alliance's side.
- b. Robots may Score Cubes in any color of Goal Zone for points.
- c. Robots may utilize either Alliance Tower for Placing Cubes.

Answered by Game Design Committee

Another way to interpret the intention of the word "either" would be to reference the opening sentence of RSC1, as quoted:

In Robot Skills Matches, all Goal Zones and Alliance Towers considered to be the same color for the purposes of any Alliance-specific rules or definitions.

The Alliance Towers are both the "same" color. Therefore, there is no "opposing Alliance Tower" as referenced in SG3. Therefore, Robots are permitted to interact with either Alliance Tower (or both, or neither) at any point during the Match.

316: Robot placement at start of the match SG1

11-Jul-2019

SG1

In rule SG1 it states "b. Contacting a foam field tile." does this mean exactly one tile or can a robot straddle 2 tiles?

Answered by Game Design Committee

In rule SG1 it states "b. Contacting a foam field tile." does this mean exactly one tile or can a robot straddle 2 tiles?

Robots are not limited to one foam field tile; contacting more than one would still satisfy the intent of SG1b.

396: <SG1> Legal starting location

27-Oct-2019

SG1

<SG1> Starting a Match. Prior to the start of each Match, the Robot must be placed such that it is: a. Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zone and Alliance Station.

Does "on the side that coincides" refer to the 12ft of field perimeter directly next to the Alliance station? or does "SIDE" refer to the entire half of the field on that Alliance's side of the field?

The first interpretation give a little less than 12ft of perimeter wall to start on.

If its the later interpretation, FIELD side, that gives an additional length of wall to start on (extending towards the center autonomous line on each end of the field).

Answered by Game Design Committee

Does "on the side that coincides" refer to the 12ft of field perimeter directly next to the Alliance station? or does "SIDE" refer to the entire half of the field on that Alliance's side of the field?

Your first interpretation is correct.

Although "Starting Wall" is not a defined term, Figure 3 in the Game Manual denotes the side that is parallel to the Alliance Station / Autonomous Line as the intended starting position to help make SG1 more clear. The walls that are perpendicular to the Alliance Stations / Autonomous Line are not considered "coincident" with the Alliance Station, and are not valid starting positions.

509: touching side

27-Jan-2020

SG1

When robots are in start position, I know they have to be touching the side of the arena. How much has to be touching? Can one screw that is sticking out from the robot be all that is touching?

Answered by Game Design Committee

Please review the [Q&A Usage Guidelines](#), specifically point 1, "Read and search the manual before posting." This question is answered by rule SG1:

<SG1> Starting a Match. Prior to the start of each Match, the Robot must be placed such that it is:

- a. Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zone and Alliance Station.
- b. Contacting a foam field tile.
- c. Not contacting a Tower.
- d. Not contacting any Cubes other than the Preload.
- e. Contacting a Preload.

The Preload must be contacting exactly one (1) Robot.

The Preload must be fully within the field perimeter.

- f. Not contacting a Goal Zone or a Barrier.
- g. Not contacting another Robot.

There is no criteria listed in SG1 for how much of the Robot must be contacting the field perimeter wall.

576: Starting Position Clarification

26-Feb-2020

SG1

According to <SG1.a> it states:

<SG1> Starting a Match. Prior to the start of each Match, the Robot must be placed such that it is: a. Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zone and Alliance Station.

My question is which of the following 2 interpretations is correct:

1. The robot may be placed anywhere along the field perimeter that is parallel to the Alliance Station as long as it satisfies all other <SG1> requirements.
2. The robot is required to be placed within the bounds of the Alliance Station. This interpretation is due to the use of the word coincides, which according to the Oxford dictionary means to meet; to share the same place. [Oxford Dictionary: coincides](#)

Also, if you examine the given example in "Figure 18: Four examples of Robots in valid starting positions" on page 20 of the Game Manual, it's obvious that all four robots are within the bounds of the Alliance Station.

Answered by Game Design Committee

My question is which of the following 2 interpretations is correct:

1. The robot may be placed anywhere along the field perimeter that is parallel to the Alliance Station as long as it satisfies all other <SG1> requirements.
2. The robot is required to be placed within the bounds of the Alliance Station. This interpretation is due to the use of the word coincides, which according to the oxford dictionary means to meet; to share the same place. [Oxford Dictionary: coincides](https://www.oxforddictionaries.com/definition/coincides)

Your first interpretation is correct. The following Q&A also provides some additional clarification on this point: <https://events.vex.com/VRC/2019-2020/QA/396>

446: <SG2> Indirectly contacting opponent tiles, cubes via cube

9-Dec-2019

SG2 SG7

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

a. According to QA 405, <https://events.vex.com/VEXU/2019-2020/QA/405> "violations could range **from** the Autonomous Bonus being awarded to the opposing Alliance, **to** a Disqualification, depending on the context of the interaction." Does this mean that if a cube has crossed the autonomous line from red into the blue side, either unintentional or intentional, then that red alliance automatically lost autonomous bonus, since the word **from** is used?

b. If the robot is intaking a neutral cube (started contacting the autonomous line), then the second the robot touched the cube, the robot now has indirectly contacted the foam tile in opposing alliance. According to SG2 Note, cubes "may be utilized by either Alliance during the Autonomous Period." In this case, does this note take precedence over SG2 via SG7?

Answered by Game Design Committee

a. According to QA 405, <https://events.vex.com/VEXU/2019-2020/QA/405> "violations could range **from** the Autonomous Bonus being awarded to the opposing Alliance, **to** a Disqualification, depending on the context of the interaction." Does this mean that if a cube has crossed the autonomous line from red into the blue side, either unintentional or intentional, then that red alliance automatically lost autonomous bonus, since the word **from** is used?

As noted in the Q&A that you linked, causing Cubes to interact with foam tiles, Towers, or Cubes on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Interaction with foam tiles, regardless of whether it affects a Robot's autonomous routine or not, is always considered a violation of SG2. As you quoted, all violations of SG2 result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

b. If the robot is intaking a neutral cube(started contacting the autonomous line), then the second the robot touched the cube, the robot now has indirectly contacted the foam tile in opposing alliance. According to SG2 Note, cubes "may be utilized by either Alliance during the Autonomous Period." In this case, does this note take precedence over SG2 via SG7?

Yes.

When evaluating a possible violation of either of these cases, we would advise Teams and Head Referees to bear in mind rule G3 - "please remember that common sense always applies in the VEX Robotics Competition."

479: SG2 cubes during :15 Autonomous

9-Jan-2020

SG2

During the :15 autonomous period, if a cube is pushed, falls, or tumbles across the center double lines, but in no way, shape, or form interferes with the opposing alliances autonomous routine, is that means for an automatic loss of the 6 point bonus?

Answered by Game Design Committee

Please see these similar Q&A's, which we believe answer your question. If not, please feel free to rephrase and re-submit.

<https://events.vex.com/VRC/2019-2020/QA/405>

<https://events.vex.com/VRC/2019-2020/QA/446>

508: autonomous

27-Jan-2020

SG2

when in autonomous, I know robots cannot cross the center line and touch the gray tiles or cubes on the other side - what about the airspace above the gray tiles?

Answered by Game Design Committee

when in autonomous, I know robots cannot cross the center line and touch the gray tiles or cubes on the other side - what about the airspace above the gray tiles?

Please review the [Q&A Usage Guidelines](#), specifically point 3, "Quote the applicable rule from the latest version of the manual in your question.". Often, you'll find that by quoting the rule, you'll answer your own question.

Rule SG2 reads as follows:

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

There is no rule prohibiting contact with the airspace above the gray tiles. Therefore, this is legal.

553: Neutral Cubes during Autonomous

17-Feb-2020

SG2

Hello, I know that the purple cubes along the autonomous line are neutral and can be picked up by either sides robot, but what if the purple cube is pushed passed the autonomous line into the opposing alliances side, but no other cubes are robots go past the autonomous line. Is that a DQ for the team that pushed the purple cube over or is that purple cube just considered neutral and if so how far can that purple cube go until its not neutral? Like if they pick it up and it rolls out of there robot and rolls to the wall of the opposing side is it still neutral or is that a DQ? Thanks for your time!

Answered by Game Design Committee

Please see this similar Q&A post, which we believe answers your question. If it does not, please feel free to rephrase and re-submit.

<https://events.vex.com/VRC/2019-2020/QA/446>

590: <SG2> Neutral Cube interaction during autonomous

6-Mar-2020

SG2

According to q&a #405 and #446

Causing Cubes to interact with** foam tiles, Towers, or Cubes** on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Per SG2, violations could range from the Autonomous Bonus being awarded to the opposing Alliance, to a Disqualification, depending on the context of the interaction.

Within <sg2> we have a note talking about cubes that start in contact with the autonomous line, from here on in this post I will be referring to these cubes as "neutral cubes"

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

My question: when do the cubes which begin the match in contact with the autonomous line "neutral cubes" violate sg2 via sg7

Here are some generic scenarios that could be used to understand my question better. The intention of these scenarios is not to gather blanket rulings, but rather to give perspective to the types of rulings that would be affected by this q&a.

Scenario A) A red robot attempts to pick up one of the neutral cubes, doing so it accidentally drops said cube such that it lands completely across the autonomous lines.

Scenario B) A red robot accidentally pushes a row of cubes into one of the neutral cubes pushing the neutral cube towards the opposing alliance tiles thereby indirectly contacting the opposing alliance tiles

Scenario C) A red robot pushes a neutral cube roughly 2 inches towards the opposing alliance tiles, such that it's still in contact with the autonomous line

Scenario D) A red robot pushes a neutral cube completely across the autonomous line, after this a blue robot pushes this same cube completely across the autonomous line again (cube travels from neutral to blue side then to red side)

Note that causing cubes to interact with opponent robots are not listed as one of the conditions for SG2 via SG7.

Answered by Game Design Committee

Q&A 446 included the following:

When evaluating a possible violation of either of these cases, we would advise Teams and Head Referees to bear in mind rule G3 - "please remember that common sense always applies in the VEX Robotics Competition."

The intent of SG2 is to prohibit Robots from interfering with their opponents' autonomous routines. The intent of the Note in SG2 is to permit Robots to utilize the "neutral" Cubes and Towers during the Autonomous Period, should they choose to do so, at their own risk of the opponents doing the same. The overarching common sense guidance is intended to protect Teams and Head Referees from having to worry about instantaneous, edge-case, or accidental violations.

We are not going to provide blanket answers to all snapshot descriptions of hypothetical interactions that involve these contested Cubes or Towers, and would advise Head Referees to prioritize "common sense" (in line with the intents noted above), and a Team-oriented experience at all times, when a judgment call needs to be made.

288: SG3 Case F clarification

26-May-2019

SG3

Rule SG3 Case F stipulates:

Robots may not intentionally or accidentally, directly or indirectly, perform the following actions ... Cause Scored Cubes within the opponent's Protected Zone to no longer meet the definition of Scored (i.e. "knock over their stack").

As written, this section would only apply to the Goal Zone contained within the protected zone. Knocking over a stack in the unprotected Goal Zone would be covered by SG3 Case B "Contact any Scored Cubes in either of opposing Alliance's Goal Zones."

This would mean that knocking over a stack of cubes in the unprotected goal zone would only be a disqualification if it is Match Affecting.

Was this distinction intentional, or was SG3 Case F intended to read:

Cause Scored Cubes within the opponent's Goal Zone to no longer meet the definition of Scored (i.e. "knock over their stack").

Thanks!

Answered by Game Design Committee

As written, this section would only apply to the Goal Zone contained within the protected zone. Knocking over a stack in the unprotected Goal Zone would be covered by SG3 Case B "Contact any Scored Cubes in either of opposing Alliance's Goal Zones."

This would mean that knocking over a stack of cubes in the unprotected goal zone would only be a disqualification if it is Match Affecting.

Yes, these are both correct interpretations of SG3.

Was this distinction intentional, or was SG3 Case F intended to read: [...]

There are no typographical errors in SG3 Case B and Case F; that is to say, they were intended to read as they are currently written.

296: <SG3> Clarification on descoring cubes

4-Jun-2019

SG3

Case 'F' in rule <SG3> states that causing an opponent's Scored Cubes to no longer meet the definition of scored in their protected zone is an automatic disqualification. First, although the smaller scoring zone is not within a protected zone, are those cubes protected from descoring? (it feels counter to common sense for them not to be) Secondly, does the interaction between a robot and the cubes need to be direct? For example, would a robot that hits the field perimeter be in violation, and thus disqualified, if the contact with the field wall causes a stack to fall.

Answered by Game Design Committee

First, although the smaller scoring zone is not within a protected zone, are those cubes protected from descoring?

As you quoted, case F explicitly refers to Cubes within the opponent's Protected Zone. Descoring Cubes in the non-Protected Goal Zone is covered by case B, quoted here for reference:

B - Contact any Scored Cubes in either of opposing Alliance's Goal Zones.

Minor violations of points A, B, C, or D that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

Hopefully this answers your question. If not, please feel free to re-phrase and re-submit.

Secondly, does the interaction between a robot and the cubes need to be direct? For example, would a robot that hits the field perimeter be in violation, and thus disqualified, if the contact with the field wall causes a stack to fall.

Let's look at the full text of SG3, quoted here for reference and bolded for emphasis:

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, **directly or indirectly**, perform the following actions:

Thus, indirect contact, such as transitively through a Field Element, would still be considered a violation.

359: Goal Zone - Descoring

16-Sep-2019

SG3

Rule SG3 Case B states that you may not contact any Placed Cubes in the opposing Alliance's Goal Zones.

Our question is: Can a Blue Alliance Robot push a Red Alliance Robot into a stack of cubes in the Red Alliance's Goal Zone (not the one in the Protected Zone) causing some (or all) of the cubes to be descored?

Answered by Game Design Committee

Please see this similar Q&A:

<https://events.vex.com/VRC/2019-2020/QA/353>

Which also references these two similar Q&A's:

<https://events.vex.com/VRC/2019-2020/QA/288>

<https://events.vex.com/VRC/2019-2020/QA/296>

If these do not answer your question, please feel free to rephrase and re-submit.

398: Inner Protected Zone Tray Disqualification

28-Oct-2019

SG3

Inner Protected Zone - The 3-dimensional volume extending upwards from the foam tiles and bound by the field perimeter and inner edge of the white tape line closest to one of each Alliance's Goal Zone.

According to SG3 Case E - Contact an opposing Alliance's Inner Protected Zone always results in a disqualification.

Based on the definition of the Inner Protected Zone, this would mean that this does not require touching the surface of the inner protected zone to be meeting this criteria.

What I would like to clarify is if a scenario where a tray-style robot, for example, the one in this video:

<https://www.youtube.com/watch?v=QJI29QI5COM> with a longer tray had said tray swing into the boundary of the inner protected zone briefly while driving were to occur, would this result in a disqualification? My concern is that as trays get longer to carry more cubes, it will be come increasingly likely for these long trays to accidentally breach the volume of the opponent's inner protected zone, without being match effecting, which does not seem to be a fair thing to disqualify a team for.

Thanks!

Answered by Game Design Committee

Thank you for quoting the relevant rules as they pertain to your question.

What I would like to clarify is if a scenario where a tray-style robot, for example, the one in this video: <https://www.youtube.com/watch?v=QJI29QI5COM> with a longer tray had said tray swing into the boundary of the inner protected zone briefly while driving were to occur, would this result in a disqualification?

This is a correct interpretation of SG3-E.

My concern is that as trays get longer to carry more cubes, it will become increasingly likely for these long trays to accidentally breach the volume of the opponent's inner protected zone, without being match affecting, which does not seem to be a fair thing to disqualify a team for.

"Break the plane" rules such as this often require a Head Referee judgment call in close cases. To minimize Disqualifications for non-Match-Affecting circumstances, we would advise Teams to bear this possibility in mind when designing their Robot and driving during a Match. We would also advise Head Referees to provide clear verbal warnings when a Robot enters the Outer Protected Zone, to ensure that Teams are aware of the risk involved in that (possibly accidental) maneuver.

426: Traybots outside vertical volume being contacted by opponent

19-Nov-2019

SG3

This is regarding rule SG3

Outer Protected Zone - The 3-dimensional volume extending upwards from the foam tiles and bound by the field perimeter, outer edge of the Protected Zone tape line, and the inner edge of the Inner Protected Zone tape line.

SG3 Case A - Contact an opponent Robot which is fully contained within their Protected Zone - minor violation will result in a warning, match affecting offenses will result in a DQ, multiple warnings may also receive a DQ.

Traybots that do not have their trays vertical may have their base fully in the protected zone while their tray is outside the 3D volume of the zone. In this case, i.e. the robot's tray is outside the vertical volume, is contact by an opponent not a violation of SG3a because the robot is not fully within their protected zone?

Answered by Game Design Committee

Thank you for quoting the relevant rules in your question.

In this case, i.e. the robot's tray is outside the vertical volume, is contact by an opponent not a violation of SG3a because the robot is not fully within their protected zone?

This is correct. As noted in [this Q&A](#), SG3 Case F is intended to read as it is currently written. Teams should bear this in mind when designing Robots or driving during a Match.

432: Clarification of SG3 Case E, contacting the inner protected zone

25-Nov-2019

SG3

If a robot is in contact with its inner protected zone, would SG3 case E apply if said robot is then contacted by an opposing robot?

Answered by Game Design Committee

The intent of SG3-E is to prevent Robots from interfering with opposing Robots' ability to Score Cubes in their own Inner Protected Zone, and to provide an additional element of risk for Robots attempting to drive anywhere in the vicinity of an opponent's Inner Protected Zone.

Regarding indirect contact with an opponent's Inner Protected Zone, G14 should be considered:

<G14> You can't force an opponent into a penalty. Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance.

Therefore, a Head Referee's judgment call will ultimately depend on the context of the interaction and the Robot designs involved. A Blue Robot playing defense on a Red Robot that pushes a Red Robot into their own Inner Protected Zone may be considered a violation of SG3-E. A Red Robot with a piece of string laying in their own Inner Protected Zone who then contacts a Blue Robot would not result in a violation of SG3-E.

459: <SG3> Not Meeting Any of Case A-F Still a Violation?

15-Dec-2019

SG3

<SG3> Stay away from your opponent's protected areas.

For the questions below, let's assume the red robot does not perform any action that meets <SG3> Case A-F criteria, will any of the case below result in violation?

1. Red robot enters blue robot's outer protected zone
2. Red robot stays partially or fully in blue robot's outer protected zone
3. Red robot enters and exists blue robot's outer protected zone repeatedly

Given that the red robot's action does not meet <SG3> A-F criteria, my interpretation is that all 3 cases listed above would not result in violation even if red robot's intention is to prevent the blue robot from scoring.

Answered by Game Design Committee

As written, the three scenarios you have listed do not meet any of the conditions listed in cases A through G of SG3. Therefore, they are legal, provided that no other rules are being violated.

467: <SG3> when does indirect contact kicks in during defensive play

19-Dec-2019

SG3

This is an extension of QA431 <https://events.vex.com/VEXU/2019-2020/QA/431> and QA432 <https://events.vex.com/VEXU/2019-2020/QA/432>

All related rules are quoted in QA 431, thus I will not quote here again to keep this question from being a mega long thread.

According to QA 432,

The intent of SG3-E is to prevent Robots from interfering with opposing Robots' ability to Score Cubes in their own Inner Protected Zone, and to provide an additional element of risk for Robots attempting to drive anywhere in the vicinity of an opponents Inner Protected Zone.

It seems like that the indirect contact via opponent robot part of SG3 only kicks in situationally. Can some examples be provided to elaborate on when do they apply and when do they not apply?

Example:

A> Red robot A is parked in the blue alliance outer protected zone. Blue robot B is entering the protection zone with the tray facing forward(i.e. backing into the Inner Protection Zone), blue robot B's long reaching tray contacts the inner protection zone and then blue robot B contacts red robot A.

B> Blue robot B is contacting the barrier/goal zone when attempting to place a stack, and red robot A comes to make contact with blue robot B.

C> Blue robot B is a Offensive robot. It has a super long, near horizontal tray, while it is maneuvering around the field, its tray enters the inner protection zone and the robot makes contact with an opponent robot.

D> Blue robot B is a defensive robot. It has part of its robot in inner protected zone, the other part parking at somewhere else on the field. It does not try to make intentionally contact with opponent robot, however, red robot A somehow contacts the wall created by blue robot B, outside of protection zone.

E> Blue robot B is a offensive robot. It has part of its robot in inner protected zone, the other part robot playing the game as normal. It has part of its robot in inner protected zone for the purpose of avoiding defense being played on this robot during matchplay. Red Robot A contacts blue robot B, outside of protection zone.

For the above situations, which of the following would apply?

- a. No violations has been committed and no calls will be made since indirect contact does not kick in under this situation
- b. Red robot A are ordered to leave immediately and cant come back. If they don't leave they will be called on the ground of indirect contact
- c. Red robot A are ordered to leave immediately, however they can come back. If they don't leave they will be called on the ground of indirect contact
- d. There is no grace period and the red robot A will be called for indirect contact. Which includes auto DQ under situation A.

For situation b, if red robot A can't come back, how long does this period last, until the rest of the match? For 5 seconds?

And for above situations, what if the robot that is being pushed in gets stuck in the goal zone? (they are attempting to come out, but they cant)

I understand that not all situations will be covered, however, leaving every situation to referee's discretion would cause inconsistencies between events and regions.

Answered by Game Design Committee

It is impossible to provide blanket answers that would apply to all hypothetical scenarios captured by the snapshot descriptions you have provided. These interactions are highly dependent on the context of the Match, the event, any previous warnings/violations, any previous interactions in the Match, etc. In general, we would point to the answers provided in the two Q&A's you have linked as our overarching direction to Head Referees for guiding their judgment calls. The dynamic sport of competitive robotics inherently includes "gray area" situations that cannot rely on black-and-white rules, and must therefore rely upon the in-context and on-the-spot judgment of human referees in these cases.

503: <SG3E> and < SG3A> Protection of a Scoring Robot in The Protected Zone

25-Jan-2020

SG3

Relevant rules and Q&As: SG3, [Q&A426](#), and [Q&A432](#).

SG3 Robots may not intentionally or accidentally, directly or indirectly, perform the following actions: A Contact an opponent Robot which is fully contained within their Protected Zone. E Contact an opposing Alliance's Inner Protected Zone

It was clarified in Q&A426 that robots not fully contained by their Protected Zone are not granted protection under SG3A. However, in Q&A432 the following was stated:

The intent of SG3-E is to prevent Robots from interfering with opposing Robots' ability to Score Cubes in their own Inner Protected Zone, and to provide an additional element of risk for Robots attempting to drive anywhere in the vicinity of an opponents Inner Protected Zone. Regarding indirect contact with an opponent's Inner Protected Zone, G14 should be considered:

><G14> You can't force an opponent into a penalty. Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance.

Therefore, a Head Referee's judgment call will ultimately depend on the context of the interaction and the Robot designs involved. A Blue Robot playing defense on a Red Robot that pushes a Red Robot into their own Inner Protected Zone may be considered a violation of SG3-E. A Red Robot with a piece of string laying in their own Inner Protected Zone who then contacts a Blue Robot would not result in a violation of SG3-E.

The response more so addressed edge cases and left a more common scenario like the following unclear:

A Blue Robot is attempting to score a stack in their Protected Zone. The Blue Robot is currently in contact with its Inner Protected Zone but not fully contained by the Protected Zone (e.g. a tray sticking slightly outside the Outer Protected Zone). A Red Robot attempts to prevent the Blue Robot from scoring by contacting the Blue Robot, in the process, the Red Robot does not directly contact blue's Inner Protected Zone.

Q&A426 establishes the Blue Robot does not have protection under SG3A. However, does the Blue Robot still have protection under SG3E because the Red Robot is indirectly contacting the Inner Protected Zone? In other words, should the Red Robot be disqualified in violation of SG3E for indirect contact of the Inner Protected Zone?

Answered by Game Design Committee

A Blue Robot is attempting to score a stack in their Protected Zone. The Blue Robot is currently in contact with its Inner Protected Zone but not fully contained by the Protected Zone (e.g. a tray sticking slightly outside the Outer Protected Zone). A Red Robot attempts to prevent the Blue Robot from scoring by contacting the Blue Robot, in the process, the Red Robot does not directly contact blue's Inner Protected Zone.

Q&A426 establishes the Blue Robot does not have protection under SG3A. However, does the Blue Robot still have protection under SG3E because the Red Robot is indirectly contacting the Inner Protected Zone? In other words, should the Red Robot be disqualified in violation of SG3E for indirect contact of the Inner Protected Zone?

Contact via an opponent Robot is considered a form of "indirect contact". With that in mind, we believe that this question is answered by [Q&A 432](#), as you linked.

Therefore, the hypothetical interaction you have described would likely result in an SG3-E violation on the Red Robot, as the snapshot description does not imply that the Blue Robot is attempting to "draw the penalty" per G14.

520: <SG3> Is SG3 only enforced conditionally?

31-Jan-2020

SG3

This is an extension from QA 451 <https://events.vex.com/VEXU/2019-2020/QA/451> QA 398 <https://events.vex.com/VEXU/2019-2020/QA/398>

From QA 451, It was ruled that if interactions between robots are completely accidental, then no G14 or SG3 violation has occurred.

From QA 398, It was ruled that even if interaction between robots and field space are completely accidental, SG3 violation will still be called if robot ever enters the 3D plane of inner protection zone.

QA451 also uses words like "intentional" as a prerequisite for SG3 violation, therefore as a connection word to imply the first has to happen for the latter to apply

of the Red Robot were intentional (and therefore an SG3 violation).

However, SG3 states that

<SG3> Stay away from your opponent's protected areas. Robots may not **intentionally or accidentally, directly or indirectly**, perform the following actions:

Note that accidental, indirect contact also falls under SG3.

Should this be interpreted as that SG3 applies differently when there is robot vs robot contact compare to robot vs field space?

Also, can clarification be provided on the following case:

red is playing defense around the blue goal zone, and blue robot drives directly into red robot in an attempt to score and resulted in stacks falling over/ red robot is pushed into the inner protection zone/barrier. In the other word, does blue robot have to try to go around the red robot before making robot to robot interaction, or are they free to drive directly into the red robot since the intention of the red robot is very clear - to play defense and try to slow down the blue robot

Thanks,

Answered by Game Design Committee

Should this be interpreted as that SG3 applies differently when there is robot vs robot contact compare to robot vs field space?

This question is a good example of why we typically try to avoid providing blanket, overarching answers to hypothetical questions that rely on in-match context.

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

F - Cause Scored Cubes within the opponent's Protected Zone to no longer meet the definition of Scored (i.e. "knock over their stack").

The specific question being asked in Q&A 451 involves a scenario where a set of Scored Cubes have become de-Scored due to a hypothetical interaction that could have occurred anywhere on the field, in any number of ways, and "caused" by any number of root actions. Robot-vs-Robot and Robot-vs-field-space is irrelevant; what *is* relevant is how realistic it would be for a Head Referee to determine where the incident falls along the G13, G14, and SG3 spectrum.

The following questions present other related scenarios, and our answers attempt to illustrate some of the reasons why it is impossible to provide a blanket overarching answer without context.

<https://events.vex.com/VRC/2019-2020/QA/432>

<https://events.vex.com/VRC/2019-2020/QA/449>

<https://events.vex.com/VRC/2019-2020/QA/503>

red is playing defense around the blue goal zone, and blue robot drives directly into red robot in an attempt to score and resulted in stacks falling over/ red robot is pushed into the inner protection zone/barrier. In the other word, does blue robot have to try to go around the red robot before making robot to robot interaction, or are they free to drive directly into the red robot since the intention of the

red robot is very clear - to play defense and try to slow down the blue robot

We feel that this question is answered by [post 449](#), specifically the following portion:

All Robots are responsible for their own actions. An offensive Robot who pushes a defensive Robot into any SG3 violation, as the result of offensive maneuvers, should be considered a G13 interaction. Therefore, the offensive Robot should receive the "benefit of the doubt", and the defensive Robot should receive the appropriate penalty for whichever portion of SG3 was violated (B, D, E, or F). However, In order to be considered a G13 interaction, the Head Referee must judge that the offensive Robot is actually acting "offensively", not just trying to draw a penalty. An example of "offensive intent" could mean a traditionally offensive Robot carrying Cubes towards an empty Goal Zone.

Since the snapshot description implies that the Head Referee has determined the blue Robot was acting offensively, this interaction would be considered a violation of SG3-D or F.

524: Cubes rolling into Inner Protected Zone

1-Feb-2020

SG3 SG7

Hello,

Here are some relevant quotes from the game manual for my question.

SG3 - Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

Case E - Contact an opposing Alliance's Inner Protected Zone. Case E Violation - Any violation of points E, F, or G will result in a Disqualification, whether the interaction was Match Affecting or not.

SG7 - Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>
- Interfering with an opponent's Autonomous Period per <SG2>

If a team were to intentionally or accidentally, directly or indirectly, Match Affecting or not cause a cube to enter the opponents Inner Protected Zone (by intaking and it ejecting out of the robot, falling out of a tray/claw, etc.) this would be a violation of SG3-E via SG7 and result in a Disqualification. Is this a correct interpretation?

Thank you for your time.

Answered by Game Design Committee

If a team were to intentionally or accidentally, directly or indirectly, Match Affecting or not cause a cube to enter the opponents Inner Protected Zone (by intaking and it ejecting out of the robot, falling out of a tray/claw, etc.) this would be a violation of SG3-E via SG7 and result in a Disqualification. Is this a correct interpretation?

Thank you for quoting the relevant rules in your question. Yes, this is a correct interpretation.

Thank you for your time.

You're welcome.

525: Precedence for Outer Protected Zone Defense

1-Feb-2020

SG3

Hello,

Here are some relevant quotes from the game manual for my question.

SG3 - Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

Case E - Contact an opposing Alliance's Inner Protected Zone. Case E Violation - Any violation of points E, F, or G will result in a Disqualification, whether the interaction was Match Affecting or not.

This is to further clarify Q&A #432 and Q&A #426.

If a blue robot is in their Inner Protected Zone and their robot is not fully within the volume of their Protected Zone, and defense is played on them by an opponent, what takes precedence? Q&A #426 for blue is not fully within their Outer Protected Zone, or SG3-E for indirectly contacting the Inner Protected Zone through a blue robot?

Does this change depending on how egregious the defense is?

Thank you for your time.

Answered by Game Design Committee

If a blue robot is in their Inner Protected Zone and their robot is not fully within the volume of their Protected Zone, and defense is played on them by an opponent, what takes precedence? Q&A #426 for blue is not fully within their Outer Protected Zone, or SG3-E for indirectly contacting the Inner Protected Zone through a blue robot?

By "defense is played on them by an opponent", we are assuming that you mean the Red Robot is contacting the Blue Robot, and the Blue Robot is contacting their Inner Protected Zone. This would, therefore, be considered indirect contact with an opponent's Inner Protected Zone.

In this scenario, we believe your question is answered by [Q&A 432](#). If this is not clear, please feel free to rephrase and re-submit.

Does this change depending on how egregious the defense is?

No. SG3 refers only to contact.

536: Indirect Contact and the Goal Zone Barriers SG3-D

4-Feb-2020

SG3

Is contacting a robot that is contacting a scoring zone/barrier an illegal action per SG3-D? SG3-D states that a robot must "Stay away from your opponent's protected areas Robots may not intentionally or accidentally, directly or indirectly, perform the following actions: Contact either of the opposing Alliance's Goal Zones or Barriers."

The definition of indirect contact has been determined through multiple Q&A posts: <https://events.vex.com/VRC/2019-2020/QA/296> <https://events.vex.com/VRC/2019-2020/QA/432> <https://events.vex.com/VRC/2019-2020/QA/376>

Would a blue robot pushing a red robot that is contacting a goal zone or barrier be an illegal action through indirect contact, and if not then why is pushing a robot into a stack considered indirect contact?

Answered by Game Design Committee

We believe that this question is answered by [Q&A 432](#), as you linked. The meaning of "indirect contact" is not intended to change between the various sub-points of SG3.

412: Introducing match loads, GRAY tiles <SG4>

10-Nov-2019

SG4

SG4 b. specifies match loads are required to be introduced onto GRAY foam tiles. The VRC Tower Takeover - Referee Training - Chapter 8: Cube Do's & Don'ts, at 1:22, it gives the thumbs up and a green check for match loads being introduced on a BLUE tile (https://youtu.be/ksrlJ1_rdv0?t=80).

Are teams not allowed to introduce match loads onto red and blue foam field tiles? If they are restricted from those tiles, can you clarify that teams ARE allowed to introduce match loads onto their alliance's inner protected zone gray foam tile (providing the cubes satisfy SG4 and specifically aren't touching a barrier or goal zone)?

<SG4> Match Load entry. Drive Team Members may introduce Match Loads during the Driver Controlled Period by placing them gently onto a gray foam field tile such that they satisfy the following conditions: a. Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zones and Alliance Station. **b. Contacting the gray foam field tiles.** c. Not contacting a Tower. d. Not contacting any Cubes besides another Match Load. e. Not contacting a Goal Zone or a Barrier. f. Not contacting a Robot.

Answered by Game Design Committee

Well.... good catch. Thank you for noticing this and bringing it to our attention!

Please see rule G22, which was primarily written to account for the unfortunate realization that we on the GDC are only human and mistakes sometimes happen:

The 2019 - 2020 Q&A is the ONLY official source for rulings besides the Game Manual. If there are any conflicts between the Game Manual and other supplemental materials (e.g. Referee Training videos, VRC Hub app, etc), the most current version of the Game Manual takes precedent.

466: <SG4> introducing match loads with new all gray anti static tiles

19-Dec-2019

SG4

Now with the releasing of the all gray anti static tiles, does that mean now we can introduce match loads on the previous colored tiles?

<https://events.vex.com/VEXU/2019-2020/QA/412>

In this QA it was ruled that match loads **cannot** be introduced onto colored tiles.

<SG4> Match Load entry. Drive Team Members may introduce Match Loads during the Driver Controlled Period by placing them gently onto a gray foam field tile such that they satisfy the following conditions: a.

Contacting the field perimeter wall on the side that coincides with their Alliance's Goal Zones and Alliance Station.

- b. Contacting the **gray** foam field tiles.
- c. Not contacting a Tower.
- d. Not contacting any Cubes besides another Match Load.
- e. Not contacting a Goal Zone or a Barrier.
- f. Not contacting a Robot.

Answered by Game Design Committee

SG4 should be ruled as applicable for the fields at any given event. If the event is using anti-static tiles (i.e. all gray), then the Match Loads may be placed on the tile that would have otherwise been red/blue (provided that all other conditions in SG4 are met). Teams should be cognizant of the possibility that an event may use either of the two possible sets of field tiles, and plan to accommodate accordingly.

504: Cubes Leaving the Field by Defense Play

26-Jan-2020

SG6

Earlier you ruled on the question below regarding SG6. Would the same ruling apply to teams playing defense on bots trying to set a stack in the unprotected corner. The scoring robot has the tray verticle or nearly verticle and a bot from the opposing alliance comes and rams them sending cubes off the field. The way they are set up there is nowhere else for the cubes to go. Would this be considered intentional. They may repeat this couple of times per match.

Cubes leaving the field 248A 1 month ago In Autonomous, often teams put a smaller stack in their goal zones. Once drive control starts they knock over the stack to create a larger stack in driver control, often they do so with disregard for elements leaving the field. Should we see an attempt to keep them in play? If there isn't an attempt to keep them in play, should this strategy receive warnings and with repeated occurrences potentially lead to a DQ?

<SG6> Keep Cubes in the field. Teams may not intentionally remove Cubes from the field. While Cubes may accidentally leave the field when attempting to Score, doing so intentionally or repeatedly would be a violation of this rule.

Answered by Game Design Committee If there isn't an attempt to keep them in play, should this strategy receive warnings and with repeated occurrences potentially lead to a DQ?

This interpretation is correct. The limits for "intentionally" and "repeatedly" in SG6 are at the Head Referee's discretion, given the context of a given Match and/or event. If they observe Teams attempting this strategy, we would advise Head Referees to provide clear warnings regarding this risk.

Answered by Game Design Committee

This scenario would be considered a combination of SG6 (which includes "Cubes may accidentally leave the field when attempting to Score" verbiage), and G14, quoted below for reference:

<G14> You can't force an opponent into a penalty. Intentional strategies that cause an opponent to violate a rule are not permitted, and will not result in an infraction on the opposing Alliance. Minor violations of this rule that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

297: Clarification on AP Points

4-Jun-2019

Tournament Structure Scoring

The definition for Autonomous Points states that "An Alliance who wins the Autonomous Bonus during a Qualification Match earns four (4) Autonomous Points." This appears to fit with last year's autonomous point values, and not the Tower Takeover values - causing points earned from the Autonomous Bonus and Autonomous Points to not have the same value. Is this interpretation correct?

Answered by Game Design Committee

Thank you for pointing this out. This was a typo and will be fixed in the June 14th Game Manual Update. You are correct, the Alliance who wins the Autonomous Bonus should receive six (6) AP's.

332: Specific Cube Scoring Question

20-Aug-2019

Scoring

We have begun to see a number of interesting scoring situations, and are looking for clarification regarding the current game rules. How many of the cubes in the match photo below are scored?

There appears to be two Base Cubes and at least six cubes which meet the definition of a Stacked Cube. A seventh cube may also be a Stacked Cube under the definitions below.

Note, too, that a robot is touching the Green Cube, so that one is not scored.

Can you provide clarification of the rules and indicate how many Cubes the game designers would have intended to meet the definition of Stacked?

The following definitions are found on Page 10 of the Tower Takeover, in Game Definitions

Scored - A Cube status. A Cube is considered Scored in a Goal Zone at the end of a Match if it is not contacting a Robot of the same Alliance color as the Goal Zone, and meets the criteria of being either a Base Cube or a Stacked Cube.

Base Cube - A Cube status. A Cube is considered a Base Cube if it meets the following criteria at the end of the Match:

1. Contacting the gray foam tile within a Goal Zone.
2. Level or "flush" with the gray foam tile.

Stacked Cube - A Cube status. A Cube is considered a Stacked Cube if it meets the following criteria at the end of the Match:

1. Contacting the Top Surface of a Base Cube or Stacked Cube.
2. Not contacting the top of the field perimeter wall.
3. Not contacting the Top Surface of any Cubes which are not Scored



Answered by Game Design Committee

First, thank you for posting your separate questions in separate threads, for including a specific image, and for quoting the relevant definitions from the rules.

How many of the cubes in the match photo below are scored?

There appears to be two Base Cubes and at least six cubes which meet the definition of a Stacked Cube. A seventh cube may also be a Stacked Cube under the definitions below.

Note, too, that a robot is touching the Green Cube, so that one is not scored.

Can you provide clarification of the rules and indicate how many Cubes the game designers would have intended to meet the definition of Stacked?

Your analysis is correct - all Cubes in the photo would be considered Scored except for the green one.

333: Another Specific Question about Cube Scoring

20-Aug-2019

Scoring

Here's another scoring question:

In the photos below there are two Cubes which qualify as Base Cubes. There are also four cubes that appear to qualify as Stacked Cubes under the rules below. Note that a piece of paper cannot slid all the way under the top Orange Cube - a portion of this Cube is sitting on the Top Surface of the Cube below it. The paper cannot get all the way to the beveled edge of the cube below, demonstrating that the top Orange Cube is still touching part of the top of the cube below.

Can you verify if this interpretation is correct, and the top Orange Cube does score?

The following definitions are found on Page 10 of the Tower Takeover, in Game Definitions Scored - A Cube status. A Cube is considered Scored in a Goal Zone at the end of a Match if it is not contacting a Robot of the same Alliance color as the Goal Zone, and meets the criteria of being either a Base Cube or a Stacked Cube.

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1. Contacting the Top Surface of a Base Cube or Stacked Cube.
2. Not contacting the top of the field perimeter wall.
3. Not contacting the Top Surface of any Cubes which are not Scored



Answered by Game Design Committee

Here's another scoring question:

In the photos below there are two Cubes which qualify as Base Cubes. There are also four cubes that appear to qualify as Stacked Cubes under the rules below. Note that a piece of paper cannot slid all the way under the top Orange Cube - a portion of this Cube is sitting on the Top Surface of the Cube below it. The paper cannot get all the way to the beveled edge of the cube below, demonstrating that the top Orange Cube is still touching part of the top of the cube below.

Can you verify if this interpretation is correct, and the top Orange Cube does score?

Yes, this interpretation is correct, if the "paper test" in the second photo confirms that there is contact with the middle orange Cube's Top Surface.

334: Another Cube Scoring Question

20-Aug-2019

Scoring

Here's another Cube scoring issue we encountered.

Can you verify how many Cubes are scored in the photo below?

Based on the definitions in the game manual, we think there is one Green Base Cube, and one Orange Stacked Cube. The Purple Cube is not scored because it seems the Orange Cube cannot have a Top Surface in this situation. But the definitions are always open to some interpretation.

Can you verify which cubes scored?

The following definitions are found on Page 10 of the Tower Takeover, in Game Definitions Scored - A Cube status. A Cube is considered Scored in a Goal Zone at the end of a Match if it is not contacting a Robot of the same Alliance color as the Goal Zone, and meets the criteria of being either a Base Cube or a Stacked Cube.

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1. Contacting the gray foam tile within a Goal Zone.
2. Level or "flush" with the gray foam tile.

Stacked Cube - A Cube status. A Cube is considered a Stacked Cube if it meets the following criteria at the end of the Match:

1. Contacting the Top Surface of a Base Cube or Stacked Cube.
2. Not contacting the top of the field perimeter wall.
3. Not contacting the Top Surface of any Cubes which are not Scored



Answered by Game Design Committee

Here's another Cube scoring issue we encountered.

Can you verify how many Cubes are scored in the photo below?

Based on the definitions in the game manual, we think there is one Green Base Cube, and one Orange Stacked Cube. The Purple Cube is not scored because it seems the Orange Cube cannot have a Top Surface in this situation. But the definitions are always open to some interpretation.

This interpretation is correct, per the definition of Top Surface:

Top Surface - The side of a Cube that is furthest away from (and roughly parallel to) the gray foam tiles. The inner indents on that Cube's side are considered part of its Top Surface; **the chamfered edges are not.**

335: A final scoring question (for now)

20-Aug-2019

Scoring

Here's an interesting scoring question.

In the photo below, there are clearly two Base Cubes. Based on the definitions in the current game documentation, it appears there may be six Stacked Cubes. All the Green Cubes on the Base Cubes seem to meet the definition of Stacked Cubes.

Can you verify which cubes score?

The following definitions are found on Page 10 of the Tower Takeover, in Game Definitions Scored - A Cube status. A Cube is considered Scored in a Goal Zone at the end of a Match if it is not contacting a Robot of the same Alliance color as the Goal Zone, and meets the criteria of being either a Base Cube or a Stacked Cube.

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1. Contacting the Top Surface of a Base Cube or Stacked Cube.
2. Not contacting the top of the field perimeter wall.
3. Not contacting the Top Surface of any Cubes which are not Scored



Answered by Game Design Committee

In the photo below, there are clearly two Base Cubes. Based on the definitions in the current game documentation, it appears there may be six Stacked Cubes. All the Green Cubes on the Base Cubes seem to meet the definition of Stacked Cubes.

Can you verify which cubes score?

Your interpretation is correct. All green Cubes in the photo would be considered Scored.

339: Autonomous Bonus - No one scores

27-Aug-2019

Scoring

If no one scores during the Autonomous Period - is that considered a tie or no bonus? The tablet scoring app offers a None (none, red, blue, tie) which led me to believe that it was a necessary option. Hence when no one scores.

Autonomous Bonus - A bonus awarded to the Alliance that has earned the most points at the end of the Autonomous Period. The Autonomous Bonus consists of six (6) points added to the score at the end of the Match, and two (2) Match Loads that may be entered any time during the Driver Controlled Period. Note: If the Autonomous Period ends in a tie, each Alliance will receive an Autonomous Bonus of three (3) points and one (1) Match Load.

Answered by Game Design Committee

If no one scores during the Autonomous Period - is that considered a tie or no bonus?

This would be considered a 0-0 tie, and the "tie" checkbox should be selected.

The tablet scoring app offers a None (none, red, blue, tie) which led me to believe that it was a necessary option.

The "none" option in the app is intended for the extremely rare but possible scenario where both Alliances commit a violation during the Autonomous Period, and therefore neither Alliance should receive any sort of bonus, per G11b:

<G11> All rules still apply in the Autonomous Period. Any infractions committed during the Autonomous Period that are not Match Affecting, but do affect the outcome of the Autonomous Bonus, will result in the Autonomous Bonus being automatically awarded to the opposing Alliance.

a. Teams are responsible for the actions of their Robots at all times, including during the Autonomous Period. Any infractions committed during the Autonomous Period that are Match Affecting can result in a Disqualification, if warranted by the rule.

b. If both Alliances cause infractions during the Autonomous Period that would have affected the outcome of the Autonomous Bonus, then no Autonomous Bonus will be awarded.

390: Robot touching placed cubes at the end of a match

22-Oct-2019

Scoring

If a team is in contact with a placed tower cube in a neutral or their own alliance tower at the end of the match would it be considered scored for the multiplier or would the multiplier be voided for that tower.

Answered by Game Design Committee

The definition of Placed states the following:

Placed - A Cube status. A Cube is considered Placed in a Tower at the end of a Match if any part of it is breaking the plane defined by a given Tower's Placing Line.

This is the only criteria used to determine if a Cube is considered Placed (and therefore used in scoring calculations). Robot contact is not listed as a criteria, and therefore has no bearing on whether or not a given Cube is considered Placed.

295: <T14> Required number of alliances at a tournament

4-Jun-2019

T14

In Rule <T14>, it states that any event with less than 32 teams may run with less than 16 alliances. Does this mean that any tournament with 32 or more teams must have 16 elimination alliances? Additionally, the RECF Qualification Criteria, which this question refers to, states that "Tournaments with thirty-two (32) or more teams will have sixteen (16) alliances in the Elimination Rounds."

Answered by Game Design Committee

In Rule <T14>, it states that any event with less than 32 teams may run with less than 16 alliances. Does this mean that any tournament with 32 or more teams must have 16 elimination alliances? Additionally, the RECF Qualification Criteria, which this question refers to, states that "Tournaments with thirty-two (32) or more teams will have sixteen (16) alliances in the Elimination Rounds."

Correct! T14 works in conjunction with the [VRC Qualifying Criteria](#) document, which includes the quote that you provided, which states that Tournaments with 32 or more teams will have 16 alliances.

294: <T7> Are tournaments required to run all qualification matches on the schedule?

4-Jun-2019

T7

In Rule <T7>, it is stated that "Qualification Matches follow the Qualification Match schedule." Does this rule prohibit tournaments from choosing to not run all of the qualification matches on the schedule?

Answered by Game Design Committee

In Rule <T7>, it is stated that "Qualification Matches follow the Qualification Match schedule." Does this rule prohibit tournaments from choosing to not run all of the qualification matches on the schedule?

Not necessarily. There are many extreme circumstances that could result in an Event Partner making changes to the Qualification Match schedule with REC Foundation approval. We will update this rule to state this more clearly in the June 14th Game Manual update.

322: VRC Phone use during alliance selection

21-Jul-2019

Tournament Structure

A question arose in the EP Q&A which impacts teams. Are you allowed to use a phone (or any communication device) as the team representative to get information from other team members or non-members during alliance selection?

Answered by Game Design Committee

There are no rules prohibiting this, thus it is legal.

Of course, this topic is also a good opportunity to remind participants that VRC is intended to be a student-centered program, as explained by this example in G2:

During Match play, it is...

...okay for an adult to provide cheerful, positive encouragement as a spectator.

...not okay for an adult to explicitly shout step-by-step commands from the audience.

293: Descoring Cubes from Towers using Force

4-Jun-2019

Towers

Please make a ruling on the legality of ramming or shaking the tower supports in order to de-score cubes. In short: can a robot intentionally ram the towers in order to attempt to de-score cubes?

Answered by Game Design Committee

can a robot intentionally ram the towers in order to attempt to de-score cubes?

There are no rules explicitly preventing this, thus it is legal. Teams who choose to attempt this strategy should be mindful of the following rules:

<S1> If at any time the Robot operation or Team actions are deemed unsafe or have damaged the Field Elements or Cubes, the offending Team may be Disabled and/or Disqualified at the discretion of the referees. The Robot will require re-inspection before it may again take the field.

At a minimum, contact with the force required to dislodge a Cube may result in a warning, depending on the amount of damage incurred to the Tower as determined by the Head Referee.

<G16> Don't clamp your Robot to the field. Robots may not intentionally grasp, grapple or attach to any Field Elements. Strategies with mechanisms that react against multiple sides of a Field Element in an effort to latch or clamp onto said Field Element are prohibited. The intent of this rule is to prevent Teams from both unintentionally damaging the field and/or from anchoring themselves to the field.

Using a mechanism to "bend" a Tower with the intent to dislodge a Cube would very likely be considered "latching" or "clamping" to a Field Element, depending on the specifics of the interaction.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to): • Encroaching upon an opponent's Protected Zone per <SG3>.

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions: [...]

Any Cubes that are Removed from Towers via this strategy would be subject to the constraints of SG3, via SG7.

363: 3D Printed license plate

27-Sep-2019

Would it be legal to 3D print the license plates with the team letters "built in" to the license plate?

Answered by Game Design Committee

This is legal, provided that every point in R28 and R12 are met.

< R28 > Robots must have team identification plates. License Plates with VEX Team ID# must be clearly visible and legible at all times on a minimum of two opposing sides. License Plates must not be in a position that would be easily obstructed by a Robot mechanism during standard Match play.

a. Robots must use the colored plates that match their Alliance color for each Match (i.e. red Alliance Robots must have their red plates on for the Match). It must be abundantly clear which color Alliance

the Robot belongs to.

i. If the plates are attached to opposite-color plates, then the incorrect color must be covered, taped over, or otherwise obscured to ensure that the correct Alliance color is abundantly clear to Head Referees during a Match. Since License Plates are considered non-functional decorations, this is a legal non-functional use of tape.

b. The VRC License Plates are considered a non-functional decoration, and cannot be used as a functional part of the Robot per <R12>.

c. License Plates must fulfill all Robot rules (i.e. they must fit within the 18" cube per <R4>, they cannot cause entanglement, etc.)

The intent of this rule is to make it very easy for Head Referees to know which Alliance and which Team each Robot belongs to. Being able to "see through" a Robot arm to the wrong color License Plate on the opposite side of the Robot would be considered a violation of <R28>.

We are not going to provide a list of acceptable RGB values, font widths, minimum sizes, etc that will need to be satisfied; it will be at the full discretion of the Head Referee and inspector at a given event to determine whether a given custom license plate makes it abundantly clear which Alliance and which Team a Robot belongs to.

With this in mind, Teams wishing to utilize custom-made license plates should be prepared for the possibility of this judgment, and ensure that they are prepared to replace any custom parts with official VEX License Plates if requested. Not bringing official replacement plates to an event will not be an acceptable reason for overlooking a violation of one or more points in R28.

365: Skills scoring question

28-Sep-2019

In Skills, will points be counted if cubes are placed in both red and blue scoring zones? And may cubes be placed in both red and blue alliance towers? Or does a single color have to be picked in Skills?

Thank you!

Answered by Game Design Committee

Please review the [Q&A Usage Guidelines](#), specifically point 1, "Read and search the manual before posting." We believe your question is answered by the [Robot Skills Challenge Appendix](#).

< RSC1 > In Robot Skills Matches, all Goal Zones and Alliance Towers considered to be the same color for the purposes of any Alliance-specific rules or definitions.

a. Robots may start on either side of the field, as long as they fulfill the constraints set forth in <SG1> and <G7> for the chosen Alliance's side.

b. Robots may Score Cubes in any color of Goal Zone for points.

c. Robots may utilize either Alliance Tower for Placing Cubes.

d. Rule <SG3> does not apply.

< RSC2 > In Robot Skills Matches, all Cubes are considered to be the same color. Placing a Cube in a Tower affects the point value of all Cubes, not just Cubes of that physical color.

If this does not answer your question, please feel free to rephrase and re-submit.

376: Scoring Zone Descored

14-Oct-2019

I am an event partner and have talked with my head referee and he asked that this scenario be posted in the forum. Please answer how a referee should handle this situation should it occur.

The Red Robot has scored a stack of cubes in their unprotected goal zone. They have backed away and no longer are contacting the stacked cubes. The blue robot pushes the red robot into the red stack causing them to fall. Would this be indirect contact SG3B because the opposing robot caused the cubes to fall?

I have seen the following Q&A's but I am still unclear as to how the ruling should be made.

Please see this similar Q&A: events.vex.com/VRC/2019-2020/QA/353 events.vex.com/VRC/2019-2020/QA/288
events.vex.com/VRC/2019-2020/QA/296

Answered by Game Design Committee

Yes, one Robot pushing another into causing some action is considered "indirect contact" by the first Robot. Therefore, a Robot which pushes an opponent into the opponent's own Protected Zone or Goal Zone would be subject to the full extent of SG3.

To answer your specific question, a Blue Robot pushing a Red Robot such that the push "knocks over their stack" and causes Cubes to become de-Scored would be considered a violation of SG3 part F on the Blue Robot, and should result in a Disqualification.

377: V5 Brain Blown Ports

15-Oct-2019

We have found that different parts of our robot that are isolated from other components of the robot with nylon spacers have issues with blowing a port on the brain. If there is a motor in the isolated section, and it is only connected to the main part of the robot through the wire running the motor it tends to blow a port over time probably due to static build up. We found potential voltage differences with a multi-meter across the different parts of the robot. We have bonded the isolated components of the robot together with a stand of the jumper stock and the issue with blowing ports went away.

My question: To fix the problem we used a stand of wire from the V5 cable to connect the isolated parts of our robot to the main part of our robot. Is it competition legal to have strand from the V5 jumper wire connection different parts of the robot?

Answered by Game Design Committee

No, this is not legal, as it would be considered a violation of R21.

<R21> No modifications to electronic components are allowed. Motors (including the internal PTC or Smart Motor firmware), microcontrollers (including V5 Robot Brain firmware), extension cords, sensors, controllers, battery packs, reservoirs, solenoids, pneumatic cylinders, and any other electrical component or pneumatics component of the VEX EDR platform may NOT be altered from their original state in ANY way.

a. External wires on VEX electrical components may be repaired by soldering, using twist/crimp connectors, electrical tape or shrink tubing such that the original functionality / length is not modified in any way. Wire used in repairs must be identical to VEX wire. Teams may make these repairs at their own risk; incorrect wiring may have undesired results.

393: Is there a limit on team size?

26-Oct-2019

One of my team members has been insisting that there is a set maximum team size of 10. Evidence I have found seems to be somewhat inconsistent, as per my discussion on the VEX forums, where Jason McKenna agreed that there was a discrepancy, but neglected to give a specific answer. What is the ruling on this issue?

Thanks

Answered by Game Design Committee

The definition of Team in the VRC Tower Takeover Game Manual is as follows:

Team - One or more Students make up a Team. A Team is classified as a middle school Team if all members are Middle School Students. A Team is classified as a high school Team if any of its members are High School Students, or made up of Middle School Students who declare themselves "playing up" as High School Students by registering their team as a High School Team. Once declared and playing as a High School Team, that team may not change back to a Middle School Team for the remainder of the season. Teams may be associated with schools, community/youth organizations, or a group of neighborhood Students.

There is no limit to the number of Students that make up a legal Team.

395: G12 Rule

26-Oct-2019

It seems there are loose interpretations of the G12 rule and what Entanglement means. Thoughts for future competitions?

G12: Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of opposing Robots are not part of the ethos of the VRC and are not allowed. If the tipping, Entanglement, or damage is ruled to be intentional or egregious, the offending team may be disqualified from that match.

Entanglement: A Robot is entangled if it has grabbed, hooked, or attached to an opposing robot or field element.

There was a robot at a competition today that legitimately did nothing but intentionally ram and use a hook to grab onto other Robot's cube stacking structures. There was nothing accidental about this strategy and was intentional all day long. They made it to the finals by doing this.

We were told that a robot isn't Entangled if there is no damage yet the definition of Entanglement (see above) says nothing of the sort. The main issue is that these competitions are preached to the students, coaches, and parents as offensive/strategic games yet concessions seem to be doled out routinely for the overly aggressive robot and rules are interpreted in their favor.

Answered by Game Design Committee

The primary purpose of the VRC Q&A is to provide clarifications for rules questions that are not covered by the VRC Tower Takeover Game Manual. The GDC cannot provide comments on specific judgment calls made by a Head Referee at an event, as we were not there to observe the specific context of the interaction; we will only comment on the rules question being posed.

We were told that a robot isn't Entangled if there is no damage yet the definition of Entanglement (see above) says nothing of the sort.

Based on the question as described here, your interpretation of G12 and the definition of Entanglement is correct. Intentional Entanglement can be considered a violation of G12 whether or not damage has occurred, just as intentional tipping can be considered a violation of G12 whether or not damage has occurred.

402: Goal Zone Descoring

30-Oct-2019

An interesting thread on the VEX forum, so I'll post it here: The scenario is ... if the red robot stacks cubes in the smaller/unprotected goal zone, backs away, then the blue robot pushes them back into the stack while playing defense either causing them to touch the bottom cube or knocking cubes off the stack. What is the ruling?

According to the rules, SG3B and SG3F may come into play, but also may not.

- SG3F states that "Robots may not intentionally or accidentally, directly or indirectly, cause Scored Cubes within the opponent's Protected Zone to no longer meet the definition of Scored". Since it is specific that this takes place in the opponent's Protected Zone, this would not apply since the Protected Zone is defined as "the area of the playing field made up of the Outer Protected Zone and the Inner Protected Zone, in which opponent Robot interaction is limited"
- SG3B states that "Robots may not intentionally or accidentally, directly or indirectly, contact any Scored Cubes in either of opposing Alliance's Goal Zones". It could certainly be argued that, although the blue robot is indirectly touching a cube by pushing the red robot into it, the cube is no longer a Scored Cube once the red robot touches it - so, technically, the blue robot never indirectly touches a Scored Cube.

There are no other rules that I can think would be at play, except maybe the common sense rule G3. I *think* (and hope) the intent would be that the blue robot couldn't push the red robot into the stack and descore those cubes. I *think* (and hope) the intent of SG3F should say "within the opponent's Goal Zone" and not "within the opponent's Protected Zone".

I have seen <https://events.vex.com/VRC/2019-2020/QA/376>. Although the question specified that it was in the unprotected zone, the answer did not and could certainly be taken as referring to the goal zone in the protected zone.

Answered by Game Design Committee

I have seen <https://events.vex.com/VRC/2019-2020/QA/376>. Although the question specified that it was in the unprotected zone, the answer did not and could certainly be taken as referring to the goal zone in the protected zone.

While the specifics of that question may be different, the following sentence from its response can be taken as a general ruling:

Yes, one Robot pushing another into causing some action is considered "indirect contact" by the first Robot.

Therefore, a blue Robot pushing a red Robot into a Cube would be considered "indirect contact with a Scored Cube". Since the Scored Cube was in the un-protected Goal Zone, then SG3B has been violated, and the blue Robot will receive a warning or a Disqualification as appropriate.

It could certainly be argued that, although the blue robot is indirectly touching a cube by pushing the red robot into it, the cube is no longer a Scored Cube once the red robot touches it - so, technically, the blue robot never indirectly touches a Scored Cube.

We admire your creative approach to looking at this question as an "at the moment of contact" paradox. However, the overarching intent of SG3 as a whole is to protect Scored Cubes in a way that can be realistically monitored and enforced by a single Head Referee. In general, if a set of Scored Cubes have become de-Scored, and an opposing Robot has had something to do with that event, then SG3 has likely been violated in some way.

I think (and hope) the intent of SG3F should say "within the opponent's Goal Zone" and not "within the opponent's Protected Zone".

Please see this similar Q&A: <https://events.vex.com/VRC/2019-2020/QA/288>

415: G7 clarification

11-Nov-2019

G7 states "Drive Team Members are not allowed to use any sort of communication devices during their Match. Devices with communication features turned off (e.g. a phone in airplane mode) are allowed." This seems obvious but I want to make sure it is OK for a drive team member to use a hand held video recorder to record the match so long as it is not live streaming. Is that a correct understanding?

Answered by Game Design Committee

There are no rules preventing this; thus, it is legal.

419: can I use a Coiled Handset Cable to connect the brain to a motor

11-Nov-2019

we are trying to make a extending arm and we need the wire to do the same.can i use a Coiled Handset Cable.

Answered by Game Design Committee

The [Coiled Handset Cable](#) is not a standard V5 cable. The only allowance for non-standard V5 cables can be found in R23, quoted below with a portion bolded for emphasis:

<R23> Custom V5 Smart Cables are allowed. **Teams must use official V5 Smart Cable Stock** but may use commodity 4P4C connectors and 4P4C crimping tools. Teams who create custom cables acknowledge that incorrect wiring may have undesired results.

The Coiled Handset Cable is not made from standard/official V5 Smart Cable Stock, and is therefore not legal for use with V5 electronics.

425: Competitors moving cube placement before match

18-Nov-2019

Are competitors allowed to enter the field and align cubes for better placement prior to the autonomous period?

Answered by Game Design Committee

Please review the Q&A Usage Guidelines before posting, specifically point 1, "Read and search the manual before posting." We believe your question is answered by the Note in G9:

Note: Any concerns regarding the Cube(s) starting positions should be raised with the Head Referee prior to the Match; Teams members should never adjust the Cubes or Field Elements themselves.

428: Excellence Award

20-Nov-2019

Can a team that is not in the top 30% in qualifying rounds and not in top 20% in Robot Skills win an Excellence Award?

Key Criteria in the Judge Guide : "Excellence Award candidates should: be ranked in the top 10 or top 30% of teams (whichever is larger) in qualifying rounds during the last round of qualification matches played; and be ranked in the top 5 or top 20% of teams (whichever is larger) in Robot Skills.

Answered by Game Design Committee

Please review the [Q&A Usage Guidelines](#), specifically Note 1:

Note 1: The Q&A system is for rules clarifications only.

- For event, registration, or other competition support questions, please contact your REC Foundation Regional Support Manager.
- For questions related to judging and/or awards, please visit the official Judging Q&A.
- For VEX technical support, contact support@vex.com or sales@vex.com
- For game questions, suggestions, or concerns outside of specific and official rules questions, contact GDC@vex.com.

This question would be most appropriate for the Judging Q&A, found at <https://events.vex.com/judging/2019-2020/QA>

442: Is a disconnected Raspberry Pi a nonfunctional decoration?

5-Dec-2019

One of my teams uses a Raspberry Pi while programming. We have been taking it off every time we compete, but we were wondering if it would be legal to just leave it on the robot as long as it is disconnected and turned off. It has a 3D printed mount that keeps it securely attached and out of the way so it would not cause any entanglement or anything like that.

Answered by Game Design Committee

Please review the Q&A Usage Guidelines, specifically point 1, "Read and search the manual before posting." Your question appears to be directly answered by rule R15, quoted below for reference:

<R15> Robots have one microcontroller. Robots must use ONLY one (1) VEX EDR Microcontroller.

- a. Examples of VEX EDR Microcontrollers are the VEX RM® Cortex®-based Microcontroller (276-2194) and the V5 Robot Brain (276-4810).
- b. Any other microcontrollers or processing devices are not allowed, even as non-functional decorations. This includes microcontrollers that are part of other VEX product lines, such as VEXpro, VEX RCR, VEX IQ, or VEX Robotics by HEXBUG; it also includes devices that are unrelated to VEX, such as Raspberry Pi or Arduino devices.

444: [Supplementary] G12d Game elements in possession of a Robot are an extension of that Robot.

7-Dec-2019

Thank you for answering my previous question. I had made a late edit to the question to include one additional part, but unfortunately I seem to have made it too late. The question (which is an extension of <https://events.vex.com/VEXU/2019-2020/QA/423>) is:

SG3a: Is a possessed cube considered part of the robot for the purpose of determining whether a Robot is considered to be "fully contained" within its Protected Zone?

Thank you!

Answered by Game Design Committee

Yes, this is a correct interpretation.

461: Three stacks in Goal Zone

16-Dec-2019

See picture. Two base cubes with three stacks. I would think that since they all meet the definition of stacked cubes, they would count, correct?

Stacked Cube - A Cube status. A Cube is considered a Stacked Cube if it meets the following criteria at the end of the Match:

1. Contacting the Top Surface of a Base Cube or Stacked Cube.
2. Not contacting the top of the field perimeter wall.
3. Not contacting the Top Surface of any Cubes which are not Scored



Answered by Game Design Committee

Your interpretation is correct.

462: Cubes leaving the field

16-Dec-2019

In Autonomous, often teams put a smaller stack in their goal zones. Once drive control starts they knock over the stack to create a larger stack in driver control, often they do so with disregard for elements leaving the field. Should we see an attempt to keep them in play? If there isn't an attempt to keep them in play, should this strategy receive warnings and with repeated occurrences potentially lead to a DQ?

<SG6> Keep Cubes in the field. Teams may not intentionally remove Cubes from the field. While Cubes may accidentally leave the field when attempting to Score, doing so intentionally or repeatedly would be a violation of this rule.

Answered by Game Design Committee

If there isn't an attempt to keep them in play, should this strategy receive warnings and with repeated occurrences potentially lead to a DQ?

This interpretation is correct. The limits for "intentionally" and "repeatedly" in SG6 are at the Head Referee's discretion, given the context of a given Match and/or event. If they observe Teams attempting this strategy, we would advise Head Referees to provide clear warnings regarding this risk.

475: Clarification of Autonomous Bonus Penalty

6-Jan-2020

As an EP and a referee, I would like to have a clarification of what constitutes a violation which causes a default of the Autonomous Bonus penalty. I have heard 2 different interpretations and would like to know which one most accurately reflects the rules committee's intentions. Referring to previous Q&A questions and answers which help, but do not definitively cover all situations.

See:

SG2> Indirectly contacting opponent tiles, cubes via cube UWAT 4 weeks ago <SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

a. According to QA 405, events.vex.com/VEXU/2019-2020/QA/405 "violations could range from the Autonomous Bonus being awarded to the opposing Alliance, to a Disqualification, depending on the context of the interaction." Does this mean that if a cube has cross the autonomous line from red into the blue side, either unintentional or intentional, then that red alliance automatically lost autonomous bonus, since the word from is used?

b. If the robot is intaking a neutral cube(started contacting the autonomous line), then the second the robot touched the cube, the robot now has indirectly contacted the foam tile in opposing alliance. According to SG2 Note, cubes "may be utilized by either Alliance during the Autonomous Period." In this case, does this note take precedence over SG2 via SG7?

Some have said the unintentional cube has to either hit a stack of cubes on the opposing Alliance

Answered by Game Design Committee

This appears to be the same question as <https://events.vex.com/VRC/2019-2020/QA/446> . If additional clarification is needed, please feel free to rephrase and re-submit.

482: Using flags to clarify the status of a stack

10-Jan-2020

Hello,

During matches robots in the unprotected zone are subject to aggressive defense while attempting to

Thank you.

Answered by Game Design Committee

There are no rules or event support materials prohibiting this. However, we would likely advise against it. This is not a standardized Head Referee responsibility, so not only are there no support materials to provide overarching best practices, Teams who come to rely on it at one event may pressure unprepared Head Referees at another event to implement it.

This practice will not be used at VEX Worlds.

483: Modification to VEX Universal Joint

12-Jan-2020

Our team has a design using the VEX universal joint. We have encountered the long-bemoaned failure mechanism where the pins fall out of the u-joint under normal loading. We would like a ruling on whether this modification is legal, considering R22 in the game manual.

a. Add a small section of slip-fit thin-walled aluminum tubing over the outside of each half of the U-joint to retain the pins in the U-joint. This would slide over the U-joint just where the pin holes are and cover the pin holes. It would not in any way modify the function of the U-joint or structurally reinforce it, just retain the pins in the holes.

A ruling on this would be appreciated.

Answered by Game Design Committee

No, this is not legal.

486: Blocking protected zone.

13-Jan-2020

Our team was warned that it is a violation make contact with an opposing robot that was parked in our outer protected area blocking us from scoring, because we might force them into our inner zone, which would mean we forced them into a

violation. Is this interpretation correct?

Answered by Game Design Committee

Please see this similar Q&A post, which we believe answers your question. If it does not, please feel free to rephrase and re-submit.

<https://events.vex.com/VRC/2019-2020/QA/432>

498: Discrepancy Between Tournament Manager and Rules in Scoring Multiple DQ's

22-Jan-2020

I am an Event Partner and based on my communication with my Regional Support Manager and from the EP Forum, there appears to be a nuance in the rules that has not been adequately communicated to EPs and Teams. I am reposting the issue here so the entire community can get an official clarification...

According to the Game Manual, under "Tournament Definitions" Note 1: "If the Team receiving the Disqualification is on the winning Alliance, then Teams on the opposing Alliance who are not also Disqualified will receive two (2) WP."

One of our qualification matches this past weekend had one team each from Red and Blue DQ'd. At the end of the match, Red finished with more points than Blue. The non-DQ'd Blue team entered the match with a 4-0 record and 8 WP. After the match was completed, scored (with appropriate DQ check boxes checked), and saved, the non-DQ'd Blue team had a 4-1 record and still only had 8 WP. Based on the definition quoted above, we would have expected both the non-DQ'd Red team and the non-DQ'd Blue team receive 2 WP for the match. The non-DQ'd Blue team either should have had a 5-0 record after the match and 10 WP, or a 4-1 record and 10 WP, but that was not how TM scored it.

I have been told that Tournament Manager is working as intended, which - to me - implies that the definition referenced is not clearly written. Please clarify.

Thanks, Mike

Answered by Game Design Committee

Thank you for bringing this to our attention. Tournament Manager has been updated to resolve this discrepancy.

501: Shaft Collar Requirements for the High Strength (0.25" dia) shafts

23-Jan-2020

We are having issues with getting parts for the high strength shafts. I have found a shaft collar that is comparable to the ones that are used with the regular shafts but they have 1/4" ID and 1/2" OD. Here are the specs and a drawing for them. Is it okay for our teams to use these with the high strength shafts? They provide for the same functional use as the ones that are provided by VEX when they are in stock.

Cindy Bednara



Roll over image to zoom in

Climax Metals C-025X20 Shaft Collar with 10"-32" Set Screw, One Piece, Set Screw Style, Zinc Plated Steel, 1/4" Bore, 1/2" OD, 5/16" Width (Pack of 20)

by Climax Metals
★★★★★ 9 ratings

Price: \$19.41 (\$0.97 / Shaft Collar) ✓prime & FREE Returns

Number of Items: 20

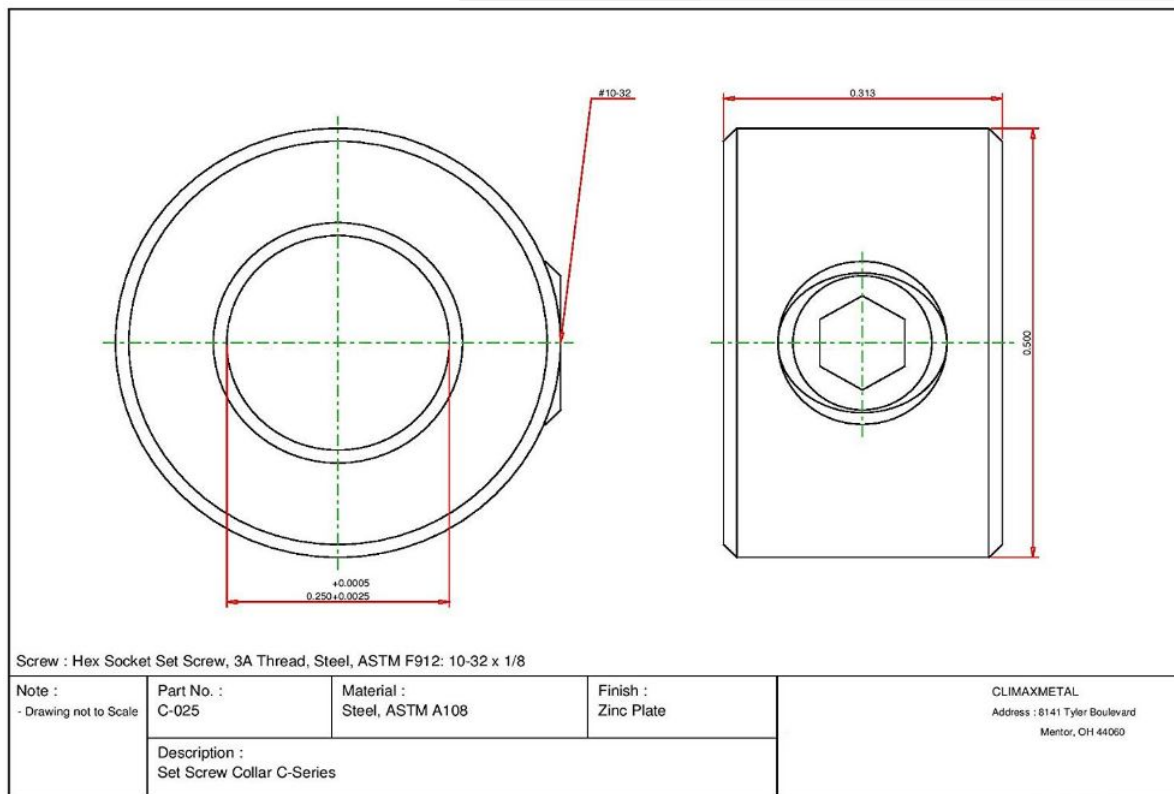
1
from 4 sellers

20
\$19.41 (\$0.97 / Shaft Collar)
✓prime

- Effective on hard and soft shafts
- Cost effective collar design
- Easily installed where major disassembly would otherwise be required
- Tolerance: +.0005/+.0025
- No plating for corrosion resistance

Product Specifications

Part Number	C-025X20
UPC	044861070710
Bore Diameter	0.25 inches
EAN	0044861070710



Answered by Game Design Committee

No, this would not be legal.

505: Ramming while in the process of putting a stack into a unprotected goal zone

26-Jan-2020

I am sorry if this question has been answered before but we could not find it.

Can a robot on alliance a push / ram a robot on alliance b while they are in the process of scoring a stack causing the alliance a bot to not be able to score the stack currently in there robot? In other words can you hit a bot that is in the process of scoring in a unprotected goal zone without getting a DQ?

Thank you for your time.

Answered by Game Design Committee

Please see the following similar Q&A's for reference, specifically the portion quoted below from Q&A 353:

<https://events.vex.com/VRC/2019-2020/QA/353>

<https://events.vex.com/VRC/2019-2020/QA/288>

The only parts of SG3 that refer to the non-protected Goal Zones are B and D. It is impossible to issue a blanket ruling that would cover all hypothetical robot-to-robot interactions. In most cases, if parts B and/or D have not been violated, then no violation of SG3 has occurred.

<SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

B - Contact any Scored Cubes in either of opposing Alliance's Goal Zones.

D - Contact either of the opposing Alliance's Goal Zones or Barriers.

507: Skills Robot Size

27-Jan-2020

So I had an Event Partner ask me if a robot has to start in the 18X18X18 starting size because in the RSC rules it never says they have to start in the 18X18X18. It does however say at the top "Please note that all rules from "The Game" section of the manual apply to the Robot Skills Challenge, unless otherwise specified. But if you look at the sizing rule G4 It says "At the beginning of a Match, each Robot must be smaller than a volume of 18X18X18. In the manual it only defines Match as "consists of an Autonomous Period followed by a Driver Controlled Period for a total time of two minutes(2:00)" It is not worded very well and I just want to get some clarification.

Answered by Game Design Committee

Yes. For the purposes of Robot Skills Challenge rulings, any mentions of the word "Match" in the standard Game Manual can be interpreted to mean "Robot Skills Match".

511: Cube Resting on Chamfered Edge - Debating Previous Q and A Answer to Doug Hepfer's Q

28-Jan-2020



Situation : two cubes are scored in the inner protected zone scoring area . they are roughly 3.5 inches apart. a third cube is placed so that it is resting on both of the other cubes but is rotated 45 degrees to the vertical and therefore is deemed to be resting on the 'chamfered edges' of the other cubes.

Before telling me that this is already answered in the rules and in a previous Q&A from 5 months ago - please let me make say a little more.....

The top surface of the cube is clearly defined on page 12 of the rules. It is clear that this is the plane parallel to the floor - as such, this plane has an edge. I believe that this edge is the intersection of the top surface and the beveled surface (also a plane) defined as the 'chamfered edge' . Therefore contacting this edge (of the chamfered edge) means with great certainty, you are contacting the top surface as well. I believe this is simple geometry.

Additionally, I would suggest that this intersecting edge (where the top surface intersects the 'chamfered edge') is slightly higher than the top surface of the cube. And if you stack two cubes on top of each other so that they are perfectly aligned, in many cases, they are in fact ONLY contacting each other along this outside edge and there is a small gap between the top surface of one cube and the bottom surface of the cube directly above it.

Perhaps the 'chamfered edge' needs to be redefined as the 'chamfered surface' and the edge where this intersection occurs needs its own definition.

Answered by Game Design Committee

For edge case scenarios such as the one in the attached photo, we would recommend using the "paper test" method described in the [referenced Q&A](#). In the original Q&A, the paper would not have reached the chamfered edge/surface. In the photo you have attached, it likely would; therefore, it would be deemed that the purple Cube is not contacting the green Cube's Top Surface, and would not be considered Scored.

While we appreciate your suggestion, we will not be re-defining the Top Surface / definition of Scored, but will be sure to take this feedback into consideration for any future games that may utilize similar Scoring conditions.

523: Can one robot be in contact with both pre-loads, provided the partner robot gives the pre-load to that robot?

1-Feb-2020

Rule: definition of a pre-load is the cube is one per robot that is placed on the field such that it satisfies the condition of SG1 prior to the start of the match. SG1 states: Starting prior to each match the robot must be placed such that it is; A. contacting the field perimeter wall on the side that consides with their aliances goal zone and alliance station. B. contacting a foam field tile C. not contacting a tower D. not contacting another cube other than a pre-load. E. Contacting a pre-load. i. the pre-load must be contacting exactly one robot. ii. The pre-load must be fully within the field perameters. We think this allows a single robot to possess both pre-loads because the definition would be met for each pre-load based of SG1, i., ii.. Due to each pre-load touching only one robot.

Answered by Game Design Committee

Robots must begin the Match contacting *exactly* one Preload. No more, no less.

533: Using different two (or more) types of plastic on one robot <R9>

3-Feb-2020

Is it permissible to use two (or more) pieces of different types of plastic as long as the total area of all plastic used does not exceed 12"x24"?

Rule <R9> says "as cut from a single 12" x 24 sheet," which implies it is not allowed: <R9> A limited amount of custom plastic is allowed. Robots may use non-shattering plastic from the following list; polycarbonate (Lexan), acetel monopolymer (Delrin), acetal copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP; as cut from a single 12" x 24" sheet up to 0.070" thick.

However, in November 2015 (Nothing But Net) Karthik said that it was allowable. <https://www.vexforum.com/t/answered-multiple-plastics/30904> Since previous rulings do not carry over year to year, could I please have a ruling on whether this is allowed.

Thank you.

Answered by Game Design Committee

Yes, this is legal.

Thank you.

You're welcome.

551: G8- Field cable malfunction

15-Feb-2020

At our last competition, in in one of our team's matches, the VEXnet Field Controller's Cat-5 cable had a poor connection. It worked minimally through the match. It worked at the beginning for about 30 seconds and then stopped. The driver turned off and on the robot. It then worked for a couple of seconds. The driver said "somethings wrong, its not working, I think it's the field" and continued trying to engage the robot unsuccessfully. At the end if the match, the officials decided the cable was faulty and replaced it. The team was told they should have set down the controller ans said "Faulty wire." In

reviewing the rules and Q & A's I don't see this particular scenario addressed. How should the team have handled this? what is the protocol if part of the field is not working correctly?

Thank you!

Answered by Game Design Committee

First, you are correct, this type of troubleshooting process is outside of the scope of the official Game Manual; it is generally at the discretion of a given Event Partner and/or Head Referee how they would like it to be handled.

With that being said, the Game Manual does include a provision for a Match replay in extreme circumstances:

<G20> Replays are allowed, but rare. Replays are at the discretion of the Event Partner and Head Referee, and will only be issued in the most extreme circumstances.

To supplement this rule, the REC Foundation provides a Replay Criteria document, which provides some recommendations to Event Partners for handling replays.

<https://www.roboticseducation.org/documents/2020/01/vrc-replay-criteria.pdf/>

"Field faults" which hinder the performance of one or both Alliances are one of the few categories that do sometimes warrant a replay; however, it is at the sole discretion of the Event Partner and/or Head Referee whether they choose to grant a replay or not.

578: Bumping in the Unprotected Zone

26-Feb-2020

So my question is: If a robot is in the process of scoring a stack while they are touching their barrier in the unprotected zone, can another robot from the opposing team push or bump them without being disqualified? Is this considered indirect contact? This is done intentionally to get the cubes out of the tray before they are scored. The opposing robot is not directly touching the goal zone or barrier.

SG3 States: <SG3> Stay away from your opponent's protected areas. Robots may not intentionally or accidentally, directly or indirectly, perform the following actions:

B - Contact any Scored Cubes in either of opposing Alliance's Goal Zones.

D - Contact either of the opposing Alliance's Goal Zones or Barriers.

QA 352 was not clear on if the robot trying to score was touching the barrier in the unprotected zone.

We need to get this clarification before our High School State Championship.

Thanks

Answered by Game Design Committee

Thank you for quoting the relevant rule in your question.

Indirect contact with either of the opponent's Barriers is always a violation of SG3-D, as quoted.

Transitive contact through an opponent's Robot is considered "indirect contact".

Therefore, yes, contacting an opponent Robot who is contacting either of their own Barriers would be considered a violation of SG3-D.

Minor violations of points A, B, C, or D that do not affect the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

Therefore, to answer your root question - a violation of SG3-D is only a Disqualification when it is Match Affecting.

581: sizing tool - varying dimensions

27-Feb-2020

Good morning,

The discontinued on field sizing tool measures 18". The more current sizing tool measures 18 1/8". After contacting my regional support manager, my understanding is the new dimension is known and intentional. Given the fact that many inspections will be conducted with the discontinued 18" version, a team could pass inspection at one event, then fail the next week at another event using the exact same robot. Will there be a stated rules clarification on the variation between the 2 sizing tools? What is the new standard?

Thank you

Answered by Game Design Committee

While the sizing tool is a useful tool to have at events, the Game Manual is always the official and final ruling on what should be considered legal.

Rules R4 and G4 are quoted as follows:

<G4> Robots begin the Match in the starting volume. At the beginning of a Match, each Robot must be smaller than a volume of 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2 mm) tall. Using Field Elements, such as the field perimeter wall, to maintain starting size is only acceptable if the Robot would still satisfy the constraints of <R4> and pass inspection without the Field Element. Robots in violation of this limit will be removed from the field prior to the start of the Match, at the Head Referee's discretion.

<R4> Robots must fit in a sizing box. At the beginning of any Match, Robots must be smaller than 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2 mm) tall.

- a. Robots may expand beyond their starting size constraints after the start of a Match.
- b. Any restraints used to maintain starting size (i.e. zip ties, rubber bands, etc.) MUST remain attached to the Robot for the duration of the Match.

R4 also contains a "red box" as follows. "Red boxes" are used throughout the manual to provide clarifying statements in situations where the strict verbiage of an official rule may require some additional context.

Robots will be measured by either being placed in a "sizing box" with interior dimensions matching the above size constraints or by using the VEX Robotics Competition Robot Sizing Tool while the Robot is placed on a flat surface. A Robot may not touch the box walls or ceiling or the Robot Sizing Tool sides when being measured. There are two VEX Robotics Competition Robot Sizing Tools that may be used: <https://www.vexrobotics.com/276-2086.html> and <https://www.vexrobotics.com/276-5942.html>

Neither G4 nor R4 are written to explicitly state that "Robots must fit in the sizing tool"; instead, they state that a Robot must be 18" x 18" x 18", and the red box clarifies that it is at the EP's discretion what tool they wish to use to test this compliance.

Teams should design their Robots with this possibility in mind; that is to say, an 18" x 18" x 18" Robot should pass inspection regardless if the event is using an old tool, a new tool, a tool that is slightly bent, a tool that was manufactured out of tolerance, or even a home-made "sizing box".

585: Are drivers allowed to move around in the driving field?

3-Mar-2020

We have a student that has limited vision and up to this point has not had any issues but in the state tournament a referee scolded her for stepping a few steps to the side for a better view. Her visual field is only what is directly in front of her so stepping left or right a few steps is needed for stacking the cubes.

Answered by Game Design Committee

As a general rule, the Game Manual states the following:

<G7> Only Drivers, and only in the Alliance Station. During a Match, all Drive Team Members must remain in their Alliance Station.

Barring any extenuating circumstances, if the Head Referee determines that a Driver has stepped outside of the Alliance Station at any point, then providing a G7 warning is the correct reaction.

With that being said, the REC Foundation does provide accommodations for students with disabilities at official VRC events. Please contact lauren_bannister@roboticseducation.org for an Accommodation Request Form and she will work directly with you to determine what accommodations can be made.