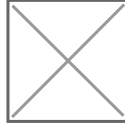


Q&A

VRC 2018-2019: Turning Point



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 Turning Point 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.

Please review the [Q&A Usage Guidelines](#) before posting. This system is only intended for specific VRC Turning Point rules questions.

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 - 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.

Index

[Clarification of The 18" Height](#)

[Questions about <G12>](#)

[Robot on Opposing Alliance Platform and G12](#)

[Contacting Platform](#)

[Hoarding Resolution - Hoarding Definition and SG5](#)

[Clarification on SG8 :Caps de-scored which leave the field](#)

[Clarification on Low Scored Cap](#)

[Shooting Caps Off Posts](#)

[Interpreting <SG8>](#)

[Possible rules contradiction between <G12> and <R3>](#)

[Replacement for 276-5677-035 - 1/2" X 1/2" Lexan Angles](#)

[Alternate to Lexan piece on center platform](#)

[INTENTIONAL tipping off center platform <R3> <G12>](#)

[Center park in programming skills match](#)

[Indirect Possession](#)

[Center Platform Defensive Strategy](#)

[Clarification on damage and entanglement](#)

[Pushing Opposing Bot Across the Field into the wall causing disconnect](#)

[Trapping G14 clarification](#)

[Programming Skills: Ending Early](#)

[V5 and Cortex robot inspection checklist differences](#)

[Forgot to turn on the Robot, but my alliance partner bumped me.](#)

[Clarification of VUR3 materials allowed](#)

[Vision sensor background Interference](#)

[V5 Controller external power pack](#)

[Making V5 Smart Cables](#)

[R16ci Question](#)

[Is it permitted to replace a V5 motor mount insert with a standoff once the insert has stripped?](#)

[How to deal with robots that do not pass inspection?](#)

[R5e Clarification on Components from V5 Beta](#)

[Flashlight for Vision Sensor Clarification](#)

[To what extent is something a non-functional decoration?](#)

[SG3/SG7 Clarification- Can Game Objects Cross the Autonomous Line During Autonomous?](#)

[Indirect Possession?](#)

[< SG4 > Accidental Ball Possession Limit Exceeded and Remediation Options](#)

[<SG8> Keep Game Objects in Field](#)

[<VUR3>c further clarification](#)

[VEXU - <VUR4> obligatory use of V5 in light of VEX suspension of new orders of V5 systems](#)

12: Clarification of The 18" Height

18-May-2018

Alliance Platform Center Platform SG2

If my robot is not touching the expansion zone and my robot is 18" high vertically when all wheels of the robot is on the foam tiles, would my robot still be considered 18" high when it climbs the platforms? (Example: My robot has a 4 wheel drive; 2 wheels are on the platform and 2 wheels are on the tiles, causing the robot to lean backward which results in the robot exceeding 18" adjacent to the foam tiles)

Answered by Game Design Committee

The 18" height requirement described by <SG2> refers to the robot height when it is placed on a flat floor (such during inspection per <R4>, or at the start of the match).

An 18" tall robot which tips slightly while climbing a Platform, as you describe, would still be legal.

21: Questions about <G12>

7-Jun-2018

Alliance Platform Center Platform G12

It seems that rule <G12> normally protects against other teams using deliberately defensive strategies, like a ground based bot using a <18" tall forklift/spatula to flip/tip bots off of the top platform. Under Note 1 of <G12>, Robots "Attempting" to utilize the Center Platform waive this right, unless they are "Alliance Parked" (Note 2).

1. Can teams design intentionally destructive/defensive/entangling subsystems for use against opponents or to aid teammates who are Center Parked?
2. If a robot is attempting to utilize the center platform but still has a single wheel, or even a single wire contacting the alliance platform, is it protected under "Note 2" of <G12> until they stop touching their own alliance platform?
3. Can Blue team tip a Red robot that is Center Parked onto the other Red robot that is "Alliance parked"?
4. Can a Blue Alliance Parked robot grapple and secure a Blue robot that is Center Parked, making it harder to push the Center Parked robot off of the center platform?
5. Can a Blue robot driving on the foam tiles use a cap to ram a Red robot that is Center Parked off of the center platform?
6. Can a robot grab and tug on the wires or VexNet Key of a Center Parked Opponent?

And now some possible rule clarification suggestions:

Could Note 1 be amended to only waive the protection offered by <g12> from robots that are either Alliance Parked or Center Parked? This way more destructive, momentum based interactions can be avoided, unless that is something that is encouraged.

Can Note 2 be extended to only cover Alliance Parked robots that have their motion subsystem touching the Alliance Platform. This way robots can't incorporate ideas to technically seek protection under Note 2, while being mostly or almost completely positioned on the center platform.

Answered by Game Design Committee

In the future, per the [Q&A Usage Guidelines](#), please quote the relevant portion of the manual in your question. In this case, you are referring to Notes 1 and 2 of G12:

- *Note 1: Teams who attempt to utilize the Center Platform should expect to encounter vigorous interactions from opponent Robots who are attempting to do the same. Engaging in this gameplay element of VRC Turning Point constitutes an acknowledgement of the risk of incidental tipping or damage, as covered by <G12b> and <G12c>, and waives the protection that is offered by <G12> against destructive interactions.*
- *Note 2: The Alliance Platform is not included in Note 1. Robots which are Alliance Parked are still protected by <G12> against destructive or defensive strategies.*

Also, splitting your question into multiple posts will help with readability and searching.

With all of these answers, remember that it is impossible to issue a blanket ruling on hypothetical scenarios. The highly interactive nature of the Center Platform means that many situations will result in judgment calls based on the context of the match and the specifics of the interaction.

1) *Can teams design intentionally destructive/defensive/entangling subsystems for use against opponents or to aid teammates who are Center Parked?*

- R3 still applies to all Robots, regardless of their Center Parked status or not. See [this similar Q&A post](#).

2) *If a robot is attempting to utilize the center platform but still has a single wheel, or even a single wire contacting the alliance platform, is it protected under "Note 2" of <G12> until they stop touching their own alliance platform?*

- No. "Utilizing the Center Platform" takes precedence over being technically Alliance Parked. The August manual update will include a revision to Note 2 that will clarify this.

3) *Can Blue team tip a Red robot that is Center Parked onto the other Red robot that is "Alliance parked"?*

- Since both Blue and Red Robots are attempting to utilize the Center Platform, these interactions may result in robots being pushed off the Center Platform onto the field or Alliance Platforms. Teams should be aware of the risks that may result from this interaction.

4) *Can a Blue Alliance Parked robot grapple and secure a Blue robot that is Center Parked, making it harder to push the Center Parked robot off of the center platform?*

- There are no rules against Entanglement with robots on the same alliance.

5) *Can a Blue robot driving on the foam tiles use a cap to ram a Red robot that is Center Parked off of the center platform?*

- Yes, this is legal. It is worth noting that the Cap in this question is irrelevant - this would be legal even if the blue Robot was not holding a Cap. Engaging in Center Parking waives the protection offered by G12 against destructive interactions, as explained by Note 1 of G12.

6) *Can a robot grab and tug on the wires or VexNet Key of a Center Parked Opponent?*

- No. Note 1 specifically refers to the risk of "incidental tipping or damage". Intentionally pulling out an opponent's wiring goes far beyond a simple pushing match and would result in a G12 violation. The Center Platform may result in some scuffles, but it is not a full-out combat robotics zone.

131: Robot on Opposing Alliance Platform and G12

31-Oct-2018

Alliance Platform G12 G13

It has been established through a couple of other Q&A's that robots of an opposing alliance may utilize the alliance platform but cannot score points for being alliance parked. What I would like further clarification on is if the waiver of protection under G12 extends to a robot occupying on an opposing alliance platform for the purpose of preventing the opposing alliance from parking. Or is this circumstance covered by rule G13, and a robot occupying an opposing alliance platform would be taking a defensive stance and the offensive robot attempting to park is given the benefit of the doubt by attempting to shove the defensive robot off their platform? Or is this an in-between case; on the center platform, rough play is expected, but if you are attempting to park on your already occupied alliance platform, you will get the benefit of the doubt but you still have to be careful?

Answered by Game Design Committee

<G12> does not mention the opposing Alliance Platform; Robots on the opposing Alliance Platform should be treated as if they were on any other foam tile on the Field.

With that in mind, a Robot which is on the opposing Alliance Platform and actively preventing an opposing Robot from Parking would be considered participating in a solely defensive strategy, as described in <G12a> and <G13>.

<G12a> VEX Robotics Competition Turning Point is intended to be an offensive game. Teams that partake in solely defensive or destructive strategies will not have the protections implied by <G12> (see <G13>). However, defensive play which does not involve destructive or illegal strategies is still within the spirit of this rule.

<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.

191: Contacting Platform

20-Dec-2018

Alliance Platform SG10

To prevent being pushed off the center platform, our team was looking at a mechanism that drops a small peg out of the back of the robot over the front of the platform. We would only contact two faces(#1 Our wheels on the top of the platform, #2 the peg only touching the outer edge of the platform) ,it would not clamp on anything and our robot could easily be removed. Would this be legal or would this considered be grappling.

Answered by Game Design Committee

With such a mechanism, <SG10> would be the primary rule in question:

<SG10> Don't clamp your Robot to the field. Robots may not intentionally grasp, grapple or attach to any Field Elements, including the Platforms. 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.

Provided that the head referee determines that the Robot has not violated <SG10> (i.e. has not anchored or clamped to the Platform), this would be legal. As described, it sounds like it would not be clamping to the platform, but as always, it is impossible to provide a blanket ruling based on of a written description of a hypothetical design.

Updated on 1/14/19 for additional clarity: It should also be noted that any mechanism used to accomplish this would also be subject to <SG2>, as explained in [this similar Q&A post](#).

145: Hoarding Resolution - Hoarding Definition and SG5

15-Nov-2018

Caps SG5

Hoarding is defined as placing two or more caps . . . in one of the four corners of the field and actively preventing your opponent from gaining access to them. If a team placed two caps between two flag towers, would that be a legal means of hoarding?

Answered by Game Design Committee

The definition of Hoarding is as follows:

Hoarding – A Robot status. A Robot is Hoarding if it is actively blocking opposing Robot access to more than two (2) Balls, or more than one (1) Cap, in any of the four (4) corners of the field (i.e. positioned in the corner roughly the size of one foam field tile).

The area between the Flags is not called out as a possible destination for Hoarding; therefore, placing two Caps between two Flag towers would not be considered Hoarding, and would be legal.

173: Clarification on SG8 :Caps de-scored which leave the field

9-Dec-2018

Caps SG8

Please clarify the following situation as related to caps leaving the field in an attempt to de-score. Is this the correct procedure given the rules "as written"

SG8 says - Match Affecting offenses will result in a Disqualification.

1. Any time a cap is knocked off a post by an opposing alliance and falls out of the field, the referees need to make a mental note and verbally warn the offending team.
2. At the end of the match, the referees need to determine if the de-scored cap(s) affects the outcome of the match. Referees should score the match with the cap (or caps) on the post first. Then referees need to score the match with the caps de-scored. If the de-scored caps affects which alliance wins, the offending de-scoring team will be disqualified.
3. For clarification, is the offending team disqualified? Or is it the alliance disqualified?

SG8 also says: Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

1. Please define multiple. The dictionary says several which is also vague at best. Is multiple two or more? Is multiple three or more? Is multiple 15 times? Please replace the word multiple with a number that is not open to interpretation.

Answered by Game Design Committee

1. Any time a cap is knocked off a post by an opposing alliance and falls out of the field, the referees need to make a mental note and verbally warn the offending team.
2. At the end of the match, the referees need to determine if the de-scored cap(s) affects the outcome of the match. Referees should score the match with the cap (or caps) on the post first.

Then referees need to score the match with the caps de-scored. If the de-scored caps affects which alliance wins, the offending de-scoring team will be disqualified.

These are both correct interpretations.

3. For clarification, is the offending team disqualified? Or is it the alliance disqualified?

Please see the definition of Disqualification, in the Tournament section of the manual, for reference:

Disqualification – A penalty applied to a Team for a rules violation. When a Team is Disqualified in a Qualifying Match, they receive zero (0) WP, AP, and SP, and the opposing Alliance receives two (2) WPs. When a Team is Disqualified in an Elimination Match, the entire Alliance is Disqualified and they receive a loss for the Match.

So, the answer to your question depends if the offense occurs in a Qualification Match or an Elimination Match.

SG8 also says: Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion. Please define multiple. The dictionary says several which is also vague at best. Is multiple two or more? Is multiple three or more? Is multiple 15 times? Please replace the word multiple with a number that is not open to interpretation.

The word "multiple" is used throughout the manual intentionally, to provide referees with the flexibility to interpret and apply a ruling based on the context of their event. Two warnings for egregious actions, or warnings that are met with uncivil reactions, should bear more weight than two warnings for accidental actions, or warnings that are met with respectful discourse.

183: Clarification on Low Scored Cap

14-Dec-2018

Caps

Low Scored – A Cap status. A Cap is Low Scored when a Cap's Core is touching the foam field tiles, white tape lines, or Platforms, without touching a Robot of the color Alliance for which the Cap would award points. Points for a Low Scored Cap are awarded to the Alliance color that is facing "up" when the Core half on its opposite side is touching the foam field tiles, white tape lines, or Platform.

In the definition for a "Low Scored Cap" where it says "...without touching a Robot of the color Alliance for which the Cap would award points.", is it saying "without the Cap touching a Robot of the color Alliance" or "without the Cap's Core touching a Robot of the color Alliance"?

I've been to competitions where they didn't score the cap of the same color if you were touching the Cap at all and other competitions where they seemed to ignore that portion of the definition entirely.

Thanks

Answered by Game Design Committee

The intent was for the Robot contact portion of this definition to refer to the entire Cap, not just the Core. It could also be written as the following, similar to the verbiage in the definition of High Scored:

A Cap is Low Scored when a Cap's Core is touching the foam field tiles, white tape lines, or Platforms, and the Cap is not touching a Robot of the color Alliance for which the Cap would award points.

This is also how it is presented in the Referee Training videos, as seen here:

<https://youtu.be/hOxbFWuJ0TY?t=83>

Thank you for pointing out this grammatical inconsistency, and we apologize for any confusion this may have caused. As noted in <G19>, the Q&A is considered an extension of the Game Manual and includes the correct and official interpretation of the Game Manual for ambiguous cases. This answer should serve as an amendment to the definition of Low Scored, and will be included in the April 5th, 2019 Game Manual update for VEX Worlds.

197: Shooting Caps Off Posts

27-Dec-2018

Caps

Regarding <SG8>.

Teams may not intentionally or strategically remove Game Objects from the field.

Some robots are capable of knocking caps off posts by shooting balls at them. If the ball hits the far underside of the cap just right it can knock it back onto the playing field. However, either the cap or ball, and most likely both, will leave the playing field.

Would this strategy be considered a violation of SG8?

Answered by Game Design Committee

This strategy would be considered a violation of <SG8>, and potentially a serious violation of <S1> depending on the specifics of the interaction. Robots should not be intentionally shooting Balls out of the field, especially not directly towards Alliance Stations (where the Posts are), regardless if the Balls leave the field or not.

<S1> Be safe out there. If at any time the Robot operation or Team actions are deemed unsafe or have damaged any Field Elements or Game Objects, the offending Team may be Disabled and/or Disqualified at the discretion of the Head Referee. The Robot will require re-inspection before it may again take the field.

248: Interpreting <SG8>

24-Feb-2019

Caps SG8

If in the elimination matches, in the act of scoring a cap on a pole, the cap leaves the field either due to defense or driver error, should that result in a disqualification for the robot attempting to score the cap? At a recent local tournament, the rules were set in such a way that if you had dropped a cap off the field at any point during the qualifier matches and then dropped a cap during the eliminations, you would be instantly disqualified regardless of if the offense was match affecting or not. Is this a proper interpretation of the rule sg<8> or not? Thanks

Answered by Game Design Committee

The full text of <SG8> reads as follows:

<SG8> Keep Game Objects in the field. Though it is expected that some Game Objects may unintentionally leave the field during Match play, Teams may not intentionally or strategically remove Game Objects from the field.

a. Balls that leave the field during regular Match play, accidentally or intentionally, will not be returned to the field.

b. Caps that leave the field during regular Match play will be returned to the nearest foam tile, Low Scored for the opposite Alliance color of the last Robot to contact it. If a referee cannot determine which Robot was the last to contact the Cap, then the Cap will not be returned to the field.

An intent of this rule is to prevent Robots from “knocking” Caps out of the field to remove them from Posts. Any strategic, intentional, or repeated removal of Game Objects from the field would be considered a violation of this rule.

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.

"Strategic, intentional, or repeated" is the key phrase to bear in mind. It is up to the Head Referee to determine if the way in which the Caps were removed from the field was intentional or strategic. Similarly, the exact definition of "repeated" will also be at Head Referee discretion, depending on the context of the Match and the event.

Generally, a Cap falling outside of the field due to defensive interactions would be protected by <G11>, although it is impossible to issue a blanket ruling that would cover all possible scenarios.

<G11> 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.

See [this Q&A](#) and [this Q&A](#) for more thoughts on this topic.

15: Possible rules contradiction between <G12> and <R3>

24-May-2018

Center Platform G12 R3

After reading through the manual some more, I have found that there is a possible contradiction in the rules, specifically regarding damage to robots when contesting the center platform. Rule <G12> note 1 states:

Teams who attempt to utilize the Center Platform should expect to encounter vigorous interactions from opponent Robots who are attempting to do the same. Engaging in this gameplay element of VRC Turning Point constitutes an acknowledgement of the risk of incidental tipping or damage, as covered by <G12b> and <G12c>, and waives the protection that is offered by <G12> against destructive interactions.

Which means that the intentional damage of robots is expected and allowed when contesting the center platform. However, rule <R3> states that:

The following types of mechanisms and components are NOT allowed: b. Those that could potentially damage other competing robots.

So it seems the possible contradiction is rule <G12> stating that damaging a robot while contesting the center platform is allowed, while rule <R3> states that mechanisms that could damage robots are not allowed.

My question would be is this a mistake in the rules, or is this stating that we may not make mechanisms *specifically* for damaging robots, and have to use existing mechanisms and/or drive power to contest and coincidentally damage opposing robots on the center platform?

Answered by Game Design Committee

My question would be is this a mistake in the rules, or is this stating that we may not make mechanisms specifically for damaging robots, and have to use existing mechanisms and/or drive power to contest and coincidentally damage opposing robots on the center platform?

Your latter interpretation is correct. R3 still exists independently of G12. For example, picture a "robot puncher" mechanism that served no purpose other than to hit opponents, or a piece of metal that has been sharpened to a point and could cut an opponent's wires. These would be considered mechanisms that could damage robots, and would not be legal.

On the other hand, picture a Robot with a strong enough drive base to push an opponent off of the Center Platform, and the resulting fall causes damage to the opponent. This is the type of tipping or damage that is covered by the G12 note, and would likely not result in a violation.

Most Robot rules could be thought of as "inspection rules" - a robot puncher or a sharp blade should be recognized during inspection as violations of R3, and would never even take the field to risk damaging an opponent (on the Center Platform or elsewhere).

90: Replacement for 276-5677-035 - 1/2" X 1/2" Lexan Angles

1-Oct-2018

Center Platform

On the competition field, can I replace the 276-5677-035 - 1/2" X 1/2" Lexan Angles with 1/2" x 1/2" aluminum angle. I have 6 fields which are transported in a trailer to multiple events. 5 of these plastic angles are already broken. I was hoping to use McMaster Carr Part number 8982K54 : <https://www.mcmaster.com/#8982K54> - Thanks.

Answered by Game Design Committee

Yes, this is permissible, provided that the modification does not affect gameplay. The specific example you have given would satisfy this constraint.

105: Alternate to Lexan piece on center platform

15-Oct-2018

Center Platform

I saw Andrew's Q&A question: <https://events.vex.com/VRC/2018-2019/QA/90>

Would it be permissible to use a 2x2x35 90 degree aluminum angle, part 276-2304, here? The screw hole pitch doesn't quite line up with the standoffs, so a hole needs to be drilled in the 276-2304, but it works well and is very sturdy.

Answered by Game Design Committee

Yes, this is permissible, provided that the modification does not affect gameplay. The specific example you have given would satisfy this constraint.

113: INTENTIONAL tipping off center platform <R3> <G12>

19-Oct-2018

Center Platform G12 R3

Applicable rules...

<R3> The following types of mechanisms and components are NOT allowed: b. Those that could potentially damage other competing robots.

<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.

Note 1: Alliances who attempt to utilize the Center Platform should expect vigorous interactions from opponent Robots. When a Robot is contacting or engaging with the Center Platform, incidental damage that is caused by opponent Robots pushing, tipping, or Entangling with them would not be considered a violation of <G12>. Intentional damage or dangerous mechanisms may still be considered a violation of <R3>, <S1>, or <G1> at the Head Referee's discretion.

QUESTION...

It's understood that a mechanism on a robot designed only for tipping robots would be disallowed. However, robots may have a mechanism that can flip caps and happens to also be able to flip opposing robots (so the mechanism is legal).

Is it legal for a robot to have their forks, or other mechanism, under an opposing robot (that is attempting to utilize the Center Platform) and lift, or activate their mechanism to lift one side of the opposing robot to intentionally flip them?

The crux of the matter is, should we differentiate between actions that cause incidental tipping, and strategies (not necessarily mechanisms) aimed solely at INTENTIONALLY tipping opponents off the center platform?

Related Q&A posts...

[Possible rules contradiction between <G12> and <R3>](#)

[Questions about <G12>](#)

Answered by Game Design Committee

<G12>, in general, only comes into consideration once a Robot has been tipped, damaged, or Entangled. Most damage that occurs in VRC is incidental; few teams come to the field intending to play combat robotics, as there are many rules against it (<G12>, <G1>, <S1>, <R3>).

With this in mind, Note 1 is intended to act as a clarification that when Robots are engaged in the Center Platform, the line for what is considered "incidental" is different from standard gameplay. Simple pushing and shoving, which would have looked fine on the normal playing field, could now turn into a tipped Robot because of the elevated Center Platform. Note 1 provides a guideline that damage caused by this maneuver should be waived as "incidental". To re-quote Note 1 with portions bolded for emphasis...

When a Robot is contacting or engaging with the Center Platform, **incidental damage** that is **caused by opponent Robots** pushing, **tipping**, or Entangling with them would not be considered a violation of <G12>. **Intentional damage or dangerous mechanisms may still be considered a violation of <R3>, <S1>, or <G1>** at the Head Referee's discretion.

Note 1 does not say whether "intentional tipping" is legal or illegal on the Center Platform, because that question is irrelevant. It focuses on what happens when a Robot has become damaged as the result of a Center Platform interaction, such as tipping. The intent for this is to help draw the thin line between "vigorous interactions" vs "combat robotics" - in other words, "incidental damage" vs "intentionally dangerous mechanisms".

Is it legal for a robot to have their forks, or other mechanism, under an opposing robot (that is attempting to utilize the Center Platform) and lift, or activate their mechanism to lift one side of the opposing robot to intentionally flip them?

As always, it is difficult to provide a blanket ruling on a snapshot description of a hypothetical mechanism. That said, this is getting close to a mechanism that would have the potential to violate some combination of <G1>, <S1>, or <R3>, depending on the context of the interaction, per the last bolded sentence in Note 1 above. Possible referee questions could include:

- Did the team's action compromise the safety of the competition area?
- Has this team been warned before about their mechanism being unsafe / destructive?
- Is this mechanism designed primarily for tipping other Robots?
- Is there something in the mechanism's design that resulted in damage? To be more specific in this hypothetical example - Did it lift the wheels just enough to break traction on the Platform and tip them when

they fell off, or was it so powerful that it launched the opponent into the air?

227: Center park in programming skills match

31-Jan-2019

Center Platform

Is center parking permitted in the 60 second programming part of the skills match?

Answered by Game Design Committee

Yes, Center Parking is permitted in a Programming Skills Challenge Match.

221: Indirect Possession

21-Jan-2019

G11 SG4 SG6

In a recent tournament, an opposing robot shot a ball at a flag. When the ball ricocheted off of the flag, it bounced into our robot into a place on the robot where it couldn't be dislogged. There was also another ball in the robot in a place where it couldn't be dislogged, as well as one more ball in the our robot's intake system or shooter. The referee warned our robot that it was over the possession limit and because the team didn't immediately fire the one ball out of their shooter, the referee made the decision to disqualify them from the match. They didn't get the win points for the match but their teammate did.

My interpretation of Rule G11 is that the other team forced our robot into a "possession" penalty and therefore our team should not have been penalized. The other team did not do this intentionally, so therefore they should not have been penalized either. Here is the exact wording of the rule. <G11> 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.

Please clarify whether my interpretation of the rule is correct.

Answered by Game Design Committee

Let's look at the specific rules in question, partially quoted here for reference:

<SG4> Watch your Possession limit. Robots may Possess a maximum of one (1) Cap and two (2) Balls at a time.

<SG6> Keep Game Objects to yourself. Robots may not intentionally drop or place Game Objects on an opponent Robot.

<G11> 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.

All three of these include the standard warning/Disqualification verbiage:

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.

It is impossible for us to provide blanket rulings based on a written description of a specific Match, which is why it's important to defer to the Head Referee who witnessed the interactions in person.

You note that the ricochet of the Ball into your Robot was incidental, so <SG6> and <G11> would not typically apply, as they both include "intentional" verbiage. <SG4> would then be the key rule to consider.

<SG4> does not include any "intentional" or "un-intentional" verbiage; thus, if the Robot in question is objectively Possessing (3) Balls, then it is objectively in violation of <SG4>. To ensure that the penalty for this violation remains a warning, we would advise Teams who find themselves in this situation to avoid doing anything which would be considered Match Affecting, such as using one of those Game Objects to impact their Alliance's score (i.e. shoot a Ball at a Flag).

In general, we would advise Teams to design their Robots to minimize these types of incidental or questionable interactions, thus minimizing the possibility of rulings that you would consider controversial.

76: Center Platform Defensive Strategy

13-Sep-2018

G12

Hello I am wondering if the following is legal, If one of our teams designs a lever system to tip another robot off of the center platform while the other team is located on the center platform?

Answered by Game Design Committee

It is impossible to issue a blanket ruling on a hypothetical robot design. Please see <R3>, quoted here for reference:

<R3> The following types of mechanisms and components are NOT allowed:

- Those that could potentially damage playing field components.
- Those that could potentially damage other competing robots.
- Those that pose an unnecessary risk of entanglement.

A device that was solely designed to tip over opponent robots would likely be considered a violation of R3b and/or R3c.

It sounds like you're attempting to extend <G12>, which states that incidental tipping on the Center Platform is permitted, to Robot design. It's important to remember that <R3> and <G12> exist independently of each other. Please see the following similar Q&A's for more detail:

<https://events.vex.com/VRC/2018-2019/QA/15>

<https://events.vex.com/VRC/2018-2019/QA/21>

As well as the relevant Referee Training video: <https://www.youtube.com/watch?v=Y122vJILF5w>

150: Clarification on damage and entanglement

19-Nov-2018

G12 R3

Is it legal for a team to make a mechanism that is solely built to purposefully grasp, grapple, or entangle their teammate robot? If this mechanism, as a second hand as a backup strategy, gets used to purposefully grasp, grapple, or entangle opponents robots while center parked, would this also be a legal strategy?

Answered by Game Design Committee

As always, it is impossible to issue a blanket ruling on a hypothetical design. In addition to the first line of G12, the other main rule to consider would be R3, quoted here for reference:

<R3> The following types of mechanisms and components are NOT allowed:

- a. Those that could potentially damage playing field components.
- b. Those that could potentially damage other competing robots.
- c. Those that pose an unnecessary risk of entanglement.

Any mechanism which is designed primarily to Entangle partner Robots, and secondarily to Entangle opponent Robots, could be at risk of violating R3b and/or R3c, depending on the specific nature of the mechanism.

As mentioned in [this Q&A post](#), there are no rules against Entanglement between Robots on the same Alliance. If attempting such a strategy, the best way for Teams to avoid potential issues with R3 and/or G12 would be to protect these hypothetical mechanisms from opponent interaction, or otherwise proactively ensure that they are primarily used for offense, not defense.

246: Pushing Opposing Bot Across the Field into the wall causing disconnect

20-Feb-2019

G12

I have seen this so often this year it is becoming an issue for many teams. One alliance bot will push an opposing bot across the field and slam them into the outside wall. After the incident the opposing bot becomes disabled due to disconnect, white screen (on V5), or parts break (chains, rubber bands, etc). Is this move legal because many referees and event partners say it is, and we need clarification. If it is legal, please explain how because it seems to go against the G12 rule part A: VEX Robotics Competition Turning Point is intended to be an offensive game. Teams that partake in solely defensive or destructive strategies will not have the protections implied by <G12> (see <G13>). However, defensive play which does not involve destructive or illegal strategies is still within the spirit of this rule.

Slamming a robot into the side wall is not incidental and while the intent may not be to damage the bot, the risk of doing so is very high and teams know that.

Here is an example video of what I am talking about, although the robot does not become disabled in this case. It takes place at the 1:55 mark.

<https://youtu.be/kEEMzIdeHzA?t=112>

Answered by Game Design Committee

Being pushed is not, in itself, a violation of <G12>. You already quoted part A, which is the primary rule that would apply in this case. We would also like to note part C, quoted here for reference:

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.

It is impossible to provide a blanket ruling that would apply to all scenarios, so it is at the Head Referee's discretion whether a given interaction is considered a "destructive strategy" (in the context of part A) or a "minor contact" (in the context of part C).

The specific video example you have linked would generally not be considered a violation of <G12>, and would generally be considered normal head-to-head gameplay. We would advise Teams to consider these types of interactions as a possibility when designing their Robots.

209: Trapping G14 clarification

14-Jan-2019

G14

I would request that GDC help clarify how trapping should be regulated correctly. Here are the pertinent rules and apparent confusion.

Game manual Trapping definition (Page 13) **Trapping** – *A Robot status. A Robot is Trapping if it has restricted an opposing Robot 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 perimeter wall) or indirect (e.g. preventing a Robot from escaping from a corner of the field).*

<G14> *No Trapping for more than 5 seconds. A Robot may not Trap an opposing Robot for more than five (5) seconds during the Driver Controlled Period. 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). After ending a Trap, a Robot may not Trap the same Robot again for a duration of five (5) seconds; if a Team does Trap the same Robot again, the count will resume from where it left off when the Trapping Robot initially backed off.*

From videos- The requirement is added that a robot must be actively trying to escape for a trap to be in effect.

There seem to be two areas where these rules seem to be often misapplied.

1. When the trap should start. What I often see is that the trap is not declared until the defensive robot is actually pinning the opposing robot.
2. When the trap should end. What I often see is that as soon as the trapped robot is able to move significantly, or an escape path becomes possible, counting stops. Basically, the same criteria are applied to initiating the trap as ending it even though the rules don't seem to support this interpretation. The concern with this application is that especially in this game with three other 18-36 inch wide robots and large and protruding field elements, mobility is already significantly impeded. Not requiring a full tile can prolong the impact of a trap much longer than 5 seconds if a trapped robot is not given some room to maneuver.

Based on this, I believe it would be helpful to clarify the following questions.

Is it required for a defensive robot to be in direct contact with another robot to be trapping?

Once a trap is declared, when does the timed count stop (more than one if appropriate)?

- A. When the defensive robot either moves a full tile away or the trapped robot is not trying to escape.
- B. When the defensive robot pulls back enough for the trapped robot to move even if its obviously not a full tile?
- C. As soon as there is a path of escape?
- D. Other?

When should the count stop (more than one if appropriate)?

- A. When the defensive robot either moves a full tile away or the trapped robot is not trying to escape.
- B. When the defensive robot pulls back enough for the trapped robot to move even if its obviously not a full tile?
- C. As soon as there is a path of escape?

D. Other?

If a defensive robot initiates a trap in a confined area and becomes unable to separate a full tile, does this negate their requirement to move back a full tile before the trap count is stopped?

A. No, the defensive robot assumes this liability when opting to play defense and should avoid trapping when they are uncertain that they can comply with the rules to separate a full tile prior to a 5 count.*

B. Yes, so long as robot that initiated the trap is doing everything possible to avoid contact.*

*Neither of these are assumed to change the obligation that the trapped robot must be continuing to attempt to escape. If the trapped robot were to attempt to produce or prolong either of these situations by doing anything other than attempting to escape the trap would be resolved. This strategy would also be attempting to cause another robot to perform an infraction and a violation of G11.

Answered by Game Design Committee

Thank you for the well thought-out and descriptive post, complete with the necessary reference materials. Before answering your specific questions, please remember that the VEX Robotics Competition is a volunteer-driven program with over 1700 events across 50 countries each season. While the Game Design Committee and the REC Foundation strive to continuously improve our training materials, requisite certifications to run an event, and overall consistency between events, providing absolute guidelines for subjective topics is one of the largest challenges that we face each year.

To be more specific - the interactive and dynamic nature of a VEX Robotics Competition game makes it impossible to provide absolutely black-and-white clarifications of inherently non-black-and-white topics, such as defensive interactions. If everything in a game was absolute and explicitly clear, then the role of a Head Referee to provide in-the-moment interpretations would not be needed!

So, with that in mind, let's dive in. These answers represent the intent of the Game Design Committee within the guidelines and training materials that we have provided for VRC Turning Point referees, not an ultimate expectation or guarantee that all Head Referees will interpret a given edge case in exactly the same way.

Is it required for a defensive robot to be in direct contact with another robot to be trapping?

No. As demonstrated in the Referee Training video, and defined in the definition of Trapping as "indirect" Trapping, direct contact is not required for a Trapping count to begin.

Once a trap is declared, when does the timed count stop (more than one if appropriate)?

A. When the defensive robot either moves a full tile away or the trapped robot is not trying to escape.

B. When the defensive robot pulls back enough for the trapped robot to move even if its obviously not a full tile?

C. As soon as there is a path of escape?

D. Other?

The intent is for a combination of A and C, although a "path of escape" is very difficult to define. The demonstration in the Referee Training video is one example; a Robot which is being Trapped against the field perimeter may technically have an instantaneous path of escape while a Trapping Robot maneuvers around them, but it is not a realistic expectation that the Trapped Robot would be able to escape in that brief moment. This is where some amount of referee subjectivity is required, to interpret the context of a given Match and the interactions they are seeing on the field.

When should the count stop (more than one if appropriate)?

Although you seem to be implying a specific and/or subtle difference between this and the last question, we are not quite understanding what you are getting at. If the answer to the previous question was not sufficient, please feel free to rephrase and re-submit.

If a defensive robot initiates a trap in a confined area and becomes unable to separate a full tile, does this negate their requirement to move back a full tile before the trap\count is stopped?

A. No, the defensive robot assumes this liability when opting to play defense and should avoid trapping when they are uncertain that they can comply with the rules to separate a full tile prior to a 5 count.*

B. Yes, so long as robot that initiated the trap is doing everything possible to avoid contact.*

The intended answer to this question would be your option A, with the pretty significant disclaimer that it is impossible to rule absolutely on snapshot descriptions of hypothetical scenarios. There are many scenarios where a Head Referee could subjectively interpret that a Trap is not occurring. Take the following two examples to illustrate this point:

- Picture two Robots who drive into the "lane" between the Platforms and the Field Perimeter from opposite directions, contact each other, and become unable to get out of the "lane". However, both Robots are clearly attempting to break free, such as by pausing driving to let the other Robot maneuver out, or verbally calling across the field to explain their movement, or rapidly turning back and forth away from the opponent. It would be a fair interpretation that neither Robot has "restricted" the other to a small confined area of the field, and no Trap should be called.
- Picture this same scenario, except the two Robots become "stuck" because one of them turned 90', began directly Trapping an opponent against the field perimeter, and then became unable to turn themselves 90' back around due to the Trapped Robot now being there. In this scenario, your option A applies - any Robot attempting to legally Trap for less than 5 seconds should have an "exit strategy".

163: Programming Skills: Ending Early

28-Nov-2018

G2 Robot Skills Challenge

The rules state:

Programming Skills Match – A Programming Skills Match consists of a sixty (60) second Autonomous Period. There is no Driver Controlled Period. Teams can elect to end their run early, however this will count as an official run.

A team asked if they were to program their robot to drive over the platforms if they can then request to end the match while they are top. This appears to be allowed by the rules, however isn't really programming. So G2 may apply here:

G2 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.

Can teams stop early as a strategic advantage (to stay on a platform, avoid descoring a flag, avoid to touch a cap, etc.)? Or should the robot run to completion, and then, only if their completion is shorter than the 60 seconds (most are), they are allowed to end early?

Thanks.

Answered by Game Design Committee

The verbiage, "*Teams can elect to end their run early*", is intended to give Teams and event staff an option to end a run if a Robot's autonomous routine does not take the full 60 seconds. Usually, this occurs once the Robot has stopped moving.

It is not intended to provide an option for teams to strategically stop the Match and/or disable their Robot while it is still moving. Such a stop would be considered a human input, and would violate the spirit of the Programming Skills Challenge.

Appendix B defines a Programming Skills Match as follows:

Programming Skills Match – A Programming Skills Match consists of a sixty (60) second Autonomous Period. There is no Driver Controlled Period.

Appendix B also includes the following line:

Please note that all rules from “The Game” section of the manual apply to the Robot Skills Challenge, unless otherwise specified.

With this in mind, G9 reads as follows:

<G9> Autonomous means “no humans”. During the Autonomous Period, Drive Team Members are not permitted to interact with the Robot in any way, directly or indirectly. This could include, but is not limited to:

- Activating any controls on their VEXnet Joysticks or V5 Controllers.
- Unplugging or disconnecting from the field in any way.
- Triggering sensors (including the Vision Sensor) in any way, even without touching them.

Just as unplugging from the field would be considered a human interaction per G7, ending a Programming Skills Match early with the intention of stopping a Robot on the Center Platform using the field control's "disable" command would be considered a human interaction.

71: V5 and Cortex robot inspection checklist differences

10-Sep-2018

G3 R8 R15

In the new V5 Robot Inspection checklist it specifically calls out <R8g> but the Cortex inspection checklist does not. Should it be considered that Cortex robots can not violate <R8g>

In the V5 checklist, it specifies that the sensor has been calibrated on competition fields - does this imply teams calibrate before inspect? on practice fields? home fields? before each match? If before a match, how much time should be allowed for teams to calibrate? This item does not have a rule associated with it. If we are to consider that the variance of lighting conditions is significant between fields, then it suggests this should be before each match and a <G> rule should be associated with it. V5 is all new to us, so <G2> is not there yet :)

In V5 check list it is implied that teams are allowed one controller - yet for Cortex two... <R15> does not make distinction between the two systems with regards to number of controllers.

I would recommend that the V5 inspection checklist be sorted in numerical order consistent with cortex, and that a single document (two sided) be provided so that the inspectors only need to pull one sheet and fill out accord to system.

thanks for the getting out the V5 checklist: <https://www.roboticseducation.org/documents/2018/09/vrc-v5-brain-robot-inspection-checklist.pdf>

Answered by Game Design Committee

It would be impossible for teams to calibrate robots on the field before each match. Event Partners should take lighting conditions into consideration when planning for an event. The added statement “If Vision Sensor is used, it has been calibrated & tested on competition fields or team accepts responsibility for doing so” reminds teams that it is

their responsibility to calibrate their robot matches begin so that they come to their first match prepared.

The V5 Robot Inspection Checklist has been updated to include up to 2 V5 Controllers, and rule <R8g> has been added to the Cortex Checklist. Keep in mind, all rules from the Game Manual still apply regardless if they are called out on the Robot Inspection Checklists. Please check www.RoboticsEducation.org for the latest versions.

146: Forgot to turn on the Robot, but my alliance partner bumped me.

17-Nov-2018

G8

Rule G8 states, "During the Driver Controlled Period, Drive Team Members may only touch their own Robot if the Robot has not moved at all during the Match." If a robot moved due to a push or bump from an alliance partner robot, can the team touch the robot to perform the permitted tasks? Technically the robot moved, but not under its own power.

Thank you.

Answered by Game Design Committee

This would be legal, as long as the Head Referee acknowledges that it is safe to do so. For example, if the Robot has moved a few feet away from the field perimeter and would require stepping into the field to reach it, this would not be permissible.

This ruling only applies to situations where the Robot has not moved under its own power. Motion as a result of stored energy, regardless of whether the microcontroller is powered on or not, would still be considered motion, and this would not be permissible.

7: Clarification of VUR3 materials allowed

15-May-2018

Other VEX U

<VUR3> Teams are allowed to fabricate their own unique components from the following additional items, for each of their robots: a. An unlimited amount of non-shattering plastic, such as PVC, Delrin, and ABS. b. An unlimited number of plastic 3D printed parts. c. An unlimited amount of steel and aluminum.

Clarification on point "a": are Fiber Reinforced Plastics (i.e. carbon fiber reinforced epoxy tube, rod, sheet, etc) acceptable as non-shattering plastics? Clarification on point "c": does the "unlimited steel and aluminum" include commercial fabricated components, such as steel springs, extruded aluminum shapes, and commercially available aluminum products (such as Andy Mark aluminum wheels <https://www.andymark.com/Performance-s/101.htm>)?

Answered by Game Design Committee

Yes, composites and fiber-reinforced plastics are legal.

No, commercially-purchased items that are not captured by VUR2, VUR4, or VUR6 are not permitted.

As quoted, VUR3 lists the raw materials from which "Teams are allowed to fabricate their own unique components". It does not state that all products made from these materials are legal, only that teams are allowed to use these raw materials to create their own parts.

238: Vision sensor background Interference

10-Feb-2019

Due to the nature of the flags in this game, it's easy for the vision sensor to get confused with things that are behind the net. Red and blue are common colors on t-shirts, logos on walls, and on various school mascots that may wander behind the net.

For teams to use a vision sensor properly, would it be acceptable to hold up some sort of sheet behind the field to avoid this interference? Will the fields at Worlds be set up to mitigate background interference?

Answered by Game Design Committee

Due to the nature of the flags in this game, it's easy for the vision sensor to get confused with things that are behind the net. Red and blue are common colors on t-shirts, logos on walls, and on various school mascots that may wander behind the net.

In addition to their red and blue graphics, the Flags also include green graphics; this design was specifically chosen to reduce the impact of these types of "distractions".

It is typically outside of the scope of this Q&A to provide specific technical advice. However, in this case, we would like to point out that not only does this green strip give Robots something else to look for (instead of just red or blue), the V5 Vision Sensor also has the capability to identify two-color pairs, so that Robots can target a "red-green" or "blue-green" pair.

For teams to use a vision sensor properly, would it be acceptable to hold up some sort of sheet behind the field to avoid this interference?

There are no rules in the Game Manual explicitly prohibiting this (other than <G7>, if you are proposing to have a Drive Team Member holding up this sheet).

If you are proposing to put up this sheet permanently for an event, any proposed venue modifications must be discussed with your Event Partner. While it is not explicitly prohibited, it is also not a requirement; the final decision will need to be made at the Event Partner's discretion.

Because of this, we would advise teams to utilize the engineering design process and investigate programming solutions that mitigate the impact of undesirable conditions.

Will the fields at Worlds be set up to mitigate background interference?

Any information regarding field modifications specific to VEX Worlds will be released as part of the scheduled April 5th, 2019 Game Manual update.

42: V5 Controller external power pack

7-Aug-2018

R11

Given that the V5 game controller does not have user replaceable batteries, is it permissible to connect it to an external USB power pack during a match. The situation may arise that the team's controller runs out of power during the day and they have not the opportunity to charge it before a match.

Answered by Game Design Committee

Provided that this external power pack interfaced with the standard micro USB port on the Controller and did not involve any modification to the Controller, yes, this would be legal.

35: Making V5 Smart Cables

10-Jul-2018

R16

Copied from: The_Original_Kev May 7 According to R16:

i. Using the V5 Smart Cable Crimp Tool, V5 Smart Cable Stock, and V5 Smart Cable Connectors to create custom-length Smart Cables is permissible. Teams who use custom cables acknowledge that incorrect wiring may have undesired results.

Alternatives can be used if they are identical to vex parts. Is there any difference between commercially available RJ11 cables and the VEX V5 Official cables or are they completely identical, and if they are identical, are teams allowed to use alternatives.

Answered by Game Design Committee

The V5 Smart Cables are not identical to all off-the-shelf 4p4c cables. VEX cables are built to a certain specification to fully support the features of V5 Smart Motors and sensors. As we cannot guarantee that off-the-shelf cables are built to this same spec, they may not perform as expected and could pose a potential safety hazard. Thus, they are not permitted. Inspectors can verify that a team is using official cables by checking for "V5" logos that are stamped along the cable.

36: R16ci Question

11-Jul-2018

R16

As an addition to the cabling question in <https://events.vex.com/VRC/2018-2019/QA/35>,

R16ci states:

"Using the V5 Smart Cable Crimp Tool, V5 Smart Cable Stock, and V5 Smart Cable Connectors to create custom-length Smart Cables is permissible."

1. Are the "V5 Smart Cable Connectors" identical to standard RJ11 connectors?
2. If the answer to 1 is yes, then would it be legal to, under R7b, use off the shelf RJ11 connectors? [Example.](#)
3. Would it be legal to use an off the shelf RJ11 crimper instead of the V5 Smart Cable Crimp Tool? [Example.](#)

Answered by Game Design Committee

1. Are the "V5 Smart Cable Connectors" identical to standard RJ11 connectors?
2. If the answer to 1 is yes, then would it be legal to, under R7b, use off the shelf RJ11 connectors? *Example.*

V5 Smart Cable Connectors are identical to standard 4p4c connectors (not RJ11 connectors). Using off-the-shelf connectors along with official V5 Smart Cable Stock would be permissible. However, note that off-the-shelf 4p4c cable is not permitted, per the other Q&A that you linked.

3. Would it be legal to use an off the shelf RJ11 crimper instead of the V5 Smart Cable Crimp Tool? *Example.*

| Yes, this would be legal.

101: Is it permitted to replace a V5 motor mount insert with a standoff once the insert has stripped?

8-Oct-2018

R16

It occurs from time to time that the small metal extrusion on the threaded motor mounts become shredded. The mount is a standoff shaped structure. So is it permissible to replace it with a standoff?

Is it further permitted to remove the internal insert and mount it outside as described in the turntable mounting instructions provided by VEX?

The concern is that these would both be violations of R16

Thank you for your consideration!

Answered by Game Design Committee

| Yes, this is legal.

102: How to deal with robots that do not pass inspection?

9-Oct-2018

Tournament Structure R2

There is a good discussion on VexForum with differing opinions and weighins from RECF RSM on how EPs are to deal with teams whose robots do not pass inspection.

Two rules appear: Rule <T03> a. If a Robot cannot report for a Match, at least one Student member of the Team should report to the field for the Match. If no Student Team members report to the field, the Team will be considered a "no-show" and receive zero (0) WP, AP, and SP.

<R2> 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) first question is does a team whose robot did not pass inspection and still on the schedule be allowed to send a representative to the field under <T03> and get credit for the outcome of the match, which is in essence the performance of the alliance partner?

B) second question - should a Head Referee disqualify the team for showing up to matches (with or without the robot) if it has not passed inspection for all matches the team shows up to? (a remedy suggested by an EP with the backing of the RSM)

C) third question - should a Head Referee allow a robot who has not passed inspection to compete while minor or trivial out of spec issues be fixed - i.e., over sized by a mere 1/16th of an inch?

D) does <R2d> specifically call for DQing the team every match until the problem has been fixed? Or does it mean the robot may not be placed on the field, but the team can show up and get credit? or does it mean the team MUST be marked as "No Show" and not allowed near the field?

<R2d> d. Referees or inspectors may decide that a robot is in violation of the rules. In this event, the team in violation will be disqualified and **the robot will be barred from the playing field** until it passes re-inspection.

Thank you for considering this complex set of scenarios and subquestions relating to <T03> and <R2> - I believe teams, EPs and RSM are all trying their best to deal with a case that does occur all too frequently in a fair manner that supports the growth of teams coming to competitions.

Answered by Game Design Committee

Per <R2d> as quoted, if a Robot is found to be in violation of Robot rules, then it should be barred from the field. <R2d> should be considered the same whether the violation is found during inspection, or during Match play; that is, they should be barred from the field and receive a Disqualification for any Matches which occur while the Robot is in violation. Passing inspection includes minor violations such as being oversized by 1/16".

If a Robot has passed inspection, but the Team decides to not field the Robot (e.g. if it is being repaired), then the Team will not be considered a "no-show" as long as a Student representative is sent to the field per <T03a>. This allowance does not apply to a Robot which has not passed inspection or has been found to be in violation - in these cases, <R2d> still applies, as explained above.

So, Teams must pass inspection before bringing their Robot to any Matches, and must ensure that they remain within compliance of all Robot rules throughout the day. We encourage event staff to work with all Teams to pass inspection, and keep Teams in the Match schedule if they are making a diligent effort to pass inspection in a timely manner.

72: R5e Clarification on Components from V5 Beta

10-Sep-2018

R5

R5e states:

Components obtained from the V5 beta program, including V5 beta firmware, are not legal for competition use. All V5 beta hardware can be identified by its lighter gray pre-production color. Robot Brains, Robot Batteries, Controllers, and Vision Sensors from the V5 beta have a "BETA TEST" stamp on them. Smart Motors and Radios do not have this stamp, but can still be identified by color.

I would like clarification on this both from a team mentor standpoint and an Event Partner standpoint. Does the Beta component restriction include things such as bulk motor/sensor wire, claw, push buttons, and motor cartridges? I don't know if those will be distinguishable from production V5 parts, and if not, they would be difficult to prevent usage of through inspection.

Answered by Game Design Committee

In general, using any components that were received for free as part of the beta program for competition use is not in the spirit of the VEX Robotics Competition and would be considered a violation of the V5 beta agreement. That said, to answer each of your specific questions:

- The Claw changed color from light gray to black, similar to the electronics, and is not legal for use.
- The Bumper Switch changed color from a white cap to a black/red cap, similar to the other electronics, and is not legal for use.
- Beta motor cartridges are functionally and cosmetically identical to production cartridges. Inspectors will not be expected to identify the difference between beta and production motor cartridges.
- Beta Smart Cables are functionally and cosmetically identical to production cables. Inspectors will not be expected to identify the difference between beta and production Cables.

189: Flashlight for Vision Sensor Clarification

20-Dec-2018

R6 R8

"<R6> "<R6> Official VEX products are ONLY available from VEX Robotics & official VEX Resellers. To determine whether a product is "official" or not, consult www.vexrobotics.com. A complete list of authorized VEX Resellers can be found at www.vexrobotics.com/find-a-reseller."

<R8 note G> "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."

Vex flashlight: <https://www.vexrobotics.com/276-2210.html>

Provided that it does not mimic any field elements, is it legal to use the vex flashlight to increase the consistency of the V5 vision sensor in driver control? If so, is it legal to use reflective or opaque non-vex components to project the light more accurately onto the flag? Thank you!"

Answered by Game Design Committee

Provided that it does not mimic any field elements, is it legal to use the vex flashlight to increase the consistency of the V5 vision sensor in driver control?

The color that a Vision Sensor "looks for" depends upon an expected lighting condition. This is why the same Sensor may require a re-calibration when looking at the same object in sunlight vs under a flashlight.

The intent of <R8g> was to prevent the scenario where a Robot's use of the Vision Sensor was impaired by an opponent's external and unpredictable light source. It should be an expected part of the design challenge to calibrate a Vision Sensor for a given event venue's lighting conditions. However, it would be impossible to prepare for lighting condition changes mid-match, such as an opponent introducing an external light source.

So - the use of a VEX Flashlight in conjunction with your own Vision Sensor is not, by itself, illegal. However, if your opponent is using a Vision Sensor to look at the same area that you are shining a flashlight on, this could be interpreted by a head referee as a violation of <R8g>. Thus, it is impossible to provide a blanket ruling that would cover all contexts.

is it legal to use reflective or opaque non-vex components to project the light more accurately onto the flag?

There are no rules preventing this, provided that no other rules are violated in the process. Specifically, the material must satisfy all of the constraints of <R7>, especially <R7e>.

9: To what extent is something a non-functional decoration?

16-May-2018

R8

So there has been some talk about teams painting the legal sheets of plastic red, blue, or even yellow and putting them on the sides of their robot in order to passively interfere with any vision sensor code. My question would be if this is legal or not. These types of decorations would for sure be made in such a way that it would be a legal non-functional decoration, but something tells me that the GDC does not intend for teams to do this. Do these decorations qualify under <R8>, or would they be pushing the limits on what is allowed under that rule?

Answered by Game Design Committee

<R8> Teams may add non-functional decorations, provided that they **do not affect the robot performance in any significant way or affect the outcome of the match**.

Robot elements which mimic visual elements of the field (such as the color pattern of the Flags), or could otherwise interfere with an opponent's Vision Sensor, clearly affect robot performance and could affect the outcome of a match. Thus, they would now be considered a functional element, and would not be permitted by R8.

This would be similar to using a giant decal. By itself, it 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" or not.

R7 and R8 will be updated in the June 15th game manual update to state this more clearly.

4: SG3/SG7 Clarification- Can Game Objects Cross the Autonomous Line During Autonomous?

15-May-2018

SG3 SG7

Hello,

Would it be legal for Game objects to cross the autonomous line during autonomous without penalty? Specifically game objects that are not contacting the robot while doing so.

The rulebook currently implies this may be illegal because of SG7:

"Scoring Objects cannot be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms."

An interpretation of this may be that game objects cannot cross the autonomous line as a robot mechanism cannot as in SG3:

"Robots may not do any of the following:

1. Contact the foam tiles on the opposing Alliance's side of the Autonomous Line."

Additionally if this is ruled illegal would accidental or unintentional violations cause the alliance to lose the autonomous bonus or be disqualified, for example a ball rolls over the line after a robot flips a cap or a ball rebounds off the net and crosses the line?

Thank You in Advance

7975F - Download Complete

Answered by Game Design Committee

There are no rules prohibiting Game Objects from crossing the Autonomous Line during the Autonomous Period. For example, if a launched Ball deflects off of a Flag and crosses the line on its rebound, this is both legal and expected.

SG7 would come into play if game objects were used as an extension of your Robot to intentionally impact an opponent's autonomous mode. For example, driving across the Autonomous Line and blocking an opponent with your robot is clearly illegal. By SG7, intentionally placing a Cap on the other side of the Autonomous Line to block an opponent would also be illegal.

151: Indirect Possession?

19-Nov-2018

SG4 SG7

Possession "...carrying, holding or encompassing" At a recent event a team was penalized for flipping a cap that had two ball resting on with another in their intake. They were said to be in violation of SG4 "Possess a maximum of one Cap and two balls at a time". Is flipping a cap with two balls on it considered possession of those two ball if there was no direct control of those balls?

Answered by Game Design Committee

It is always difficult to issue a blanket ruling on a snapshot description of an action during Match. With that in mind, in addition to the definition of Possession, SG7 should also be considered.

Possession - A Game Object status. A Robot has Possession of a Game Object if it is carrying, holding, or encompassing it.

<SG7> Game Objects cannot be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms.

A Robot which is using a Game Object to carry, hold, or encompass other Game Objects would be considered Possessing them.

Momentarily flipping a Cap, such that the two Balls on top of it fall off, would not be considered Possession. Lifting that Cap, such that the two Balls were lifted with it, would be considered Possession.

The relevant [Referee Training video](#) also uses the following guideline: if the Game Object turns with the Robot as the Robot turns, then it is probably being Possessed. This rule of thumb applies to the two examples given in the above paragraph.

253: < SG4 > Accidental Ball Possession Limit Exceeded and Remediation Options

26-Feb-2019

SG4

This is a multi-part question around < SG4 > The Possession limit of balls, and disqualifications.

These questions are related to the "Match Effecting" interpretations of excess ball possession.

< SG4 > Watch your Possession limit. Robots may Possess a maximum of one (1) Cap and two (2) Balls at a time. Note: Robots that interact with High Scored Caps while already Possessing a Cap will undergo additional scrutiny regarding this rule. 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.

During recent events as the pace of the game has picked up, it has become fairly common for robots to accidentally ingest more than the two-ball possession limit as the balls bounce around and ricochet into the intake mechanisms. At a recent event a team was disqualified for possessing 4 balls at the end of the match that were never used to score. Since the difference in the final score was 4-points and the two extra balls could have been used to score those 4 points the referee called for the disqualification as the possession was match effecting.

Definition: Part 1: Is there a scenario where accidentally possessing 3 or more balls is considered match effecting even if the balls are never used to score a flag? it has been argued that simply possessing excess balls is match effecting since the robot is now controlling balls that are not available for the opposing alliance to score (effectively "hoarding"). Therefore, If the balls in possession have the potential to score points that are equal to, or greater than the match differential, then should this be considered match effecting? (also similar to the point differential when caps that are knocked out of bounds being a match effecting disqualification)

Remediation Options?: Part 2: If simply exceeding the possession limit is not match effecting (i.e. Part 1), is it then permissible for a team announce to the referee that they are have excess capacity and they intend to safely discharge the excess balls in such a way as to not attempt to score? (either through reversing the intake, or if that isn't possible, discharge the excess balls with the launcher directly and safely into the net while avoiding changing the state of any flag)

Part 3: Finally, if a team does score a flag while unintentionally possessing more than 2 balls, could the team: a. announce to the referee they intend to de-score the illegal flag (that is return the scored flag to its previous state) before scoring additional points so as to make the accidental score impossible to affect the match? b. after scoring the flag, announce to the referee they intend to safely discharge all remaining balls in possession before scoring additional points?

This post is for clarification for future occurrences, and in no way trying to modify a previous ruling.

Thank you!

Answered by Game Design Committee

Part 1: Is there a scenario where accidentally possessing 3 or more balls is considered match effecting even if the balls are never used to score a flag?

Yes, for exactly the reason you imply - in a game with neutral Game Objects of a limited quantity, any additional Possession has the potential to limit the opposing Alliance's ability to play the game.

Part 2: If simply exceeding the possession limit is not match effecting (i.e. Part 1), is it then permissible for a team announce to the referee that they are have excess capacity and they intend to safely discharge the excess balls in such a way as to not attempt to score?

Discharging the extra Game Objects would not just be permissible, it would be required. If a Robot comes into Possession of more than the permitted number of Game Objects, then they should immediately attempt to rectify the situation. We would expect that the Head Referee would instruct the Team to do so, not the other way around as proposed here, but the philosophy is the same.

Part 3: Finally, if a team does score a flag while unintentionally possessing more than 2 balls, could the team: a. announce to the referee they intend to de-score the illegal flag (that is return the scored flag to its previous state) before scoring additional points so as to make the accidental score impossible to affect the match? b. after scoring the flag, announce to the referee they intend to safely discharge all remaining balls in possession before scoring additional points?

First, <SG4> does not contain "intentional" or "unintentional" verbiage, so whether they intentionally or unintentionally Possessed the extra Game Object is irrelevant; Toggling the Flag in this situation is a clear-cut violation of <SG4> (see [this similar Q&A](#) for more thoughts on this topic).

In general, it is a Team's responsibility to ensure that:

- a) Their Robots are designed to mitigate the possibility of controversial rulings (e.g. they cannot Possess more than the permitted Game Object limit), and
- b) Their strategies during a Match mitigate the possibility of controversial rulings (e.g. they do not Toggle Flags while Possessing three Balls).

We typically try not to comment on previous rulings (and appreciate that you did not ask us to). However, given the explanations above, the example that you provided is actually a pretty good one to demonstrate these principles.

At a recent event a team was disqualified for possessing 4 balls at the end of the match that were never used to score. Since the difference in the final score was 4-points and the two extra balls could have been used to score those 4 points the referee called for the disqualification as the possession was match effecting.

It is always difficult to provide a blanket ruling without the full context of a Match; however, based on the information given in this snapshot, this would be a correct interpretation of the answer provided above.

11: <SG8> Keep Game Objects in Field

18-May-2018

SG8

Depending on how taut the net is installed, is it conceivable that balls can get caught in the net. If they do, will these balls be released by the refs back into the playing field or are they considered out of play?

Since it is possible that the degree of tautness could vary from one tournament to the next, are event partners going to receive guidance on how taut to install the nets?

Visual Aid: The Turning Point Manual and Appendix A does not contain any instruction on how taught the net should be on the Turning Point playing field. If the net is secured on the top and bottom of the net (seen in figure one), it has too much slack and the balls get caught in the net.

Figure One <https://i.imgur.com/G0P771R.png>

We simply attached the net to the top horizontal pole in the net's second Row (Figure Two) this removed all slack, and the balls no longer got caught in the net.

Figure Two <https://i.imgur.com/IN7ALPm.png>

I am concerned this will result in discontinuity between fields from event to event, or even within a single event.

Answered by Game Design Committee

There is no specification for tautness in the Net; Teams should expect some variance, both due to manufacturing tolerance in the Net itself, and due to wear over the course of a season. One good way to avoid balls being "caught" in the bottom of the Net, other than by "pulling it tight", is to make sure that the rubber feet at the bottom of the Net are attached per the guidelines in the Field Assembly Instructions - <https://link.vex.com/docs/vrc-turning-point/field-assembly>

The building method you describe (removing slack by attaching the top an extra "row" down) would be permissible.

14: <VUR3>c further clarification

22-May-2018

VEX U

<VUR3>c is the rule allowing steel and aluminum as raw materials for making parts. What limits are placed on the form of raw material. Based on our previous Q&A, it's clear that simple round or square bar, plate, and sheet (industrial standard stock) would be fall under this rule, but what about the following examples, considered by many to be raw materials, that are not so clear:

1. threaded steel rod
2. steel pipe or tubing
3. rolled steel shapes (angle iron, C-channel, etc)
4. threaded aluminum rod
5. extruded aluminum shapes (angle, C-channel, small bars)
6. extruded aluminum shapes, specifically 80/20-style T-slot extrusions
7. Aluminum castings (produced by the team in their college's own foundry)

If #6 is allowed, would the commercial fasteners available for the T-slot (1/4-20 or M6 t-nuts) be legal, or would the team need to machine their own t-nuts from legal steel bars?

Answered by Game Design Committee

Point 7 (aluminum castings made in a college foundry) would be legal.

Points 1 and 4 (threaded rod) would be legal, if it is the same diameter/pitch as the screws already permitted by <R7c>.

The rest (pipe, tubing, angle, 80/20) would not be legal, other than VEX Robotics products per <VUR2>. These are not raw materials, as they have already undergone some amount of "post-processing" to add functionality.

The intent of <VUR2> is to provide access to a set of commercially available products that teams may utilize to build their robots. This is similar to <R5> for Middle/High School teams, just with a broader library for VEX U. The intent of <VUR3> is to encourage teams to explore fabrication techniques such as milling, 3D printing, injection molding, sheet metal punching, etc, to develop their own new robotic components in addition to those permitted by <VUR2>. Its intent is not for all commercial products made out of these materials to be legal.

143: VEXU - <VUR4> obligatory use of V5 in light of VEX suspension of new orders of V5 systems

13-Nov-2018

VEX U

I have been asked if there will be an adjustment to the requirement of VEXU teams to use V5 in light of VEX indefinitely suspending all new V5 system order?

VEXU is the only format that requires V5. VRC middle and high school have the option to run with Legacy Cortex systems.

Answered by Game Design Committee

At this point, there are no plans to modify <VUR4> and allow VEX U teams to use Cortex microcontrollers in official VEX U tournaments.

The REC Foundation, VEX Robotics, and the GDC have been working closely together to ensure that VEX U teams are supported as best as possible this season. Orders for VEX U teams are being expedited when possible, to ensure that currently registered teams have time to get their V5 equipment before official qualifying tournaments. Based on this data and monitoring, the VEX sales team and the REC Foundation Regional Support network are confident that the majority of currently registered VEX U teams have either received equipment, or have orders placed that will be fulfilled soon.

To modify this rule would be to change one of the most significant design constraints that all VEX U teams have worked within thus far. We acknowledge that the V5 rollout delays translated into build season delays for many VEX U teams, but these were delays and constraints that impacted all VEX U teams; to lift the restriction would be to cast aside the efforts of the teams that worked within this constraint to learn a new coding language, prototype without microcontrollers that were traded in, or in some cases delay starting their season as a whole.

VEX U teams who have not yet placed an order are an exception to the V5 ordering freeze, and can place an order by contacting sales@vex.com. VEX U teams who have placed an order but not yet received it should notify their REC Foundation Regional Support Manager or sales@vex.com to ensure that their order is prioritized accordingly.