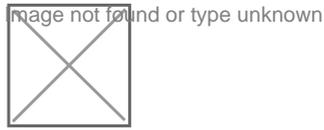


Q&A

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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3: Alliance tile defense

14-May-2018

Alliance Platform G12

As per <G12> note 2 states, The Alliance Platform is not included in Note 1. Robots which are Alliance Parked are still protected by <G12> against destructive or defensive strategies.

I'm asking for clarification on if the alliance tile would have the same <G12> rule as any regular field tile, such as legal pinning/trapping and pushing.

In short, would it be legal to push an opposing robot off their alliance tile in a non-destructive manner?

Answered by Game Design Committee

Please note that G12 refers specifically to the Alliance Platform, not the Alliance Starting Tile. Figure 3 in the Game Manual depicts the Alliance Starting Tiles, while Figure 5 depicts the Alliance Platforms.

I'm asking for clarification on if the alliance tile would have the same G12 rule as any regular field tile, such as legal pinning/trapping and pushing.

The Alliance Starting Tile is not treated any differently than any other field tiles with regard to Trapping. The Alliance Platform is not treated any differently than any other field element with regard to Trapping.

In short, would it be legal to push an opposing robot off their alliance tile in a non-destructive manner?

There are no rules prohibiting this, for either the Alliance Platform or an Alliance Starting Tile. The note in G12 is included because pushing a Robot off of the Alliance Platform carries with it a significant amount of risk that the Robot will tip over or become otherwise damaged.

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.

23: Clarification Regarding Pinning and Trapping

11-Jun-2018

Alliance Platform Center Platform G14

If a robot pushes the opposing robot against an Alliance or Center Platform, would it be considered pinning/trapping always in that scenario since the space is being restricted, would this be dependent on variables as to if the robot that is being pushed is able to drive up the platform such as according to the capabilities of the opposing robot, or it wouldn't be considered pinning/trapping because there was an avenue of escape but the opposing robot has a chance where it wasn't built to climb the Alliance or Center Platform?

Answered by Game Design Committee

Yes, holding an opponent against the Alliance or Center Platform such that they cannot escape would be considered Trapping.

28: Parking Platforms Closer to Blue?

15-Jun-2018

Alliance Platform Center Platform

As documented in this thread: <https://www.vexforum.com/index.php/33972-parking-platforms-closer-to-blue/> the parking platforms are positioned closer to the blue alliance when the field is assembled according to the assembly instructions. I am not talking about usual minor variance from human error during field assembly, rather I am saying that the assembly instructions themselves place the parking platforms closer to blue. Is this intentional? If so, why does the field specifications document not reflect the off-center nature of the parking platforms?

Answered by Game Design Committee

- I am not talking about usual minor variance from human error during field assembly, rather I am saying that the assembly instructions themselves place the parking platforms closer to blue. Is this intentional?

The Field Assembly Instructions correctly depict the intended placement of the Platform assembly. Because of the interface between the Platform, the mounting plate, and the tabs on the foam field tiles, a consistently perfectly centered Platform could not be guaranteed without sacrificing other constraints, such as leaving field tiles undamaged.

- If so, why does the field specifications document not reflect the off-center nature of the parking platforms?

The Field Appendix will be updated shortly to reflect the off-center nature of the Platform assembly.

It's worth noting that all Field Elements, including the Platforms, have an expected tolerance of +/- 1.0 inches. This is noted in G17 and on page 13 of the Field Appendix.

51: Consequence for alliance on opposite alliance's platform

17-Aug-2018

Alliance Platform

In the game manual definitions it states:

Alliance Platforms are denoted by their red or blue structural PVC pieces, and can only be used for Parking by Robots of the same color Alliance as the Platform.

So what is a referee to do if a robot from the opposing alliance gets on the parking platform, for example RED1 goes onto BLUE Alliance Platform with the intent of preventing either BLUE1 or BLUE2 from parking. Based on the definition this appears to be prohibited - so what would be the consequence?

Answered by Game Design Committee

There are no rules prohibiting a Robot from getting on to the opposing Alliance Platform. The usage of the word "Parking" in the Alliance Platform definition refers to the defined term "Alliance Parked"; that is, a Robot which sits on the opponent's Alliance Platform is not Parked, and no points are awarded to either Alliance.

61: Consequence for alliance on opposite alliance's platform, cont.

31-Aug-2018

Alliance Platform

This continues on the question Pascal asked about the following:

Alliance Platforms are denoted by their red or blue structural PVC pieces, and can only be used for Parking by Robots of the same color Alliance as the Platform.

This rule is ambiguous; it could be read in different ways.

1. Robots of the same color can only use these platforms for parking, for nothing else. Opposing robots cannot use these platforms at all.
2. Robots of the same color can only use these platforms for parking, for nothing else. But there is no restriction on use by opposing robots.
3. Any robot may use these platforms freely, but only robots of the same color count as parked when sitting on them.

I'm pretty sure #1 and #2 are incorrect, that #3 is what is intended, but apparently some referees are ruling that #1 is correct. Here are some of the problems with #1 and #2 that may need to be addressed if they are correct:

1. How would you determine if a robot of the same color is trying to park but goes too far, thus driving right over the platform, versus a robot of the same color intentionally driving right over the platform. They would look the same, only the intent determining the legality.
2. There would be restrictions on robots placing caps on the platforms since that would be using the platforms for something other than parking.
3. It would be hard for robots to pick up some of the balls on the platforms because they would likely touch the platforms and thus be using them for something other than parking.

All this reinforces my belief that interpretation #3 is what is intended, but it is not definitively what is written. Regardless of which interpretation is correct, this rule needs to be rewritten a little bit, and referees need to be using it the same way. Assuming interpretation #3 is correct, something like this is probably better:

"Alliance Platforms are denoted by their red or blue structural PVC pieces. Any robot may use them either Platform, but only Robots of the same color Alliance as the Platform can score points by Parking on it."

Answered by Game Design Committee

Any robot may use these platforms freely, but only robots of the same color count as parked when sitting on them.

This is the correct interpretation.

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.

148: Clarification of 18" height on platforms

18-Nov-2018

Alliance Platform Center Platform SG2

If a robot is parked on a platform and has a claw that hangs down slightly below the surface of the platform due to gravity, is it considered to be violating <SG2> which states that "Once fully outside of the expansion zone, the robot must return to a height of 18 inches"? In other words, is the rule referring to "height" or vertical displacement? For example, the height of a tree would not include the depth of its roots.

Answered by Game Design Committee

As explained in this [Q&A](#), the 18" height described by <SG2> is determined as the Robot height when placed on a flat floor. Therefore, the claw and any other protrusions are considered part of the Robot's height and should be included in the 18" height limit.

154: Cap Score when leaning on platform

20-Nov-2018

Alliance Platform Center Platform Caps

Is a cap scored if it is leaning on it's side where the Core is touching the side of a platform but outer rim rests on the foam tiles? Our debate regards the definition of the platform whether or not the PVC Sides/Bottoms are included in the Platform. In this Example, the cap's core is NOT touching both the foam tile and platform. This cap is also NOT resting on TOP of the platforms as ruled in a previous post.

EXAMPLE: The cap's Core is only touching the rounded (colored) edge of one of the 3 platforms and the outer rim is resting on the foam tiles. This cap is supported by the side of the platform. I think this cap would count as Scored because the entire Colored PVC Pipe is included in the definition of the Platform. The only thing excluded is the metal side structure in Fig. 11.

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. ...

Answered by Game Design Committee

The definition of Platform is as follows, with a portion bolded for emphasis:

Platform – One of three (3) raised surfaces made of **PVC and polycarbonate**, roughly 23.875" (606.4mm) by 21.70" (551.2mm), that can be used for Parking Robots.

You are correct in your interpretation that the blue/red/yellow PVC edges are included in the Platform. Thus, a Cap whose Core is contacting the PVC would be considered contacting the Platform, and would be considered Low Scored.

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](#).

249: Parking while partially supported by a game object or robot

24-Feb-2019

Alliance Platform Center Platform

Parking is defined in the game manual as

Parked – One of two Robot statuses.

- Alliance Parked – A Robot status. A Robot is Alliance Parked when it is:
 - o Contacting its Alliance Platform.
 - o Not contacting the foam field tiles or white tape.
- Center Parked – A Robot status. A Robot is Center Parked when it is:
 - o Contacting the Center Platform.
 - o Not contacting any Alliance Platform.
 - o Not contacting the foam field tiles or white tape.

The platforms are defined as

Platform – One of three (3) raised surfaces made of PVC and polycarbonate, roughly 23.875" (606.4mm) by 21.70" (551.2mm), that can be used for Parking Robots. See Figures 5, 9, and 10.

- Alliance Platforms are denoted by their red or blue structural PVC pieces, and can only be used for Parking by Robots of the same color Alliance as the Platform.
- The Center Platform is denoted by its yellow structural PVC pieces, and can be used for Parking by Robots of either Alliance.

Note: The structures on the sides of the Center Platform are not considered part of the Platform, and cannot be used for Center Parking. See Figure 11 and <SG9>.

Assuming no violation of SG9 and SG10, and given these definitions, would it be legal to park such that the robot is not fully supported by the platform? For example, if one set of a robot's wheels were touching the top, clear plastic part of the platform, with the other wheels supported by another robot, either from the same or opposing alliance, assuming no part of the robot is touching the foam tiles? Would it then also be legal if those wheels were supported instead by a cap or ball?

Also, would it still count as parked if, instead of the wheels being supported by the clear plastic on top of the platform, if the wheels were supported by the colored PVC pipe around the perimeter of the platform?

Would the answers to these questions be the same regardless of it is the center platform or alliance platform that is in question?

Thank you for your time.

Answered by Game Design Committee

Thank you for the specific question and for quoting the relevant rules.

Assuming no violation of SG9 and SG10, and given these definitions, would it be legal to park such that the robot is not fully supported by the platform?

"Fully supported" is not a listed requirement in the definitions of Alliance Parked and Center Parked, so yes, there are scenarios that exist in which a Robot can receive points for being Parked without being "fully supported" by the Platforms.

For example, if one set of a robot's wheels were touching the top, clear plastic part of the platform, with the other wheels supported by another robot, either from the same or opposing alliance, assuming no part of the robot is touching the foam tiles?

Yes, this would be considered Parked.

Would it then also be legal if those wheels were supported instead by a cap or ball?

Game Objects are not mentioned in the definition for Center or Alliance Parked, therefore a Robot can be Parked even if they are contacted (or supported) by a Game Object.

If a Robot is hypothetically balanced on Robots/Game Objects and touching only the clear plastic skirt on the sides of the Center Platform, this does not count as Center Parked. If a Robot is hypothetically balanced on Robots/Game Objects and touching the clear plastic top or yellow PVC sides, this does count as Center Parked.

Also, would it still count as parked if, instead of the wheels being supported by the clear plastic on top of the platform, if the wheels were supported by the colored PVC pipe around the perimeter of the platform?

The definitions of Alliance Platform and Center Platform include both the clear polycarbonate on the top and the colored PVC pipe, so there is no ruling difference between the two.

Would the answers to these questions be the same regardless of it is the center platform or alliance platform that is in question?

Yes.

63: Center Platform Autonomous Scoring

4-Sep-2018

Center Platform Autonomous

Does a team get points for autonomous if they part on the center platform?

Answered by Game Design Committee

Please review the Q&A [Usage Guidelines](#), specifically point 1, "Read and search the [Game Manual](#) before posting".

This question is answered in a few places. In the Definitions section:

Autonomous Bonus - A point bonus awarded to the Alliance that has earned the most Cap, Flag, and Alliance Parking points at the end of the Autonomous Period.

Note that "Center Parking" points are not included in the Autonomous Bonus.

In the Scoring section:

Autonomous Period Scoring:

- A Toggled High Flag is worth two (2) points.
- A Toggled Low Flag is worth one (1) point.
- A High Scored Cap is worth two (2) points.
- A Low Scored Cap is worth one (1) point.
- A Robot which is Alliance Parked earns three (3) points.
- An Alliance that wins the Autonomous Bonus earns four (4) points.

Note that no points are listed here for Center Parking.

In rule <SG3>:

<SG3> Stay on your side in Autonomous. During the Autonomous Period, **Robots may not do any of the following:**

1. Contact the foam tiles on the opposing Alliance's side of the Autonomous Line.
2. Contact the opposing Alliance Platform.
3. **Become Center Parked.**

166: Skills Competition - Handling Robot

3-Dec-2018

Autonomous

Is it permissible to retrieve the robot and reposition it in a legal starting position during the 60 second autonomous skills challenge?

ie. run a 15 second routine, pick-up the robot and take it back to a legal starting tile, then run "part 2" of the program?

Thanks.

Answered by Game Design Committee

No, this would not be legal. Appendix B 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.

None of the Appendix B rules permit this. Thus, it would violate a few different standard rules.

<G8> Hands out of the field. Drive Team Members may only touch the Team’s controls and Robot at specified times during a Match as per <G8a>. Drive Team Members are prohibited from making intentional contact with any Game Object, Field Element, or Robot during a Match, apart from the contact specified in <G8a>.

<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.

10: Descoring legal this year?

16-May-2018

Caps

After reading through the game manual, I didn't see any mention of descoring being illegal. Specifically, can you flip a cap that has been scored on top of a pipe?

Answered by Game Design Committee

If there are no rules prohibiting something, this generally means that it is legal. There are no rules prohibiting flipping the orientation of a Cap which is High Scored on a Post, thus it is legal. (provided, of course, that rules such as SG4, SG8, SG10 etc are still followed)

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.

170: Cutting Rubber Bands R4

6-Dec-2018

Flags Caps

Hello, I read the game manual and R4/R7 did not say anything about not cutting rubber bands. Since you can cut zip ties and 1/8" rope, can you cut rubber bands to string them together for usage with a mechanism? Thank you in advance.

Answered by Game Design Committee

Yes, this is legal, provided no other rules are violated in the process.

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.

190: Andy Zieglmeier Event Partner

20-Dec-2018

Caps SG8

Is it an option for the head referee to clarify expectations of SG8 before qualification matches begin? This would be in reference to the following - The 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.

Examples of clarification would be-

1. If your robot leverages a Pole scored Cap on the bottom side, from the field side only, this would be considered a violation of the note listed above. Reason for this is due to leverage from the field side only would result in knocking a Cap out of the field in most cases. Teams executing this move and "knocking" Caps out of the field, in this manner, will receive one warning and then be logged.
2. It is not possible to assume the intent of a robot to correctly de-score a Cap from a Pole in all scenarios. With that said, a robot that is correctly attempting to take possession of a Cap to bring it back to the field drops it out of the field will be notified that multiple attempts in that nature will be viewed as "knocking" Caps out of play.

My reasoning for asking for this clarification is due to volunteering as a referee or emcee at multiple tournaments this year and having teams knock two or more Caps out of the field and saying that they were trying to bring it back into the field. In clarifying the head referees expectations, this lowers the potential of alliances disagreeing with how the match is called.

It is not my belief that the game designers desired to see the Poles empty at the end of matches. I have not seen a robot be able to score a Cap on a Pole anywhere near the same time it takes to knock that scored Cap out of the field.

Answered by Game Design Committee

The VEX Robotics Competition does include some rules which are not inherently black-and-white, and rely on some amount of contextual referee interpretation for heat-of-the-moment decisions. See [this Q&A](#) for some more discussion on this topic.

With this in mind, it is reasonable and standard practice for a Head Referee to hold a "[Driver's Meeting](#)" to review and/or clarify key rules prior to an event.

However, it is imperative that any clarifications made during this pre-event meeting are in accordance with the guidance given in official materials like the Game Manual, the Referee Training Videos, the Referee Guide, and the Q&A. Augmenting these guidelines with additional qualifications or criteria would not provide a consistent experience for teams across all events.

Much like we avoid making "blanket" assumptions in the Q&A for these context-specific rules, we would advise Head Referees to avoid making "blanket" assumptions for their entire event. Due to the dynamics of head-to-head robotics games, and the creativity of VRC teams, it is impossible to account for all scenarios that you may encounter.

To directly comment on your specific examples:

If your robot leverages a Pole scored Cap on the bottom side, from the field side only, this would be considered a violation of the note listed above. Reason for this is due to leverage from the field side only would result in knocking a Cap out of the field in most cases.

This is an example of a blanket statement, "We will always interpret X as Y because it can only be Z", which may not always be true. It would not be in your (or the teams') best interest to provide this assumption.

a robot that is correctly attempting to take possession of a Cap to bring it back to the field drops it out of the field will be notified that multiple attempts in that nature will be viewed as "knocking" Caps out of play.

This is a better example of a guideline that is in line with <SG8> as it is written. A portion of <SG8> is quoted below, bolded for emphasis.

Any strategic, intentional, **or repeated** removal of Game Objects from the field would be considered a violation of this rule.

Removal of Game Objects from the field does not have to be strategic, intentional, AND repeated; "repeated" alone can be considered a violation of this rule. This is a good case where the Head Referee should keep track of the warnings in their [Match Anomaly Log](#) and watch for repeated instances from the same Team.

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.

212: What happens to a cap if sg8 is violated?

16-Jan-2019

Caps SG8

According to Sg8 balls can not be shot at caps on posts So let's say blue has a scored cap on a post and red comes over and shoots a ball and the cap falls off, will the cap be placed back on the post scored for blue due to the violation?

Answered by Game Design Committee

First, to be clear, shooting Balls at Caps is not considered a legal strategy. Please see this relevant similar Q&A post: <https://www.robotevents.com/VRC/2018-2019/QA/197>

will the cap be placed back on the post scored for blue due to the violation?

There is no precedent in the Game Manual for "un-doing" an action mid-Match because the action was the result of a rules violation. Instead, the Head Referee should determine if the action was Match Affecting, and assign a warning

or a Disqualification accordingly.

However, please note in the linked Q&A above, this particular action should result in an <S1> violation and a potential Disqualification at the Head Referee's discretion, regardless of if the action was Match Affecting or not.

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).

22: Other Questions

7-Jun-2018

Center Platform G16 SG10

Can a team extend tabs from their robot which extend out over the edges of the center platform to keep them on when an opponent is attempting to push them off? This is assuming they do not grapple the platform in any capacity, so they don't "exert force or pressure on opposite sides of an object to control its position."

Can a team use a potential energy based series of actions which begins as time runs out, enabling them to score or descore after time has expired?

Answered by Game Design Committee

Please review the [Q&A Usage Guidelines](#) before posting, specifically points 3 (quote the applicable rule), 4 (make a separate post for different questions), and 5 (use specific and appropriate question titles).

- Can a team extend tabs from their robot which extend out over the edges of the center platform to keep them on when an opponent is attempting to push them off? This is assuming they do not grapple the platform in any capacity, so they don't "exert force or pressure on opposite sides of an object to control its position."

It sounds like you're referring to SG10, quoted here for reference:

<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.

It is impossible to provide a blanket ruling on a hypothetical design. However, a static mechanism which extended past the edge of the Center Platform and did not clamp or anchor the robot to it would likely not violate this rule. A mechanism which reacted against multiple sides of the Center Platform, anchoring or latching the Robot to it, would likely violate this rule.

Of course, this assumes that no other rules, such as SG2, are violated in the process.

- Can a team use a potential energy based series of actions which begins as time runs out, enabling them to score or descore after time has expired?

Please see G16, quoted here for reference:

<G16> It's not over until it's over. Scores will be calculated for all Matches immediately after the Match, once all Game Objects, Field Elements, and Robots on the field come to rest.

Provided that no Robot or Safety rules were violated, there are no rules prohibiting this, and the scores would be calculated once all robots and game objects have come to rest. That said, please remember G2 - "common sense always applies in the VEX Robotics Competition".

65: Center Platform

6-Sep-2018

Center Platform

1. Can we make a device that would flip the opposing robot off the center platform?
2. Can we made a wedge that would slide under the opposing robot that would allow our robot to slip under eventually push the robot off the center platform.

Answered by Game Design Committee

We apologize for the delay in answering this question. Please see this similar question, as well as the questions that it references: <https://www.robotevents.com/VRC/2018-2019/QA/76>

78: How many robots can be parked on the center platform?

15-Sep-2018

Center Platform

Can multiple robots be parked on the center platform?

Example: A. Two robots of the same alliance fit on the center platform. At the end of the match, both of the robots are fully on the center platform. Are both of these are scored as center parked? B. Two robots of opposing alliances fit on the center platform. At the end of the match, both of the robots are fully on the center platform. Are both of these scored as center parked?

Answered by Game Design Committee

There are no restrictions on the number of Robots that can receive points for being Center Parked.
In both of your examples, both Robots would receive points for being Center Parked.

85: Asked more than once but not answered.

21-Sep-2018
Center Platform

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

In the future, please review the [Q&A Usage Guidelines](#) before posting. Repetitive posts clutter the system and slow down response times. Furthermore, some questions may take additional time to review internally. While we do apologize for the delayed response, there are no guarantees given that questions will be answered before a given date.

This question is a duplicate of the following, and has been answered here: <https://www.robotevents.com/VRC/2018-2019/QA/15>

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://www.robotevents.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?

149: Tipping off platform leading to a violation of SG2

18-Nov-2018

Center Platform G11 G12 SG2

Is it considered to be a violation of <G11> "You can't force an opponent into a penalty" if in competition for the center platform one robot tips, which causes it to violate <SG2> a) that states that a robot must return to 18" height when outside of the expansion zone. In other words, is it considered to be forcing a robot into a penalty if the opposing alliance's robot is more than 18" when tipped over (not intentionally) in a battle for the center platform, or is this protected as part of Note 1 of <G12>?

Answered by Game Design Committee

Let's look at the specific verbiage of G11:

<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.

Pushing a Robot off of the Center Platform, such that it accidentally or momentarily ends up expanded beyond 18" tall, is not the same as intentionally forcing an opponent into a rules violation. A better example of forcing an opponent into an 18" height violation would be to grab an expandable Robot mechanism and lift it up beyond 18".

Conversely, if a Robot falls off of the Center Platform and momentarily ends up expanded beyond 18" tall because of its fall, and does nothing else to affect the match in this expanded state, then it would also not receive an SG2 violation; at most, it should only receive a warning.

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.

57: Flag Lubrication

22-Aug-2018

Flags

Our flags have increased friction after only two weeks. Is any lubrication allowed?

Answered by Game Design Committee

No, this would not be legal, as this would be considered a modification that affects the performance of the field. Teams should be prepared for this variance.

99: Can I add this piece that I made to the top of the flag posts?

5-Oct-2018

Flags

As I was assembling my field elements, I realized that with the top flag being able to be lifted off the post that could lead to flag assemblies being lost or damaged during storage, handling, or moving from one event to another. I designed a simple plug with a lip around the edge that goes into the top of the flag post and keeps the flags from being able to be lifted off the top of the post. The cap does NOT interfere with the movement of the flags in ANY way. I would like to know if these would be legal to leave on the posts during competitions?

If not, I can still use them for storage and handling. It's a friction fit and they pull out with a little effort. I have provided the .STL file if anyone out there would like to print one to check it out. Simple design for a simple solution for a simple problem. Printed in PLA, .4mm nozzle, .2mm layer height, 40% infill.

Here is a link to a zip file containing 2 images and the STL file: https://gv1-my.sharepoint.com/:u:/g/personal/pruckelshaus_gvsd_org/EUflJ4uxA81KkoQvHOgSUIYB3wp08YBTIx8BVOaR0kQybg?e=JiAawY

Answered by Game Design Committee

This piece is not legal for use during official VEX Robotics Competition Turning Point gameplay. While Event Partners may develop additional parts in order to improve transportation of fields between events, these parts should be removed during official Matches.

142: Nested in detent, or not nested?

13-Nov-2018

Flags

Toggled – A Flag status. A Flag is Toggled when the Flag's pointer is not nested in the Detent

<https://imgur.com/a/A8cRcsT>

Should a flag rotated like this be considered nested in detent or not?

(in case image doesn't appear see also <https://www.vexforum.com/index.php/35628-nested-in-detent-or-not-nested/0#p288090>)

Answered by Game Design Committee

Thank you for providing an image to help demonstrate this rare edge case. As quoted, a Flag is considered Toggled if the Flag's pointer is not nested in the Detent. To be "nested" in the Detent, the pointer would need to be resting anywhere in the valley between the two points of the Detent.

As the pointer is to the left of the valley, this Flag would be considered Toggled for the Red Alliance.

168: Making scoring go a little faster

4-Dec-2018

Flags

I was wondering if it was allowed to paint the Detent a different color to help facilitate scoring both autonomous and end of match a little faster. The black on black makes it very difficult from a far to see if the Pointer is out of the Detent. While yes the Flags are there to make it more clear, when the flag is turned just a little bit and the Pointer is out of the Detent refs would have to get up close to the flag to see if it is scored one way or the other. This slows down match times and match cycles in turn. This would provide no change to the current field set other than a color difference. We have orange acrylic paint ready to change the color on our practice field but if this is allowed we would change our 4 competition fields as well.

Thank you.

Answered by Game Design Committee

Yes, this is legal, provided that it does not impact Robot or field performance in any way. To help ensure this, we would advise painting with care and moderation, only on the outside face of the Detent. We would not advise letting any paint get on to the surfaces that slide against each other, or the inside surface that is against the PVC pipe.

59: Toggled Low Flags When Raised

24-Aug-2018

Flags

According to the definition of *toggled*: "A Flag status. A Flag is Toggled when the Flag's pointer is not nested in the Detent and the Flag is not touching a robot of the color Alliance for which the Flag would award points. When Toggled, points are awarded to the red Alliance if the pointer is to the left of the Detent, and awarded to the blue Alliance if the pointer is to the right of the Detent. In the case that the Flag pivots beyond the containing PVC structure, the Flag is no longer Toggled. See Figures 18-20 on the following page."

It is possible for a robot that is below the legal height limit to raise a flag above the detent structure as there is nothing preventing a flag from being raised up the PVC pipe.

Say a low flag is currently toggled for the blue alliance. A red robot drives into the blue flag with the intent to rotate the flag such that it becomes toggled for the red alliance. When driving into the blue flag, the flag incidentally gets raised on top of the robot (say on a wedge). The match timer ends and the red robot becomes disabled holding the flag in a raised position.

When scoring the match, the low flag appears very close to either being toggled for the blue alliance or not being toggled for either alliance (neutral). According to the definition of toggled "A Flag is Toggled when the Flag's pointer is not nested in the Detent... When Toggled, points are awarded to the red Alliance if the pointer is to the left of the Detent, and awarded to the blue Alliance if the pointer is to the right of the Detent" Because the flag is raised too high up, It is unclear if the pointer is to the right and scored for the blue alliance.

Because the pointer is not nested in the detent, is it scored for the blue alliance? Or would this scenario fall under the case of "In the case that the Flag pivots beyond the containing PVC structure, the Flag is no longer Toggled"

Answered by Game Design Committee

It is impossible to provide a blanket ruling on a hypothetical scenario. In this close situation, the Referee would need to make a visual determination whether the pointer was to a side of the Detent or not. As you quoted, from the definition of Toggled:

points are awarded to the red Alliance if the pointer is to the left of the Detent, and awarded to the blue Alliance if the pointer is to the right of the Detent

So, if a referee determines that the pointer is not "to the right of the Detent" (or if it is too close to call), then no points would be awarded.

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.

231: Blocking Opponent Shots, Vertical Expansion Limit.

3-Feb-2019

G11 G13 SG2

Hi Again,

This is the second question that I have been asked to rephrase and repost.

The game manual states, in <SG2a> that "Once the match begins, a robot which is contacting the expansion zone may expand vertically with no height limit. However, once fully outside the expansion zone (ie, no longer contact it), the robot must return to a height limit of 18" tall." The follow-up info also states that <A robot which interferes with gameplay as a result of violating this rule, such as scoring a high flag or blocking a launched ball while outside the expansion zone, will result in a disqualification, whether the interference is match affecting or not.> The game manual also states in <G11> that <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.>

The issue then follows: if a robot is designed to block opponent shots, say by expanding horizontally over the opponent robot, and the opponent robot fires a shot, causing the defending robot to expand over 18", who would be at fault? The game manual states through <G13> that offensive robots get the "benefit of the doubt". In this instance, the defending robot is not actively seeking to break the rules, and has taken reasonable measures to prevent this (through proper bracing, good build quality, etc. etc.) If the offensive robot however, then decided to shoot the ball and cause the defending robot to violate the 18" limit (perhaps through a powerful launcher), who would be at fault? The offensive robot could have driven somewhere else and fired the shot, and if they had fired the shot with the intention to cause a rule violation, would also receive scrutiny from <G11>.

Answered by Game Design Committee

If a robot is designed to block opponent shots, say by expanding horizontally over the opponent robot, and the opponent robot fires a shot, causing the defending robot to expand over 18", who would be at fault?

In this hypothetical situation, <G13> would apply, quoted here for reference with a portion bolded for emphasis.

<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 Robot which is attempting to block the opponent would be considered the defensive Robot, and would be considered in violation of <SG2>.

Furthermore, if the intent of such a "blocker" mechanism (as defined in your question) is to prevent launched Balls from reaching their intended target, and it extends past 18" tall when it succeeds in preventing a launched Ball from reaching its intended target, then the following portion <SG2> would likely apply on its own, even without <G13>.

Note: A Robot which interferes with gameplay as a result of violating this rule, such as Toggling a High Flag **or blocking a launched Ball while outside of the Expansion Zone**, will result in a Disqualification, whether the interference is Match Affecting or not.

We would advise that Teams attempting this type of strategy design their Robot such that they minimize the possibility of any edge cases such as these.

232: clarification on trapping.

3-Feb-2019

G11 G13 G14

This question focuses around "trapping", which is defined in the game manual as a robot status where "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> also states that there should be no trapping for more than 5-seconds, and is effectively over once the opposing robot has driven away by 2 feet and has driven away for 5 seconds.

Trapping however, has a loose definition of "avenue of escape" and "confined area of the field". Pinning, has also not been defined. If a robot were to push an opposing robot, this would be deemed legal, because there is open space around the robot. If a robot were to push another robot into the wall, and then back away, leaving enough space in the front and back for the robot to escape, but would push the robot every couple seconds, would this be legal? The defending robot in this instance, is not technically trapping the robot as it has not confined the robot, the robot can escape, however is not doing so fast enough, and the defending robot is pushing (which, is not trapping), the robot ever so slightly. Would this be considered trapping?

A follow up to the above question, what is the definition of an avenue of escape? If there is a robots-width of space between a post and my robot, then that should be sufficient for a count to NOT be held against me. By that sense, if a robot is in a corner, and caps/balls are piled beside them (which should not be hoarding, the caps are not in the corner because the corner is occupied by a robot), and can not escape, it should not be a trap, correct?

We would also like to seek clarification on pushing, there have been many referees at local tournaments who start counting as soon as robot-robot contact has been made (ie, RED1 pushing BLUE1 away from flags so they can not line up for flags), however, as per the rules, this should be legal, correct? Now, suppose a robot, say BLUE1 were to push RED1 into their partner, RED2, in the middle of the field. RED1 has a clear avenue of escape, all RED needs to do is have RED2 drive away, and RED1 can then drive away. Would this still be counted as a trap? Now what if BLUE1 was preventing RED1 from moving, who was then preventing RED2 from moving. If BLUE1 backed away, then returned to trap RED2, should the count be restarted (BLUE1 was never defending RED2) or should the count continue (BLUE1 has been preventing RED2 from moving as well, albeit indirectly). It would be nice if the GDC could give clarifications on these, as the local refs have had very unclear rules, and there has been a lot of variation with the rulings, which means that students are often left confused to as why one team at one tournament could act in such a way, whereas these actions were ruled illegal at another tournament.

The last question, if RED1 were trapping BLUE1 against a perimeter, and BLUE1 was then incidentally trapping RED2, would there also be a count against BLUE1? Even if RED1 were to back away at 5 seconds, it would be almost impossible for BLUE1 to also move away fast enough (especially if the trap has put them in an awkward position) to allow RED2 to move away. Again, this refers to <G13> and <G11>. If BLUE1 were an offensive robot about to score, but then got trapped by RED1 - they should not be at fault, and should not be allowed to be forced into a penalty, correct?

Thank you for taking the time to carefully read and answer these questions!

Answered by Game Design Committee

Your question(s) appear to be answered by [this similar Q&A](#). If this is not the case, please feel free to rephrase and re-submit. Please especially take note of the following portions:

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.

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!

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.

50: <G12> Incorrect description of figure 22

17-Aug-2018
G12

In the description in Note 3 it refers to BLUE2 in Figure 22. There is no BLUE2 robot. Caption in figure 22 is correct. This applies to August 15 version of the Game Manual.

Answered by Game Design Committee

Thank you for pointing this out. We have updated the web and VRC Hub accordingly.

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:

- 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.

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://www.robotevents.com/VRC/2018-2019/QA/15>

<https://www.robotevents.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.

241: Referee Definition of Egregious

11-Feb-2019

G12

Hello,

It has recently come to my team's attention that "egregious" is no longer defined by VEX in the Game Manual. In the Toss Up Game Manual, "egregious" was followed by the parenthetical "(Match Affecting)", drawing clear correlation between the two definitions. For example: " <G7 (2013-2014)> During a Match, Robots may be operated only by the Drivers and/or by software running in the onboard control system. A Coach may not touch his/her team's controls anytime during a Match. Violations of this rule will result in a warning for minor offenses which do not affect the match. Egregious (match affecting) offenses will result in a Disqualification. Teams who receive multiple warnings may also receive a Disqualification at the head referee's discretion."

However, when looking through the Turning Point Game Manual, no such clarification exists. "Egregious" is left as a stand alone word with no clarification on how the word can be defined. For example: "<G12 (2018-2019)> 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."

Because of this, should it be assumed that Vex no longer associates the word "egregious" with "Match Affecting," or can it be assumed that the word and phrase can still be paired? The cause for this question stems from a tip in one of our matches. The referee argued that the tip was unintentional, and therefore disqualification was not applicable. In addition, we were not able to argue that it was an "egregious offense" due the vagueness of the word's dictionary definition "outstandingly bad; shocking," as this definition is difficult to interpret in the context of robot interactions. If there is damage/tipping caused to a robot that is match affecting, would the action be "egregious", or does "egregious" depend solely on the severity of the action in question?

Thank you for your time and attention in this matter.

Answered by Game Design Committee

should it be assumed that Vex no longer associates the word "egregious" with "Match Affecting," or can it be assumed that the word and phrase can still be paired?

Your first assumption is correct. The breaking apart of "egregious" and "Match Affecting" in recent Game Manuals is a conscious and intentional verbiage change.

It is worth noting that just like Q&A's, the only rules which apply to a given game is that game's official Game Manual. Previous rules, interpretations, or precedents can not always be assumed to apply.

The referee argued that the tip was unintentional, and therefore disqualification was not applicable. In addition, we were not able to argue that it was an "egregious offense" due the vagueness of the word's dictionary definition "outstandingly bad; shocking," as this definition is difficult to interpret in the context of robot interactions. If there is damage/tipping caused to a robot that is match affecting, would the action be "egregious", or does "egregious" depend solely on the severity of the action in question?

There is no VRC-specific definition of the term "egregious". The dictionary definition that you quote is the intended one when applying it to <G12>. Note that <G12> does not include "Match Affecting" verbiage, and only includes "intentional or egregious" verbiage.

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.

192: Blocking Opponent Shots

20-Dec-2018

G14 SG5

Hi There,

Would it be legal for a team, let's say BLUE1, to have a large piece of legal material, provided they have passed inspection and are within the expansion limits (18"x18"x18"), on field used *solely* with the intent to block opponent shots. In this hypothetical scenario, RED1 has lined up to take a shot at two flags, and BLUE1 has driven in front of RED1. From here, there are a few scenarios that can occur, I will outline them below.

Scenario 1) BLUE1 is holding a ball and actively pushing RED1, while RED1 is not showing any attempt to escape (eg. no drive motion on joysticks). RED1 fires two balls, both of which hit BLUE1's plate and then bounce off. Would this be legal, or would it go past the possession limits outlined in rule SG5?

Scenario 2) BLUE1 does not have any game objects and is actively pushing RED1, while RED1 is not showing any attempt to escape. Both balls are fired, again bouncing off. Would this be legal?

Scenario 3) BLUE1 has game objects and is actively pushing RED1, while RED1 is actively fighting back. RED1 is approximately 1 tile away from the platforms, and BLUE2 is behind RED1, however they are just "passing through", on their way to score their own game object and in no way showing an intent to block RED1. RED1 fires, again both balls bouncing off BLUE1's blocker. Would this violate SG5 for hoarding, as well as G14 for trapping. Would BLUE be called for trapping if this situation passed 5 seconds? There is an open avenue for espace on both sides of the RED1 robot, RED1's robot may not however, be capable of 'strafing', or sideways motion and are thus unable to back away.

Scenario 4) This is similar to Scenario 3), however BLUE1 is not holding any game objects (scenario 4 is to scenario 3 as scenario 2 is to scenario 1).

Scenario 5) BLUE1 has game objects, and is pushing both RED1 and RED2. RED is being pushed towards the alliance platforms, RED1 and RED2 both fire two balls and both are blocked by BLUE1 - what call (if any) would be made?

Last question - if BLUE1 has this blocker, but RED1 comes underneath and forces the blocker above 18" (for example, by bending a piece of metal). What is the ruling here? Would it be different if RED1 bent it with for example, an arm or lifting mechanism, or if RED1 bent it with the sheer force of hitting it repeatedly with a ball.

Thanks, Anthony.

Answered by Game Design Committee

We apologize, but it is always difficult to rule absolutely on hypothetical scenarios, and we are having a hard time understanding the root of the question that you are attempting to ask.

Please review the [Q&A Usage Guidelines](#), specifically points 1, 3, 4, and 5, and re-submit your question. It will be much easier to provide a clear interpretation if you phrase your question concisely and in terms of a specific rule.

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".

80: Minor Field Damage Clarification

16-Sep-2018

G18 R3

A question from one of my team members:

<G18> 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.

<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.

<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.

In the quarterfinals of a local tournament yesterday, the red alliance ran into a low flag in autonomous in such a way that it pivoted past 90 degrees (which isn't supposed to happen). Red also passed the center line in autonomous and blue scored more points. Here is a recording of the incident.

<https://drive.google.com/file/d/12NUL5WUIM0Lj3L41kPdXv0H2qCM06qZx/view?usp=sharing>

After some discussion, the head referee ruled that the damage to the field was too severe to continue playing the match. So, they reset the flag, told the four teams to reset their robots, and restarted the match. This time, red won the autonomous period, and then they ended up winning the match by 3 points (the winner of autonomous was match affecting).

I understand that the head referee's decision is final and that the calls for replays are made at their discretion. But in the same situation in the future, what is the correct call? Is the match replayed? Is the match continued with blue winning

autonomous? Is the red robot disqualified or disabled?

Thank you!

Answered by Game Design Committee

First - as you noted, replays are always an option at the discretion of the Head Referee and Event Partner. Once a decision to replay has been made, the previous match is no longer relevant in any Match Affecting determinations, should they arise. Decisions made at an event by a Head Referee are final, and cannot be overturned by Q&A post after the event.

In this specific instance, for crossing the Autonomous Line, the Red Alliance would have been assessed an <SG3> violation and the Autonomous Bonus would have gone to the Blue Alliance.

In the future, over-rotating a Flag does not need to be cause for a replay. However, if done intentionally or repeatedly, it could be considered a violation of <S1>. Thus, <G10> may apply:

<G10> 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.

If the match had not been replayed, then the over-rotated Flag would have been considered in any Match Affecting determinations (i.e. if the Match ended up being within the point value of one over-rotated Flag).

195: Loose leaning Poles

21-Dec-2018

G18

http://youtu.be/Oj_IK7WX9sg

The attached video shows a leaning/loose pole at our last competition. This is the beginning of the match with the starting center flags in the neutral position. The leaning and loose swinging of the pole cause most attempt to turn the middle and upper flags to flip all the way back against us. In the video you can clearly see the pole at rest leaning toward red, then swing forward and back causing the weight of the flags to swing them back against us. This does not occur coming from the other side, in fact, just a glancing hit would turn the flag from the other side.

Does this inequity constitute a field malfunction and justify a reply (assuming it was match affecting)? If so, is it permitted to request that poles be straightened and/or better secured before a match?

Thank you-

Answered by Game Design Committee

The REC Foundation has released a document that provides some guidelines for what should and should not constitute a replay. This document should not be used as an absolute list of what is and is not allowed, but helps to frame the spirit of the rule and guide EP's / head referees in their decision. It can be found here:

<https://www.roboticseducation.org/documents/2018/10/vrc-replay-criteria.pdf>

The document includes the following item:

Field elements detaching or moving beyond normal tolerances.

Field tolerances are defined by <G17>, partially quoted here for reference:

<G17> Be prepared for minor field variance. Field Element tolerances may vary from nominal by ± 1.0 ". Game Object tolerances and weights may vary from nominal by ± 0.25 " and 10 grams respectively. Game Object placement at the beginning of Matches may vary from nominal by ± 1.5 ". Teams are encouraged to design their Robots accordingly.

It is impossible to retroactively issue a blanket ruling on a specific event that has already occurred, but in general, it will be the Head Referee and Event Partner's responsibility to determine if a given field is set up within spec. If you have a concern about a field's construction, you are always welcome to discuss it with the Head Referee and/or Event Partner, but it will be at their discretion to determine if the field in question is within tolerance. Teams should be prepared for, and design their Robots to accommodate, minor field variances.

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.

109: <G6> and Substitute Drivers

16-Oct-2018

G6

This question was asked in the VEXiQ Q&A: "<G6> Drivers switch Controllers midway through the Match. Each team shall include two Drivers. Teams with only one Student in attendance at an event are granted an allowance to use another qualified Driver from the event. No Student may fulfill the role of Driver for more than one Team at a given event, or in a given season.

Does the Allowance to use another qualified driver bind that substitute driver to the team? Or, if there is a team "with only one Student in attendance" is the substitute driver exempt from the season rule as long as they only substitute for that day?"

And responded to: "The intent of the more specific language in G6 was to penalize organizations that were using their best drive team to qualify multiple teams to their Regional / State / World championship. This behavior is not within the spirit of the VEX IQ Challenge.

Event Partners should bear in mind G3, and use common sense when enforcing this rule. It is not our intent to punish a Team who may change Drivers over the course of a season due to illness, changing schools, conflicts within a Team, graduating up to VRC, etc. We do not expect EP's and referees keep a roster of any student who has ever driven for a day.

To answer your specific question, a student who fills in as a "substitute" Driver for a single day/tournament due to a Team having only one student in attendance at the event would not fall under the intent of this rule."

Would VRC Event Partners have similar flexibility in enforcing this rule due to circumstances stated above?

Answered by Game Design Committee

As always, this rule should be read with <G2> in mind, and the spirit of the answer that was given in VIQC applies to VRC as well. The intent of <G6> is to not allow 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.

Conversely, a Student driver who is still associated with another Team *may not* fill in as a "substitute" driver for a single day. VRC does not require more than one Student for any given Match, like VIQC does, so "substitute" drivers should never be necessary.

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.

5: Pneumatics for VEX-U robots

15-May-2018

Other VEX U

From the VEX-U appendix,

<VUR5> There is no restriction on the number of V5 Smart Motors that Robots may use. No other motors, servos, or actuators are permitted, including those sold by VEX (e.g. the 2-Wire 393 Motor).

Is the term "actuator" referring also to pneumatic cylinders (often called actuators in industry), meaning that VEX-U is not permitted to use a pneumatic system this season? Or is VEX-U permitted to use pneumatics as in past years: 2 air tanks at 100 psi and unlimited number of air cylinders?

Answered by Game Design Committee

Yes, VEX U teams are still permitted to use pneumatic systems. This will be clarified in the June 15th Game Manual update.

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.

20: Clairification on the Height of Posts

2-Jun-2018

Other

While discussing with a group of people, I realized that the height of the poles in the Field Appendix is different than the height in the Game Manual. The definition of Post in the game manual states that the 4 short posts are 20" tall, while the 2 tall posts are 32" tall. According the Field Appendix, it states that the 4 short posts are 23" tall, while the 2 tall posts are 34" tall. I currently don't have a field with me and I'm planning on building a robot for this season, so I would like clarification as to which heights are correct.

Post – One of six (6) vertical PVC pipes attached to the field perimeter with a diameter of approximately 0.84" (~21.5mm) where Caps can be Scored. • Four (4) Posts (furthest from the Flags) are roughly 20" (508.0mm) tall. • Two (2) Posts (closest to the Flags) are roughly 32" (812.8mm) tall.

Answered by Game Design Committee

The Field Appendix is correct, the short and tall Posts are 23" and 34" tall, respectively. This was a typo in the Game Manual and will be fixed in the June 15th update.

116: Laser/Light Guidance for Aiming

21-Oct-2018

Other

My students have asked if any sort of passive aiming device (i.e. a laser pointer--so long it was safe--or other light source like a flashlight) can be attached to their robot. They would like to use it in conjunction with a ball launcher.

Answered by Game Design Committee

No, this would not be legal.

171: World Spots from Signature Events

7-Dec-2018

Other

If a team earns a Worlds spot at a Signature Event, then wins a Worlds spot at their home State event, does that State spot roll down to the next team in the state (Skills list, etc) or is it lost and not replaced?

Answered by Game Design Committee

The purpose of this Q&A is to answer specific rules questions regarding VRC Turning Point. For questions regarding the REC Foundation Qualification Criteria, please contact your REC Foundation [Regional Support Manager](#).

193: Latest FW inspection waiver period

21-Dec-2018

Other

Section 4 Overview "All robots will have to pass inspection"

From V5 inspection checklist... "Robot Brain has the latest firmware listed on VEX.com/firmware"

Will the GDC consider creating an "early adopter"/UAT phase after firmware release where the latest update is optional. It seems reasonable to give teams a chance to regression test their code and functions should a new code release just before a competition.

Thank you-

Answered by Game Design Committee

Thank you for the suggestion. At this time there are no plans to implement such an allowance.

218: Replays after White Screen of Death?

19-Jan-2019

Other

As documented in [this thread](#) on the forum, many teams have experienced what has been named a "White Screen of Death". When a WSOD occurs, the V5 Brain shows a pure white screen and from all information available, seems to be completely frozen. It does not execute user code, does not respond to joystick input, and cannot be shut down by holding down the power button. The only way to resolve the issue is by unplugging the battery and plugging it back in, which seems to have fixed the issue in all reported cases.

This has the potential to affect not only the outcome of individual matches, but also the outcome of the entire tournament, as was seen today at an event in AZ in the final match, [Link](#)

As the video shows, one of the red robots freezes immediately after contacting the field perimeter and, from information gathered from those at the field, experienced a WSOD. This team was also running the latest firmware, 1.0.5, with charged batteries. This was undeniably potentially match affecting.

While writing this question, yet another team posted on the forum reporting this issue during finals in [this thread](#)

Students have no control over this issue, and when it happens it is devastating. Despite this, the rules currently have no mechanism for initiating a replay in this frustrating and disappointing circumstance.

Would the GDC consider making an update to the game manual or a ruling here that allowed one of the following?

1. A replay is called in the case that a robot experiences a WSOD and it is determined by the head referee that it potentially changed the outcome of the match.
 - As WSODs are rare, this allowance would most likely not impact the runtime of the event too much.
2. If the robot is in a location close to the edge of the field a member of the drive team would be allowed to reach in to the field as safety allows and with actions similar to those described in G8a (in this case, most likely unplugging and replugging the battery).
 - This would not cause any delay for the tournament, and in many cases is very easy to do.
3. If the WSOD occurs during the autonomous period, during the pause period between autonomous and user control a member of the drive team would be allowed to carefully step on to the field and perform actions similar to those described in G8a (in this case, most likely unplugging and replugging the battery).
 - This would not cause any meaningful delay for the tournament, and in many cases is very easy to do.

I understand that the GDC might prefer to wait on making these additions (if it does indeed wish to make them) until next season, but I argue that this situation needs to have some solution put forward this season considering the effect it has had on the competition and the much greater potential effects it could have at the world championship.

Edit: It seems that my formatting in the editor is not being respected by the website, so I apologize for any strange formatting.

Answered by Game Design Committee

Thank you for this well-thought-out question and suggestion. At this time, a control system crash (whether on V5 or Cortex) is not an official requirement or cause for a replay. Official replay guidelines can be found in the REC Foundation's [VRC Replay Criteria](#) document.

The only official warranted replay condition for a technical issue like this is when a VEXnet Match Controller disables both Robots on the same Alliance, which can be confirmed by looking at the status lights on the Driver Interface.

238: Vision sensor background Interference

10-Feb-2019

Other

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.

256: Possession

1-Mar-2019

Other

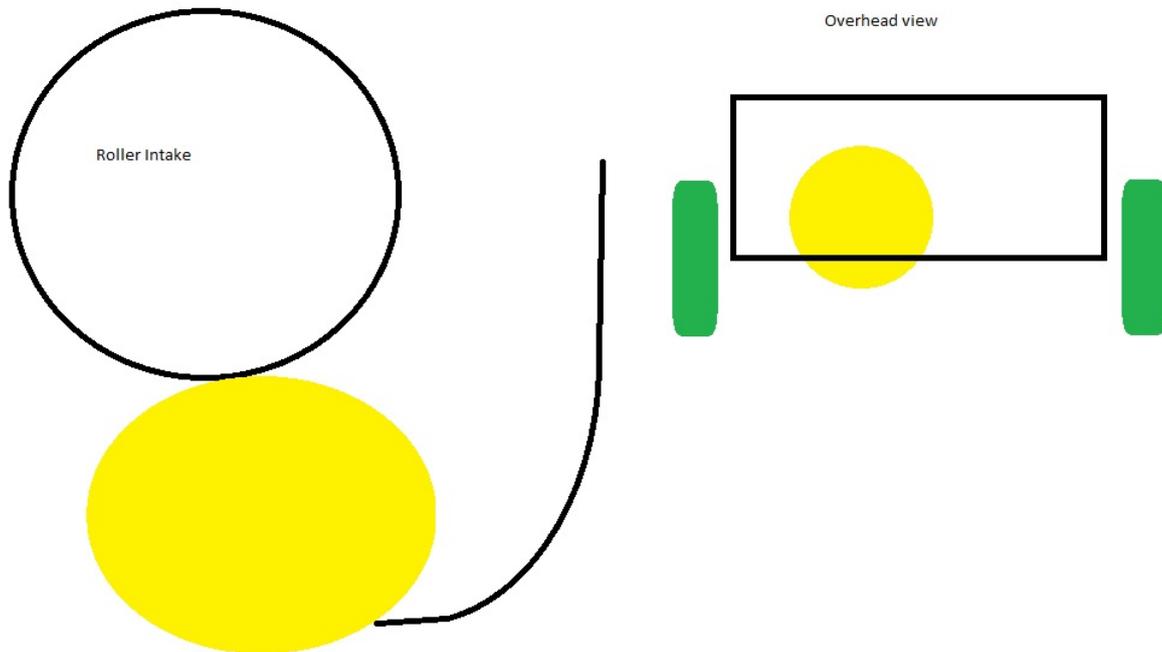
From Page 10 in the manual. **Possession** – *A Robot has Possession of a Game Object if it is carrying, holding, or encompassing it. See rule <SG4> for details on Possession limits. *

From this <https://www.robotevents.com/VRC/2018-2019/QA/151> you also indicate that moving a cap with ball may constitute possession depending on the amount to which the ball's movement is being controlled by the movement of the cap.

The training videos <https://youtu.be/lpreV3qZKvQ?t=65> also indicate possession would include where a game object became stuck on or under a robot such that it moved with the robot.

With many of the ball intakes this year (even when turned off) a ball may become partially stuck under a robot's intake, such that it would still come out if the robot were to drive backward but would move with the robot in forward directions. Does this constitute possession or is this a head referee judgment call?

-Thank you



Answered by Game Design Committee

With many of the ball intakes this year (even when turned off) a ball may become partially stuck under a robot's intake, such that it would still come out if the robot were to drive backward but would move with the robot in forward directions. Does this constitute possession or is this a head referee judgment call?

It is always difficult to provide blanket rulings on hypothetical scenarios. However, based on the description and image provided (thank you, by the way!), yes, this would constitute Possession.

Teams are advised to be cognizant of this possibility when designing their Robot mechanisms. Please see [this Q&A](#) for more discussion and guidance on this topic.

262: Roller Intakes and Entanglement

11-Mar-2019

R3 Other

Many of this year's robots have a ball intake like a paddle wheel wrapped in rubber bands or elastic (like the attached picture). The rubber bands often get entangled in other robots. How should a referee handle a match when the outcome is dependent on an entanglement? As reference the game manual defines entanglement as:

"Entanglement – A Robot status. A Robot is Entangled if it has grabbed, hooked, or attached to an opposing Robot or a Field Element."

That definition fits this scenario. In addition, rule R3c says:

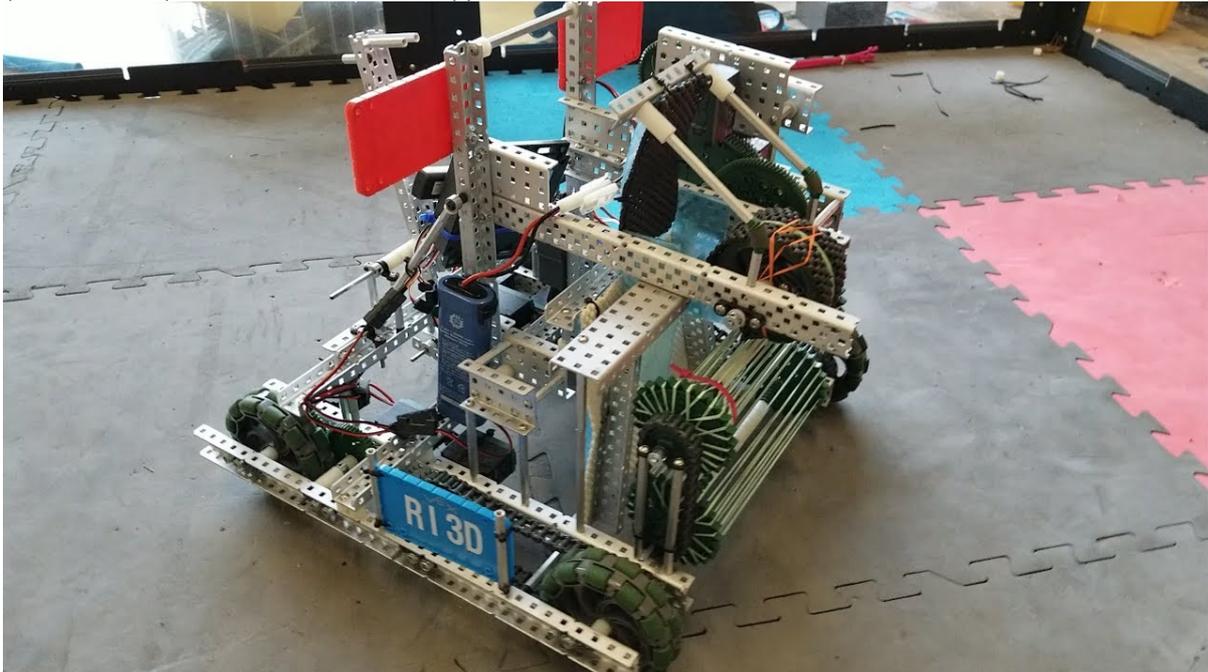
"The following types of mechanisms and components are NOT allowed: ... c. Those that pose an unnecessary risk of entanglement."

"Unnecessary" is the key word here. There has been no precedent for robots with this type of intake failing inspection (that I know of), and I wouldn't expect that to change now, but I'll still ask. Is this type of intake legal?

Beyond that the rules don't provide much guidance for referees to handle situations where two robots become entangled for a long period of time affecting the outcome of a match. This seems like a question that would have been asked early in the season, and maybe I'm missed it, but I don't see anything in the official Q&A.

The answer might depend on how the entanglement occurred. So here are three scenarios. In each scenario the Red robot has the roller intake that becomes entangled in the blue robot. The entanglement occurs with 30 seconds left in the match and the robots are unable to separate. Neither robot can move or score after being entangled. The final score is 16-15.

1. Red robot is playing defense and engages with blue when entanglement occurs.
2. Blue robot is playing defense. Red robot is playing offense, but does not attempt to protect intake from blue.
3. Red is offense, blue is playing defense aggressively. Red attempts to protect intake from blue, but still becomes entangled. Referee believes that blue purposefully become entangled.
4. (OK one more). Referee didn't see it happen. Red and blue both claim the other is at fault.



Answered by Game Design Committee

Is this type of intake legal?

Yes, the intake in the attached photo appears to be legal, in the context of this question regarding Entanglement hazards (i.e. we can't see if there are any 3D printed parts, or check if the rubber bands are of legal width, etc). The intent of <R3c> is to prohibit mechanisms which serve no primary purpose other than Entangling opponents (e.g. [a net](#)).

Beyond that the rules don't provide much guidance for referees to handle situations where two robots become entangled for a long period of time affecting the outcome of a match.

There are a several key rules that apply in this interaction. First, <G12b>:

b. VEX Robotics Competition Turning Point 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.

And its related rule, <G13>:

<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.

And finally, <G12c>:

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.

These rules all combine to form the following overarching guideline regarding "rubber band intakes":

- A Robot with this type of mechanism is assuming the potential risk of Entanglement.
- Teams who build mechanisms with Entanglement hazards are responsible for minimizing this risk, or accepting the potential inevitability of becoming Entangled with an opponent.
- A Robot with a "rubber band intake" who becomes Entangled with an opponent generally would not result in a <G12> violation on their opponent, because it is inherently the rubber band Robot's "fault" for assuming that risk, per <G12c>.
- However, that "fault" does not immediately flip to a <G12> violation on the rubber band Robot, because this intake is generally being used for an inherently offensive maneuver, per <G13>.
- In short, under normal gameplay (as judged by the Head Referee), there would be no violations on either Team.
- Of course, all of the above is superceded by <G12> if the Head Referee determines that the Entanglement was intentionally or egregiously initiated by either Robot (e.g. the rubber band Robot is defending and "intakes" their opponent with no Balls nearby or other reason to have the intake; or, the non-rubber-band Robot is defending and puts out a "claw" which is immediately ensnared by the intake).

27: Clarification of <R1> and <R2>

14-Jun-2018

R1 R2

Rule <R1> allows teams to replace subsystem 3 during a competition, such as a flywheel, cap lifter, scissor lift etc, whilst rules <R1> and <R2> limit teams to only having one robot at a competition:

Would a team be allowed to have spare subsystem 3s for their entire robot if they are identical to the subsystem originally on the robot? Would having replacement subsystem 3s for all the parts of the robot class as being a second robot effectively for spares, breaking rule <R2>

This is because we intend on building a modular robot where each subsystem 3 can be swapped out with ease, whilst keeping the same subsystem 1 and 2

Answered by Game Design Committee

Yes, this is legal. As you noted, <R1> only prohibits teams from swapping Subsystems 1 and 2. Remember that if you have multiple configurations with different Subsystem 3 mechanisms, your Robot must be inspected in all possible configurations per <R2b>.

223: <R1> (a) second robot clarification

22-Jan-2019

R1

"<R1> Only one (1) robot will be allowed to compete per team in the VEX Robotics Competition. ... a. Teams may not compete with one robot while a second is being modified or assembled."

Teams in my region (and I assume others) are now receiving V5 kits. They have Cortex robots built but want to work on their V5 robot. For several schools, tournaments are the longest block of time available to work on a robot. Does <R1>(a) prevent them from competing with their Cortex robot while building their V5 robot if they don't compete with the V5?

Secondly, <R1>(Subsystem 1) states: "...For a stationary robot, the robotic base without wheels would be considered Subsystem 1." Would a team be allowed to have a stationary base (w/o Subsystem 2) for the purpose of working on a Subsystem 3?

Thank you.

Answered by Game Design Committee

Does <R1>(a) prevent them from competing with their Cortex robot while building their V5 robot if they don't compete with the V5?

The red box underneath <R1> helps to clarify this:

To help determine if a robot is a "separate robot" or not, use the Subsystem definitions found in <R1>. Above that, use common sense as referenced in <G2>. If you can place two robots on a table next to each other, and they look like two separate legal/complete robots (i.e. each have the 3 Subsystems defined by <R1>), then they are two robots.

So, the answer to your specific question is "Yes". Competing with one Robot at an event while working on a second Robot (which has a second Subsystem 2) at the same event is an explicit violation of <R1>.

Would a team be allowed to have a stationary base (w/o Subsystem 2) for the purpose of working on a Subsystem 3?

Yes, this would be legal. <R1> includes the following statement:

Given the above definitions, a minimum robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of 1 and 2 above.

A Robot without both subsystems 1 and 2 would not be considered a second "Robot" within the purest definition of <R1>.

214: Subsystem removal

17-Jan-2019

R1

Rule

<R1> Only one (1) robot will be allowed to compete per team in the VEX Robotics Competition. Though it is expected that teams will make changes to their robot at the competition, a team is limited to only one (1) robot. As such, a VEX robot, for the purposes of the VEX Robotics Competition, has the following subsystems:

Subsystem 1: Mobile robotic base including wheels, tracks, legs, or any other mechanism that allows the robot to navigate the majority of the flat playing field surface. For a stationary robot, the robotic base without wheels would be considered Subsystem 1.

Subsystem 2: Power and control system that includes a legal VEX battery, a legal VEX control system, and associated motors for the mobile robotic base.

Subsystem 3: Additional mechanisms (and associated motors) that allow manipulation of game objects or navigation of field obstacles. Given the above definitions, a minimum robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of 1 and 2 above. Thus, if you are swapping out an entire subsystem of either item 1 or 2, you have now created a second robot and are no longer legal.

- a. Teams may not compete with one robot while a second is being modified or assembled.
- b. Teams may not switch back and forth between multiple robots during a competition. This includes using different robots for Skills Challenge and Qualification / Elimination Matches.
- c. Multiple teams may not use the same robot. Once a robot has competed under a given team number at an event, it is "their" robot - no other teams may compete with it for the duration of the competition season.

Question: Our team would like to clarify that we can compete with and without our lift under the ruling of R1 We understand that we will have to have the robot reinspected when a subsystem 3 is removed and put back on. We operate using V5 with 8 motors with the lift (4 motors used for our lift) and 6 without the lift (we add two motors to our drive train) The purpose of removing the lift is because it's so heavy and we want to add speed.

Answered by Game Design Committee

Yes, this would be legal within <R2>, quoted here for reference and bolded for emphasis.

<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. If significant changes are made to a robot, such as a partial or full swap of Subsystem 3, it must be re-inspected before it will be allowed to compete.

b. If a robot has multiple functional configurations, all possible 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. 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.

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.

69: V4/Cortex Only Comps?

8-Sep-2018

R12

I've been hearing that some official qualifying competitions are going to establish a rule where the robots must be V4/VEX Cortex only. Is it correct that Event Partners cannot do such a thing considering the rule <R12>?

Answered by Game Design Committee

The Cortex and V5 systems are both legal at all standard VRC qualifying/championship events.

New this season, EP's also have the ability to host an Invitation-Only event if they also host a standard/open VRC event per the VRC Qualification Criteria guidelines. EP's with questions about Invitation-Only events should contact their REC Foundation [Regional Support Manager](#) for more information.

155: R14 b iii Controller Power Source

25-Nov-2018

R14

As per this Q&A: <https://www.robotevents.com/VRC/2018-2019/QA/42> it is legal to power a V5 Controller using an external battery pack.

This seems to imply that R14 b iii does not always apply. If this is correct, when **does** R14 b iii apply? Also, what is considered an acceptable external power source for the joystick? Here are a few examples, but more general language would be appreciated:

1. USB battery pack
2. USB wall plug
3. Laptop
4. Tablet
5. Phone
6. Solar (for trickle charging)

To be clear, the joystick would not be modified in any way; all devices would be external and power the joystick only through the micro USB port.

Answered by Game Design Committee

These would all be acceptable, provided that they meet the requirements spelled out in the linked Q&A post (interface with the standard micro USB port on the Controller and do not involve any modification to the Controller).

G7 would also apply:

<G7> Only Drivers, and only in the Alliance Station. During a Match, all Drive Team Members must remain in their Alliance Station. 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.

If a laptop or tablet were to be used as an external power source for a Controller, it must do so with communication features disabled.

179: Powering and using lights including LED light strings

12-Dec-2018

R8 R14

During Skyrise a battery source of power for LED light strips was not allowed by rule R13 (comparable to Turning Point R14). Obviously old Q&As don't directly apply to new games, but they often do provide insight into what has been allowed/disallowed in the past.

<https://www.vexforum.com/index.php/13041-answered-led-lights-for-decoration/0>

In light (no pun intended) of the recent Q&A answer <https://www.robotevents.com/VRC/2018-2019/QA/162> where LED lights are powered by a battery that isn't a V5 or Cortex battery...

Can a robot have LED lights powered by an external battery source (not Cortex or V5 battery) providing R8 isn't violated? or is it only small self contained objects that are allowed (that don't include external wiring)?

<R14> The only allowable source(s) of electrical power are as follows: a. If using a VEX ARM® Cortex®-based Microcontroller, robots may use (1) VEX 7.2V Robot Battery Pack of any type, and one (1) 9V backup battery. i. Robots utilizing the VEX Power Expander may use a second VEX 7.2V Robot Battery of any type.

b. If using a V5 Robot Brain, robots may use (1) V5 Robot Battery (276-4811).

<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. 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.

Answered by Game Design Committee

Thank you for pointing out this inconsistency. We will update the answer to the other Q&A post accordingly.

Powered non-functional decorations may only be powered by legal sources of electrical power as defined in <R14>.

124: R15 3D printed Scuff Controller

23-Oct-2018

R15 VEX U

a. Does the ruling from last year carry over concerning adding 3D printed (or other, not legal for competition material) paddles to the controller that physically press the existing buttons, without modifying the electrical functions in anyway.

b. If yes on (a), does the same apply to the V5 controller.

c. If yes on (b), does the mounting method matter, since the V5 controller does not have the (2) 6-32 threaded holes available for mounting. Are adhesives allowed for mounting, or should any paddles be designed to snap over or mechanically clamp around the V5 controller.

And rather than making them ask again: d. Do any of these rulings change for VEX U teams?

Answered by Game Design Committee

This is legal, provided that the VEXnet Joystick and/or V5 Controller are not modified in any way.

Bear in mind that the best way to demonstrate to an inspector, referee, or EP that the controller has not been invasively modified is to be able to remove the addition if asked to do so. Thus, permanent attachments like glue would not be recommended, even though they may technically not be considered "modifications".

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://www.robotevents.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.

161: Legal non-functioning decoration? V5 USB extention left mounted during matches

28-Nov-2018

R7 R8 R16

Would a short USB cord left plugged into the V5 programming port be legal during an event? The intent is to save wear and tear on the programming mini USB port in the V5 brain. Example: <http://a.co/d/5j3D0nI>

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

h. A USB extension cable may be used for the sole purpose of remote mounting of a VEXnet Key 2.0 to a VEX ARM® Cortex®-based Microcontroller.

<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. These decorations must be in the spirit of the competition. Inspectors will have final say in what is considered "nonfunctional".

Answered by Game Design Committee

Yes, this would be legal, provided that the conditions of R8 and R16 are met. If there is any concern as to whether such a device is functional or not, Teams should be prepared to demonstrate to inspectors and/or referees that such a decoration is non-functional, such as by playing a Match with the device removed.

107: <R16> Clarification for VEX U

15-Oct-2018

R16 VEX U

In VRC rule <R16> f. it is stated that "Welding, soldering, brazing, gluing, or attaching in any way that is not provided within the VEX EDR platform will NOT be allowed." However, in <VUR3> it states that VEX U teams are allowed to use "An unlimited amount of steel and aluminum." for their designs. Would this mean that soldering or brazing is allowed for VEX U if the team uses steel or aluminum as a filler metal? Furthermore, due to the encouragement of using advanced manufacturing techniques for VEX U, would welding, soldering, brazing, or gluing in general be legal? If not is soldering specifically allowed on additional electronics used for sensing or processing for VEX U?

Answered by Game Design Committee

Welding, brazing, and gluing can be considered acceptable "fabrication" methods within the context of VUR3, and are permitted in VEX U. We will keep this distinction in mind when revising VEX U rules in the future to be more clear.

Soldering additional electronics within the constraints of VUR6 is permitted. However, VEX electronics (including Robot Brains, Motors, Batteries, etc) may still not be modified in any way, including via soldering.

130: <R19>, <VUR10>, and tank-less pneumatic systems

30-Oct-2018

R19 VEX U

If the ports of multiple cylinders are connected to each other and the pressure in both sides of the cylinders are kept relatively similar, a cylinder can be actuated and retraced by manipulating one of the cylinders (ideally using a motor) ([Image for clarification](#)).

R19 States

<R19> Pneumatic devices may only be charged to a maximum of 100 psi. Teams may only use a maximum of two (2) legal VEX pneumatic air reservoirs on a Robot. The intent of this rule is to limit teams to the air pressure stored in two reservoir tanks, **as well as the normal working air pressure contained in their pneumatic cylinders and tubing on the robot**. Teams may not use other elements (e.g. surgical tubing) for the purposes of storing or generating air pressure. Teams who use cylinders and additional pneumatic tubing for no purpose other than additional storage are in violation of the spirit of this rule and will fail inspection.

And VUR10 states:

Teams may utilize commercially available pneumatic components from the following list: Cylinders, actuators, valves, gauges, storage tanks, regulators, manifolds, and solenoids. c. Pneumatic devices may only be charged to a maximum of 100 psi. **i. Compressors or any other forms of "on-Robot" charging are not permitted.** d. All commercial components must be rated for 100 psi or higher. Teams should be prepared to provide documentation that verifies these ratings to inspectors if requested. e. Components must not be modified from their original state as purchased from a commercial vendor, other than the following exceptions: i. Cutting pneumatic tubing or wiring to length, assembling components using preexisting threads, brackets, or fittings, or minor cosmetic labels.

I would assume that the setup (same as the image) would be illegal, as air is technically compressed if the cylinders experience resistance, but would like an official ruling.

If the max pressure (under load) is kept under 100Psi, is the setup in the image legal for VRC?

If not legal for VRC, is such a setup legal for VEXU?

Answered by Game Design Committee

The intent of <R19> and <VUR10>, in this context, is to safely limit the amount of stored pneumatic energy available at the beginning of a Match. As pictured, and assuming no other rules were violated in the process, this hypothetical

example would satisfy that intent and would be legal in both VRC and VEX U.

Of course, if this concept was used to create a rudimentary "compressor" or otherwise generate additional pneumatic pressure during a Match for other devices to use, this ruling would not apply, and it would be illegal.

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.

82: R5 Rubber Bands

17-Sep-2018

R5

What are the rules on using rubber bands?

Is their specifics on how you can utilize them on your robot?

What types of rubber bands are okay and not okay?

Are the VEX IQ orange rubber bands okay? (<https://www.vexrobotics.com/rubber-bands.html>)

Answered by Game Design Committee

Please see the following rules:

R5 Robots may be built ONLY using official VEX EDR components, unless otherwise specifically noted within these rules. c. 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. i. **Products from the VEXpro, VEX IQ, or VEX Robotics by HEXBUG product line which are also cross-listed as part of the VEX product line are legal.** A cross-listed product is one which can be found in a VEX EDR section of the VEX Robotics website.

The rubber bands you refer to are cross-listed to the VEX EDR section of the VEX Robotics website:
<https://www.vexrobotics.com/vexedr/products/accessories/other/rubber-bands.html>

R7 Robots are allowed the following additional “non-VEX” components: b. Any parts which are identical to legal VEX parts. 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.

So, if you had rubber bands that were identical in size and material to VEX rubber bands, but were a different color, these would be legal.

R3 The following types of mechanisms and components are NOT allowed: c. **Those that pose an unnecessary risk of entanglement.**

If using rubber bands, make sure to use them in a way that would not pose an unnecessary risk of entanglement, such as making a "net" that drags on the floor, or stretching over long distances without a rigid guard.

128: R6 Latex Tubing (10') 275-1262

26-Oct-2018

R6 R5

Hello

I am a robotics coach and I am wondering if my team can use the following item in this year in Turning point it appears that we are allowed to use all official VEX products but I was not sure if we could use the following items under rule R6?

1. R6 Latex Tubing (10') 275-1262 <https://www.vexrobotics.com/275-1262.html#Description>

<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.

<R5> Robots may be built ONLY using official VEX EDR components, unless otherwise specifically noted within these rules.

C. 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>. i. Products from the VEXpro, VEX IQ, or VEX Robotics by HEXBUG product line which are also cross-listed as part of the VEX product line are legal. A cross-listed product is one which can be found in a VEX EDR section of the VEX Robotics website. For example, the Rubber Shaft Collar (228-3510) is a VEX IQ component that can be found on the VEX EDR “Shafts & Hardware” page:
<https://www.vexrobotics.com/vexedr/products/accessories/motion/shafts-andhardware.html>

Thanks for your Assistance.

Answered by Game Design Committee

Yes, as this is a VEX EDR product that is found on the VEX website, it is legal within R5 and R6.

169: Is this material allowed?

5-Dec-2018

R5 R7

Hi,

I need a answer to this forum.

<https://www.vexforum.com/index.php/35819-is-this-material-allowed>

I will thank.

Cordially, Aleksander Pérez

Answered by Game Design Committee

No, this is not legal. Please review R5 and R7. This material is not sold by VEX Robotics, and it is not listed in these rules as an exception to this general guideline.

224: is 3D printed parts are allowed?

24-Jan-2019

R5 R7

Hi I was wondering if we can use some 3D printed pieces on the robot like this battery holder below. That piece is not a active functioning mechanism on the robot. So, can we consider it like an electrical tape?

<https://www.thingiverse.com/thing:275299> My second question is as you know ordering from vex sales takes too much time and we didn't have enough time to order a VEXnet Backup Battery Holder. So I have ordered some 9 volt battery clips and modified with a 2 pins connector. It is functioning properly on the robot but is that allowed to as well? Thanks.

Answered by Game Design Committee

The only permissible non-VEX components in the VEX Robotics Competition are detailed in <R7>. The parts you have described are not included in this list, and would also not be considered non-functional decorations under <R8>. Thus, they would not be legal.

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>.

1: Plastic alterations

14-May-2018

R7

As per <R7> Robots are allowed the following additional "non-VEX" components: ~ ~ e. 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.
ii. Plastic may be mechanically altered by cutting, drilling or bending etc. It cannot be chemically treated, melted or cast. Heating polycarbonate to aid in bending is acceptable.

I wanted to ensure the following mechanical alterations and the results of such alterations would be allowed to make inspection easier.

1: splitting of a plastic sheet along the plane defined by the 1' x 2' dimensions, resulting in multiple sheets thinner than 0.070" in thickness

2: repeated application of force by rollers to a plastic sheet, resulting in a thinner sheet with a larger surface area.

Additionally, I wanted to ask for the allowance of use of multiple 1' x 2' sheets of legal plastic, such that the total thickness of all sheets combined do not surpass 0.070".

Answered by Game Design Committee

The key line from R7 is *"as cut from a single 12" x 24" sheet up to 0.070" thick"*. Practically, this means that you can cut a single 12"x24" piece of any thickness (up to 0.070" thick) into individual parts of that thickness, and if those pieces were laid out as puzzle pieces, they could be reassembled back into a 12"x24" rectangle. Thinking in 2-dimensions is much more plausible for inspectors than thinking in 3-dimensions. It would be nearly impossible for an inspector to differentiate between a team who achieved their super-thin plastic via rolling, vs a team who purchased a sheet of super-thin plastic larger than 12"x24".

Thus, using multiple 12"x24" sheets (or a single sheet larger than 12"x24") of a thinner thickness is not permitted, regardless of how the sheet was made.

8: VEX-U hardware allowances.

15-May-2018

R7 VEX U

Hardware for VRC is given under <R7> c. Any commercially available #4, #6, #8, M2, M2.5, M3 or M4 screw up to 2" long (nominal), and any commercially available nut and/or washer to fit these screws.

<VUR2> a. i. expands this to "Small hardware, such as screws and nuts found in VRC field kits, are permitted."

Is the intent of VUR2 to allow any hardware up to size 1/4" (M6) for VEX-U? VEX-Pro does not specifically sell hardware, but some hardware is included in various components, such as VERSADROP has 1/4" and #10 hardware included. Also, Versaframe specifies #8 screws or 5/32" aluminum rivets for assembly, but VEXPRO does not sell either in the catalog. Would aluminum rivets (and any size steel screw or nut for that matter) fall under the "unlimited aluminum and steel" since both types of fasteners could be machined from aluminum or steel bar stock as allowed by <VUR-3>c?

Answered by Game Design Committee

The intent of VUR2a-i was specifically in reference to field kits, which are not permitted (per VUR2a). It would not be feasible to differentiate between a screw that came from a field kit and a "normal" screw. VUR2a-i was not meant to stand alone as a blanket allowance for small hardware beyond R7c.

That being said, rivets and hardware found inside of VEXpro kits are considered legal fasteners for VEX U. We will be sure to clarify this in the June 15th update.

45: R7i 1/8" Nylon Paracord

8-Aug-2018

R7

R7 states: "Robots are allowed the following additional "non-VEX" components: i. An unlimited amount of 1/8" (or local metric equivalent), braided, nylon rope"

Is ?" 100% nylon braided paracord legal under this rule? For example,

<https://www.homedepot.com/p/Everbilt-1-8-in-x-500-ft-Black-Premium-Nylon-Paracord-70070/206192268>

Answered by Game Design Committee

Yes, this is legal, so long as it is 1/8" in diameter and made of braided nylon.

54: R7.c regarding commercially available nuts for screws

20-Aug-2018

R7

Rule R7.c allows for "Any commercially available #4, #6, #8, M2, M2.5, M3 or M4 screw up to 2" long (nominal), and any commercially available nut and/or washer to fit these screws."

I would like to ascertain that nuts known as cap nuts (sometimes called acorn nuts) can be used under this rule.

McMaster describes them thusly: "Also known as acorn nuts, they have a smooth rounded head that covers and protects threads while providing a finished appearance."

A link to an example with a picture can be found here: <https://www.mcmaster.com/#91855a440/=1e8raxb>

Thanks

Answered by Game Design Committee

The rest of <R7c> states the following:

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.

If used simply to protect threads and provide a finished appearance, these nuts would be legal. However, if used for another purpose (such as a form of ball caster or to interact with a sensor in a way that a standard nut would not), then that would be considered "introducing additional functionality" and would not be legal.

134: Adhesive Foam Material

5-Nov-2018

R7

Hi, so I notice the material for the adhesive foam listed on vexrobotics.com is made of polyurethane foam. If we were to use other commercially available adhesive foam, would it have to be made of polyurethane, or could it be made of other material?

Answered by Game Design Committee

See <R7b>, quoted here for reference:

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

b. Any parts which are identical to legal VEX parts. 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.

If the commercially available adhesive foam was identical to the foam found on www.vexrobotics.com, including (but not limited to) physical properties such as density and material, then yes, it would be legal.

137: Use of Commercially Available M1.6 x 16mm Motor Housing Screws

9-Nov-2018

R7

Motor housing screws appear to be size M1.6 x 16mm. Can these screws be replaced with commercially available screws having socket head, torx head, or other head styles. M1.6 falls outside of the rule R7(c) by one screw size.

R7 (c). Any commercially available #4, #6, #8, M2, M2.5, M3 or M4 screw up to 2" long (nominal), and any commercially available nut and/or washer 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.

Answered by Game Design Committee

Yes, this is legal.

188: Wire Protection

18-Dec-2018

R7

Is it legal to add wire protection against static build up by providing a copper wrap or shielding for the wires. We believe we have lost 2 motor ports on our V5 brain possibly due to this. It has been on our long runs of wires from the brain to the motor and has happened to 2 different ports with the same motor run. I know it has not been shown to absolutely be the cause, but there are theories that this is a possibility. We would like to try these systems and still be competition legal. We were looking at copper wrap or wire shielding systems. The systems would be solely for protecting the wires. The systems we are looking at are as follows:

<https://www.electriduct.com/Flexo-Conductive-Braided-Sleeving.html>

<https://www.ebay.com/itm/172810245663>

<http://a.co/d/efQ4wCp>

Thank you

Answered by Game Design Committee

Yes, this would be considered a legal form of cable protection under <R7j>.

<R7> Robots are allowed the following additional “non-VEX” components:

j. Commercially available items used solely for bundling or wrapping of 2-wire, 3-wire, 4-wire, or V5 Smart Cables, and pneumatic tubing are allowed. These items must solely be used for the purposes of cable protection, organization, or management. This includes but is not limited to electrical tape, cable carrier, cable track, etc. It is up to inspectors to determine whether a component is serving a function beyond protecting and managing cables.

222: Tape Restrictions

22-Jan-2019

R7

In the 2018-2019 vex turning point competition, is it acceptable to tape a color filter straight onto the light sensor? I know tape is restricted in most cases but I don't know how else to attach the filter to the light sensor.

Answered by Game Design Committee

<R7a> states the following:

<R7> Robots are allowed the following additional “non-VEX” components:

a. Any material strictly used as a color filter or a color marker for a VEX Light Sensor.

This would be legal, provided that is used solely as part of a color filter for the VEX Light Sensor, and not in any additional capacity as a fastener or structural element.

41: Hardware specified by VEXpro, but not available from VEXpro.

Sorry to be so nitpicky, but there are a couple points on hardware that was not clarified on the June 15th update:

"Answered by Game Design Committee That being said, **rivets and hardware** found inside of VEXpro kits are considered legal fasteners for VEX U. We will be sure to clarify this in the June 15th update." (emphasis mine).

There are six references to a McMaster Carr part within the vexpro product specifications, two for master links, three for screws, and one for a washer.

On the page for roller chain: <https://www.vexrobotics.com/roller-chain.html> "Note: VEXpro does not offer a #35 master link for purchase separately. We recommend McMaster-Carr part number 6261K191 as a suitable replacement. The #25 Roller Chain requires a standard master link. VEXpro does not offer a standard #25 master link. We recommend McMaster-Carr part number 6261K108 as a suitable replacement."

And on the page for the linear gussets:

<https://content.vexrobotics.com/vexpro/pdf/217-4399-20180116.PDF> "(Note: Some McMaster parts required)" and the BOM lists the following: McMaster P/N 91251A555 1/4-20 x 3.250" Screw
McMaster P/N 91251A553 1/4-20 x 2.750" Screw
McMaster P/N 91251A550 1/4-20 x 2.000" Screw
McMaster P/N 92141A029 9/32" ID x 5/8" OD Washer

Additionally, the versaframe page notes using 5/32 rivets for assembly (<https://www.vexrobotics.com/versaframestock.html>), but these are not sold by VEXpro, only 1/8 rivets are available.

Do the references to McMaster-Carr parts, and to a 5/32 rivet, make these McMaster-Carr parts legal for VEX-U?

If so, then would the legality of a 1/4-20 x 3.250" screw (McMaster 91251A555) make any shorter screw lengths of 1/4-20 screw legal also (since long screws can obviously be cut shorter). In the same way, VEXpro sells a #10-32 x 2.5 long screw and 10-32 locknut (in kit 217-4824), so would this make #10 screws up to 2.5 long also be legal?

Thank you for your time and consideration.

Answered by Game Design Committee

Sorry to be so nitpicky, but there are a couple points on hardware that was not clarified on the June 15th update.

No apology needed, these types of questions are beneficial to all teams as we work through the nuanced implications of this year's VEX U rules.

Do the references to McMaster-Carr parts, and to a 5/32 rivet, make these McMaster-Carr parts legal for VEX-U?

For the most part, yes.

The #25 master link (6261K108) is legal for this purpose (alongside VEXpro #25 chain).

The following items will be clarified in the August 17th manual update:

- All rivets up to 1/4" will be legal
- 1/4-20 screws, washers, and nuts will be legal
- #10 screws, washers, and nuts will be legal (in addition to the #4, #6, and #8 screws as specified in R7-c)

47: Non-Vex Screws & Nuts - aluminum / nylon

<R7> Robots are allowed the following additional "non-VEX" components: c. Any commercially available #4, #6, #8, M2, M2.5, M3 or M4 screw up to 2" long (nominal), and any commercially available nut and/or washer 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.

Are we allowed to use aluminum and nylon/plastic screws & nuts (examples below) as long as they are commercially available, are sizes listed above, and are only up to 2" long?

<https://www.mcmaster.com/#93143a194/=1e2q1gl>

<https://www.mcmaster.com/#94735A737>

<https://www.robosource.net/aluminum-screws-nuts/253-alu-screw-0500.html>

<https://www.mcmaster.com/#94812A400>

Answered by Game Design Committee

Yes, these would be legal.

In general, as long as the screws do not provide additional functionality beyond a standard screw (such as an eye bolt), "any screw" means "any screw". Properties like material type or color are irrelevant.

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.

162: Decoration question

28-Nov-2018

R8

Rule: <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. These decorations must be in the spirit of the competition. Inspectors will have final say in what is considered "non-functional".

Situation - We have had a small keychain flux capacitor (1.75" wide x 2.125" tall) attached every year for the last two years. This year we attached it at league and inspection went fine, we even asked about it. During our 3rd or 4th match for the night a parent said it's not a VEX approved part and I said it is a decoration and has been allowed every year. Parent said since it blinks (it fluxes just like in the movie) it can't be on it. We took it off and reread the above rule and we think it should be fine. My students are sad about it, it is their good luck piece. It is zip tied to our radio tower and does nothing other than blink. This is exactly what it is and what it does: <https://www.thinkgeek.com/product/itti/>

Question - Can we still use this?

Answered by Game Design Committee

On 1/25/19, this answer was revised to the following:

Unless otherwise specified, non-functional decorations are governed by the same rules as functional items with regard to safety, power, etc. Thus, they may only be powered by legal sources of electrical power as defined in <R14>. Therefore, this would not be legal. We will make sure this is more clearly explained in future versions of the game manual.

19: Robot skills left over preloads

28-May-2018

Robot Skills Challenge

<RSC2> Prior to the start of each Robot Skills Match, the Robot must use its one (1) Ball available as a Preload. A Ball is considered to be legally preloaded if it is touching the Robot, and is fully within the field perimeter.

What do you do with the other three preloads in a robot skills match?

Answered by Game Design Committee

In a Robot Skills Match, the Preloads that would have been available for the other 3 robots are not used - that is, there is only one Preload Ball available for the one Robot on the field to use.

132: SG1 SG3 clarifying

1-Nov-2018

SG1 SG3

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

1. Touching one of its colored Alliance Starting Tiles.
2. Not touching any other foam field tiles or Game Objects that are not Preloads.
3. Preloaded with one (1) Ball.

To be clear, we park in our Alliance starting tile with our wheels completely touching the Alliance Tile and part of our robot that is not touching the tile can be outside of the Alliance tile. I'm happy to share a picture of an example if needed.

Autonomous Line definition – The pair of white tape lines that run across the center of the field, underneath the Platforms. Per <SG3>, Robots may not contact the foam field tiles on the opposite Alliance’s side of the Autonomous Line during the Autonomous Period <SG3> Stay on your side in Autonomous. During the Autonomous Period, Robots may not do any of the following:

1. Contact the foam tiles on the opposing Alliance’s side of the Autonomous Line.
2. Contact the opposing Alliance Platform.
3. Become Center Parked.

Can we cross the Autonomous line with part of our robot that isn't physically touching the foam tile?

Thank you

Answered by Game Design Committee

Regarding <SG1>, if the Robot meets the three criteria listed, then it is in a legal starting position. Keeping the entire Robot within an infinite vertical projection of the Starting Tile is not one of the criteria that is listed. So, while it is always impossible to issue a blanket ruling on a hypothetical description, your description sounds like it is legal, provided no other rules (such as <G3>) are violated.

Regarding <SG3>, if the Robot does not perform any of the three actions listed, then it has not committed a violation. Extending past the Autonomous Line without contacting the foam field tile, with the exception of being Center Parked, is not one of the actions listed. So, it will not be a violation, provided that no other rules are violated in the process.

123: Vacuum cups for VEX-U and SG-10.

23-Oct-2018

SG10 VEX U

Now that the ruling on WPI's question about vacuum has officially expanded pneumatics to include vacuum devices as well as pressure devices, are commercially available suction cups, such as those typically used for robotic material handling legal for use, and if so, does attaching a suction cup to a field element violate SG-10?

Answered by Game Design Committee

Commercially available suction cups would be considered commercially available pneumatic devices, if integrated with a legal VEX U pneumatic system and provided that no other rules are violated in the process.

Using these suction cups to attach to a field element would be considered a violation of <SG10>.

<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.**

6: VEX-U Expansion allowances

15-May-2018

SG2 VEX U

VUG6 there are differences between manuals in the VRC hub and the Game Manual. On the VRC Hub app, rule VUG6 says: "Once the Match begins, Robots may expand beyond the starting size defined in <VUR1>, but no horizontal

dimension can exceed 48" (1219.2mm). The robot may not exceed this limit for the duration of the match. There is no height limit on Robot Expansion" But on the Vex U appendix on the Vex website: "Both robots follow the expansion rules laid out in <SG2>

Which one of these rules (If either) is the correct VUG6 rule? If the VRC Hub App version is the correct ruling, does the 48" expansion apply to the 15" robot as well, and is there no vertical height limit restrictions for VEX U as implied by the wording in the VRC Hub version of VUG6?

Answered by Game Design Committee

Thank you for bringing this to our attention. This was an error in VRC Hub and has now been corrected. The PDF Game Manual version of VUG6 was correct - both VEX U Robots follow the same expansion rules set forth by SG2.

13: VEX U Expansion Outside Expansion Zone

22-May-2018

SG2 VEX U

VUG6 States: "Both Robots follow the expansion rules laid out in <SG2>."

VUR1 States: "Teams must build two (2) Robots, subject to the following size restrictions at the start of the match:

a. Robot A must be smaller than 24" x 24" x 24". b. Robot B must be smaller than 15" x 15" x 15"."

SG2 States: "a. Once the Match begins, a Robot which is contacting the Expansion Zone may expand vertically with no height limit. However, once fully outside of the Expansion Zone (i.e. no longer contacting it), the Robot must return to a height limit of 18" (45.72 mm) tall."

Does this mean Robot A may not be taller than 18" when not in contact with the expansion zone?

Is Robot B able to expand 3" vertically from its starting height while not in contact with the expansion zone?

Answered by Game Design Committee

VUG6 will be revised and clarified in the June 15th game manual update to answer this question.

67: SG2 - B 36 inch expansion

7-Sep-2018

SG2

Can you clarify how the 36" expansion will be measured? For example, last season one of my teams built a robot that expanded to 35" front to back to make sure that they were under the 36" rule. At one tournament, the robot was measured from the back corner diagonally across the robot. This dimension was 37.6" and they were sent back to the pits to fix the issue. Is this the correct procedure? I have created a model of two robots to help clarify.

1. Is robot A or B legal? [pdf](#)
2. Should the diagonal also consider from top to bottom? (the 38" dimension on robot B) Does this make robot B also out of dimension?

Answered by Game Design Committee

Thank you for the images to help clarify your question. The 36" dimension will be measured by a [Robot Expansion Sizing Tool](#), which measures point-to-point horizontal distance. The 36" limit is a point-to-point horizontal limit, not a perfect square or X/Y distance.

The procedure you described from last year's inspection sounds like the correct interpretation of this rule.

In your linked images, Robot A would not be legal. Robot B would be legal.

No, the vertical diagonal should not be considered. Robot B is still legal, despite the dimension that the blue arrow is pointing to.

203: Extending Briefly in the Expansion Zone

8-Jan-2019

SG2

Hello,

Team 12054A has a question regarding Specific Game Rule 2 <SG2>. Our robot currently is within the 18"x18"x18" frame volume "at rest". We have a lift that expands beyond that but we intend to only use that IN the "Expansion Zone" when placing caps.

Our concern is with our current ball launcher. "AT REST" the ball launcher is under 18" tall. However, when the launcher is "RELEASED" it extends beyond "18" for a brief moment and then resumes back under 18". Would this be in violation of SG2 if we are OUTSIDE of the "Expansion Zone". We are in no way trying to block or see the potential issue of accidentally blocking another teams shot.

Thank you, Team 12054A

Answered by Game Design Committee

The full text of <SG2> is quoted here, for reference:

<SG2> Robot expansion is limited once the Match begins. As per <G3>, 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.

- a. Once the Match begins, a Robot which is contacting the Expansion Zone may expand vertically with no height limit. However, once fully outside of the Expansion Zone (i.e. no longer contacting it), the Robot must return to a height limit of 18" (457.2 mm) tall.
- b. Once the Match begins, Robots may expand, but no horizontal dimension can exceed 36" (914.4 mm) at any point during the Match.
- c. As a result of this rule, Robots may not contact High Flags.

Note: A Robot which interferes with gameplay as a result of violating this rule, such as Toggling a High Flag or blocking a launched Ball while outside of the Expansion Zone, will result in a Disqualification, whether the interference is Match Affecting or not.

Minor violations of this rule that do not affect or interfere with 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.

Expanding beyond 18" tall outside of the Expansion Zone will always be a violation of <SG2>. The penalty will either be a warning or a Disqualification depending on the number of warnings received, if the Robot interferes with gameplay as a result of violating this rule, or if the violation was Match Affecting.

It is always difficult to issue blanket rulings on hypothetical Robot designs. However, any mechanism which must expand taller than 18" outside of the Expansion Zone to operate would be in violation of <SG2>. As this hypothetical mechanism is being used to Toggle Flags, it would most likely always be considered "interfering with gameplay", and

would most likely always be considered Match Affecting if its use resulted in winning the Match. Thus, it would not be legal.

219: 36" expansion question

20-Jan-2019

SG2

> <SG2> Robot expansion is limited once the Match begins. As per <G3>, 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.

- Once the Match begins, a Robot which is contacting the Expansion Zone may expand vertically with no height limit. However, once fully outside of the Expansion Zone (i.e. no longer contacting it), the Robot must return to a height limit of 18" (457.2 mm) tall.
- Once the Match begins, Robots may expand, but no horizontal dimension can exceed 36" (914.4 mm) at any point during the Match.
- As a result of this rule, Robots may not contact High Flags.

When measuring a robot, should inspectors consider horizontal slices of the robot? What physically should the inspector do with the tool to make sure the robot is in compliance?

Is the following robot legal?

<https://photos.app.goo.gl/DJ2r24MtJxJU9ykE9>

Thanks to @TaranMayer

Answered by Game Design Committee

Physically, an inspector should pass the Robot Expansion Sizing Tool over the Robot and check if any portion of the Robot contacts the Tool. This is demonstrated in the relevant Referee Training video:

<https://youtu.be/cnrKOBmIAFI?list=PLvcc7S26YEj0tB5oTmhUwB251kf-Tab5&t=294>

The hypothetical Robot in the linked image would not be legal, as it would fail this test. (thank you for the image to specifically illustrate your question)

265: VexU- VUG6 Loophole

15-Mar-2019

SG2 VEX U

Hello, Upon a close inspection of the game manual, I noticed a discrepancy between the intent of VUG6 and the actual wording of the rule. VUG6 reads:

"The Robot which starts 24" tall must return to 24" once it is no longer contacting the Expansion Zone. The Robot which starts 15" tall must return to 15" once it is no longer contacting the Expansion Zone."

The loophole lies with in phrase "starts 24" tall" and "starts 15" tall. Very few robots actually start at 24" tall and 15" tall. In practice they are smaller then these values, for example a robot sarting at a height of 23" tall and another robot starting at a height of 14.5" tall. The way the rule is written, a robot starting at 23" tall and another starting at 14.5" tall would not fall under VUG6 as it is not starting at 24" tall nor 15" tall. Furthermore since VUG6 no longer applies to these robots, SG2a would apply. SG2a reads:

"Once the Match begins, a Robot which is contacting the Expansion Zone may expand vertically with no height limit. However, once fully outside of the Expansion Zone (i.e. no longer contacting it), the Robot must return to a height limit of 18" (457.2 mm) tall."

So from the actual wording of the game manual, all vexU robots that do not start at exactly 24" tall or 15" tall then must return to be within 18" outside of the expansion zone. So that means that nearly every vexU team has violated the game manual rules as they are written.

The intent of the rule clearly is to base the expansion rules off the robots that start within 24" tall and within 15" tall, which is how vexU has been playing Turning Point so far. However, even this wording is inadequate as the scenario that both robots start within 15" tall would cause confusion on which robot would be allowed to expand vertically. For example, a 23x23x14" tall robot and a 14x14x14 robot. Now is the 14"x14x14 robot allowed to expand to 24" tall, declaring that is your robot that started within 24" tall, and the 23x23x14" robot limited to 15" expansion declaring that is your robot that started within 15" tall?

I would like to propose the wording of VUG6 to be revised to reflect the actual robot definitions established in VUR1. VUR1 reads:

"Teams must build two (2) Robots, subject to the following size restrictions at the start of the match: c. Robot A must be smaller than 24" x 24" x 24". d. Robot B must be smaller than 15" x 15" x 15". "

Therefore using the definitions of robot A and robot B already set by VUR1, I would like to propose VUG6 be revised to: "Robot A must return to 24" once it is no longer contacting the Expansion Zone. Robot B must return to 15" once it is no longer contacting the Expansion Zone."

Answered by Game Design Committee

Thank you for pointing this out. Yes, the intent of the rule is for Robot A to return to no higher than 24", and for Robot B to return to no higher than 15".

We will be sure to clarify this in the April 5th Game Manual update, but until then, <G2> and this Q&A should be used to confirm the intent of <VUG6>.

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.

230: Blocking Opponent Shots, Possession limit.

3-Feb-2019

SG4

Hi There, per request of the GDC, I am not splitting up my questions.

This is the first question, and concerns "Possession", with the definition being "a robot has possession of a game object if it is carrying, holding, or encompassing it". rule <SG4> outlines specific limits, where <robots may possess a maximum of one (1) cap and two (2) balls at a time>. The game manual also states that <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.>. If a team were to block opponent shots while at the possession limit, would they be breaking the rule.

In this instance, blocking a shot may involve interacting with 1 opponent shot, or 2 opponent shots using a legal vex material. If it is impossible to give a blanket ruling, if the balls were to glance off of a piece of aluminum or otherwise rigid material, would the robot be breaking the possession limit?

Answered by Game Design Committee

In this instance, blocking a shot may involve interacting with 1 opponent shot, or 2 opponent shots using a legal vex material. If it is impossible to give a blanket ruling, if the balls were to glance off of a piece of aluminum or otherwise rigid material, would the robot be breaking the possession limit?

It is always difficult to provide a blanket ruling on a snapshot description of a hypothetical Robot and interaction. However, a "blocked shot" would typically not be considered Possession, provided the following assumptions are met:

- A "shot" is a Ball which has been launched through the air in the direction of the Flags.
- The "blocking Robot" is not violating any other rules, such as <SG2>.
- The "blocking Robot" does not meet the definition of Possession in order to block the shot:

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

The relevant [Referee Training video](#) provides the following "rule of thumb": if the Game Object turns with the Robot as the Robot turns, then it is probably being Possessed. For example, a flat vertical wall would not be considered Possession; a "catcher" would be considered Possession.

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 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.

104: NZ National V5 Ban

15-Oct-2018

Tournament Structure

According to a post on VEXforum, EPs in the country voted to ban V5 from their World Qualifying National Event. Has this been sanctioned by the RECF? If so, why? This encourages regional partners to cherry pick what tournament rules to change for the sake of "level playing field".

I am perplexed by this action. We could make a similar ban of V5 at all fall events because not everyone got their shipments in time.

Or is this simply a single exception due to their national event being much earlier than all others?

Answered by Game Design Committee

The decision to disallow V5 at the New Zealand national event was made and approved in a collaboration between the Event Partners in New Zealand, the VEX office in Australia (who supports New Zealand), and the REC Foundation. It is an explicit, individual, and specific exception to the rules due to circumstances outside of the scope of this Q&A, and is not an invitation for EP's to "cherry pick" rules elsewhere.

175: <T03> Can an elimination time out occur during a match?

11-Dec-2018

Tournament Structure

[edit - This apparently was answered during Toss Up season, and the answer was that it was not the GDC's intention. Given the situation raised in VEX forum it appears that it is still not clear to some. I would recommend that that the words "prior to the start of the match" be added to T03 in future game manuals.]

An interesting discussion on VEXforum on time outs. A poster noted that a team asked for a time out during a match, and was given it by disabling all the robots on the field:

This reminds me of Chinese teams were calling timeout during the match..... Yes, during the match, like when there is 1 min left and they call "timeout", field comp got cut and teams start discussing strategies. I scratched my head and searched for the rules, it does not explicitly say timeout cant be called during the match.....

Was this proper procedure to follow - shutting down the match because a team asked for it.

The game manual does not specify that a time out must be prior to the start of a match:

<T03> There are no time outs in Qualifying Matches; in the elimination rounds, each Alliance will be allotted ONE time out of no more than three (3) minutes, as permitted by the head referee. The Matches must progress according to schedule.

Answered by Game Design Committee

The intent of T03 is for a time-out to be held between Matches, not during a Match. We will look at making this verbiage more clear in the future.

220: V5 vs Cortex - not a level playing field

20-Jan-2019

Tournament Structure

Not really a question but rather an observation from a middle school still waiting for their two V5 kits since September. Are there others waiting and/or having success getting their purchased kits more quickly? My teams are generally OK with where we're at in our rankings and likely not going to states, as we have in the past, but we all noticed a very clear difference in abilities and power between V5 & Cortex bots. There's nothing to do now but I wish that V5 bots would compete against V5 bots and Cortex bots against cortex bots. The V5 bots have a real advantage and I feel that it was truly unfortunate that many teams are still waiting for their kits to arrive 6 months after they've been ordered and promised. I am surprised I don't see more posts about VEX's practice of taking a team's money and not being able to provide the teams their products during the standard competition time... I saw posts from VEX U teams but not middle and high school teams and wonder if somehow we're the only ones still waiting? I'm not interested creating any drama or legal issues, but I am frustrated on behalf of my team & feel taken advantage of by VEX. I just want to advocate for my kids and am curious if others have had success getting kits more quickly and/or have gotten any "handicaps" at competitions because of having the cortex bots. Again, I am NOT interested in starting a struggle... I am just making sure I am advocating for my team or not missing out on any accommodations. Thanks from a newbie middle school mentor/coach!

Answered by Game Design Committee

Thank you for your post and for visiting the VRC Q&A. Please review the official [Q&A Usage Guidelines](#) before posting. The intent of the Q&A is to provide official clarifications on specific VRC Turning Point rules.

If you have programmatic feedback, feel free to contact GDC@vex.com. If you are interested in starting a conversation with other VEX Robotics Competition teams, please visit www.vexforum.com.

247: T01 and REC participation in local rulings

23-Feb-2019

Tournament Structure

> <T01> Referees have ultimate authority during the competition. **Their rulings are final.**

- a. The referees will not review any photo or video Match recordings.
- b. Any questions for the referees must be brought forward by a Student Drive Team Member (not an adult) from the affected Team within a time period of two (2) Qualifying Matches, or immediately after the score is announced of an Elimination Match.
- c. Any concerns regarding the Match score must be raised by a Student Drive Team Member (not an adult) before the playing field has been reset for the next Match. Once the field has been cleared, scores may no longer be disputed.

In a semi-final match at the Southwest Texas Regional Qualifier, there was a disputed call which led to a narrow loss. The affected (losing) team questioned the head referee immediately after the score was called, prior to any robots or scoring objects being moved. The head referee conferred with the teams and confirmed the ruling. Finalists were announced and queued to the field. The losing semi-finalist team left to the pits and then the stands, no longer contesting the ruling.

At that point there began a delay of over an hour while the REC regional coordinator conferred with the entire referee crew and persons unknown over the phone. The regional coordinator then announced that, in conjunction with the local referees, himself as a representative of the REC and other persons from the REC (by phone), the previous ruling was overturned. The previous winners waiting at the finals field were disqualified from the finals, and (after even more delay) the finals were played.

Two questions:

1: At what point and in what circumstances may the REC overrule local decisions? T01 seems clear on the referees having the final decision, but was overruled in this case. In other words, on what basis may remote, non-observers rule on a game-play violation observed first-hand by the local referee staff?

2: At what point may persons other than students on the affected team advocate for a rule interpretation? In this case, despite the affected team accepting the ruling, it was overruled due to the advocacy of unnamed persons. Neither the affected team nor the alliance later disqualified was a part of the very lengthy discussion that led to the disqualification.

(edited for formatting and grammar)

Answered by Game Design Committee

Both of your specific questions can be directly answered by <T01> as quoted in your question. While it is always impossible to issue a blanket ruling based on a snapshot description, the scenario laid out in this question would not be consistent with the guidelines and intended chain of communication set forth by this rule.

The GDC cannot comment on a specific event staff's decision-making process, and the scenario described in the question is under investigation by the REC Foundation outside of the context of this Q&A forum.

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.

43: VUR9 And VRC License Plate Identification Letters

7-Aug-2018

VEX U

VUR9 states: "Teams must display their team identification letters (e.g. "IFI", "ABCD") in two visible locations on opposing sides of the Robot. The team identification letters in total must be legible to head referees or other participants, at least 2" high and 3" wide. The identification must also clearly display which alliance color the Robots belong to in that Match (i.e. red or blue)."

The rule specifically states "**The team identification letters** in total must be legible to head referees or other participants, **at least 2" high and 3" wide.**" However, on a standard VRC License Plate Kit, the identification letters are not 2" high. The identification letters are also less than 3" wide unless the name is 5 characters long.

Image showing size of identification letters.

https://drive.google.com/file/d/1UKJ_ZVhDN66cmmonAM1FcEdjQNC7ruuV/view?usp=sharing

Under this rule, are the VRC license plate identification letters illegal in VEX U?

Answered by Game Design Committee

This was addressed in the August 17th Game Manual Update:

<VUR9> Teams must display their team identification letters (e.g. "IFI", "ABCD") in two visible locations on opposing sides of the Robot, per <R20>. [b]Teams must use the official VEX Robotics License Plate Kit (276-3938) for this identification.[/b] The identification must clearly display which alliance color the Robots belong to in that Match (i.e. red or blue).

70: <VUR2> and 'This product is not legal for use in the VEX Robotics Competition.'

9-Sep-2018

VEX U

As of September 9, 2018 < VUR2 > states:

Teams may use any official VEX Robotics product, other than the exceptions noted below, to construct their Robot. This includes those from the VEXpro, VEX EDR, and VEX IQ product lines. To figure out if a product is "official" or not, refer to the www.vexrobotics.com website. ...

But several items (such as the *BEST Belt & Pulley Kit*, item 270-1683) state:

Note: This product is not legal for use in the VEX Robotics Competition.

So I would like to ask: For items that state they are not legal for VRC use but could potentially be allowed under < VUR2 >, does VUR2 take precedence (making these items legal) or does the item page take precedence (making these items illegal)?

Answered by Game Design Committee

For BEST products that explicitly state "This product is not legal for use in the VEX Robotics Competition", like the Belt & Pulley Kit you reference, the website will take precedence. These items are not legal for use in the VEX Robotics Competition or VEX U.

92: <VUR10> c Use of vacuum pressure in VEX U pneumatics systems

2-Oct-2018

VEX U

> <VUR10> Teams may utilize commercially available pneumatic components from the following list:

Cylinders, actuators, valves, gauges, storage tanks, regulators, manifolds, and solenoids. c. Pneumatic devices may only be charged to a maximum of 100 psi.

There is a maximum pressure, but no minimum pressure. Assuming the components used are allowed by <VUR10> and rated for vacuum pressure by the manufacturer, would the limit of 100psi also apply to vacuum pressure? If so, would vacuum heads be considered legal pneumatic actuators by VUR10?

Answered by Game Design Committee

Yes, vacuum heads would be considered legal pneumatic devices within the scope of <VUR10>. If using a [Venturi pump](#), which uses positive pressure to create negative pressure, the operating pressure would be bound by the 100psi limit.

93: <VUR10> Powering non-vex solenoids

2-Oct-2018

VEX U

<VUR10> allows 3rd party solenoids, but there does not appear to be a legal way of powering solenoids other than the vex solenoid driver cable.

<VUR10> Teams may utilize commercially available pneumatic components from the following list:
Cylinders, actuators, valves, gauges, storage tanks, regulators, manifolds, and solenoids.

The VEX solenoid driver cable is only compatible with a small number of 5V SMC solenoids, but most solenoids follow a standard 12V or 24V. Is it legal to power other solenoids with other electronics?

Answered by Game Design Committee

Yes, this is legal.

125: <VUR3> and Metallurgy

23-Oct-2018

VEX U

VUR3 states:

Teams are allowed to fabricate their own unique components from the following additional raw materials for each of their robots: a. An unlimited amount of non-shattering plastic from the following list: polycarbonate, acetal monopolymer (Delrin), acetal copolymer (Acetron GP), POM (acetal), ABS, PEEK, PET, HDPE, LDPE, Nylon (all grades), Polypropylene, FEP. b. An unlimited amount of composite materials, such as G10 (Garolite), FR-4, or carbon fiber. c. An unlimited number of plastic 3D printed parts. **d. An unlimited amount of steel and aluminum.**

The intent of <VUR3> to encourage teams to explore fabrication techniques like milling, 3D printing, injection molding, sheet metal punching, etc., to develop their own new robotic components in addition to the “standard” set of VEX components permitted by <VUR2>. To utilize these techniques, raw materials from the list provided in <VUR3> may be used. However, the intent of <VUR3> is not to legalize all commercially available items made from these materials. The only commercial components (other than pneumatic components) that may be used are those purchased from VEX Robotics, as specified in <VUR2>. For example, aluminum billet may be used to machine a custom bracket. However, purchasing a custom aluminum bracket is not within the spirit of this rule. Similarly, pre-drilled or extruded metal, such as angle aluminum, is not permitted, unless it can be found on www.vexrobotics.com.

Are VEXU teams allowed to perform the following meturgical processes:

1. Hardening and tempering
2. Hot and Cold Rolling
3. Shot penning

Additionally, are VEXU teams allowed to buy pre-processed (ie prepenned) steel and aluminum stock for fabrication?

Answered by Game Design Committee

Yes, these are all 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.

44: VUR3c Legal Plastic

7-Aug-2018

VEX U

VUR3 states: "Teams are allowed to fabricate their own unique components from the following additional raw materials for each of their robots:" VUR3c continues: "An unlimited number of plastic 3D printed parts."

Specific types of plastic are not defined in VUR3c.

Are the plastics in these Q&As from last season still legal for this season?

<https://www.vexforum.com/index.php/27581-answered-vexu-allowed-3d-printing-materials/0>

<https://www.vexforum.com/index.php/32739-answered-3d-printing-materials/0>

In addition, is NinjaFlex filament considered legal this season? The product description states the material is a variation of thermoplastic polyurethane (TPU). <https://ninjatek.com/products/filaments/ninjaflex/>

Answered by Game Design Committee

Yes, these would be legal.

58: VUR4 Question

23-Aug-2018

VEX U

VUR4 states "Each Robot must utilize one (1) V5 Robot Brain microcontroller and one (1) V5 Robot Radio. No other types of VEX microcontrollers or wireless communication protocols are permitted."

With the delay in the shipping of the V5 Robot Brains and peripherals, can VEXU teams use the old microcontroller cortex for qualification events?

Answered by Game Design Committee

We are monitoring the V5 rollout, and at this time there are no plans to change the VEX U robot rules in this way.

If this stance changes and such an update is made, it will be communicated via a manual update, VEXforum.com post, and email blast to VEX U teams.

98: <VUR3> Casting Silicone, Polyurethane or Rubber

4-Oct-2018

VEX U VUR3

Our team is interested casting uncured resins of silicone, polyurethane, or rubber into parts for our robot. While these are not legal materials listed in <VUR3>, we believe this is in the spirit of the rule because we developing our own fabrication process for these materials and not using prefabricated commercial parts. Would fabricating parts out of these materials in this fashion be legal and in the spirit of the rule?

Answered by Game Design Committee

As you noted, these are not materials or fabrication processes that are currently included in VUR3. Thus, they would not be legal. However, we will take this into consideration for future seasons.

106: <VUR8> COTS Spacers

15-Oct-2018

VEX U VUR8

<VUR8> Allows for "Any commercially available #4, #6, #8, #10, M2, M2.5, M3, M4, or ¼-20 screw (of any length), and any commercially available nut and/or washer to fit these screws" Would any COTS spacer for the screw sizes listed be legal, as the only spacers sold on VEXRobotics.com are for #8 screws?

Answered by Game Design Committee

Yes, this is legal.

122: Conflict between VEX-U Appendix E and "Robot Inspection Checklist"

23-Oct-2018

VEX U

From the VEX-U Appendix, the rules allow for any commercial storage tanks, and give no limit on size or number, just the 100 psi limit:

<VUR10> Teams may utilize commercially available pneumatic components from the following list: Cylinders, actuators, valves, gauges, storage tanks, regulators, manifolds, and solenoids.

However, the newly released robot inspection checklist, VEX Parts Inspection point 20, specifies VEX air reservoirs and limits it to two, in conflict with the rules stated in VUR10.

http://link.roboticseducation.org/vexu_inspectionchecklist201819

Please clarify which rule is correct, and correct the incorrect one. Thanks!

Answered by Game Design Committee

Thanks for pointing this out! The VEX U inspection checklist will be revised accordingly.

In the future, for errors in non-Game-Manual documents that do not require specific rules clarifications, feel free to email GDC@vex.com.

184: <VUR5> <VUR6> Legality of CPU Cooling Fans

15-Dec-2018

VEX U VUR5 VUR6

<VUR5>"There is no restriction on the number of V5 Smart Motors that Robots may use. No other motors, servos, or actuators are permitted, including those sold by VEX." <VUR6>"There is no restriction on sensors and other additional electronics that are used 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. b. Sensors and electronics CANNOT directly electrically interface with the VEX motors or solenoids. c. The additional sensors and electronics may only receive power from any of the following: i. Directly from the V5 Robot Brain via any externally accessible port. ii. From an additional VEX 7.2V Robot Battery or from a VEX 9.6V Transmitter Battery."

With these rules in mind, would a CPU cooling fan be legal in VEX U? The fan motor, which is not used for any physical robot mechanism actuation, would be attached to and powered off of a single board computer. The computer would be connected to and receive power from the V5 Robot Brain via an externally accessible port.

Answered by Game Design Committee

No, this would not be legal.

237: Using 3D Printer filament

7-Feb-2019

VUR3

I know we can use unlimited 3d printed parts but can we also use the filament itself? Say our printer uses 1.75mm filament. From my understanding of the rules we could not use the filament directly off the spool because it has not yet been 3d printed. My question is if we were to get a 1.75mm nozzle on our 3d printer and extrude the 1.75mm plastic filament would it then be legal? Thanks, Bison1

Answered by Game Design Committee

Yes, this would be legal.