

# Q&A

## VIQC 2019-2020: Squared Away

Tagged: G5



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 VIQC Squared Away 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 VIQC Squared Away rules questions.

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- For VEX technical support, contact [support@vex.com](mailto:support@vex.com) or [sales@vex.com](mailto:sales@vex.com).
- For game questions, suggestions, or concerns outside of specific and official rules questions, contact [GDC@vex.com](mailto:GDC@vex.com).

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### Leaving Parts on the Field

G5

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

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

#### Answered by Game Design Committee

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

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### Blocks on tower

G5

Can a robot flip a block over the top of itself to place it on the tower? The robot meets the 15" maximum for height but the top of the block is above that.

### Answered by Game Design Committee

There are no rules preventing this, thus it legal, provided that no other rules are violated in the process.

## Robot Size and Starting Position Problem

G5 R4

Hi all, I spoke with are regional rep, and he directed me here for this question. I notice that there have been similar problems but people didn't seem to realize what is causing the difficulties.

As stated in the following rules, the robot must be 11 x 19.

<G5> Expansion is limited during a Match. During the Match, Robots may not expand beyond the following restrictions: a. Horizontally, beyond an 11" x 19" (279.4mm x 482.6mm) area. b. Vertically, beyond the 15" (381mm) high starting requirement.

Also as stated by the following rule, it must fit inside the starting area of 11 x 19.

<R4> Robots must fit in the sizing box. At the start of each Match, the Robot must be able to satisfy the following constraints: a. Only be contacting the Floor and/or the Field Perimeter. b. Fit within an 11" x 19" (279.4mm x 482.6mm) area, bounded by the Starting Position. c. Be no taller than 15" from the Floor.

The problem that I have discovered is the following. The starting areas are NOT 11 x 19. On our two fields bought two years apart the starting areas for length and width are both about a 32nd of an inch short in either directions as shown in the two following pictures.

![[img](https://www.robotevents.com/storage/markdown/uploads/V1LBoQXTadECev05s71ZmG1bLwNoDcZmln6D2)]  
![[img](https://www.robotevents.com/storage/markdown/uploads/8N9M2WQn1YB0lJz9LdjfXkG6bPfk6NUE35JmC)]  
In previous years and games, this was not a problem. This year though the tolerances are very small. Making the robot size smaller would not work. The way the pieces are made, the robot would have to be slightly larger. A rule addition allowing the robots to be slightly (thickness of an axle) outside the starting area would be a good solution. Thanks for the time.

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### Answered by Game Design Committee

First, please review this similar Q&A. Although it is asking a slightly different question than yours, it includes some relevant background information regarding Robot size rulings and tolerances.

[www.robotevents.com/VIQC/2019-2020/QA/382](https://www.robotevents.com/VIQC/2019-2020/QA/382)

It looks like your root question is the following:

We have groups that have robots that are exactly 11 by 19. They would pass inspection (assuming the measuring device does not rely on the field which might have the same problems) but be ever so slightly outside of the starting positions. Their definitely needs to be a rules clarification on this.

A rule addition allowing the robots to be slightly (thickness of an axle) outside the starting area as long as it passes inspection of course would be a good solution.

Thank you for your suggestion, but this rule addition will not be made. The intents of VIQC's sizing rules are for Robot size to be checked during inspection and then enforced at the beginning of each Match. Having a different sizing rule for a Match vs inspection would negate the purpose of the inspection process.

They would pass inspection (assuming the measuring device does not rely on the field which might have the same problems) but be ever so slightly outside of the starting positions.

The official [VIQC Sizing Tool](#) does utilize the field as its reference. Relying on a common field ensures a standardized expectation for Teams, inspectors, and Head Referees, regardless of which event they attend. Some manufacturing variance is to be expected in any physical product, as is variance if using different measuring methods.

For example, the VIQC Field Perimeter has a very slight draft angle as an injection molded plastic part; so, if you lay a ruler from the perimeter to the black line, a difference of less than 1mm could easily occur depending on where you rest the ruler against the wall.

So, as an overarching answer to this question, we are going to refer to rule G3:

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

The intent of G4, G5, R5, and R6 is to provide a design constraint in the form of Robot size that is reasonably observable by a volunteer inspector/referee, and consistently enforceable across all events worldwide. It is not a reasonable expectation for an event to use digital calipers to measure Robot size; it *is* a reasonable expectation for an event to use the tools that are available to all Teams, such as a standard field, a publicly available physical sizing tool, and human observation. To avoid potential conflicts, we would advise Teams remind mindful of these realities when designing their VEX IQ Robots such that they do not rely on a possible variance of 0.03" to determine their legality.

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## Detaching robots and entanglement

G5 R3

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

They are concerned firstly that rule G5 is being violated.

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

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

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

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

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

### Answered by Game Design Committee

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

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

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

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

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

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

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

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

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

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

1. When inspecting for R3, has the Team done their due diligence in the engineering design process to mitigate the risks of unnecessary Entanglement? While it is outside the scope of this Q&A to provide specific design advice, we would recommend that Teams wishing to utilize this strategy test different thicknesses, attachment methods, lengths, etc in different types of robot-to-robot interactions to minimize unnecessary, egregious, or intentional Entanglement.
2. Does the string on the field pose a likely or strategic possibility of Entangling another Robot? That is to say - is Entangling a primary function of the string (is it a "dragnet" mechanism), or is it simply a means-to-an-end?
3. Any Robot with a mechanism such as the one in the linked video would be taking on some risk of incidental Entanglement. Therefore, if incidental Entanglement occurs, was the Entanglement egregious or intentional? If it was not egregious or intentional, was it the result of vigorous interactions from opponent Robots (per the Note in G12)?