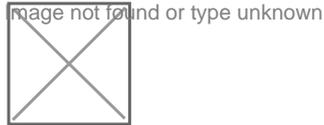# Q&A

VIQC 2019-2020: Squared Away

Tagged: Other

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.

- For event, registration, or other competition support questions, please contact your REC Foundation Regional Support Manager.
- For VEX technical support, contact support@vex.com or sales@vex.com.
- For game questions, suggestions, or concerns outside of specific and official rules questions, contact GDC@vex.com.

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96: Parking Questions

4-Oct-2018
Other

We have two questions about parked robots. 1) is it acceptable for the robot to be touching the vertical structures that hold the hanging rod? 2) Is it acceptable for both robots to be parked in the same zone (the same side of the hanging structure)? Thank you!

> **Answered by Game Design Committee**
>
> There are no rules prohibiting either of these questions. Thus, they are legal.

95: robot control working backwards

3-Oct-2018
Other

The control of our robot is moves in the opposite direction as we are expecting. What can we do to fix this problem?

> **Answered by Game Design Committee**
>
> The purpose of the VIQC Q&A system is to answer specific rules clarifications regarding this year's VIQC game. For technical support, please feel free to post on the community-based VEX IQ Forum (www.vexiqforum.com), or contact support@vex.com.

88: Parking Zone

25-Sep-2018
Other

In regards to the parking zone, how much of the robot must be in the parking zone to count for 1 point? Does part of the robot need to cross the grid line or must at least one part of the robot touch the ground "to make contact" with the parking zone?

> **Answered by Game Design Committee**
>
> Please review the Q&A Usage Guidelines before posting, specifically point 1, "Read and search the Game Manual before posting."
>
> This question is answered by the definition of Parked, quoted below and bolded for emphasis:
>
>> A Robot is considered Parked if it is **contacting the Parking Zone**.
>
> So, to directly answer your question, yes, at least one part of the robot must touch the Floor inside the Parking Zone in order to count for points. Just "reaching across" (breaking an invisible vertical plane) is not sufficient to count for points.
>
> This is also covered in more detail in the relevant Referee Training video: https://youtu.be/04IO9YDimKc?t=261

87: Robot Build

24-Sep-2018
Other

Is there a preferred robot build for the Next Level Challenge? We are new this year to robotics. As of now my kids have built the Clawbot IQ but I wasn't sure if that would be the best build for the competition.

> **Answered by Game Design Committee**
>
> Please see this similar question: https://www.robotevents.com/VIQC/2018-2019/QA/73
>
> If this does not answer your question, please feel free to re-phrase and re-submit.
>
> Of course, the robot referenced in the above answer is only intended to be a basic starting point. The true intent of the VEX IQ Challenge is for students to experience the engineering design process as they develop and test their own solutions to the game!

73: Robot Design

10-Sep-2018
Other

Is there a "prefered" (basic) design for the 2018-2019 Vex IQ robot? If so, where can I find it?

> **Answered by Game Design Committee**
>
> We recommend the "Flex" robot build, which can be found here:
>
> https://www.vexrobotics.com/vexiq/resources/robot-builds

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.

52: Is STEM Video the required method of Judging

20-Aug-2018
Tournament Structure   Other

Is the video submission for the STEM Presentation Awards a requirement? Can a local event skip the video judging process and do in person judging on the day of the event, instead?

If video judging is a requirement, would we be able to narrow down the top 5 STEM Presentations videos and perform in person judging with the top 5 video judging submissions?

Or must the determination of the STEM Presentation Award be made solely on the Video Submission prior to the start of the event?

Answered by Game Design Committee

The purpose of the VEX IQ Challenge Q&A System is to clarify rules for the VEX IQ Challenge game, Next Level. For questions related to judging, please post in the official Judging Q&A, located on the VEX IQ Forum:

http://www.vexiqforum.com/forum/vex-iq-challenge-discussion/general-vex-iq-challenge-discussion/judging-q-a

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.

470: Multiple Intentional Infractions

23-Dec-2019
Other

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

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

443: Unanswered VEXU Q&As?

7-Dec-2019
Other

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

https://www.robotevents.com/VEXU/2019-2020/QA/310

https://www.robotevents.com/VEXU/2019-2020/QA/301

https://www.robotevents.com/VEXU/2019-2020/QA/300

https://www.robotevents.com/VEXU/2019-2020/QA/340

https://www.robotevents.com/VEXU/2019-2020/QA/350

https://www.robotevents.com/VEXU/2019-2020/QA/351

https://www.robotevents.com/VEXU/2019-2020/QA/400

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

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

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

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

> **Answered by Game Design Committee**
>
> Thank you for bringing this to our attention. Please see this post on the VEX Forum that addresses this concern; we will work to address these delays moving forward.

421: Shoulder Screws

12-Nov-2019
R11 Other

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

Thanks for you time!

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

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

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

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

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

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

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

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

Rule VUR8 states the following:

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

> a. Any commercially available #4, #6, #8, #10, M2, M2.5, M3, M4, or ¼-20 screw (of any length), and any commercially available nut, washer and/or spacer to fit these screws.

> b. Any commercially available aluminum or steel rivet, up to ¼" nominal diameter.

Therefore, yes, this would be legal.

> Thanks for you time!

You're welcome.

400: <SG2> What Cubes are robots allowed to contact in autonomous

29-Oct-2019
Other

> <SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact th foam tiles, Towers, or **Cubes which are on the opposing Alliance's side of the Autonomous Line**. Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification. Note: Towers and **Cubes** which **begin the Match in contact with the Autonomous Line** are not considered to be on either side, and may be utilized by either Alliance **during the Autonomous Period**. If attempting to utilize these Towers or Cubes, Teams

should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

According to this rule, we are not allowed to contact any cubes that are fully in the opponent's side of the autonomous line. Now, the question is, would the following actions be legal?

a. In an attempt to intake cubes, the cube that were originally on your side of the autonomous line was pushed to touch the opponent's side of the autonomous line(e.g. Trying to intake a cube and the cube was pushed by the robot and touched the opponent's side of autonomous line). Are robots still allowed to interact with that said cube if the cube is not entirely on the opponent's side of the autonomous line? What if the said cube is fully in the opponent's zone?

b. The rule states that cubes begin the match **in contact** with the autonomous line are not considered to be on either side. What about the purple cube that sits above the 4 cubes, as seen in picture? It is not in contact with the autonomous line, since autonomous line is not a 3D space.

c. My interpretation is that "Cubes which begin the Match in contact with the Autonomous Line are **not considered to be on either side**", which means that those cubes are not on either side for the **duration of the autonomous** and as long as the robot does not touch foam tiles or towers on the opposing alliance side, they can interact with those said cubes which started neutral but are now fully on opponent's side? Robots can easily push the cubes forward a little in the processing to trying to intake it and in the process may result in that cube to be fully on opponent's side of autonomous, and can easily make contact with a cube which now is in opponent's zone if two robots are fighting for the same cube.

Thank you for explaining this long question!
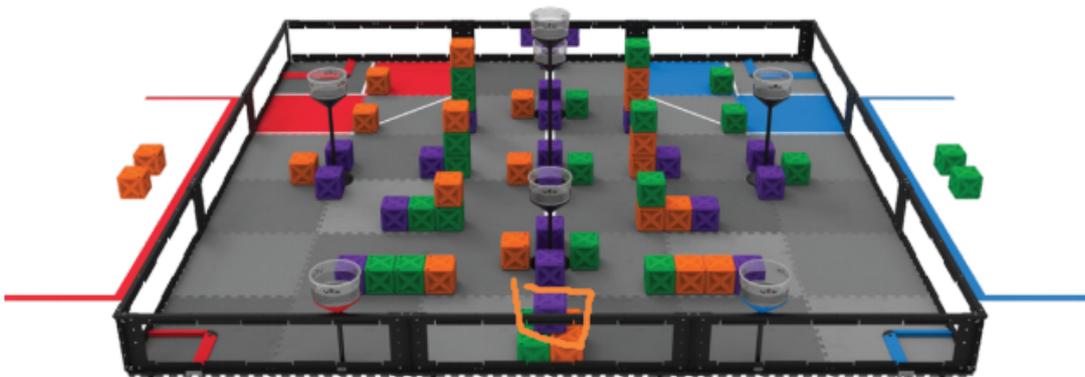
Answered by Game Design Committee

We sincerely apologize for this extremely delayed response.

> What about the purple cube that sits above the 4 cubes, as seen in picture? It is not in contact with the autonomous line, since autonomous line is not a 3D space.

The purple Cube in question should be considered a "neutral" Cube alongside the others which physically contact the Autonomous Line.

For your other questions, please see these similar Q&A posts, which we believe provide answers. If they do not, please feel free to rephrase and re-submit.

https://www.robotevents.com/VRC/2019-2020/QA/405

https://www.robotevents.com/VRC/2019-2020/QA/446

356: RE: Updating Legal Parts File with Omni-Directional Wheels

11-Sep-2019
Other

My students recently discovered that the 200 mm Travel VEX IQ Omni-Directional wheels that we have purchased directly from the VEX official website (228-2536) wasn't listed on the legal parts index for the last few years. Since we have seen it in competition for years, we figured it was a mistake and we wanted to give you a heads up so you can update the legal parts list for clarity.

> **Answered by Game Design Committee**
>
> Thank you for bringing this to our attention - the VIQC Legal parts Appendix has been updated to include the VEX IQ Omni-Directional Wheels. Slide-drive away!

351: Enforcement of Student Centered Policy

4-Sep-2019
Other

Hello,

I have a question regarding the "REC Foundation Enforcement" section of the newly released REC Foundation Student Centered Policy:

> The goal of this guide is to communicate expectations to organizations and encourage an alignment of best practices within the community. The REC Foundation will evaluate concerns related to behaviors inconsistent with this policy per the Code of Conduct. Although it is never the desire to punish students for adult behaviors, it is imperative that organizations are held accountable to ensure fairness and increase the learning opportunities for students.

This section is vague regarding how organizations will be held accountable. Is my interpretation that this means that, under certain circumstances, teams may be disqualified from tournaments for actions falling under the "red" column of the policy?

Additionally, given the following excerpt:

> If a student team member that has expertise on a specific portion of the robot design or programming cannot attend the VEX Worlds or an event that qualifies teams directly to VEX Worlds, the other attending team members should be prepared to share the knowledge and demonstrate functionality.

This is the first mention that I've seen anywhere of effectively requiring the students who built a robot to necessarily attend its events. How will the REC Foundation balance enforcement of this Policy with ensuring that teams are not unfairly penalized (in awards or via disqualification, etc as discussed above) for failing to have all team members understand the entirety of the robot? While this is obviously encouraged, it has never been required, and it has the potential to especially affect teams who take on the challenge of implementing more advanced mechanical and software concepts. Furthermore, how will unforeseeable absences (i.e. medical or other emergency)? While absences always have the potential of hurting a team's performance at events, I don't recall any previous policy having the potential to actively punish teams for it.

Thank you for your time.

> **Answered by Game Design Committee**
>
> We sincerely apologize for this extremely delayed response. However, per the Q&A Usage Guidelines, the Q&A system is intended for Game Manual rules clarifications only. For REC Foundation event and policy questions, please

350: Programming platforms & Student Centered Policy

4-Sep-2019
Other

Hello,

I'd like to clarify the intent of this section of the [newly released REC Foundation Student Centered Policy](#):

> Teams that utilize example code or custom libraries from outside sources should use caution. The program used in the robot should represent the students' design efforts and abilities. Blindly using code without understanding the code functionality is not consistent with the educational goals of this program. Students should be able to understand and explain the code used on their robots, and students should be able to demonstrate that they can program on par with the code included on their robot.

Specifically, does functionality included in and packaged/distributed with any of the official programming platforms (which from my understanding are VEXCode, RobotMesh Studio, and PROS) count as "custom libraries from outside sources"? Here are a few examples, in order of increasing ambiguity in my opinion, of features that could hypothetically be covered by this rule (with links to associated tutorials in PROS documentation):

- [smart motor functionality such as position and velocity control](#)
- [preemptive task scheduling and concurrency](#)
- [file i/o](#)
- [brain LCD control](#)
- [chassis control for various types of drives](#)
- [abstraction of autonomous drive motion](#)
- [filtering sensor input](#)
- [2D motion profiling](#)

There are various other examples that could be included, including work-in-progress features which are not yet released. I believe this question applies to all competitions and age groups, as the basic expectations as outlined in the policy are universal.

Thank you for your time.

> **Answered by Game Design Committee**
>
> We sincerely apologize for this extremely delayed response. However, per the [Q&A Usage Guidelines](#), the Q&A system is intended for Game Manual rules clarifications only. For REC Foundation event and policy questions, please contact your [REC Foundation Regional Support Manager](#).

319: New Scoring Rubric

15-Jul-2019
Other

Hello, Our question is regarding the change in the scoring rubric. When do you expect to release the new rubric? Will the expert scoring requirements of 5 be similar to the high score of 3 for the current rubric? Our team has set some crazy goals to do well in this area and we are in the middle of our first build iteration process. We have concerns about not being scored as high if the rubric is changed.
Thank you 41091A

318: Students with Disabilities: Accommodations (velcro)

11-Jul-2019
Other

Is it acceptable for a student to have velcro on the controller and wear velcro gloves to assist them with holding the controller during the match?

> **Answered by Game Design Committee**
>
> There are no rules prohibiting this, thus it is legal.

317: Students with Disabilities: Accommodations (sitting)

11-Jul-2019
Other

1. Is it okay for a student with physical disability to sit in a wheelchair or on a walker during the match?

> **Answered by Game Design Committee**
>
> There are no rules prohibiting this, thus it is legal.
>
> Rule <T15> states the following (bolded for emphasis):
>
> > <T15> Fields may be raised or on the floor. Some tournaments may choose to place the playing field on the floor, or elevated off the floor (common heights are 12" to 24" [30.5cm to 61cm]). **No Drive Team Members may stand on any sort of object during a Match, regardless of whether the field is on the floor or elevated**.
>
> The intent of this rule is to help ensure Student safety; standing on a stepstool could pose a trip/fall hazard. This rule is not intended to restrict Students who require medical accommodations, such as a wheelchair, walker, crutches, etc.
>
> It is always helpful to review any specific requests or accommodations with your Event Partner and/or Head Referee at the beginning of an event to ensure that there is no confusion when it comes time for a Match.

315: Age clarification for middle school IQ

10-Jul-2019
Other

The current game manual for IQ defines a middle school student as being born after May 1, 2005 (14 or younger at Worlds). The current game manual for VRC defines a middle school student as being born after May 1, 2004 (15 or

younger at Worlds). Can you clarify the age for middle school IQ? Leaving it as written would not allow many 9th grade students in a junior high (grades 7-9) to compete.

> **Answered by Game Design Committee**
>
> Thank you for sharing your concern. The age breakdowns of the different types of Students will be clarified further in the August Game Manual update.
>
> EDIT: In the August 16th Game Manual update, the definition of Student was updated as follows:
>
> > Anyone born after May 1, 2004 (i.e. who will be 15 or younger at VEX Worlds 2020). Eligibility may also be granted based on a disability that has delayed education by at least one year. Students are the individuals who design, build, repair, and program the Robot with minimal adult assistance.
> >
> > • Elementary School Student - Any Student born after May 1, 2007 (i.e. who will be 12 or younger at VEX Worlds 2020). Elementary School Students may "play up" and compete as a Middle School Student.
> >
> > • Middle School Student - Any eligible Student that is not an Elementary School Student.

310: Clarification regarding "Stacked" status of cubes

24-Jun-2019
Other

The "Stacked Cube" definition (under "Scored"), and associated Figure 13:

- **Stacked Cube** - A *Cube* status. A *Cube* is considered a *Stacked Cube* if it meets the following criteria at the end of the *Match*:
    1. Contacting the *Top Surface* of a *Base Cube* or *Stacked Cube*.
    2. Not contacting the top of the field perimeter wall.
    3. Not contacting the *Top Surface* of any *Cubes* which are not *Scored*.

Figure 13: An example of a Goal Zone with Cubes are Scored (green checkmark) and not Scored (red "X"). This Cube is not Scored because it is being contacted by a Robot of the same Alliance color as the Goal Zone.

The text of the definition suggests that the top (orange) cube in the figure should **not** be considered "Stacked", because it is touching the top surface of a cube (purple) which is not scored (because it is in contact with a robot, as indicated in the figure caption). However, this contradicts the figure, which shows this cube as "Scored" (requiring it to be either "Stacked" or a "Base Cube"). We would assume that the figure has an error in this case; is that correct?

> **Answered by Game Design Committee**
>
> We sincerely apologize for this extremely delayed response. However, we do not believe there is a discrepancy in this image/description; the top orange Cube has a red "X" over it, denoting that it is not Scored.