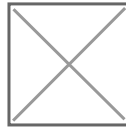


Q&A

VRC 2019-2020: Tower Takeover

Tagged: R11



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

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

421: Shoulder Screws

12-Nov-2019

R11 Other

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

Thanks for you time!

Answered by Game Design Committee

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

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

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

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

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

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

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

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

Rule VUR8 states the following:

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

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

Therefore, yes, this would be legal.

Thanks for you time!

You're welcome.

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.

284: R11 Clarification

22-May-2019

R11

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

to see elevator slides this year again. Thank you.

Answered by Game Design Committee

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

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

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

Please also see R5d:

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

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

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

1496: Metal Spacers

9-Mar-2023

R11

<R11> point C states that robots may use "Any commercially available nut, washer, standoff, and / or non-threaded spacer up to 2.5" (63.5mm) long which fits these screws."

<G3> notes that "if there is no rule prohibiting an action, it is generally legal."

Our question is the following: Are spacers that are made of metal that fit VEX-legal screws and are up to 2.5" long a legal vex component? If not, why? If so, can they be modified under <R22>? If metal spacers are not modifiable, why?

Thanks for your time answering this question.

Answered by Game Design Committee

As you quoted in your question, rule <R11> permits any commercially-available non-threaded spacer up to 2.5" long that fits the screws in the VEX V5 product line.

Rule <R22> specifies that most modifications to non-electrical components are legal, and goes on to provide some allowed and disallowed examples.

Provided no other rules are violated, the part you describe may be allowed by rule <R11>, and can be bent or cut as allowed by rule <R22>. The final determination of whether any part is legal will be made by inspectors and/or Head Referees at an event. You should also keep the red box from rule <R11> in mind: "If a key component of a Robot's design relies upon convincing an inspector that a specialized component is "technically a screw," it is probably outside of the spirit and intent of this rule."

1342: Legality of Field parts on robots

13-Dec-2022

Robot Rules and Inspection R6 R11

I have noticed in recent tournaments that some teams appear to have been using parts that originate from VRC field kits. I understand that polycarbonate can be legal assuming that it fits within the sizing restrictions but our question specifically centers around Nuts. Rule R11 gives a detailed explanation of legal fasteners for robots as listed which seems pretty straightforward.

[<R11>](#)

I've noticed that some teams may be using larger nuts as part of their endgame expansion projectiles that look like they could be the 1/4" lock nuts used in the VRC field perimeter. What I would like to clarify is whether these nuts are competition legal. The vex website lists the field perimeter as being VRC Legal under the V5 platform; however, I am unsure if this might fall into the bounds of the red box in rule R6 as listed below due to being "competition support materials".

[<R6>](#)

Clarification would be appreciated, thank you!

Answered by Game Design Committee

Thank you for your question! 1/4" nuts, whether from the VRC field perimeter or any other source, are not legal for use on VRC Robots.

As you noted, 1/4" screws and nuts are not included in the list of legal commercially-available fasteners in rule [<R11>](#), and the use of competition support materials is prohibited by the red box following rule [<R6>](#).