

Q&A

VEXU 2021-2022: Tipping Point

Tagged: VUR2

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 VEX U Spin Up rules clarifications, and the clarifications made here from the Game Design Committee (GDC) are considered as official and binding as the written [Game Manual](#) (including the VEX U Appendix C) itself.

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

- For event, registration, or other competition support questions, please contact your [REC Foundation 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.

767: VIQ Game Objects

22-Mar-2021

VUR2

Quick question about the using VIQ game objects.

VIQ Legal Parts Appendix <https://content.vexrobotics.com/docs/viqc-rise-above/LegalPartsAppendix06032020.pdf>

VUR2

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 V5, and VEX IQ product lines. To figure out if a product is "official" or not, refer to the www.vexrobotics.com website.

VUR2-a

The following products are not permitted under this rule: a. Products intended for competition event use, such as trophies, field perimeters, or game objects

Part 228-2500-1381 (the image attached) is a VIQ game object for this season, making it illegal according to VUR2-a. But, this part is also allowed in the VIQ parts appendix, making it legal according to VUR2.

My question is the following:

1. Can VEXU teams use current VIQ game objects if they are listed in the Legal Parts Appendix?
2. Can VEXU teams use previous VIQ game objects if they were listed in that season's Legal parts Appendix?

Thank you for your time



Answered by committee

My question is the following:

1. Can VEXU teams use current VIQ game objects if they are listed in the Legal Parts Appendix?
2. Can VEXU teams use previous VIQ game objects if they were listed in that season's Legal parts Appendix?

Yes, VIQC game objects that are also intended to be construction elements (i.e. are listed in the VIQC Legal Parts Appendix) are legal for use in VEX U.

The intent of VUR2-a is to prohibit the use of VRC game objects, due to the potential for confusion between the game object on a Robot vs a game object on the field.

708: <VUR6> Clarification

7-Dec-2020

R6 R7 R8 R10 R12 R20 R22 VUR2 VUR3 VUR5 VUR6 VUR8

In this previous ruling, it was determined that <VUR5> takes priority over <VUR6>:

<https://events.vex.com/VEXU/2020-2021/QA/674>

However, this is contradictory to every other instance of past rulings regarding <VUR6> and the wording of <VUR6> in the game manual.

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For example, consider a typical custom sensor such as the pixy camera:

<https://www.robotshop.com/en/charmed-labs-pixy-2-cmucam5-image-sensor.html>

This sensor violates <R6>, <R7>, <R8>, <R10>, <R12>, <R20>, <R22>, as well as <VUR3> and <VUR8>.

VUR3 restricts the materials allowed, but this sensor violates the allowed materials.

VUR8 restricts the screw sizes allowed, but this sensor may have smaller screws than the allowed limit.

As another example, consider a vex IQ sensor: <https://www.vexrobotics.com/228-3014.html>

This sensor would violate <R6>, <R7>, <R8>, <R10>, <R12>, <R20>, <R22>, as well as <VUR3> and <VUR2b>.

<VUR2b> restricts teams from using any vex IQ electronics, which would include this sensor.

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Because <VUR6> specifically states "There is no restriction on sensors and other additional electronics that Robots may use for sensing and processing" it has been understood by most VexU teams that <VUR6> takes priority over all the other rules in the game manual. Logically this would also mean <VUR6> would take priority over <VUR5>.

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Several other Q/As over the years have verified this as correct as the wording on <VUR6> has not significantly changed since these rulings:

<https://www.vexforum.com/t/answered-vexu-speakers-as-part-of-custom-sensor/42312>

<https://www.vexforum.com/t/answered-vex-u-old-college-q-a-updates/23810>

<https://www.vexforum.com/t/answered-custom-sensor-housing/19582/2>

These three Q/As verify that <VUR6> would take priority over <VUR3> and <VUR8> as well as all the regular game manual rules mentioned above.

Furthermore, the following Q/A shows that <VUR6> would also take priority over <VUR5>:

<https://www.vexforum.com/t/answered-vex-u-non-vex-servo-motors-for-a-custom-sensor/35538>

This allowed external non vex motors used solely for manipulating custom sensors.

If this were the case, it would agree with the wording of <VUR6>. There are numerous sensors and processing boards that rely on motors to operate.

For example, many full field lidar systems such as:

<https://www.robotshop.com/en/rplidar-a1m8-360-degree-laser-scanner-development-kit.html>

rely on an integrated motor to spin the lidar enabling it to map the field. VexU teams have legally used similar lidar systems in the past and may plan to do so again this season.

Another example would be the Nvidia Jetson Xavier NX listed below:

<https://www.nvidia.com/en-us/autonomous-machines/embedded-systems/jetson-xavier-nx/>

This processing board has a built-in fan on its heatsink that is critical to its function as a processing unit.

A third example is the pixy tilt and pan kit: <https://pixycam.com/pixy2-pan-tilt-kit/> (ruled legal in the above Q/A linked).

Without these integrated motors, none of these sensors or processing units could function as intended.

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Therefore, which rules, if any, restrict the "no restriction" clause of <VUR6>?

Furthermore, if <VUR5> does not apply to <VUR6>, then was the previous ruling in QA#674 an error?

If <VUR5> is applicable, are 360-degree Lidar sensors and the Nvidia Jetson processing boards also illegal? If all VexU appendix rules also apply to <VUR6>, then does that mean that there are no legal VexU custom sensors?

Answered by committee

If all VexU appendix rules also apply to <VUR6>, then does that mean that there are no legal VexU custom sensors?

Please see 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 Robotics Competition.

The intent of the answer in the linked Q&A was to prohibit using VUR6 as a loophole to install cooling fans on a Robot.

Sensors containing an internal motor which is integral to their operation, such as a LIDAR or pan-tilt Pixy, would be permissible. It would not be feasible for an inspector to take apart a LIDAR module to see if there is a motor inside of it. It is, however, feasible for an inspector to check if a fan is being used to cool a V5 Smart Motor.

To prevent confusion, we would advise Teams with external processors that require thermal protection to utilize a [passive heat sink](#) instead of an active cooling fan.

1014: <VUR2> Mining parts

24-Jan-2022

VUR2

<VUR2> allows teams to use official VEX Robotics products.

Is it permitted to render items from an official VEX part?

Example is extracting ball bearings from a VEX Pro radial bearing.

- Used in a team designed/manufactured part such as a 3d printed metric radial bearing
- Used in an aluminum draw slide extrusion permitted under <VUR4>;

Hoping for an answer sooner than 3-4 weeks....

Answered by committee

We are not going to provide a blanket answer that will encompass all possible forms of "mined" parts and materials.

The specific examples in this post would be permitted. As Fabricated Parts, per VUR4, we would advise having strong documentation supporting these designs, per VUR5.