Q&A

VIQRC 2023-2024: Full Volume

Tagged: R16

Welcome to the official VEX IQ 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 VIQRC **Full Volume** 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 VIQRC Full Volume rules questions.

- For event, registration, or other competition support questions, please contact your REC Foundation Manager.
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903: Are ESD Boards Considered Non-Functional Decoration When Unplugged?

30-Oct-2021
R13 R16 R21

Hello,

R13

> Decorations are allowed. Teams may add non-functional decorations, provided that they do not affect 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”. Unless otherwise specified below, non-functional decorations are governed by all standard Robot rules.
>
> In order to be “non-functional,” any guards, decals, or other decorations must be backed by legal materials that provide the same functionality. For example, if your Robot has a giant decal that prevents Scoring Objects from falling out of the Robot, the decal must be backed by VEX material that would also prevent the Scoring Objects from falling out.
>
> a. Anodizing and painting of parts is considered a legal nonfunctional decoration. b. Small cameras are permitted as non-functional decorations, provided that any transmitting functions or wireless communications are disabled. Unusually large cameras being used as ballast are not permitted. c. VEX electronics may not be used as non-functional decorations. d. 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 Inspector and Head Referee will make the final decision on whether a given decoration or mechanism violates this rule. e. Internal power sources (e.g. for a small blinking light) are permitted, provided that no other rules are violated and this source only provides power to the non-functional decoration (e.g. does not directly or indirectly influence any functional portions of the Robot). f. Decorations which provide feedback to the Robot (e.g. by influencing legal sensors) would be considered “functional”, and are not permitted. g. Decorations which provide visual feedback to Drive Team Members (e.g. decorative lighting) are permitted, provided that they do not violate any other rules and serve no other function (e.g. structural support).

R16

> Robots have one microcontroller. Robots must ONLY use one (1) VEX V5 Robot Brain (276-4810). a. Any other microcontrollers or processing devices are not allowed, even as non-functional decorations. This includes microcontrollers that are part of other VEX product lines, such as Cortex, VEXpro, VEX RCR, VEX IQ, VEX GO, or VEX Robotics by HEXB

R21

> No modifications to electronic components are allowed. Motors (including the internal PTC or Smart Motor firmware), microcontrollers (including V5 Robot Brain firmware), extension cords, sensors, controllers, battery packs, reservoirs, solenoids, pneumatic cylinders, and any other electrical component or pneumatics component of the VEX platform may NOT be altered from their original state in ANY way.
>
> a. External wires on VEX electrical components may be repaired by soldering, using twist / crimp connectors, electrical tape or shrink tubing such that the original functionality / length is not modified in any way. Wire used in repairs must be identical to VEX wire. Teams may make these repairs at their own risk; incorrect wiring may have undesired results. b. Teams must use the latest official VEXos firmware updates, found at www.vexrobotics.com. Custom firmware modifications are not permitted. c. Teams may make the following modifications to the V5 Smart Motor’s user-serviceable features. No other modifications are permitted. i. Changing or replacing the gear cartridge with other official replacement cartridges. ii. Replacing the V5 Smart Motor Cap (276-6780). iii. Replacing the threaded mounting inserts (276-6781).

BLRS Wiki - V5 ESD Protection Board https://wiki.purduesigbots.com/vex-electronics/v5-esd-protection-board

It is my understanding these boards are illegal for use during competition. But, as these boards don't violate <R16> or <R21> when unplugged on a robot, if the team follows <R13>, these would be considered non-functional decoration. Is this a correct interpretation?

Thank you for your time!

> **Answered by committee**
>
> > It is my understanding these boards are illegal for use during competition. But, as these boards don't violate <R16> or <R21> when unplugged on a robot, if the team follows <R13>, these would be considered non-functional decoration. Is this a correct interpretation?
>
> Yes, this is correct.

472: Cortex Non-Functional Decorations

2-Jan-2020
R12 R16 R17

Under rules <R12>, <R16>, <R17>, may teams using the V5 Control System use a Cortex VEXNET 2.0 Key as a non-functional decoration?

> **Answered by committee**
>
> No, this is not legal.

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 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.

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 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.

1754: IQ Pneumatics wires too short

7-Nov-2023
R16

We are experimenting with Pneumatics and find the wires coming with Pneumatics Kit are quite short and this makes it very hard to attach the Pneumatics system to the robot properly. We found the extension cables available on VEX site but they are currently not allowed in IQ, would it be possible to make the extension cables also legal for IQ? <R16>

https://www.vexrobotics.com/extension-cables.html

<R16> Pneumatics. Robots using parts from the VEX IQ Pneumatics Kit (228-8795) must satisfy the following criteria: No more than two (2) Air Tanks, including any that aren't connected. No more than (1) Pneumatic Pump, including any that aren't connected. No additional parts that are not included in the VEX IQ Pneumatics Kit (e.g., unofficial tubing or fittings).

> **Answered by committee**
>
> No, using an extension cable between the Air Pump and Pneumatic Solenoid would not be legal.
>
> The Pneumatic Solenoid connects to the Robot Brain with a standard VEX IQ Smart Cable, of which any legal length may be used.

1706: Pneumatic tubing

16-Oct-2023
R16

<R16> unofficial tubing?? when we run out or cut tubing wrong where do we get replacement or can we get same 4mm tubing on amazon? please advise.. vex doesn't offer tubing for iq.

> **Answered by committee**
>
> Please see this similar Q&A post, which we believe answers your question. If it does not, feel free to rephrase and re-submit.

1702: Pneumatics Tubing

16-Oct-2023
R16

Rule <R16> states:

> Pneumatics. Robots using parts from the VEX IQ Pneumatics Kit (228-8795) must satisfy the following criteria: .... No additional parts that are not included in the VEX IQ Pneumatics Kit (e.g., unofficial tubing or fittings).

However, the kits come with very little tubing which is cut into pieces based on robot needs, and it doesn't appear currently possible to buy more kits or IQ tubing.

Is it possible to use the V5 black tubing or is it potentially possible to revisit this rule similar to the rubber bands to allow outside sources of 4mm tubing?

Additionally the legal parts list doesn't show any of the Pneumatics Kit parts or tubing. I assume they are legal based on the rule book inclusion of them.

> **Answered by committee**
>
> > Is it possible to use the V5 black tubing or is it potentially possible to revisit this rule similar to the rubber bands to allow outside sources of 4mm tubing?
>
> The black tubing found in the V5 Pneumatics Kit is not compatible with VEX IQ pneumatics, and is not legal for use.
>
> Legal replacement / additional VEX IQ Pneumatics Tubing can be found here: https://www.vexrobotics.com/228-7728.html

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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 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 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.

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 committee

> Yes, this is legal.