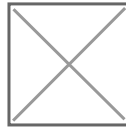


Q&A

VRC 2019-2020: Tower Takeover

Tagged: R28



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.

427: 3d Printed License Plate Holders

19-Nov-2019

R12 R28

On the vex forum there are discussions of 3D Printed License Plate Holders. But, "Anything written on the forum is just chit-chat and can't be used to prove anything to EPs or tournament hosts." I find this to be confusing because many teams are posting their designs online and are not distinguishing whether they are VRC or VEXU. I can see a team showing up at a tournament with a 3D Printed License Plate Holder and trying to prove to the EP it is legal by showing discussions that it is allowed because "Team A" is doing it, and "Team A" happens to be a VEXU team.

I would like to officially ask if 3D Printed License Plate holders are allowed on the VRC robot (Middle School & High School) as long as it "would be considered a non-functional decoration as described" by <R12> & <R28> or are 3D Printed License Plate Holders only allowed on the VEXU robots due to the abundance of resources allowed for them to use (including 3D printed materials)?

Answered by Game Design Committee

3D printed non-functional decorations are permitted in VRC, provided that they satisfy the constraints of R12. R12 is partially quoted below:

<R12> 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 Cubes from falling out of the Robot, the decal must be backed by VEX material that would also prevent the Cubes from falling out.

It is impossible to issue a blanket ruling that would apply to all hypothetical decorations and Robot designs; inspectors will have the final say in what is considered “non-functional”. The most common thought experiment used in this determination is to ask what would happen if the decoration were removed from the Robot. Is the hypothetical License Plate holder being used to join structural pieces together, to guide Cubes, etc?

We would also ask teams to bear in mind [this similar Q&A](#), specifically the following point:

Teams wishing to utilize custom-made license plates should be prepared for the possibility of this judgment, and ensure that they are prepared to replace any custom parts with official VEX License Plates if requested. Not bringing official replacement plates to an event will not be an acceptable reason for overlooking a violation of one or more points in R28.

3079: Is drilling or adding holes to the V5 Smart Motor Cap permitted under R27 and R28?

5-Feb-2026

R27 R28

According to , no modifications to electronic components are allowed, with a limited list of user-serviceable exceptions for the V5 Smart Motor (11W).

<R28.c> states that, for the purposes of this rule, the V5 Smart Motor Cap is not considered “part of the motor,” and therefore applies.

allows most physical modifications to non-electrical components, such as cutting or drilling legal metal or plastic parts.

Given this interaction between and , is it legal to drill holes or otherwise physically modify the V5 Smart Motor Cap (for example, for cable routing or mounting), beyond the specific actions listed in <R28.a>?

In other words, does permit structural modifications to the Motor Cap, or is modification limited strictly to the user-serviceable actions explicitly listed in <R28.a>?<R27><R28>

Answered by Game Design Committee

The V5 Smart Motor Cap is not considered a part of the motor, and can be modified like other structural parts.

3007: 3D printing use

27-Dec-2025

R19 R28

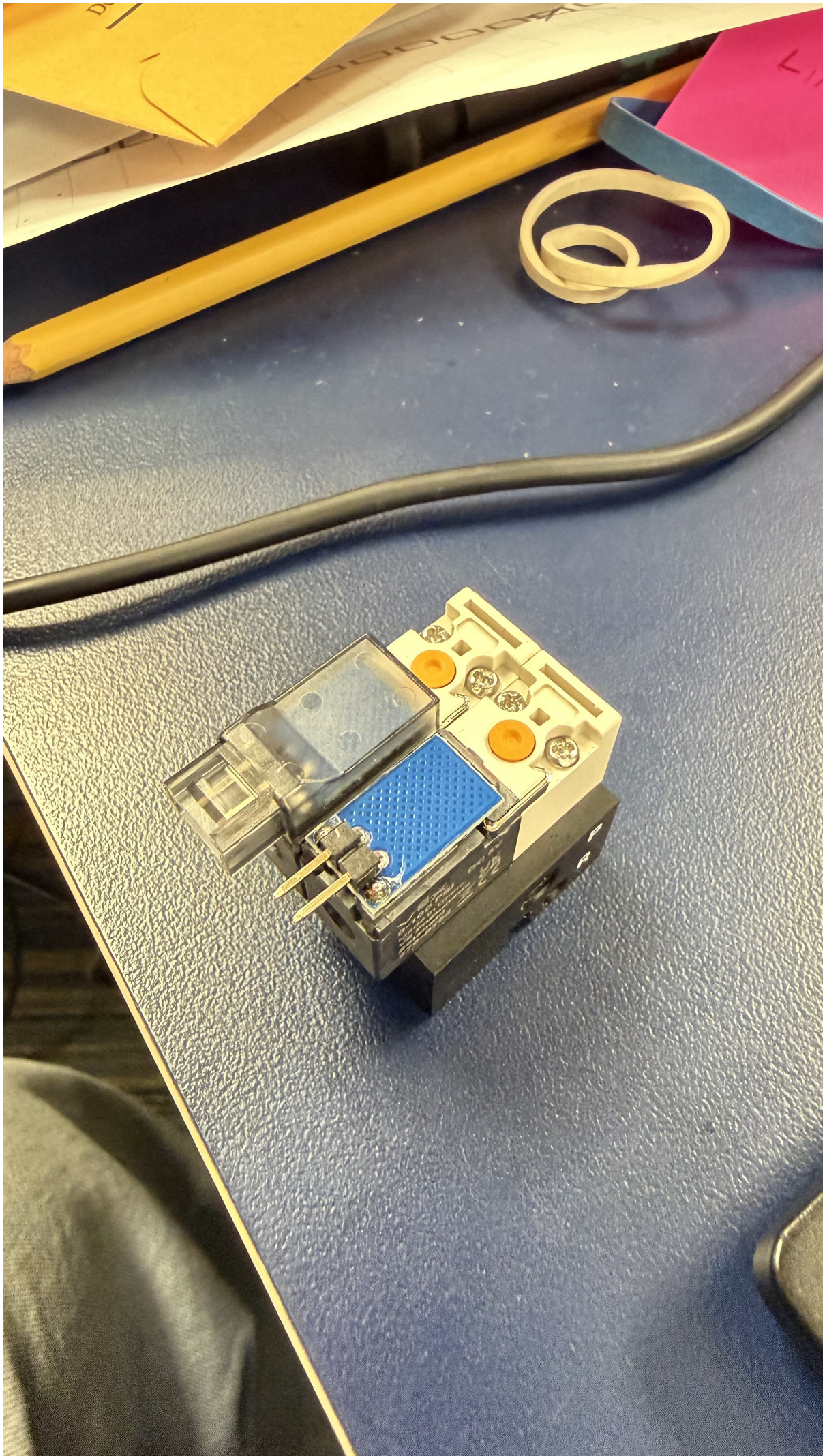
<R19><R19>

I understand that 3D printing parts are not allowed for functional/non-functional use. I also understand that R28 prohibits modifications of solenoids. However, I would still like to know if this would be possible. Picture is a pneumatics solenoid.

Notice the one connector lacking the plastic casing for the 3-wire connector leaving one set of pins exposed. Could a replacement part (approximately identical) be 3D printed to prevent the pins from being bent when in use?

This would not be a modification as described in R28 as it's reverting the the solenoid to its "original" design rather than adapting for a new purpose. It's not necessarily a custom part for the robot like a functional bracket, or decoration which I believe to be the "spirit of the rule".

Honestly my opinion would be not allowed based on R19, but thought I would throw it out there.



Answered by Game Design Committee

No, this is not permitted. This modification is an intentional Violation of rules [<R19>](#) and [<R28>](#). Rule [<R4>](#) could also apply.

2900: V5 Robot Brain parts uses elsewhere on robot as functional elements.

6-Nov-2025

R6 R25 R28

[<G3>](#)I have seen posts about using V5 Brain accessories on other parts of the robot not related to mounting or protecting the V5 Robot Brain.

1. Screen protector used as part of intake mechanism - is this permitted?
2. If it is permitted, does it count against plastic use? If not, how many screen protectors may be used on the robot?
3. Can the magnets be used from screen protector as functional use on robot? 4. if magnets be used from screen protectors, how many may be used by a team?
4. Flanges from V5 Brain may they be used on other parts of the robot not related to mounting of V5 Brain?
5. If they are permitted to be used, any limit on number of flanges used on robot?
6. If they are permitted, may they be used as substitute for IQ pins to mount License Plates?

Robot rules does not prohibit these cases, nor limits it. Yet, it seems that V5 Brain parts should be used for the Brain, as screen protectors and flanges do not individual SKU with V5RC legal designation.

Answered by Game Design Committee

Thanks for these questions, Pascal!

The December 4 game manual update will include two new clauses to reflect Q&A guidance from prior seasons. These changes are effective immediately.

- A new clause in rule [<R8>](#) will specify that V5 Robot Brain accessories (short flanges, long flanges, and the magnetic screen protector) are part of the V5 Robot Brain and are only legal for use on Robots as part of the V5 Robot Brain.
- A new clause in rule [<R28>](#) will specify that all V5 Robot Brain accessories (short flanges, long flanges, and the magnetic screen protector) are considered "part of the V5 Robot Brain" and cannot be modified.

The answers to your questions are therefore:

1. Screen protectors can only be used to protect the V5 Robot Brain screen as intended.
2. The one screen protector used to protect the V5 Robot Brain does not count against the custom plastic limit. Only one screen protector can be used per V5RC Robot Brain.
3. Because the screen protector is part of the V5 Robot Brain, it cannot be modified in any way, including removing the magnets.
4. Magnets cannot be removed from the screen protector for other uses on the Robot.
5. Flanges are part of the V5 Robot Brain and cannot be used for other purposes on the Robot.
6. Each V5 Robot Brain includes two Short Flanges and two Long Flanges, all of which can be used to mount the V5 Robot Brain on other materials. Flanges are not required.
7. The V5 Robot Brain flanges cannot be used for other purposes on the Robot, including attaching License Plates.