Q&A

VRC 2023-2024: Over Under

Tagged: R1

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 Over Under 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 Over Under 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.

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934: Clarification on R1

18-Nov-2021
R1

According to <R1> teams may not have more than one robot. Additionally, in <R1a> teams may not participate with one robot while another is being modified or assembled. The clarification refers to use of a second robot diminishing "the efforts of a team that has spent extra design time making sure their one Robot can accomplish all of the game's tasks."

If iterative design and improvement is the goal, would teams be allowed to have a second robot at all? Is there a difference between what is allowed for "practice purposes" as opposed to during competition? Would creating and practicing with a second robot diminish the efforts of a team carefully assessing improvements, evaluating risk and potential benefit?

> **Answered by committee**
>
> The full text of the "blue box" at the end of <R1> reads as follows, with a portion bolded for emphasis:
>
> > The intent of <R1a>, <R1b>, and <R1c> are to ensure an unambiguous level playing field for all Teams. Teams are welcome (and encouraged) to improve or modify their Robots between events, or to collaborate with other Teams to develop the best possible game solution.
> >
> > However, **a Team who brings and / or competes with two separate Robots at the same tournament** has diminished the efforts of a Team who spent extra design time making sure that their one Robot can accomplish all of the game's tasks. Similarly, a multi-team organization that shares a single Robot has diminished the efforts of a multi-team organization who puts in the time, effort, and resources to undergo separate individual design processes and develop their own Robots.
> >
> > To help determine if a robot is a "separate Robot" or not, use the Subsystem definitions found in <R1>. Above that, use common sense as referenced in <G3>. If you can place two complete and legal Robots on a table next to each other, then they are two separate Robots. Trying to decide if changing a pin, a wheel, or a motor constitutes a separate Robot is missing the intent and spirit of this rule.
>
> Most Robot rules, including <R1>, are intended to apply within the context of a competition event. For example, <R1-a> is intended to prohibit competing with one Robot in a Match while a second Robot is being assembled in the Team pit area.
>
> There are no rules prohibiting the use of a separate "practice Robot" between events, provided that no other rules are violated (namely, <R1-c>, <R2>, <G2>, etc).

857: Using VexAI Robots in the VexU Competition

1-Sep-2021
R1

Can a collegiate VexAI team also register as a VexU team to compete in both competitions? This would seem to violate <R1> section d, since it states that a robot may not compete under multiple team numbers. But the spirit of the rule seems to be to prevent multiple teams/organizations from sharing a robot, not to prevent one team from competing in both VexU and VexAI.

> **Answered by committee**

Yes, the same group of Students may register as both a VEX U Team and a collegiate VAIC Team. Yes, they may use the same Robot for each competition (provided that no other Robot rules are violated in either one).

R1 is intended to apply to Teams within the same REC Foundation competition platform / grade level. In a tournament, a VEX U Team and a VAIC Team would never share the same field, Skills ranking, Alliance selection, etc. (of course, the Robot cannot be used in multiple programs by separate groups of Students, since that Robot would not represent the skill level of both Team(s), i.e. would be in violation of rule G6)

738: Tetherbots and R1

29-Jan-2021
R1

A team has a main robot and a tethered minibot. For skills matches the team disconnects the minibot and uses only the main robot. Is this a violation of rule R1, specifically R1c?

R1c states "Teams may not switch back and forth between multiple Robots during a competition. This includes using different Robots for Skills Challenge, Qualification and/or Elimination Matches"

Answered by committee

The Subsystem definitions in R1 read as follows:

> • Subsystem 1: Mobile robotic base including wheels, tracks, legs, or any other mechanism that allows the Robot to navigate the majority of the flat playing field surface. For a stationary Robot, the robotic base without wheels would be considered Subsystem 1.
>
> • Subsystem 2: Power and control system that includes a legal VEX battery, a legal VEX control system, and associated motors for the mobile robotic base.
>
> • Subsystem 3: Additional mechanisms (and associated motors) that allow manipulation of game objects or navigation of field obstacles
>
> Given the above definitions, a minimum Robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of 1 and 2 above. Thus, if you are swapping out an entire subsystem of either item 1 or 2, you have now created a second Robot and are no longer legal.

It is always difficult to provide a blanket answer based on a snapshot description of a hypothetical design. For this to be legal, inspectors and Head Referees should make the following decisions:

1. If the "minibot" portion of your Robot is not considered Subsystem 1 or Subsystem 2 of your Robot (i.e. it is not the "mobile robotic base").
2. If Subsystems 1 and 2 are not swapped out when changing between configurations.

If these conditions are met, and the "minibot" can therefore be interpreted as Subsystem 3, then this would be a legal configuration change. At this point, the Robot would be subject to R3, which discusses Robots with multiple functional configurations.

> <R3> Robots must pass inspection. Every Robot will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all robot rules and regulations are met. Initial inspections will take place during team registration/practice time.
>
> a. Significant changes to a Robot, such as a partial or full swap of Subsystem 3, must be re-inspected before the Robot may compete again.
>
> b. All possible functional Robot configurations must be inspected before being used in competition.

27: Clarification of <R1> and <R2>

14-Jun-2018
R1 R2

Rule <R1> allows teams to replace subsystem 3 during a competition, such as a flywheel, cap lifter, scissor lift etc, whilst rules <R1> and <R2> limit teams to only having one robot at a competition:

Would a team be allowed to have spare subsystem 3s for their entire robot if they are identical to the subsystem originally on the robot? Would having replacement subsystem 3s for all the parts of the robot class as being a second robot effectively for spares, breaking rule <R2>

This is because we intend on building a modular robot where each subsystem 3 can be swapped out with ease, whilst keeping the same subsystem 1 and 2

> **Answered by committee**
>
> Yes, this is legal. As you noted, <R1> only prohibits teams from swapping Subsystems 1 and 2. Remember that if you have multiple configurations with different Subsystem 3 mechanisms, your Robot must be inspected in all possible configurations per <R2b>.

223: <R1> (a) second robot clarification

22-Jan-2019
R1

"<R1> Only one (1) robot will be allowed to compete per team in the VEX Robotics Competition. ... a. Teams may not compete with one robot while a second is being modified or assembled."

Teams in my region (and I assume others) are now receiving V5 kits. They have Cortex robots built but want to work on their V5 robot. For several schools, tournaments are the longest block of time available to work on a robot. Does <R1>(a) prevent them from competing with their Cortex robot while building their V5 robot if they don't compete with the V5?

Secondly, <R1>(Subsystem 1) states: "..For a stationary robot, the robotic base without wheels would be considered Subsystem 1." Would a team be allowed to have a stationary base (w/o Subsystem 2) for the purpose of working on a Subsystem 3?

Thank you.

> **Answered by committee**
>
> > Does <R1>(a) prevent them from competing with their Cortex robot while building their V5 robot if they don't compete with the V5?
>
> The red box underneath <R1> helps to clarify this:
>
> > To help determine if a robot is a “separate robot” or not, use the Subsystem definitions found in <R1>. Above that, use common sense as referenced in <G2>. If you can place two robots on a table next to each other, and they look like two separate legal/complete robots (i.e. each have the 3 Subsystems defined by <R1>), then they are two robots.
>
> So, the answer to your specific question is "Yes". Competing with one Robot at an event while working on a second Robot (which has a second Subsystem 2) at the same event is an explicit violation of <R1>.

> Would a team be allowed to have a stationary base (w/o Subsystem 2) for the purpose of working on a Subsystem 3?

Yes, this would be legal. <R1> includes the following statement:

> Given the above definitions, a minimum robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of 1 and 2 above.

A Robot without both subsystems 1 and 2 would not be considered a second "Robot" within the purest definition of <R1>.

214: Subsystem removal

17-Jan-2019
R1

Rule

> <R1> Only one (1) robot will be allowed to compete per team in the VEX Robotics Competition. Though it is expected that teams will make changes to their robot at the competition, a team is limited to only one (1) robot. As such, a VEX robot, for the purposes of the VEX Robotics Competition, has the following subsystems:
>
> Subsystem 1: Mobile robotic base including wheels, tracks, legs, or any other mechanism that allows the robot to navigate the majority of the flat playing field surface. For a stationary robot, the robotic base without wheels would be considered Subsystem 1.
>
> Subsystem 2: Power and control system that includes a legal VEX battery, a legal VEX control system, and associated motors for the mobile robotic base.
>
> Subsystem 3: Additional mechanisms (and associated motors) that allow manipulation of game objects or navigation of field obstacles. Given the above definitions, a minimum robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of 1 and 2 above. Thus, if you are swapping out an entire subsystem of either item 1 or 2, you have now created a second robot and are no longer legal.
>
> a. Teams may not compete with one robot while a second is being modified or assembled.
>
> b. Teams may not switch back and forth between multiple robots during a competition. This includes using different robots for Skills Challenge and Qualification / Elimination Matches.
>
> c. Multiple teams may not use the same robot. Once a robot has competed under a given team number at an event, it is “their” robot - no other teams may compete with it for the duration of the competition season.

Question: Our team would like to clarify that we can compete with and without our lift under the ruling of R1 We understand that we will have to have the robot reinspected when a subsystem 3 is removed and put back on. We operate using V5 with 8 motors with the lift (4 motors used for our lift) and 6 without the lift (we add two motors to our drive train) The purpose of removing the lift is because it's so heavy and we want to add speed.

Answered by committee

Yes, this would be legal within <R2>, quoted here for reference and bolded for emphasis.

> <R2> Every robot will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all robot rules and regulations are met. Initial inspections will take place during team registration/practice time.

a. If significant changes are made to a robot, such as a partial or full swap of Subsystem 3, it must be re-inspected before it will be allowed to compete.

b. If a robot has multiple functional configurations, all possible configurations must be inspected before being used in competition.

c. Teams may be requested to submit to random spot-inspections by event personnel. Refusal to submit will result in Disqualification.

d. Referees or inspectors may decide that a robot is in violation of the rules. In this event, the team in violation will be disqualified and the robot will be barred from the playing field until it passes re-inspection.

1987: Swapping of Subsystem 3

2-Mar-2024
R1

Is swapping of subsystem 3 allowed between matches or skills? For example, swapping the entire climbing mechanism based on our alliance partner's climbing mechanism. Or swapping the catapult to a kicker mechanism for skills? <R1>

If this is allowed, do teams show all configurations during inspection?

Answered by committee

Please review the Q&A Usage Guidelines before posting, specifically point 2, "Read and search existing Q&As before posting." We believe the following previously answered post (Q&A 1871) answers your question; if it does not, please feel free to rephrase and re-submit.

1950: Rubber bands motors

12-Feb-2024
R1

We see teams holding their motors using rubber bands. Is it legal?

Answered by committee

Yes.

1871: Clarification of Q/A 1847

12-Jan-2024
R1 R3

<R1>Good Afternoon, Q/A 1847 states that swapping motors between mechanisms is legal. However, Is it acceptable to have a two completely separate mechanisms for launching triballs (A flywheel and a slapper) that are modular.

The red box of R1 states "To help determine if a Robot is a “separate Robot” or not, use the subsystem definitions found in <R1>. Above that, use common sense as referenced in <G3>. If you can place two Robots on a table next to each other, and they look like two separate legal/complete Robots (i.e., each has the 3 subsystems defined by <R1>), then they

are two Robots. Trying to decide if changing a screw, a wheel, or a microcontroller constitutes a separate Robot is missing the intent and spirit of this rule." After swapping the launching mechanisms the robot looks the same but instead of a flywheel it will have a slapper on the back. Would this meet the definition of looking like two separate robots or will the change be negligible enough to be viewed as one robot?

Earlier in R1 it states "Given the above definitions, a minimum Robot for use in any VEX Robotics Competition event (including Skills Challenges) must consist of subsystems 1 and 2 above. Thus, if you are swapping out an entire subsystem 1 or 2, you have now created a second Robot and have Violated this rule." This specifically excludes Subsystem 3 which is the subsystem that the launching mechanisms would fall in to. Is this intentional to allow for a swappable subsystem 3?

Also in R3b it states "All possible functional Robot configurations must be inspected before being used in competition. This especially pertains to modular or swappable mechanisms (per <R1>) and Match starting configurations/sizes (per <R4>)." This excerpt uses the words "Modular or swappable"

Is it correct to assume that you can have a modular launching mechanism as long as the main visual of the robot is similar and it is reinspected and passes?

Thank You

> **Answered by committee**
>
> > <R1> Good Afternoon, Q/A 1847 states that swapping motors between mechanisms is legal. However, Is it acceptable to have a two completely separate mechanisms for launching triballs (A flywheel and a slapper) that are modular.
>
> Yes.
>
> > Is it correct to assume that you can have a modular launching mechanism as long as the main visual of the robot is similar and it is reinspected and passes?
>
> We're not sure what you mean by "the main visual of the robot is similar," but a Robot can have and use a modular launching mechanism as long as both mechanisms meet all Robot rules and the Robot passes inspection in all configurations.

1847: <R1> Legality of switching motors between subsystems

29-Dec-2023
R1

What is the legality of having more than 8 motor caps, with the intention of being able to switch one of the motors to a different mechanism? For example: switching a motor to a different subsystem for skills, then switching it back for matches, while remaining under the 88W limit. I have seen teams do this and not get called out for it, but none are fully clear about the legality of it.

Rule <R1c> states

> Teams may not switch back and forth between multiple Robots during a competition. This includes using different Robots for Skills Challenges, Qualification Matches and/or Elimination Matches.

However, if no subsystems are being modified, even though the motor allocation is, would it be considered "switching between multiple Robots"?

> **Answered by committee**
>
> Yes, this would be legal. The red box in <R1> includes the following note:

> To help determine if a Robot is a “separate Robot” or not, use the subsystem definitions found in <R1>. Above that, use common sense as referenced in <G3>. If you can place two Robots on a table next to each other, and they look like two separate legal/complete Robots (i.e., each has the 3 subsystems defined by <R1>), then they are two Robots. Trying to decide if changing a screw, a wheel, or a microcontroller constitutes a separate Robot is missing the intent and spirit of this rule.
>
> To avoid any confusion, the Robot should be inspected in both configurations, per <R3>.
>
> b. All possible functional Robot configurations must be inspected before being used in competition. This especially pertains to modular or swappable mechanisms (per <R1>) and Match starting configurations/sizes (per <R4>).

1784: Are cables considered for size & parking?

21-Nov-2023
SC7 R1 R4

This has come up with my teams in previous years, but hasn't mattered much. With this year's supply zone and fully parking, it has now become an important question. When determining size restrictions of a robot, do loose cables count? Is it the same ruling when considering a breach of the parking zone? I see two possible solutions:

- Either they do not count for size and do not count for parking (ie a cable over the zone is not a partial park, or a cable outside the zone with the rest of the robot inside is still a full park)
- or they do count for size (cables must be within starting size configuration) and do count for parking (ie a cable over the zone is a partial park and a cable outside the zone with the rest of the robot inside is not a full park)

Obviously I can teach kids about proper cable management, but they resist without explicit rulings. There is a note in R1 about subsystems 2&3 being a part of the robot, but I am still unclear if that includes cables as it specifies motors but not cables.

Thank you!

> **Answered by committee**
>
> When determining size restrictions of a robot, do loose cables count? Is it the same ruling when considering a breach of the parking zone?
>
> Yes, loose cables count as part of the Robot when determining whether or not the Robot is within the size limits, and when determining whether a Robot is Partially or Fully Parked. Everything attached to the Robot counts as part of the Robot (e.g., cables, non-functional decorations, Robot Brain, shafts, etc.). If a cable or other part comes loose but remains connected to the Robot it still counts toward the Robot's size and the horizonal expansion limits in rule <SG2>. In most cases when a loose or dragging part is *not* being used to score points, this type of SG2 Violation would be a Minor Violation and a warning (unless repeated).

1314: is changing Gear Ratio (by only changing 1 gear) considered as a Separate Robot?

29-Nov-2022
R1

<R1> we have designed a Robot which can change the Speed by swapping out 1 gear, nothing else, as the high gear ration gives good speed, and lower gear Ratio is more accurate. if during the competition (event), at start we are using high gear ration (using a size 5 gear), but feels it is not accurate enough, and change to a lower gear ratio (swap to a size 3 gear piece), does this consider as swapping out the entire subsystem, and as violation of this rule? (R1)

Answered by committee

Thank you for your question! No, swapping out a single gear within an existing mechanism is not considered swapping out Subsystem 1 or 2 as prohibited by rule <R1>.

The only rule that might apply in this case is the requirement that a Robot be reinspected after a significant change. While we do not consider this a significant change as described in rule <R3a>, we would recommend that the Team ask to have the Robot reinspected, if possible, just to avoid any question of its continuing legality.