

Q&A

VRC 2022-2023: Spin Up

Tagged: SG2

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 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](#) itself.

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

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 - 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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909: Using Scoring Objects to Exceed Expansion

1-Nov-2021

SG2 SG10

Hello,

SG2

Robot expansion is limited once the Match begins. Per <G4>, at the beginning of a Match, each Robot must be smaller than a volume of 18" (457.2 mm) long by 18" (457.2 mm) wide by 18" (457.2mm) tall. Once the Match begins, Robots may expand, but no horizontal dimension can exceed 36" (914.4 mm) at any point during the Match. See Figure 24.

Note: This is intended to be a linear, horizontal, "point-to-point" limit, measured across an expanded Robot. It is not a 3D volume, and it does not "rotate" with the Robot.

Note 2: If a Head Referee is uncertain whether a Robot has momentarily expanded beyond this limit, they may ask the Team after the Match to replicate the Robot's state and check for compliance using a tape measure, VRC Expanded Sizing Tool, or other linear measuring device.

Minor violations of this rule that do not affect or interfere with the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion

SG10

Use Scoring Objects to play the game. Scoring Objects may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms (e.g., Interfering with an opponent's Autonomous routine per <SG4>.)

The intent of this rule is to prohibit teams from using game objects as "gloves" to loophole any rule that states "a Robot may not [do some action]". This rule is not intended to be taken in its most extreme literal interpretation, where any interaction between a Scoring Object and a Robot needs to be scrutinized with the same intensity as if it were a Robot.

With 2 bar mobile goal lifts, teams have found they can hold the tall neutral goal so the pole is parallel to the ground and can increase the effective length of their robot. My interpretation is because of the SG10 note, this would only be illegal if it's used intentionally.

Is using a Scoring Object to increase the Robots horizontal length past 36" legal? What should a Referee look for to determine if an action violates <SG2> through <SG10>?

Thank you for your time!

Answered by committee

Is using a Scoring Object to increase the Robots horizontal length past 36" legal? What should a Referee look for to determine if an action violates <SG2> through <SG10>?

Holding a Scoring Object such that the horizontal length of Robot + Scoring Object exceeds 36" is not, by itself, illegal. In the strictest interpretation of SG2 + SG10, it could be considered a "minor violation of this rule that does not affect or interfere with the Match".

However, you are correct that it is riding the edge of a very slippery slope. This scenario could escalate if the Scoring Object was used to accomplish an action that would be otherwise illegal if attempted by a greater-than-36" Robot mechanism. Examples could include, but are not limited to:

- Defending or Trapping an opponent
- Hoarding
- Manipulating a Platform

At this point, the standard SG2 review would be used to determine the penalty, i.e. if the violation was Match Affecting or not.

887: <SG2> Rule Clarification on Robots with multiple configurations

18-Oct-2021

SG2

Rule <SG2> states that the robot may not at any point during the match extend past 36 inches horizontally. So say if a robot had two arms one on the front and one on the back that started within the 18 inch cube starting requirements. but during the match when both arms are extended the robot exceeds 36 inches. However, when only one arm is extended at a time it fits the 36 inch requirements. So if the robot was coded so that only one arm can be extended at a time during match would this still violate <SG2> and would the robot be allowed to pass inspection?

Answered by committee

Yes, this would be permissible.

However, when competing with a Robot which is physically capable of exceeding the 36" limit, Teams should expect additional scrutiny from inspectors and/or Head Referees. A mechanical or software "lock" would be highly recommended, to avoid any potential confusion or close calls.

835: SG2 - A tall robot tips over exceeding the 36" expansion limit

1-Aug-2021

SG2

SG2 states Robots may expand, but no horizontal dimension can exceed 36" (914.4 mm) at any point during the Match. When a robot expanded to a height greater than 36 inches tips over, is this is a violation of SG2? The tipped over robot's "height" is now in a horizontal orientation which exceeds 36".

Answered by committee

Yes, the expansion limit is still considered "horizontal" with respect to the gray field tiles, even if a Robot is no longer "upright".

Minor violations of this rule that do not affect or interfere with the Match will result in a warning. Match Affecting offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the Head Referee's discretion.

It will require a Head Referee judgment call to determine the severity of the violation. In many situations, a Robot which has tipped over does not affect or interfere with the Match to their advantage, and this violation would result in a warning. A Robot which has "accidentally tipped over" (with heavy "air quotes") in a Match Affecting manner may receive a Disqualification at the Head Referee's discretion.

773: scoring in opponents home row during auton??

1-Apr-2021

G13 SG2 SG3 SG7

Would it be legal to score a ball in one of the opponent's home row goals during the autonomous period? Rule that apply: <SG2> The robot itself isn't crossing the autonomous line. <SG3> The ball would not contact the field tiles on the opposing side. <SG7> The balls are being used to "play the game" and would not interfere with the opponents autonomous routine. <G13> This is an offensive strategy, which should get the "benefit of the doubt"

Thanks #50075 Margaret, Coach

Answered by committee

Yes, this would be legal provided that the following are all true:

- The Goals of the opposing Alliance's Home Zone are not contacted by your Robot, per <SG2>
- No opposing Alliance Robots or Balls are contacted by your Robot, per <SG2>
- Balls that start on your Robot's side of the field do not contact the foam tiles or opposing Alliance Robots, per <SG3>
- The Balls do not leave the field while attempting to be Scored, per <SG6>

700: Contact the Autonomous Line

18-Nov-2020

SG2

During the Autonomous Period , can a robot contact the second Autonomous Line which is next to the opposing alliance ?

Answered by committee

Please review the [Q&A Usage Guidelines](#) before posting, specifically point 3, "Quote the applicable rule from the latest version of the manual in your question."

Rule SG2 reads as follows:

<SG2> During the Autonomous Period, Robots may not contact the foam tiles or Balls which are on the opposing Alliance's side of the Autonomous Line. Robots may not contact the Goals that are in the opposing Alliance's Home Zone.

The Autonomous Line is defined as follows:

Autonomous Line – The pair of white tape lines that run across the center of the field. Per <SG2>, Robots may not contact the foam field tiles on the opposite Alliance's side of the Autonomous Line during the Autonomous Period.

Robots may not contact the foam tiles which are on the opposing Alliance's side of the Autonomous Line, and the Autonomous Line is made up of both white tape lines. So, there is nothing prohibiting Robots from contacting either white tape line.

For more information, please review the relevant [VRC Referee Training video](#).

67: SG2 - B 36 inch expansion

7-Sep-2018

SG2

Can you clarify how the 36" expansion will be measured? For example, last season one of my teams built a robot that expanded to 35" front to back to make sure that they were under the 36" rule. At one tournament, the robot was measured from the back corner diagonally across the robot. This dimension was 37.6" and they were sent back to the pits to fix the issue. Is this the correct procedure? I have created a model of two robots to help clarify.

1. Is robot A or B legal? [pdf](#)
2. Should the diagonal also consider from top to bottom? (the 38" dimension on robot B) Does this make robot B also out of dimension?

Answered by committee

Thank you for the images to help clarify your question. The 36" dimension will be measured by a [Robot Expansion Sizing Tool](#), which measures point-to-point horizontal distance. The 36" limit is a point-to-point horizontal limit, not a perfect square or X/Y distance.

The procedure you described from last year's inspection sounds like the correct interpretation of this rule.

In your linked images, Robot A would not be legal. Robot B would be legal.

No, the vertical diagonal should not be considered. Robot B is still legal, despite the dimension that the blue arrow is pointing to.

6: VEX-U Expansion allowances

15-May-2018

SG2 VEX U

VUG6 there are differences between manuals in the VRC hub and the Game Manual. On the VRC Hub app, rule VUG6 says: "Once the Match begins, Robots may expand beyond the starting size defined in <VUR1>, but no horizontal dimension can exceed 48" (1219.2mm). The robot may not exceed this limit for the duration of the match. There is no height limit on Robot Expansion" But on the Vex U appendix on the Vex website: "Both robots follow the expansion rules laid out in <SG2>

Which one of these rules (If either) is the correct VUG6 rule? If the VRC Hub App version is the correct ruling, does the 48" expansion apply to the 15" robot as well, and is there no vertical height limit restrictions for VEX U as implied by the wording in the VRC Hub version of VUG6?

Answered by committee

Thank you for bringing this to our attention. This was an error in VRC Hub and has now been corrected. The PDF Game Manual version of VUG6 was correct - both VEX U Robots follow the same expansion rules set forth by SG2.

596: Intentional Autonomous Interference to Stop Autonomous Win Point

13-May-2020

SG2

SG2: Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles or Balls which are on the opposing Alliance's side of the Autonomous Line. Robots may not contact the Goals that are in the opposing Alliance's Home Zone.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

SG2 Establishes that intentionally interfering with an opponent's autonomous routine by crossing the center line and making contact with the opponent is grounds for a disqualification. However, intentional interference with the opponent's autonomous routine does not result in the opponent being granted the autonomous win point. Is this interpretation correct?

If this interpretation is correct, this would allow teams to play spoiler. A disqualification does not mean anything to the team playing spoiler as they were likely already ranked low and/or suspected they were going to lose the match anyway. However, by preventing the opposing alliance from earning the autonomous win point, the spoiler team can heavily influence the outcome of the tournament. The additional win point could be the difference between the team achieving the #1 rank in VRC or making the cut off for the elimination matches in VEXU.

Answered by committee

SG2 Establishes that intentionally interfering with an opponent's autonomous routine by crossing the center line and making contact with the opponent is grounds for a disqualification. However, intentional interference with the opponent's autonomous routine does not result in the opponent being granted the autonomous win point. Is this interpretation correct?

Yes, this interpretation is correct.

If this interpretation is correct, this would allow teams to play spoiler. A disqualification does not mean anything to the team playing spoiler as they were likely already ranked low and/or suspected they were going to lose the match anyway. However, by preventing the opposing alliance from earning the autonomous win point, the spoiler team can heavily influence the outcome of the tournament. The additional win point could be the difference between the team achieving the #1 rank in VRC or making the cut off for the elimination matches in VEXU.

This type of unethical strategy would be out of line from the spirit of the VEX Robotics Competition; a team who would attempt this strategy would be at risk of a severe violation of G1 and/or the REC Foundation Code of Conduct. Violations of the Code of Conduct can result in Disqualification from a current Match, an upcoming Match, an entire event, or an entire competition season.

590: <SG2> Neutral Cube interaction during autonomous

6-Mar-2020

SG2

According to q&a #405 and #446

Causing Cubes to interact with** foam tiles, Towers, or Cubes** on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Per SG2, violations could range from the Autonomous Bonus being awarded to the opposing Alliance, to a Disqualification, depending on the context of the interaction.

Within <sg2> we have a note talking about cubes that start in contact with the autonomous line, from here on in this post I will be referring to these cubes as "neutral cubes"

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

My question: when do the cubes which begin the match in contact with the autonomous line "neutral cubes" violate sg2 via sg7

Here are some generic scenarios that could be used to understand my question better. The intention of these scenarios is not to gather blanket rulings, but rather to give perspective to the types of rulings that would be affected by this q&a.

Scenario A) A red robot attempts to pick up one of the neutral cubes, doing so it accidentally drops said cube such that it lands completely across the autonomous lines.

Scenario B) A red robot accidentally pushes a row of cubes into one of the neutral cubes pushing the neutral cube towards the opposing alliance tiles thereby indirectly contacting the opposing alliance tiles

Scenario C) A red robot pushes a neutral cube roughly 2 inches towards the opposing alliance tiles, such that it's still in contact with the autonomous line

Scenario D) A red robot pushes a neutral cube completely across the autonomous line, after this a blue robot pushes this same cube completely across the autonomous line again (cube travels from neutral to blue side then to red side)

Note that causing cubes to interact with opponent robots are not listed as one of the conditions for SG2 via SG7.

Answered by committee

Q&A 446 included the following:

When evaluating a possible violation of either of these cases, we would advise Teams and Head Referees to bear in mind rule G3 - "please remember that common sense always applies in the VEX Robotics Competition."

The intent of SG2 is to prohibit Robots from interfering with their opponents' autonomous routines. The intent of the Note in SG2 is to permit Robots to utilize the "neutral" Cubes and Towers during the Autonomous Period, should they choose to do so, at their own risk of the opponents doing the same. The overarching common sense guidance is intended to protect Teams and Head Referees from having to worry about instantaneous, edge-case, or accidental violations.

We are not going to provide blanket answers to all snapshot descriptions of hypothetical interactions that involve these contested Cubes or Towers, and would advise Head Referees to prioritize "common sense" (in line with the intents noted above), and a Team-oriented experience at all times, when a judgment call needs to be made.

553: Neutral Cubes during Autonomous

17-Feb-2020

SG2

Hello, I know that the purple cubes along the autonomous line are neutral and can be picked up by either sides robot, but what if the purple cube is pushed passed the autonomous line into the opposing alliances side, but no other cubes are robots go past the autonomous line. Is that a DQ for the team that pushed the purple cube over or is that purple cube just considered neutral and if so how far can that purple cube go until its not neutral? Like if they pick it up and it rolls out of there robot and rolls to the wall of the opposing side is it still neutral or is that a DQ? Thanks for your time!

Answered by committee

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

<https://www.robotevents.com/VRC/2019-2020/QA/446>

508: autonomous

27-Jan-2020

when in autonomous, I know robots cannot cross the center line and touch the gray tiles or cubes on the other side - what about the airspace above the gray tiles?

Answered by committee

when in autonomous, I know robots cannot cross the center line and touch the gray tiles or cubes on the other side - what about the airspace above the gray tiles?

Please review the [Q&A Usage Guidelines](#), specifically point 3, "Quote the applicable rule from the latest version of the manual in your question.". Often, you'll find that by quoting the rule, you'll answer your own question.

Rule SG2 reads as follows:

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

There is no rule prohibiting contact with the airspace above the gray tiles. Therefore, this is legal.

479: SG2 cubes during :15 Autonomous

9-Jan-2020

SG2

During the :15 autonomous period, if a cube is pushed, falls, or tumbles across the center double lines, but in no way, shape, or form interferes with the opposing alliances autonomous routine, is that means for an automatic loss of the 6 point bonus?

Answered by committee

Please see these similar Q&A's, which we believe answer your question. If not, please feel free to rephrase and re-submit.

<https://www.robotevents.com/VRC/2019-2020/QA/405>

<https://www.robotevents.com/VRC/2019-2020/QA/446>

446: <SG2> Indirectly contacting opponent tiles, cubes via cube

9-Dec-2019

SG2 SG7

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

a. According to QA 405, <https://www.robotevents.com/VEXU/2019-2020/QA/405> "violations could range **from** the Autonomous Bonus being awarded to the opposing Alliance, **to** a Disqualification, depending on the context of the interaction." Does this mean that if a cube has cross the autonomous line from red into the blue side, either unintentional or intentional, then that red alliance automatically lost autonomous bonus, since the word **from** is used?

b. If the robot is intaking a neutral cube(started contacting the autonomous line), then the second the robot touched the cube, the robot now has indirectly contacted the foam tile in opposing alliance. According to SG2 Note, cubes "may be utilized by either Alliance during the Autonomous Period." In this case, does this note take precedence over SG2 via SG7?

Answered by committee

a. According to QA 405, <https://www.robotevents.com/VEXU/2019-2020/QA/405> "violations could range **from** the Autonomous Bonus being awarded to the opposing Alliance, **to** a Disqualification, depending on the context of the interaction." Does this mean that if a cube has cross the autonomous line from red into the blue side, either unintentional or intentional, then that red alliance automatically lost autonomous bonus, since the word **from** is used?

As noted in the Q&A that you linked, causing Cubes to interact with foam tiles, Towers, or Cubes on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Interaction with foam tiles, regardless of whether it affects a Robot's autonomous routine or not, is always considered a violation of SG2. As you quoted, all violations of SG2 result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

b. If the robot is intaking a neutral cube(started contacting the autonomous line), then the second the robot touched the cube, the robot now has indirectly contacted the foam tile in opposing alliance. According to SG2 Note, cubes "may be utilized by either Alliance during the Autonomous Period." In this case, does this note take precedence over SG2 via SG7?

Yes.

When evaluating a possible violation of either of these cases, we would advise Teams and Head Referees to bear in mind rule G3 - "please remember that common sense always applies in the VEX Robotics Competition."

405: Indirect Cube movement while Autonomous

2-Nov-2019

G11 SG2 SG7

During the Autonomous period, if a red robot causes a cube from the vertical stack of four to fall while trying to get cubes from that stack and one or more of the cubes in that stack crosses the autonomous line and causes the other vertical blue alliance stack of four to fall is that a violation of any rule?

Additionally, if the other team is not running autonomous, is the answer the same?

The robot is not directly touching the cube that crosses the line-e.g. trying to get the bottom 2 cubes of the stack.

Answered by committee

It is impossible to issue a blanket ruling based on a snapshot description of a hypothetical Match. In general, SG7 and SG2 would be the primary rules that a Head Referee would have to look at in this case:

<SG2> Stay on your side in Autonomous. During the Autonomous Period, Robots may not contact the foam tiles, Towers, or Cubes which are on the opposing Alliance's side of the Autonomous Line.

Violations of this rule will result in the Autonomous Bonus being awarded to the opposing Alliance. Intentional, strategic, or egregious violations, such as intentional contact with an opposing Robot while completely across the Autonomous Line, will result in a Disqualification.

Note: Towers and Cubes which begin the Match in contact with the Autonomous Line are not considered to be on either side, and may be utilized by either Alliance during the Autonomous Period. If attempting to utilize these Towers or Cubes, Teams should be cognizant of the possibility that opponent Robots may attempt to do the same. <SG7>, <G10>, <G11>, and <G12> will be taken into account when these types of Robot interactions occur.

<SG7> Use Cubes to play the game. Cubes may not be used to accomplish actions that would be otherwise illegal if they were attempted by Robot mechanisms. Examples include (but are not limited to):

- Encroaching upon an opponent's Protected Zone per <SG3>.
- Interfering with an opponent's Autonomous Period per <SG2>.

Causing Cubes to interact with foam tiles, Towers, or Cubes on the opposing Alliance's side of the Autonomous Line would be considered a violation of SG2 via SG7. Per SG2, violations could range from the Autonomous Bonus being awarded to the opposing Alliance, to a Disqualification, depending on the context of the interaction.

265: VexU- VUG6 Loophole

15-Mar-2019

SG2 VEX U

Hello, Upon a close inspection of the game manual, I noticed a discrepancy between the intent of VUG6 and the actual wording of the rule. VUG6 reads:

"The Robot which starts 24" tall must return to 24" once it is no longer contacting the Expansion Zone. The Robot which starts 15" tall must return to 15" once it is no longer contacting the Expansion Zone."

The loophole lies with in phrase "starts 24" tall" and "starts 15" tall. Very few robots actually start at 24" tall and 15" tall. In practice they are smaller then these values, for example a robot sarting at a height of 23" tall and another robot starting at a height of 14.5" tall. The way the rule is written, a robot starting at 23" tall and another starting at 14.5" tall would not fall

under VUG6 as it is not starting at 24" tall nor 15" tall. Furthermore since VUG6 no longer applies to these robots, SG2a would apply. SG2a reads:

"Once the Match begins, a Robot which is contacting the Expansion Zone may expand vertically with no height limit. However, once fully outside of the Expansion Zone (i.e. no longer contacting it), the Robot must return to a height limit of 18" (457.2 mm) tall."

So from the actual wording of the game manual, all vexU robots that do not start at exactly 24" tall or 15" tall then must return to be within 18" outside of the expansion zone. So that means that nearly every vexU team has violated the game manual rules as they are written.

The intent of the rule clearly is to base the expansion rules off the robots that start within 24" tall and within 15" tall, which is how vexU has been playing Turning Point sofar. However, even this wording is inadequate as the scenerio that both robots start within 15" tall would cause confusion on which robot would be allowed to expand vertically. For example, a 23x23x14" tall robot and a 14x14x14 robot. Now is the 14"x14x14 robot allowed to expand to 24" tall, declaring that is your robot that started within 24" tall, and the 23x23x14" robot limited to 15" expansion declaring that is your robot that started within 15" tall?

I would like to propose the wording of VUG6 to revised to reflect the actual robot definitions established in VUR1. VUR1 reads:

"Teams must build two (2) Robots, subject to the following size restrictions at the start of the match: c. Robot A must be smaller than 24" x 24" x 24". d. Robot B must be smaller than 15" x 15" x 15". "

Therefore using the definitions of robot A and robot B already set by VUR1, I would like to propose VUG6 be revised to: "Robot A must return to 24" once it is no longer contacting the Expansion Zone. Robot B must return to 15" once it is no longer contacting the Expansion Zone."

Answered by committee

Thank you for pointing this out. Yes, the intent of the rule is for Robot A to return to no higher than 24", and for Robot B to return to no higher than 15".

We will be sure to clarify this in the April 5th Game Manual update, but until then, <G2> and this Q&A should be used to confirm the intent of <VUG6>.

2566: R4 & SG2 Robot Status during size measurement for inspection

24-Feb-2025

R4 SG2

For this question there are two parts:

Part 1

My question relates to the initial inspection of the robot starting size: <R4> Robots must fit within an 18" x 18" x 18" volume.

Compliance with this rule must be checked using the official VEX Robotics On-Field Robot Expansion Sizing Tool. Any restraints used to maintain starting size (i.e., zip ties, rubber bands, etc.) must remain attached to the Robot for the duration of the Match, per <G6>. For the purposes of this rule, it can be assumed that Robots will be inspected and begin each Match on a flat standard foam field tile. (

https://www.robotevents.com/storage/game_manual/VEX_V5_Robotics_Competition_2024-2025_High_Stakes/rules/R4.html

At a recent tournament, a few robots came to inspection when turned off they would not fit in the 18X18X18 starting required volume. However, if the team turned the robot on and activate the program the robot would pull itself into the accurate starting volume. At the beginning of a match TM does not allow the motors to activate, the robot is in a rested position and not longer meets the starting volume. Due to this the inspection team was not passing the robot. The coach addressed concerns that the rule does not say that the robot must be either on or off.

When robots are presented for inspection for the 18X18X18 should they be off or out of program to mirror the beginning of a match when connected to tournament manager?

Part 2:

<SG2> Horizontal expansion is limited. Once the Match begins, Robots may only expand beyond their starting size and configuration within the following criteria: a. Robots may never exceed an overall footprint of 24" x 18". For reference, 24" is roughly the width of one foam field tile.

At the same tournament, teams were coming to the inspection table to measure the 24" x 18". The robot would rotate outside of the 24 inches, teams would indicate that the motors were used to prevent this from happening either by using a rotational sensor or the internal motor controllers. The inspection team indicated that the rule states in appendix a. that the robot is to "never" exceed the 24" x 18". The explanation was that if the motor disconnected during the match they would have no way to keep the robot in the required expansion limit.

When robots are presented for inspection for the 24"x 18" can the students use the program to ensure the robot does not exceed the expansion limit of 24 inches, or should it have the ability to stay within the 24 inches without the use of a sensor?

Answered by committee

When robots are presented for inspection for the 18X18X18 should they be off or out of program to mirror the beginning of a match when connected to tournament manager?

Either is fine, but if the Robot is inspected while powered on, it must be able to stay "in size" while in a disabled state, similar to how the Robot must maintain starting size to begin a Match in accordance with rule [<G5>](#).

When robots are presented for inspection for the 24"x 18" can the students use the program to ensure the robot does not exceed the expansion limit of 24 inches, or should it have the ability to stay within the 24 inches without the use of a sensor?

Using code and sensors to prevent the Robot from exceeding the maximum expansion size is a legal strategy. As with any other means of keeping the Robot in size, any expansion beyond the legal limits will be considered a Violation.

2522: [UPDATED] Clarification Regarding Reference Point for Expansion

10-Feb-2025
SG2

We recently asked Q&A 2479 and were told that our question could not be understood. Below we have simplified the wording of our question so it is easier to understand.

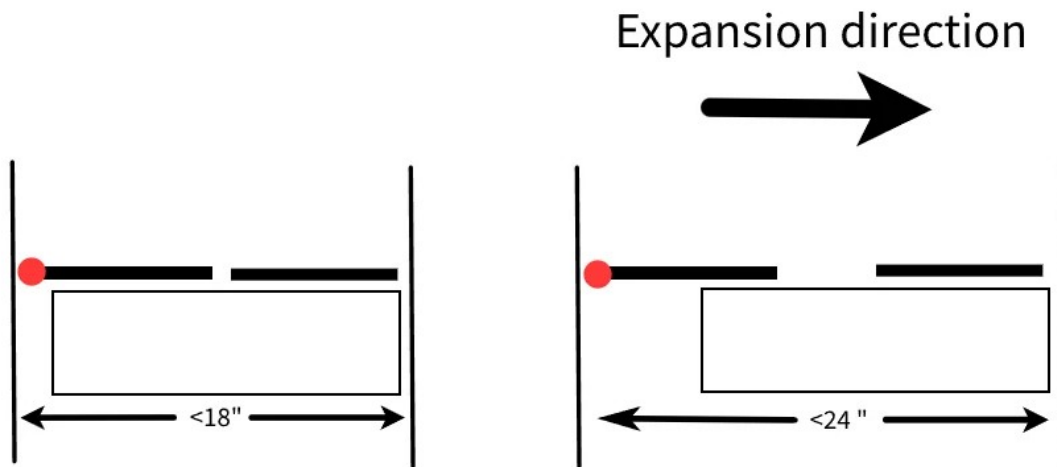
In Q&A 2006, a scenario was posed where a robot's back plate moved backward in relation to the rest of the robot. The given response stated that the robot's back plate had not expanded backward, but instead the rest of the robot had expanded forward. In other words, the robot's back plate was used as the reference point for expansion.

However, not all robots contain a "back plate" or similar feature. In cases like this, how should a robot's reference point for expansion be determined? The response also stated that "The Robot's horizontal size includes all portions of the Robot, including any non-functional decorations or protruding parts like cables or zip ties." Does that indicate that expansion is determined by whichever point on the robot is the furthest back along the plane of expansion?

In case the question is still not understandable, we will ask it a different way. If the robot's back plate in the scenario given by Q&A 2006 is replaced with some extending mechanism, would the response be identical? This mechanism would still be the point on the robot that is furthest back. The Q&A response implies that this mechanism would not be considered to be expanding backwards and instead the rest of the robot is considered to be expanding forward (we have attached a picture for reference). If not, which point on the robot should be used as the reference point for expansion?

Thank you for your time.

● Reference point for expansion



Answered by committee

...how should a robot's reference point for expansion be determined?

[<SG2>](#) covers expansion beyond the Robot's starting size/configuration. In other words, this means any extension of the Robot beyond the Robot's starting footprint.

The response also stated that "The Robot's horizontal size includes all portions of the Robot, including any non-functional decorations or protruding parts like cables or zip ties." Does that indicate that expansion is determined by whichever point on the robot is the furthest back along the plane of expansion?

The Robot's current size/configuration at a given point in time must never exceed the 24" x 18" footprint limit. As long as the Robot could fit inside a 24" x 18" box at every point in time throughout a Match, the Robot has not exceeded this footprint limit. This was clarified in [Q&A 2138](#).

We don't believe this idea of a reference point is particularly applicable to [<SG2>](#) expansion rules regarding Robot size, at least with our current understanding of how you are trying to apply this concept. As always, you are welcome to submit a follow up question if we have not sufficiently answered this one.

2509: Horizontal expansion - Violation Notes

6-Feb-2025

SG2

[<SG2>](#)

In a recent elimination match, one red robot playing defense caused a blue robot's mechanism to partially detach causing the blue robot to unintentionally horizontal expand. This expansion had no strategic benefit and hindered the robot's performance. However, blue did win the match, and the referee stated that this horizontal expansion was repeated in the match (it had not happened before during the event) and therefore disqualified the blue alliance. In Q&A 2262, the GDC stated "As described in the Violation Note for [<SG2>](#)," but did not confirm that the given examples were examples that should not escalate to a Major Violation.

1. Can the GDC confirm that the given examples should not escalate?
2. Can the GDC provide guidance on how referees determine "extreme circumstances"?

Answered by committee

1. Can the GDC confirm that the given examples should not escalate?

The examples in the Violation notes should *generally* not escalate to Major Violations, but if the Violation is determined to be strategic or intentional it can and probably should become a Major Violation. Every scenario is different, and we cannot provide absolute guidance.

2. Can the GDC provide guidance on how referees determine "extreme circumstances"?

We try very hard to avoid defining terms that aren't unique to the game manual, or that aren't used in an unusual way in our competitions. A Google search for the definition of 'extreme circumstances' suggests that they're "unusual or severe situations that are difficult to predict or prepare for." We can't define it better than that.

2442: claw extension

16-Jan-2025

SG2

[<SG2>](#)

Does anyone know if a claw that extends in front of AND in back of a robot to grab and score rings is in violation of the expansion rule?

Answered by committee

If the Robot's starting configuration doesn't have the claw fully extended in one of the directions (front or back), fully extending the claw in front *and* in back would violate [<SG2>](#) by expanding in multiple directions.

If the claw begins the Match fully extended in one direction (while fitting within the starting size requirements), the graphic and explanation in [Q&A 2138](#) might help you understand how it could be legal under [<SG2>](#). In the context of that Q&A, your Robot's claw would be simultaneously both mechanism A and B.

2436: Problem with Vex IQ Herobot "Swish" height

14-Jan-2025

SG2

[<SG2>](#) I am a head referee and have a question regarding the 2024-2025 Vex IQ Herobot, "Swish." I observed twice in a tournament I refereed that it is possible for a ball to get stuck between the top edge of the catapult and the underside of the intake, which pivots. If a ball is taken in by the intake, but doesn't line up properly and isn't centered as it enters the robot, it can get stuck on the side between the intake and the catapult. When the catapult fires, the robot can get jammed by the stuck ball and the intake can swing all the way up. When this happens, the height of the robot can reach about 17". Rule SG2 states "the 15" height limit is a "virtual ceiling," meaning that no part of the Robot may exceed 15" above the floor, regardless of robot orientation." Because this happened with the Vex IQ recommended Herobot, I did not disqualify the two teams that this happened to. I figured this was an oversight that may not have been thought of when this robot was designed. However, I will be serving as a referee for another couple of meets and should have a full understanding of

this rule as it applies to the "Swish" robot if this were to happen again. If this were to happen during a meet, should the team technically be disqualified from the match and/or meet unless this is fixed? When judges inspect this robot, they often may not anticipate this scenario. If this were to happen to another type of robot, I would have to disqualify the robot until the problem is rectified so this loophole in the build of "Swish" needs clarification if this common problem occurs. Can you please clarify this rule relative to this robot? Thank you.

[<SG2>](#)

Answered by committee

We would generally consider the scenario you describe, in which a Robot (of any design) becomes inoperable when a Ball is stuck in an undesired location, a valid reason for a Team to handle and reset their Robot as described in rule [<G10>](#). A Team in this scenario is, by definition, struggling and should generally not be penalized for something having gone wrong. If the Team can fix the Robot during a reset, and return it to a legal height, no penalty should be assessed if no points were scored while the Robot was too tall.

Any Robot can break or malfunction in a way that would cause them to unintentionally and non-strategically Violation rule [<SG2>](#). This possibility should never prevent a Robot from passing inspection if the Robot meets the requirements of all Robot rules.

If a Robot scores points in a Match while in Violation of rule [<SG2>](#)--either intentionally or accidentally--the Team should receive a Disqualification from that Match due to the Score Affecting Violation. The Robot should be reinspected before its next Match to ensure it meets the requirements of all Robot rules.