Q&A

VEX IQ Robotics Competition 2024-2025: Rapid Relay

Tagged: T10

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 Rapid Relay 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 Rapid Relay 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

Index

2395: Clarification on tolerances given by T10

16-Dec-2024
T10

In <T10>, it is stated that

> Rings and Mobile Goal placement at the beginning of the Match may vary from nominal by up to ±1” (25.4 mm).

For mobile goals specifically, does this 1 inch variation refer to all points on the mobile goal or just the base of the stake? At some competitions we have been to, differences between heights of adjacent field tiles where mobile goals were placed to begin the match resulted in the mobile goals becoming tilted. While the center of the mobile goal (the base of the PVC pipe at the bottom of the mobile goal) was within the 1 inch tolerance of its nominal position, the mobile goal was tilted enough that the rubber tip of the mobile goal was certainly more than 1 inch away from where it should be if the goal were to begin the match fully upright. Is this an allowable starting placement for the mobile goal under the tolerances given by T10?

> **Answered by committee**
>
> Rule <T10> does not provide a tolerance for the angle of an upright Mobile Goal, and this would be legal if the Field and other Field Elements are within tolerance and if the Mobile Goal is constructed correctly. If the section of the Field that is "tipping" the Mobile Goal is not in tolerance (as described in Q&A 2356), this would not be legal.

2360: Field Tolerance Issues of Strapless Portable Skills Field

7-Dec-2024
T7 T10

During our skills run at the WPI signature event, we encountered a skills run affecting the outcome of our score. The portable skills field was not equipped with a strap causing teams that drove into the wall stake at speeds that should not have tampered with the overall construction. Due to the field not having the strap that it comes equipped with, the field perimeters expanded and the wall stakes fell off the field far past the 1 inch tolerances (almost 1.5) as described in rule T10, and this led to the rest of the run being off. Our previous run in driver utilized a macro to test the field and adjust according to this problem that many people had been facing. The run executed perfectly and we planned to run the same thing in programming skills, however when we did so, the field perimeter was pushed past the tolerance not due to sheer force of the robot, but the incomplete field setup which was inevitably deemed "unfortunate circumstances". This run was originally classified by the head ref as a replay before he later changed the ruling after the skills run had been deleted and instead re-added it. We were just wondering whether this would be classified as a robot issue or an incomplete field setup.

> **Answered by committee**
>
> Each VEX Portable Competition Field Perimeter must be assembled with the two included velcro straps (276-7596-018) as shown on pages 9, 20, & 21 of the PDF Field Assembly Instructions.
>
> Per rule <T11>:
>
> > All competition fields at an event must be set up in accordance with the specifications in Appendix A and/or other applicable Sections. Minor aesthetic customizations or repairs are permitted, provided that they do not impact gameplay (see <T4>).
>
> Per page A-1 of Appendix A:

Instructions and specifications for these field perimeters are available in separate documents and are important for the field assembly.

2356: Field Tilt Tolerance

7-Dec-2024
T10

<T10>

Hello!

In the game manual there is no specified variance for the acceptable tilt/angle of a field, should it be assumed that a field should be completely level?

In the event field risers are used and are slightly on an angle, provided all fields are consistent are these fine to play on? If they are not consistently tilted, as no tolerance is specified are they also fine to use if some fields are slightly steeper in some areas than others (For instance over seams connecting risers)?

Cheers

Answered by committee

The Field cannot be more than 1" from flat at any point and cannot have two heights that are more than 1" apart, across either the entire length or width of the field.

Two practical ways to assess this are:

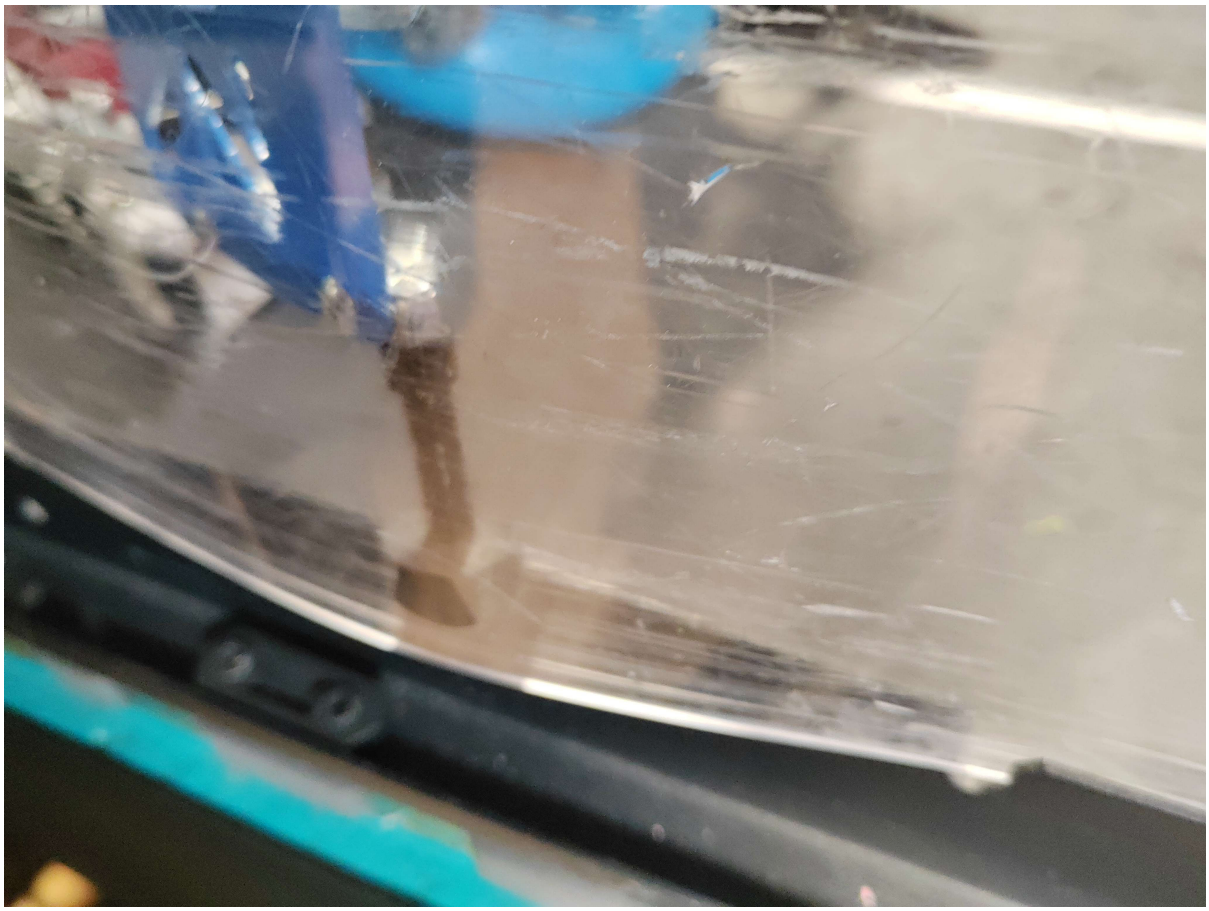
1. Lay a yardstick or other similar object on its long edge on the field, and run it across all parts of the Floor in both directions. Gaps between the straight edge and the Floor at any point will highlight measurable spaces where the Floor is uneven.
2. Use a yardstick or measuring tape to check the distance between the Field and the floor of the venue at various points around the perimeter.

2308: Clarification on field tolerance issues affecting replay eligibility

17-Nov-2024
T7 T10

<T7> <T10>

At a tournament, our alliance partner's robot had a mechanism get jammed in the wall of a legacy field perimeter due to the plexiglass flexing outward, preventing them from moving for the duration of the match. Given that T10 states "Field Element tolerances may vary from nominal by up to ±1.0 inches," the ref had a hard time deciding whether or not to replay the match, but chose to not replay in the end, which was a match-affecting decision in finals. I'd like to know if this replay eligibility ruling still applies for field perimeters and specifically legacy metal competition fields, which are not intended to flex in this manner but still can, unlike the new portable fields that are physically impossible to deform. With the rising popularity of mechanisms such as the one our alliance partner used, it is also possible that this situation may happen again in future tournaments, which is why our team wants clarification on this rule.



Answered by committee

If the Field Perimeter panel was already flexed outward in this position prior to the start of the Match, it could be a reasonable justification for the Event Partner and Head Referee to agree on a Match replay if it has a negative impact on gameplay.

However, if a Robot moved the Field Perimeter panel into this position during the Match and then got stuck, that is not a Field tolerance issue or a reasonable justification for a Match replay. That is a gameplay interaction that the Drive Team is responsible for.

Based on your description, in this Match the panel was moved out of tolerance by the Robot, and the Head Referee ruled it the same way we would have.

2302: Rapid relay ball tolerance and related match replays

16-Nov-2024
T7 T10

<T10> Section T10 of the game manual states that Field element tolerances (likely including the ball) can vary between +/- 0.5 inches ("Field Element tolerances may vary from nominal by up to±0.5” [25.4mm], unless otherwise specified."), and it only specifies ball weight, so therefore the 0.5 inch rule likely applies to ball width/diameter. Suppose that an ball was outside of this tolerance. T7 states that match reruns may occur if "Field Elements detaching or moving beyond normal tolerances, not as a result of Robot interactions". If a match started with a ball outside this tolerance, and the head referee was notified in time, could a match rerun occur?

Answered by committee

The Rapid Relay Balls are manufactured to a +2, -13mm specification. Because they are soft and plush, actual dimensions may vary, and it is impossible to guarantee exact specifications/dimensions/tolerances in any given Match. Teams should be prepared for variance in Ball shape/size, and it is expected that Balls will change shape during the course of a Match and/or event. Event staff may periodically or at a Team's request attempt to re-shape the Balls, but are not required to do so.

Ball dimensions should not generally lead to a replay, except potentially in cases where the Ball is significantly damaged in a way that impacted game play.

2298: Preparation for field variances

15-Nov-2024
T10

<T10> At a recent event, the fields were placed on risers made of inverted 5 gallon buckets with 1/2" particle board placed on them. Our team noticed one or more of the field's **Floor** was not level/dipped in the center. <T10>, in part, states "Field Element tolerances may vary from nominal by up to +/- 0.5" (25.4 mm) unless otherwise specified." In the case of the field floor not being level, over what distance is the tolerance allowed to be up to 0.5" off?

> **Answered by committee**
>
> The Field cannot be more than .5" from flat at any point and cannot have two heights that are more than 0.5" apart, across either the entire length or width of the field.
>
> Two practical ways to assess this are:
>
> 1. Lay a yardstick or other similar object on its long edge on the field, and run it across all parts of the Floor in both directions. Gaps between the straight edge and the Floor at any point will highlight measurable spaces where the Floor is uneven.
> 2. Use a yardstick or measuring tape to check the distance between the Field and the floor of the venue at various points around the perimeter.

1990: Pushing triballs causes net to lift slightly

5-Mar-2024
T10

T10a states:

> Field Element tolerances may vary from nominal by up to ±1.0”

In the event that a goal is fairly full of triballs, and an opponent starts to legally push the triballs out of the goal, the net may incidentally raise and some triballs may escape the goal by going over the bar instead of under. This is quite common when Teams attempt to de-score triballs from an opponent's goal that is full.

Please see this example video demonstrating a scenario in which this can occur:
https://www.youtube.com/watch?v=cDuILsMaNoM

It seems to me that this would be considered "normal gameplay" as the intention isn't to lift the net but the net lifting is only a secondary consequence of simply trying to push a large quantity of triballs at once.

Therefore, is it correct to say that a robot that indirectly causes the net to lift slightly incidentally while pushing triballs is not violating T10 or any other rule?

Thank you.

> **Answered by committee**
>
> > Therefore, is it correct to say that a robot that indirectly causes the net to lift slightly incidentally while pushing triballs is not violating T10 or any other rule?
>
> Thank you for your very clear video example. Provided no other rules are violated in the process, a Robot that indirectly causes the net to lift slightly while pushing Triballs into or out of the lower portion of a Goal is not violating rule <T10>; additionally, the Note following rule <SG5> will generally not apply, and this action is unlikely to be an

> <SG5> Violation if the Robot is not entangled with the net or directly/intentionally lifting or raising the net structure.

1811: T10 - Does the Field Variance Tolerance Cover Incorrectly Assembled Field Elements

3-Dec-2023
T7 T10

<T10> states (in part):

> Field Element tolerances may vary from nominal by up to ±1.0”, unless otherwise specified.

At a recent event we noticed part way through the finals matches that the goals on the competition fields were not assembeled correctly. The top horizontal beams were 10.5" above the field floor because the corner chassis connectors were placed in the highest pair of holes on the uprights, rather than the second-highest pair.

Should this sort of variance be considered a <T10> condition that teams should design around (meaning a robot would need to be designed to clear ~11.5" vertically for anything going over the top of the goal), or would it be a <T7> field fault?

> **Answered by committee**
>
> Yes, this would be included in the <T10> tolerance. Since there are no flexible Field Elements, improper assembly is the most common source of such variances. Of course, whenever a Team finds that a field has been assembled incorrectly, they should bring it to the attention of the Head Referee and/or Event Partner as soon as possible.
>
> With that being said, a Match Replay is always an option at the Head Referee / Event Partner's discretion; the list of situations provided in <T7> are intended to be representative examples, not an all-inclusive list. In the case of improper field assembly, they will usually take the following considerations into account when making this decision:
>
> - The severity of the error (e.g., on an Autonomous Coding Skills field, a Starting Peg in the incorrect location would be far more significant than a Starting Peg rotated in the wrong direction)
> - If any Teams claim that the error was Score Affecting
> - When the error was found (e.g., if the event has already run until Finals, then it is unlikely that the error impacted Teams directly enough to warrant concern)

1590: Field Tolerances Impacting Gameplay

17-Jul-2023
S1 T7 T10

(via team 920B) <T10> [...] Field Element tolerances may vary from nominal by up to ±1.0” <T7> Match Affecting “field fault” issues. [...] iii. Field Elements detaching or moving beyond normal tolerances (not as a result of Robot interactions). Grant Cox (chairman of the GDC) clarifies here (https://youtu.be/V0fb47-Zd5Q?t=37) that the goals should be built such that you cannot easily roll the triballs into the goals; they must be pushed with a reasonable amount of force to get them under the PVC bar that defines the outside of the goal. After much experimenting with the field and observing other fields, it has become apparent to us that sometimes the vertical PVC pipes on the corners of the goals will sometimes become raised up due to intense robot interactions. This drastically changes how triballs interact with the goal, namely how easy they roll under. With this and the above rules in mind, we would like some clarification as to how these rules should be interpreted in certain situations. We are not looking for a blanket ruling, and we know that it is impossible to issue one. Instead, we would like a ruling on what the correct ruling should be in the following situations (assuming no other rules are being violated): Situation 1: A robot is pushing triballs into their alliance goal in an act of reasonable normal gameplay. As they are doing so, the vertical PVC pipe in one of the corners of the goal loosens up a little bit and raises up ¾”. Since it is still within the ±1” allowable tolerance, it is not in violation of <T10>. However, it now allows triballs to be easily rolled under the net from several feet away, such that they don’t even contact the horizontal PVC pipe. This does not meet any of the criteria of <T7a>, so the way I read the rule, no replay should be awarded. However, one alliance clearly had an advantage due to their goal being raised up allowing for easier scoring in the goal. After the match, it is determined that the alliance who had the goal that raised up ¾” won, but only because the goal had become raised up. The head referee

recognizes this as affecting the outcome of the match, but cannot classify it as match affecting as it does not violate <T7>. What should be done? Should the match be replayed (if so, under what rule)? Should the team that caused the goal to raise up be given a warning (if so, how should the referee determine which robot to penalize)? Situation 2: A robot at the beginning of the match intentionally presses upward on the goal, causing the vertical PVC pipe to slide ¾", causing the outcome described in Situation 1 (including the head referee determining that it did affect the outcome of the match). The robot did utilize the fact that triballs can easily be rolled into the goal. Does the fact that it was intentional change any of the answers to the questions in Situation 1? Situation 3: The head referee determines after a match has ended that the match had begun with one of the goals raised up ¾" as described in Situation 1. It leads to the same outcome as in Situation 1, where the head referee sees that it did affect the outcome of the match. Situation 4: After a match, the head referee sees that one of the alliance goals is ¾" lower than normal (they are unsure how or when it happened). It is still within the ±1" tolerance set by <T10>. However, this impacts the ability to score triballs in the goal so much that the head referee determines that it did severely affect the outcome of the match. From my observations, it would be unsafe and likely to damage triballs (in violation of <S1>) to design and compete with a mechanism capable of pushing triballs under the bar if it were ¾" lower than normal. What should be done in this situation? Should the match be replayed (if so, under what rule)? Or should the outcome of the previous match just be left as-is and the field be fixed for the next match? Again, we are only looking for answers to these specific situations, not a blanket answer (as we know you cannot provide one). Assume no other rules are being violated in these situations. Thank you for your time and consideration.

> **Answered by committee**
>
> Thank you for your questions. We'll start by noting that the tolerances for the opening of the Goal between the PVC pipe and the foam tiles was revised to +0.25" / -0.00" in version 1.0 of the game manual on June 27, 2023. This change predated your Q&A post and has a significant impact on your scenarios. As always, we encourage users to review and follow the Q&A Usage Guidelines, which include "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."
>
> In all scenarios in which the Goal is or becomes out of tolerance due to normal gameplay or incorrect assembly (including your Situations 1, 3, & 4) a Match replay may be warranted under clause aiii of rule <T7>, "Field Elements detaching or moving beyond normal tolerances (not as a result of Robot interactions)," at the discretion of the Head Referee and Event Partner. In these scenarios, no Teams should be penalized.
>
> In scenarios in which the Goal is moved out of tolerance intentionally (including your Situation 2), would merit a Major or Minor <S1> Violation depending on whether the Head Referee determines that the Violation is Match Affecting or not.
>
> To keep events on schedule, Teams that are concerned about a Goal height should notify the Head Referee or event staff prior to the Match.

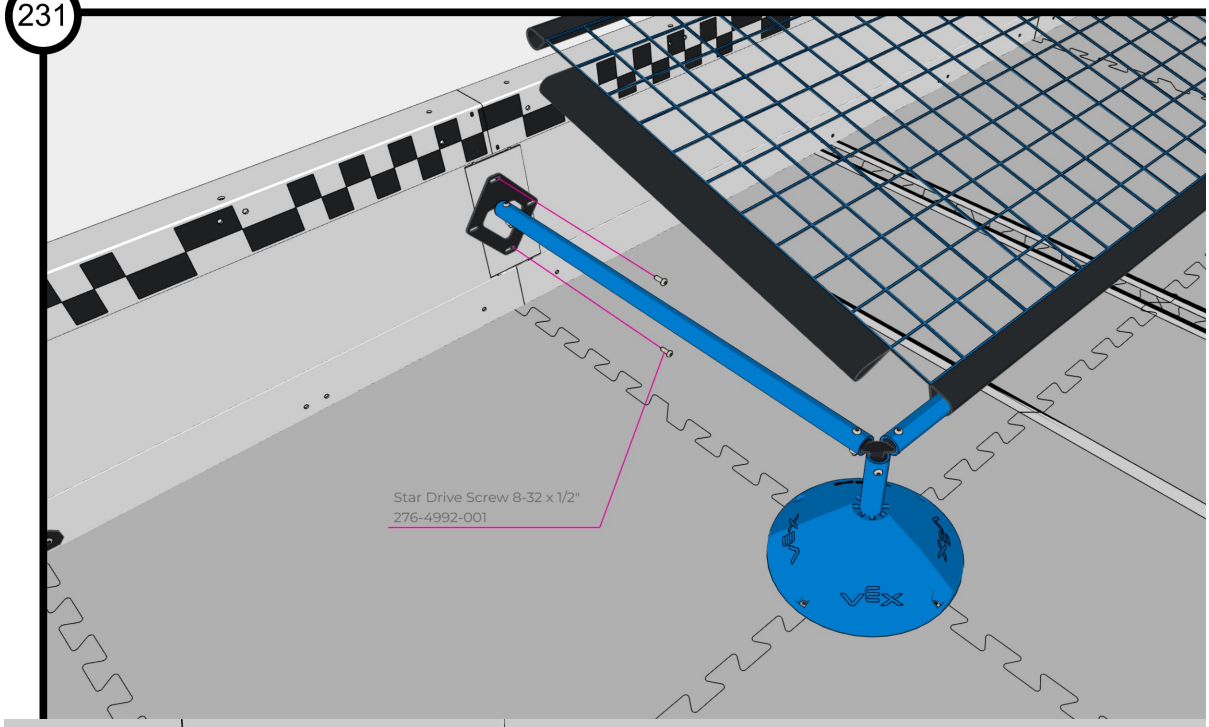
1535: Over Under Field Assembly

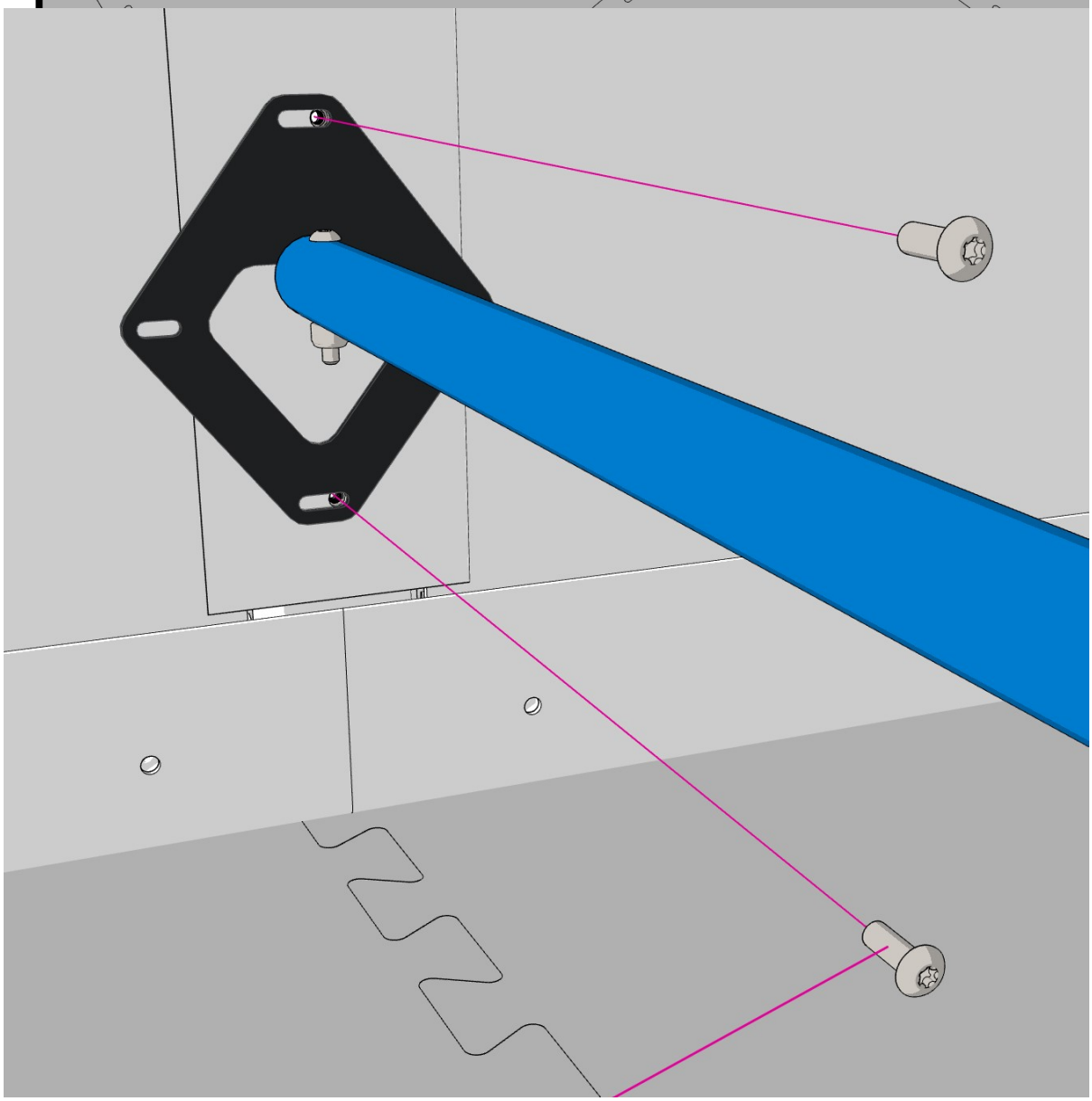
7-Jun-2023
G1 T10

<G1>

Step 231 uses 1/2" screws to connect the net to the field perimeter wall. However, there is no way for the screws to stay put. I have looked throughout the assembly manual to make sure I didn't miss anything. I have looked through the holes in the perimeter walls to confirm my thinking that there is nothing inside to attach to. Even poked a screwdriver all the way through. I'm wondering what the fix was? I can't find anything online yet. I want to maintain legality of the field for competition purposes.

231





Answered by committee

Please review the Q&A Usage Guidelines. This question does not fall under the scope of the Q&A, and would be better suited for an alternative source of discussion such as the VEX Forum or a call to VEX Support.