Q&A

VRC 2021-2022: Tipping Point

Tagged: G19

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 Tipping Point 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 Tipping Point 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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959: Conflict Between G19 and Figure 20

7-Dec-2021
G19 Field Setup

In the December 7th game manual update Version 2.2 G19 states "Mobile Goals should always be oriented such that the vision target found on the “point” of the heptagon Base, and the rotation of all outer “points”, resembles Figure 20."

In Figure 20 both alliance goals on the AWP lines are shown as "pointed up" from the audience perspective. However the red box states "The Alliance Mobile Goals that begin on the AWP Line are "pointing towards" the neutral zone. The orientation described in the red box is consistent with other images throughout the game manual and Appendix A. Which is the correct orientation?

> **Answered by committee**
>
> Thank you for bringing this to our attention. This was an error in the initial upload of the v2.2 document that has since been rectified. Figure 20 is now consistent with G19 and the other images throughout the manual.

958: Orientation of Tall Neutral Goal

7-Dec-2021
G19 Field Setup

Renders of the field throughout the game manual and its appendices show the tall neutral goal with the point with the vision target facing toward the audience. The object placement CAD in Appendix A shows the point with the vision target facing away from the audience. Given the specifics stated in G19, if Figure 22 is correct then the object placement in Appendix A must be incorrect. Which is the correct orientation?

> **Answered by committee**
>
> The v2.2 Game Manual update included the following “red box” addition to rule <G19>. We sincerely apologize for any inconvenience and confusion caused by this inconsistency.
>
> > Prior to version 2.2 of the Game Manual (released December 2021), there have been conflicting interpretations of the correct Mobile Goal rotation in the official game documentation. The layout defined in Figure 20 above, and Appendix A, in version 2.2 (or later) of the Game Manual is the only correct variation. This layout takes precedent over any other variations found elsewhere, such as other figures, websites, videos, etc that were created prior to December 2021.
> >
> > Here are some ways to visualize the correct orientation, using the V-shaped vision target as the “front” of the heptagon, and the rectangular vision target as the “back” of the heptagon:
> >
> > • The Alliance Mobile Goals that rest on the Platforms are “pointing towards” their respective Platform
> >
> > • The Alliance Mobile Goals that begin on the AWP Line are “pointing towards” the Neutral Zone
> >
> > • The outer two Neutral Mobile Goals are ”pointing towards” the field perimeter walls
> >
> > • The center Neutral Mobile Goal is “pointing up”, when viewed from the audience perspective, or “pointing left” when viewed from the red Alliance Station

930: G19 Tall Neutral Mobile Goal Orientation

15-Nov-2021
G19 Field Setup

There have been multiple Q&As asking about the placement of the Tall Middle Neutral Mobile Goal and its orientation. The 2 Q&As (826 & 881) that have been answered have contradicting answers and I would like a definitive answer for this.

> **Answered by committee**
>
> The v2.2 Game Manual update included the following “red box” addition to rule <G19>. We sincerely apologize for any inconvenience and confusion caused by this inconsistency.
>
> > Prior to version 2.2 of the Game Manual (released December 2021), there have been conflicting interpretations of the correct Mobile Goal rotation in the official game documentation. The layout defined in Figure 20 above, and Appendix A, in version 2.2 (or later) of the Game Manual is the only correct variation. This layout takes precedent over any other variations found elsewhere, such as other figures, websites, videos, etc that were created prior to December 2021.
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> > • The Alliance Mobile Goals that rest on the Platforms are “pointing towards” their respective Platform
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> > • The outer two Neutral Mobile Goals are ”pointing towards” the field perimeter walls
> >
> > • The center Neutral Mobile Goal is “pointing up”, when viewed from the audience perspective, or “pointing left” when viewed from the red Alliance Station

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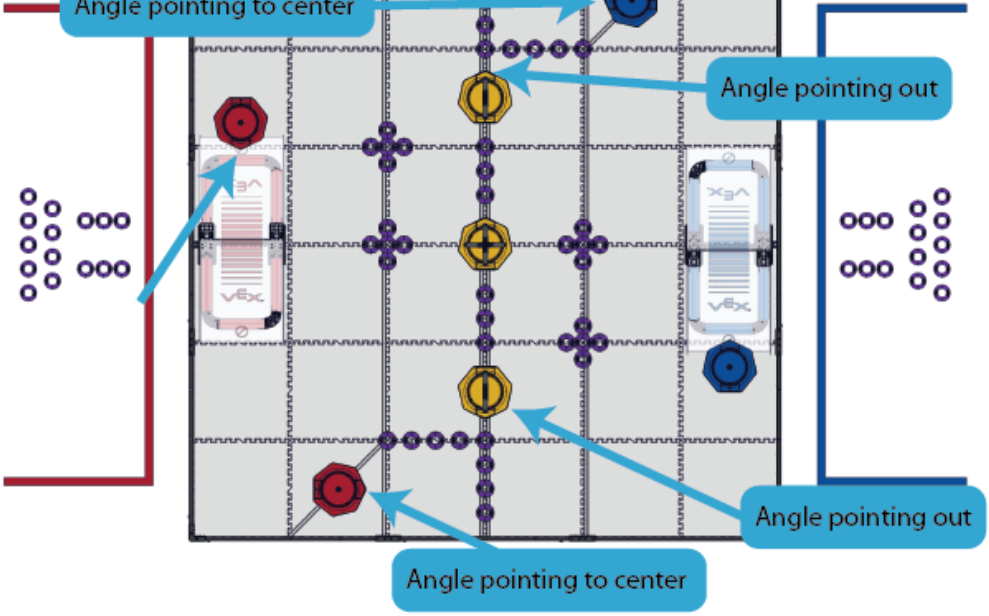
826: G19 Mobile Goal Placement

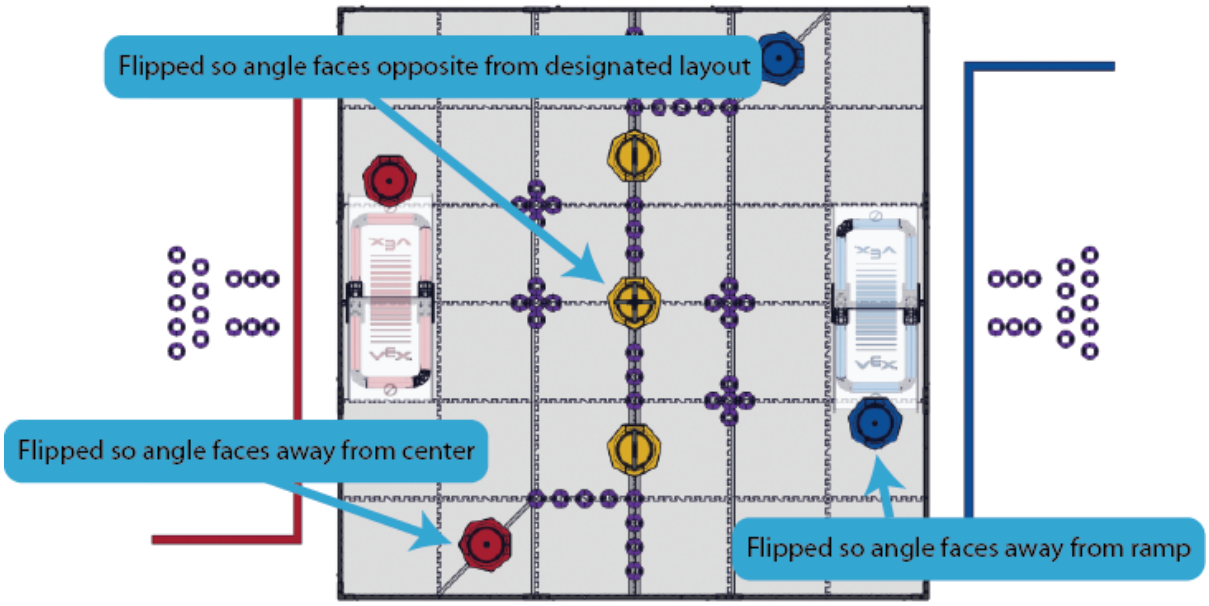
22-Jul-2021
G19

G19 references object placement and variances on the field. The field assembly instructions show mobile goal placement, and I understand orientation of the mobile goals is intended to be specific, especially with regards to the orientation of the vision sensor targets.

Since the mobile goals have a seven-sided base, they have two orientations that they could be placed on the field that would work, still allow the vision sensor targets to be pointing in the correct direction. My questions is do the mobile goals need to be placed exactly as shown in the field assembly instructions, or would it be acceptable for the orientation of the bases to be random, as long as the vision sensor targets are still pointing in the appropriate directions? I have created an annotated image to illustrate what I am asking:



Variances to setup - are these allowable?:



The rationale behind the question is that I want to know how diligent we need to be with field resets at events, or will it be sufficient to ensure that the mobile goals are arranged in one of the two orientations that align the vision sensor targets with the correct directions.

> **Answered by committee**

Edit 2021-12-07: The v2.2 Game Manual update included the following “red box” addition to rule <G19>. We sincerely apologize for any inconvenience and confusion caused by this inconsistency.

> Prior to version 2.2 of the Game Manual (released December 2021), there have been conflicting interpretations of the correct Mobile Goal rotation in the official game documentation. The layout defined in Figure 20 above, and Appendix A, in version 2.2 (or later) of the Game Manual is the only correct variation. This layout takes precedent over any other variations found elsewhere, such as other figures, websites, videos, etc that were created prior to December 2021.
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> Here are some ways to visualize the correct orientation, using the V-shaped vision target as the “front” of the heptagon, and the rectangular vision target as the “back” of the heptagon:
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764: Ball Locking Allowing More Scored Balls at Remote Events

21-Mar-2021
G19

> G19: Field Element tolerances may vary from nominal by ±1.0”, unless otherwise specified. Ball tolerances and weights may vary from nominal to ±0.10” and 10 grams respectively. Ball placement at the beginning of Matches may vary from nominal to ±1.5”. The bottom opening of Goals between the lowest two rings has a dimensional tolerance of -0.0 / +0.5”. Teams are encouraged to design their Robots accordingly. Please make sure to check Appendix A for more specific nominal dimensions and tolerances.
>
> As per the May 25th Game Manual Update, Option A: (1x) 4” Standoff (276-1021) or Option B: (2x) 11” Zipties (275-0125) are added to the four corner Goals to aid in proper function of the Goal. One of these options will be required for official match play, with option A being preferred.

As per the May 25th update, a 4” standoff or 2x 11” zipties must be added to the corner goals to prevent balls from becoming locked, Q&A599.

Q&A716 has already addressed what is considered a field fault if a ball becomes locked and a team has not installed standoffs/zipties or a ziptie loop slides out of tolerance at a remote event. However, it does not address what to do if a ball has become locked and additional balls have been scored that would have otherwise not been possible (locking a ball creates additional volume for scoring). Consider the following two scenarios related to more balls being scored as a result of ball locking.

Scenario A: A team intentionally does not install standoffs/zipties for a remote event in order to gain a competitive advantage. This would be considered a violation of G19, correct? What would be the proper course of action if this was noticed prior to the start of a match? What would be the proper course of action if this was noticed after the end of the match and more balls had been scored than what was otherwise possible? Does the proper course of action change depending on whether it’s a robot skills match or live remote tournament?

Scenario B: A team has installed the ziptie loop to follow G19. During the course of normal gameplay, the loop slides out of the acceptable tolerance as specified in Appendix A, allowing a ball to become locked. The team then scores additional balls that would have otherwise not have been possible. What is the proper course of action in this scenario? Does the proper course of action change depending on whether it’s a robot skills match or live remote tournament?

> **Answered by committee**

> Scenario A: A team intentionally does not install standoffs/zipties for a remote event in order to gain a competitive advantage. This would be considered a violation of G19, correct? What would be the proper course of action if this was noticed prior to the start of a match? What would be the proper course of action if this was noticed after the end of the match and more balls had been scored than what was otherwise possible? Does the proper course of action change depending on whether it's a robot skills match or live remote tournament?

Yes, this interpretation is correct. Omitting the zip ties and/or standoffs would be considered the same as building a field out of tolerance in other ways, such as making a Goal taller, or using non-standard field tiles. The answers to the rest of your questions would be that this is handled the same as a standard out-of-tolerance field (i.e. rules LRT7 and/or G20 as applicable).

> Scenario B: A team has installed the ziptie loop to follow G19. During the course of normal gameplay, the loop slides out of the acceptable tolerance as specified in Appendix A, allowing a ball to become locked. The team then scores additional balls that would have otherwise not have been possible. What is the proper course of action in this scenario? Does the proper course of action change depending on whether it's a robot skills match or live remote tournament?

As above, this would be considered a standard "field fault"; therefore, LRT7 and/or G20 may apply accordingly at the Head Referee's discretion.

> <LRT7> In a Live Remote Tournament Match, Teams must set up their own field in accordance with the layouts, tolerances, and specifications found in the Game Manual and Appendix A.
>
> a. Prior to a Match, a Head Referee will verify each Team's field layout and request any adjustments as needed. A Team will not be permitted to play in a Match until the Head Referee has approved their field layout; refusal to comply with any requested adjustments may be considered a violation of <G1> at the Head Referee's discretion.

716: Ball Locking at Remote Events

22-Dec-2020
G19 G20

> G19: Field Element tolerances may vary from nominal by ±1.0", unless otherwise specified. Ball tolerances and weights may vary from nominal to ±0.10" and 10 grams respectively. Ball placement at the beginning of Matches may vary from nominal to ±1.5". The bottom opening of Goals between the lowest two rings has a dimensional tolerance of -0.0 / +0.5". Teams are encouraged to design their Robots accordingly. Please make sure to check Appendix A for more specific nominal dimensions and tolerances

> G20: Match Replays, i.e. playing a match over again from its start, are at the discretion of the Event Partner and Head Referee, and will only be issued in the most extreme circumstances listed but not limited to the following:
>
> a. Field Fault issues that have directly affected Match play. i. Game Elements not in the correct positions ii. Tape lines lifting Iii. Field Elements detaching or moving beyond normal tolerances that is not a result of team play violations. Iv. Autonomous Period or Driver Controlled Period ending early v. Field Control disconnecting and disabling Robots. Not to be confused with a Robot that trips its own PTC and has to reboot to reconnect the robot to controller, or teams with controllers that have bent pins that affect only their alliance Field Control tower.
>
> b. Game Rule issues that affect the outcome of a match. i. Referee disables a robot for a misinterpretation of a rule violation. ii. Referee starts the Driver Controlled Period without determining the outcome of the Autonomous winner. iii.The field is reset before a score is determined.

As per the May 25th update, a 4" standoff or 2x 11" zipties must be added to the corner goals to prevent balls from becoming locked <Q&A599>. When using the ziptie option, it can be easy for the ziptie loop to slide outside of the accepted tolerance as specified in Appendix A (1.25" to 4.75" measured from top face of the goal's bottom ring) as a

result of normal gameplay. This is especially true in situations like Remote Skills Events and Live Remote Tournaments where the Head Referee is unable to directly assess how well the zipties have been installed.

Say during a Remote Skills Event or Live Remote Tournament, a situation arises where a ball becomes locked in a corner goal as a result of a ziptie loop sliding out of tolerance and violating G19. But, it is unclear if the ziptie loop was already out of tolerance before the match started or became out of tolerance during the match as a result of normal gameplay. G20aiii states a field fault can be “Field Elements detaching or moving beyond normal tolerances that is not a result of team play violations.” Since only the team is capable of physically interacting with their own field in a remote event, would the ziptie loop being out of tolerance be considered “a result of team play violations” and not result in a replay?

In a related scenario, a team fails to install the standoffs or ziptie loops to the corner goals after being reminded via email and/or the team meeting for a remote event. During one of their matches, a ball becomes locked and the team requests a replay due to a field fault. Would the failure to install standoffs and/or ziptie loops be “a result of team play violations” and not result in a replay?

Answered by committee

> Since only the team is capable of physically interacting with their own field in a remote event, would the ziptie loop being out of tolerance be considered “a result of team play violations” and not result in a replay?

Just as it is the Team's responsibility to ensure that their Robot is built as intended (and legally) during an in-person event, it is also their responsibility to ensure that the playing field is set up correctly during a Live Remote Tournament. Therefore, this would not be considered eligible cause for a Match replay in most circumstances.

685: Additional standoff/zipties for corner goals

1-Nov-2020
G19

> As per the May 25th Game Manual Update, Option A: (1x) 4” Standoff (276-1021) or Option B: (2x) 11” Zipties (275-0125) are added to the four corner Goals to aid in proper function of the Goal. One of these options will be required for official match play, with option A being preferred.

We have found that we prefer the ziptie method as the screws that hold the ziptie will bend with repeated play. This bend will result in a standoff that is not vertical - resulting in balls still getting into the back corner. This zipties seem to be better, but only slightly as, with repeated play, the zipties will move up or down ... resulting in balls getting deep in the corner.

Two questions:

1. It says that one of the options is required. Can we do both? Install both the standoff AND the zipties?
2. During a match when a ball does get stuck deep in the corner - a result of the bent stand off or zipties moving - I'd assume that it is a field fault and a match replay would be warranted, but only if the head referee determines that it may have been match affecting. Is this the correct interpretation?

Answered by committee

> 1. It says that one of the options is required. Can we do both? Install both the standoff AND the zipties?

Yes, this is fine.

> 2. During a match when a ball does get stuck deep in the corner - a result of the bent stand off or zipties moving - I'd assume that it is a field fault and a match replay would be warranted, but

> only if the head referee determines that it may have been match affecting. Is this the correct interpretation?
>
> Yes, this is correct.

638: Where do we Measure the Bottom 2 Rings on the Side Goals?

16-Aug-2020
G19

Further clarification is needed regarding the previously-asked question "G19 Goal Height Tolerance" from the Q&A. Although the game manual has been updated, there has been some debate and confusion about how to properly set up the side goals - e.g. see (https://www.vexforum.com/t/goals-clamping-down-on-change-up-balls/83688/16).

Some teams take the May 25 update to mean that NO part of the goal could be lower than 6.13" and any part of it could be up to 6.63", other are interpreting this differently; some interpret it to mean the back of the goal have these tolerances, while others think it is the front of the goal. The Game Manual, Appendix A, and the Field Assembly instructions don't make this clear and don't appear to represent the actual physical realities of the side goals.

Teams will benefit from a clear understanding of how the field will be set up at competitions and will be better prepared with clarity. Please provide more clarity.

The Game manual at <G19> states, in the 6/25/2020 update: "The bottom opening of Goals between the lowest two rings has a dimensional tolerance of -0.0 / +0.5".

Appendix A at "Wall Goal Specs" (sheet 7) in the 5/15/2020 update: Shows ALL RINGS PHYSICALLY LEVEL with the distance between the two bottom rings MEASURED HALFWAY FROM THE FRONT TO THE BACK at 6.13" (+0.50/0.00).

Field Assembly Instructions on Page 7 (276-6499-750): Shows the cardboard measuring tool measuring the distance between the bottom two rings AGAINST THE BACK TUBE.

There are several issues that are causing confusion:

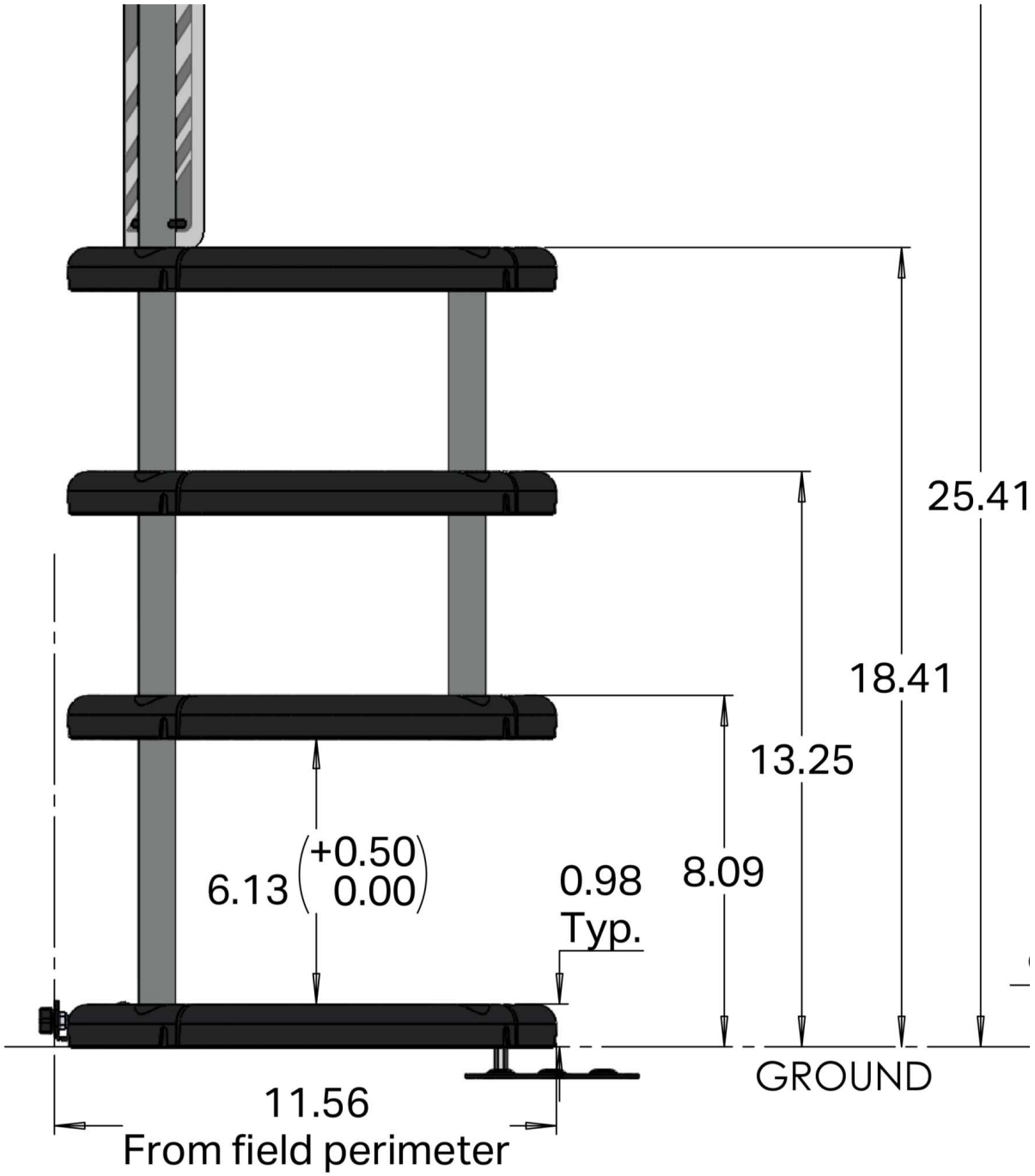
a. Appendix A and the Field Assembly Instructions show a side goal that is level, when in fact,

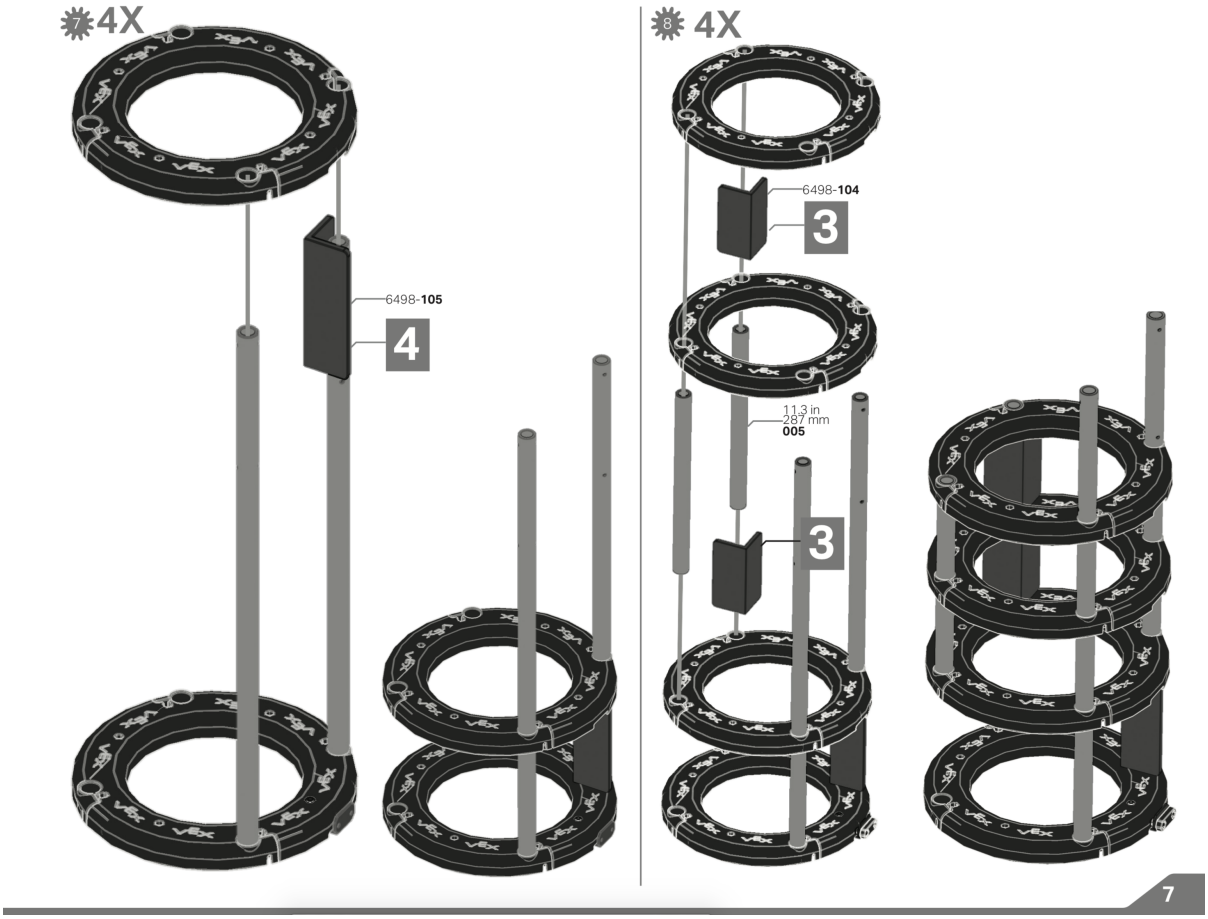
b. Appendix A and the Field Assembly instructions measure 6.13" from different locations – fr

c. It is not apparent whether 6.13" and its tolerance means that NO Part of the ring (whether

To eliminate the confusion, it would be helpful to have clear guidance for the following:

1. What is the shortest vertical distance between ANY PART of the lowest two rings?
2. If the droop results in the tolerances being outside of the stated +0.5/-0 what should be done?
3. From where should the vertical 6.13" and its tolerance be measured?


25.41
18.41
13.25
8.09
6.13 (+0.50 0.00)
0.98
Typ.
GROUND
11.56
From field perimeter



Answered by committee

1. What is the shortest vertical distance between ANY PART of the lowest two rings?

6.13" (155.7mm).

2. If the droop results in the tolerances being outside of the stated +0.5/-0 what should be done?

It is the responsibility of the Event Partner, in conjunction with their Head Referee, to ensure that fields are assembled according to the specifications listed in Appendix A. If a field is found to be assembled incorrectly, it should be fixed as soon as possible (i.e. prior to any upcoming Matches). It is generally good practice for Head Referees / Event Partners to check key field dimensions regularly throughout a tournament, and adjust as needed.

3. From where should the vertical 6.13” and its tolerance be measured?

Any location on the top surface of the bottom ring, perpendicular to that ring, vertically towards its associated point on the bottom surface of the second ring.

In a perfect world ("it works in CAD"), the two surfaces would be parallel to each other, and it would not matter where they were measured. This is why it is presented that way in Appendix A - no angle dimension is specified.

In reality, we acknowledge that perfectly parallel surfaces are not a feasible expectation. Therefore, the tolerance was written as (-0.0 / +0.5”) to provide guidance that "if it's going to err, err on the plus side".

> Consider the case where the front of the ring is at 6.13”, but to get it to that height, the back side connected to the long tubes needs to be higher than 6.63”.

With the above answers in mind, this is a good example of a goal that has been assembled out of tolerance, and should be rectified as soon as possible.

609: Discrepancies in Appendix A

14-May-2020
G19

There are a several discrepancies between Appendix A and the rest of the manual, as well as within itself.

Sheet 5 of Appendix A states that the mass of the balls has a tolerance of ± 10 grams (see https://imgur.com/a/rbAGm4A). However, G19 in the game manual specifies tolerance to be ± 20 grams:

> Ball tolerances and weights may vary from nominal to ±0.10” and 20 grams respectively.

Which of these is correct?

Sheet 6 of Appendix A shows a bracket connected to the third ring of the side wall goal (see https://imgur.com/a/hY2l0Bq). This bracket appears to secure the goal to the top of the field perimeter. This bracket also appears in the field CAD. However, there is no mention of this part in the field assembly instructions and no such part was included in the field element kit.

Does this part need to be used?

> **Answered by committee**
>
> Thank you for bringing this to our attention. This question will be addressed in the May 25th Game Manual Update.

598: G19 Goal Height Tolerance

13-May-2020
G19

G19 states:

> Be prepared for minor field variance. Field Element tolerances may vary from nominal by ±1.0”, unless otherwise specified.

The specification in Appendix A for the distance between the first and second rings of a wall goal is 6.13". By G19, distances ranging from 5.13" to 7.13" are legal. At the lower end of this tolerance, several issues emerge. At 5.2" (within tolerance as specified by G19), it becomes very difficult to descore balls through the bottom. See this video as a demonstration:

https://youtu.be/ZBA2E7cu3XY

Additionally, when the goal is lowered by this amount, it becomes impossible to score three balls inside the goal. This is because the top of the top ball in a goal sticks out past the upper edge of the goal, and since the definition of scored states:

> Scored - A Ball status. A Ball is considered Scored in a Goal if it is not touching a Robot of the same color as the Ball and meets all of the following criteria.
>
> • The Ball is fully below the upper edge of the Goal.

The ball is therefore not scored.

Left as is, lowered but technically in spec wall goals have the potential to drastically affect gameplay of VRC Change Up. I ask that the GDC modify G19 to change the tolerance for the hight of the goal rings to 0.5" or 0.25".

Answered by committee

Thank you for bringing this to our attention. This question will be addressed in the May 25th Game Manual Update.