



FRC Q&A

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Game - The Arena

Q149

Q. Follow-up to Q57. Do you have a source where we can purchase pre-cut HDPE (ideally the same source as for the field components used in competition, like NASA has in the past for other fields). We can use our source otherwise, but having an exact replica would be better.

A. We normally don't answer non-rules questions in the Q&A. Questions like these are best directed to frcteams@usfirst.org. That being said, we do want to be as helpful as we can. In this particular case, though, we're not comfortable recommending a specific source for the HDPE. Many sources are likely to be able to supply you with material that meets the specification, some likely closer to you that will reduce your shipping costs.

Q100

Q. Rule 2.1.6 States the landmark is 15 ft 7 in from the alliance wall. The picture immediately below cites the distance as 13 ft 7 in. Which is the correct measurement?

A. The Game Manual was corrected in *Team Update 2015-01-06* to reflect the correct dimension of 13 ft. 7 in.

Q57

Q. My supplier for HDPE says that there are two types of surfaces -- totally smooth and "orange-peel like." Could you let us know which surface type is used for Recycle Rush?

A. Good question, apologies for the omission. The answer is both. The HDPE used for the Chute Plastic (GE-15017 and GE-15018) is "smooth". The HDPE used for all other elements is "orange-peel". The drawings will be updated to include this detail and announced in an upcoming Team Update.

Field

Q95

Q. Is the carpet used in this year's game the same as the carpet used last year?

A. The carpet used in RECYCLE RUSH is similar to the carpet used in AERIAL ASSIST, but is a different color. The exact carpet is described in the first paragraph of *Section 2.1*: "Shaw Floors, Philadelphia Commercial, Neyland II 20, 50510, 'Polar Express' and 'Capital Red'"

Q88

Q. We believe the bottom surface of the tote shoot is to be covered with HDPE. GE15017 and GE15018 are drawings of these parts (red and blue plastic chute). However Tote Slide Assembly drawing GE15004 does not include these parts. We cannot find any drawing which calls for the HDPE parts. Should th

A. The assembly of GE15017 and GE15018 can be seen as Item No 18 and 19 in drawing FE-00038 contained in the [Arena Layout and Marking](#) document.

Guardrail

Not Available

Alliance Wall

Q124

Q. What is the angle of the angled wall (where the human player station is) relative to the alliance wall or the guard rail? I'm not seeing it on any of the drawings.

A. Major dimensions are provided in drawings in documentation. Any additional geometry must be derived as needed.

Scoring Platforms

Q68

Q.Can a robot travel over the scoring platforms during the match?

A.Yes, there are no rules that prohibit that.

Q37

Q.Are the scoring platforms HDPE (as specified in the drawings and 2.1.3), or polycarbonate, as specified in the glossary?

A.Thank you for the question! The *Glossary* will be corrected to reflect that the scoring platforms are HDPE. Edits will be in *Team Update 2015-01-09*.

Q1

Q.Team Built Field - In the team prints, is there a page missing that suggests how to make the steps 2 " High?

A.To help in answering the question, we're going to assume that you mean "Scoring Platform" when you used "Step." Given that, we don't think there is a page missing. The assembly is illustrated in drawing number TE-15027: a stacked set of a platform (at 1.75 in.) plus a Scoring Platform Top (at 0.25 in). Note that, because the Scoring Platforms are already low cost wood construction, the assembly references the parts GE-15019 and GE-15020 from the Game Specific Field Drawings.

Step

Q50

Q.It appears that the sentence in 2.1.4, "Mounted to the sides of the STEP facing each ALLIANCE WALL is a 0.25 in. thick by 6.375 in. tall HDPE sheet..." should read as 6.63 in tall (which would be consistent with the stated lip height, as well as the part drawing. Is this the case?

A.Thank you for pointing out the discrepancy. *Team Update 2015-01-09* has corrected the dimension in *Section 2.1.4* to 6.625 in.

Q30

Q.Are the pieces of HDPE on the alliance faces of the step considered part of the step?

A.Yes, the Red and Blue plastic sheets are part of the STEP (per the *Glossary*, which states that the STEP is "the wooden and plastic structure which bisects the FIELD" and Step Assembly Model GE-15014).

Zone Markings

Q53

Q.What are the dimensions of the AUTOZONE, since the Glossary (which includes ramps), 2.1.5(which is inconsistent with the tape), and the Field Drawings (which is probably what was intended) are inconsistent?

A.Thank you for pointing out this discrepancy. The dimensions in the Arena Layout and Markings document (drawing FE-00038) are correct. *Team Update 2015-01-09* will correct *Section 2.1.5* to the correct dimension (6ft. 2in.).

Q52

Q.Is the white tape included in the LANDFILL ZONE (As specified in the Glossary), or not (As specified in 2.1.5 and the Field drawings)? In either case, what is the specified width?

A.The tape is not included in the LANDFILL ZONE. This will be corrected in *Team Update 2015-01-09*. In case of inadvertent conflict between the Glossary and other sections of the Game Manual, the Game Manual shall prevail. Thank you for the heads up.

Q35

Q.We would like clarification on the Auto and Landfill zones. 1) With respect to G7-C, where

starting configuration of the robot must be completely outside of these two zones, does this also mean that no parts of the robot can start in the airspace above these zones?

A.We believe the answer to [Q5] answers this question. If it does not, please ask again with additional detail.

The Landmark

Not Available

Vision Guides

Not Available

Alliance Stations

Not Available

Player Stations

Q102

Q.Can you have a camera on top of a pole that is connected to your computer within the drivers station, giving you a birds eye or wide view point of the arena? This camera would be entirely within your drivers station area and would be connected through wiring to a laptop.

A.We believe that the response to [Q7] answers this question. If not, please ask a follow up question.

Human Player Station

Q154

Q.The bottom of the chute is aluminum on the diagram. There are many finishes on the aluminum that will have different frictional aspects. Different standard finishes are M-mill, P - preferred mill, SB - short brush, LB - long brush, and C - coated. Can you tell me what the finish is on the aluminum?

A.Thanks for your follow-up question. While the Tote Slide, GE-15008, is a mill finished aluminum part, it gets covered with a piece of Blue or Red, smooth HDPE, GE-15017 or GE-15018. Please see updates to the Arena Layout and Markings drawings for more information on where those parts get placed on the Tote Slide.

Q127

Q.Our team-built tote chute lands totes on their nose 100% of the time, but with tweaking land totes in their normal orientation 100% of the time. Can the GDC provide their intent on what orientation the totes are suppose to land in the field? If not, can a percentage nose-dive be provided? Thank you.

A.We cannot guarantee a TOTE will exit the TOTE CHUTE in any particular pattern, nor is the construction of the TOTE CHUTE intended to guarantee a particular "landing style". The orientation of the TOTES upon exiting the TOTE CHUTE is dependent on factors such as flatness of the venue floor, assembly tolerances, and manner in which the DRIVER or HUMAN PLAYER feed the TOTE.

Q120

Q.In regards to the chute plastic (GE-15017 and GE-15018), the only reference to installation is that it is included in the parts list for FE-00038. There are no dimensions for installation and no features (holes, etc.) that would line up with anything else. Where does the plastic start and end?

A.Vertically, the top edge of the Chute Plastic (GE-15017 and GE-15018) is aligned to the top edge of the Tote Slide (GE-15008). Horizontally, the Chute Plastic is centered on the Tote Slide. Views depicting these alignments will be added to the Arena Layout and Marking drawing (FE-00038) for *Team Update 2015-01-13*.

Q59

Q.What material is the bottom of the Tote Chute made of?

A.It appears you are referring to the HDPE Chute Plastic, which are part numbers GE-15017 and

Human Player Zone

Not Available

Game Elements

Q87

Q.Can we contain the totes within our robot (a box) and allow the totes to stack "in" our box robot before reaching the staging/scoring area or do we have to stack at the staging/scoring area?

A.A ROBOT may stack TOTES first and then bring them to the SCORING PLATFORM (either within their ROBOT or externally to their ROBOT). A ROBOT does not have to bring TOTES individually to the SCORING PLATFORM and stack them there.

Q79

Q.Is the robot allowed to hold the totes and recycling containers inside of itself or stack the totes in itself before reaching the staging area?

A.We're not sure of your question. Can you please follow up using additional specific terms used in the Game Manual? Thank you.

Totes

Q191

Q.Is the field staff allowed to position yellow totes "upside down" within the staging zones?

A.No. The Yellow TOTES and RECYCLING CONTAINERS are setup for each MATCH as demonstrated in various figures throughout the Game Manual (particularly *Sections 2.2 and 2.3.1(d)*). Also, as a reminder, Per G13, "DRIVE TEAMS may not rearrange TOTES or LITTER prior to the start of the MATCH.

Q158

Q.In what orientation and configuration will the zip ties on the totes be? For example, will they inbound, outbound, trimmed, etc?

A.[Q62] states that placement of the cable ties will be documented and announced in a future Team Update. Thank you for your patience.

Q89

Q.Are YELLOW TOTES worth points if they're scored on the SCORING PLATFORM similarly to GREY TOTES? Cont: Do YELLOW TOTES contribute to stack levels when calculating Container Score if they're used in combination with GREY TOTES?

A.No, there are no point values defined for Yellow TOTES on the SCORING PLATFORM. And No, Yellow TOTES do not contribute to the RECYCLING CONTAINER level - remember, "A RECYCLING CONTAINER is scored if it is fully supported by **only** scored Gray TOTES."

Q15

Q.Are the Yellow TOTE placements in the ALLIANCE STATION intended to be asymmetric for the Red and Blue sides? Since the position of the Scoring Table is the criteria for the positioning of Yellow Totes, it may provide a bias to an alliance depending on whether they are red or blue.

A.Yes, they are positioned such that the Head REFEREE can easily verify the correct number of Yellow TOTES are in the ARENA prior to the start of the MATCH.

Recycling Containers

Q179

Q.During match set up, will the recycling containers be centered on the step in addition to having the handles facing the driver stations?

A. RECYCLING CONTAINERS will be approximately centered on the STEP, as depicted in Figure 2-16, between the two HDPE Lips.

Q175

Q. Will the lip/handle ("lift here") of the recycling container LID be lined up with the handle of the BOTTOM of the recycling container during the entire match?

A. The details regarding game element preparation will be documented and announced in a future Team Update. Thank you for your patience.

Q147

Q. When the recycle bins are placed before autonomous will the handles be facing towards us or will it be random?

A. Please see the paragraph before Figure 2-20: "Each RECYCLING CONTAINER is oriented such that the handles point at the ALLIANCES' PLAYER STATIONS"

Q62

Q. Can you specify the size and location of the cable ties used to secure the lid to the recycling container, to ensure they don't interfere with pickup systems? Pictures would be a big help.

A. The cable ties used to secure the lids of the TOTES and RECYCLING CONTAINERS are 50 lb Nylon 6-6 cable ties, 11.1" long by .18" wide. Placement of the cable ties will be documented and announced in a future Team Update.

Litter

Q4

Q. Is it legal to place the litter inside the recycling container before you place the recycling container on top of a grey tote and still receive all the points for all the levels of totes stacked under the recycling container and get the litter points as well?

A. There are no rules that restrict the order in which ROBOT actions must be completed. Per Section 3.1.2.4, "TELEOP scores, with the exception of Coopertition, are assessed based on the state of the FIELD when the ARENA timer displays zero (0), or, if not all elements have come to rest, five (5) seconds after the ARENA timer displays zero (0)."

Field Management System

Not Available

Game - The Game

Q196

Q. If placing yellow totes on the step and they fall into the opposing alliance side, this would be a foul. Would it receive a single penalty for the event or a penalty for each item that falls completely onto the other side?

A. Each item that is completely transferred would result in a FOUL.

Q162

Q. May we use a hand or foot to hold the yellow TOTE firmly in place while we attach to it? What if we are lining up near the Yellow TOTE and bump it a little? Will it be reset by FIELD staff or can we move it back into the STAGING ZONE approximately where it started?

A. You can hold a Yellow TOTE in place with your foot as long as you do it without actually stepping on the tote (G3: "DRIVE TEAMS may not ... step on game elements..."). Also, there are no rules prohibiting you from holding the Yellow TOTE with your hand while positioning your ROBOT. Regarding bumping Yellow TOTES, G13 prohibits the movement of TOTES prior to the start of the MATCH. The violation for G13 is that the MATCH will not start until the situation is corrected. As such, the FIELD staff will re-position the Yellow TOTE and RECYCLING CONTAINER to be in compliance with the FIELD reset process if it is re-positioned by the DRIVE TEAM (or their ROBOT) during setup. If the process of staging your ROBOT for the MATCH is causing FIELD staff to have to correct the Yellow TOTE or RECYCLING CONTAINER, G10 ("DRIVE TEAMS may not cause significant or repeated delays to the start of a MATCH") may be enforced.

Q151

Q.when can you place the noodle in the recycle can?

A.We believe the answer to [Q4] answers this question. If it does not, please ask again with additional detail.

Q148

Q.If your robot is parked at the tote chute ,and a tote is released from the tote chute, and as it exits the tote chute the tote starts to fall and is touching the robot but still hasn't completely exited(i.e. the chute door isn't completely closed) the chute. Would this be a violation of G27?

A.Please see [Q83]. If this does not answer your question, feel free to post again with more detail.

Q119

Q.If the TOTE is stuck or jammed in the TOTE CHUTE, can the ROBOT dislodge or move the TOTE to get it free?

A.Please see [Q83]. Also, per G27, a ROBOT may not contact the TOTE CHUTE as it is outside the FIELD. If this does not resolve your question, please ask again with additional detail. Thank you.

Q104

Q.Does a tote have to be placed right side up in the chute or can it be upside down? The video mentions only one orientation but it is not specified in the rule book.

A.There is no rule requiring a TOTE be entered in the TOTE CHUTE "right-side up", however the design of the TOTE CHUTE will not allow a TOTE to be entered "upside-down" without damage.

Q103

Q.If a pool noodle is laying across the top of two recycle containers would both containers receive a litter score? The rule (page 21 of game manual) says a maximum of one litter per container which would still be true in this scenario.

A.We believe the answer to [Q16] answers this question. If it does not, please ask again with additional detail.

Q83

Q.Would a robot taking control of a game piece as it is being introduced through the alliance wall be considered a violation of G27. (For example, could a tote be controlled by a robot as it is exiting the chute.)

A.*(edited, 1/14/15, apologies for any confusion, and thank you for your patience!)* No, per the revised G27 (as of *Team Update 2015-01-13*), a ROBOT controlling a TOTE in the TOTE CHUTE (or LITTER in the LITTER CHUTE) is permitted.

Q58

Q.Can a team clamp a mechanism to an autonomous Tote before the beginning of the match so long as the tote remains inside the staging zone as placed by the volunteer staff and the mechanism detaches from the tote prior to the Teleoperated period?

A.Yes, a ROBOT may attach to a TOTE before the start of the MATCH, provided the TOTE is not moved, in any way, from its position as placed by the FIELD staff. There is no requirement that the ROBOT detach from the TOTE before TELEOP (i.e. no penalty if the ROBOT doesn't disengage), however in order for the TOTE to be eligible for TOTE SET scoring, the ROBOT must disengage.

Q55

Q.Can more than one recycle bin be scored on the same stack if they are both fully supported by the tote stack?

A.Yes, per *Section 3.1.2.3*, a RECYCLING CONTAINER is scored if it is fully supported by only scored Gray TOTES.

Overview

Not Available

Match Timing

Not Available

Scoring

Q91

Q.Is a recycling container and litter scored if the litter is in the container and is placed on two totes, which the robot then picks up and places on the scoring platform? Or does the robot have to put the totes on the platform first, then add the recycling bin, then add the litter for full points?

A.We believe your question is answered in [Q4]. If not, please post again with additional detail.

Q64

Q.Must the totes be right side up in order to score?

A.We believe the answer to [Q41] answers this question. If it does not, please ask again with additional detail.

Q51

Q.Per 2.1.3, the backstop is described as a structure to prevent totes AND bins from falling outside of the field. Would having a bin on top of 6 totes a valid score, even though the few inches of backstop available to prevent the bin from falling outside of the field is unlikely to do so?

A.Yes, a RECYCLING CONTAINER can score on top of a six (6) scored Gray TOTES (as long as the TOTES are not stacked in such a fashion that they extend above the top of the BACKSTOP).

Q36

Q.Is it legal to take yellow totes off of the STEP?

A.Yes, there are no rules that prohibit a ROBOT from removing Yellow TOTES from the STEP.

Q23

Q.Can more than one (Auto) Container Set be scored by the same alliance in the same match?

A.The Game Manual is a bit ambiguous there. Our apologies. *Team Update 2015-01-09* updates the language to clarify that no, each AUTO scoring option (CONTAINER SET, TOTE SET/STACK, ROBOT SET) is a singular opportunity for an ALLIANCE. For example, if six (6) RECYCLING CONTAINERS are present within the AUTO ZONE that would still only count for one (1) CONTAINER SET.

Q22

Q.Can stack F on game manual page 19 be reordered (for example: yellow - yellow - grey - yellow - yellow) and still score a coopertition stack?

A.Yes. Per the Blue Box in Section 3.1.2.2 "'Support", for COOPERTITION, AUTO, and TELEOP, is transitive through other TOTES." In your example, all four (4) Yellow TOTES are fully supported by the STEP transitively via the TOTES below.

Q21

Q.If a robot is holding one or more litter at the end of the match, and that litter is fully within the landfill zone, is the litter considered scoring in the landfill?

A.Yes, per Section 3.1.2.3 "LITTER is considered scored in a LANDFILL ZONE when it is fully contained within a LANDFILL ZONE." There is no requirement that the LITTER be free of contact from ROBOTS. However, the blue box in Section 3.1.2.3 does seem to contradict this and will be edited in *Team Update 2015-01-09* to clarify that the language does not apply to LITTER in the LANDFILL ZONE. Thank you for bringing this to our attention.

Q20

Q.If a tote and a litter are both stacked on a scoring container side by side such that, if the tote were removed then the litter would fall off the container, does the litter score?

A.We believe the answer to [Q19] answers this question. If it does not, please ask again with

additional detail.

Q19

Q.If a tote is stacked on top of a litter, both of which are stacked on a scoring container, and the litter is positioned such that, if the tote were removed then the litter would fall off the container, does the litter score?

A.Yes, the LITTER scores because it is fully supported by a scored RECYCLING CONTAINER. Per *Section 3.1.2.3*, "When a scored RECYCLING CONTAINER fully supports a LITTER that LITTER is considered scored in/on a RECYCLING CONTAINER".

Q18

Q.If a litter is wedged between 2 scoring containers and is not otherwise supported, does that litter score?

A.We believe the answer to [Q16] answers this question. If it does not, please ask again with additional detail.

Q17

Q.If yes to (If a litter is supported by 2 scoring containers which are next to each other (positioned like a bridge, not as in (d)), does that litter score?) then: can another litter be added to one of the two scoring containers in (g) for 2x scoring litter?

A.We believe the answer to [Q16] answers this question. If it does not, please ask again with additional detail.

Q16

Q.If a litter is supported by 2 scoring containers which are next to each other (positioned like a bridge, not as in (d)), does that litter score?

A.No. Per 3.1.2.3 "When a scored RECYCLING CONTAINER fully supports a LITTER, that LITTER is considered scored in or on that RECYCLING CONTAINER". In this scenario, neither RECYCLING CONTAINER fully supports the LITTER.

Q14

Q.If an alliance has two scoring containers in two different stacks and only 2 litter are stacked on only one of those containers (with no other litter or scoring containers), do both litter score?

A.No, per Section 3.1.2.3 a maximum of one (1) LITTER will be scored per RECYCLING CONTAINER.

Q13

Q.If yes to (If a container is stacked on a scoring container, do both containers score?) then: if 2 litter were stacked on top of the top container, would both litter score?

A.We believe the answer to [Q12] answers this question. If it does not, please ask again with additional detail.

Q12

Q.If a container is stacked on a scoring container, do both containers score?

A.No. We believe the response to [Q10] addresses this question. If not, please ask a follow up question clarifying your inquiry. Thank you!

Q11

Q.If a litter is stacked on a yellow or grey tote, on a scoring container, is the litter scoring?

A.The manual was vague on when scoring support is transitive. We've added language to the Blue Box in *Section 3.1.2.2* describing support that clarifies that transitive support is for and via TOTES only. As such, LITTER on a TOTE which is on a RECYCLING CONTAINER is not scored.

Q10

Q.Would the grey tote, container, and litter score in this stack? (Top down) Litter, Container, yellow tote, grey tote, yellow tote, platform?

A.Assuming this "stack" is being fully supported by a SCORING PLATFORM, the Gray TOTE scores since its support is transitive through TOTES (such as in the scoring example in Figure 3-2(F)). In order for a RECYCLING CONTAINER to score, it may only be supported by scored Gray TOTES (per Section 3.1.2.3, "RECYCLING CONTAINERS"). As a result of the Yellow TOTES, the container in this example does not score. In order for LITTER to score in a CONTAINER, the CONTAINER must also be "scored." Since it is not, the LITTER is not scored.

Q9

Q.If a grey tote is stacked on a yellow tote on the platform, does the grey tote count as scoring?

A.Yes. The Blue Box under 3.1.2.2 is true of Gray and Yellow TOTES: "'Support', for COOPERTITION, AUTO, and TELEOP, is transitive through other TOTES. For example, a Yellow TOTE is 'fully supported by the STEP' if it is resting on top of another Yellow TOTE that is in turn resting directly on the STEP (and thus both Yellow TOTES are 'fully supported' by the STEP)." This is further clarified by example F in Figure 3-2.

Q8

Q.In auto, can yellow totes be combined with other totes/containers in the same stack and still score an Auto Stack? For Example (Top Down) container, y-tote, y-tote, y-tote, g-tote. Or: container, y-tote, container, y-tote, container, y-tote, g-tote.

A.Section 3.1.2.1 states that "the Yellow TOTES are stacked one on top of another in a single column." This excludes Gray Totes, and therefore only Yellow TOTES can be used to score an AUTO STACK.

Q6

Q.Can a scored CONTAINER SET include RECYCLING CONTAINERS which started the match on the STEP?

A.There are no distinguishing features between the RECYCLING CONTAINERS that begin the MATCH in the STAGING ZONES and those that begin on the STEP. As such, a CONTAINER SET requires any three (3).

Penalty Assignment

Not Available

Match Logistics

Q159

Q.3.1.4 Can a tote be within the frame perimeter (or straddled around a tote) before the beginning of the match: touching it but not lifting or possessing it?

A.Please see [Q146]. If this does not answer your question, feel free to post again with additional information.

Game Rules

Q160

Q.Team Update 1-13-15 and the answer to Q83 seem to contradict each other. Q83 says a robot controlling a tote in the tote chute is a G27 foul, but the new G27 says that is legal. Should the wording of Q83 been updated for the new G27?

A.Yes, *Team Update 1-13-15* required a revision to the answer to Q83 (and the others similar to it) such that they would all be in line with each other. Q83 was revised this morning, and there shouldn't be a conflict any more. Thank you for paying attention to this.

Q110

Q.In relation to G27, what is the definition of game piece control? (e.g. would a passive tote slide count as control?)

A.There is no FRC-specific definition of control. Generally, if a ROBOT is directing the position or movement of a game piece, with either active or passive elements, it is considered to be in "control" of it.

Q105

Q.In Q55 you said that "a RECYCLING CONTAINER is scored if it is fully supported by only scored Gray TOTES." I want to know if it is possible to create a stack such as the following (bottom-up). Grey tote, Grey tote, Recycling container, Grey tote, Recycling container. Would both containers score?

A.No. Per *Team Update 2015-01-09*, the Blue Box in *Section 3.1.2.2* has been updated to clarify that support is transitive for and through TOTES only. The Grey TOTE on top of the RECYCLING CONTAINER is therefore not scored, making the RECYCLING CONTAINER above it supported by a non-scored GREY TOTE.

Q94

Q.Since robots have no frame perimeter rules this year and rope is a legal material does that imply robots can start or play the game with rope of any length around game objects?

A.Yes, there are no rules explicitly prohibiting this. However, be sure you meet G7-B and C, which requires you to start on your side, completely outside the AUTO ZONE and LANDFILL, and fully supported by the floor, SCORING PLATFORM, or SCORING PLATFORM ramps. This means you could not put a rope around game objects on the STEP before the match starts or have a rope supported by a Yellow TOTE or RECYCLING CONTAINER, as that rope is part of your ROBOT.

Q93

Q.Is there any rule that prohibits robots from being in contact with totes or containers in/on the Landfill or Step at the start of the match? The blue box under Fig 3-7 states there is nothing preventing teams being in contact with game objects in the staging area but is silent on those elsewhere.

A.Compliance with rule G7-C would prevent any contact with game elements in the LANDFILL ZONE or on the STEP prior to the start of the match.

Q27

Q.Can a human player move litter or totes during Auto? If yes, can human players cause litter or totes to enter a human player zone during Auto as long as said player doesn't cross the starting line?

A.There are no rules that prevent HUMAN PLAYERS from moving TOTES or LITTER once a MATCH begins (even in AUTO) or moving TOTES or LITTER in to the HUMAN PLAYER Zone, provided no one from the DRIVE TEAM crosses the STARTING LINE.

Q26

Q.Must litter be thrown over the alliance wall from only the human player zone, or from anywhere behind the alliance wall?

A.There are no rules that require a person throwing LITTER to be in the HUMAN PLAYER Zone.

Q24

Q.Is there a limit on the number of totes or litter a human player may be in contact with at once?

A.No, there are no restrictions on the number of TOTES or LITTER a HUMAN PLAYER may be in contact with simultaneously. However, the FIELD staff may enforce T1 if they feel it is necessary - for example a person is attempting to carry many TOTES over which they cannot see.

Safety

Q174

Q.What is meant by "ALLIANCE member" in G5 and G6? Is this referring to a single person or a team that is a member of an ALLIANCE?

A.Each person who is in the ALLIANCE STATION is a member of the ALLIANCE.

Q25

Q.Are robots allowed to drive on top of totes? Or would this constitute a violation of G1?

A.There aren't any rules prohibiting ROBOTS from driving on TOTES, however the circumstances of such an occurrence may result in a violation of T1 or G1 (safety, e.g. precariously near the side border) or G16 (FIELD element damage, e.g. the TOTE lid caves in).

Pre-Match and Post-Match

Q146

Q.May the robot be touching totes or containers at the start of a match?

A.Yes, there are no rules prohibiting that.

Q130

Q.G10, blue box E: If a field fault or other problem forces a rematch, is on-field maintenance such as pneumatic recharging or battery replacement allowed?

A.In case of an ARENA fault where the MATCH is replayed immediately (instead of at a later time), the FIELD staff will permit teams to reset their ROBOTS on the FIELD, such as charging pneumatic systems or changing batteries. However, G10 still applies: "DRIVE TEAMS may not cause significant or repeated delays to the start of a MATCH."

Q74

Q.Regarding the tote placement, our team would like to know if there is a preset layout for the yellow tote and recycle bin for the autonomous mode setup. In 3.1.4 of the Game Manual, rules say we must comply with tournament personnel, but no further guidelines as to the starting conditions are listed

A.Please see Figure 2-20 and the paragraph that precedes it: "The RECYCLING CONTAINERS in the STAGING ZONES will always be to the left of the Yellow TOTE when viewed from the corresponding ALLIANCE STATION."

Q73

Q.Prematch 3.2.2.C When referring to the placement of the robot, does "completely outside of their AUTO ZONE and LANDFILL ZONE" mean only that part of the robot that touches the floor, or does it mean the plane that extends upward from the tape of each listed ZONE?

A.Apologies for the confusion and thank you for the question. [Q5] addresses this issue. Please follow up if it's still unclear.

Q69

Q.What equipment is allowed on the field for setup such as attaching parts to the robot before the game? Are power tools allowed or strictly Hand tools?

A.Please see G9: "DRIVE TEAMS may only bring hand tools, including battery-operated hand tools, onto the FIELD to configure or disassemble their ROBOTS"

Q48

Q.Is there a starting configuration for the robot at the beginning of each match?

A.No. With the exception of the ROBOT height limit defined in R3-A and G22, there is no prescribed starting configuration for a ROBOT at the beginning of the MATCH. Consider G7, as it implicitly limits ROBOT size.

Q5

Q.Does 3.2.2 mean the robot can support itself anywhere not auto zone or landfill zone and thus can protrude into the airspace above the auto and landfill zone, or does it mean that the robot cannot protrude into the airspace above the auto and landfill zone?

A.Good question. *Team Update 2015-01-09* will update the Glossary to clearly show that the AUTO ZONE and the LANDFILL ZONE are intended to be volumes (three-dimensional spaces) instead of areas (two-dimensional surfaces). Given this update, G7-C prohibits any part of the ROBOT from extending in to the AUTO ZONE or LANDFILL ZONE.

General Rules

Q188

Q. If more than 4 yellow totes are stacked on the step for the co-op. bonus, will the stack still count for co-op. points?

A. Yes, please see *Section 3.1.2.2*, which reads in part "A COOPERTITION SET exists when **at least** four (4) Yellow TOTES are..."

Q187

Q. Are you permitted to rest an arm for support across the step?

A. We aren't able to comment absolutely on this question, as it depends highly on the MATCH and other ROBOTS and final authority at the event rests with the Head REFEREE. However, relevant rules include G17: "ROBOTS may not push or react against the white horizontal surface of the STEP" and G18: "ROBOTS may not contact anything beyond the STEP." In general, if you are not actively picking up TOTES or RECYCLING CONTAINERS, you cannot "rest an arm" on the STEP.

Q177

Q. If you stack two pairs of totes next to each other and place one tote across the top of both of the stacks does it count towards both stacks for score?

A. *Section 3.1.2.3* reads: "A Gray TOTE is scored if it is fully supported by a SCORING PLATFORM and no portion of the TOTE extends above the top of the BACKSTOP." There is no additional requirement or points associated with a TOTE "spanning" stacks, and if a TOTE is "spanning" stacks of TOTES, it has no affect on the points associated with those stacked TOTES.

Q173

Q. Is it possible to put the litter in the recycling container before putting the totes on the scoring platforms?

A. We believe the answer to [Q4] answers this question. If not, please post again with additional detail.

Q156

Q. Video Quote: "Teams will want to maximize their score for each match except for the final matches, WINNERS OF INDIVIDUAL MATCHES WILL NOT BE DECLARED as this has no bearing on tournament. . ." Are Teams scored separately or do all alliance team members get the same points per match?

A. Teams are not scored separately in the MATCH, but they are ranked separately in the context of the event. *Section 5.5.3* describes the process in detail, but reads in part: "Each Team receives MATCH Points equal to their ALLIANCE's final score." The reason the video says "winners of individual matches will not be declared" is that it does not matter if Red ALLIANCE scored higher than Blue ALLIANCE in one particular MATCH during qualification, as each Team on each ALLIANCE is receiving MATCH Points equal to their ALLIANCE's final score. Also, it's important to keep in mind that the game animation is not intended to be a substitute for the rules in the manual. We make the animation as accurate as possible in reflecting the rules at the time the animation is created, but rules may change over time.

Q112

Q. Answers to Q34 and Q83 seem inconsistent. Is G27 violated by a human player loading litter into a recycling container that is held by a robot if the litter contacts the recycling container while the litter is still in the litter chute?

A. You're correct. [Q83] will be correct as of *Team Update 2015-01-13* where G27 will be updated to state: ROBOTS and anything they control (**except for LITTER in the LITTER CHUTE and TOTES in the TOTE CHUTE**), may not contact anything outside the FIELD. Our apologies for the confusion.

Q77

Q. On scoring the tote set and tote stack in autonomous. It seems as if the points for having a tote set are not supposed to stack with the points for having a tote stack, but it does not clarify this in the rules. Can you score both the points for a tote set and the points for a tote stack in auto?

A. As you suggested, you cannot score both a TOTE SET and TOTE STACK in the same MATCH. Per

Section 3.1.2.1, "A TOTE SET exists if all three (3) Yellow TOTES from an ALLIANCE are fully contained by the AUTO ZONE, **but do not meet the requirements of a STACKED TOTE SET**, at the end of AUTO." If a TOTE STACK has been assembled, it would no longer meet the requirements for a TOTE SET.

Q65

Q. If litter is placed on a robot, and the robot and litter are moved entirely within the landfill zone, with the litter touching only the robot, but not the floor or a crate, will the litter be considered processed and scored at one point per piece of litter?

A. We believe the answer to [Q21] answers this question as well. If it does not, please ask again with additional detail.

Q43

Q. Can the recycle can be placed on top of one tote and then stacked on other totes, or does it need to be stacked last?

A. We believe the answer to [Q4] answers this question. If it does not, please ask again with additional detail.

Q42

Q. Can the noodle be placed in the recycle can prior to stacking it on top of the totes?

A. We believe the answer to [Q4] answers this question. If it does not, please ask again with additional detail.

Q41

Q. Do totes that are stacked upside down on the scoring platform still count?

A. There is no orientation specified for scored TOTES in *Section 3.1.2.3*, so they may be in any orientation so long as the TOTE "is fully supported by a SCORING PLATFORM and no portion of the TOTE extends above the top of the BACKSTOP."

Q34

Q. Is it legal for the human player to feed the litter, from human player station, into a recycling container held by robot?

A. Yes. There are no rules prohibiting this method. Please be safe.

Q31

Q. Please confirm the word "any" shouldn't be "all" in 3.1.2.1, container set definition.

A. We believe the response to [Q6] addresses this question. If not, please ask a follow up question clarifying your inquiry. Thank you!

Q29

Q. If the actions of one alliance cause the other to violate G18, which alliance will be penalized? For example, if one robot from each alliance has a grasp on a container on the step and the blue alliance robot is pulled over the step by the red alliance robot while pulling on the container.

A. We can't answer your question as there are many different scenarios that could be in play. If the violation is momentary (i.e. the ROBOT is only momentarily in contact with that RECYCLING CONTAINER that is now on the opposite side of the STEP, but lets go quickly and retreats), then there's no violation and neither ALLIANCE is penalized. If, however, the contact is extended, the ALLIANCE with the ROBOT violating G18 will be penalized.

Auto Rules

Q186

Q. Is it possible to score more than one recycling container on one stack of totes? If so, how will that be scored?

A. We think [Q55] answers your question. If it doesn't, please rephrase and ask again.

Q183

Q.Is the Robot allowed to utilize Webcams and/or Kinect cameras to make decisions based on pre-programmed algorithms independent of the operator console in autonomous?

A.Yes, ROBOTS can make decisions based on camera input during AUTO. However, we think [Q108] may be of interest to you. Additionally, any wireless functionality of the camera must be disabled (per R52) and no member of the DRIVE TEAM may interact directly or indirectly with the ROBOT (per G21).

Q129

Q.Regarding the scoring of the container set, does the container set have to be touching the ground in the auto zone and free of robot contact in the auto zone to be considered scored?

A.No, the only requirement for a CONTAINER SET is that any three (3) RECYCLING CONTAINERS are fully contained by the AUTO ZONE at the end of AUTO.

Q113

Q.Our question is similar to Q77. Are the autonomous points additive; for instance if an alliance ends autonomous with both a ROBOT SET and CONTAINER SET will they receive points for both?

A.Yes. Per *Section 3.1.2.1*, as revised in *Team Update 2015-01-09*: "During AUTO, each ALLIANCE can earn points for a ROBOT SET, TOTE SET or STACKED TOTE SET, and CONTAINER SET." However, an ALLIANCE cannot earn both a TOTE SET and a TOTE STACK in the same MATCH (see [Q77]).

Q80

Q.Can you have a bin on top of a triple stack of totes during the autonomous mode?

A.Yes, there are no rules that prohibit that.

Q67

Q.Can the litter be placed in a recycling can at any time or only when a recycling can has been placed in scoring position?

A.We believe the answer to [Q4] answers this question. If it does not, please ask again with additional detail.

Q66

Q.Can totes and the recycling bin in the staging zone be manipulated in any way before the match starts as long as they remain in the staging area completely when the match starts?

A.We believe the answer to [Q58] answers this question. If it does not, please ask again with additional detail.

Robot Actions**Q190**

Q.If a second RECYCLING CONTAINER is stacked atop a scored RECYCLING CONTAINER, does it also score? If so, how is its LEVEL determined?

A.No, In order for a RECYCLING CONTAINER to score, it may only be supported by scored Gray TOTES (per *Section 3.1.2.3*, "RECYCLING CONTAINERS").

Q171

Q.2.1.4 states there is a lip (.375") that is part of the STEP. The interpretation of the STEP in section 6 would include all 3 coloured HDPE. If a robot reacts against this lip, it would not violate G17, but would it violate G18 if the robot reacts against the lip of the opponent's colour?

A.No, it would not, assuming you don't contact anything on their side in the process. As you stated, the STEP includes the colored HDPE, so reacting against the opposite colored lip of the STEP would not result in a violation of G18.

Q167

Q.Can the situation from Q131 be applied to G23 for grey TOTES, RECYCLING CONTAINERS, and/or LITTER if a robot's action accidentally - directly (tips over and elements fall out of the robot) or indirectly (while scoring, a CONTAINER knocks another CONTAINER out) - causes pieces to leave the field?

A.Yes, it can. G23 reads: "ROBOTS may not cause TOTES, RECYCLING CONTAINERS, and/or LITTER to completely leave the FIELD", there are no exemptions based on the "intent" of the action. G23 is, above all else, a safety rule to help protect the FIELD staff who are around the perimeter of the FIELD. As such, all the actions you have described would result in a violation of G23.

Q150

Q.Regarding rule G24 ,Would a robot that causes an object to fall off the step but the object is still partially supported by step (leaning against it) be penalized under this rule? If there is no foul in this situation, would G18 be in effect if a robot touched such an object?

A.If the object is a TOTE, RECYCLING CONTAINER, or LITTER, there would be no foul assessed in this situation. G24 requires the object to "transfer completely onto the opposite side of the FIELD" which is not met by an object still supported by the STEP. A ROBOT could interact with the portion of the object above the STEP without violating G18.

Q131

Q.If, while attempting a coopertition set or stack, one alliance's yellow tote falls onto the other alliance's side of the field will a FOUL be called?

A.Yes, a FOUL would still be called. If the action is egregious or strategic, a RED CARD will be issued and the offending ROBOT will be DISABLED. G24 does not have an exemption for Yellow TOTES: "ROBOTS may not cause TOTES, RECYCLING CONTAINERS, and/or LITTER to completely transfer from their side of the FIELD, or from the STEP, onto the opposite side of the FIELD."

Q121

Q.If the answer to Q115 is yes, then can you please expand on what constitutes "control" (e.g., G24 in 2013)? For example, would a passive contact mechanism which not only touches but also diverts the motion of the tote be considered "control"?

A.We believe that [Q110] answers your question. If it does not, please post again with additional information.

Q115

Q.Once the tote chute door has been opened, can the tote be in contact with both the robot and the tote chute simultaneously, if the robot is not in contact with the tote chute or alliance wall?

A.Please see [Q83]. If this does not fully answer your question, feel free to post again with additional information.

Human Actions

Q185

Q.Is the 3rd human player permitted to make contact with the other two human players in the feeder station zone? For example, can the 3rd human player act as a runner and bring totes/noodles to the other two human players? Can two human players be in contact with one game piece at a time (ie handing over a tote), or must only one human player be in contact with a game piece at a time (ie setting the tote/noddle on the floor next to the human player at the feeder station)?

A.Yes, *Section 2.2.3* defines the HUMAN PLAYER ZONE as the area: "on each end of the FIELD, behind the ALLIANCE WALLS and ... bounded by the edge of the carpet, the HUMAN PLAYER STATION, the STARTING LINE, and White gaffers tape." Per G5, "Only one ALLIANCE member may be in each HUMAN PLAYER ZONE at a time," meaning that one HUMAN PLAYER could pass TOTES to another HUMAN PLAYER, as long as only one person at a time is in the HUMAN PLAYER ZONE.

Q170

Q.In reference to Q166!!! I made a mistake and the question I meant when I said Q164 was actually the following: Since the human player cannot be in contact with the chute door and the

tote chute at the same time, could someone make a simple device to do the "being in contact"?

A.No, this device would be a violation of T21 (which restricts items brought to the ALLIANCE STATION). (revised, 1/14/15, 2:10pm)

Q166

Q.If yes to Q164, if such a device is possible, does this mean that the device could be used during the autonomous period to manipulate and insert the game pieces into the game, as long as the human player does not cross the starting line and enter into the human player zone?

A.We believe the answer to [Q170] answers this question. If it does not, please ask again with additional detail.

Q164

Q.Is the chute door allowed to contact the tote as the tote is entering the playing field? If so, can the human player control/touch the chute door while the tote is entering the field?

A.There is no restriction on when / where the CHUTE DOOR can contact a TOTE. However, please keep in mind G6: "A single ALLIANCE member may not be in contact with both a TOTE and the CHUTE DOOR simultaneously." Also consider G6-1: "G6-1 DRIVE TEAMS may not use any object to prop the CHUTE DOOR open." which would prohibit actions such as using a TOTE to prop the CHUTE DOOR open in order to feed multiple TOTES through the TOTE CHUTE without operating the CHUTE DOOR. Depending on the actions of the HUMAN PLAYER or DRIVER, G16 (FIELD damage) may be enforced if the CHUTE DOOR or TOTES are being damaged by the method.

Q163

Q.chute door

A.Yes, Chute Door.

Q141

Q.Is it legal for a human player to feed a pool noodle to a robot from above the wall rather than the litter chute?

A.There are no rules that would prohibit this, but special attention should be paid to G4: "DRIVE TEAMS may not extend any body part into the FIELD during the MATCH" and G1: "ROBOTS whose operation ... is dangerous or unsafe are not permitted."

Q140

Q.Is it legal to bend the pool noodle by a small amount before feeding it through the litter chute ?

A.Generally speaking, bending a noodle by a small amount before feeding it through the litter chute would not be a violation of G16. However, the FIELD staff may request that the action be discontinued (or enforce G16) if the action is causing damage to LITTER.

Q138

Q.In the kickoff video, a robot was shown taking a noodle from the litter chute. Is this allowed or is this a violation of G27? I know you previously clarified that we are allowed to load a recycle bin directly from the human player station, but would this be different?

A.The Kickoff Game Animation is meant to provide a general understanding of RECYCLE RUSH, but is not authoritative or a replacement for the Game Manual. We think [Q83] may answer your question.

Q114

Q.Can a human player just leave multiple totes in the human player zone on the ground next to the human player station? That way the human player does not have to run back and forth between the station and the stack.

A.There are no restrictions on the number of TOTES in the HUMAN PLAYER ZONE, as long as it does not become a safety issue (see T1). Additionally, please be conscious of G5: "Only one ALLIANCE member may be in each HUMAN PLAYER ZONE at a time".

Q107

Q.What is meant by "loaded in to the TOTE CHUTE" from 2.2.2 Human Player Station? Must the tote be all the way up against the back of the chute door before the human player opens it?

A.There are no rules requiring the TOTE to be in any specific position when the CHUTE DOOR is opened. The referenced text in *Section 2.2.2* is provided to explain the operation of the FIELD, it is not a rule.

Q106

Q.Can the human player be in contact with the tote when they open the chute door? Specifically, can the human player apply a force to the back of the tote once the door is opened?

A.No, per G6: "A single ALLIANCE member may not be in contact with both a TOTE and the CHUTE DOOR simultaneously."

Q82

Q.Can the human player use any tools to help them throw the litter or must it be done with only their arms?

A.We believe [Q2] answers your question. If it does not, please post another question with additional details.

Q76

Q.On page 12, it states the boundaries of the human player zones. However, I cannot find anything in the rules penalizing a player for leaving their zone. Are the human players bound by their zones, or can they move out of the human player zones?

A.There is no requirement that the HUMAN PLAYER remains within the HUMAN PLAYER ZONE. However, please be conscious of G5 ("Only one ALLIANCE member may be in each HUMAN PLAYER ZONE at a time") and G30 ("DRIVE TEAM members must remain fully within the ALLIANCE STATION for the duration of the MATCH, unless for personal safety").

Q75

Q.What is the third human player's job?

A.It is up to each DRIVE TEAM to determine what they do throughout the MATCH. There are no requirements as to what each person, such as the HUMAN PLAYER, must do while the MATCH is in progress.

Q54

Q.Can a human player hold on to litter while it is simultaneously touching the recycle bin ?

A.Yes, there are no rules prohibiting that.

Q39

Q.Does litter scored in the container count if it is loaded by a human player from the loading station?

A.Yes, LITTER would still score in a **scored** RECYCLING CONTAINER if loaded by a HUMAN PLAYER, as there are no requirements outlining how the LITTER gets into the RECYCLING CONTAINER.

Q2

Q.Is it acceptable to create and use a device to aid or enhance the human player in casting litter over the alliance wall?

A.No, a device used to cast LITTER over the ALLIANCE WALL would not meet the requirements of "Special Equipment Rules" as outlined in Section 5.5.8, T21.

Game - The Robot

Q56

Q.If two separate systems, including drive systems and mechanisms, are placed on the field joined by a tether and share the same electrical system, does that meet the definition of a ROBOT and is it legal (provided all

other rules are met)? I.e. can you have 2 robots joined over a tether?

A.If all other rules are met, it is allowable to have two separate MECHANISMS linked by a flexible tether. This would not be considered two ROBOTS, but one. As you point out, the two MECHANISMS need to use the same electrical system, along with a single control system, battery, and meet all other requirements. Of course, you will want to make sure your tether does not entangle the other ROBOTS on your ALLIANCE.

General Robot Design

Q189

Q.The blue box by R3 says we can have "additional aids such as bungee cords" to get the ROBOT into TRANSPORT CONFIGURATION. Would this also include removable metals pins or ratchet straps? May these only be used to keep the ROBOT in TRANSPORT CONFIGURATION? Are these considered part of the ROBOT or can they be placed with our cart during the MATCH? Do they count toward the ROBOT weight?

A.Yes, items such as removable pins or ratchet straps are allowed to keep your robot in TRANSPORT CONFIGURATION. They can be placed on your cart during the match, and they would not count toward your ROBOT weight, as they are a transportation aid, not part of the ROBOT itself.

Q182

Q.Does the height restriction of 78 inches include only the robot itself or may game elements being held by the robot exceed the 78 as long as no part of the robot does? Example: A forklift type robot is holding a recycling container and the robot tops out at 76 inches but the top of the recycling container is above the top of the robot.

A.The ROBOT height restriction applies only to the ROBOT and not to any other objects being handled by the ROBOT.

Q181

Q.Can the robot length be more than 42" with the chassis of the robot and the forks to pick up field elements during the match?

A.Yes, there are no length or width restrictions for the ROBOT at the start of or during the MATCH.

Q145

Q.1) in R2 Does the number have to remain unobscured on all sides of the robot throughout the match, or may one side be partially blocked by game elements during portions of the match 2) Can the team number be split across two placards on any given side of the robot (as in 2014)

A.The requirements defined in R2 do not account for game elements. Thus partial obstruction by anything but the ROBOT (e.g. TOTES, other ROBOTS, etc.) do not result in a violation of R2. 2) Yes, there is no requirement that the digits of a team number be co-planar, however R2-B requires that an observer can "unambiguously" identify the team number.

Q139

Q.Per R3 A the robot's height may not exceed 78 inches. Is the height of the robot determined from the lowest point of the robot, from the platform, from the carpet, or from somewhere else to the highest point of the robot?

A.Please see the Blue Box under G22, which reads in part: "For reference, the height restriction matches the height of the ALLIANCE WALL. However, it is expected that ROBOT that are on a SCORING PLATFORM may actually be slightly taller than the ALLIANCE WALL due to the elevation of the SCORING PLATFORM..." The restriction is measured from the lowest point of the ROBOT to the highest point. In most cases, the lowest point will be the floor, but as the example says, it will be slightly above the floor if the ROBOT is on a SCORING PLATFORM. Inspectors will need to check the height of all anticipated playing configurations of the ROBOT, which will be done with the ROBOT on the floor.

Q123

Q.While still maintaining the other numbering rules, does the team identification number have to only be the team number or can it be part of a team logo? For example: <http://i.imgur.com/l1iHfnq.png>

A.The purpose of this tool is to help provide clarity about the rules as they're written. We cannot pre-inspect or approve specific parts or designs. Please see the criteria in R2, namely "consist of numerals at least 3.5 in. high, at least 0.5 in. in stroke width..." and "be positioned around the ROBOT such that an observer walking around the perimeter of the ROBOT can unambiguously tell the Team's number from

any point of view." There is no provision in this rule for additional design or coloring in that space.

Q118

Q.Do bolt heads count for the dimension in the transportation configuration?

A.There are no exemptions for bolt heads in the TRANSPORT CONFIGURATION. Please see R3: "The ROBOT must be able to be arranged into a TRANSPORT CONFIGURATION with dimensions which do not exceed 28 in. wide, 42 in. long, and 78 in. tall."

Q109

Q.Are there any other rules regarding the transport configuration besides the size constraint? For example, do all wheels have to be touching the ground?

A.In addition to the size constraint in T6, ROBOTS must be able to be transported safely per T1. There are no requirements regarding wheels touching the ground, in fact in most cases, the ROBOT is likely on a cart and not touching the ground at all.

Q98

Q.Can we tether our robot to an allied one via thin cable or rope?

A.Yes, there are no rules explicitly prohibiting this. Please only do this if the other team says OK though. Note that per G7-B the entire rope or cable must be "fully supported by the floor, SCORING PLATFORM, and/or SCORING PLATFORM ramps" on your ALLIANCE's side of the field at the start of the match. Also, to be eligible for a ROBOT SET, "all ROBOTS on an ALLIANCE move themselves to" the AUTO ZONE.

Q97

Q.I understand that totes and litter in the human player zone are able to be moved during autonomous, however are they allowed to enter the field in autonomous from the loading zone? As in, are we allowed to feed yellow totes to our robot during autonomous?

A.Per G19: "During AUTO, DRIVE TEAMS must remain behind the STARTING LINE". Given that the CHUTE DOOR is in front of the STARTING LINE and the CHUTE DOOR may only be operated by a HUMAN PLAYER or DRIVER as updated in *Team Update 2015-01-13*, operation of the CHUTE DOOR in AUTO would be a violation of G19.

Q96

Q.May a robot contain a "normal" full pneumatic system set up (such as the one depicted in Figure 4-7) in addition to a completely separate "Working pressure only" system (such as the On-board half of Figure 4-9), if it remains in compliance with R69, R71, R75, and all other rules at apply?

A.No, multiple completely separate pneumatic systems do not comply with R78. R78 requires any pressure vent plug to be "connected to the pneumatic circuit such that, when manually operated, it will vent to the atmosphere to relieve all stored pressure in a reasonable amount of time."

Q92

Q.Can a "robot" actually consist of multiple smaller devices connected by a wire or string? According to G25 ROBOTS may not intentionally detach or leave parts on the FIELD but does having them connected by the slightest of means (and potentially spread across the field) satisfy that rule?

A.We believe your question is answered in [Q56]. If not, please post again with additional detail.

Q90

Q.So building a robot base with modular components

A.Apologies, we don't understand your question. Please draft a question with clear terms and a specific inquiry. Whenever possible, please use specific terms as outlined in the Glossary. Thank you!

Q86

Q.Regarding rule R6. What happens if, at the end of a match, your robot is powered off while lifting totes, making them out of reach for team members. Do we have to bring a stepladder to safely remove the totes from the robot or such item will be available for teams to use on the field ?

A.The consequence for a violation of R6 depends heavily on the context, ranging from a verbal warning,

to RED or YELLOW CARD, to being prevented from competing in subsequent MATCHES until the ROBOT is in compliance. The consequence will be at the discretion of the HEAD REFEREE. A stepladder is a violation of G9, as it is not a hand tool.

Q81

Q.In the rules it does not necessarily state that we cannot have an expanding base for our robot. we just have to be able to get it into transport size after the matches to move it and such. could someone clarify this rule and make sure that we could do something like this?

A.You are correct, there are no rules that would prohibit this.

Q72

Q.Robot Rule R3-B specifies that the robot can be 78 inches tall in the transport configuration. The "Shipping Crate Construction" document does not seem to be linked in the Admin manual to give crate dimensions. Will the height limit of the robot crate accommodate the 78 inch tall robots?

A.Sorry for that omission. The [Shipping Crate Construction](#) document is now posted (and the Admin Manual will be updated in *Team Update 2015-01-13*). Crate height is more restrictive than the ROBOT Rules (although a ROBOT may be disassembled to fit in a crate), and Teams should think carefully about such practical sizing restrictions such as fitting through standard sized doors (likely on a cart), into a shipping crate, bag, vehicle, etc.

Q63

Q.Are we allowed to build modular robots? According to R3, I see nothing wrong - But will inspection consider it okay?

A.We're not sure what you mean by modular ROBOTS, but teams may build ROBOTS made of modular components.

Q61

Q.Does your robot have to stay in transport configuration while in queue? I believe it does but several other mentors after reading the manual several times are not so sure. Thanks

A.Yes, per T6, the TRANSPORT CONFIGURATION applies whenever the ROBOT is being transported, including from the Pit to the FIELD (through the queue). Stopping en route does not mean a ROBOT can expand beyond the TRANSPORT CONFIGURATION. Per G10 it can then be configured on the FIELD prior to the MATCH.

Q60

Q.Is the 28" by 42" listed in R3 as the transportation size restraint also the competition length and width restraint?

A.No, please see elaboration in the response to [Q48].

Q47

Q.What determines width and length? Given a 28 x 42 overall footprint, could the wheels be on the 28" side? Does the wheel placement determine width or length?

A.There is no rule that specifies ROBOT orientation when determining the TRANSPORT CONFIGURATION. The long dimension cannot exceed 3 ft. 6 in. and the short dimension may not exceed 2 ft. 4 in.

Q46

Q.Rule R3 B the "Transport Configuration". How exactly is this rule checked? Last years robot was put in the "BOX" and checked for clearance. The "Transport Configuration" sounds like the robot must fit in a 140" perimeter which would be similar to the string wrapped around the widest points method?

A.The process that will be used by Inspectors to check the TRANSPORT CONFIGURATION is not yet finalized, but will be published before Week 1 events. Meanwhile, the TRANSPORT CONFIGURATION is not determined by ROBOT perimeter. It is a box with a prescribed maximum width, depth, and height.

Q45

Q.Is there any restraint on wheel size?

A.No, there are no constraints on wheel size, so long as no other rules are being broken (such as TRANSPORT CONFIGURATION and others).

Safety & Damage Prevention

Q40

Q.If we are using a chassis other than AM 14U2, do we need an outer plate covering the wheels or can they be exposed?

A.There are no explicit requirements for wheels to be covered.

Budget Constraints

Not Available

Fabrication Schedule

Not Available

Material Utilization

Q70

Q.For the past 3 years we have used connectors from www.mercotac.com, the Model 430, Four Conductors, 2@4amps, 2@30amps connectors. Are they legal this year again?

A.The purpose of this tool is to help provide clarity about the rules as they're written. We cannot pre-inspect or approve specific parts or designs. Generally speaking, devices that contain hazardous materials are prohibited per R8 and the examples cited in the Blue Box (specifically, reference part H, "Switches or contacts containing liquid mercury").

Q49

Q.does a motor included in a COTS vacuum pump have to be a motor listed in the acceptable motor list?

A.Yes, the only motors legal in RECYCLE RUSH are listed in Table 4-1. However, if the supplied motor is removed and replaced with a motor from Table 4-1, the vacuum pump may be used.

Motors & Actuators

Q172

Q.Table 4-1 lists door motors as allowed for use on the robot. Does that include the door motor for power locks?

A.Yes, *Team Update 2015-01-16* will update the description of the Window, Door, Windshield Wiper, and Seat motors to specify that they must be from an automotive application (i.e. from an automobile). Motors used in or for automotive doors meet the revised criteria.

Q152

Q.Are we allowed to use the RS775 motor with the Part Number RS-775-8513DF-R/90? (Here is the specifications of motors, as a reference. (specification of RS-775-8513DF-R/90 is in Japanese, so I translated it for better understanding.)) <http://pastie.org/9829567>

A.R18 lists the legal motors for FRC in 2015. If the motor is not described in Table 4-1, as this one is not, it is not legal for use in competition.

Q142

Q.Is it legal to use a COTS computer fan on our robot, or does it have to be one from FIRST Choice or the KOP? There is a statement about fans in the legal motor chart, but the wording is rather confusing. Thanks

A.Only if the fan is a part of a COTS computing device. Fans allowed per R18 include those:

- Included in the 2015 Kickoff Kit
- Included in 2015 *FIRST* Choice
- Part of a legal motor controller (including manufacturer provided accessories
- Part of a COTS computing device

Q71

Q.Per rule R18, teams are allowed to use drive motors or fans that are part of a motor controller or COTS computing device. Would a sensor that comes with and requires an integrated motor (ex. a pan/tilt camera or a 360 degree laser scanning lidar) be considered a COTS computing device under this rule and thus be legal for teams to use?

A.No, if the integrated motor in the COTS computing device is not a hard drive motor or fan, it is not permitted per R18.

Q38

Q.Thank you. But some electric actuators are NOT solenoid actuators (based on a screw driven motion). Are they allowed in any size? Table 4-1 is not forbidding these.

A.No, R18 specifies that "The only motors and actuators permitted on 2015 FRC ROBOTS include" those listed in Table 4-1. Electric actuators that are not solenoid actuators are not listed in Table 4-1 and are therefore not legal.

Q3

Q.Are we allowed to use electric actuators that are not solenoid actuators?

A.Electric actuators permitted for 2015 are listed in Table 4-1. The row that permits electric solenoid actuators allows any product that meets the listed specifications and is sold as an electric solenoid actuator.

Power Distribution

Q153

Q.We recently purchased new 120 amp breakers from Powerwerx What they offer is the: 285120F as opposed to the 185120F which is in the kit of parts. The site states: "Model CB285 is a direct replacement for CB185". Can this breaker be used on the robot?

A.No, the CB185-120 is the only main breaker permitted on the ROBOT per R25.

Q111

Q.How do I return a malfunctioning power distribution board?

A.Please contact Cross the Road Electronics for assistance, support@crosstheroadelectronics.com.

Q85

Q.Can multiple 30A rated slip ring legs be combined and connected to a 40A protected circuit? This configuration was recommended by slip ring supplier.

A.Yes, a parallel connection of two (2) 30A elements would be considered appropriately gauged/rated for a 40A breaker.

Control, Command, & Signals System

Q194

Q.Configuring the D-Link radio for untethered communication to the driver's station. What is or how do we generate a password for the DLink?

A.Please post technical support/assistance questions to the [FIRST Forums](#). Thank you!

Q180

Q.Can I de-solder the wire pigtails from the Talon SRX/Victor SP and replace them with a different (but equivalent) wire?

A.No, modifications to these devices are prohibited per R55. De-soldering the wire pigtails is not one of the exceptions listed in items A-M of R55.

Q178

Q.Do we need to use the "Green/Yellow twisted cable" to connect the CAN parts? or it's possible to use any other cable of the same AWG??

A.There currently is no rule covering color code for signal/CAN wires. Green and Yellow will make it easier for you and others to identify the CAN bus wiring.

Q168

Q.Having carefully considered rules R9, R10, R20 and R48 my question is: In addition to the laptop used for the driver station, can I use a second COTS laptop (specifically, the 2014 Classmate) securely mounted to robot, and connected to the wireless bridge, for vision processing?

A.There are no rules that explicitly prohibit the use of a laptop as a co-processor on-board the ROBOT.

Q157

Q.In order to be approved for a custom expansion board, you have to submit a proposal by November 14. Is that deadline still enforced, or may we submit a new proposal?

A.The deadline for submitting proposals for approved ACTIVE DEVICE boards (listed in R58-C) for the 2015 season was November 14th, 2014 in order to give FIRST time to review and approve devices before kickoff. No additional ACTIVE DEVICES will be approved for the 2015 season, and we have not yet determined what the rules will be for ACTIVE DEVICES for the 2016 season.

Q136

Q.Are suction cups, devices which USE but don't CREATE a vacuum, allowed? (They were once supplied in the KOP)

A.There are no rules prohibiting the use of devices which use or create a vacuum. Unless explicitly noted (such as in R66) the distribution of a part in a previous Kit of Parts has no relation to its legality for 2015.

Q135

Q.Per rule R66 H: Is Bimba's 1/2-turn rotary actuator (PT-017 090-M) allowed? Don't know if its considered a "cylinder". (It used to be in the KOP)

A.If this item was previously distributed via PDV (and PT-017 090-M was) and meets the requirements of R64 it is legal per R66-A.

Q133

Q.R66 F: Are exhaust mufflers allowed? (They were supplied in KOP years ago)

A.If the item was listed on a previous KOP checklist and meets the requirements of R64, it is allowed per R66-A.

Q132

Q.Are KOP items from previous years acceptable? If not, why say "except as noted in I" where I talks about a storage tank supplied ONLY in previous year's KOP?

A.It depends... just because an item is or has been a KOP item (per Section 4.1 and the Glossary, the Kit of Parts is "the collection of items listed on any Kit of Parts Checklist, distributed via FIRST Choice, or obtained via a Product Donation Voucher (PDV)") doesn't necessarily mean it's legal in the 2015 competition. Regarding your example, the White Clippard tanks (P/N:AVT-PP-41) were distributed via FIRST Choice and thus fit the definition of KOP. This means they would be legal per R66A, but in I they're explicitly prohibited. The reason for the parenthetical in A is to alert the reader that there's an exception later in the list.

Q126

Q.May our robot be equipped with an NFC reader/writer?

A.The purpose of this tool is to help provide clarity about the rules as they're written. We cannot pre-inspect or approve specific parts or designs. Generally, sensors are not prohibited, however R52 prohibits any form of wireless communication used to communicate to, from, or within the ROBOT, except those required per R46 and R51.

Q125

Q.Is the CAN bus a "Branch circuit" for R39 purposes?

A.No, the term "branch circuit" is intended for and used only to reference power pathways.

Q108

Q.Microsoft Kinects on robots have been legal in the past. Are they a legal sensor for use on robots this year?

A.The purpose of this Q&A tool is to help provide clarity about the rules as they're written. We cannot pre-inspect or approve specific parts or designs. There are no rules that prohibit the use of Kinect-like sensors, however please note that R43 requires that "Servos be directly connected to the PWM ports on the roboRIO," which applies to servos contained within COTS devices.

Q99

Q.May the cover for the Talon SRX data port be removed? It is not listed as an approved modification in R55.

A.This would be allowed per R55-E as the connector under the cover is a standard connection point for the device.

Q44

Q.What gyro would work best with mecanum drive?

A.We cannot answer questions guiding ROBOT design. The purpose of the Q&A is to help the FRC community better understand the rules of RECYCLE RUSH. For technical support or advice, please use the [FIRST Forums](#).

Pneumatic System

Q165

Q.As per R66I, the white clippards from 2013 is illegal. Will there opportunities to replace those at competitions this year?

A.There is no formal trade-in program for tanks at events, however there will be a limited supply of legal tanks stocked in the Spare Parts cases. These are consumed throughout the season so there is no guarantee that they will still be there for your event. It's recommended that you plan to replace them before your event.

Q144

Q.Are rodless air cylinders considered "pneumatic cylinders" per R66?

A.Yes, there are no requirements that cylinders employ rods.

Q134

Q.Per rule R79, Can the output of one valve be plumbed to the input of the other? (This does NOT create the kind of flow-increasing "parallel" joint they're clearly trying to rule out...)

A.Plumbing the output of one valve to the input of another is not a violation on R79. Note that, per R78, all stored pressure must be relieved when the pressure vent plug is operated regardless of valve state.

Q84

Q.Can we substitute a model 98c compressor for the 90c compressor?

A.The purpose of this tool is to help provide clarity about the rules as they're written. We cannot pre-inspect or approve specific parts or designs. Generally speaking, to be legal a compressor must comply with all ROBOT Rules, but R68 contains specific requirements about compressor specifications: "Compressor specifications may not exceed nominal 12VDC, 1.05 cfm flow rate."

Operator Console

Q184

Q.Can the driver's station contain more than one monitor?

A.Yes, however if you're using the AC outlet in the PLAYER STATION, please be mindful of the current limit described in *Section 2.2.1*.

Q155

Q.Do motors that are connected with the Operator console need to follow all rules that apply to motors mounted on the robot?

A.No, there are no rules that explicitly legislate motors used in the OPERATOR CONSOLE, however please consider T1 and make sure that the implementation doesn't pose risk to people.

Q78

Q.Can an operator console be designed so that it clamps to the driver station shelf? Not in any way that damages it but more like a small spring clamp or c-clamp, just to add a little more security than what the velcro can provide.

A.Yes, as long as the attachment device is not damaging and can be quickly removed.

Q7

Q.The OPERATOR CONSOLE doesn't have a max height in the rules. Can teams extend their console above the driver station glass? This would mostly be for mounting a camera for an over head view of the field.

A.There is no legislated maximum height of the OPERATOR CONSOLE. However, be aware that some venues and production setups may have basketball hoops, lighting fixtures, or other installments that can not be moved and may inhibit exceptionally tall OPERATOR CONSOLES.

Game - The Tournament

Not Available

Overview

Not Available

Match Schedules

Not Available

Practice Matches

Not Available

Schedule

Q33

Q.Please clarify if rule 5.5.2 "Not showing up for a match..." applies to practice matches or just qualification matches.

A.Thanks for pointing out this ambiguity! *Team Update 2015-01-13* updates the language to clarify that this applies only to QUALIFICATION and PLAYOFF MATCHES. Specifically, you'll see that language in *Section 5.5.2* will state: "If a ROBOT will not report for a **QUALIFICATION or PLAYOFF** MATCH, the Lead Queuer should be informed and at least one (1) member of the DRIVE TEAM should report to the FIELD for the MATCH to avoid receiving a RED CARD, with the exception of a Team that has not passed Inspection, per Rule T8."

Filler Line

Not Available

Qualification Matches

Not Available

Schedule

Not Available

Match Assignment

Not Available

Qualification Average (QA)

Not Available

Qualification Seeding

Not Available

Playoff Matches

Not Available

Alliance Selection Process

Not Available

Backup Teams

Not Available

Playoff Scoring

Q101

Q.It is noted that coopertition is not a valid way to score points in the Playoff Matches. However, what isn't clear is their role beyond Auto. Do they become scoreable during teleop similar to Gray Totes? Or are they dead pieces after autonomous?

A.The only changes to scoring in Playoff MATCHES are those noted by the asterisk in Table 3-2. With regards to all matches,we believe that the response to [Q89] answers this question. If not, please ask a follow up question.

Playoff Match Format

Q28

Q.How will the Red and Blue alliances be determined in Playoff Matches? Since the Yellow TOTE starting positions are asymmetrical on the field for Red and Blue, we would like to know this in advance.

A.Good question! The alliance assignment has not been finalized. Once it's set, implemented, and tested, the Game Manual will be updated and we'll include notification in a Team Update.

Pit Crews

Not Available

Tournament Rules

Not Available

Safety and Security Rules

Not Available

Eligibility and Inspection

Q137

Q.Do the various zones include the air above them or only ground space?

A.We believe that [Q5] answers your question. If it does not, please post again with additional details.

Referee Interaction

Not Available

Yellow and Red Cards

Not Available

Match Replays

Not Available

Timeout and Backup Team Rules

Not Available

Measurement

Q32

Q.What is the consequence of not being in transport configuration outside on the pit, practice filed, or playing field?

A.T6 will be treated much like the rule on safety glasses. If event staff sees a team violating T6, they will remind the team of the rule and insist on compliance. If the team continues to ignore the rule, or is found to be regularly violating it, despite warnings by event staff, this is likely to be considered egregious behavior as defined in *Section 5.5.4*, and the team could receive a yellow or red card. This is a safety issue, teams should treat it very seriously.

Special Equipment Rules

Q169

Q.Regarding rule T21, may a HUMAN PLAYER bring a non-powered signaling device into the HUMAN PLAYER STATION? Specifically, we're considering a passive robot alignment target held or placed by the HUMAN PLAYER.

A.Teams may have a non-powered signalling device in the ALLIANCE STATION per T21, however per G21, DRIVE TEAMS may not directly or indirectly interact with ROBOTS or OPERATOR CONSOLES during AUTO. Using a signalling device during AUTO, even if non-powered, is thus prohibited. There are no rules prohibiting such a device to assist fellow DRIVE TEAM members in lining up the ROBOT before the start of the MATCH.

Championship Additions and Exceptions

Not Available

Four Robot Alliances

Not Available

Championship Pit Crews

Not Available

FRC Championship Match Bracket

Not Available

Game - Glossary

Q122

Q.CHUTE DOOR - The polycarbonate shield that separates the TOTE CHUTE from the FIELD.... Per the drawings, parts of the tote chute (chute plastic, tote slide) are located on both sides of the chute door. At what point are they considered part of the field (the chute extends beyond the wall) for G27?

A.The CHUTE DOOR is part of the HUMAN PLAYER STATION per the revised description in *Team Update 2015-01-13*. All elements in the Tote Slide Assembly (GE-15004) are outside the FIELD.

Admin - Introduction

Not Available

Admin - Team Resources

Not Available

Admin - Team Organization

Not Available

Admin - At the Events

Q143

Q.Can the robot be locked up in 2 separate bags as long as each bag is sealed with a tag and documented on the lock-up form?

A.There is no specific requirement that teams bag their ROBOT in only one bag, but we saw the ambiguity in

the Manual. Team Update 2015-01-13 included an update to the Admin Manual, Section 5, to specifically define this and allow teams to use two bags if they wish.

Admin - Robot Packaging and Transporting

Q161

Q.According to Q72: Teams who can bag their robot and bring it themselves to all events can build a one piece, 78" high robot. Team who ship their robot in a crate by air, are limited to a robot with no piece longer than ~55". This seems to be an unfair advantage. Will FIRST address this issue?

A.There will always be advantages or disadvantages for teams within the rules based on their specific situations. Even some teams that are only planning to compete locally may not have a vehicle large enough to fit a 78" tall robot in one piece. This is one of the reasons we recently added explicit permission in the rules for teams to use two separate bags for their robots. All teams should be thinking ahead, and recognize that if they want to go to Championship they will need to crate their robot, and design appropriately. We recognize this is a challenge, but we're sure you're up to it!

Admin - Awards

Not Available