



FRC Q&A

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Game - Introduction

Not Available

What is the FIRST Robotics Competition (aka FRC)?

Q119

Q.In giving answers to Q and A questions, the responder often refers to the questioner by saying look at question # X Where do I find the questions listed by number? This is really difficult because when I use the search engine for a given question, it pops up the questions in that section only

A.By clicking "Search" without selecting any categories, all questions are listed by number. Also note that the Q# in those answers is a hyperlink to that question.

Gracious Professionalism, A FIRST Credo

Not Available

Prominent FRC Awards

Not Available

The Chairman's Award

Not Available

The Woodie Flowers Award

Not Available

Safety: A FIRST Culture

Not Available

Robot Design and Build Schedule

Not Available

ULTIMATE ASCENT Summary

Not Available

Game - The Arena

Not Available

Overview

Not Available

The ARENA

Not Available

The FIELD

Q613

Q.The rulebook indicates "30753, 'Ground Pepper'" carpet from Shaw, but it appears as though 30753 is in fact "Park Bench" colored carpet (30550 is "Ground Pepper"). Which color is correct?

A. Thank you for identifying that error. Please see [Team Update 2013-04-02](#).

FIELD Markings

Not Available

The GOALS

Q374

Q. Can the robot touch the chains inside of the pyramid goal?

A. There are no Rules explicitly prohibiting this, but beware of [G14].

Q352

Q. The goal at the top of the pyramid shows 2 3/4" deep on the manual 2.2.3. The field drawings do not support this. They show 2 inches deep. Which is correct?

A. Per *Section 2.2.3*, the PYRAMID GOALS are approximately 2-3/4 in. deep. The part and assembly drawings for the PYRAMID GOAL authenticate this dimension.

Q261

Q. Are the chains inside the goal inside the arena's field?

A. Please see [Q172].

Q248

Q. Can any part of the robot extend into the goal?

A. There are no Rules explicitly prohibiting this; however, per Rule [G12], ROBOTS may not contact anything outside the FIELD.

The VISION TARGETS

Q102

Q. The kickoff announcement stated that a sample of the reflective tape would be in the kit of parts. It is not on the list and not included. Should we have received some?

A. Please see [Q46].

Q46

Q. I called FIRST HQ; they didn't know and said to ask this question here. At least two videos on the FRC Teams youtube channel mention 4 inch retro-reflective tape as being in the KOP. But it's not in the KOP checklist nor in the kit nor on AndyMark. Is there an official source for this? Txx

A. The Kit of Parts is the system used by *FIRST* to get items to teams. It consists of three elements: The Kickoff Kit, the Virtual Kit, and *FIRST* Choice. The retro-reflective material is available in *FIRST* Choice.

The PYRAMIDS

Q514

Q. The lower bars of the pyramid - is the bottom of the bar 30" from the floor, or is the top of the bar 30" from the floor? We understand the bar is 1 1/2" diameter, we just need clarification as to if we need to reach 30" or 31 1/2" to pull our robot up. Thank you.

A. Please see [Q321].

Q451

Q. It is my understanding that the legs of the pyramid are attached to steel plates with carpet covering the plate, so is there a lip at the corners of the pyramid where the legs are attached to the floor?

A.Please see *Section 2.2.5*, specifically *Figure 2-8*.

Q356

Q.Can you confirm that the orientation of the crossbar in the pyramid cap relative to the field as shown in figure 2-2, will be the orientation we can expect at all Ultimate Ascent competitions?

A.The FIELD will be laid out in accordance with official *FIRST* drawings, which are visualized in *Section 2 - The ARENA*.

Q328

Q.From figure 2-7 in section 2.1 and from the PYRAMID drawing, we couldn't understand whether the 30",60" and 90" is measured from the bottom, middle or the top of the rung?

A.Please see [Q321].

Q321

Q.The field drawings do not detail the heights of the pyramid bars for climbing. Where are the height measurements taken from? In other words, are the 30-60-90 inch dimensions taken from the top, middle or bottom of the bars?

A.This information is nominally included in Figure 2-7. The detail can be derived from details in the Game Specific Drawings.

Q316

Q.Team Update 01-22 shows the belay system on a robot climbing the side. How will it work for an outside corner climbing robot?

A.It will work in a similar manner and per the judgement of the field crew.

Q286

Q.Vertical legs of pyramid appear held together with bolts. Drawings do not give a clear indication of their orientation around the circumference of the pipe. What direction do the bolts point? Toward the center of the pyramid or toward one of the faces? Do the bolt heads face in or out of pyramid?

A.The only bolts used in the PYRAMID assembly are documented in drawing GE-13024. You may be seeing the holes in our models that specify weld locations for manufacturing. On the actual fields these holes are mostly filled with weld. Rather than protrusions, there are actually small indentations at these locations.

Q257

Q.we would like to connect to the rod and we have a question: what is the torque it can resist? from the game specific drawings pdf we can't figure it out.

A.That specification is not available.

Q238

Q.Why does the pyramid manual have different measurements from the game pyramid? (1.25" diameter vs. the game's 1.5" and 60 deg angle vs. the game's 68 deg angle)

A.The Team PYRAMID Drawings are designed to use inexpensive, common components and construction methods likely to be available to all teams. The Team PYRAMID uses a 1.25 in. pipe (Outside Diameter of 1.66 in.) instead of the 1.5 in. diameter tube (OD of 1.5 in.) used on the competition PYRAMID. The angle of the diagonal supports of both PYRAMIDS are approximately the same (60 degrees to horizontal in the plane bisecting the PYRAMID diagonally).

Q214

Q.Please clarify - Are the tops of the U-Bolts (which extend above the Horizontal bars) considered to be part of the zone above the bar (e.g. the tops of the U-Bolts holding the Horizontal bars for Zone 1 would be in Zone 2)?

A.The U-Bolts on the Team Version of the PYRAMID do not exist on the official PYRAMID.

Q179

Q.Follow-up to Q171: Section 2.2.5 indicates that the belaying device attaches to the ROBOTS with two carabiners or loops of rope, and only staff can use it, yet G04 indicates that TEAMS are required to attach the belay line. Thus, who attaches the belay system to the robot (staff or TEAM)?

A.The device is attached to the ROBOT by the TEAM. The device is then operated by the staff while the TEAM removes the ROBOT.

Q171

Q.Are the "belay system" and "belaying device" the same thing, or does the belaying device refer to the "brake" only, and the belay system refers to the entire robot-lowering system (brake, rope, carabiners, etc.)?

A.As used in *Section 2*, the terms "belay system" and "belay device" are synonymous.

Q170

Q.Where does the belaying rope attach to the pyramid for anchoring the rope above the robot? Also, is there some type of bridle that splits the belaying rope into two sections (each with a carabiner that attaches to the robot)?... the "FRC Field Tour" showed one. If a bridle is used, what size is it?

A.Good question. The belaying rope is fed through a brake that is anchored to the lowest rung on the opposite side of the PYRAMID from the ROBOT. It is then fed through the PYRAMID top and down the other side to be attached to the ROBOT. There is a "bridle" that splits the rope into two sections. Different from those shown in the Field Tour video, the official bridle sections are 90 in. long. This detail will be added to *Section 2 - The ARENA*.

Q131

Q.I spent a great deal of time examining all plans and other documents with information on the pyramid. I started by making a solid model of the the geometry. The assembled pyramid on the arena is incorrect. Is there a dimensioned front view of the assembled pyramid?

A.The Autodesk models have been corrected, as noted in [this blog post](#). There is not a dimensioned assembly drawing of the assembled PYRAMID.

Q121

Q.I appreciate the quick response but the dimension I'm looking for isn't in the manual. What we are looking for is the angle from the floor to the corner of the pyramid, considering the vertical cross-sectional plane that cuts the pyramid corner to corner.

A.All details about FIELD geometry is included in, or can be derived from, the official FIELD Drawings posted [here](#).

Q118

Q.The pyramid pipe is listed as 1 1/2" steel tubing. Is this a nominal dimension? If so, is the true outside diameter 1.900 or another value?

A.Dimensions and material details for all FIELD elements are included in the drawings published as Supplemental Documentation [here](#).

Q117

Q.What is the climbing angle of the pyramid? Is it 68 degrees or 60 degrees? This forum <http://www.chiefdelphi.com/forums/showthread.php?t=110944> states that it is 60 degrees.

A.Per *Section 2.1*, the FIELD drawings published by *FIRST* are the official source for all dimensions.

Q113

Q.The Inventor assembly shows the rung heights at 30" 60" & 83.18" with the total height at 113.53" while figure 2-7 shows the rung heights at 30" 60" & 90" with the total height at 120". Why is there such a difference between the assembly and the figure on the height of the pyramid

and rungs 3 and 4?

A.Per *Section 2.1*, the FIELD drawings published by *FIRST* are the official source for all dimensions.

Q83

Q.What are the actual dimensions for the U-bolts. There appears to be conflicting information regarding them as I flip through the pages of the document.

A.The U-Bolts specified in TE-13001 are U-Bolts made for 1-1/4" pipe. The internal clearance of the bolt is 1.75". The length of a standard U-Bolt this size is 3". The thread size is 1/4-20.

Q78

Q.What are the limits to the support tube above Level 3, and below the pyramid scoring goal? Can it be touched by the robot in order to place discs in the goal?

A.Please see [Q66] and [G14].

Q56

Q.There seems to be discrepancy between the Autodesk CAD model and drawings of the pyramid (pulled from the game arena file). Specifically, the drawings show that the rungs (1,2,3) are all 30" apart in the vertical, and at a consistent 68 degrees from horizontal. The CAD model shows that the first two rungs (1,2) are also 30" apart in the vertical, and 68 degrees from horizontal, but the inconsistency is in the third rung. The third rung is depicted higher than 30" - not at the joint of the 68 degree angled bar and the vertical section of the pyramid - but several inches above on the vertical bar. This changes the angle and climbing plans. Has anyone else seen this, or does anyone have a concrete source that we can trust to design around? Thanks -

A.Per *Section 2.1*, the FIELD drawings published by *FIRST* are the official source for all dimensions.

Q53

Q.2) Is the part of the pyramid marked in red Zone 1? If so, what would the height of the red mark be? <http://i49.tinypic.com/2e3wdgk.png>

A.Level 1 extends from the floor (Level 0) to the top of the first rung on the PYRAMID.

Q25

Q.Is the height of the rungs on the pyramid measured from the top of the rung or the center of the rung?

A.Please refer to Figure 2-7 and tolerances in Section 2.1 and FIELD assembly drawings.

The ALLIANCE STATIONS

Not Available

The FEEDER STATIONS

Not Available

The PLAYER STATIONS

Not Available

The Netting

Not Available

The DISCS

Q216

Q.Can you clarify under which conditions (damaged) DISCS may be replaced at official events? For instance, the extent of chips/cracks, scratches, surface damage. Will DISCS be replaced at the start of Elimination Matches?

A.There are no specific criteria under which a DISC will be replaced. Generally, DISCS with scuff

marks and scratches will continue to be used, but DISCS that are broken or have chunks removed will likely be removed from game play at the next safest opportunity (and the ROBOT responsible for the damage will likely be considered in violation of [G14]).

Game - The Game

Q565

Q.Can we apply power to our robot to rotate an arm inbetween Finals rounds (Where we never return to our pit station)?

A.Yes, TEAMS may tether to the ROBOT off the FIELD or during a TIMEOUT.

MATCH Setup

Q538

Q.3.1.1 Manual mentions "at least 10 white discs" will be located on the field during set up. What if all 6 robots want to hold 3 discs each while being in the Autozone toching the pyramid? It appears there wouldn't be enough, will more be given or can be brought out?

A.Per [Section 3.1.1](#), each ALLIANCE STATION will have 45 White DISCS, 10 more start on the FIELD as pictured in Figure 3-1, which leaves 18 available for pre-loading into ROBOTS.

Q500

Q.before the match starts can any part of the robot extend past the 112 inches perimeter

A.No, per [G05] and the definition of STARTING CONFIGURATION.

Q429

Q.Will there be set markings on the field to coordinate where white discs are placed before the start of a match to both: a. expedite field reset so discs can be quickly set up. b. Ensure discs are accurately placed in the starting locations as they are so specifically defined by sec 3.1.1 B:a-e.

A.Yes, there will be small, black marks to assist with DISC placement, however these marks are not intended to be visible from the side of the FIELD or the audience. Please note however, that the placement of the DISCS on the field are approximate.

Q425

Q.Where in the alliance station will the 45 white and 6 colored discs be located at the start of the match?

A.The ALLIANCE may choose where, in the ALLIANCE STATION, the DISCS begin the MATCH.

Q395

Q.Regarding [G06], at what point before the match will team be able to preload discs? While queued? Or while position the robot on the field?

A.The Team will be given the DISCS once the ROBOT is on the FIELD.

Q359

Q.During the autonomous period (first 15 seconds of match), can our robot start from the inside of the pyramid if it is touching the pyramid? Where is the starting location?

A.Please see [G05] and [Q4].

Q358

Q.If our robot is touching the ground and an arm extends beyond the first horizontal beam and is in the level two space, but does not come in contact with the second horizontal beam, then is this considered legal or illegal?

A.There is nothing inherently legal or illegal about this. Acceptable CLIMBS, per *Section 3.1.5.2*, rely on contact with the PYRAMID.

Q335

Q.Does our robot begin on the alliance pyramid or the opponents pyramid?

A.Please see [G05]-D.

Q334

Q.What is starting configuration?

A.Please see Section 6 - Glossary.

Q333

Q.If the robot is touching the floor and extends beyond the first horizontal beam without contact, then is the robot considered to be in level 0, 1, AND 2?

A.Yes.

Q196

Q.In rule G07, are we allow to use a measuring device to align our robot as long as we do NOT delay the start of the game?

A.This is not explicitly prohibited, but it will be the discretion of the Head Referee as to what is delaying the start of a MATCH.

Q158

Q.Before the start of each MATCH, are all DISCS positioned convex-side up?

A.Yes.

Q108

Q.How are we allowed to distribute white Frisbees to our alliance feeder stations?

A.However the ALLIANCES chooses.

MATCH Timing

Q30

Q.At what time may the robot begin climbing the pyramid? The manual doesn't seem to specify.

A.There are no Rules dictating when a ROBOT may begin to CLIMB the PYRAMID.

MATCH Logistics

Q539

Q.R93 states "The OPERATOR CONSOLE must not exceed 60 in. long by 12 in. deep (excluding any items that are held or worn by the DRIVERS during the match)." Just to be clear would the driver station laptop with a depth greater than 12" violate this rule? What if it were held during the match?

A.1) This is dependent on the orientation of the laptop in the OPERATOR CONSOLE. 2) Per [G21], the laptop, being held, must be disconnected during AUTO. This would prevent the ROBOT from communicating with the Driver Station, disabling the ROBOT.

Q142

Q.Thankyou for the answer. Just to confirm, as soon as a frisbee is scored into a goal, we can instantly retrieve it and load our robot?

A.DISCS are not removed from GOALS during the match. The DISCS present at the start of the MATCH as described in *Section 3.1.1* are the only DISCS used for the MATCH, no additional DISCS will be made available during the MATCH.

Q132

Q.Can we use any laptop (assuming it is a windows) with the new game management system? (or do we have to use a netbook?)

A.There is no requirement that teams use a netbook to host the Driver Station software, provided all requirements in *Section 4.1.11* are met.

Q80

Q.How often can a team load a robot from the loading area? And how quickly do more Frisbees become available to the team.

A.There are no Rules regulating how often a TEAM or ROBOT may use the FEEDER STATION. The DISCS present at the start of the MATCH as described in *Section 3.1.1* are the only DISCS used for the MATCH, no additional DISCS will be made available during the MATCH.

Penalty Assignment

Q183

Q.Rule G18-1 says that forcing the opposing ALLIANCE into a penalty is “not in the spirit of FRC and [is] not allowed” whereas G30 dictates: “regardless of who initiates the contact, a ROBOT may not contact an opponent ROBOT touching the carpet in its LOADING ZONE.” Which rule will predominate?

A.If the Team is employing a strategy that tries to take advantage of [G30], [G18-1] takes precedence.

Q52

Q.If you’re attached to the bar on level one and tethered to the bar on level two, when you release from bar one the robot will swing on arc below level two, is it a violation if we touch the floor as we swing tethered to bar two?

A.If a ROBOT contacts the PYRAMID in Level 2 while simultaneously contacting the floor (Level 0), the CLIMB would be considered invalid.

Scoring

Not Available

DISC Points

Q585

Q.How is it determined that the discs are above the horizontal plane of the pyramid goal? Our discs nest together top facing down with the lowest (we believe to be) below the yellow line marked in rule 3.1.5.1. As the discs are opaque, is this just based on a judgement call?

A.This is confirmed visually.

Q532

Q.In light of the 2/19/13 team update do colored discs thrown by human players in the last 30 seconds into the LOW, MIDDLE, or HIGH GOALS still count as SCORED?

A.Yes.

Q402

Q.Can we use any colored disk (blue or red depending on the team color and white) to aim at the five point goal on top of the pyramid or can we only use a colored disk that is red or blue to score into the five point goal and gain points?

A.There are no Rule prohibiting White DISCS in the PYRAMID GOAL, however per Section 3.1.5.1, only DISCS that match the color of the PYRAMID will be considered SCORED.

Q355

Q.Is a disk considered scored in the pyramid goal if a robot remains in contact with the disk?

A.Please see the definition of SCORED.

Q314

Q.If several DISCS are stacked on top of each other in the PYRAMID GOAL, but the top DISC in the stack is completely above the yellow horizontal opening (in the illustration) due to the lower DISCS in the stack holding up the top DISC in the stack, would that top DISC be considered scored?

A.No. Please see *Section 3.1.5.1*.

Q303

Q.For scoring purposes, does the PYRAMID GOAL's yellow opening depict a four-sided "fence" that the DISC must pass through via a ~horizontal motion, or is the opening a horizontal plane bounded by four sides that the DISC must drop into via a ~vertical motion?

A.The depicted opening represents a horizontal plane bounded by the yellow lines which some part of the DISC must cross to be considered scored per [Section 3.1.5.1](#).

Q297

Q.Is a disc considered scored in the pyramid if it is resting on top of the circle that supports the chains for the goal?

A.No, a DISC sitting on top of the circular chain support has not crossed the yellow PYRAMID GOAL opening shown in Figure 3-3.

Q293

Q.Will there be some way of stoping disks from flying off the field and going out of play, such as a net?

A.Please see *Section 2.2.9*.

Q236

Q.Does a disk score in the pyramid goal if it is leaning on the top of the plexiglass rim around the goal basket?

A.A DISC is considered SCORED if it meets the criteria defined in *Section 3.1.5.1*.

Q234

Q.Are robots allowed to stay in the protected LOADING ZONE while shooting across the field into the goals? This robot would be protected from interference (Rule G30) while making the long shot to the other side of the field. Is this allowed?

A.There are no Rules prohibiting this.

Q134

Q.1. Will a DISC that crosses the plane of an ALLIANCE GOAL in AUTO, but does not trigger the weight sensor in AUTO, still receive the doubled AUTO points? 2. Will a DISC that is released from the ROBOT in AUTO, but does not cross the plane of the ALLIANCE GOAL in AUTO, still receive the AUTO points?

A.Yes. No.

Q110

Q.Do discs scored into the pyramid goal need to be scored from the ground, or can the robot climb the pyramid and then score discs?

A.There are no Rules regarding from where any DISC must be scored.

Q104

Q.Per 3.1.5.1, "A DISC is considered SCORED in an ALLIANCE'S GOAL if any part of the DISC has crossed through the opening of the GOAL, is in the GOAL at the end of the MATCH, and is not in contact with any ROBOT from that ALLIANCE." Does this apply to the PYRAMID GOAL?

A.Yes, SCORING in the PYRAMID GOAL adds an additional restriction but does not remove any.

Q103

Q.Will we recieve points if a blue disk is scored in the red alliance pyramid?

A.No. A Blue DISC does not correspond to the color of the Red PYRAMID GOAL.

Q73

Q.Can a team receive points for scoring the opposite colored discs in their own alliance goals?

A.Please see [Q17].

Q71

Q.Scoring of discs is governed by 3.1.5.1. which has 3 statements. One of the statements is that the disc "is in the GOAL at the end of the MATCH". Does this mean that none of the frisbees coming into the alliance station goals will be reused during the match? If discs fall out, are the points lost?

A.Correct. Correct.

Q37

Q.Can a team pick up opposite alliance's colored discs off the arena floor and place them into THEIR OWN goals in order to prevent the opposing alliance from picking them up again and scoring them on their pyramid?

A.There are no Rules prohibiting that.

Q34

Q.Our question is in relation to rule section 3.1.5.1 and G24. Do the discs have to be individually fired/thrown into the goals? We have found the answer in the broadcast, but not in the game manual. Can you please clarify? Thank you.

A.There is no requirement that DISCS are put into a GOAL individually.

Q17

Q.Do the red or blue disc score as normal (white) disc if put in the goal openings? During AUTO & TELEOP?

A.Yes, Red, White, and Blue DISCS have the same value if SCORED in the LOW, MIDDLE, or HIGH GOALS.

CLIMB Points**Q621**

Q.If a robot is supported from the lowest rung of the pyramid, but its lowest point is in contact with a disc on the floor, not in possession of the robot, such that if the disc was removed, no part of the robot would be in contact with the floor. Does contact with the disc invalidate the climb?

A.We will not rule on hypothetical situations; however, Level 0 does not include DISCS. Provided the Head Referee has determined the DISC has not aided the CLIMB per [G16], the CLIMB is acceptable.

Q530

Q.If a team inadvertently has a part (nut, lexan covering, bumper, appendage) of their robot fall off so that it is no longer attached to their machine, are they still able to receive climb points? Are they considered in contact with level zero and unable to receive any climb points?

A.Yes. No.

Q472

Q.We have a doubt regarding the climb, the rules were not very explicit for us. Our robot climbed from level 0 to level 2 but level 1 is touched, when it is hung on level 2 is still touching Level 1 (it doesn't climb on the level 1 but if touch it) is the robot eligible for climb points?

A.Please see [Q6] and [Q39].

Q449

Q.If a robot is hanging from the level 2 horizontal bar and is not in contact with the ground or a level 1 bar, but occupies the airspace of both levels 1 and 2, does this constitute a level 1 climb or a level 2 climb? There seems to be a conflict between Section 3.1.5.2 of the manual, Q13, and Q39.

A. Per *Section 3.1.5.2*, the Level to which a ROBOT has CLIMBED is determined by the lowest point of the ROBOT (not the lowest point of the ROBOT contacting the PYRAMID). The answer to [Q13] refers specifically to *Section 3.1.5.2 A and B* which govern acceptable CLIMBS.

Q393

Q. If a robot contacts level 0 uses a ramp that is touching the pyramid contacts level 1, is the robot eligible for climb points as per 3.1.5.2?

A. ROBOTS that contact the PYRAMID during ascent per *Section 3.1.5.2*, will be eligible for CLIMB points.

Q382

Q. Regarding the rule that no more than two levels can be simultaneously climbed at once, could you have a robot that is on the floor (level 0) and reaches for the first bar with an appendage that hooks over the bar (it would be in level 0, 1, and 2) and pull up would that count as a valid climb.

A. Please see [Q13] and [Q28].

Q375

Q. In the game rules it states that touching the pyramid is in a zone, but on the Q&A I was told occupying a space was considered in the zone. Which is the correct answer? I've already seen *Section 3.1.5.2* several times, but your previous answer conflicts what it says. What's the correct rule on this

A. The Q&A and the Rules do not conflict. For a ROBOT to be "in" a Level, it must occupy space in that Level. For the purposes of acceptable CLIMBING, the ROBOT must be contacting the PYRAMID in the Level.

Q363

Q. Q311 does not answer Q346. It is too ambiguous. Please answer the question asked as the way a rule can be interpreted is either way. We read it as yes a robot can be elevated as long as the robot touches each level's bar.

A. Per *Section 3.1.5.2*, the ROBOT must contact each Level sequentially as it ascends the PYRAMID.

Q357

Q. When is a *Section 3.1.5.2* invalidated climb considered restarted from level 0? Is touching level 0 sufficient, or must the bot also stop touching level 1?

A. Contacting the floor, Level 0, is sufficient.

Q354

Q. Please explain the rationale in 3.1.5.2 as identified in the blue box, whereby at a FIRST Championship, FIRST may alter the value of the climbing by up to 10 points. Does this mean that any level can be changed either up or down by 10 points. What situation would justify a change in the points?

A. Yes. We cannot comment on exactly what type of situation would lead to the points being changed.

Q346

Q. So a robot can be elevated by another robot as long as it makes contact with each level sequentially?

A. Please see [Q311].

Q311

Q. IF robot B contacts Level 0 then Level 1 and is then raised to a level 3 by Robot A is Robot B eligible for 30 CLIMB POINTS.

A. Per *Section 3.1.5.2*, the ROBOT must contact each Level sequentially as it ascends the PYRAMID.

Q310

Q.If your robot is hanging off of the second horizontal beam from the bottom, is the claw which is touching the top of the horizontal beam considered to be touching zone three or zone two?

A.Please see [Q175].

Q304

Q.Which is considered in the pyramid zones? Touching the Pyramid or the Area around it? (Eg. If a robot isn't touches the pyramid but is tall enough to be in the second zone is the robot in the second zone or not?)

A.Please see Section 3.1.5.2, specifically Figure 3-4, and other related questions already answered.

Q288

Q.For the purposes of assessing CLIMB points, if "the lowest point of the ROBOT (in relation to the FIELD)" is in contact with the top of a rung, will it be considered to be in the Level containing that rung or in the Level immediately above?

A.A ROBOT who's lowest point is in contact with the PYRAMID (and/or Floor) in a particular Level will be considered in that Level for scoring purposes.

Q285

Q.Is a climb legal if a robot goes from the ground to the first level and is hanging from lowest bar, then it reaches up and touches the second bar and then goes up to grab the third bar and grabs it and pulls itself up, if not why so? it seems to meet all requirements in rule 3.1.5.2

A.The purpose of this forum is to answer specific questions about specific Rules. We cannot comment absolutely on hypothetical situations. A ROBOT in contact with the PYRAMID in Level 1 and contacting Level 3 would result in an invalid CLIMB per *Section 3.1.5.2*, part A.

Q271

Q.We are concerned that there is a conflicting answer on whether or not a climb would be invalidated by being in contact with bars of the pyramid within levels 1 and 2, while being in contact with the floor. According to rule 3.1.5.2 a robot may be in contact with two levels of the pyramid and/or the floor, but not in contact with more than 2 levels simultaneously (emphasis ours). Where in part a, level 0 is a level of the pyramid, but in the first part of the rule it is not considered part of the pyramid. The answers to Q6, Q8, Q237, and the January 11 team update seem to contradict each other on these issues. Could you please clarify whether or not a climb involving contact with the floor, level 1, and level 2 would receive 20 points assuming all other climbing rules are followed? Or, do we have to be off the floor, and in contact with level one before contacting level 2 for our climb to be valid?

A.There is no conflict as far as we can tell. Per *Section 3.1.5.2*, a ROBOT cannot contact the PYRAMID and/or floor in more than two Levels simultaneously. Contacting Levels 0, 1, and 2 simultaneously does invalidate a CLIMB.

Q270

Q.Rule 3.1.5.2 defines being in a level as being in contact with the pyramid in that zone, not as actually occupying space in that level, is this correct?

A.No.

Q247

Q.A robot has reached the top level, or level three, in its climb and maintains its position until the end of the game. At the END of the match after the time has run out and the robot is unpowered, the robot touches the second level rung. Does this count as a level three or level two climb?

A.The purpose of this forum is to answer specific questions about specific Rules. We cannot offer absolute statements on hypothetical situations. Per Section 3.1.5, Points are awarded to ALLIANCES per the details below. Final scores will be assessed five (5) seconds after the ARENA timer displays zero (0) or when all elements come to rest, whichever event happens first. Anything that happens after this point do not impact the score.

Q245

Q.Per "Figure 3-4: PYRAMID Levels" how high does level 3 extend? Or is it assumed essentially to infinity?

A.Please see [Q32].

Q237

Q.Our climbing design touches the floor, diagonal bar below the 10-pt bar, and simultaneously touches the 10-pt bar. If some part of our robot touched the 10-pt bar and a little above it on the diagonal, does this count as touching 3 levels?

A.Simultaneously touching the floor (Level 0), Level 1, and Level 2 would invalidate the CLIMB per Section 3.1.5.2 B

Q228

Q.Team Update 2013-01-08 added "at the point in which final scores are assessed per Section 3.2.4." Section 3.2.4 is titled "AUTO Rules", and doesn't seem relevant. Should it be "...per Section 3.1.5"?

A.Yes, this has been fixed in the Game Manual.

Q225

Q.In reference to the revised Q107, is the intent of the language in the Game Manual such that a ROBOT must always be in contact with the PYRAMID during a legal CLIMB? Must a CLIMB be conducted using only the direct support of the PYRAMID? If so, must a ROBOT always be fully supported by the PYRAMID?

A.No, a ROBOT must contact the Floor and/or PYRAMID in each Level as it ascends, but there is no requirement that the ROBOT maintain contact with the PYRAMID through the entire CLIMB nor that the ROBOT be fully supported by the PYRAMID at any point during the CLIMB.

Q193

Q.Once the match reaches it's conclusion, how long is a robot required to hold it's position in order to obtain the points for the level it is in as time expires?

A.Please see *Section 3.1.5*.

Q175

Q.Per Q28, Levels extend "to the top of [each] rung." If "the lowest point of the ROBOT (in relation to the FIELD)" is in contact with the top of a rung, is the ROBOT considered to be in the Level containing that rung or the Level immediately above said rung?

A.If a ROBOT is in contact with a rung on the PYRAMID, the ROBOT will be considered to be contacting the PYRAMID in the Level that contains that rung.

Q150

Q.Is it a valid climb and 30 points if robot A is used as a base and is touching the pyramid with its bumper while on the floor at level 0. Robot B rolls onto robot A and is lifted straight up by robot A past the 30 inch and 60 inch height requirements for level 2 & 3. Robot A is touching level 0.

A.~~Please see [Q107].~~ We have revised the answer to this question because, after further discussion, we agree that the answer above does in fact conflict with the Game Manual and the intent of the language in the Game Manual. Please accept our apologies. Please see the revised answer for [Q107].

Q124

Q.Can robots climb the inside of the pyramid?

A.There are no Rules prohibiting this.

Q122

Q.If you are in the second scoring zone of the pyramid and happen to touch the ground again (e.g.

tipping and touching the ground with a corner) is there a penalty?

A.No violation will be assessed, but even brief contact with the floor (Level 0) while still in contact with a Level other than Level 1 would invalidate the CLIMB.

Q107

Q.Is a robot that only contacts Level 0 considered to have CLIMBED for the purpose of receiving CLIMB points as "determined by the lowest point of the ROBOT" as appropriate? For instance, this would require that contacting only Level 0 constitute contacting in "sequential order" during ascent

A.~~Yes.~~ We have revised the answer to this question because, after further discussion, we agree that the answer above does in fact conflict with the Game Manual and the intent of the language in the Game Manual. Please accept our apologies. The revised answer is no, a ROBOT that has only contacted the floor in Level 0, but ascended, is not eligible for CLIMB points.

Q98

Q.If the answer to Q97 is Yes: Robot A has a ramp on it. Robot B drives on Robot A and is 2 inches above Level 0. Does Robot B score 10 CLIMB points?

A.~~Yes, ROBOT B would have completed a valid CLIMB to Level 1 per the criteria in Section 3.1.5.2, but please remember [G33].~~ The answer to [Q97] has been reversed and is now "No." In this particular scenario, if Robot B did not contact the PYRAMID in Level 1 during its ascent it is not eligible for CLIMB points.

Q97

Q.Assume Robot A makes a valid climb to Level 3. 1) If Robot A grapples Robot B and hoists Robot B completely above the first rung, does Robot B score 20 points? Robot B has only touched Level 0 of the pyramid, and has not touched two non-consecutive levels at the same time.

A.~~Yes, ROBOT B would have completed a valid climb to Level 2 per the criteria outlined in Section 3.1.5.2~~ We have revised the answer to this question because, after further discussion, we agree that the answer above does in fact conflict with the Game Manual and the intent of the language in the Game Manual. Please accept our apologies. 1) No, per *Section 3.1.5.2*, in order for a ROBOT to have CLIMBED the PYRAMID, it must contact the PYRAMID in the Levels in sequential order during ascent. In this example Robot B contacted Level 0, but not the PYRAMID in Levels 1 and 2 as it ascended and is therefore not eligible for CLIMB points.

Q92

Q.Could you please clarify two words in the rules: contact and ascend. Does contact imply continued contact or can it also imply momentary contact? Does ascend imply only while the robot is in motion or is a robot that is hanging on rung still considered to be in the 'ascent' stage?

A.All types of contact are contact. The ascent of a ROBOT is the entire CLIMB action.

Q87

Q.Will this CLIMB be considered valid according to Section 3.1.5.2 A and B: The ROBOT is touching the first rung. Afterwards the ROBOT grabs the third rung, while breaking contact with the first rung. During the ROBOT's climb to the third level, it touches the second rung, and reaches the third level.

A.No. The ROBOT contacts PYRAMID Levels in a non-sequential order (Level 1 then Level 3).

Q86

Q.If my ROBOT touches the PYRAMID only in Level 1, but he is tall enough so the ROBOT'S presence is in the physical space of Levels 2-3. Does it consider a CLIMB?

A.Please see [Q13].

Q85

Q.Suppose a robot has executed a legal CLIMB into Level 2. From this position, the robot (1) makes contact with Level 1 *without* breaking contact with Level 2, then (2) breaks contact with Level 1 and returns to a height within Level 2. Does the contact made with Level 1 invalidate the CLIMB?

A.No. In the above example, at no time does the robot touch more than two (2) Levels or non-

sequential Levels.

Q82

Q.Ok, Could a robot setting on the ground, attach to the top of the second horizontal bar, and then as climbing touch in zone 1 (no longer touching floor) before entering zone 2, would it then be legal climb?

A.No.

Q79

Q.Is contacting the leg of the pyramid considered being in that zone?

A.Please see [Q49].

Q70

Q.Would it be a legal climb if the robot is on the floor (Level 0), contacts Level 1, remains on the floor, breaks contact with Level 1 and makes contact with Level 2, pulls itself off the floor, makes contact with Level 3, and then pulls itself completely into the Pyramid's Level 3 zone?

A.No.

Q68

Q.If an arm reaches up onto the first bar on the pyramids and hooks it, while the robot is still on the floor. Will the climb be disqualified because the robot would be touching level 0, in level 1, and grabbing over the bar under level 2?

A.Please see answers [Q13] and [Q28].

Q67

Q.Could a robot setting on the ground, attach to the top of the second horizontal bar, and then lift into zone 2, with out touching the pyramid at any other point? Or would this be a invalid climb? My team is getting confused with all the clarifications.

A.Please see [Q6].

Q51

Q.Is the pyramid base (drawing number GE-13024) considered the floor (level 0) or part of level 1 of the pyramid? For example, if a robot has a wheel on the floor and a wheel on the pyramid base, is that considered contacting level 0 and 1?

A.Per *Section 2.2.5* the bases will be covered with carpet and thus would be part of the floor.

Q45

Q.Per the updated version of 3.1.5.2, can your robot touch the floor and two levels of pyramid simultaneously? (i.e. the robot on the floor grabs the pyramid on the first and second level)

A.There are no Rules that prohibit this action; however, it would invalidate a CLIMB attempt as the ROBOT would be contacting the PYRAMID structure in Levels 1 and 2, as well as contacting the floor (Level 0) simultaneously.

Q39

Q.Is the climb score counted by lowest point relative to a horizontal plane at the top of each rung, or by the lowest point of the robot physically touching the tower. I.E. If an robot is hanging down into zone 2, but is touching only the steel in zone 3, is his score 20 or 30?

A.Per *Section 3.1.5.2*, the Level to which a ROBOT has CLIMBED is determined by the lowest point of the ROBOT (not the lowest point of the ROBOT contacting the PYRAMID).

Q38

Q.1) Does touching the top of the horizontal pole in level one count as level one or level two? 2) What is the space between the knuckle and the zone above on the horizontal pole?

A.1) This is contacting the PYRAMID in Level 1. 2) Please clarify your question.

Q32

Q.Is the section of the pyramid above the Zone 3 border as shown in Team update 1 considered a separate zone for climb legality purposes? For example, would touching the pyramid above the Zone 3 line while still in contact with the zone 2 bar be considered a violation of the Sequential zone rule or the 2 zone rule?

A.There is no upper bound to Level 3.

Q28

Q.a) Is the extreme top surface of the lowest horizontal bar considered Zone 1 or Zone 2? b) If Zone 1, then is the robot allowed to violate air space of zone 2 and not be considered in contact with zone 2?

A.The horizontal rungs are located at the top of each Level. Each Level extends to the top of the rung. Being in the "air space" of a Level does not necessarily mean the ROBOT is contacting the PYRAMID in that Level.

Q27

Q.In order to be a valid climb in sequential order, a robot must be fully supported by zone 1 (off the ground), prior to contacting zone 2. In other words, a robot cannot be touching Zone 0 and touching zone 2 at the same time. Is this a correct statement?

A.The first statement in this submission is incorrect. The requirements in *Section 3.1.5.2 A and B* pertain to the ROBOT'S contact with the PYRAMID structure and/or floor within each Level, not the ROBOT'S presence in the physical space of the Level.

Q24

Q.Does a robot have to be in zone 1, 2, or 3 at the END of the match to score climbing points? In other words, can a robot climb up to zone 3, get 30 points, then climb back down for the rest the match without forfeiting that 30 points or getting any penalties?

A.Yes. No.

Q13

Q.Figure 3-4 on page 28/90 shows Level 2 just above the horizontal bar. Since the rule states no more than two zones why is it (or is it) permissible to hook the pipe while still on the floor and if so how far into level 2 can you go? Does that include the side pipes?

A.The requirements in Section 3.1.5.2 A and B pertain to the ROBOT'S **contact** with the PYRAMID and/or floor within each Level, not the ROBOT'S presence in the physical space of the Level.

Q11

Q.If you have a tall robot are you in more than 2 zones simultaneously?

A.Yes, depending on the height of your ROBOT, it is possible for a ROBOT to occupy more than one Level at a time.

Q8

Q.If a legal climb constitutes being in between only 2 levels at a time would putting a hook on the next level be considered illegal?

A.Per Section 3.1.5.2, for a CLIMB to be legal, a ROBOT may contact no more than two (2) Levels of the PYRAMID and/or the floor (Level 0) simultaneously.

Q6

Q.Can the robot go from the floor to level 2 while climbing the pyramid or does it have to climb to level 1 first and then level 2? I need clarification

A.Per Section 3.1.5.2, a ROBOT has CLIMBED its PYRAMID if it contacts the PYRAMID and/or the floor (Level 0) in sequential order (Level 0, 1, 2, 3) during ascent. Skipping a level (i.e. going from the floor directly to Level 2) would not meet the "sequential order" requirement.

Q5

Q.When hanging does the lowest point of the robot include the bumpers?

A.Yes.

Safety**Q115**

Q.Regarding the G4 "A" Update (2013-01-11) - For a robot completely within zone 3, how will the belay be attached if the attachment points are above the reach of the team? And will the belay mechanism allow a robot to be lifted slightly if that is necessary to remove it?

A.If the ROBOT cannot be removed from the PYRAMID under the constraints listed in [G04], the Team would receive a YELLOW CARD.

G01

Not Available

G02**Q220**

Q.G02-Please confirm, the term "team" refers to the Human players not the robot.

A.The term Teams refers to the members of FRC Teams, not ROBOTS.

G03**Q521**

Q.Does G03 require that all motion of any part of the robot be controlled at all times by an actuator, or can certain parts of the robot move freely (due to inertia, for example) as long as there are mechanisms to limit that motion?

A.The answer to this question is completely dependent on the risk associated with the uncontrolled movement and will be left to the discretion of Inspection and Referee personnel.

Q69

Q.Does a robot mechanism explicitly designed to perform an action with the explicit intent of proceeding with the action after the robot has been disabled or the power has been cut (beyond the forces of inertia) violate Rule G03?

A.We cannot comment on the legality of specific (or non-specific) design ideas. However, actuation beyond the control of safety measures in the control system may be considered violations of [G03].

G04**Q481**

Q.To facilitate robot removal from the 3rd level after the match, can an electric motor override (a switch to reverse an electric motor) or a pneumatic pressure release be used to release tension to safely remove the robot from tower?

A.Per [G04]-B, the ROBOT must be unpowered when removed from the PYRAMID.

Q366

Q.G04 says level 3 climbing robots must use a belay to be removed. R10 says all teams must have attachment points for belay lines. If a robot is only designed for level 1 or 2 and not level 3, are the attachment points still required ?

A.Please see [Q194].

Q329

Q.Is it acceptable for team members other than the TEAM to enter the field in between matches to assist in robot removal, so long as the total number of team members on the field never exceeds 4? This would allow larger/stronger members of the team to assist in safely removing the robot.

A.No.

Q185

Q.A team's climbing method has their robot completely in level 3 and they have connected the Belay system to the robot, but they are unable to reach their hooks/release point/whatever their method may be for climbing. How then can a team successfully disengage their robot from the pyramid?

A.It is the responsibility of the Team to understand and be able to execute the process for removing their ROBOT from the PYRAMID. If a Team is unable to remove their ROBOT from the PYRAMID under the requirements of [G04], the Team will be assessed a YELLOW CARD.

Q178

Q.Assume a ROBOT has ascended the PYRAMID to an elevation where no member of the TEAM can physically reach it from the floor without the aid of "special equipment". Per G04, will this TEAM receive a YELLOW CARD?

A.Yes.

Q177

Q.G04 states that "ROBOTS may only be removed from a PYRAMID under the following conditions: ... by the TEAM while standing on the floor without special equipment." What falls under the definition of "special equipment"?

A.There is no formal definition of special equipment. Generally speaking, any equipment beyond what you would need to remove your robot from the FIELD'S floor would likely be considered "special."

Q176

Q.Per G04, to remove any ROBOT in Level 3, "TEAMS are required to attach a FIRST supplied belay line" without the aid of "special equipment." Given that most humans are below 72" tall and that Level 3 begins above 90", how will TEAMS be expected to attach the belay line without special equipment?

A.Level 3 does not begin at 90", it begins immediately above the second rung of the PYRAMID. Teams must locate the belay attachment points of their ROBOT such that the belay can be attached from the ground without special equipment.

Q161

Q.For the purposes of G04 will a ROBOT be considered unpowered if it is disabled by the FIELD?

A.No. Unpowered is not the same as disabled.

Q159

Q.May the belay system be used to lift the ROBOT a small distance to aid in releasing it from the PYRAMID before lowering the ROBOT after the MATCH?

A.No. The belay system is meant as a safety against falling ROBOTS, not a removal tool.

Q96

Q.We were just wondering what penalties would a team incur if their robot were to be able to climb to the third level of the pyramid for this year's game, but would have to be powered back on to be able to be removed? Would this get the team a foul? Technical foul? Yellow card, red card? Thanks!

A.Please see [G04].

Q22

Q.Would G04 or any other rule prohibit the robot from climbing to top of pyramid, then returning to floor and gathering additional discs?

A.There are no Rules that prohibit this, but per *Section 3.1.5.2*, CLIMB points are not assessed until the MATCH ends per *Section 3.1.5*.

Pre-MATCH

Q242

Q.Can we start our robot start under the pyramid?

A.Please see [Q4].

Q241

Q.Can the robot start by touching the bottom horizontal bar of the pyramid?

A.Please see [Q123].

G05

Q590

Q.Does part B "confined to its starting configuration" limit robots to 60" or does it allow robots to be up to 84" at the start of the match since all robots must start in contact with the pyramid and auto zone?

A.The combination of [G05]-D and [G22]-A allow ROBOTS to be up to 84 in. at the start of the MATCH.

Q570

Q.Does part C apply to all robot appendages? For instance, could a robot start with an inside-the-frame-perimeter appendage being partially supported (along any vector?) by the pyramid, so long as its frame perimeter would not move if the pyramid were to be removed?

A.Yes, [G05]-C applies to the ROBOT in its entirety.

Q556

Q.Is the bracket, where the pyramid uprights connect to the floor plate, considered a part of the pyramid, or a part of the floor? Does the robot need to contact the vertical pipe, to satisfy G05, or can it contact the bracket? If the bracket is a part of the floor, can the robot be supported by it?

A.The bracket is part of the PYRAMID.

Q545

Q.Is the Robot considered touching the pyramid if a string attached to the robot and within the starting configuration is touching the pyramid ie drooped over the 30 " bar?

A.The ROBOT is considered touching the PYRAMID if any part of the ROBOT is touching the PYRAMID. If the string is supported by the PYRAMID, then the ROBOT would not be fully supported by the floor, which would be a violation of [G05]-C.

Q331

Q.Can an apendage be extending outside the robot frame perimeter at the start of a match, so long as it stays within the 54in diameter?

A.Please see [G05]-B and the definition of STARTING CONFIGURATION.

Q191

Q.Please define "fully supported by the ground." Would not any robot starting in a non-flying configuration be directly or indirectly fully supported by the ground?

A.[G05] requires the ROBOT be fully supported by the floor and only the floor.

Q146

Q.Can you start the game hooked onto, the first bar of the pyramid and have a part of the robot touching the floor? and after autonomous continue climbing?

A.Please see [Q123].

Q123

Q.Can you start the game hooked onto, but not supported by, the first bar of the pyramid?

A.Provided the criteria in [G05] are met, there are no Rules prohibiting this.

Q19

Q.Are you considered contacting the pyramid at the 30 inch bar at any location?

A.Yes, any time the ROBOT is contacting the PYRAMID, the ROBOT will be considered contacting the PYRAMID.

Q4

Q.Can we start inside the pyramid as long as we are in contact with the pyramid?

A.There are no Rules that prohibit this.

G06

Q343

Q.For the purposes of complying with G06.A, does the 2" wide Gaffers Tape marking the AUTO LINE reside in the AUTO ZONE or outside of the AUTO ZONE?

A.Gaffer's tape is not carpet.

Q33

Q.Can a preloaded disc be in contact with the carpet or does it need to be wholly supported by the robot?

A.There is no requirement that a preloaded DISC not touch the carpet.

G07

Q568

Q.Is it legal to use an AndyMark "Insight" Diagnostic Tool type of device while arranging the robot on the field, if it does not cause significant or repeated match delays? If so, must the device be part of the robot, or may it be plugged in and unplugged before the match starts?

A.1) We cannot rule definitively on the legality of a particular device. There are no Rules explicitly prohibiting using a diagnostic device while placing the ROBOT on the FIELD. 2) There are no Rules explicitly prohibiting this.

G08

Not Available

G09

Not Available

General Rules

Q587

Q.What situations constitute a violation of G18-1?

A.A strategy aimed solely at forcing the opposing ALLIANCE to violate a Rule is a violation of [G18-1].

G10

Q418

Q.Is a mentor the coach as per section G10 - Only TEAM members and their ROBOT may report to the ARENA for a MATCH. TEAM members are limited to: 1 COACH, 2 DRIVERS, and 1 FEEDER?

A.Please see the definition of COACH in the [Section 6 - Glossary](#).

Q90

Q.Are there any time limits on a robot being in any position on the floor, assuming that it is not pinning another robot?

A.The Rule referenced with your Question is [G10], which applies to the TEAM Members who may report to the ARENA during a MATCH. If you have a specific Question about a specific Rule, please reference that Rule when you ask the Question.

Q65

Q.Is there a maximum time limit that robots can in the loading area?

A.The rule referenced and the terminology used in this inquiry are not sufficient to be able to understand, and thus answer the question accurately.

G11

Not Available

G12

Q172

Q.Follow-up to Q20: Are the housing and chains comprising the low goal assembly considered part of the LOW GOAL, or are they considered parts outside of the FIELD? The game-specific drawings include the housing/chains, but the Glossary does not specifically define what the LOW GOAL consists of.

A.Per Section 2.2.1, the FIELD bounded by ALLIANCE WALLS, FEEDER STATIONS, LOW GOALS, and GUARDRAILS. Anything beyond (i.e. outside) the front face of the LOW GOAL would be considered outside the FIELD.

Q133

Q.Is it a violation of G3 or G12 for a ROBOT to intentionally extend an appendage outside the FIELD (specifically, the GUARDRAILS) provided the ROBOT appendage does not contact anything outside the FIELD (including not contacting the netting)?

A.While not explicitly unsafe, we cannot comment on the safety of hypothetical scenarios. Per [G12], ROBOTS may not contact anything outside the FIELD.

Q20

Q.If I put something into the low goal to drop Frisbee's into the goal is it considered leaving the field?

A.There are no Rules that prohibit breaking the plane of the LOW GOAL, however per Rule [G12], ROBOTS may not contact anything outside the FIELD.

G13

Not Available

G14

Q582

Q.If there is absolutely no physical damage or melting done to the frisbee but only a black marking (eg. shoe sole), would my team still be in violation of rule G14?

A.We cannot comment absolutely on hypothetical situations. The Blue Box in [G14] provides additional description of what may be considered damaging, specifically, "ROBOTS that gouge, tear off pieces, or routinely mark DISCS will be considered in violation of G14."

Q378

Q.Is the robot allowed to touch the plastic above the third level of the pyramid or is there a penalty for that? If so, how many points is the penalty?

A.There are no Rules explicitly prohibiting this, but ROBOT interaction with the FIELD is detailed in [G14].

Q296

Q.Can the Robot hang on to the goal at the top of the pyramid?

A. While not explicitly illegal, please see [G14].

Q295

Q. can you damage the bar on the pyramid while climbing?

A. This would be a violation of [G14].

Q218

Q. Regarding Rule G14: We have prototyped a wheeled thrower for the disks. When the wheel comes in contact with the disk, it leaves a permanent mark each time the disk goes through the thrower. I have seen a number of similar wheeled throwing videos from other teams online and they all seem to leave the same kind of marks on the perimeter of the disk. Upon close inspection, it is not merely a scuff mark or scratch. Material is not removed, but the surface of the disk is slightly melted and discolored due to the friction from the thrower. I assume this type of routine marking is prohibited in G14. Can you confirm?

A. The purpose of this forum is to clarify Rules. We will not use it to declare strategies or designs unequivocally legal or illegal as there are factors in play beyond this forum. With that said, it is likely that routinely melting the DISCS would be considered "damaging" and a violation of [G14].

Q88

Q. Would rule "G14 E- Damaging" include gripping the tower and indentions being left behind on the steel pipe or scaping the pipe oif the robot rubs against as it is pulled over a pipe. These marks would be similar to the teeth marks left from a pipe wrench or scratches.

A. Inadvertent scratching of FIELD elements is expected and considered normal wear and tear. However, if a specific ROBOT design requires FIELD elements to scratched/dented it will be subject to [G14].

Q66

Q. Is the center post in the PYRAMID GOAL considered part of the PYRAMID, and therefore exempt from Actions A-D of G14?

A. Yes, however if a ROBOT is perceived as damaging any component of the FIELD, the Referee will likely DISABLE the ROBOT. Teams will also be required to remove/alter the damaging MECHANISM before competing in subsequent MATCHES.

Q14

Q. Is it permissible to touch the top tray while climbing or depositing Discs?

A. There are no Rules explicitly prohibiting this, but ROBOT interaction with the FIELD is detailed in [G14].

G15

Q566

Q. Would a foul (per G15) be incurred by our robot if an intentional disruption of a frisbee's trajectory (with air) unintentionally sends the frisbee out of bounds?

A. We cannot comment absolutely on hypothetical situations. Generally, an intentional action which inadvertently results in a DISC leaving the FIELD will not be considered a violation of [G15].

G16

Q141

Q. Per G16 and G27 a robot is awarded points for a Level 3 climb if their climb is interfered with. If the disrupted robot attempts another climb after the incident, is it eligible for additional climb points?"

A. ~~Yes.~~ No.

G17

Not Available

G18

Q579

Q.Would a robot extending a device to touch the pyramid while shooting result in a foul on an opponent which contacts them under G30A or would it result in a technical on the team with the arm under G18-1. Does it matter if the robot extends the device before or after it is contacted by the opponent?

A.1) A ROBOT is protected while contacting its PYRAMID. 2) [G30]-A applies when the ROBOT is contacting its PYRAMID.

AUTO Rules

Q211

Q.Define Auto Zone

A.Please see [Section 6 - Glossary](#).

G19

Q60

Q.This is just a comment that the hyperlink to G19 in your answer to Q26 refers back to the game LogoMotion

A.Thank you for pointing this out. We have fixed the issue.

Q26

Q.If part of our robot is in contact with the carpet on our side, but has part of the robot in contact with the opponents carpet, and comes in contact with another opponent robot in autonomous, would a technical foul be assessed? If so, would the foul be assessed to both teams who make the contact?

A.If the ROBOT has not violated [G19], no penalty will be assessed.

G20

Not Available

G21

Q224

Q.Does this mean that other legal forms of wireless communication can be used during the Autonomous period? Such as IR remotes? What about a custom range finder on the driver station and the distance was read by the laptop and passed to the robot?

A.Please see [R94].

Q198

Q.During Autonomous do the rules allow the use of a Kinect attached to the operator console to provide input to the robot?

A.There are no Rules prohibiting this.

ROBOT Actions

Q160

Q.If the lowest point of the robot is resting on top of the the lowest rung, can the robot reach up and touch level 3?

A.If the ROBOT is contacting Level 1, it cannot simultaneously contact Level 3 and still have a valid CLIMB per *Section 3.1.5.2*.

Q140

Q.Can disks be manually fed to the robot or do they need to be picked up from the floor?

A.There is no requirement that DISCS be picked up off the floor, however please note [G37].

Q49

Q.if we are using the corners and contact the vertical pipe when grabbing the first rung as we climb are we then in 3 zones?

A.Contact with the PYRAMID'S vertical poles contained in a Level count as contacting the PYRAMID in that Level.

Q47

Q.If we our robot is on the floor and grabs the first rung to climb up, are then in contact with 3 zones as we would be on the floor and touching the the top of the first rung?

A.See the answer to [Q28].

G22**Q551**

Q.The wording "and/or" in G22 is confusing some teams and they do not think that the robot has to be in contact with their pyramid to exceed 60". Does a robot have to be in contact with their pyramid to exceed 60"? **A.**If in contact with the carpet in its AUTO ZONE and/or its PYRAMID, ≤ 84 in

A.No, provided it is in contact with it's AUTO ZONE.

Q411

Q.You measure height from the base of the wheels and above for total height. If a component extends below the wheels during climb is that included in total height?

A.Please see [Q128]. Yes.

Q401

Q.If we want our robot to have "arms" (a.k.a. extendable apparatus), is there a limit on how long it can be? It has to be within the 54" clinder throughout the game, right?

A.Beyond the Rules legislating overall volume limitations of the Robot during a Match, there are no Rules explicitly legislating the length of "arms."

Q232

Q.how tall can we be if we are touching the floor and/or pyramid? we want to build, some form of a climbing assembly, would that be legal?

A.Please see [G22].

Q221

Q.G22 - What is the significance of the "?" in the two bullets?

A.There is a bug with the PDF generation when converting symbols. We apologize for the inconvenience and are working to correct the problem. In both cases for [G22], the symbol missing is a less-than-or-equal-to symbol.

Q128

Q.G22 defines the height measurement as being relative to the robot. Does "in relation to the ROBOT" mean normal to the planes which define the BUMPER ZONE, or is height always measured in the direction normal to the floor from the lowest point on the robot (ROBOT-relative).

A.[G22] limits the distance from the lowest point on the ROBOT while standing normally on the floor to the highest point on the ROBOT.

G23**Q353**

Q.Follow-up to Q342: Why would G23 not permit the cylinder to be in any orientation to fit around the robot, while G23-1-A does permit it (per Q184/Q199/Blog)? Both G23 and G23-1-A have the

same "vertical cylinder" wording ("ROBOT'S horizontal dims. may not exceed a 54" diam. vertical cylinder").

A.[G23-1]-A includes "relative to the ROBOT".

Q350

Q.does the 54" perimeter around the pyramid include the robots bumpers?

A.Please see [Q44].

Q342

Q.Follow-up to Q315: To clarify your answer, are you confirming that G23 permits the cylinder to be in any orientation to fit around the robot (I would appreciate a "Yes" or "No")? Also, does "editorial here" in your answer refer to FRC Blog "Team Update 1-15-2013"?

A.No, [G23] requires the cylinder to be vertical. Yes, the hyperlink has been fixed.

Q315

Q.G23: Can the cylinder be in any orientation to fit around the ROBOT? If not, why? G23 seems to indicate the same thing as G23-1-A, and the Blog/Q184/Q199 indicate that G23-1-A allows the cylinder to be in any orientation to fit around the ROBOT (G23's blue box seems to imply "any orientation", too).

A.Clarification regarding the vertical cylinder relative to the ROBOT has been made in Team UPDATE - 2013-01-15, [G23-1], Q199 , and the editorial [here](#).

Q276

Q.If a robot is contacting its alliance pyramid and a non-alliance robot blocks its shot without contacting the robot, does the non-alliance robot get a penalty?

A.[G30] requires contact for a violation to occur.

Q275

Q.If a robot is contacting its alliance pyramid is it allowed to rest flat on the floor?

A.There are no Rules prohibiting this.

Q217

Q.In reviewing Game Manual Update 2013-01-15 Rule G23-1, Fig 3-5c appears to be different then the response to Q15. In fig 3-5c it appears that the cylinder follows the base (feet of the robot), Q15 indicates that the cylinder is always vertical. Which is correct.

A.You are correct. [Q15] was answered prior to [Team Update 2013-01-15](#). We have updated the answer to [Q15] to reflect this.

Q201

Q.In the 54 in. cylinder, is this measurement taken from the BUMPER ZONE or the FRAME PERIMETER?

A.The cylinder is the projection of all parts of the ROBOT. The cylinder includes BUMPERS.

Q199

Q.In rule G23-1 it states "may not have its horizontal dimensions exceed a 54 in. diameter vertical cylinder relative to the ROBOT..." could you explain what relative to the Robot mean?

A.This means that at least one 54 in. right cylinder with a height of 84 in. must fit around the ROBOT.

Q188

Q.Would the GDC be willing to explain the rationale for G23-1's update to render certain climbing strategies illegal?

A.Please refer to [this FRC blog post](#).

Q184

Q. Per G23-1, is it legal if a robot climbs the corner of the pyramid (robot frame is parallel to the corner bar), and extends an appendage towards the second rung for a total distance of 70 inches? <http://www.chiefdelphi.com/forums/showpost.php?p=1216338&postcount=66> has a good picture of this.

A. The purpose of this forum is to clarify Rules. We will not use it to declare strategies or designs unequivocally legal as there are factors in play beyond this forum. The 54 in. cylinder is not fixed to a specific reference point on the ROBOT when the ROBOT is contacting the PYRAMID. In other words, if a 54 in. right cylinder with a height of 84 in. could, in at least one orientation, fit around the ROBOT, the ROBOT is in compliance with [G23-1]-A.

Q156

Q. Is it legal to extend a wheelie bar outside of the robot's FRAME PERIMETER and/or BUMPERS after the match has begun, provided the entire robot remains within the 54in cylinder? If so, must these bars have bumpers, and do they count towards the 112in perimeter calculation?

A. There are no Rules explicitly prohibiting this. Only the FRAME PERIMETER requires BUMPERS per Section 4.1.6.

Q106

Q. How will the referees determine if your robot exits the 54" cylinder? I don't see how they would be able to call that infraction during the climbing process. Teams themselves may not even realize they exit the 54" cylinder.

A. The potential for a ROBOT to violate [G23] will be assessed at Inspection per [R03]. During a MATCH, Referees will call infractions to the best of their abilities. It is in the Team's best interest to minimize any ambiguity during game play.

Q89

Q. How long does a tipped robot have to right itself before it is assessed a TECHNICAL FOUL under G23? Is there anything a tipped robot can do to avoid a TECHNICAL FOUL? Is the TECHNICAL FOUL still assessed if a robot is tipped by the actions of an opposing team?

A. A tipped ROBOT will not be considered "continuously" breaking [G23]. Please see *Team UPDATE 2013-01-11* in reference to your final question.

Q59

Q. Are the bumpers included in the 54" cylinder limitation?

A. Please see the answer to [Q44].

Q40

Q. Rule G22 places height restrictions "in relation to the ROBOT." Does this apply to G23 (horizontal restrictions)? When climbing the pyramid, extending an appendage "out" from the robot but "up" in space might extend past the cylinder if it is taken relative to the robot, as opposed to the ground.

A. The height requirement in [G22] is relative to the ROBOT. The horizontal volume requirement of [G23] is relative to the FIELD (see answer to [Q15]).

Q29

Q. Is the 54" vertical cylinder perpendicular to the floor or to the horizontal axis of the robot? In other words if you tilt your bot 90 degrees does the vertical cylinder tilt with it?

A. Please see the answer to [Q15].

Q23

Q. This rule states that the 54" dia cylinder is horizontal. Is this perpendicular to the floor or the bottom plane of the robot. For example, if a robot is 60" tall and tips over, is a foul assessed as it is outside the 54" cylinder?

A. Please see the answer to [Q15].

Q15

Q.Is the 54 inch envelope diameter (figure 3-5) orientation sensitive ie is its axis always vertical regardless of the robots axis ie such as when the robot climbs?

A.~~The vertical cylinder specified in [G23] is not coupled with the ROBOT'S orientation and is always vertical.~~ Please see [Team Update 2013-01-15](#).

G24

Q323

Q.G24 states that Herding will be penalized but Bull Dozing will not be. If a Robot, with 4 Frisbees in it's possession, is going to it's scoring side of the arena and inadvertently catches a Frisbee with the front of their robot and pushes it along the floor, Will they be penalized for Herding? Unlike last years basketball, the frisbee will not just bounce off the robot or just roll off to the side. The arena could, at worst case, have around a 100 Frisbees on the floor.

A.Please see Part D in the Blue Box for [G24] for clarification on bulldozing.

Q153

Q.Will yellow cards or additional FOULS or TECHNICAL FOULS be assessed for repeated, intentional violations of G24? Is this considered within the spirit of the game?

A.This may be considered egregious behavior and assessed a YELLOW CARD or RED CARD per *Section 5.5.4*.

Q91

Q.If a Red Robot dumps DISCS on a Blue Robot and causes the Blue Robot to control more than 4 DISCS, is the Blue Robot assessed FOULS per G24?

A.Please see *Team UPDATE 2013-01-11* for an update on this situation.

G25

Q611

Q.Is it appropriate to hold tall robots (over 30") and short robots (under 30") to different standards when enforcing G25? i.e. can a ref determine that a tall robot is being impeded, but a short robot in the exact same circumstance is not. Or should G25 be enforced the same regardless of height?

A.No. Yes.

Q600

Q.If red robots block each side of the red pyramid (one red robot on each side of the pyramid), preventing a tall (over 30") blue robot from leaving their feeder area, is this a violation of G25? If the blue robot is short (under 30"), and can escape under the red pyramid, is this a violation of G25?

A.We cannot comment absolutely on hypothetical situations.

Q577

Q.Does G25 have the potential to apply (at the referees' discretion) to all types of 2-on-1 defense, or is the intent limited to field-centric blocks? Could intentionally impeding 1 robot with 2 defenders qualify as blockading if no other match flow is stopped?

A.We cannot comment absolutely on hypothetical situations. Generally, impeding a single ROBOT without blocking all traffic across the FIELD is not considered a violation of [G25].

Q491

Q.Is it in violation of G25 for an alliance to restrict/block access to one or two of the opposition feeder stations?

A.We rely on the judgement of our Referees to make this decision in each MATCH. Generally, blocking access to a FEEDER STATION is not considered a violation of [G25]. Blocking access to all FEEDER STATIONS would be considered a violation of [G25].

G26

Not Available

G27

Q576

Q. Does the term "the action" apply to the potentially illegal action, or to the act as a whole? Meaning, would one receive a foul for inconsequentially bushing the pyramid (G27 legal) while simultaneously performing an otherwise legal but consequential action?

A. We cannot comment on hypothetical situations.

Q284

Q. If a robot is defending the PYRAMID and is pushed into the PYRAMID through the actions of an opposing robot initiating their CLIMB is the defending robot liable for consequential contact under G27 or does G18-1 take precedence?

A. The purpose of this forum is to answer specific questions about specific Rules. We cannot comment absolutely on hypothetical situations. Generally, if a ROBOT is attempting to play the game, it will not violate [G18-1].

Q190

Q. What determines "inconsequential" contact with an opponent PYRAMID? Is consequentiality based on the consequence of the whole action, or only on how the itself pyramid is contacted? e.g. Is it legal to touch an opponent's pyramid while hitting climbing/shooting opponent (not contacting its pyramid)?

A. The determination of if an act is consequential or not is determined based on what happens because of the action. For example, if a ROBOT contacts the opponent's PYRAMID as it drives past it, and no opponent ROBOTS are nearby or affected, the action would be considered inconsequential. If a ROBOT contacts the opponent's PYRAMID and blocks an opponent's attempt to CLIMB, it would be considered consequential. Contacting an opponent ROBOT who is contacting its PYRAMID is illegal per [G30].

Q144

Q. If a ROBOT affected an opponent's CLIMB, would the offending robot be given a RED CARD, 30 points to the opposing ALLIANCE, and a TECHNICAL FOUL, or would the TECHNICAL FOUL not be given.

A. If an opponent's CLIMB is affected, the offending ROBOT will be given a TECHNICAL FOUL and RED CARD and the affected opponent will be awarded points for a successful Level 3 CLIMB.

ROBOT-ROBOT Interaction

Q256

Q. If we are actively shooting full-court shots from our protected loading zone and another robot attempts to defend against us and we push the other robot away to create space to shoot either with our robot's body or an extension, which robot will be penalized?

A. The purpose of this forum is to answer specific questions about specific Rules. We cannot comment absolutely on hypothetical situations. If contact in a protected area is made as an attempt to play the game, it will not be a violation of [G18-1]. Conversely, if a ROBOT repeatedly rams an opponent ROBOT, drawing penalties on that ROBOT, even though there's a clear egress from the area, that would be considered a violation of [G18-1].

Q255

Q. If our robot is in our protected loading zone and an opposing robot places itself directly in front of us such that we cannot leave the protected area without intentionally striking the other robot (causing a penalty), which robot is penalized?

A. The purpose of this forum is to answer specific questions about specific Rules. We cannot comment absolutely on hypothetical situations. With that said, if a ROBOT is perceived as trying to leave a protected area to play the game, this will not be considered a violation of [G18-1]. Conversely, if a ROBOT repeatedly rams an opponent ROBOT, drawing penalties on that ROBOT, even though there's a clear egress from the area, that would be considered a violation of [G18-1].

Q151

Q.Can a robot use air power to throw off discs launched by opponents?

A.There are no Rules explicitly prohibiting this.

Q126

Q.Can a robot block the one-point goal for the duration of the game?

A.There are no Rules explicitly prohibiting such an attempt.

G28

Not Available

G29**Q605**

Q.Robot A initiates a high speed collision with Robot B causing robot B to be tipped back; Robot A then continues driving and goes under Robot B and is damaged in the process. Is Robot B given a foul for damaging Robot A even though there was nothing Robot B could do to avoid this?

A.We cannot comment on hypothetical scenarios. Real-time evaluations will be made by Referees given the full context of the occurrence.

Q563

Q.Is the intent to only penalize applicable contact of an "extended element" in an opponents frame perimeter? Does it apply equally to contact by an opponent's main robot (i.e. its own frame perimeter/bumpers), as in colliding and wedging over/under another? If so, must the latter be deliberate?

A.As [G29] states, the intent is to penalize "deliberate or damaging contact with an opponent ROBOT on or inside its FRAME PERIMETER."

G30**Q608**

Q...... We shoot full-court shots from the protected feeder. A defender parks inches in front of us to block. We push him away to clear a shooting lane - contacting him while still in the protected area. We take a couple of shots. He returns. We push him away, etc. How is this to be called?

A.We cannot comment on hypothetical scenarios. Real-time evaluations will be made by Referees given the full context of the occurrence.

Q592

Q.Can disabled/non-functioning robots inflict G30? If a robot starts the match touching the pyramid, but does not move, and the opposing alliance touches them when traversing the field, would the opposing alliance receive a foul?

A.[G30] makes no distinction as to whether the protected ROBOT must be enabled or functioning.

Q591

Q.Can disabled/non-functioning robots incur G30? If a robot was traversing the field and loses connection near the opposing alliance pyramid and an opposing alliance moves in such a way that they are in contact with their pyramid and touches the non-functioning robot (without obvious G18-1).

A.There are no Rules explicitly protecting a disabled ROBOT from violating a Rule and incurring a penalty.

Q583

Q.Given that G30 has a clause stipulating that a foul will be called "regardless of who initiates contact," is it to be expected that in any situation where a robot comes into contact with an opposing robot that is touching its own pyramid, as it attempts to play the game, a foul will be

called?

A.We cannot comment absolutely on hypothetical situations. Generally, if the Referee does not believe [G18-1] is being violated, this statement is correct.

Q533

Q.My team and I have looked through the game manual and still cannot find the answer to our question; is there a set period of time that a robot may sit/stay/etc. in the taped off, loading zone portion? Clarification is very much appreciated. Thank you.

A.There is no time limit on how long a ROBOT may stay in the LOADING ZONE.

Q512

Q.A Red robot is trying to block a Blue robot and the Blue robot pushes until it is touching the Blue loading zone. Obviously a G30 violation by Red, but would this be a FOUL or consequential TECHNICAL FOUL or up to the judgement of the referee? Basically, can a robot force a G30 TECHNICAL FOUL?

A.We cannot fully assess hypothetical situations in this forum. Such calls will be left to the judgement of the Referee.

Q488

Q."Violation [of G30]: FOUL. If purposeful or consequential, TECHNICAL FOUL." If the action was purposefully done by the protected ROBOT, is the violation still considered a TECHNICAL FOUL?

A.No, "purposeful" applies to the actions of the ROBOT violating [G30].

Q348

Q.With reference to Q256: "If contact in a protected area is made as an attempt to play the game, it will not be a violation of [G18-1]." Where a referee has determined that contact to create space to shoot satisfies the above condition, will the opposing alliance be penalized per [G30]?

A.The purpose of this forum is to answer specific questions about specific rules. We cannot comment absolutely on hypothetical situations. Generally, if [G18-1] is not violated during a violation of another Game Rule (e.g. [G30]), the violation of that Game Rule (i.e. [G30]) will be enforced.

Q347

Q.With reference to Q255: "With that said, if a ROBOT is perceived as trying to leave a protected area to play the game, this will not be considered a violation of [G18-1]." In this case, can you confirm that the opposing alliance will still be penalized per [G30]?

A.The purpose of this forum is to answer specific questions about specific rules. We cannot comment absolutely on hypothetical situations. Generally, if [G18-1] is not violated during a violation of another Game Rule (e.g. [G30]), the violation of that Game Rule (i.e. [G30]) will be enforced.

Q229

Q.G30-According to Climb Points, a Robot is in contact with its Pyramid if it is touching Level 0. Please clarify the boundary of Level 0 for determining robot-to-robot contact.

A.Section 3.1.5.2 does not state that the Floor (Level 0) is part of the PYRAMID, it states requirements for CLIMBING which include the Floor as Level 0.

Q145

Q.Does this rule also apply to robots that are contacting the pyramid while shooting? That is to say, can a robot contact its pyramid to aim and shoot at its goals and consider this a "safe zone"? Or is this rule only active when climbing the pyramid?

A.[G30] applies regardless of what the ROBOT is doing, so long as it is contacting its PYRAMID.

Q138

Q.G30 has different penalties if the act is consequential or purposeful. Please define

'Consequential' and 'purposeful' with respect to violations of G30 in the LOADING ZONE.

A.Consequential means the action has an effect on the outcome of the MATCH. Purposeful means the action was deemed intentional.

G31

Q553

Q.According to G31, "A ROBOT will be considered pinned until the ROBOTS have separated by at least six (6) ft." If my robot is within 6 feet of an opposing robot, is my robot always pinning it? What action or series of actions constitutes a pin?

A.We cannot comment absolutely on hypothetical situations. Generally, being 6 ft away from an opponent ROBOT is not considered pinning that ROBOT. There is no predetermined set of actions that constitute a pin, so the colloquial definition is valid here, "to hold fast in a spot or position" (from dictionary.com). The Referee will indicate if a ROBOT is pinning an opponent ROBOT.

G32

Not Available

G33

Q324

Q.G33: This rule states that one robot can support another if one of them is touching a pyramid, but it is a technical foul if it is strategic. This seems like a contradiction to me--when would this not be strategic? How is strategic defined in this rule?

A.A Violation is only assessed on an ALLIANCE if a Rule is violated. A ROBOT supported (fully or partially) by another ROBOT while one of the ROBOTS is in contact with a PYRAMID would not be a Violation of [G33].

Q63

Q.Section 3.2.4.2 Climb Points: In the picture, each zone is shown to start immediately above the horizontal bar. Does this preclude hanging on the bar with a hook, or is there an allowance for a gripping device that goes over the top of the bar? If a device can go on top, is there a max size?

A.Please see answers to [Q28] and [Q13].

Q62

Q.G33: If one robot is supported by another robot, what are the rules determining which zones it is in? Is it by position, or does the zone of the first robot determine the zone for the second robot, or does the second robot need to be touching the pyramid?

A.Please see [Q61].

Q61

Q.G33: What the rules for scoring and zones when one robot is supporting another robot? For instance, can you carry the other robot entirely, either on top of the first robot, or by grabbing it with an arm? If you do carry another robot, does each robot get points according to the zone it ends up in?

A.The position and CLIMB validity of each ROBOT will be assessed independently per the criteria in Section 3.1.5.2.

Human Actions

Q602

Q.At the Waterloo Regional all stacking on the feeder slides was forbidden. The Head Ref was presented with Q567 and he stated this answer has been reversed through an internal directive from FIRST HQ. Our team would like to confirm this. Is stacking that does not cause damage illegal?

A.No.

Q567

Q.Is it permitted to stack discs on top of the FEEDER slides and/or LOW GOAL? If so, is there a limit to the number of discs permitted in stack?

A.There are no Rules prohibiting TEAMS from stacking DISCS on the slides at the FEEDER STATION, provided they're not damaged. As stacking DISCS on the LOW GOAL could affect the sensors used to score the MATCH, TEAMS must not stack DISCS on the LOW GOAL. DISCS on the LOW GOAL, or for that matter any interaction with the GOALS, could be considered an attempt to change the score displayed on the audience display and could result in a YELLOW or RED CARD.

Q426

Q.Can feeders handle discs prior to the start of the match and/or during the autonomous period?

A.There are no Rules prohibiting this.

Q226

Q.As a follow up to Q192, any climbing on the items listed in G10 is not explicitly prohibited and will not be penalized, correct?

A.[G10] does not cover TEAM members climbing on anything, it covers who may report to the ARENA for a MATCH. Generally, climbing (lower case) by humans on anything is unsafe and may be considered "egregious Team member behavior" and assessed a YELLOW CARD or RED CARD at the discretion of the Head Referee per Section 5.5.4.

Q192

Q.Are TEAMS (and particularly FEEDERS) required to maintain contact with the ground at all times? Would persistently leaving the ground for several seconds result in a FOUL or other penalty provided the team-member is not climbing on any parts of the ARENA?

A.There are no Rules that explicitly prohibit this.

G34

Not Available

G35

Q222

Q.G35- Is an alliance required to feed any disks onto the field during TELEOP?

A.No.

Q35

Q.Our question is in relation to rule section 3.2.7 and G35. Last season, Feeders weren't allowed to pass their hands through the slots to reload the bot. Does that rule still apply this year or are our hands allowed to pass through? Clarification is much appreciated. Thank you.

A.Per [G37], TEAMS may not extend any body part into the FIELD or contact any ROBOT at any time during the MATCH.

G36

Not Available

G37

Q484

Q.How many discs can be fed through the feeder slot at one time? Can one disc be used to push another disc through the feeder slot and into a robot? Can a feeders hand enter into the back feeder slot as long as it does not pass through the slot and onto the field.

A.The Rules do not limit the number of DISCS that can be fed simultaneously. The limit is purely in the geometry of the slot itself. There are no Rules prohibiting this. There are no Rules prohibiting this.

Q125

Q.Can we use a guide (such as a piece of wood board) to protrude through the human feeder slots that we would then use to connect with the robot?

A.No. See Rule [T22].

G38

Not Available

Game - The Robot

Q168

Q.Where can we find a download for the inspection checklist?

A.We are working to finalize the 2013 Inspection Checklist and will post it on the [Manual homepage](#) soon.

General ROBOT Design

Q546

Q.Is it required to put the school name or sponsor names anywhere on the robot, as was required in the past?

A.No, but per Section 4.1, Teams should acknowledge the support provided by the corporate Sponsors and Mentors with an appropriate display of their school and Sponsors names and logos (or the name of the supporting youth organization, if appropriate).

Q508

Q.When must the 3-D model of the robot be submitted?

A.There are no Rules requiring submission of a 3D model of the ROBOT.

Q496

Q.What type of device will be used to measure the robot frame perimeter at inspection? Will it be a fabric tape measure like used by a taylor, or some other type of device?

A.The Inspectors will use cloth tape measures to Inspect FRAME PERIMETER length.

Q492

Q.Can our team use a non-powered automotive jack to raise or lower a part of our robot?

A.We cannot declare an item explicitly legal or illegal on these forums, but there are no Rules that explicitly prohibit non-powered automotive jacks.

Q436

Q.If a leaf blower is added to the robot to deflect any frisbies flying over our robot, would it be considered a foul?

A.No, this would not be considered a FOUL. However, please see [R32].

Q404

Q.Is a fixed laser sight from a rifle permissible?

A.We cannot determine if specific devices are legal or illegal. This will be checked at Inspection at your event. Provided it does not violate any Robot Rules, particularly [R08] and part D in its Blue Box, there are no Rules that explicitly prohibit this.

Q400

Q.Can the robot use the tallest portion of the pyramid (also known as the five point scoring goal) to pull itself into the thirty point scoring goal?

A.There are no Rules explicitly prohibiting this, however please be sure not to violate [G14]-E.

Q320

Q.Can we go to the floor to without conveyor and touch the carpet to pick up frisbees, or no?

A.We do not understand your question and cannot answer it.

Q312

Q.Can a chrome color be used on the robot for the color scheme?

A.There are no Rules explicitly prohibiting this.

Q165

Q.Would a robot be disqualified, if the size could exceed the 54 in cylinder, but is programmed to never achieve this?

A.Please see the Blue Box below [R03].

Q164

Q.What will be used to check the 54 in cylinder size at the tournament (ie tape measure)? This is a Clarification to Q162

A.Inspectors will use a tape measure to check this dimension.

Q143

Q.The frame parimeter is defining the starting configuration. In the playing configuration, can frame parts slide (not articulate) to change frame parimiter dimensions, where the bumpers retain their original location with respest to the floor and their attached frame section?

A.No. Per [R02] the FRAME PERIMETER must be comprised of fixed structural elements contained within the BUMPER ZONE.

Q111

Q.Are electromagnets allowed?

A.There is no explicit Rule prohibiting electromagnets. However, any such device would qualify as a custom circuit/additional electronics. As such, the device must satisfy all applicable custom circuit/additional electronics Rules.

Q93

Q.The team 4673 has a question, our robot can throw the discs upside down?

A.There are no Rules prohibiting this.

Q58

Q.Wouldn't using a COTS vacuum intact conflict with the rules governing what motors/actuators can be used on the robot? Does it not count as an 'actuator'? Or are you implying the vacuum's motor would have to be 'swapped' with one allowed by R32? -Thanks

A.Correct. Only motors listed in [R32] are legal for use on the ROBOT.

Q21

Q.CAN I USE A 12 VOLT VACUUM CLEANER IN MY ROBOT

A.There are no Rules explicitly prohibiting this, but the vacuum must comply with all ROBOT Rules (specifically motor Rules).

R01

Q501

Q.Can I attach a disc (that has been painted) to my robot as a permanent part of the robot design and function?

A.There are no Rules prohibiting this.

Q277

Q.Please confirm, a robot without wheels "or other way of moving around the field" 1) would satisfy

the "mobility" requirement in R01 IF that robot could attempt to climb the pyramid. 2) would NOT satisfy the "mobility" requirement if it could NOT attempt to climb.

A.1) Confirmed. 2) Confirmed.

Q129

Q.Must the robot have wheels or some other method of moving around on the field, or can it be purely a climber?

A.Please see [Q10].

Q10

Q.Do we need a drive-train?

A.There are no Rules that require a drive base.

R02

Q524

Q.Does the height limit include frisbees? That is, if the robot surpasses a height limit only with 4 frisbees, is that legal?

A.If the Frisbees are part of the ROBOT (e.g. [Q501]), yes. If the Frisbees are DISCS, i.e. scoring elements, no.

Q376

Q.Would 1/8" thick aluminum plate, cut into a triangle and bolted to the frame of the robot for the purpose of connecting the corners of the frame, be considered part of the frame perimeter, or would this be exempt as per the blue box under R02?

A.The purpose of this forum is to answer specific questions about specific Rules. We cannot perform design reviews for legality as there are factors in play outside this forum. Generally, the only thing excluded from [R02] are those listed in the Blue Box for [R02].

Q339

Q.Regarding R02, can an axle bearing be considered a minor protrusion? For example we have axle bearings that are 1 1/8" in diameter that protrude 1/8" beyond the outer frame face.

A.These would not be considered "minor protrusions".

R03

Q623

Q.Do DISCS under the active control of a ROBOT count towards the limits defined by the PLAYING CONFIGURATION? STARTING CONFIGURATION?

A.No. No.

Q368

Q.Are we allowed to cut the ends of the C channel back to the angle brace in the corner in order to get our frame perimeter under the 112 inch rule?

A.There are no Rules explicitly prohibiting this, but please remember [R22] and [R29].

Q345

Q.Can your wheels/tracks extend beyond your 112" perimeter or are they to be included?

A.Please see [R02], [G05]-B, and the definition of FRAME PERIMETER and STARTING CONFIGURATION.

Q254

Q.Does the 112" perimeter include the bumpers? R02/03 references wrapping a string around the BUMPER ZONE to determine the perimeter of the robot which is what is causing confusion for our

team since the 54" cylinder DOES include the bumpers.

A.No.

Q203

Q.Given this years r3 only limits us to 112in perimeter robot is there anything against having a circular robot and since a circle has no corners are bumpers required for that robot? Or in the case of our robot it is pacman shaped, would the only bumpers necessary be at the 2 corners for 8 in?

A.For the purposes of [R22] ~~FRC and BUMPERS~~, a round FRAME PERIMETER will be treated as a series of infinite corners. As such, each corner would require at least 8 in. of BUMPER on each side. In the example of a circular FRAME PERIMETER, the entire FRAME PERIMETER would require BUMPERS.

Q137

Q.Does a robot with the convex hexagonal frame perimeter shown in R03 (Figure 4-1) satisfy R22 if one of the sides of that frame perimeter is less than 8 in. in length and that entire frame perimeter and all exterior corners are completely covered with bumpers?

A.Per the Blue Box in [R22], the 8 in. measurement is taken along the FRAME PERIMETER. For sides of the FRAME PERIMETER less than 8 in., this measurement wraps around the next outside corner(s) of the FRAME PERIMETER. Please see Team UPDATE 2013-01-15 for illustration.

Q116

Q.Do inside faces of the frame (such as with an H-shaped or U-shaped chassis) contribute to the 112" frame perimeter limit?

A.Please see [R03], particularly Figure 4-1.

Q72

Q.Does the height limit apply to temporarily extended parts? For example, if the robot will be under the limit for the majority of the game but at one point a part extends above the limit for a matter of seconds, is it breaking the rules?

A.Yes. Yes.

R04

Q367

Q.Sect 2.1 & 6.1 define the Discs as elements of the game, part of the arena. Sect 3.1.1 & G06 discuss the pre-load of discs at the beginning of the game. R04 speaks to the starting configuration. Can discs, at the beginning of the game, partially protrude outside the vertical frame projection?

A.There are no Rules prohibiting this.

Q166

Q.We have an L shaped robot design. When using the sting to define our perimeter we are left with a triangular section on the internal angle of the L. Can mechanism be mounted in the triangular area without violating R02 or R04?

A.There are no Rules prohibiting pieces of the ROBOT from being inside the FRAME PERIMETER.

Q135

Q.After the game starts, can the robot activate elements that protrude outside the bumper perimeter through the bumper zone? In other words can robot appendages be hanging in front of / overlapping the bumper?

A.There are no Rules explicitly prohibiting this.

R05

Q301

Q.R05 is causing confusion since it pertains to the weight of the robot and yet it mentions volume.

Is it implying that the bumpers are not included in the calculation of the horizontal width of the robot?

A.Please see [Team Update 2013-01-11](#)

Q230

Q.R05 mentions that the Anderson cable can include no more than 12 in. per leg. Does this mean that we can have only 12 in. of cable connecting the battery to the power distribution board or can we have a longer cable?

A.The restriction in [R05] applies to the battery side of the Anderson quick connect/disconnect pair. It does not restrict the length of the cable on the Power Distribution/Main Breaker side of the Anderson quick connect/disconnect pair.

Q44

Q.Does the 54" diameter cylinder include the bumpers or not. R05 ambiguous.

A.Yes, BUMPERS are considered part of the ROBOT for [G23]. This will be addressed in *Team UPDATE - 2013-01-11*.

R06

Q573

Q.Rule R06 states that hard plastic studs are not permissible as traction surface. In order to clarify the term "hard" is it reasonable to say that if a plastic stud is visibly deformable by light finger pressure then it is not considered hard?

A.There is no true specification for "hard" or "soft" in regard to [R06] and the final determination of ROBOT part legality is left up to the LRI at each event. Generally, material that visually depresses as it contacts the FIELD surface (i.e. carpet) is not "hard".

Q136

Q.We want to make absolutely sure that metal alligator clips placed on robot wheels to keep the tread in place do not violate any robot rule. Thank you

A.The purpose of this forum is to clarify Rules. We will not use it to declare items or designs unequivocally legal as there are factors in play beyond this forum. The best we can offer here is that [R06] does not apply to sub-surface features that do not transmit propulsive and/or breaking forces between the ROBOT and FIELD.

Q100

Q.Do the conector clips for wheel treads (Andy Mark #am-0894) comply with the rule number 4.1.1.6?

A.Sub-surface features that do not transmit propulsive and/or breaking forces between the ROBOT and FIELD carpet are not regulated by [R06].

R07

Q432

Q.Can you please further clarify the 112" FRAME PERIMETER. Does it mean only the actual frame were the bumpers attached? If we have a chute, for example, that is 18" above the frame and sticks out past the frame allowed before the game starts? Trying to understand how high does FRAME PERIMETER go.

A.For clarification of FRAME PERIMETER, please see the Blue Box on [R02]. Per [R04], in the STARTING CONFIGURATION, no part of the ROBOT may extend outside the vertical projection of the FRAME PERIMETER, with the exception of minor protrusions such as bolt heads, fastener ends, rivets, etc.

Safety & Damage Prevention

Q561

Q.do we have to integrate some protection for any chain system in the robot?

A.There are no Rules explicitly requiring this.

Q529

Q.Could our team use liquid rubber on our robot in order to prevent carpet damage?

A.There are no Rules explicitly prohibiting this.

Q513

Q.Do we need to get an MSDN sheet for the gear boxes, from andy mark, and on the batteries for safety papers? If so do you know where we can find them?

A.Inspectors are likely to request MSD Sheets for any material on the ROBOT that could be considered a violation of Rule [R08]. Grease is not likely to be considered hazardous. Battery MSD Sheets can be found at via internet search.

Q452

Q.Is it legal to build one set of bumpers covered with a cloth that is made of the red fabric on one side and the blue fabric on the other? That will allow us to change the colors easily with the use of velcro and/or bolts instead of building two sets of bumpers.

A.Yes.

Q326

Q.Is it legal to contact the carpet with lexan or other material to create a wedge type mechanism to pick up frisbees along the floor??

A.Provided the material does not violate [R06] or its use violate [G14], there are no Rules that explicitly prohibit this.

Q290

Q.If our tracks extend from front to back, where would we place them as there would be no solid corner; just track. Our sides would be protected as would the front except where the track would be. There is no place to secure the bumpers in front of the track. Bumpers will impede the use of our track

A.Each ROBOT must be designed to accommodate BUMPERS per the rules in *Section 4.1.6*.

Q282

Q.Our robot will possibly be using a tracked vehicle. What are bumper requirements for a tracked vehicle?

A.The BUMPER Requirements do not change based on the ROBOT'S method of propulsion.

Q269

Q.We have read every section of the manual many times and have copious notes;-) Are you stating that bumping is not a violation of G28, specifically the phrase "inhibition of ROBOTS" ? We do not want to have a game strategy that is incorrect.

A.BUMPER-to-BUMPER contact is not "attachment, damage, tipping, or entanglement of ROBOTS" and thus not an explicit violation of [G28].

Q258

Q.Would bumping a robot when it is trying to shoot be a violation of R08 or Gracious Professionalism? (Assuming all other rules are followed.)

A.This is not a violation of any ROBOT Rule, nor is it explicitly a violation of Gracious Professionalism. However, we recommend you read Section 3 - The Game of the Game Manual, specifically Section 3.2.6 - ROBOT-ROBOT Interaction.

Q252

Q.Does the battery have to be mounted vertically as in past years, or can they be mounted in any orientation?

A.There are no rules legislating the orientation of the battery.

Q244

Q.When in the teleop period of the match can your robot have a part in contact with the floor? In other words can you have a plastic ramp like part to help pick up the disks?

A.There are no rules explicitly prohibiting this.

Q194

Q.R10 If you don't plan on climbing above zone 1, do you still need to provide fasteners/mounting points for the belay system on your robot? If you don't will this violate R10?

A.Yes, [R10] requires all ROBOTS to have attachment points for the belay system.

Q76

Q.Can I make a fanbot?

A.We cannot comment on the legality of specific (or non-specific) design ideas.

R08

Q564

Q.Would FIRST be willing to publish further guidance on the guard/protection requirements for open-wheeled shooters, in order to help teams operate safely and prepare for smooth and consistent inspection processes?

A.Due to the large number of design parameters which affect the safety of a particular ROBOT MECHANISM it is not possible to provide absolute guidelines regarding compliance with [R08]. When considering MECHANISM safety, teams are advised to consider factors such as velocity, exposure, and material ratings. The Lead Robot Inspector at each event has final authority on any ROBOT'S compliance with [R08].

Q507

Q.Our team wants to decorate the protective sides of our robot like a Companion Cube from Portal, with our team colors gray, silver, black. This link shows design and color samples. <http://i.imgur.com/TTJdc4i.jpg>. Is the square shape and color too close to the vision target? This is not intentional.

A.The purpose of this Q&A System is to answer specific questions about ULTIMATE ASCENT Rules; we cannot provide remote review of designs and implementation. Generally, decorations that are not retro-reflective are unlikely to be considered mimicking the VISION TARGET.

Q505

Q.Is there a required fluid that has to be in the Andy Mark gear boxes? A inspector told us there was a required fluid and we have no idea what it is or if they are wrong.

A.There is no fluid required by FRC rules. The manufacturer may recommend lubricants, however.

Q476

Q.The 2013 Inspection states "Decorations: Cannot interfere with other ROBOTS' electronics and sensors (particularly via color distraction) and be in spirit of 'Gracious Professionalism'" and cites rule R08. Does this preclude us from attaching colored LEDs to our robot for decoration?

A.There are no Rules explicitly disallowing LEDs.

Q317

Q.We are considering gripping the pyramid cross-members with pipe-wrenches to climb. Would this be allowed? We understand that objections might be damage to the cross-member tubes, or possible slipping of the wrench on the pipe.

A.While not explicitly a violation of [R08], this may be a violation of [G14].

Q306

Q.Regarding R08 and Q152 can you provide any more guidance as to when a defensive device (shield) becomes a safety hazard? Waiting for the device to pass an inspection seems to penalize potentially safe devices. Is a 54" by 60" square of volleyball type netting unsafe? Ping-pong netting? Windowscreen?

A.We cannot comment absolutely on hypothetical ROBOT designs or strategies, as there are factors in play beyond this forum. Per the Blue Box on [R08], a shield would be illegal if it was designed or used to obstruct or limit the vision of any drivers and/or coaches and/or interfere with their ability to safely control their ROBOT.

Q299

Q.Would interfering with Frisbee shot from other robots mid-flight be a violation?

A.There are no Rules explicitly prohibiting this.

Q152

Q.Would a screen used to block other robot's shooting mechanisms be in violation with R08 A?

A.While not explicitly in violation of [R08]-A, this item would invite detailed Inspection to ensure compliance.

R09

Not Available

R10

Q371

Q.For the belay system, what are the sizes the eyelets must be, in the manual it's only one brand but no sizes. And here in the Netherlands they are rare for us, can we use something similar from a other brand? What size eyelet does it need to be?

A.If a Team decides to use an eyelet as its belay system attachment point the eyelet must meet the requirements of [R10]-D.

Q215

Q.Can the belaying attachment points be used during a match by one robot to lift another robot (assuming all the requirements of R10 are met at the end of the match)?

A.There are no Rules explicitly prohibiting this, so long as all applicable Game (e.g. [G04]) and ROBOT Rules are followed.

Budget Constraints

Q287

Q.Team 4400, recently an Axis representative lent us an Axis model P1204 camera to use it for our robot's vision system, meaning that the camera is not team's property, so we were wondering if this was possible to do, also we have access to a 212 PTZ model, are these models possible to use on the game

A.Please see Rules [R12] and [R14], particularly the second example in [R14]'s blue box.

R11

Q586

Q.Since there is a Jaguar ESC in the KOP, would the accounting cost of 10 Jaguars on a robot be zero dollars? (Over last 10 years, I have always accounted for quantity of parts above the number available in the KOP, but Q469 suggests I have been over billing.)

A.Please see [Q469]. Rules from previous seasons do not apply to Ultimate Ascent.

Q581

Q.If the classmate laptop and the 2012 KOP Kinect are used on the robot, does it qualify for the Kit of Parts exemption to R11?

A.Yes.

Q535

Q.Are the cost of items from previous years' kit of parts excluded from the BOM (ex. 8 slot cRIO), and are quantities taken from this years' kit of parts or from previous years' (ex. we received 1 jaguar in this year's KOP, but 2 in last year's KOP)? To rephrase, are items in any KOP exempt from cost?

A.Generally, no. However, the 2013 KOP includes 1 Jaguar and a voucher for 2 additional Jaguars (or Victors, depending on the Team's preference). The KOP also includes a cRIO (so, even if a cRIO wasn't delivered to a veteran team, it's still considered part of the KOP). For the purposes of FRC, and [R11] particularly, there is no distinction between the 4-slot and 8-slot cRIOs.

Q509

Q.For a veteran team is the cost of a cRio included in the BOM.

A.This would be a Kit of Parts item and excluded per [R11]-B.

Q485

Q.If we use a right-hand window motor from a previous kit of parts what is the cost that we use in our Bill of Materials?

A.Please see the definition of [Kit of Parts](#).

Q469

Q.What price do we put in our Bill of Materials for the left window motor (PN 262100-3040) that is the KOP? We are using 2 of these motors from other Kit of Parts from previous years.

A.There is no quantity limit on Kit of Parts items in regards to the Cost Accounting Rules. If the item is a Kit of Parts item, it does not require an associated cost on the BOM.

Q468

Q.Does the Rookie Kit (Green Bin) count towards the Kit of Parts? or do we have to include all the materials in the BOM?

A.Please refer to the definition of the Kit of Parts in [Section 6: Glossary](#).

Q458

Q.On the Bill of Materials, does one include the FIRST Choice or PDV items as KOP, thus cost of zero? How should we indicate that the item was FIRST Choice or PDV?

A.Yes. It is not required that you separate the different KOP components.

Q330

Q.Does the kit of parts count for the total cost of the robot?

A.Please see [R11]-B.

R12

Q460

Q.Thank for your answer at Q442, but our idea is to record the game from the robot perspective, for a presentation on our HS, not to use as an information during the game. it's possible?

A.There are no Rules explicitly prohibiting this.

Q442

Q.Is it possible to use a GoPro Camera to record the games for further use? As long as we don't break any of the price, weight or security rules, is there a problem?

A.There are no Rules explicitly prohibiting this, but remember [R74].

R13

Not Available

R14

Not Available

R15

Not Available

Fabrication Schedule

Q542

Q. We want to unbag our competition robot for a demonstration @ a University Engineering Day 2-23-13. Is that permissible if we unbag it there and rebag and tag before we leave? We would reference the when and why on the bag and tag form.

A. Such requests should be submitted via frcteams@usfirst.org.

Q439

Q. Does the C-Rio have to be included in our robot when bagged?

A. No, as it is a COTS item.

Q403

Q. Can we transfer the unmodified 4 mecanum wheels and 4 transmissions from our competition robot to our practice robot before bag and tag without it counting toward our 20 pounds of weight we can pull?

A. [R21] restricts the total weight of FABRICATED ITEMS which may be brought to the event. There are no rules restricting COTS items brought to the event.

R16

Q406

Q. Is the OPERATOR CONSOLE considered part of the ROBOT? Can an OPERATOR CONSOLE built before kickoff be used in competition this year?

A. No. Yes.

R17

Q477

Q. Our robot has a modular construction. May we bag each module separately or do they all need to be in the same bag? Separate bagging would make it easier to transport our bot.

A. So long as the Bag & Tag process is followed for each bag, there are no Rules prohibiting this.

R18

Q572

Q. Per 5.6.2 "Robot Access Period" Schedule, when exactly does the "7 day period preceding a 2-day event" begin-one week from when the event initially lets teams in to set up their pit and inspect their robot (usually a 4-10pm day before matches begin), or does it begin on the first full-day?

A. The former.

Material Utilization

Q601

Q. Can we use a bucket on our robot that was made at Home Depot. It is used for our hopper.

A. There are no Rules explicitly prohibiting this.

Q506

Q.Can we add a car scissor jack to our robot to adjust the height of the launcher? This is a COTS system but we would have to build something so we could attach a motor to it to make it move.

A.Please see [Q492].

Q502

Q.we have an electrical lineal actuator that extends 5 inches long, we are planning to use it as a climbing mechanism, is it legal to use it at the competition?

A.Please see [R32].

Q493

Q.Is there any rule preventing the use of rope to assemble the robot (lashing)? Additionally, if the rope is cloth filled, can it extend into the bumper zone (it is softer than the bumpers)?

A.1) There are no Rules that prohibit this. 2) No.

Q441

Q.Is expanding foam allowed on the robot?

A.There are no Rules prohibiting this.

Q438

Q.What kind of glue is allowed on the robot?

A.There are no Rules explicitly prohibiting or allowing any specific adhesives, so long as all other ROBOT Rules are followed.

Q421

Q.Can we use magnets to support the climbing on the pyramid ?

A.There are no Rules explicitly prohibiting this.

Q365

Q.Is there a rule prohibiting the use of temporary adhesives in contact with the frisbees - assuming they do not leave any residue and do not in any way damage the discs ?

A.No.

Q300

Q.Can teams use more than one camera, Axis 1011 and/or Axis 206, on the robot? Use is subject to communication rules (port usage, etc.).

A.There are no Rules explicitly prohibiting this.

Q212

Q.We have an abundance of foam , same type as "pool noodles" that we can cut to make bumpers. Is that legal ?

A.No. Per [R24], BUMPERS must use pool noodles.

Q101

Q.Are there any restrictions on the use of commercially available gears?

A.There are many restrictions, all of which are located in *Section 4 - The ROBOT*.

Q94

Q.We have another question, can we use any kind of infrared light on the robot?

A.There are no Rules explicitly prohibiting infrared light, assuming all other ROBOT Rules are followed.

Q54

Q.Are there any restrictions on the type of camera we are allowed to use on the robot for robot vision? It must cost less than 400\$, be an IP camera, are we allowed to use a IP conversion module (ex. standard camera converted to IP)?

A.There are many Rules in *Section 4 - The ROBOT* that restrict the type of camera allowed on the ROBOT.

R19**Q95**

Q.Can we use TETRIX by PITSCO parts for our robot?

A.These parts are not inherently illegal, but must comply with all ROBOT Rules.

R20

Not Available

R21**Q558**

Q.Are the componenets of the control board (Jaguars, cRIO, digital side car, etc.) considered fabricated parts? Clarification is very much appreciated. Thank you.

A.No. These parts, individually, are COTS COMPONENTS.

Q552

Q.We are attending a 3-day event on week 2. Can we completely assemble a robot upgrade outside the bag right now (less than 30 lbs) that we can install on the Thursday of that event? Does any inspector need to see or weigh the upgrade prior to it being installed on that Thursday?

A.1) Yes. 2) This will be at the discretion of the Inspectors at the event.

Q547

Q.For clarity, when is the 30lb limit assessed? Is it legal to have 60lbs of spares in the car and only bring in 30lbs eventually as you grab the ones you need? Related question, can a team bring a practice bot into a regional event for demonstration purposes only?

A.1) [R21] limits what can be brought to the event. 2) No.

Q478

Q.Can we remove our electronics board and leave it unbagged with the COTS parts mounted and bring it to the competition as a fabricated part? Or would the parts mounted be counted as COTS parts?

A.There are no Rules prohibiting this, but it is a FABRICATED ITEM and subject to [R21].

Q464

Q.Does a motor mounted to a wheel classify as a fabricated item? If so, could you disassemble the pieces and bring the separate components, with the separate components not being part of the 30 lb limit?

A.Yes. Yes, provided this returns them to an unaltered, unmodified state, per the definition of COTS in *Section 6 - Glossary*.

Q445

Q.What makes up the 30 lbs of fabricated materials? The tools and machines to work on the robot with the materials do they count in that? Also does the 30 lbs of material have to be tagged and bagged with the Robot on stop build day?

A.Please see *Section 6 - The Glossary* for the definition of FABRICATED ITEMS. No, the 30 lbs allowed per [R21] are not required to be bagged with the ROBOT.

Q427

Q.Our team is a rookie FRC team in MAR. What actions are permitted BETWEEN February 19th and our 6 hour "Robot Access Period"? For example, can we create a component while the robot is bagged and then install it during the 6 hour access? Or must the component be built AND installed during the 6 hours?

A.We apologize for the confusion. Please see [R21] as updated in [Team Update 2013-02-08](#).

Q344

Q.Do the bumpers have to be bagged and Tagged on February 19th? Some confusion with R21 and admin manual section 5.4 where it says bumpers can be bagged separate from robot with their own tag.

A.Per [R21] BUMPERS do not have to be bagged. This will be corrected in *Section 5.4* of the *Administrative Manual* in a Team Update. We apologize for the confusion.

BUMPER Rules

Q555

Q.An exact match for the blue bumper material does not exist in our town. We intend to show up with blue bumpers that are a little darker than the FRC logo color. What happens?

A.Please see the blue box below [R24]-D.

Q475

Q.Is there a maximum size that the bumpers can be?

A.There is no overt restriction on BUMPER size. BUMPER height and depth are dictated by the construction specifications in [R24]. There is no restriction on BUMPER length, provided it is attached to the FRAME PERIMETER as defined in the BUMPER Rules.

Q459

Q.Can any red or blue material be used to construct bumpers or must it be the specific one for First?

A.There is no requirement that Teams use the material in the Kickoff Kit for their BUMPERS. The only requirements on the material are found in [Section 4.1.6](#).

Q405

Q.Hey. I was wondering if there were any rules governing exactly where the mechanism used to attach the bumpers to the robot must be placed and how far from the corner they must be. Thanks.

A.Please see [R29].

Q386

Q.Can the bumper cover cloth have patches or seams?

A.There are no Rules explicitly prohibiting this, assuming all other BUMPER Rules are followed.

Q379

Q.Can we cut the bumpers if they still cover all the corners of our robot, but just aren't rectangular?

A.All BUMPERS must meet all BUMPER Rules. If you would like to rephrase and re-ask citing a specific Rule and clarification needed, we may be able to better assist.

Q341

Q.If a robot is designed exclusively as a climber - never leaves contact with the pyramid during the 2:15, does it need bumpers? Also, is there a clearance distance between any robot part and the carpet for any part of the robot other than the wheels? If so, what is that clearance in inches.

A.1) ROBOT rules apply to all ROBOTS, regardless of MATCH strategy. 2) No, not explicitly.

Q332

Q.Q256 and R-26 clarify that bumpers cannot move vertically. However, Q174 states that bumper height is measured when the robot is on a flat surface. Is it correct that bumpers can shift vertically while not "standing normally on a flat floor" as long as they are stationary when on a flat floor?

A.No, per [R26], BUMPERS may not be articulated relative to the FRAME PERIMETER.

Q294

Q.Are the corners along the frame perimeter that are formed from an opening in one side of the frame (like the lower left-hand example in Figure 4-2) considered "outside corners" and, if so, require 8 in of bumper along the frame perimeter from those points?

A.Gaps in the ROBOT'S frame that do not create corners in the FRAME PERIMETER are not considered "outside corners" of the FRAME PERIMETER.

Q246

Q.Can the bumpers be covered near the end of gameplay in order to facilitate pyramid climbing? i.e. with a ramp that unfolds over the bumpers from the main robot body

A.There are no Rules prohibiting this.

Q209

Q.Would any variance to the cross-section be permitted in the spaces between the conforming sections? i.e. along the perimeter length where a design would require a gap in the bumper, would a partial (less than 5" tall) section be allowed instead of no bumper at all?

A.No. All BUMPERS must be constructed to the specifications of *Section 4.1.6*.

Q130

Q.Can bumpers be pentagonal or wedge shaped instead of rectangular so long as the top and bottom are parallel to the ground and are within the bumper zone?

A.All BUMPERS must be constructed as described in *Section 4.1.6*. The cross-section of the BUMPERS must always look like that in Figure 4-4.

Q18

Q.If a robot is shaped like an "L" according to R22 do the inside edges of the "L" need to have bumpers?

A.Per R22, all outside corners of the FRAME PERIMETER are required to be protected by BUMPERS. See the definition of FRAME PERIMETER for information on how to determine the FRAME PERIMETER for your ROBOT.

R22

Q490

Q.The manual states that BUMPERS at a minimum must be on an 8in by 5in rectangular piece of plywood . Would a single diagonal cut on a corner of the plywood backing be allowed if this diagonal cut removed less than or equal to 2 square inches of plywood, and was not on an outside corner of the ROBOT? This would create a 5-sided plywood backing with dimensions 8in by 5in with a 45deg cut 2in from a non-outside corner.The FRAME PERIMETER would still be appropriately BUMPERED, and the BUMPERS would be in compliance of . The fasteners for the BUMPERS, and overall structural integrity are unaffected by this modification.

A.No.

Q424

Q.If we have a frame segment that is shorter than 8" do we still need to have an 8" bumper as there would be a section of the bumper unsupported by the frame

A.Please see [Team Update 2013-01-15](#).

Q399

Q.As described in the bumper rules and Figure 4-2 updated, If a robot has a cutout in the frame at a 45 degree angle, not a 90 degree as shown, is that corner considered an outside corner or does it

fit into the bottom left diagram with the 90 degree angle.

A.The angle of a corner is not the determining factor for whether or not it is an outside corner of the FRAME PERIMETER. Please see [R02] and the Glossary for the definition of FRAME PERIMETER.

Q319

Q.We know that bumpers must extend inwards from the corner = to or greater than 8". We also know by the diagrams that we can have a vertical noodle in the corner. Can we have a vertical noodle at the other end of the 8"? (the 1.25 radius of the noodle can make a difference for climbing)

A.Pool noodles in BUMPERS may only be vertical if they are filling a corner per [R27]. Otherwise, the BUMPER cross section must match that of Figure 4-4.

Q289

Q.Regarding Q173 and the bottom left robot frame perimeter in figure 4-2. May the right side of that robot have a frame segment of less than 8". If so, may the bumper be also less than 8"? Q137 does not seem to answer this particular question.

A.Please see [Team Update 2013-01-15](#)

Q239

Q.in fig 4-2 Why is the top right corner of the lower left image different than the top left corner of the lower right image? Both bumpers stop at the edge of a perpendicular cutout in the frame perimeter. one is ok, one is not

A.In Figure 4-2, the FRAME PERIMETER of each ROBOT is denoted with a black outline. All corners marked as OK have at least 8" of BUMPER on either side of each outside corner of the FRAME PERIMETER. The corner marked as NOT OK on the bottom-right ROBOT does not have 8" of BUMPER covering the diagonal side next to the outside corner.

Q235

Q.Which of the following Bumper designs depicted in the image linked below are legal and which are not legal? <http://i.imgur.com/cXQIJ.png>

A.The purpose of this forum is to clarify Rules. We will not use it to declare strategies or designs unequivocally legal or illegal as there are factors in play beyond this forum. With that said, please see [Team Update 2013-1-15](#) and [R22]

Q219

Q.After reading update 2013-01-15, I am more confused about what is a legal bumper/perimeter configuration. Is there any way to submit a sketch to find out if it is a legal design?

A.The purpose of this forum is to clarify specific Rules. We will not do design reviews or declare strategies or designs unequivocally legal as there are factors in play beyond this forum.

Q187

Q.Must the through-axis of each individual bumper segment be parallel to the ground? Or may it be tilted provided it is fully within the BUMPER ZONE and meets all construction, frame dimensions and rigid attachment requirements?

A.Please see [Q42].

Q173

Q.Can there be fewer than 8 in. of BUMPER on each side of each outside corner if the relevant side is less than 8 in. long? Can the right side of the robot in the bottom of figure 4-2 have either segment less than 8 in?

A.Please see [Q137].

Q112

Q.http://www.icarus2081.org/web/images/img_20130111_194015_903.jpg In this illustration, the black crosshatched area represents the robot frame while the red crosshatched area represents a

correctly built bumper. Are there any more bumpers required on this corner?

A.We cannot comment on legality of specific (or non-specific) ROBOT design.

Q42

Q.Do bumpers have to be parallel to the ground?

A.There is no explicit requirement that BUMPERS be perfectly parallel to the floor, however the requirement that BUMPERS be constructed per Figure 4-4, the vertical cross-section, does implicitly mean that a BUMPER should not overtly deviate from this orientation.

Q41

Q.Do bumpers have to be at the same height around corners? For instance, the bumper on one side starts 2 inches off the ground and the bumper on the adjacent side starts 5 inches off the ground.

A.No, provided they are all located entirely within the BUMPER ZONE per [R25].

Q9

Q.Using a Tri-Lambda like drive platform (<http://www.andymark.com/product-p/am-0666.htm>) What would be the requirements for the bumpers?

A.The Rules regarding BUMPERS, Section 4.1.6, are the same regardless of the shape of the ROBOT.

R23

Q487

Q.We built 2 sets of bumpers, one red and one blue, it says in the rules that the bumpers can weigh no more than 20 pounds. So we were wondering if, for the 20 pounds for us, counts for both sets of bumpers combined or both sets individually have to weigh less than 20 pounds?

A.Per set.

R24

Q597

Q.Are there any restrictions on what purposes bumper hard parts may be used for?

A.No.

Q595

Q.Are there any limits to the weight of the "rigid fastening system" as long as the total 20lb weight limit (per R23) and the 1" hard parts limit (per R24-E) are obeyed? In short can large steel components be a part of the fastening system?

A.There is no explicit weight limit for the fastening system.

Q578

Q.Per Rule 4.1.6.4 R24, (Bumper Cross Section) the thickness limit for hard parts is 1" in the horizontal dimension. Is there height limit for "hard parts" attached to the back side of the bumper?

A.No explicit limit exists.

Q550

Q.Per rule 24 , As long as the bumper stays within the overall dimension can a bumper be angled. For instance the one side of the bumper starts 2" off the ground and the other end is 5" off the ground.

A.Please see [Q42].

Q528

Q.R24 E. states that the bumpers must make a robust connection with the frame (no hook and loop). Is this referring to the wood backing or the fabric? More specifically, can we attach the fabric with a hook and loop to the wood, which is attached robustly to the frame?

A.This Rule specifically references the attachment of the BUMPER to the FRAME PERIMETER. There are no Rules explicitly regulating the method of attachment of different parts of the BUMPER.

Q480

Q.Can weight be added to the bumpers as long as you stay under the 20 lbs limit

A.No, BUMPERS must be constructed as outlined in [R24].

Q463

Q.What is the allowable tolerance of the pool noodles? The rules state approximately 2 ½" We currently have access to 2" noodles. Is this legal?

A.Please see [Q444].

Q444

Q.I have not been able to find 'pool noodles' but I did find foam tubing is the same density and material however it is only 2 inches in diameter, can we use these? What if we put a half inch of padding behind these noodle? How 'approximate' do they need to be?

A.No. BUMPERS must be manufactured per the requirements of [R24]. The use of the term approximate is to allow for minor variations in diameter given the variety of shapes permitted.

Q407

Q.Is it premitted to place a velcro strip (if it is not in an alliance color) in a visible place on the bumpert, as shown in the picture? <http://i.imgur.com/ePfD28H.png>

A.Please see [R24]-D. Meanwhile, the purpose of this forum is to help clarify specific rules, and thus we will not declare specific designs legal or illegal in this forum.

Q373

Q.Hello, We would like to construct a single bumper set with a black fabric covering it. an additional "skirt" will be used so to cover this fabric with Red or Blue for each match. We would like to know if this setup is legal. Thanks, FRC 3316

A.Hi! There are no Rules explicitly prohibiting this, but remember that all parts of the BUMPER must remain in the BUMPER ZONE per [R25].

Q298

Q.Can we use MDF 18 mm instead of plywood 19,2 mm(3/4 inch) for the bumpers, in Holland 3/4 inch plywood can not be ordered. FRC 4481

A.Per [Section 4.1](#), if your team has a question about a metric-equivalent part's legality, please e-mail your question to frcparts@usfirst.org for an official ruling.

Q253

Q.Are bumper sections allowed to move up vertically on a rigid track mechanism that is mounted to the main frame.

A.No, please see [R26].

Q43

Q.For the purposes of lightening the robot, would balsa wood reinforced with a cured carbon fiber tape outer layer be considered "solid, robust wood" for use as a bumper backer?

A.Carbon fiber is not wood.

R25

Q560

Q. If a robot is NOT "in the process of CLIMBING", but deploys a mechanism that tilts the robot relative to its "wheels on the floor" orientation (while meeting G23), do the bumpers need to remain within the bumper zone in order to satisfy R25?

A. Yes.

Q559

Q. Regarding R25: (1) Per Q174, does a robot need to be in contact with the pyramid to be considered "in the process of CLIMBING"? (2) If a robot is NOT "in the process of CLIMBING", but deploys a mechanism that tilts the robot relative to its "wheels on the floor" orientation (while meeting

A. 1. Yes. 2. Please see [Q560].

Q337

Q. R25 says that the BUMPER ZONE is in reference to the Robot standing normally on a flat floor. What is defined as the "normal" position of the robot? What constitutes a change to a different normal? What is defined as a change in robot position to one that is abnormal?

A. "Normal" and "abnormal" have no formal definitions for the 2013 FRC Game. The intent of [R25] is to ensure that when ROBOTS are on the carpet, all BUMPERS are between 2 and 10 in. from the floor.

Q181

Q. Regarding R25, how is the orientation of a ROBOT "standing normally on a flat floor" determined? Are changes in the robot's configuration during gameplay taken into account?

A. The orientation of a ROBOT is determined by the Team during the design of the ROBOT. If there are multiple configurations of the ROBOT, the BUMPER ZONE will be evaluated while the ROBOT is in its STARTING CONFIGURATION. Regardless, if the ROBOT has multiple configurations, the BUMPERS must remain in that BUMPER ZONE for all configurations throughout the MATCH while the ROBOT is on a flat floor.

Q174

Q. In response to the answer of Q147: When a robot is in the process of climbing the pyramid, is it considered to be NOT "standing normally on a flat floor" and therefore the bumper height requirement is not applicable?

A. Correct. When the ROBOT is in the process of CLIMBING, the ROBOT is not standing normally on a flat floor, and it will be considered not standing normally on a flat floor.

Q147

Q. In regards to R25 and "standing normally on a flat floor", I interpret this to mean that a robot, while climbing, can extend a mechanism more than 10" below its 'normal' lowest point (the bottom of its wheels, probably) without violating the bumper rules. Is this correct?

A. The purpose of this forum is to clarify Rules. We will not use it to declare strategies or designs unequivocally legal as there are factors in play beyond this forum. The best we can offer here is that the height requirement of the BUMPER ZONE is measured when the ROBOT is standing normally on a flat floor.

R26

Q409

Q. Can bumper sections be joined with hinges

A. There are no Rules explicitly prohibiting this, as long as all other BUMPER Rules are followed.

Q318

Q. Can the corners of our bumpers be hinged for the purpose of easy installation, if they do not articulate when attached to the robot?

A. Provided the fastening system is in compliance with all other Rules, particularly [R24]-E, there is nothing explicitly prohibiting this.

R27

Not Available

R28

Not Available

R29

Q519

Q.According to , part A, the bumpers must be attached to the frame. Is this measurement taken from the inside corner of the FRAME PERIMETER or the outside corner? Additionally, does the definition of FRAME PERIMETER in this instance include securely attached vertical projections?

A.1. Please see the definition of FRAME PERIMETER. We don't see the possibility for an "inside corner" of the FRAME PERIMETER. 2. We do not understand this question.

Q467

Q.[R29] C states that "no section of the BUMPER >8 in. may be unsupported." In this context, does "supported" imply true attachment by fastener to the frame, or simply that the frame-to-backing gap is < 1/4" and that the section is backed by the frame?

A.The latter.

R30

Not Available

R31

Q336

Q.I ran in to a discrepancy on rule R31. It says that the stroke size has to be 1/2 inch at least, but it does not specifically design what a stroke is. If the bumper number is an 8-bit style font, where there are no corners, do the lack of corners count as a 0 inch stroke size or are they not counted?

A.The stroke limit is a minimum requirement regardless of font.

Q272

Q.Q203 clarifies that "For the purposes of FRC and BUMPERS, a round FRAME PERIMETER will be treated as a series of infinite corners." Would the same be true for the purpose of R31, which requires that Team Numbers NOT wrap around a corner of the frame perimeter?

A.You're right, our apologies for the contradiction. [Q203] has been refined. For the purposes of [R31], there are no corners.

Motors & Actuators

Q390

Q.Team #1095 was going to order the following from Andy Mark. <http://www.andymark.com/product-p/am-2081.htm> Upon reading the description we need to know if it is legal to use this year. (aka: Fisher Price motors or Andy Mark?)

A.The only legal motors for use are listed in [R32].

Q305

Q.can we use any kind of servo motors?

A.Please see [R32].

Q231

Q.Team 3024 would like to utilize a winch from Harbor Freight in its design. This winch has a motor and gear box integrated into its construction. Would this be legal?

A.Only the motor part numbers in [R32] are legal for use on the ROBOT.

Q202

Q.Are we allowed to use these linear actuators? <http://progressiveautomations.com/track-linear-actuator-c-106.html> Or can we use other linear actuators off-the-shelf? Or can we just use the linear actuator and insert a different motor that is allowed?

A.Please see the answer to [Q200].

Q200

Q.Are we allowed to use these linear actuators
http://www.firgelliauto.com/product_info.php?cPath=121&products_id=259

A.There are no Rules explicitly prohibiting linear actuators, but linear actuators may not be used with a non-FRC legal motor. There is no Rule that prevents replacing the stock motor with a motor from the approved motor list in [R32].

Q84

Q.Is there a limit to the total number of motors allowed on the robot? For example, can we have 6 CIM and 4 Banebots and 4 AndyMark?

A.[R32] specifies the maximum allowable quantity per type of motor. There is no specific limit on the total quantity of motors used, provided all other Robot Rules are followed.

R32**Q527**

Q.Please clarify why this answer is labeled "DRAFT".

A.[We apologize for the confusion.](#) The "DRAFT" label is used internally to create Answers and should not have been published with the Answer.

Q520

Q.The method of control for "ARA window motors" are defined in [R52] but "ARA window motors" are not made explicitly legal in [R33]. Are window motors from the Automotive Recyclers Association legal to use this year?

A.DRAFT: ARA Window Motors are "Window Motors" and "Various in FIRST Choice" and are thus legal per [R32].

Q474

Q.Can we use a worm gear combination motor/gearbox (Part # NPC-41250) from <http://www.robotmarketplace.com/products/NPC-41250.html> ?

A.No, only the motors listed in [R32] may be used.

Q455

Q.Are we allowed to use a server fan (blower type) to cool our electronics en masse?

A.No, [R32] permits only fans that are part of a motor controller or COTS computing device or fans included in the 2013 Kickoff Kit, *FIRST* Choice, or as a Talon motor controller accessory.

Q440

Q.Is the Taigene van door motor, available thru FIRST Choice in 2012, legal for use in 2013?

A.No.

Q437

Q.Are continuous rotation servos considered servos or Motors? For Example is a Hitec HSR-1425CR Continuous Rotation Robot Servo considered a servo?

A.If the manufacturer sells the item as a servo, it is a servo.

Q435

Q.We were thinking of using the following servo from Vex Robotics: 3-Wire Servo P/N: 276-2162 Is this a legal servo to use this year?

A.Per [R32], ROBOTS may use an unlimited number of COTS servos with a maximum power rating of 4W each at 6VDC. Per [Section 4.1](#), Teams may be asked to provide documentation proving legality of non-2013 KOP items during Inspection where a Rule specifies limits for a legal part.

Q430

Q.Trying to get clarification on linear actuators based on answer to team FRC3478. The linear actuator itself needs a motor to drive the rod up and down. Is the ruling that it still counts as one of the "motors" and can't be used? It is a way for us to raise and lower our shooter. It is all one part.

A.Unless the motor in the actuator is one of the motors listed in [R32], the motor cannot be used. There are no Rules prohibiting replacing the illegal motor in the actuator with a motor that is legal.

Q415

Q.i ordered motor M5-RS550-12 from Banebots. The motors I received are labeled RS550VC-7527. Are these in fact the same motors and legal for competition, or have they sent me unauthorized motors?

A.We apologize for the confusion. Please see [R32] as updated in [Team Update 2013-02-05](#).

Q413

Q.Our team was able to obtain some linear actuators made by Pololu (<http://www.pololu.com/catalog/product/2337>) this mechanism has already a 12V motor, per R32 we are able to use a solenoid actuator with these electrical characteristics, but the stroke size is ambiguous. Can we use it?

A.Motors are not electric solenoid actuators. The only motors that may be used are listed by part number in [R32].

Q392

Q.Table 4-1 in R32 specifies that we may use "Electrical solenoid actuators, no greater than 1 in. stroke and rated electrical input power no greater than 10 watts (W) continuous duty at 12 volts (VDC)". Can we run 24VDC electric solenoids at 24V as long as they are

A.Per [R32], electric solenoid actuators must be run at 12 volts.

Q309

Q.Is the banebots RS-555 motor legal for use this year? It is listed in table R52 for the motor controllers, but isn't in R32 for the motors (it is the only banebots motor that isn't listed).

A.Good catch! This omission will be corrected in a Team Update.

Q250

Q.Table 4-1 under the Andymark PG entry only shows am-2161 and am-2194, not am-0914 which was supplied in the Kit of Parts both in 2012 and this year. Is this a legal motor?

A.The am-0914, as supplied in the KOP, is not a motor, it is an assembly of a motor (am-2161) and a gearbox.

Q233

Q.We have a AndyMark am-0914/pg71 gearmotor assembly which was supplied to us in our KOP and it is not listed on the table in R32 but it is listed in the competition manual, section 4 2013 Technical resources. Are we missing something in the table or is this an error?

A.[R32] regulates motors, not motor/gearbox assemblies (except where the gearbox is considered integral to the motor, see [R33]). Please see the AndyMark PG entry in *Table 4-1*.

Q148

Q.If we remove the gear boxes from motor part number 262100-3030 or 262100-4040 and do not use the motors is it ok to use the gear boxes with other motors

A.There are no Rules prohibiting this.

Q120

Q.The motor model number PM25R-35F-1001 is not on the legal motors list, however it was included in the startup kit this year. Is this motor permitted to be used and if so what type of motor (motor name) category does it fall in.

A.This is the manufacturer part number for the mini-CIM motor (p/n 217-3371). The legal part number should also be printed on this motor.

Q109

Q.The cim motor from FIRST choice is part number: PM25R-45F-1003, however the legal motor from R32 is listed as PMR25R-45F-1003. It is never safe to assume, so, is the cim motor from FIRST choice legal for this season despite the extra R listed in the game manual?

A.We apologize for the confusion. Please see *Team Update 2013-01-15*.

Q64

Q.I have several andymark and banebot motors that I purchased last year with similar p/ns but R32 p/ns are partials. Are the andymark pn 00968-9015, banebot RS550VC-7527, Andy mark PG71 gearmotor/am-0914, and denso throttle motor 6 from last year legal this year?

A.Only the motor part numbers in [R32] are legal for use on the ROBOT.

Q48

Q.Can we use these: Andymark PG-188 Gearmotor am-2193(first-choice Andymark PG-27 Gearmotor am-0915(,,) Festo Pneumatic rotary actuator DCM-16-270-P We're the first native Dutch team from the Netherlands. So we don't know if we can use the Festo one. (Hence the question.) We have it here at our school

A.Legal motors are listed in [R32]. Pneumatic components must comply with all ROBOT Rules, especially those in *Section 4.1.10* to be legal. If you need to request permission to use an alternate part to a required part because of availability in your country, please send a detailed message (include the legal part number that's not available to you, why it's not available, and the requested alternate) to frcparts@usfirst.org.

R33

Q526

Q.Allow us to clarify: Would it be legal to replace the motor portion of the assembly with an identical motor portion from another identical assembly? The final assembly would use a window motor on its proper window motor gearbox and be functionally identical to one that is unmodified.

A.No, this modification is not allowed per [R33].

Q517

Q.[Q148] states that the motor of part number 262100-3030 and 4040 are not integral to the assembly. In the case of overheating motors, would it be legal to swap just the motor portion of the 262100-3030 and keep the gearbox in place?

A.[Q148] does not permit use of the window motor without its gearbox. Please see Rule [R33] and its Blue Box.

Q434

Q.In the spec sheet on AndyMark the servos are listed as "360 Modifiable: Yes". (For example the HS-322HD Servo) Would performing this change be a violation of the rules?

A.The only modifications allowed to motors, servos, or electric solenoids are listed in [R33]. If the modification is not listed in [R33], it is not a legal modification.

Power Distribution

Q580

Q.May a small strip of LED's be powered by a limit switch directly hooked up to the power distribution board?

A.This is permitted per [R72].

Q541

Q.Can a Spike Relay be used to control decorative LED lights?

A.Please see [R52].

Q465

Q.Can we connect several servos to a single pwm channel?

A.There are no Rules prohibiting this.

Q422

Q.Can you have more than one battery?

A.Please see [R34].

R34

Q615

Q.Are batteries labeled "NP18-12BFR" legal? Our regional planning committee (Hawaii) is wondering whether or not NP18-12BFR batteries are legal. They were clarified in a team update last year as legal but no one asked this year and the RPC is not a team that can post questions. In 2011, the NP18-12BFR was made legal in this team update.<http://www.usfirst.org/uploadedFiles...pdate%2020.pdf> The BFR suffix I was told means that it has a fire retardant case. The reason why they are asking is that we are having a lot of international teams and do not believe that spare parts will have enough batteries to realistically last them competitively throughout the regional. I believe last year each team only got one or two batteries. The RPC would like to purchase extra batteries locally for these teams to borrow but only the NP18-12BFR is available. Thanks!

A.Both the NP18-12B (supplied in the Kit of Parts) and the NP18-12BFR (the same battery with a fire-retardant case) are allowed.

Q182

Q.Pertaining to Rule R34 and Power Distribution, are there any rules directly prohibiting the use of a netbook, running on its own battery, on the robot?

A.A netbook computer would be a COTS computing device, allowing the exception clause of [R34] to apply.

R35

Not Available

R36

Not Available

R37

Q396

Q.1. Is the compression of a closed-loop COTS pneumatic (gas) shock considered energy storage achieved by deformation of robot parts and so acceptable for use on the robot? 2. If not, would it be acceptable under any other rule?

A.1. Yes.

Q387

Q.Is a bungee cord under tension considered deformation of a robot part?

A.Yes. See [Q325].

Q325

Q.Is bungee cord under tension an acceptable form of stored energy to be used during the match?

A.This would be legal per [R37]-C.

R38**Q499**

Q.Is it illegal to have two Power Distribution Boards connected to ONE 120 amp breaker?

A.[R38] permits the use of one, and only one, Power Distribution Board.

Q249

Q.Is it illegal to have more than one 120A circuit breaker?

A.Yes, this would be a violation of [R38].

R39

Not Available

R40

Not Available

R41

Not Available

R42**Q453**

Q.Does the "for Inspection" in R42 apply only to the robot inspection process or must the PD board and circuit breakers be easily visible for inspection by the field crew?

A.Yes. No.

R43**Q598**

Q.Are we allowed to use a lower amperage breaker in the 40A slots on the distribution panel?

A.Please see [R46].

R44**Q251**

Q.If a 5V circuit is powered in parallel with the wireless bridge (connected on the 5V side of the 12V-5V power adapter), does this violate R44, or is the 12V-5V converter itself considered the electrical load?

A.Yes, this would be a violation of [R44].

R45

Not Available

R46

Not Available

R47**Q397**

Q.We would like a clarification of this answer. Since R47 states that it does not prohibit the use of smaller values of fuses "within custom circuits" for additional protection, does a motor controller fused for 30A conform to the intent of the rule?

A.A motor controller is not a custom circuit. The values in Table 4-2 that say "Up to" are maximum values.

Q394

Q.Can a motor controller be used in a 20A fuse on the power distribution board to power a motor?

A.Please see [R47].

Q308

Q.We are creating a custom circuit and would like to get power from the Power Distribution Board using 18AWG wire and would like to install a 5 amp Snap Action breaker in the PD Board. Is this FRC legal?

A.Please see [R46], [R47], and [R48].

R48

Q554

Q.May 20AWG wires be connected to the power distribution board for custom circuits requiring

A.Yes, provided they are protected by a breaker less than or equal to 5A and all other applicable ROBOT Rules are met.

Q454

Q.Is there a minimum required wire gauge for PWM (Victor 888/Talon) power, ground, and control signals?

A.There is no Rule governing minimum PWM wire gauge.

Q443

Q.A COTS Raspberry Pi does not ship with cables. A COTS micro-usb cable, which safely powers the device at 5V and < 1 Amp when unaltered, is cut (therefore technically a custom part) and spliced into a second official 12V-5V Andymark power converter. Does this qualify for the exemption to R48?

A.We apologize for the confusion. Please see [R48] as updated in [Team Update 2013-02-12](#).

R49

Not Available

R50

Q624

Q.Are teams allowed to use colored tracers on +V wires? Also, are output wires from Spike Relays or Speed Controllers (leading to motors, LEDs, compressor, etc) considered "constant polarity"? And if not, can we use any colors we like for these wires?

A.Yes. Please see [R50]. Please see [R50].

Q540

Q.Does the color in this rule denote the color of the insulator or the color of the wire. If we have clear wiring for our positive leads is it legally white or brown since the copper has a reddish brown color and the insulator is clear. We feel our wiring is identifiable <http://imgur.com/a/QLFLe>

A.The color requirement is not specific to the insulator or the wire, i.e. if a reasonably astute observer would say the wire is white, it's white.

Q536

Q.[R50] A day before shipping we found out from a head inspector that our wiring is illegal since the wiring is clear blue and clear white. Is the purpose of the colors to easily differentiate the positive and the negative leads. We have solid blue and solid white shrink tubes marking the ends.

A.Yes, that is part of the reason. Wiring that is not compliant with [R50] will not pass Inspection.

Q498

Q.[R50]B says that only Black or blue can be used for negative. In this previous year's KoP servo/PWM cables have been provided with Yellow-Red-Brown wires. Literal interpretation of [R50] would make them illegal as the negative is brown. Please clarify? Or are PWM/sensors not "Active Circuits"?

A.For the purposes of FRC, PWM signals are not considered "active circuits."

Q489

Q.A local helicopter manufacturer has donated shop time and access to a laser printer to mark and code the wire. The aircraft wire avail. is only white. are we allowed to laser mark the white wire clearly with black or cover the wire with black heat shrink?

A.No.

R51**Q456**

Q.R51 limits spike relays to PN 217-0220. The same spike relay was previously sold with PN SPIKE-RELAY-H until the VexPro transition in late 2012. The old PN is shown on the VexPro product page. Does R51 limit spikes to those purchased this year with the new PN, or should the old PN be listed as well?

A.We apologize for the confusion. Please see [R51] as updated in [Team Update 2013-02-12](#).

Q81

Q.Is it legal to use either model of Victor speed controller or the new Talon speed controller without an attached fan, provided that adequate airflow is provided in some other way?

A.The only legal modifications to motor controllers are listed in [R65].

R52**Q416**

Q.can we use several electric solenoids with only one spike?

A.No, per [R52], unless otherwise noted, each power regulating device may control one and only one electrical load.

Q377

Q.In Table 4-4 the first section (am PG motor to am-2235) under the Jaguar, Victor, or Talon motor controller column has the statement "Up to 2 per controller". Is the statement applicable to only the M3-RS390-12 motor or the entire section?

A.This applies to all motor part numbers listed in that row.

Q340

Q.Regarding R52, Can the solenoid breakout be used to control low power lighting on the robot? Lighting would not exceed the load requirements of R70.

A.There are no Rules explicitly prohibiting this.

Q274

Q.R52 lists motor controllers to be used with allowable motors. I do not clearly see a listing for the snow blower motor fc13-067/am-2235. What are the requirements for motors controllers for this motor? Given its electrical characteristics, I would think that it belongs in the first row of the table.

A.Good catch! Please see [Team Update 2013-01-22](#).

Q99

Q.Can an actuator have more than one controller attached, e.g. two window motors are attached to a Jaguar with a relay between each window motor and the Jaguar?

A.No, per [R47], [R52], and [R54].

R53

Q522

Q.Can we attach 2 HS-422 servo motors to a single PWM output on the digital sidecar using the "Y" signal cable from the KOP

A.There are no Rules explicitly prohibiting this.

R54

Q381

Q.Are COTS power adapters modified to use standard power connectors considered "custom circuitry" for the purposes of R54?

A.Yes. Please see [Q372].

Q372

Q.Does using a power supply (connected to one of the PD board breaker terminals) to regulate power (for example to provide 5v at high current to power a COTS Computing Device or to provide regulated 12v to power a Kinect) violate by altering the power pathways to a sensor or circuit?

A.No. The power supply is considered a part of the custom circuit to which it is supplying power, not an "other" circuit, legislated by [R54].

Control, Command, & Signals System

Q562

Q.May we use a (small) motor as a rotational speed sensor? (connecting the "sensor motor" shaft to the rotating axle and the electrical output from the "sensor motor" directly to the analog input board)

A.Please see [R32].

Q523

Q.With reference to Q522: For two legal motor controllers powering separate legal motors, may we use a spike relay to select which controller receives the signal from a single PWM output? (Essentially "selecting" the Y cable through the spike)

A.No, please see [R53] and [R67].

Q466

Q.We cannot get video feed from our camera (m1011) to our Drivers Station. We can get video from the camera using Internet Explorer and the camera's IP Address. We have updated the Drivers Station, camera, and D-Link. We are using Wind River (c++). Please reply if you know how to help us.

A.Please submit technical questions to the *FRC Technical* Q&A System hosted [here](#).

Q423

Q.Our team would like to either change the connector or use a DB-25 cable to relocate or angle the Analog breakout and the Solenoid breakout. Would this be a legal change? It would just be to reduce the overall height of the components sticking out of the top of the c-Rio.

A.There are no Rules explicitly prohibiting this.

Q417

Q.I am downloading the labview software but it comes up on the computer as the 2012 addishion. what is going on?

A.The purpose of this Forum is to answer specific questions about specific Rules. For technical help, please see the FRC Technical category on the [Supplier Q&A](#).

Q369

Q.We are using Windows 8 to setup the new wireless router. It errors out when launching the utility tool. We get "An error occurred while initializing the computer network settings". Has this been seen by anyone else and is there a solution/hint.

A.The purpose of this forum is to answer specific questions about specific Rules. For Technical Help, please see the "FRC Technical" section [here](#).

Q327

Q.What are the maximum numbers of controllers for the movement of the robot or an aspect of the robot that we're allowed to use?

A.Provided these devices accommodate *Section 4.1.3*, there are no Rules explicitly limiting the number of these devices used on the ROBOT.

Q322

Q.Our lab view disc says 2013 but it installs 2012. We do not have any experienced programmers so the NI help tutorials don't match what we see on the screen and do not help us. Is there an update that we missed or did we just get the wrong version? Can we download the newer version?

A.The purpose of this forum is to answer specific questions about specific Rules. For technical questions, please post to the FRC Technical Section of the [Supplier Q&A](#).

Q197

Q.This is Team 1537 and we are having some trouble leading all the new software onto the FIRST laptop that we were given. Last year we noticed that some teams were using laptops like HPs and Dells. We have a HP computer and would like to use it to control the robot this year. Is that against the rules?

A.Please see [R90].

Q114

Q.Are we allowed to use the Microsoft Kinect from 2012 KOP as part of our robot, along with an under 400\$ laptop wired to it? WE didn't find any restrictions to this, but want to be sure before developing the idea. Thanks.

A.This is not explicitly prohibited, as long as all other ROBOT Rules are followed.

R55

Q243

Q.Can an arduino be used to relay commands sent to it from the CRIO.

A.The answer to this question depends on the commands and the device(s) to which they're being relayed. Please see [R67] and [R68].

Q149

Q.We want to use a coprocessor on the robot. Rule 55 says that coprocessors are allowed in an aside. Can these coprocessors be powered from their own source, such as a laptop battery, or must they be powered from the main power source for the robot?

A.Please see [R34].

R56

Not Available

R57

Not Available

R58

Not Available

R59

Q457

Q.Do we have to have a camera on our robot? Our coach received an email update that seems to say that we need to update software to use a camera and we can't compete without it and we were wondering if the camera was required?

A.No, there is no requirement that a ROBOT must have a camera on it. The [Driver Station Update](#) released on 2/5/13 must be installed by all teams.

Q446

Q.What cameras are we allowed to use and what are we not allowed to use? After reading the rules we are wondering if we could facetime the robot by either hooking up a camera connected to the router or just an ipod to the robot?

A.There are no Rules explicitly allowing or disallowing any specific camera, provided that all other ROBOT Rules are met, specifically [R56]. For technical help with getting video from the ROBOT to the OPERATOR CONSOLE, please use the FRC Technical section of the [FRC Supplier Q&A](#).

R60

Not Available

R61

Not Available

R62

Q447

Q.Could we use wireless LED lights on our robot? The LED's themselves are allowed but we would like to know if we could use the wireless remote in the pit for color changing, dimming, on/off etc...

A.No, per [R62].

Q370

Q.The rule states that no wireless communication can be used on the robot, however, the example states that wireless devices are prohibited on the robot. If a wireless device is on the robot, but the wireless capabilities not used (e.g. an Android device in airplane mode), is the device allowed?

A.Provided that all wireless capabilities are disabled, including any WiFi or Bluetooth capability, this would meet the requirements of [R62]. However, the burden of proof that all wireless capabilities are off at all times is with the Team. If the FIELD Staff suspects that this device is causing interference, the Team will be asked to remove it.

R63

Not Available

R64

Not Available

R65

Q412

Q.Can we use 20A auto-resetting fuses on the Spike relay, instead of the automotive fuses, for items other than compressor (motors, solenoids, etc.)

A.No.

Q313

Q.In part J. it states: "Limit switch jumpers may be removed from a Jaguar motor controller and a custom limit switch circuit may be substituted." Does the Microswitch (PN: V7-2B17D8-048) provided in the KOP constitute an example of a custom limit switch circuit?

A.Yes.

R66

Not Available

R67

Not Available

R68

Q606

Q. Does R68-2 preclude the use of the PWM splitter provided in the kit of parts to use one PWM output on the Digital Sidecar to control two Jaguars (or a jaguar and another speed controller)?

A. No.

Q223

Q. R68- This rule references Jaguar, does this rule also apply to other motor controllers?

A. Since [R68] deals with controlling a motor controller via CAN, and only the Jaguar can be controlled via CAN, [R68] applies to only the Jaguar.

R69

Not Available

R70

Q525

Q. R70 limits the cumulative power of the solenoid breakout to values that make sense when the Solenoid Breakout shares 24v power with the cRIO. Does R70 also apply if the solenoid breakout is powered by 12v from the PDB which does not have the same power restrictions as the 24 volt supply?

A. Yes, [R70] applies regardless of the source of Solenoid Breakout power.

R71

Q180

Q. Does the NI9472 Module need to be plugged into slot 3 of the cRIO? We have a damaged pin in slot 3. Can we plug this Module in slot 4?

A. [This page](#) has just been updated to include this detail. While there is no rule legislating where that module is installed, the FPGA image accommodates that module in slot 3 and/or 4 (in the four-slot cRIO-FRCII) or slots 3 and/or 7 (in the eight-slot cRIO-FRC).

R72

Q628

Q. May a non-KOP 12V->24V DC-DC convertor be used to power a Solenoid Breakout board, so that donated KOP 24V pneumatic solenoids may be used in quantities greater than can be supported by the PD board's 24V supply that provides shared power to the cRio?

A. No, per [R54].

Q349

Q. Are we allowed to connect a custom electronic circuit to the Digital Side Car Relay outputs for the purpose of controlling decorative lights on the robot? TNX for your efforts.

A. There are no rules explicitly prohibiting this.

R73

Not Available

R74

Not Available

Pneumatics System

Q549

Q.Is it allowed for one Festo valve to control 2 pistons? The intention is to deploy two security hooks at the same time when climbing.

A.There are no Rules prohibiting this.

Q504

Q.Can a mechanical regulator can be used to prevent a second air tank from filling until the first has reached a certain pressure?

A.Yes, provided all other Rules are met, particularly [R82] and [R88].

Q428

Q.Are pressure transducers (analog pressure sensors) legal for use on the high pressure side of the pneumatic system, in addition to the standard pressure switch used to control the compressor? Assuming that all specification (maximum pressure, etc) are met.

A.No. Please see [R82].

Q420

Q.Are teams still allowed to use plastic tank clips on their robot this year? We just wanted to make sure that it is not against any rule this year please let us know as soon as you can. Thank you!

A.There are no Rules that prohibit this.

Q419

Q.Are the older KoP Festo VPLE18-M5H valve legal for use? The specification from FESTO are obsolete, however these valves were legal in previous FRC seasons.

A.To be legal for use, any pneumatic solenoid valve must meet the requirements of all ROBOT Rules, specifically, [R78]-C. Per *Section 4.1*, the Team is responsible for proving a part's legality during Inspection.

Q408

Q.In the Pneumatics Manual it tells us that we were going to get some parts but we noticed that it was not in the kit we got. Do we need to apply for these parts or pick them up some where?

A.The Kit of Parts includes three components: the Kickoff Kit, *FIRST* Choice, and the Virtual Kit. Pneumatic components for the 2013 FRC season are distributed via *FIRST* Choice.

Q391

Q.With regards to the recent issue concerning the plastic pneumatics storage tanks from Clippard as noted on Bill's Blog and email sent from Clippard. Will the use of them be at our own risk or will there be a rule change to ban them from use at the competition?

A.At this time, we do not expect to prohibit this tank.

Q351

Q.R78 B. refers to pneumatic pressure vent plug valves, indicating there could be multiple of them. R88 uses the word valve indicating there is one single one. Please clarify. Background: if using a 3 position solenoid-center locked, pressure could remain on one side of a cylinder-it needs to get bleed

A.Per [R88] the ROBOT must have a single pressure vent plug valve, unless the compressor is located off the ROBOT. Per [R88]-A this pressure vent plug valve must be able to release all stored pressure when operated.

Q204

Q.Is it legal to use a venturi style vacuum generator that is getting compressed air from the robots pneumatic system?

A.There are no Rules that explicitly prohibit this. Please see the Blue Box in [R78].

R75

R76

Not Available

R77

Not Available

R78

Q618

Q.a maximum Cv of 0.32 I want to know what conversion I should use for l/min. I asked Festo and this is the response - Typically you can use somewhere between 850 to 1000 l/m for 1 Cv depending on how conservative you want. So 2010 Festo is 340...380 l/min calc.one way it is legal another it is not???

A.There is no specific conversion required in the Manual. Provided the Team can adequately justify their method for determining legality to the Inspector (via supplier recommendations, etc.), the item may be used.

Q614

Q.Per [R78H] states that you may use pneumatic cylinders on the 2013 FRC robot. We received pneumatic muscle as part of the FIRST Choice KOP last year, and we are hoping to use it in this year's robot. Does pneumatic muscle fit in the definition described in [R78] part H?

A.No, a pneumatic muscle is not a pneumatic cylinder.

Q571

Q.Are pneumatic cylinders from vendors other than Bimba allowed? Rule R78H states pneumatic cylinders are allowed, but it doesn't state that they must be Bimba cylinders. However, the 2013 Pneumatic User Guide Rev C implies that we should use Bimba only. Please clarify.

A.The Pneumatics Manual "describes the cylinders available to FRC teams as part of the Bimba donation." The Game Manual limits what parts may be used on the robot.

Q531

Q.Are air piloted solenoid valves allowed, provided they meet the criteria in R78-C?

A.Yes, provided they meet all applicable ROBOT Rules.

Q494

Q.Does "maximum" in R78-E mean that "functional equivalence" doesn't depend on diameter? (One could proffer that pneumatic tubing function is dependent on diameter) Meaning, is smaller diameter tubing legal if it's otherwise identical to the KOP tubing and meets other all other rules (e.g. R76)?

A.Yes. Yes.

Q462

Q.FIRST Choice part number fc13-024 is festo valve part # 566475 which seems to also be VUVG-L10-B52-T-M7-1P3. The festo site lists this part as having a flow rate of 380 l/min, as far as I can tell, this translates to a Cv of more than 0.32. But we used first choice credits. Is it a legal part?

A.[R78]-A allows items available in the 2013 KOP.

Q461

Q.R78 does not explicitly list flow-control valves as legal pneumatic components, but are included in the KoP (through FIRST Choice: <http://www.andymark.com/FIRST-Choice-p/fc13-128.htm> , Parker FCC703-4-2) and thus legal by R78-A. Are devices that are non-identical, but functionally equivalent, legal?

A.For the purposes of FRC, manual flow control fittings are considered connecting fittings.

Q431

Q.The response to Q186 clarifies that a "pneumatic rotary cylinder" is a pneumatic cylinder under R78. There are multiple types of rotary pneumatic actuators. Are cylindrical rotary vane actuators such as the following (<http://www.mcmaster.com/#6508K142>) considered legal pneumatic cylinders under R78?

A.There are no Rules explicitly prohibiting types of rotary cylinder. However the cylinder must meet all of the applicable ROBOT Rules (in this case, we recommend you pay particular attention to [R76]).

Q291

Q.We are planning to use steel hydraulic/pneumatic line. The inner diameter is 0.152" The working pressure for the tube is 3593 PSI. We are not sure if R78 indicates that we must use flexible tubing like in the kit of parts, or tubing that meets COTS tube requirements. Could you clarify?

A.The tubing must meet all Pneumatic Rules in *Section 4.1.10* including, per [R78]-E, being "functionally equivalent to that provided in the KOP."

Q273

Q.Is there any restriction on what kind of pneumatic tubing we use, such as solid tubing, as long as we are within the diameter restrictions?

A.Pneumatic tubing must meet all Pneumatic System requirements, particularly those defined in [R76] and [R78]-E.

Q186

Q.Is a pneumatic rotary cylinder the same as a pneumatic cylinder?

A.For the purposes of FRC, yes.

Q16

Q.What is the value of ? in bullet point C?

A.We're so sorry about that! The correct value is "1/8 in." and will be corrected in *Team UPDATE - 2013-01-11*.

R79**Q380**

Q.Figure 4-11 may have an error in depicting the pressure regulator. The regulator has 3 ports for stored (high) pressure, and 1 for working (low) pressure. The picture implies that the gauge on the regulator will depict the working pressure, while another port supplies working pressure.

A.The regulator shown and recommended in the Blue Box below [R81] (Norgren R07-100-RNEA) has a port intended for a gauge of the regulated pressure. Please use the Technical Q&A if further discussion is needed.

Q302

Q.Does figure 4-11 show sample functional connections or does it regulate specific required connections? For example, must the working pressure gauge screw into a regulator port or may it be attached to a T in the downstream line? May we use a single reservoir instead of two as shown in the figure?

A.Figure 4-11 is for illustrative purposes. There is no Rule explicitly regulating the number of storage tanks used on the ROBOT. Please see [R83] for placement requirements for pressure gauges.

Q155

Q.The picture in the rule shows 2013 KOP pneumatics parts. We only have 2012 KOP pneumatics. The accumulators are different as are other parts. Can we create an equivalent circuit or do we need to buy 2013 KOP parts if we want to use pneumatics?

A.The pneumatic setup in Figure 4-11 is for illustrative purposes only.

R80

Q574

Q.Can separate off-board compressor system be used to pre-charge our unpowered robot's pneumatic system? This off-board compressor would be a FIRST-compliant compressor system, incl. battery, compressor, relief valve, spike w/20A breaker, pressure switch, digital side car, computer and storage tank

A.No, per [R80].

Q510

Q.May a team use an off-board reservoir to speed up pre-charging air tanks if the off-board reservoir is also filled only with a legal onboard compressor controlled by the cRIO?

A.No, please see the Blue Box below [R80].

Q473

Q.Can we begin the match with pre-charged air reservoirs (i.e. 120 psig "stored" and 60psig "working" pressure) as long as the robot control system and battery (and in our case, the on-board air compressor) was used to pre-charge the reservoirs?

A.Yes.

Q471

Q.Rule 80 States "Compressed air on the ROBOT must be provided by one and only one compressor. Compressor specifications may not exceed nominal 12VDC, 1.05 cfm flow rate." Is the compressor flow rate at working pressure or storage Pressure?

A.Neither. The compressor flow rate may not exceed 1.05cfm at any pressure.

Q105

Q.Would it be acceptable to fill a compressed air system with a tire pump prior to matches? The pneumatic system would include one accumulator with a pressure gauge, one regulator with pressure gauge, and electrical valving as required.

A.No. Per [R80] off-board compressors must be controlled and powered by the ROBOT.

R81

Q338

Q.We have multiple volume tanks on our bot. We need one of the tanks to be connected to the compressor. The other tanks will be pre-filled before the match. Do we need regulators for each tank that is not connected to the compressor or would pressure gauges showing the working pressure suffice?

A.Please see [R81] for requirements of the "working" air pressure regulator and [R83] for requirements for locations of pressure gauges for "stored" and "working" pressure.

R82

Not Available

R83

Q470

Q.Would a configuration such as the one shown here: <http://imgur.com/YygzRhn> or a configuration in which the gauge is shifted upward satisfy the "easily visible" condition of R83? If not, would removing the perforated polycarbonate in front of the gauge satisfy the condition?

A.The purpose of this Q&A System is to answer specific questions about ULTIMATE ASCENT Rules; we cannot provide remote review of designs and implementation. The intent of [R83] is to aid Inspectors during the Inspection process.

R84

Not Available

R85

Not Available

R86

Q448

Q.Our storage tanks are on the high pressure side of the pneumatics system Is it permissible to place the only pressure relief valve on the end of one of the storage tanks (using legal fittings)? Again, this is the high side of the system and all fittings are legal fittings. thank you

A.No, per [R86], the relief valve must be attached directly to the compressor or attached by legal fittings connected to the compressor output port.

R87

Not Available

R88

Not Available

R89

Q433

Q.R89 says outputs from multiple valves may not be plumbed together. Can the exhaust of one solenoid valve be plumbed to the input of another solenoid valve. Intention is switch the exhaust between flow control and non-flow control.

A.There are no Rules explicitly prohibiting this, provided all other applicable ROBOT Rules are met (in this case, we recommend you pay particular attention to [R88]-A).

OPERATOR CONSOLE

Q537

Q.Would it be legal to share the network connection of the computer running the driver station software with another computer via USB?

A.There are no Rules explicitly prohibiting this.

Q518

Q.We would like to know if it would be legal to have a secondary computer on our operator console to interface with our on board computer on the robot, pending if we only use certain ports and a certain IP. We would plug both computers into a switch, and then plug that into the field.

A.There are no Rules prohibiting a second computer. Per [R92], the PLAYER STATION Ethernet cable must attach directly to the computer hosting the Driver Station software, not through a switch.

Q497

Q.Does the FMS (and the rules) allow for the user to input data into driver station, which in turn communicates the input over network tables to the robot, before the start of the match?

A.There are no rules prohibiting this. Technical questions should be directed to the [Technical Q&A](#).

Q389

Q.Do all components of the operator console have to be supported by the aluminum shelf? Rule 93 specifies the maximum length and depth of the operator console, but there is no height limit. Would it be a violation to use foot pedals that are within the specified dimensions but would be on the floor?

A.No, provided there are no safety concerns (e.g. trip hazards) and all other Rules are met.

Q240

Q.How many joysticks/controllers are we allowed to use?

A.There are no rules explicitly regulating the number of controllers used on the OPERATOR CONSOLE.

R90

Not Available

R91

Not Available

R92

Not Available

R93

Q283

Q.Is the intention of R93 to provide a hard dimension in the depth direction. In previous years our console carrying case was 13", and this years donated console laptop is 12.5", both now illegal under R93. If the console can be completely supported by the shelf and velcro can it be longer than 12"?

A.Yes, the intent of [R93] is to provide hard dimensions for the OPERATOR CONSOLE.

R94

Not Available

Game - The Tournament

Not Available

Overview

Not Available

Practice Matches

Q626

Q.If all teams in a 15-minute official practice field block at Championships agree, is it possible to use the time to operate individually, rather than run the 2 matches described in the procedure document?

A.No, for both safety and technical reasons this will not be possible.

Q625

Q.Will there be official Pyramids on the tethered practice fields at Championships?

A.Please see the updated [Practice Field policy](#).

Schedule

Not Available

Filler Line

Not Available

Qualification Matches

Not Available

Schedule

Not Available

MATCH Assignment

Not Available

Qualification Score (QS)

Not Available

Qualification Seeding

Elimination Matches

Q616

Q.During Eliminations are alliances allowed to request that their member teams receive a specific PLAYER STATION?

A.No.

Q557

Q.May the ALLIANCE CAPTAIN armband be moved to another student on the same team after the Alliance Selection process?

A.There are no Rules prohibiting this.

ALLIANCE Selection Process

Q620

Q.Announcer at Razorback declared that no electronic devices were allowed on the field during Alliance Selection. Is this a rule, or are teams allowed to use any assistance they desire during alliance selections?

A.There are no Rules explicitly prohibiting electronic devices during ALLIANCE selection.

BACKUP TEAMS

Not Available

Elimination MATCH Bracket

Not Available

Elimination Scoring

Not Available

Tournament Rules

Q593

Q.In the rare case that a Q&A answer contradicts the FRC Manual and/or Team Update, which takes precedence?

A.Should this occur, the FRC Manual and/or Team Update take precedence.

Q398

Q.How does the tournament work? Is it a round robin? What is the time between matches? Also, how many discs can be scored into the goals at a time?

A.Please review Section 5 for information about tournament execution. There are no Rules restricting the number of DISCS that can be scored simultaneously.

T01

Not Available

T02

Not Available

T03

Not Available

T04

Not Available

T05

Not Available

T06

Not Available

T07

Not Available

T08

Q610

Q.Please clarify what is meant by "time of Inspection." Does it mean time of initial inspection or any time of inspection? In other words, may a ROBOT add a MECHANISM after initial inspection, be reinspected and compete legally? Assume the ROBOT remains legal after the later inspection.

A."Time of Inspection" is when your ROBOT is being Inspected. If you make changes to your ROBOT after Inspection, you must have those changes re-Inspected before being considered "legal" again, per [T10].

T09

Not Available

T10

Not Available

T11

Not Available

T12

Not Available

T13

Q612

Q.As Q&A merely provides clarification and interpretation of the rules, is the Head Referee required to follow the guidance provided by Q&A?

A.Please see [Q594].

Q594

Q.1.)What is the order of precedence for the following rule authorities in the case of contradiction: Head Ref, Manual, Team Update, Q&A, FIRST HQ? 2.) If the head ref has higher precedence than Q&A, is Q&A to be interpreted as rule or as guideline?

A.1) The Game Manual is the ultimate authority for Rules and is created by *FIRST* HQ and the Game Design Committee. The Team Updates revise the Game Manual. The Q&A helps to clarify questions regarding Rules. The Head Ref at each event applies the most up-to-date Game Manual to the game play. As stated in Section 5.3.3, "The Head Referee has the ultimate authority in the ARENA during the event, but may receive input from additional sources, e.g. Game Designers, *FIRST* personnel, and technical staff. The Head Referee rulings are final. 2) The Q&A is not a source of Rules.

YELLOW and RED CARDS

Not Available

T14

Not Available

T15

Not Available

T16

Not Available

T17

Not Available

T18

Not Available

T19

Not Available

T20

Not Available

T21

Not Available

T22

Q619

Q.At some events, special DISC bins or carriers have been provided by the event staff and used by human players during matches to store DISCS. Is this not a violation of T22? Such devices are not contained on the list of allowed items.

A.[T22] applies to parts brought to the ARENA by the Team. Equipment used by ARENA staff is not included. ARENA crews have been notified that if such equipment is used, it must be equally employed for both alliances, and that Teams do not need to use such equipment if they don't want to.

Q410

Q.Are we allowed to hold-up (and not attach) a non-powered signaling mechanism (i.e. vision tape) at the clear/polycarbonate feeder station for robot's guidance/alignment to the feeder slot? We believe doing so does not violate T22 (allowed equipment in alliance stations). Thanks for your guidance.

A.There are no Rules that explicitly prohibit this, provided it does not violate [T22] as updated in [Team Update 2013-02-05](#).

Q12

Q.Are teams allowed to bring step ladders or any other equipment to the field to assist in removing the robot on the pyramid? I.E. One person goes onto step ladder to vent the pneumatics system.

A.No. Please refer to Team Update 2013-01-11.

Championship Additions

Not Available

Championship Pit Crews

Not Available

Championship BACKUP ROBOT

Not Available

FRC Championship MATCH Bracket

Not Available

Administrative - Introduction

Q383

Q.What is the minimum age for the driver of a team (not the maximum age). Can we have a grade 8 student from a different school?

A.There is no minimum age requirement.

What is the FIRST Robotics Competition (aka FRC)?

Not Available

Gracious Professionalism, A FIRST Credo

Not Available

Prominent FRC Awards

Not Available

The Chairman's Award

Not Available

The Woodie Flowers Award

Not Available

The Dean's List Award

Not Available

Safety: A FIRST Culture

Not Available

Administrative - Communication

Not Available

Overview

Q292

Q.Is there a way a question can be asked without it becoming public knowledge?

A.Greetings Team: No,there is no way to post a question to the Q&A Forum without it becoming public knowledge. I apologize for any inconvenience this may cause. Thank you, FRC Team Support

FIRST Headquarters - Contact Information

Not Available

Team Support

Not Available

Emails and Subject Lines

Not Available

Please Do Not Duplicate Efforts

Not Available

Technical Resources

Q57

Q.Why does the link to the NI imaging software link not work under the getting started C++?

A.Greetings Team: Thank you for your message. The link to the NI imaging software has been corrected, and is available here: <http://www.usfirst.org/roboticsprograms/frc/2013-Technical-Resources>. Thank you, FRC Team Support

Additional Software Contact Information

Not Available

FIRST Robotics Competition Website

Not Available

Getting Answers to Your Competition Questions

Not Available

FRC Q&A Forum

Not Available

Email Blasts

Not Available

Bill's Blog

Not Available

TIMS - Supplying Information to FIRST

Not Available

Judges' Information

Not Available

Event Specific Information

Not Available

Regional Events and Championship Hotel Information

Not Available

FIRST Logos

Not Available

Logo Use

Not Available

Administrative - Team Organization

Not Available

Getting Started: Guides, Handbooks, and Other Helpful Resources

Not Available

Suggested Leadership Roles

Not Available

Main Contact Responsibilities

Not Available

Alternate Contact Responsibilities

Not Available

Shipping Contact Responsibilities

Not Available

Recommended Additional Contacts

Not Available

Corporate / University Contact Responsibilities

Not Available

Public Relations Contact Responsibilities

Not Available

Scholarship Contact Responsibilities

Not Available

School Contact Responsibilities

Not Available

Technical Contact Responsibilities

Not Available

Travel Contact Responsibilities

Not Available

Other Important Team Positions

Not Available

Game Rules Monitor Responsibilities

Not Available

Safety Captain Responsibilities

Not Available

Administrative - At the Events

Not Available

Overview

Not Available

FIRST Safety

Not Available

Safety Recommendations

Q596

Q.Please clarify the term closed toe shoes. Last year we asked about Vibram Fivefingers and were told they were allowed. In St Louis the inspectors that came to our pit did not think they were allowed. I showed them a printout from the Q&A from last year. Can you please provide clarification again.

A."Closed-toed shoes" completely cover toes. Shoes which separate toes, but still cover them are considered "closed-toed."

Robot Carts

Not Available

Safety Recognition Program

Not Available

Courtesies and Rules

Not Available

Root Wireless Control

Not Available

Staff / Volunteer Badges

Not Available

Competition Overview

Not Available

Practice Matches

Not Available

Competition Matches

Not Available

Competition Agendas

Not Available

Load In Procedures

Not Available

Bag and Tag

Not Available

At Championship

Not Available

Event Check In

Q627

Q.We are only permitted 5 people in the pits at Championships Wednesday afternoon. Can we rotate one student out (back to the hotel) when another arrives with specific expertise - we'd never go above 5 at a time.

A.There are no rules that prohibit this.

Consent and Release Form

Not Available

Event Check In Envelope

Not Available

The Pit

Not Available

Pit Admin Station

Not Available

Team Pits

Not Available

Spare Parts Station

Q362

Q.This is in relation to rule 4.8.3. My team has searched both manuals and cannot find the answer... Are the AndyMark multi-battery chargers legal at competition? The one we have is the Dual Pro Model RS3. Clarification is very much appreciated. Thank you.

A.There are no Rules explicitly prohibiting or allowing certain chargers.

Inspection

Not Available

Machine Shop

Not Available

Team Provided Machine Shops

Not Available

Machine Tools at Events

Not Available

Suggested Equipment

Not Available

First Aid Station

Not Available

Traffic Flow

Not Available

Announcements

Not Available

Queuing Your Team

Not Available

Property Security

Not Available

Lost and Found

Not Available

Ceremonies

Not Available

All Teams Should Attend

Not Available

Pit Manners / Rules During the Ceremonies

Not Available

Pit Closing Etiquette

Not Available

Team Socials

Not Available

Championship FIRST Finale

Not Available

Team Spirit and Team "Look"

Not Available

Team Giveaways

Not Available

Mascots and Team Costumes

Not Available

Competition Spirit

Not Available

Banners and Flags

Not Available

Bleacher Rules

Not Available

Site Restrictions

Not Available

Considerations

Not Available

Administrative - Robot Transportation

Not Available

Overview

Not Available

Stop Build Day

Not Available

Bag and Tag

Q516

Q.Is there a 6-hour window to unbag and work on robot between regional events? How does this work?

A.Only for teams attending 2-Day events (Michigan District Events and Mid-Atlantic Robotics (MAR) District Events). See the [Administrative Manual Section 5.6](#) for full rules

Q486

Q.For the bag and tag do we have to take our robot somewhere for storage after the stop day period or do we just bag it and not touch it for the time and take it to the competition on the date?

A.There are no requirements that you store your bagged ROBOT at a specific location.

Q450

Q.From the rules it wasn't quite clear about what can be done with the robot COTS components. Are we allowed to strip the robot of these components and just bag and tag the chassis and any components we constructed? We would like to re-assemble the robot in the given time before the competition

A.Yes.

Requesting an Exemption

Not Available

Instructions for Bag and Tag

Not Available

Robot Lock and Unlock Instructions

Not Available

Completing the Robot Lock-Up Form

Not Available

When the Robot Lock-Up Form is Used

Not Available

"Robot Access Period" - For Teams Attending 2-Day Events

Q588

Q.The NJ event had no more seals. I have none in the shop what do I do?

A.Please contact frcteams@usfirst.org.

"Robot Access Period" - Permitted Actions

Q548

Q.Between Bag Day and the "Robot Access Period" granted to qualifying teams, are teams allowed to continue fabricating parts for the sole purpose of installing them during the "Robot Access Period" without restriction from the 30 lb rule (R21)? Can such teams still use R21 to bring in 30 lbs?

A.Please see [R21] as updated in [Team Update 2013-02-08](#).

"Robot Access Period" - Schedule

Not Available

Robot Shipping - For Teams Granted an Exemption or Attending Championship

Not Available

In You Have Been Granted an Exemption to Ship to a Bag and Tag Event

Not Available

If You Are Attending Championship

Q589

Q.Can we attached the robot to the crate while it is in the required bag? This would, of course, put a hole in the bag where the screw or bolt went through the bag to the wood underneath? Our team is concerned about shifting during crate transport but also do not want to break the rules. Thank you.

A.Small puncture holes required to secure the robot to the crate are acceptable.

Important Shipping Contacts

Not Available

FIRST is Your First Contact

Not Available

Administrative - Awards

Q617

Q.Our team is very large and we were fortunate enough to win our regional and Engineering Inspiration. However, due to our size, there were not enough medals for our students. How do we order more?

A.Greetings Team: You will be able to order extra medals via our post-season awards order form. The form will be available in the near future. Thank you, FRC Team Support

FIRST Robotics Competition Awards

Not Available

Complete Awards List

Not Available

Awards Submission Process

Not Available

Chairman's Award

Not Available

Overview

Not Available

First-Year (Rookie) and NASA Grant Teams

Not Available

Submission Information

Q622

Q.Our team won our Regional Chairman's Award. At the Championship, can we offer revised versions of our Chairman's video and presentation or are we restricted to the exact same video and presentation we presented to the judges at the Regional? Thank you for your help.

A.Greetings Team: Thank you for your inquiry. Teams may revise their video and presentation for Championship. Thank you, FRC Team Support

Q604

Q.Section 6.4.3.4 includes Note 2, which states "...the Chairman's judges will not be judging your video as part of your submission..." Does this mean the Chairman's video will not be judged, even if it is played during the interview? That judges must ignore the video as if the 3 mins never happened?

A.The team has the option to show the video to the judges during the team's 5 minute presentation time. Anything presented to the judges during the 5 minute presentation is considered during the judging process.

Q603

Q.Our team wished to use our Chairman's video as an integral part of our Chairman's presentation, similar to CCA winner 341. When we started playing the video, the judges made us stop it, and informed us that the video could not be shown or judged as part of the Chairman's presentation. Is this true?

A.As long as the video is presented during the 5 minute presentation and does not exceed the time limit, the judges should allow the video to be viewed.

The Chairman's Award Championship

Award Process

Not Available

The Allaire Medal - Leadership Exemplified

Not Available

FIRST Future Innovator Award (FFIA) Sponsored by the Abbott Fund

Not Available

Award Overview

Not Available

Award Criteria

Not Available

Award Judging

Not Available

Additional Documentation and Video

Not Available

FIRST Dean's List

Not Available

Overview

Not Available

Submissions

Q511

Q.How should teams handle submitting QPA information for a Dean's List candidate if the school's grading system is weighted (i.e., an A in an AP course gets more points toward the QPA than an A in a regular course)?

A.GPA is asked for but not mandatory and can be left blank if the school's criteria is different. It will not affect the student's consideration to leave this blank; it's just an additional point of reference for the judges.

Q195

Q.What is the total submission per team? Is it 2 per individual Mentor or 2 per team? So team of 20 students and 5 mentors can submit 2 or 10?

A.Only 2 submissions per team.

Criteria

Not Available

Judging

Not Available

The Founder's Award (Championship Only)

Not Available

Digital Media Award (Replaces Website Award)

Award Criteria

Q154

Q.Our question is in relation to Section 6.8.1 of the Administrative Manual. The viral media note states; professionally produced content will be disqualified. Does this cover website templates? Clarification is much appreciated.

A.The comment regarding professionally produced material was specific to viral media, such as viral videos. The use of website templates as an aid in creating websites is fine.

Judging Criteria

Not Available

Submission Process

Q495

Q.Latest email from FIRST stated that the "Website Award" submission is due via STIMS on 2/21/13. At present, the MANUAL lists only the "Digital Media Award" that replaces the Website Award. The Submission Process section of the Manual says TBD. Please clarify where the 2/21 was stated earlier.

A.We apologize for the confusion. The original email blast was in error. A correction was sent out shortly after. The 'Digital Media Award' is replacing the Website Award, but we do not yet have submission information or deadlines.

Q414

Q.What is the submission process for the Digital Media Award? What is the deadline? It is not covered in Section 6.8.3 of the Administrative Manual.

A.We are in the process of finalizing the details of this award and will make them available as soon as we do.

Woodie Flowers Award

Not Available

Eligibility

Not Available

Spirit of the Award

Not Available

Award Eligibility Requirements

Not Available

Judging Criteria

Not Available

Entry Requirements

Not Available

Submission Deadline

Not Available

Entry Process

Not Available

Prior Year Regional WFFA Recipient Re-Submission

Not Available

Entrepreneurship Award Sponsored by Kleiner, Perkins, Caufield & Byers

Not Available

Business Plan Submission

Q543

Q.Manual states Thursday... TMS states Friday Which is correct

A.Greetings Team: The deadline to submit for the Entrepreneurship Award was Friday, 2/22/13 at 12 pm (noon) EST. I apologize for the confusion. Sincerely, FRC Team Support

Q479

Q.What is maximum PDF file size for submission of Entrepreneurship Business Plan?

A.There is no size restriction for this submission.

Guidelines

Not Available

Eligibility

Not Available

FIRST SAFETY ANIMATION AWARD

Not Available

Award Overview

Not Available

Theme

Not Available

Criteria

Not Available

Submission

Not Available

Judging

Not Available

Deadline

Not Available