GAME - Team UPDATE - 2012-04-17

Section:GAME

Championship Bridge Points

There will be no change to the points awarded to Alliances for Robots Balanced on the Bridges for the *FIRST* Championship, per Rule [G40].

Thank you for a great 2012 season and good luck to all teams headed to the *FIRST* Championship!

GAME - Team UPDATE - 2012-04-03

Section:GAME

Good luck to all teams at Week 6 Events!

GAME - Team UPDATE - 2012-03-27

Section:GAME

Teams should make sure to keep track of the 2012 Control System Known Issues compiled by NI. This list covers any control system issues that FIRST is currently aware of and the corresponding fixes.

The Image files for the E9 and E11 Classmate computers are now available online for download, for instructions on using these files to create a USB key for Classmate imaging see the updated Creating a USB Drive for 2012 Classmate Image Restoration document on the Driver Station section of the Kit of Parts website.

Good luck to all teams at Week 5 events!

GAME - Team UPDATE - 2012-03-20

Section:GAME

There are no changes to the Manual for this week.

Good Luck to all teams competing at Week 4 events!

Special Message from the GDC

The Coopertition Bridge in Rebound Rumble is this year's method of fostering Coopertition and Gracious Professionalism among students while inspiring an appreciation of science and technology. The white bridge's purpose is to motivate participating players, teams and alliances to collaborate with other players, teams and alliances (even in the heat of competition) by rewarding them for working together. Coopertition and Gracious Professionalism are tenets of *FIRST* – they are part of what makes *FIRST* different and wonderful; all *FIRST* participants, teams and alliances should strive to exercise those principals at every given opportunity. To quote Woodie, "*FIRST* does not celebrate being an incompetent jerk. *FIRST* does celebrate high-quality, well-informed work done in a manner that leaves everyone feeling valued." In other words, bullying, coercion, and unsportsmanlike conduct have no place in *FIRST*. We expect all teams to always try their best to accomplish the tasks at hand, and always push themselves to achieve even greater successes. Best of luck to all of you as you continue to balance the real-life struggles of competing against each other while cooperating with each other – both on and off the Court.

Caution about CPU Usage

During the first two weeks we have observed a substantial number of teams with communications issues caused by CPU saturation. Saturating the CPU on either your cRIO or Driver's Station computer can compromise your communications and cause your robot response to lag or drop completely. cRIO CPU usage can be monitored via the Driver's Station Charts tab or the Driver Station Log File Viewer, more information on this utility is available on the Driver Station Kit of Parts page. Driver's Station CPU usage can be viewed using the Task Manager by pressing Ctrl+Shift+Esc.

As a reminder, wireless control of robots in the pits is prohibited per section 4.3.1 of the Administrative manual. Additionally, we would highly recommend teams to connect to their DAP 1522 Robot Radio via Ethernet when tethering in the pits and leave the cRIO to Robot Radio connection in place.

Good luck in Week 3!

Week 1 Observations and Reactions

The 2012 FRC events have begun, and Week 1 was a great testament to the FRC community's ability to respond to the challenge. The events went well, and we hope that the Week 1 participants had fun and valuable experiences. Congratulations to Week 1 teams and volunteers for contributing to Week 1 successes.

That said FRC Staff and Volunteers have reviewed issues and opportunities that manifested in Week 1 and, in the spirit of continuous improvement, share the major ones, and their reaction plans, below.

The Arena

At some events, there were more trapped Basketballs toward the lip of the Bridges than originally expected. To address the issue, we have made a minor change to the way the ball deflectors mount under the bridge. We expect this will greatly reduce, but not necessarily eliminate, the instances of Basketballs trapped under the Bridges. These modifications effectively leave the dynamics of the Bridge unchanged. For details, please see the modified drawings GE-12017 and GE-12064.

The Robot

Inspection

Week 1 Inspectors have shared the three most frequent issues at Week 1 events. We share them below as a heads up for future competitions.

Bumper construction and placement

Robots had Bumpers shorter than 8", measured from the vertices of the Frame Perimeter. A 'Bumper' is made up of the plywood backing, pool noodles, cloth covering and fasteners. Soft fill at the ends of Bumpers does not contribute to minimum Bumper length. Reference Rules [R27], [R28] and [R31].

Bumper numbering

Robots had their team numbers displayed in more than 4 locations on their Bumpers. Reference Rule [R35].

Robots had numbers that were not white or outlined in white, or not properly sized. Reference Rule [R35].

Robots had team numbers split between Bumper segments. Reference Rule [R35] and GDC Q&A answers related to this rule.

Motors

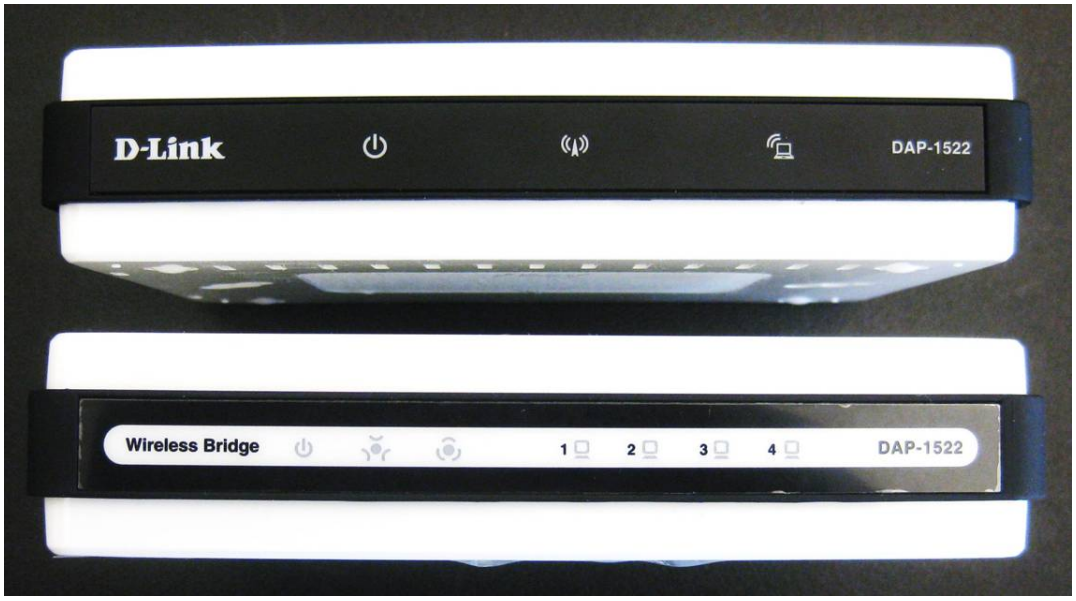
Robots used motors that are not permitted, or modified motors in ways that are not permitted. Reference Rules [R48] and [R49].

DLink Wireless Bridge – Hardware Version

DLink has released a new version of the DAP-1522 wireless bridge hardware used on the Robots. The new hardware revision, Rev B, is legal for use in FRC events; however, is not programmable by the Radio Programming Kiosk at events.

If a team has a DAP1522 Rev B (which would only be if they purchased a wireless bridge on their own, all bridges shipped in Kits are Rev A), they will need to retrieve their WPA key from the FTA at the beginning of the event and configure their bridge manually. Due to this inconvenience and opportunity for error, FRC strongly recommends that teams use the Rev A version of the hardware if possible.

A user can easily tell the difference between the Rev A and Rev B hardware platforms. In addition to being noted on the box and the back of the device on a sticker, the front of the bridge is also visibly different. In the image below, the Rev B is the upper radio, with the Rev A below it.



General

The official Android App for the 2012 FRC Q&A system is now available.

Good luck to all teams in Week 2!

GAME - Team UPDATE - 2012-02-28

Section:GAME

General Announcements

2012 Foul Process

Congratulations on surviving build season! Just a few things we wanted to remind you about before you head off to your first competition…

Your Head Referee and their Referee staff are here to work with you and ensure that we have consistent, fair play in all matches. If you have any concerns about what happens on the Court, a student player can go to either the red or blue question box at either end of the scoring table. As soon as the Head Ref has a moment, they will talk to them there. One big change this year though, normal Fouls are not up for discussion – Technical-Fouls, cards and general concerns are all open for discussion – just not normal Fouls. We don't enter or record any details about them, other than their occurrence. This approach is very similar to other sports where basic calls aren't challengeable.

Recall that this year Fouls will be called and updated in real time. When a Referee sees a Foul committed, they will first raise their flag, point to the offending Robot, and, they will also issue a hand signal (if the Foul is one of the six that we predicted to be the most likely). Those hand signals are how Teams learn what Foul has been called – more details on them can be found under *Section 3 - The Game* on the Competition Manual section of the *FIRST* Website. The Referee will then enter the Foul into the scoring system, which will credit the other alliance with points – kind of like a free-throw in basketball or a penalty kick in soccer – only the points are guaranteed in our case – and credited immediately.

All of that means that about fifteen seconds after the buzzer in any Match, the score you see on the screen will be the final score – no more waiting for adjustments. (Issuing of a Yellow or Red Card may take another minute or so to make sure we get the details right, but cards don't affect the score in the current Match during the Qualification portion of the Tournament.)

Lastly – Rule [G44] says that you cannot be penalized for something your Robot does that was directly caused by the actions of your opponent. It does have an exception though – it doesn't affect Rule [G28]. Any time an opponent contacts a Robot that touching its Key, Alley or Bridge – it's a Foul on the opponent – no matter who caused it to happen. So be careful – and provide plenty of breathing room in those areas.

Cutting the Nets

In the tradition of customary Basketball, there will be an opportunity for the winning Alliance and the Chairman’s Award winning team to each cut down one net as a souvenir of the competition and of their success. As the final event during the Awards Ceremony, the drive teams from the winning Alliance will be invited to come onto the Court and join the Chairman’s Award winning team to cut down one net per team. The ceremonies will conclude and the audience will be dismissed as the drive teams make their way to the Court.

One member from each team will be provided with cutters and may cut down one net, one at a time, safely and expeditiously. A ladder may not be used; however those cutting the nets may stand on the Fender.

The net from the Top Basket will be reserved for the Regional Chairman’s Award winning team.

Section:The Robot

The *2012 FRC Inspection Checklist* has been updated to Rev C and is now available under *Section 4 - The Robot* on the Competition Manual section of the *FIRST* Website.

GAME - Team UPDATE - 2012-02-24

Section:GAME

General Announcements

This will be the final scheduled Friday Team Update for 2012.

Section:[T09]

Rev A of the Bill of Materials Template is now available under *Section 5 - The Tournament* on the Competition Manual section of the *FIRST* Website.

GAME - Team UPDATE - 2012-02-21

Section:GAME

Happy Stop Build Day! We have no changes to report -- we hope you all get a good night's sleep!

GAME - Team UPDATE - 2012-02-17

Section:[R44]

All active circuits shall be wired with appropriately sized wire:

Application	Minimum wire size
40A circuit	12 AWG (2.052mm)
30A circuit	14 AWG (1.628mm)
20A circuit	18 AWG (1.024mm)
between the PD Board and the Analog and/or Solenoid Breakouts if a common power feed is used	
between the PD Board and the Analog and/or Solenoid Breakouts if individual power feeds are used between the PD Board and the cRIO between the PD Board and the wireless bridge	20 AWG (0.8128mm)
between the PD board and 5A custom circuits pneumatic valves	24 AWG (0.5106mm)

The branch circuit may include intermediate elements such as COTS connectors, splices, COTS flexible/rolling/sliding contacts, and COTS slip rings, as long as the entire electrical pathway is via appropriately gauged conductors.

Wires that are originally attached to legal devices are part of the device and by default legal as supplied. Such wires are exempt from Rules [R44] and [R45].

GAME - Team UPDATE - 2012-02-14

Section:GAME

General Announcements

Kinect Kiosk Software

A new version of the Kinect Kiosk software has been posted. It enables multiple machines on the network to have the Kinect Server running as long as only one is actively using the Kinect. This would be potentially necessary for the Kiosk to function properly at pre-ship events if multiple teams have the Kinect software setup.

Section:[G40]

The Answer in the Q&A to the Question asked on Rule [G40] by FRC2826 on 01/17/2012 has been updated. We apologize for the confusion.

Section:[R43]

Please note, per ~~[R64]~~ [R63], that for an 8-slot cRIO, the circuit may not exceed 16W. For a 4-slot cRIO, the circuit may not exceed 21W.

Smaller value Snap Action auto resetting breakers may be used on the PD Board for circuitry not defined above.

In addition to the required branch power circuit breakers, smaller value fuses or breakers may be incorporated into custom circuits for additional protection.

Section:[R48]

Note that this is not a change to the Rule but is simply changing the Rule to match the documentation (Kickoff Kit Checklist and FIRST Choice site).

The only motors and actuators permitted on 2012 FRC Robots include:

G. up to 2 Denso throttle control motors (acceptable part # ~~AE2351000~~ AE235100-0160)

Section:The Robot

The Inspection Checklist has been updated to Rev B is now available under *Section 4 - The Robot* on the Competition Manual section of the *FIRST* Website.

GAME - Team UPDATE - 2012-02-10

Section:The Tournament

Information on the FMS Twitter feed is now available under *Section 5 - The Tournament* on the Competition Manual section of the *FIRST* Website.

Section:The Robot

The Inspection Checklist is now available under *Section 4 - The Robot* on the Competition Manual section of the *FIRST* Website.

GAME - Team UPDATE - 2012-02-07

Section:[G21]

Robots may extend one appendage up to 14 in. beyond a single edge of their frame perimeter at any time.
Violation: Foul for exceeding size allotments; Technical-Foul for continuous or repeated violations.

These appendages are intended for use in manipulating Basketballs and/or Bridges. A Robot may have multiple extension devices onboard, but only one may be deployed at a given time.

All portions of an appendage that are outside the Frame Perimeter must be contiguous with each other. Very brief violations of the contiguity requirement as a single appendage is being extended or retracted will not be penalized.

Section:The Game

The Answer affected by the change to Rule [G21] has been updated in the Q&A.

Section:[T09]

The Bill of Materials Template is now available under *Section 5 - The Tournament* on the Competition Manual section of the *FIRST* Website.

GAME - Team UPDATE - 2012-02-03

Section:Operator Console

Note: The version of the Driver Station released at Kickoff has not changed. This Rule change is to bring the Rule in line with the current version.

Section:[R37]

Items specifically *prohibited* from use on the Robot include:

A. circuit breakers used on the Power Distribution (PD) Board that are different from the Snap Action breakers provided in the KOP~~,~~ and
B. PD Boards and/or fuse panels other than the single PD Board provided in the KOP since 2009~~, and~~.

Section:[R80]

The Driver Station software provided on the Kit of Parts website is the only tool permitted to specify and communicate the operating mode (i.e. Autonomous/Teleop) and operating state (enable/disable) to the Robot. The Driver Station software must be revision 11.30.11.00 ~~01.07.12.00~~ or newer.

GAME - Team UPDATE - 2012-01-31

Section:GAME

General Announcements

Operator Console Note

A conflict has recently been discovered between the Driver Station's Cypress board Enhanced IO mode and the Kinect, but ONLY if the Cypress board is not present. If you are receiving Kinect data on your Dashboard, but not on the robot, you must either plug in your Cypress Board OR change your Driver Station IO configuration to Compatible mode by clicking the Configure button on the IO tab.

Section:[G25]

Robots may not contact or otherwise interfere with the opposing Alliance Bridge.
Violation: Technical-Foul. If the act of Balancing is interfered with, also a Red Card and the Bridge will be counted as Balanced with the maximum number of Robots possible for that Match.

Section:Operator Console

Rule [R82] has been updated to include the edit below. To clarify, the shelf width of the narrowest Player Station is in fact 48 in.; however, the field EStop device limits the usable width to 44 in. The field tour video, Episode 2, is misleading as it measures the available space, but claims it's the width of the shelf. Our apologies for any confusion.

Section:[R36]

The only legal source of electrical energy for the Robot during the competition is one MK ES17-12 12VDC non-spillable lead acid battery, or one EnerSys NP 18-12 battery, as provided in the 2012 KOP. This is the only battery allowed on the Robot.

Batteries integral to and part of a COTS computing device are also permitted (i.e. laptop batteries), provided they're only used to power the COTS computing device and any peripheral COTS USB input devices connected to the COTS computing device.

Non-electrical sources of energy used by FRC Robots, (i.e., stored at the start of a Match), shall come

only from the following sources:

A. Compressed air stored in the pneumatic system, stored at a maximum pressure of 120 PSI.

B. A change in the altitude of the Robot center of gravity.

C. Storage achieved by deformation of Robot parts.

Section:[R82]

The Operator Console must not exceed ~~48~~ 44 in. long by 12 in. deep (excluding any items that are held or worn by the Drivers during the Match).

GAME - Team UPDATE - 2012-01-27

Section:GAME

No changes.

GAME - Team UPDATE - 2012-01-24

Section:GAME

General Announcements

The Arena

The Game Specific Field Drawings have been updated to include detail on the color of the polycarbonate used on the Hoops

Control System

National Instruments has released an optional update for the Utilities portion of the FRC Software 2012. For download and details, please visit **http://joule.ni.com/nidu/cds/view/p/id/2262**.

If you have not already installed the first version of this update, you must install this update in order to compete in the *FIRST* Robotics Competition. If you have already installed the first update, this is an optional update.

Because this software also contains the update to the cRIO Imaging Utility, this update also applies to teams using Java and C/C++.

Kit of Parts

The “Where to Get More” document has been updated to include information about sourcing the competition carpet.

Section:[G20]

Robots in contact with the carpet and/or Key on their Alliance Station end of the Court are limited to 60 in tall. Otherwise, Robots are limited to 84 in tall.
Violation: Foul; or Technical-Foul for repeated or continuous violation.

Section:[R27]

Figure 4-3 has been updated to correct the portrayal of the Frame Perimeter. The image intends to portray a nuance that bumper material assembled per the rules in Section 4.1.6, which is not along the Frame Perimeter, is not considered an official Bumper. Whether in contact with the official Bumper segment that is running along the Frame Perimeter, or not, padding placed inside the Frame Perimeter is not considered an official Bumper and thus Rule [R03-B] does not apply.

Section:[R48]

The only motors and actuators permitted on 2012 FRC Robots include:

K. drive motors or fans that are part of a speed controller or COTS computing device and fans included in the 2012 Kit of Parts

GAME - Team UPDATE - 2012-01-20

Section:GAME

Code Bondé

Summary: If a competition's wireless environment has too many Access Points (AP's), the wireless bridge provided to teams will not be able to connect to the field's AP. Should FIRST determine that an event meets this criteria, we will employ an emergency procedure, called Operation Bondé, to insure that the event continues with minimal impact. This determination will most likely be made Wednesday or Thursday morning, and will be communicated to teams as early as possible. In the event of an Operation Bondé, teams will use a DLink DIR-825, provided by *FIRST* in the queue, instead of the DAP-1522 that's required by the rules.

Background: The DAP-1522 wireless bridge required for competition will not link to *FIRST's* field access point if there are more than approximately 60 active access points in the venue. *FIRST* is working with all scheduled venues to reduce the number of access points active during the competition.

In the event that a venue cannot limit the number of active access points, *FIRST* will implement the emergency WiFi plan. *FIRST* has identified and tested an alternate bridge, the DIR-825, which is successful at reliably connecting with the *FIRST* access point in hostile WiFi environments like those described above.

Detail: *FIRST* will ship a small batch of these devices to each event to be used in the event of a hostile wireless environment. Teams will be asked to trade out their DAP-1522 wireless bridge for the *FIRST* provided DIR-825 while they're in queuing, use it in the match, and then return it to the field crew after leaving the field.

Teams will still go through inspection with their DAP-1522 (to meet size and weight parameters); the DIR-825 will not be subjected to inspection. Also, teams won't have to configure the DIR-825, they will be preconfigured.

Other quick facts:

- It's larger: 7.6" x 4.6" x 1.2" versus 4.4" x 5.7" x 1.3".
- It's heavier: 0.7 lbs versus 0.5 lbs.
- It has two external antennae.
- It requires 12V and the alternate bridge will be provided with a 4 ½ ft power cord with connector. Teams will plug it directly in to the dedicated 12V supply on the Power Distribution Board (it doesn't use the Current Logic converter).

We do not recommend teams purchase these devices as their use in the 2012 competition is improbable and if employed, the radios will be preconfigured so team-supplied DIR-825s will not be used.

Section:The Player Stations

Once plugged in to the Field Management System via the Ethernet cable provided, the ports that the teams will be able to access on the playing field are as follows:

– TCP 1180: This port is typically used for camera data from the cRIO to the DS when the camera is connected to port 2 on the cRIO. This port is bidirectional on the field.

– TCP 1735: SmartDashboard, bidirectional

– UDP 1130: Dashboard-to-Robot control data, directional

– UDP 1140: Robot-to-Dashboard status data, directional

– HTTP 80: Camera connected via switch on the robot, bidirectional

– HTTP 443: Camera connected via switch on the robot, bidirectional

All these ports are open on the playing field, so a team can use them as they wish if they do not employ them as outlined above (i.e. TCP 1180 can be used to pass data back and forth between the robot and the DS if the team chooses not to use the camera on port 2).

Section:[G30-1]

Added Rule [G30-1]

A Robot may only be supported (fully or partially) by another Robot if one of the Robots is in contact with a Bridge.

Violation: Technical Foul for extended, strategic, or repeated loss of contact.

Robots supporting other Robots will invite scrutiny regarding the safety inherent in the design, per Rule [G07]. It behooves a team employing such a strategy to take precautionary action to mitigate any risk of Robots falling outside the Court.

Section:[R01-2]

The Robot must have a Frame Perimeter that is comprised of fixed, non-articulated structural elements of the Robot. The Frame Perimeter of a Robot is defined by the outer-most set of exterior vertices on the Robot that are within the Bumper Zone, which is between 2 and 10 in. from the floor. Minor protrusions no greater than ¼ in. such as bolt heads, fastener ends, and rivets are not considered part of the Frame Perimeter.

To determine the Frame Perimeter, wrap a piece of string around the Robot at the level described in [R02]. The string describes this polygon.

Note: to permit a simplified definition of the Frame Perimeter and encourage a tight, robust connection between the Bumpers and the Frame Perimeter, minor protrusions such as bolt heads, fastener ends, rivets, etc are excluded from the determination of the Frame Perimeter.

The carpet, the Bridge surfaces, and Keys are considered the flat floors – and thus are the reference planes for the Bumper Zone requirements. A Robot in a transitory state of crossing onto/off of a Bridge or Barrier is not considered to be on a flat floor.

Section:The Robot

We have recently published conflicting responses in the Q&A regarding interpretation of the Bumper Zone, specifically [R01-2] and [R29]. We apologize for the confusion, and have revised the responses in question and added clarification in the Blue Box for [R01-2].

GAME - Team UPDATE - 2012-01-17

Section:The Hoops

Drawing *GE-12013, Basketball Hoop*, has been updated to include Note #3.

Section:[G27]

Deliberate or damaging contact with an opponent Robot on or inside its Frame Perimeter is not allowed. *Violation: Technical-Foul and potential Yellow Card*

Section:[R33]

Bumpers must be supported by the structure/frame of the Robot (i.e. each end of the Bumper must be rigidly attached to the Frame Perimeter, the gap between the backing material and the frame must not be greater than ¼ in. and no section of Bumper greater than 8 in. may be unsupported). See Figure 4-7.

Section:[R48]

The only motors and actuators permitted on 2012 FRC Robots include:

A. up to 4 CIM motors (part #FR801-001, M4-R0062-12, AM802-001A, 217-200, PM25R-44F-1005 or PMR25R-45F-1003),

GAME - Team UPDATE - 2012-01-13

Section:GAME

General Announcements

E09 Image Solution Posted

As noted in *Team Update 01*, some teams are experiencing an issue traced to a defective boot loader on the USB Key when attempting to image their E09 Classmate with the E09 USB Key distributed at Kickoff.

A solution to this issue has been posted on the 2012 FRC Robot Driver Station Information page. Please post any questions to the E09 Image section of the *FIRST* Forums.

Jaguar Firmware Update

Please note that Texas Instruments has released a new version of the Jaguar firmware, relevant to teams who use CAN. While this new version has not been mandated by in the competition manual, we ***strongly*** recommend teams using CAN update the firmware. Details on what changes are implemented are posted on the *FIRST* Forums.

Throughout the Manual

Misprints have been corrected.

Section:The Bridges

A Bridge will count as Balanced if it is within 5° of horizontal and ~~any~~ all Robots touching it are fully supported by it.

Section:[G26]

Strategies aimed at the destruction or inhibition of Robots~~,~~ via attachment, damage, tipping or entanglement of Robots are not in the spirit of the FRC and are not allowed.

Section:[G40]

When the final score is assessed per [G37], a Balanced Alliance Bridge will earn points based on the number of Alliance Robots completely supported by the Bridge, ~~a Balanced Alliance Bridge,~~ per Section 2.2.5, ~~earn points~~ as follows:

Section:[G38]

Alliances will be immediately awarded points for each Basketball that passes completely through ~~a~~ their Hoops as follows:

Section:[R36]

The only legal source of electrical energy for the Robot during the competition is one MK ES17-12 12VDC non-spillable lead acid battery, or one EnerSys NP 18-12 battery, as provided in the 2012 KOP. This is the only battery allowed on the Robot.

Batteries integral to and part of a COTS computing device are also permitted (i.e. laptop batteries), provided they’re only used to power the COTS computing device.

Non-electrical sources of energy used by FRC Robots, (i.e., stored at the start of a Match), shall come only from the following sources:

A. Compressed air stored in the pneumatic system, stored at a maximum pressure of 120 PSI.

B. A change in the altitude of the Robot center of gravity.

C. Storage achieved by deformation of Robot parts.

Section:[R39]

Figure 4-8 was revised to allow wire larger than 6AWG between the battery terminals and the Power Distribution Board terminals.

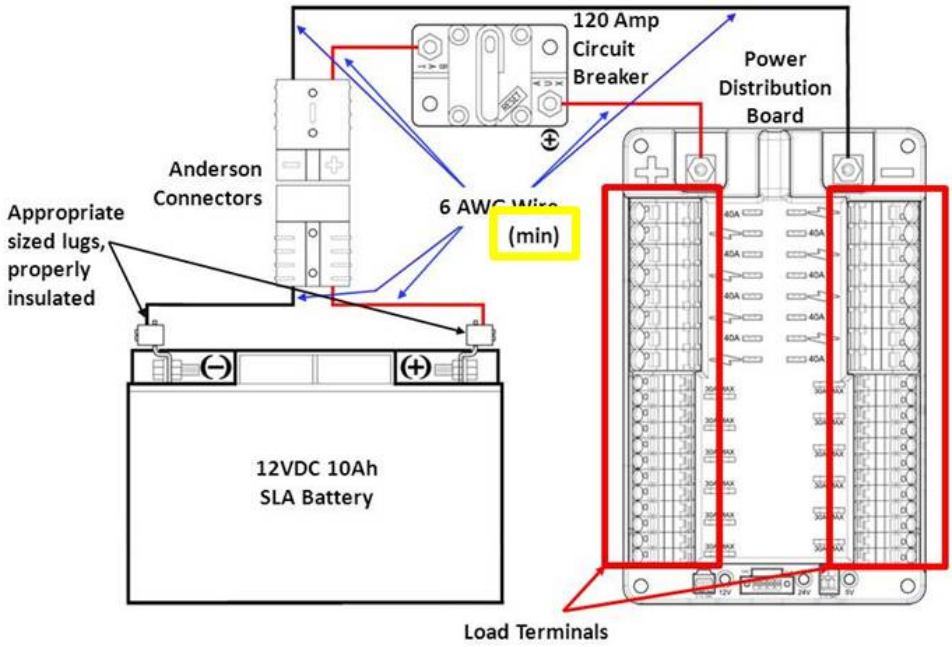


Figure 4-8

Section:[R58]

The control system is designed to allow wireless control of the Robots. The Driver Station software, FirstTouch I/O module, cRIO, speed controllers, relay modules, wireless bridge, and batteries shall not be tampered with, modified, or adjusted in any way (tampering includes drilling, cutting, machining, gluing, rewiring, disassembling, etc.), with the following exceptions:

K. If CAN-bus functionality is used, the Jaguar firmware ~~may (~~must~~)~~ be updated as required by *FIRST* (see Rule [R61]-D).

Section:[R02]

The Robot must satisfy the following size constraints:

A. horizontal dimensions must not exceed 28 by 38 in.,
B. the absolute height must not exceed 84 in.,
C. the height of the Robot at the start of the match must not exceed 60 in.,
D. any appendage may not extend more than 14 in. beyond the frame perimeter, and
E. no other part of the Robot may extend beyond the vertical projection of the Frame Perimeter (with the exception of minor protrusions permitted per [R01-2]).

For the purposes of determining compliance with the volume limitations, the Bumpers are not included in the size assessment.

Section:[R27]

Figure 4-3 has been revised to clarify that example padding is legal, but not considered an official Bumper based on its placement.

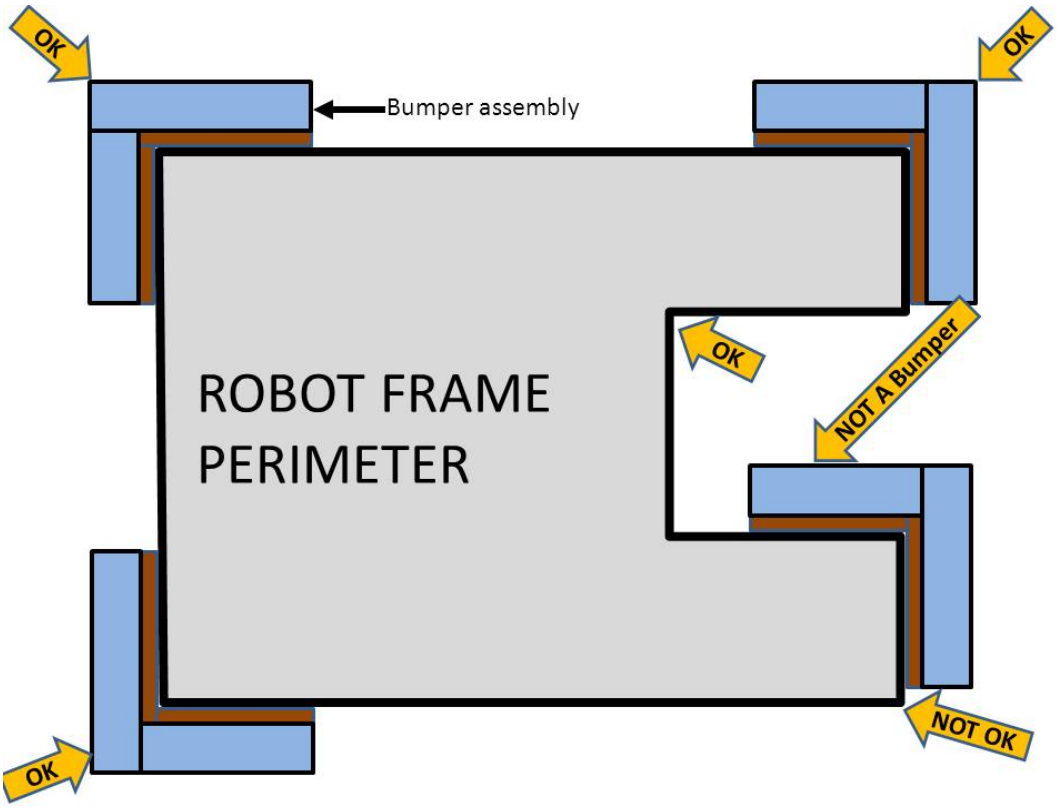


Figure 4-3

Section:[R48]

The only motors and actuators permitted on 2012 FRC Robots include:

D. up to 2 FisherPrice motors (acceptable part #s are 000968-9012, 00968-9013, 00801-0673, and 00968-9015),

GAME - Team UPDATE - 2012-01-10

Section:GAME

General Announcements

Replacement Parts Request Deadline

There have been conflicting due dates published for all Replacement Parts Requests, our apologies for the discrepancy. Because of the inconsistency, replacement part requests will be accepted via TIMS until the lengthier deadline, Friday, January 13, 2013 at noon.

DB37 Rework

Please note that many, if not all, of the DB37 cables shipped in the 2012 Kickoff Kits were assembled incorrectly. We have posted more information about the issue as well as instructions to fix the cables here.

E09 and E11 Image Notes

We've received feedback from some Kickoff locations that teams may not have received the appropriate USB key for their kit Classmates. These keys contain the updated software license key for Windows 7, as well as other helpful software for the 2012 FRC season. To determine if you have the right key, here's the gist:

If you have the wrong key, please let us know using the Replacement Parts Request Process.

The E11 Classmates that were shipped to rookie teams do not have an Operating System loaded on

them, so rookie teams *must* image them per the instructions in the Getting Started with the 2012 Control System document in order to be able to use the netbook.

Meanwhile, veteran teams do not *have* to reimage their machines for the 2012 season. Instead, they can follow the instructions posted in the Classmate Imaging Supplement to update the machine so it's compatible with the 2012 FRC hardware and software.

We've received some feedback that not all E09 USB keys are allowing the user to boot from the drive, for which we sincerely apologize for the inconvenience. We are working to understand the root cause of this issue. Meanwhile, for those teams experiencing this issue, please use the alternate procedure in the Classmate Imaging Supplement.

Per *The Game Manual*, teams are not required to use a Classmate as their Driver Station computer. To configure your machine properly for use with the FRC Field, please follow the updated instructions posted on the 2012 FRC Robot Driver Station Information page.

The Kit of Parts

The ***Kickoff Kit Checklist, Rev A***, has been edited to make the following corrections:

- AndyMark motor PN has changed from am-9012 to am-0912.
- AndyMark gearmotor PN has changed from am-9014 to am-0914.
- FisherPrice motor PN has changed from 00968-2719 to 00968-9013.
- The sub-container for the following parts was changed from Software Pack to Small Parts Bag.
    - STOP Sticker
    - FRC Sticker
    - LabVIEW for FRC
    - WinRiver Software Bundle

Section:The Bridges

Robots traverse the center of the Court by crossing over either one of three Bridges or the 4 in. tall by 6 in. wide, smooth steel Barriers running between them. Each Alliance has one dedicated Bridge for their use at end of their Alley. An additional white Coopertition Bridge is located at the center of the Court. Each Bridge is 48 in. wide, 88 in. long (outside dimensions), and sits with the top platform 12 in. high off the ground when level. Each Bridge is mounted on a double-hinge that allows the Bridge to tip towards either end of Court. The top surface of each bridge includes an array of 15 small holes, details of which are included in the official field drawings.

A Bridge will count as Balanced if it is within 5° of horizontal and any Robots touching it are fully supported by it.

Section:[G10]

Robots may not grab, grasp, grapple, or attach to any Arena structure. Robots may not push or react against the top of the Fender. (Robots may push or react against any element of the Arena that is not protected by another rule.)
Violation: Foul

Section:[G40]

When the final score is assessed per [G37], Robots completely supported by a Balanced Alliance Bridge, per Section 2.2.5, earn points as follows:

# of Robots	Qualification	Elimination
1	10	10
2	20	20
3	20	40

As the level of competition at the *FIRST* Championship is typically very different than during the competition season, the Game Design Committee will possibly alter the value of Balancing at the *FIRST* Championship within the range of 5 to 15 points per Robot.

Section:[R61]

Each Jaguar must be controlled with signal inputs sourced from the cRIO and passed via either a connected PWM cable or a CAN-bus connection.

A. The Jaguar must receive signals via either a PWM cable -OR- a CAN-bus connection. Both may not be used simultaneously.
B. PWM configuration: If the Jaguar speed controller is controlled via PWM communications, the PWM port on the Jaguar speed controller must be connected directly to a PWM port on the Digital Sidecar with a PWM cable. No other devices may be connected to these PWM ports. No other devices may be connected to any other ports on the Jaguar speed controller with the exception of connection to the coast/brake port.
C. CAN-bus configuration: If the Jaguar speed controller is controlled via CAN-bus communications, then each Jaguar speed controller must be connected to either the cRIO or another CAN-bus device with a CAN-bus cable.
D. If the CAN-bus configuration is used, the firmware on all Jaguar speed controllers must be updated to at least Version ~~94~~ 99 of the official *FIRST* firmware.

Section:[R71]

The only pneumatic system items permitted on 2012 FRC Robots include the items listed below.

A. Items ~~listed in the 2012 KOP Checklist or available via FIRST Choice~~ available in the 2012 Kit of Parts.

B. Pneumatic pressure vent plug valves functionally equivalent to those provided in the KOP.

Parker valves PV609-2 or MV709-2 are recommended.

C. Solenoid valves with a maximum ⅛ in. NPT port diameter, and a maximum Cv of 0.32 (if non-KOP valves are used, the team will be required to provide part documentation validating that the valves meet these constraints).
D. Solenoid valves that are rated for a maximum working pressure that is less than 125 psi rating mandated above are permitted, however if employed, an additional pressure relief valve must be added to the low pressure side of the main regulator. The additional relief valve must be set to a lower pressure than the maximum pressure rating for the solenoid valve.
E. Additional pneumatic tubing, with a maximum 0.160 in inside diameter, functionally equivalent to that provided in the KOP, with the pressure rating clearly factory-printed on the exterior of the tubing or with supplier documentation showing the pressure rating.
F. Pressure transducers, pressure gauges, and connecting fittings,
G. Pressure regulators with a maximum bypass pressure of no more than 60 psi,
H. Pneumatic cylinders,
I. Pneumatic storage tanks, and
J. Compressors compliant with Rule [R73].

For the purposes of the FRC, the following devices are not considered pneumatic devices and are not subject to pneumatic rules (though they must satisfy all other rules):

- a device that creates a vacuum
- closed-loop COTS pneumatic (gas) shocks
- air-filled (pneumatic) wheels

Section:[R01-2]

Created [R01-2] from [R01-1] original blue box.

The Robot must have a Frame Perimeter that is comprised of fixed, non-articulated structural elements of the Robot. The Frame Perimeter of a Robot is defined by the outer-most set of exterior vertices on the Robot that are within the Bumper Zone, which is between 2 and 10 in. from the floor. Minor protrusions no greater than ¼ in. such as bolt heads, fastener ends, and rivets are not considered part of the Frame

Perimeter.

To determine the Frame Perimeter, wrap a piece of string around the Robot at the level described in [R02]. The string describes this polygon.

Note: to permit a simplified definition of the Frame Perimeter and encourage a tight, robust connection between the Bumpers and the Frame Perimeter, minor protrusions such as bolt heads, fastener ends, rivets, etc are excluded from the determination of the Frame Perimeter.

Section:[R01-1]

Removed Blue Box to create [R01-2]

Section:[R48]

Added Rule #

The only motors and actuators permitted on 2012 FRC Robots include:

A. up to 4 CIM motors (part #FR801-001, M4-R0062-12, AM802-001A, 217-200 or PMR25R-45F-1003),
B. up to 4, in any combination, of the BaneBots motors provided in the KOP (acceptable part numbers are M7-RS775-12, M7-RS775-18, M5-RS550-12, M5-RS550-12-B, and M3-RS395-12),
C. up to 2 window motors (acceptable part #s are 262100-3030 and 262100-3040),
D. up to 2 FisherPrice motors (acceptable part #s are 00968-~~2719~~ -9013, 00801-0673, and 00968-9015),
E. up to 2 AndyMark motors (acceptable part # is ~~am-9012~~ am-0912),
F. up to 2 AndyMark gearmotors (acceptable part # is ~~am-9014~~ am-0914),
G. up to 2 Denso throttle control motors (acceptable part # AE2351000)
H. up to 2 VEX motors (acceptable part # 276-2177)
I. up to 2 window lift, seat, windshield wiper or door motors obtained through either the *FIRST* -Automotive Recyclers Association partnership or from a prior years' KOP.

Note: It will be up to the teams to show that the motors used on the Robot are legal by providing paperwork showing the motor's original use, i.e. if it's called a "seat motor" on the ARA receipt, it is a seat motor.

J. electrical solenoid actuators, no greater than 1 in. stroke and rated at no greater than 10 watts continuous duty at 12 V,
K. drive motors or fans that are part of a speed controller or COTS computing device
L. an unlimited number of COTS servos with a maximum power rating of 4W each at 6V

Servo Max Power Rating = (Stall Torque) X (No Load Speed)

Section:[R50]

All electrical loads (motors, actuators, compressors, electric solenoids) must be supplied by an approved power regulating device (speed controller, relay module, or Digital Sidecar PWM port) that is controlled by the cRIO on the Robot.

a. Each CIM motor and Fisher-Price motor must be connected to one and only one approved speed controller. These motors must not be connected to relay modules.
b. Servos must be directly connected to the PWM ports on the Digital Sidecar. They must not be connected to speed controllers or relay modules.
c. If used, the compressor must be connected to one and only one approved relay module.
d. Each other electrical load (motor or actuator) must be supplied by one and only one approved speed controller, or one and only one relay module.
e. Electric solenoids may alternatively be supplied by a Solenoid Breakout Board connected to the NI 9472 cRIO module, which is powered by 12V.

ADMINISTRATIVE - Team UPDATE - 2012-03-13

Section:Award Overview

The *FIRST* Future Innovator Award will be judged by a panel of leading experts in the fields of engineering and patent law, including Dean Kamen, and representatives from Abbott and others, to determine the winning idea.

The winner will be announced at the *FIRST* Championship in St. Louis. The winning students will be granted an award presented by the Abbott Fund and also will have the opportunity to meet with a venture capitalist firm for a real-world experience to discuss their invention and possible business application.

The *FIRST* Future Innovator Award competition is open to all North American FRC and FTC teams officially registered for the current 2011/2012 *FIRST* competition season. The portal for student submissions will open in February and the deadline for submissions will be Noon, March ~~16~~ 30, 2012, Eastern Standard Time.

ADMINISTRATIVE - Team UPDATE - 2012-02-24

Section:Eligibility

Each year, students may submit an essay nominating one mentor from their team to be considered for this award. *FIRST* will recognize one adult mentor at each regional to receive the WFFA. If a team already has a mentor who has received the WFFA in a prior year, then that team may re-submit that mentor in the current year in addition to ~~instead of~~ nominating a mentor for the WFFA if they wish. The current year WFFA recipients, along with those mentors who received a WFFA in a prior year, and have been re-nominated, will be judged to receive the WFA at the FRC Championship.

ADMINISTRATIVE - Team UPDATE - 2012-02-03

Section:Criteria

If a team is attending more than one regional event, the mentor must select one event at which their nominations are to be considered. Each essay must clearly state the team name, the names and grade levels of the student(s) nominated, an explanation of why the students were nominated as well as the regional event at which the nomination is to be considered. Teams participating in Michigan and Mid-Atlantic Robotics Region District events must submit their nominees at the local Championship.

Section:Award Eligibility Requirements

Michigan ~~Region/~~State Championship WFFA (applies only to teams participating in Michigan district events) - Each Michigan District ~~event~~ team may nominate one adult member ~~for~~ from their team ~~for~~ at the Region or State Championship ~~Woodie Flowers Finalist Award~~. Each District team many only nominate their candidate at one of the local District events. The adult mentor must be on the same team as the student nominators and only one adult member may be nominated per team. Previous WFFA recipients ~~or~~ are not eligible to receive the current year WFFA. One Regional WFFA recipient will be selected at the Michigan ~~each Region/~~State Championship.

MAR Region Championship WFFA (applies only to teams participating in MAR district events) - Each MAR District team may nominate one adult member for their team at either the Region Championship or a Regional Event they are attending. District teams that nominate their candidate for the Region Championship many only nominate their candidate at one of the local District events. The adult mentor must be on the same team as the student nominators and only one adult member may be nominated per team. Previous WFFA recipients are not eligible to receive the current year WFFA. One Regional WFFA recipient will be selected at the Region Championship.

ADMINISTRATIVE - Team UPDATE - 2012-01-20

Section:Complete Awards List

Section 6.2 has been updated to include the following edits:

Deleted the 'X' indicating the Autodesk Award(s) will be given at Regionals. This is a Championship-only award this year.

Added a new row,

Award: *FIRST* Future Innovator Award *presented by the Abbott Fund*

Description: This award celebrates innovation and intellectual property creation inspired by the FIRST season experience

Selected by: *FIRST* Future Innovator Award Judge Panel

Presented: *FIRST* CMP

ADMINISTRATIVE - Team UPDATE - 2012-01-17

Section:Awards

Sections 6.6.3 and 6.6.4 have been updated to include content (formerly “To be announced”).

Section 6.11, “*FIRST* Future Innovator Award presented by the Abbott Fund,” has been added.

Section:Robot Carts

To protect team members from muscle strains and other injuries as they transport the robot between the pits and the competition area, we strongly recommend that team members use a cart. Please keep the following in mind:

- Carts must be safe for cart operators, bystanders, and field personnel. A cart may be declared unsafe by the Field Supervisor, FTA, or Lead Robot Inspector. Carts declared unsafe must remain in the team pit area.
- Carts must remain in the team pit area when not in use for robot transportation;
- All carts should fit through a standard 30-inch door;
- Wheels on the cart must not damage site flooring; and
- Do not add music or other sound devices to the cart.
- Put your team number on your cart so it can be identified by field personnel

Refer to the “FIRST Safety Manual” for robot lifting techniques. By practicing these safety techniques, your team members will also develop a quick, fluid routine.