



FIRST Safety

FIRST Safety

OHSa Training not Safe?

OHSa Training not Safe?

Posted by FRC2859 at 01/31/2009 10:18:07 pm

Speaking to volunteer alumni and other FRC Teams, we have learned that there is no proper training for the safety advisors. As rookies, we are not aware of how the safety advisors operate at events but we are a team that strongly supports OHSa and even have OHSa Compliance Officer and OHSa Authorized Trainers on our team. We were wondering if the Safety Advisors will be at the same level as our training in safety and be more than just "common sense" because we are afraid of being told our training is not safe.

Re: OHSa Training not Safe?

Posted by GDC at 02/02/2009 01:58:01 pm

The green-shirted lead safety advisors, as discussed in Section 2.6.2, are Underwriters Laboratories employees. We rely on their professional training and certification to provide appropriate safety advice at FRC events.

Meanwhile, the 2009 safety documentation will be posted [[URL="http://first.wpi.edu/Volunteers/2009sa953.html"\]here\[URL\]. The 2008 documentation is there for your review now.](http://first.wpi.edu/Volunteers/2009sa953.html)

The Pit

The Pit

Kids in the pits

Kids in the pits

Posted by FRC1983 at 01/21/2009 12:32:59 pm

At the kickoff a new rule was mentioned for the pits in which kids under 12 were not allowed in the pits without an adult. I am certainly in full accord with this rule but I would just like some clarification.

We have FLL teams and school classes that would like to come and visit and I need to know whether this means that an adult needs to be with each child or whether an adult can supervise a group of children.

Can team members act as ambassadors for these visitors in the pits in lieu of an adult?

Our team has always invited our FLL teams and any interested elementary school classes to come and visit and get excited about what FRC is like. We want to continue to do this but we also want to make sure we follow the pit rules.

Can you give us guidance in this?

Thank you

Re: Kids in the pits

Posted by FRCOPS at 01/29/2009 03:03:50 pm



The official wording from section 3.9 of the Manual is "Children under 12 MUST be accompanied in the Pit by an adult at all times!" Although team members are certainly welcome to assist with children, an adult (over 18) will need to accompany the children as well.

We expect the teams and the adults involved to use your best judgment about how many children can be reasonably supervised by one adult.

The Pit

Tethering Robots in the Pits/Practice Fields?

Tethering Robots in the Pits/Practice Fields?

Posted by FRC2056 at 02/14/2009 06:23:16 pm

As per Team Update 12, robots may be operated via wireless control only on the competition fields.

Does this mean that there will be no wireless connection to robots in the pits/practice fields?

If so, will we be allowed to tether our robots in the pits?

If so, what specifically are we allowed to use to tether the robot to the driver station and where will this be connected (ports on cRIO/Driver Station)?

Re: Tethering Robots in the Pits/Practice Fields?

Posted by GDC at 02/16/2009 01:43:15 pm

Yes.

Yes.

Any standard CAT5 Ethernet cable must be used to tether Port 1 of the cRIO to either Ethernet port on the Drivers Station.

The Pit

Crate in the Pit

Crate in the Pit

Posted by FRC2791 at 02/15/2009 12:52:24 pm

In years past, team have been allowed to use their crate as part of their pit setup (work space, storage, etc). Have there been any changes to this allowance providing that the team does not extend into a neighboring team's area?

Re: Crate in the Pit

Posted by FRCOPS at 02/16/2009 04:06:43 pm

No changes. Please carefully review section 3.9.3.3. (Space Regulations).

Battery Shipment

Battery Shipment

We have lost our original battery box

We have lost our original battery box

Posted by FRC2942 at 02/03/2009 08:15:07 pm

According to the rules, we are required to ship our battery in its original box. We have lost our box. Are there alternatives solutions?



Re: We have lost our original battery box

Posted by FRCOPS at 02/10/2009 02:35:45 pm

Please recreate the battery packaging as best you can. If your team does not remember what the battery packaging consisted of, you may want to contact another local team to take a look at their battery box. This will ensure the safest shipping possible for your battery.

Crate Information

Crate Information

Shipping Crate Geometry

Shipping Crate Geometry

Posted by FRC234 at 01/11/2009 08:43:05 pm

Can the shipping crate be something other than a square or rectangle, as long as it does not exceed the maximum allowable dimensions?

Re: Shipping Crate Geometry

Posted by FRCOPS at 01/13/2009 04:24:32 pm

The shape of your crate is less important than making sure that the crate fits within the maximum dimensions listed in the Manual (Section 4.4). However, please keep in mind that the shipping carrier must be able to transport your crate easily from dock to truck and back again in order for it to arrive at your Regional safe and sound. Also, remember that your crate must be able to withstand stacking for transport and storage.

Crate Information

Crate material

Crate material

Posted by FRC1429 at 01/14/2009 01:00:40 pm

We have read the rules on how to make a crate for shipping, but I would like to get a clarification.

Can we build the crate out of sheet aluminum? We have seen other teams do this, and would like to do it as well. We will keep it under the weight limit.

Thanks,

Paul

Re: Crate material

Posted by FRCOPS at 01/16/2009 09:33:44 am

Yes, however the crate must still follow the guidelines as specified in section 4.4.1.1 of the Manual. A crate made of metal is likely to be heavy when loaded with your robot and therefore may also incur extra shipping and drayage charges for the team.

Crate Information

Crate Size

Crate Size

Posted by FRC2743 at 02/11/2009 10:25:42 pm

Section 4.1.1.3 "Have a footprint no greater than 4' by 4' "



We apparently built our crate from 4' wide plywood, so it is likely to be 48" plus 2 thicknesses wide.

Is there tolerance room for this common occurrence, or do we need to rip our crate to a narrower width?

4' x 4' footprint

Posted by FRC2973 at 02/13/2009 10:44:29 am

Rule 4.4.1.1-3 says All Crates MUST have a footprint no greater than 4' by 4'

I know it says no greater than, but that requires rip cutting 3/8 of an inch off of each 4' wide sheet of plywood or making a miter cut down each edge or something similar. Is it acceptable to use 4' plywood as-is and have the footprint 48 3/8 inches by 48 3/8 inches?

Re: Crate size tolerance

Posted by FRCOPS at 02/13/2009 04:30:29 pm

The 4' by 4' footprint for Robot Crates is firm. Crates must meet all requirements set forth in Section 4.4.1.1 of the Manual.

Shipping Your Robot

Shipping Your Robot

Shipping Deadline

Shipping Deadline

Posted by FRC501 at 02/06/2009 11:21:05 am

Hi,

This is my first year helping to ship the robot so I just want to double check something. Section 4 of the manual says that the robot needs to be out of our hands by Tuesday, February 17th. That means 5pm on the 17th right? Not midnight on the 16th?

Thanks so much,
Jen - 501

Re: Shipping Deadline

Posted by FRCOPS at 02/10/2009 02:59:29 pm

In order to comply with the 2009 FRC Rules, your robot must leave the team's possession by 12 midnight local time on [B]Tuesday, February 17[/B] (before 12:01 AM February 18). However, you must keep in mind certain factors, for example:

- 1) FedEx has limited hours of pickup. FedEx can tell you what is the latest time they will pick up from your location.
- 2) If you are personally delivering your robot to the drayage site, you must do so within the site's business hours.
- 3) Your robot must arrive at the drayage site by the date specified in the Shipping and Drayage document for the Regional Event your team is attending (found on the [URL="http://www.usfirst.org/community/frc/regionalevents.aspx?id=430"]Regional Events page[/URL])...



This list is not intended to be comprehensive, but to give you a few factors to keep in mind. Please read all shipping instructions carefully.

Shipping Your Robot

Shipping Robot Home

Shipping Robot Home

Posted by FRC2476 at 02/06/2009 01:34:50 pm

Is it possible to simply take the robot home after the competition? Or do we have to Fed-Ex it back to our school? I was unable to find clarification of this in the rules. Thanks.

Re: Shipping Robot Home

Posted by FRCOPS at 02/10/2009 10:33:42 am

Please refer to Section 4.9.1 - 4.9.1.2 of the Manual for complete details. Teams are not permitted to transport robots home themselves without prior approval of the Director of FRC. Exceptions to this rule will be made on a case-by-case basis.

1. Requests will be considered for a team's last event of the season only.
2. Teams requesting an exception must contact Team Support via [email]frc teams@usfirst.org[/email].
3. [B]Complete the exception application process by February 13, 2009[/B] to allow for processing. Make the request clear and provide the:
 - Subject line: "Robot Removal, “Name of Event - Team XXXX (your team #)"
 - Reason for the rule variation
 - Event from which the robot would be taken
 - Description of the vehicle you will use to transport your robot and crate

Upon reception of this information, FIRST will, in good faith, consider your request. Be advised that each venue, its rules, and safety situations are unique. Some events are not laid out for safe robot removal and you will be refused for that reason. The FRC Director will review each case and will provide a written response. This decision will be final.

Shipping Your Robot

Bagging robots in Michigan

Bagging robots in Michigan

Posted by FRC1254 at 02/12/2009 09:07:57 pm

What time on Tuesday do Michigan teams need to have their robots sealed in their bags?

Re: Bagging robots in Michigan

Posted by GDC at 02/16/2009 01:56:16 pm

5:00pm local time

Shipping Your Robot

Shipping time

Shipping time

Posted by FRC696 at 02/13/2009 07:59:17 pm

According to:



4.10.2. Crate Shipment Deadlines

All team robots/crates must leave the team's hands by February 17, 2009. This date applies whether you ship your crate(s) or drive it/them to the drayage facility. The crate(s) must arrive at

your team's initial event's drayage warehouse by the Monday before the event.

NOTE: Teams must work within the business hours of the shipper and drayage facilities.

Hours: Monday – Friday, 8 a.m. to 4 p.m.

There is no Time restrictions besides what the company is willing to work with.

I have looked through the rules and have found nothing to contradict this assumption.

however, My teammates tell me it has had to be picked up by 10:00 in previous years.

For now our robot is going to be picked up from 3pm to 6pm. is this legal?

Re: Shipping time

Posted by FRCOPS at 02/16/2009 11:14:53 am

Your teammates are mistaken. As long as the ROBOT is delivered to, and accepted by, the shipper or drayage facility before midnight on February 17, then you have satisfied the shipping requirement.

FedEx Freight System Complimentary Shipping

FedEx Freight System Complimentary Shipping

FedEX Complimentary Shipping

FedEX Complimentary Shipping

Posted by FRC1071 at 02/09/2009 12:26:35 pm

In the past (last year?) I have set up a FedEx account. Our account number is on TIMs and has a check in the statis section that makes me think everything is OK.

When talking to FedEx to schedule my pick up they cannot find my account number in their files. Is this normal? Is it OK to make a new account? IF so do I then have to change my account number on TIMs? Can this cause a problem in shiiping verification?

I have read the different sections on shipping and:

[url]<http://www.usfirst.org/community/frc/content.aspx?id=12298>[/url]

states that I need to supply the pro-number but the person at FedEx was looking for an account number.

Re: FedEX Complimentary Shipping

Posted by FRCOPS at 02/10/2009 10:50:06 am

You do not need a FedEx account number to use your two donated shipments. Perhaps the FedEx representative you spoke to was not familiar with this donation. If they request billing information, you can provide the "Bill Freight Charges to" information pre-printed on your Bill of Lading. However, you should be able to schedule the pickup using the information provided on our website: [url]<http://www.usfirst.org/community/frc/content.aspx?id=12298>[/url].

The account number your team provides in TIMS is used to charge anything that [I]FIRST[/I]



ships to the team at the team's expense. For example, if a team requested early shipment of the new control system, the shipping charge was picked up by the team via their shipping account. You would need to talk to FedEx about why they cannot find the account you set up.

Chairman's Award

Chairman's Award

Chairman's Award Required Video

Chairman's Award Required Video

Posted by FRC1515 at 01/13/2009 10:00:55 pm

Will the Chairman's Award Required Video this year have to be submitted _____ or only to judges at the Regional Event?

Re: Chairman's Award Required Video

Posted by FRCOPS at 01/16/2009 10:03:15 am

Teams competing for the Regional Chairman's Award must provide a video, on DVD, to the judges at the event. The video does not need to be submitted via FIRSTAwards.org. For further clarification, we have recently posted an updated Chairman's Award criteria document on our website here: [\[url\]http://www.usfirst.org/community/frc/content.aspx?id=440\[url\]](http://www.usfirst.org/community/frc/content.aspx?id=440).

Chairman's Award

2009 Chairman's Award Video Questions

2009 Chairman's Award Video Questions

Posted by FRC341 at 01/20/2009 09:01:49 pm

Hello! I had some questions about the format and size of the video submission to accompany the Chairman's submission this year. In the PDF about the Chairman's Award which can be found here, [\[url\]http://www.usfirst.org/uploadedFiles/Chairman%20Award%20Criteria.pdf\[url\]](http://www.usfirst.org/uploadedFiles/Chairman%20Award%20Criteria.pdf), it states that the video "Most be able to be compressed to not more than 5 Mb for web." Does that mean that we could supply both a high quality version of our video on the DVD along with a compressed web-ready 5mb file? Also, if we provide a Flash video are we allowed to present it in an .html page that can be loaded from the disc? And finally, are there minimum dimensions that you would like to see of the video? Thank you very much.

Re: 2009 Chairman's Award Video Questions

Posted by FRCOPS at 01/27/2009 09:25:28 am

[QUOTE=FRC341;24829]Hello! I had some questions about the format and size of the video submission to accompany the Chairman's submission this year. In the PDF about the Chairman's Award which can be found here, [\[url\]http://www.usfirst.org/uploadedFiles/Chairman%20Award%20Criteria.pdf\[url\]](http://www.usfirst.org/uploadedFiles/Chairman%20Award%20Criteria.pdf), it states that the video "Most be able to be compressed to not more than 5 Mb for web." Does that mean that we could supply both a high quality version of our video on the DVD along with a compressed web-ready 5mb file?[/QUOTE]

Yes, please do supply a higher quality version of your video on the DVD along with the 5mb version.

[QUOTE=FRC341;24829]Also, if we provide a Flash video are we allowed to present it in an



.html page that can be loaded from the disc?[/QUOTE]

Yes.

[QUOTE=FRC341;24829]And finally, are there minimum dimensions that you would like to see of the video?[/QUOTE]

No, there are no minimum dimensions.

Chairman's Award

Chairman's Award and NASA grants

Chairman's Award and NASA grants

Posted by FRC696 at 01/23/2009 06:52:30 pm

According to [url]http://www.usfirst.org/uploadedFiles/Chairman%20Award%20Criteria.pdf[/url], a team that wins the chairman's award is unable to submit for the chairman's award again. will this render them unable to receive the NASA grant?

Re: chairmans award

Posted by FRCOPS at 01/26/2009 10:00:13 am

No, winning the Chairman's Award does not disqualify you from applying for a NASA grant in the future. Please note that winning a Regional Chairman's Award also does not prevent the team from applying for a Regional Charman's Award in subsequent years.

Chairman's Award

Chairman's Award Video

Chairman's Award Video

Posted by FRC1712 at 01/29/2009 09:29:21 am

In submitting the video on a DVD. Are we to assume judges will be playing the files on a "DVD player" or through Windows Media, Quicktime, etc on a computer? If the "DVD player" is not something the judges would use and since the filesize is so small, isn't a CDR just as good to store files on as using a DVD? If a "DVD player" will be used, then I'd assume (but hope it wouldn't be true) that we need to do the full DVD authoring thing and include a menu?

Re: Chairman's Award Video

Posted by FRCOPS at 01/30/2009 03:57:25 pm

Unless your team chooses to show the video during your Chairman's Award presentation, the judges will not view the videos. They are not part of the judging process for 2009. However, you are correct that the videos will be viewed on a computer. Regional Chairman's Award winning teams will have their videos shown during the event. A CDR will be accepted, as long as your video meets the file requirements outlined in the 2009 Chairman's Award Criteria ([url]http://www.usfirst.org/community/frc/content.aspx?id=440[/url]).

Chairman's Award

Yearbook Page Directions

Yearbook Page Directions

Posted by FRC696 at 02/15/2009 05:31:33 pm

Where do we find information on the Yearbook page, required as part of the Chairman's



2009 Q&A Forum Export

generated: 02/18/2009 11:47:54 am EST

Award? We didn't find anything in section 1 of the manual, where the Chairman's Award guidelines say its supposed to be.

Re: Yearbook Page Directions

Posted by FRCOPS at 02/16/2009 02:37:44 pm

The yearbook page information, including the robot picture, is captured in the JUDGE'S section in TIMS. Login to TIMS to access your Team Summary page. The JUDGE'S section is found at the bottom of your Team Summary page. Click on Edit/View for each of the 3 required or optional areas (Additional Team Info, Team School Demographics and Team Essays) to edit the specific details of this section.

Website Award

Website Award

Website Award

Website Award

Posted by FRC2476 at 01/27/2009 04:00:50 pm

Hello, I just wanted to know some information relating to the Website Awards, is there any information online in regards to what the requirements are or whats it for?

Re: Website Award

Posted by FRCOPS at 01/29/2009 03:10:08 pm

You can find information about FRC Awards on the Awards page here: [\[url\]http://www.usfirst.org/community/frc/content.aspx?id=440\[url\]](http://www.usfirst.org/community/frc/content.aspx?id=440). Please click the "Website Award" link for detailed information.

Website Award

Website Judging Timeline

Website Judging Timeline

Posted by FRC492 at 01/30/2009 12:25:49 am

Hi GDC

We were just curious if there was a specific time frame in which the websites will be judged. I know they are finished before the regionals, and that you submit your URL on FIRST Awards, but other then the Feb 12th URL Deadline, are teams going to know when their website will be visited?

Also, as an example, our website has a login system that adds and changes some features of the website that we think the evaluators may be interested in. Is there a way to share a log-in with them, or will they contact us using the "Website Contact Email" if they have questions?

Much Appreciated,

-492

Re: Website Judging Timeline

Posted by FRCOPS at 02/02/2009 10:20:13 am

Teams will not know when evaluators visit their site. Evaluators may visit a website any time between the February 12th deadline and the Monday night before the regional event for which the website is being evaluated. Evaluators are viewing the websites from the perspective of someone who has stumbled across the site and is just learning about [I]FIRST[I]. They will



not contact teams directly about the websites, so please make sure that any information the judges need is available on your site.

Rookie Awards

Rookie Awards

Rookie Chairman's Award Requirements

Rookie Chairman's Award Requirements

Posted by FRC2901 at 02/09/2009 04:22:38 pm

For the Rookie Chairman's Award submission, since we do not present in front of the judges, are we required to create and submit the video portion of the Award?

Thank You,
Team 2901

Re: Rookie Chairman's Award Requirements

Posted by FRCOPS at 02/10/2009 10:56:28 am

We encourage, but do not require, rookie teams to enter a Chairman's Award submission for the Rookie All-Star Award. Teams are judged for this award at their Regional Events. Rookie teams who decide to write a Chairman's Award submission may present this packet of information to the judges at the Regional Event they attend. This packet would include the same information as a Chairman's Award submission.

If you would like to record your rookie year experiences on video, this may be useful in the future, but judges for the Rookie All-Star Award will probably not have easy access to a DVD player at the event.

The Arena

The Arena

Regolith Material

Regolith Material

Posted by FRC2035 at 01/07/2009 04:09:02 pm

The rules say the flooring of the Arena is Glasliner FRP but don't specify smooth or embossed gel coating. Which type of Glasliner should we get?

Field Material

Posted by FRC435 at 01/07/2009 05:04:06 pm

1. Is there a part number to go along with the description of the field material?
2. Would something such as linoleum be a close equivalent to the slickness of the floor material?

Texture of the arena

Posted by FRC378 at 01/07/2009 05:12:13 pm

What is the texture of the material used for the crater?

Glasliner FRP type

Posted by FRC293 at 01/07/2009 08:50:03 pm

From the Glasteel web site:



"Glasliner FRP panels are offered in two popular surface finishes. Embossed or Smooth Gel Coat".

Which surface finish is used for the Regolith? Thank you

Arena Floor FRP

Posted by FRC1764 at 01/07/2009 11:26:50 pm

We would like some clarification about the FRP Liner. There is both smooth and "pebbled" FRP available for purchase, but nothing specifically stated concerning this. Could we have an update concerning this material? We know its "Glasliner FRP". Smooth or pebbled? Locations to buy?

Re: Regolith Material

Posted by GDC at 01/09/2009 11:09:06 am

From [URL="http://frcdirector.blogspot.com/"]Bill's Blog[URL]: You can purchase 4'x8' Fiber Reinforced Plastic Sheets, pebble texture on one side, from Home Depot (SKU 121586) or Lowes (SKU 8566). If you're on a tight budget, a clean waxed linoleum tile floor (found in many older school cafeterias - but please don't damage your school's flooring!) mimics the performance of the field closely enough for practice. What is important is duplicating the coefficient of friction; 0.05 static and 0.04 dynamic.

The Arena

Location of the outpost seat

Location of the outpost seat

Posted by FRC230 at 01/07/2009 08:47:37 pm

How high off the floor is the seat at the outpost and how far is it from the port in the oit post shield?

Re: Location of the outpost seat

Posted by GDC at 01/13/2009 04:54:45 pm

Please refer to Team Update #3.

The Arena

How is the field surface attached to the floor?

How is the field surface attached to the floor?

Posted by FRC121 at 01/08/2009 10:38:03 am

How is the FRP surface attached to the carpeted floor that is underneath?

FRP and Carpet in Arena

Posted by FRC492 at 01/08/2009 09:03:35 pm

Hi GDC!!

We were wondering, for design purposes, if you had any further details about how the FRP sheets are attached at regional events. I have heard that the official drawings are 3 long 50 foot sheets, but also that maybe they will be 4 x 8 sheets... Is there any definites at this point? (Basically, are the way in which they are attached going to cause a change in the friction in those areas, or is it negligible?)

Also, for the carpet border around the field, are the FRP sheets sunk into the carpet so that



there is no edge from the sheets to the carpet, or is there a lip? (Although I think this will probably be less than 1/4" anyways, so mostly negligible)

We have talked to one of the field assembly people for the Seattle Regional, and he does not know yet how it will work, so we thought we would ask.

Thank you!

~Team 492

Regolith Attachment

Posted by FRC1746 at 01/11/2009 10:16:20 am

How will the 3 long sheets of FRP be secured?

Will they be taped together with the gaffers tape mentioned in "2009 Arena Layout and Markings.pdf" ?

Will they be secured to the carpet in any way?

We are building a practice field and would like to emulate the actual field as much as possible.

Re: How is the field surface attached to the floor?

Posted by GDC at 01/11/2009 10:32:49 pm

For the competition fields, the Regolith will be made from three 8-foot by 50-foot rolls of the FRP surface material. The rolls will be taped in place to hold them in position on the underlying carpet. Edges of the FRP surface material will be taped down and the seams between the three pieces will be taped together with fiberglass tape with a friction characteristic similar to the FRP material. This will be done to prevent uneven edges/seams from "catching a wheel" during the game.

The Arena

Exact Regolith/Glasliner FRP

Exact Regolith/Glasliner FRP

Posted by FRC2028 at 01/09/2009 04:14:12 pm

Can you confirm that the arena floor will be the Glasteel product called Glasliner FRP (SBS) Premium Gel Coat, or (TOS) Traditional Pebble Finish?

As seen here

[url]http://www.glasteel.com/ingles/DetalleSubMarcaProd_1_1261_1262_1266_1273_1274.html[/url]

Re: Exact Regolith/Glasliner FRP

Posted by GDC at 01/11/2009 10:18:54 pm

The Regolith covering of the Crater floor will be made of eight- by fifty-foot sections of Glasliner FRP material. The traditional pebbled texture material will be used, with the textured side up. Teams can obtain four- by eight-foot sheets of this material from Home Depot (SKU 121586) or Lowes (SKU 8566). If you are on a tight budget, a clean waxed linoleum tile floor (found in many older school cafeterias - but please don't damage your school's flooring!) mimics the performance of the field closely enough for practice.



The Arena

Outpost Hoop usage

Outpost Hoop usage

Posted by FRC1746 at 01/11/2009 10:58:30 am

What is the outpost hoop in drawing TE-9007a used for?

Re: Outpost Hoop usage

Posted by GDC at 01/11/2009 10:27:33 pm

This assembly is used to simulate the port in the OUTPOST shield through which EMPTY CELLS are passed from the PAYLOAD SPECIAL1ST to the ROBOT.

The Arena

Outpost Moon Rock storage

Outpost Moon Rock storage

Posted by FRC1746 at 01/11/2009 11:07:33 am

Will Outpost Moon Rocks be in a box or simply piled next to the Outpost?

If a box, what are the dimensions and where will box be located?

Re: Outpost Moon Rock storage

Posted by GDC at 01/12/2009 05:17:37 pm

Please refer to Section 6.2.7 of The Manual. Two containers are provided for the temporary storage of Game Pieces at each PAYLOAD SPECIAL1ST location. Each container is approximately 26 x 14 x 12 inches (large enough to hold approximately 10 GAME PIECES). In the FUELING STATION, they are located behind the PAYLOAD SPECIAL1ST as they are facing the field; in the OUTPOST they are located to either side of the seat.

The Arena

Regolith floor material

Regolith floor material

Posted by FRC2028 at 01/11/2009 02:48:43 pm

Elsewhere GDC says the Lowes and HomeDepot material may be used and quotes from "Bills Blog" the coefficient of friction as :

"What's important is duplicating the coefficient of friction; 0.05 static and 0.04 dynamic."

But the Section 10/KOP says:

10.2.4.1 Wheels

The wheels supplied in the 2009 KOP are very different from previous years' kit wheels. The tread material is Celcon M90, and has the following coefficients of friction on white, rippled fiberglass plastic sheet

Inline, static: 0.06 Inline, dynamic: 0.05 Transverse, static: 0.14 Transverse, dynamic: 0.10

So is the Lowes or Home Depot material REALLY the same material? And is it the pebble finish?

Re: Regolith floor material



Posted by GDC at 01/12/2009 05:18:43 pm

Yes, it really is the same material. Honest. Cross our heart and hope to die. It is the same stuff.

The Arena

Spec for the Outpost Chair

Spec for the Outpost Chair

Posted by FRC111 at 01/12/2009 04:14:59 pm

We would like to know the specs for and the kind of chair is being used.

- Does it swivel or is it fixed?
- What is the height of the horizontal part off the floor?
- How long is the seatbelt and how securely must it be fastened?

Thank you.

Re: Spec for the Outpost Chair

Posted by GDC at 01/13/2009 04:50:46 pm

Please refer to Team Update #3.

The Arena

Fiberglass tape source

Fiberglass tape source

Posted by FRC1746 at 01/12/2009 07:08:24 pm

"Edges of the FRP surface material will be taped down and the seams between the three pieces will be taped together with fiberglass tape with a friction characteristic similar to the FRP material. This will be done to prevent uneven edges/seams from "catching a wheel" during the game."

Can you identify the part number and/or supplier of the fiberglass tape so we can emulate the setup we will find at the regionals?

Re: Fiberglass tape source

Posted by GDC at 01/15/2009 11:48:02 pm

JVCC 762-BD Bi-Directional Filament Strapping Tape is a fiberglass reinforced polypropylene tape which gives you #220 tensile strength in both directions (measures the tape's resistance to being broken apart as stress is applied). It is a high strength, bi-directional filament tape used for extremely demanding strapping, bundling and palletizing applications. High tear resistance makes it ideal for tabbing/seaming in the metal fabricating industry. Can also be used as project material for building out a Hexayurt shelter. Referred to as strapping tape or string tape.

Equivalences: 3M #8959; IPG #745; Cantech #190; SICAD #FG-BD

JVCC 762-BD Bi-Directional Filament Strapping Tape specifications:

Adhesive: synthetic rubber

Carrier/Backing: fiberglass reinforced polypropylene film



Thickness: 5.1 mils (total)
Adhesion: 91 ounces per inch (to stainless steel)
Tensile Strength: 220 pounds per inch (longitudinal) 220 pounds per inch (transverse)
Elongation: 6%
Core: 3" diameter neutral

We are using: 3 in. x 60 yds.

Available from: [url]http://www.findtape.com/shop/product...296&height=953[/url]

The Arena

Will there be real-time scoring?

Will there be real-time scoring?

Posted by FRC1746 at 01/16/2009 08:48:07 am

It looks like it will be challenging to keep track of which balls are where and how many and what type each robot has in it's trailer during the game.

Should we expect to see real-time scoring displayed, or will scores simply be posted only at the end of the match?

Re: Will there be real-tim scoring?

Posted by GDC at 01/18/2009 10:45:33 pm

The score will be posted on the Audience Screen in real-time, throughout the match.

The Arena

Operator Interface Shelf Height

Operator Interface Shelf Height

Posted by FRC1717 at 01/16/2009 11:48:28 pm

What is the height at which the operator interface will sit for the pilots during a match?

Re: Operator Interface Height

Posted by GDC at 01/18/2009 10:35:18 pm

As shown in Drawing FE-00004, the Players Station shelf is approximately 34 inches above the ground.

The Arena

Operator Control board

Operator Control board

Posted by FRC68 at 02/06/2009 11:42:29 am

Our control board designer would like to know which ports will need to be accessible for plugging into the players station at competition.

Re: Operator Control board

Posted by GDC at 02/09/2009 02:08:16 pm

As noted in Section 6.2.6 of The Manual, each Base Player Station includes two cables that must be connected to the OPERATOR CONSOLE. These cables must connect directly to the Competition Port and either of the Ethernet Ports on the Driver Station.



The Arena

Tongs tethered to which side

Tongs tethered to which side

Posted by FRC585 at 02/06/2009 10:18:39 pm

Upon which side of the fueling port are the tongs tethered to?

Upon the outside or the inside wall?

Re: Tongs tethered to which side

Posted by GDC at 02/09/2009 02:15:58 pm

Outside wall.

The Arena

Footwear limitations

Footwear limitations

Posted by FRC386 at 02/12/2009 10:52:39 am

Are there any restrictions or limitations on the sole material of the footwear that drive teams or field reset volunteers can wear so as not to mark the crater floor material?

Re: Footwear limitations

Posted by GDC at 02/12/2009 03:11:26 pm

To avoid any problems with the floor, we recommend rubber-soled shoes (sneakers, tennis shoes, etc). Hard soles and heels should be avoided. Open-toe shoes are not allowed because of safety issues.

Game Pieces

Game Pieces

Replacing damaged game pieces

Replacing damaged game pieces

Posted by FRC2775 at 01/09/2009 06:20:56 pm

Will broken orbit balls be replaced in between matches. If yes what defines a broken orbit ball (squished?, snapped plastic?, torn material?, etc.)

Replacing Damaged Balls

Posted by FRC1771 at 01/10/2009 01:14:31 pm

Balls will obviously be damaged in just general use. Does FIRST have a plan/policy to share regarding the replacement of broken balls during matches, between matches, and if an adequate inventory of replacements is exhausted and broken balls must be used?

Broken orbit balls?

Posted by FRC2220 at 01/12/2009 08:28:42 am

Will broken orbit balls be allowed on the field during matches?
If so, how broken can they be? Will they be checked at all for damage between matches?

Re: Replacing damaged game pieces

Posted by GDC at 01/12/2009 05:21:51 pm

GAME PIECES may become damaged during the course of normal game play. ROBOTS



should be designed to accommodate reasonable variations in the condition of GAME PIECES that may occur during the game. GAME PIECES that are identified by field reset personnel with more than two broken and/or protruding straps will be replaced before the start of the MATCH. GAME PIECES will not be replaced while a MATCH is underway.

Game Pieces

Orbit Ball geometry

Orbit Ball geometry

Posted by FRC1450 at 01/14/2009 07:41:25 am

Is there aiges, step, or JT file of the "orbit ball" available ?

Thanks

Harv

Mentor, Team 1450

Re: Orbit Ball geometry

Posted by GDC at 01/15/2009 11:46:03 pm

No. The GAME PIECES are commercial products, and not produced by FIRST. We do not have, and cannot provide, any CAD files for them. If necessary, this is left for the community of teams to develop and share. Some team-developed versions have been made public and are available through the Chief Delphi forum. Note however, that we cannot attest to their accuracy.

Game Pieces

Broken Orbit Balls

Broken Orbit Balls

Posted by FRC449 at 01/26/2009 11:15:39 am

Will all events be adequately stocked with orbit balls to replace damaged and/or broken orbit balls (between matches or otherwise)? Or will broken and/or damaged orbit balls be a likelihood for any given match?

Re: Broken Orbit Balls

Posted by GDC at 01/26/2009 02:53:01 pm

This has been previously addressed in [\[URL="http://forums.usfirst.org/showthread.php?t=11107"\]](http://forums.usfirst.org/showthread.php?t=11107)this Q&A thread^[/URL]. The answer is still the same.

Game Pieces

broken moon rocks

broken moon rocks

Posted by FRC1001 at 01/27/2009 04:05:57 pm

During a competition, will officials attempt to fix broken moon rocks, or should we assume we will be playing with broken ones? The plastic rings disconnect readily.

Re: broken moon rocks

Posted by GDC at 01/29/2009 11:12:21 pm

Please refer to this thread: [\[url\]http://forums.usfirst.org/showthread.php?t=11107\[/url\]](http://forums.usfirst.org/showthread.php?t=11107).



Payload Trailers

Payload Trailers

Trailers for no-show robots

Trailers for no-show robots

Posted by FRC1529 at 01/07/2009 01:54:46 pm

If no members of a team report for a Match, is that team's trailer left on the field?

Trailers for no-show robots

Posted by FRC190 at 01/07/2009 05:40:23 pm

Does the trailer for a no-show robot still stay on the field at the LAUNCH PADS?

No - Show Robots?

Posted by FRC234 at 01/07/2009 11:33:54 pm

If one (or more) alliance member does not make it to the match, is the trailer still placed on the playing field? Is there any modification to it, or will it sit "tongue down" at one of the starting locations. Can it be moved by the other robots in the match?

Trailers for a No-Show

Posted by FRC365 at 01/08/2009 08:38:17 am

If a team is a no-show for a match, does their team's trailer, which is defined as part of the arena, start the match unhitched in the corresponding robot's launch pad?

Broken Robots

Posted by FRC135 at 01/09/2009 02:18:39 pm

If you have an alliance member that cannot field their robot during a qualifying round, what will FIRST do with the third trailer?

Leaving it out of the game would be an obvious advantage to the alliance with two robots. On the other hand, placing it somewhere on the field would be a serious advantage to the opposing alliance.

Thank you in advance.

No Shows

Posted by FRC1038 at 01/10/2009 01:10:08 pm

What is FIRST's policy on the trailer for "no shows" (either no team members show up or just no robot) during the qualification and the elimination rounds during competition? Will the "no show" trailers be removed from play or just sit in the starting area? Will it be handled differently during elimination rounds than in qualifying rounds? It doesn't seem fair to punish an alliance by leaving a trailer unprotected when a no show happens but it could also be an unfair advantage by decreasing the maximum points the opposing alliance could score. Thanks in advance for a clarification.

Robot No-Show - What Happens to Trailer?

Posted by FRC1746 at 01/11/2009 10:55:05 am

What happens to the trailer if a team does not show up for a match?

If left on the field, will any provision be made to protect the field and/or robots from the exposed trailer hitch and pin?



Missing Robot

Posted by FRC1718 at 01/18/2009 12:38:56 pm

Forgive me if this has been covered - I've searched but have been unable to find anything regarding this:

If one of the teams on an alliance is unable to field a robot for a match, what will be done with the trailer for that team? Will it be left on the field for the match? Will there be a support under the tongue so that it can be pushed by other robots? Thanks.

Robot No Show

Posted by FRC498 at 01/18/2009 11:08:48 pm

If for some reason a TEAM's ROBOT is not present for a non-playoff match(i.e broken and unable to fix in time) What happens to said TEAM's TRAILER, is it removed from the field or is there some other procedure

Re: Trailers for no-show robots

Posted by GDC at 01/22/2009 04:25:31 pm

If a team fails to send a Robot to the Arena for a match, the Trailer is still placed in the Crater on the Launching Pad, but the tongue will be supported by a placebo hitch.

Robots may interact with the Trailer throughout the match, as deemed appropriate by the game rules.

Missing robot

Posted by FRC79 at 01/22/2009 05:33:01 pm

What happens to the trailer goal of a robot that doesn't show up to a match?

Is it put on the field?

Will there always be a even number of goals on the field during a match, if there isn't a even number of robots?

Re: Trailers for no-show robots

Posted by GDC at 02/08/2009 02:43:27 pm

Please refer to the previous answer. It is still valid.

Payload Trailers

Where do we get the team trailer?

Where do we get the team trailer?

Posted by FRC1635 at 01/08/2009 08:55:05 am

Was the team trailer included with the kit of parts or is our team to build it? If so, where do we get the specs to build? Also, how come each has an item number attached?

Thanks,

Team #1635

Re: Where do we get the team trailer?

Posted by GDC at 01/12/2009 05:26:07 pm

The TRAILER is not included in the Kit Of Parts. Drawings of a [URL="http://www.usfirst.org/community/frc/content.aspx?id=11626"]practice version of the TRAILER[URL] are provided if the TEAM desires to have one for practice and development purposes.



Payload Trailers

Weight of the trailer?

Weight of the trailer?

Posted by FRC1350 at 01/08/2009 04:13:52 pm

What is the total weight of the official trailer when empty?

Trailer

Posted by FRC836 at 01/09/2009 11:51:03 am

1. What is the weight of the Trailer?
2. What are the coordinates of the Center of Gravity of the Trailer?

Re: Weight of the trailer?

Posted by GDC at 01/13/2009 04:58:14 pm

The competition TRAILERS weight approximately 36 pounds. The precise location of the center of gravity of the TRAILER has not been determined.

Payload Trailers

Trailer Hitch Plans Problem & Weight

Trailer Hitch Plans Problem & Weight

Posted by FRC2846 at 01/09/2009 05:27:19 pm

Reading the Trailer Hitch drawings, it shows a 1/4-20 HHCS through the trailer tongue (GE-09009a.pdf) and through the Swivel Hitch (GE-09036a.pdf).

If something happens to tip the trailer when connected to a robot it will rip something up because the 1/4-20 HHCS effectively makes the Swivel Hitch no longer a swivel hitch. I don't know what will get damaged, most likely the trailer tongue or the c-frame piece on the robot.

This change was a late change (12/29/08).

Is this really what is intended? Sounds like there is a functional change of the swivel hitch.

Also, do you have any specs on the competition trailer weight?

Thanks.

- Tom

Re: Trailer Hitch Plans Problem & Weight

Posted by GDC at 01/13/2009 04:56:19 pm

The referenced drawing properly reflects the intended design. The TRAILER is able to swivel around the yaw axis, but not the roll axis.

The competition TRAILER weighs approximately 36 pounds.

Payload Trailers

ball amounts in trailers



ball amounts in trailers

Posted by FRC316 at 01/10/2009 10:57:28 pm

How many moon rocks, empty cells, or super cells can fit in 1 trailer at 1 time? and how many are commonly fit in a trailer during gameplay?

Re: ball amounts in trailers

Posted by GDC at 01/12/2009 12:06:28 pm

The number of GAME PIECES that can fit in a TRAILER is variable, based on the particular orientation and positioning of the GAME PIECES. As the dimensions and volumes of the TRAILER and GAME PIECES is known, a reasonable estimate and first-order approximation can be calculated with basic geometry. The number of GAME PIECES "commonly fit in a trailer during game play" will be determined by the TEAMS during the competition season.

Payload Trailers

Clarification of vision target height

Clarification of vision target height

Posted by FRC41 at 01/17/2009 10:57:40 am

The arena manual states in section 6.4 page 9:

"The vision target is located between 59 and 83 inches above the floor."

Does this mean there is a variable height or are you stating the bottom and top of a static target? If it is a variable height what does this dimension describe?

Thank you,
Team 41

Re: Clarification of vision target height

Posted by GDC at 01/18/2009 10:42:07 pm

Please read Section 6.4 carefully. The vision target is 24 inches tall. It is located between 59 and 83 inches above the floor.

Payload Trailers

Trailer No-Show Action

Trailer No-Show Action

Posted by FRC492 at 02/07/2009 03:15:31 am

We were wondering:

Suppose you are a member of the red alliance. One of the three teams on your alliance is unable to make the match, they are having troubles with their robot, but they send a member to represent their team, so there is no DQ. (This is a qualification match) Because it is having trouble, they have no robot on the field. Does their trailer sit on the field unattended? This would leave the trailer with the tongue out on the field, a potential hazard to other robots, as well as having a spot where they could get tangled, or game pieces could be tangled. This situation would also leave the trailer right in front of the other teams payload specialist, potentially very simple to put all 20 moon rocks from that specialist in a trailer, without any problem. I assume the trailer would not be removed, because that would cause a problem with uneven number of goals, but at the same time it essentially causes the red alliance to start



2009 Q&A Forum Export

generated: 02/18/2009 11:47:54 am EST

down by 40 points, assuming blue could get all 20 moon rocks in the trailer from that situation. Also, by having a trailer in the way, if it was the outpost, there would be no way for the blue alliance to get their empty cells from that location. Because they can not reach through the hole on the shield, the specialist would have no option but to put all 4 empty cells in the trailer, and hope that their alliance acquired the empty cells from the other outpost. Finally, what kinds of penalties could this situation cause? Because of the FRP and slick wheels, the blocking trailer (s) may get moved by all the robots. While this may clear the issue of the blocked outpost, it could interfere with rule <R18.E> in that the trailer tongue may be damaged.

Sorry for such a long question, but it could cause some major strategy changes at the events.

Sincerely,

Team 492, Titan Robotics

Re: Trailer No-Show Action

Posted by GDC at 02/09/2009 08:25:46 pm

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=10932"]this Q&A thread[/URL], where this question is addressed. The answer has not changed.

Payload Trailers

Payload trailer placebo hitch

Payload trailer placebo hitch

Posted by FRC1529 at 02/10/2009 10:24:03 am

A trailer without a corresponding robot has been said to be supported by a "placebo hitch." Would you be willing to supply a detailed description of said placebo hitch? For example, is it static, or would it be mobile? Are there any drawings of it?

Where is drawing of 'placebo hitch' for no-show robots?

Posted by FRC2743 at 02/12/2009 01:36:30 pm

[QUOTE=] payload trailer A#10 from GDC

If a team fails to send a Robot to the Arena for a match, the Trailer is still placed in the Crater on the Launching Pad, but the tongue will be supported by a placebo hitch.

Robots may interact with the Trailer throughout the match, as deemed appropriate by the game rules. [/QUOTE]

Where is a drawing available for the 'placebo hitch'?

Re: Payload trailer placebo hitch

Posted by GDC at 02/12/2009 03:41:12 pm

Please refer to Bill's Blog for photographs of the placebo hitch.

Safety

Safety

Fingers through outpost hole

Fingers through outpost hole

Posted by FRC1986 at 01/19/2009 02:13:14 pm

Is it allowed for the payload specialist in the outpost station to have their fingers(or other body parts) to extend out of the hole to pass a ball through or must they remain outside of it at all



times?

Re: Fingers through oupost hole

Posted by GDC at 01/22/2009 04:38:50 pm

During the MATCH, all body parts of the PAYLOAD SPECIALIST stationed at the OUTPOST must remain on the exterior side of the Outpost Shield. The PAYLOAD SPECIALIST may not extend a hand (or other body part) through the port in the Shield. This is a basic safety issue.

Game Periods

Game Periods

Time Between Autonomous and Teleoperated Periods

Time Between Autonomous and Teleoperated Periods

Posted by FRC365 at 01/14/2009 07:42:51 am

Will there be any delay in between the end of the AUTONOMOUS PERIOD and the start of the TELEOPERATED PERIOD (where the robots will be disabled) similar to the delay in previous games?

If so, will PAYLOAD SPECIALISTS be permitted to enter GAME PIECES into the CRATER during this period?

If there is no delay, will the field control software transition the robots seamlessly from autonomous state to teleoperated state without entering a disable state?

Re: Time Between Autonomous and Teleoperated Periods

Posted by GDC at 01/15/2009 02:37:23 am

Barring any extreme circumstances, there will be a negligible delay between Autonomous and Teleop. Yes, the field will transition seamlessly.

Game Periods

Match sequencing

Match sequencing

Posted by FRC1746 at 01/30/2009 09:23:58 am

A. Can we be assured that all matches will be cycled through all 6 states:

1. Autonomous Disabled... _____
2. Autonomous Enabled .. 15 Seconds
3. Autonomous Disabled .. _____
4. Teleop Disabled _____
4. Teleop Enabled..... 120 Seconds
5. Teleop Disabled..... N/A

B. Is there a minimum guaranteed time for step 1 (in case we need to do some calibration or setup? If so, what is the minimum time?

C. Is there a minimum guaranteed time for steps 3 & 4 (in case we need to do some re-calibration between Auton/Teleop? If so, what are those minimum times?



D. What state will robot be in when initially powered up on the field (after the 30 second boot time)? Auton Disabled or some other disabled state? If Auton Disabled, can robot be semi-active (ie: Camera searching for target, gyro calibration, etc)?

Re: Match sequencing

Posted by GDC at 02/05/2009 03:47:57 pm

Please see Team Update 9.

Scoring

Scoring

When are scores calculated?

When are scores calculated?

Posted by FRC1529 at 01/07/2009 01:31:34 pm

Rule <G07> states that scores are determined at the end of the match. Is this defined as the instant the match ends, or when all objects have come to rest?

Also, does a robot touching a game piece at the end of a match have any effect on that game piece being scored?

Re: When are scores calculated?

Posted by GDC at 01/12/2009 11:27:00 pm

Scores are assessed when all objects in the CRATER come to rest. Please refer to Rule <G07>, as amended in Team Update #3.

If a ROBOT is in contact with a GAME PIECE at the end of the MATCH, the GAME PIECE will be assessed to determine if the required conditions for SCORING are still satisfied. If ROBOT contact causes a GAME PIECE to become de-scored, it will be considered a violation of Rule <G25.1>.

Scoring

Points in autonomous

Points in autonomous

Posted by FRC378 at 01/07/2009 05:10:17 pm

Do you receive any extra bonus points for autonomous scoring?

Re: Points in autonomous

Posted by GDC at 01/08/2009 03:24:43 pm

No.

Scoring

Scoring Questions

Scoring Questions

Posted by FRC234 at 01/07/2009 11:22:44 pm

These are all related to scoring so are being submitted as one post -

1. Is the 2X and 3X decision based on pre-penalty or post-penalty scores?



2. Is there a minimum win margin before the 2X and 3X penalties apply?
(example a 6 to 2 score greater than 2x, but only a 4 point margin, a 42 to 20 score is also greater than 2x, but a 22 point margin).

3. How is a "0" score handled?
(example, 6 to 0, what is that multiplier?)

Clarification of <G14>;

Posted by FRC1073 at 01/10/2009 02:02:25 pm

In rule <G14>, how do the "more than twice," and "more than triple," clauses apply if one or both alliances has/have a score of zero? What score would be considered twice or triple one of zero?

Re: Scoring Questions

Posted by GDC at 01/12/2009 05:23:00 pm

The assessment of the conditions under which Rule <G14> may be invoked will be determined before any penalties are assessed. This is to prevent any ALLIANCE from intentionally getting a PENALTY to impose the Rule <G14> conditions on their opponent.

Rule <G14> is assessed for every MATCH, regardless of the score.

If an ALLIANCE ends a MATCH with zero (0) points, and their opponent has any non-zero score, then the opponent has out-scored by an infinite factor. This is logically more than triple (3x) the lower score. Thus, the most strict effects off Rule <G14> will apply. Therefore, it is always to your advantage to make sure that both ALLIANCES always score at least once.

Scoring

Scoring on a disabled robot

Scoring on a disabled robot

Posted by FRC234 at 01/07/2009 11:25:33 pm

G31 states that a disabled robot will not incur further penalties.

Can cells still be scored on a disabled robot?

Re: Scoring on a disabled robot

Posted by GDC at 01/12/2009 05:12:01 pm

Yes, you may still SCORE in a TRAILER that is attached to a disabled ROBOT.

Scoring

Moon Rocks Scoring Confirmation

Moon Rocks Scoring Confirmation

Posted by FRC492 at 01/08/2009 09:07:26 pm

I would like to confirm, because I have not been able to locate the exact rule in the manual, if a moon rock (or the fuel cells) are hanging onto the trailer by only the pipes (aka, the robot or payload spe_____t has hooked it onto the robot so that the ball has at least one band over the pipes, but the ball itself is on the outside or the trailer) does it count?

I hope my explanation is not too terrible!

Thanks!



~Team 492

Re: Moon Rocks Scoring Confirmation

Posted by GDC at 01/12/2009 10:46:51 pm

Yes, a GAME PIECE that is placed in this manner would be considered SCORED. Please refer to the definition of SCORED in Chapter 7 of The Manual.

Scoring

tracking game pieces spilled from a tipped trailer

tracking game pieces spilled from a tipped trailer

Posted by FRC1683 at 01/12/2009 07:23:58 pm

will the referees keep track of tipping trailer content?

Re: tipping trailer

Posted by GDC at 01/18/2009 11:05:46 pm

No. The value of any Game Pieces scored in a Trailer if it tips over will be preserved for the rest of the match. Any Game Pieces spilled from the Trailer will re-enter play and will not be tracked thereafter.

Scoring

Accuracy of the Real Time Scoring

Accuracy of the Real Time Scoring

Posted by FRC1276 at 01/19/2009 04:13:46 pm

Will the Real Time score be used as the official score or will the referees reassess the number of MOON ROCKS, EMPTY CELLS, and SUPER CELLS in all of the TRAILERS prior to announcing the official score?

Re: Accuracy of the Real Time Scoring

Posted by GDC at 01/22/2009 06:14:03 pm

There is only one score this year - the score maintained by the Official Scorers. This will be entered in real time, and will be the final score at the conclusion of the match, unless modified by penalties.

Official Scorers will verify their counts during field reset; in any case where an error is discovered, the posted final match scores will subsequently be corrected by the Head Referee and announced publicly.

Game Play

Game Play

CELL Count Modification

CELL Count Modification

Posted by FRC1529 at 01/07/2009 01:38:47 pm

<G14> states that EMPTY or SUPER CELLS may be withheld. Who decides what type of game piece is withheld?

Also, is the opposing alliance score used to calculate this penalty the final match score or the



score before penalties are applied?

Rule <G14>

Posted by FRC623 at 01/09/2009 07:13:20 pm

An ALLIANCE is made up of three TEAMS. Only one of those teams will have a PAYLOAD SPECIALIST in the OUTPOST where the 4 EMPTY CELLS for the ALLIANCE start the game. An EMPTY CELL or EMPTY CELLS cannot be withheld from a specific TEAM but only from an ALLIANCE. What if two teams in the current ALLIANCE in two separate previous matches were on ALLIANCES which "ran up the score"? Will they be double penalized? On the other hand, why should the other two teams in the current ALLIANCE who did not "run up the score", be penalized for the previous behavior of their current ALLIANCE partner. It seems to me that the penalty for "running up the score" should be borne by the offenders, not by those who they next happen to be allied with.

Re: CELL Count Modification

Posted by GDC at 01/12/2009 11:34:03 pm

The determination of whether an EMPTY CELL or SUPER CELL is withheld under the conditions described in Rule <G14> is based on the position of the Payload Specialist from the TEAM that caused the condition to occur. The position of that Payload Specialist is negotiated within the ALLIANCE prior to the start of the MATCH (see Rule <G09>). So, the ALLIANCE effectively gets to determine which type of GAME PIECE is withheld. The ALLIANCE will make this determination for one, two, or all three TEAMS that enter the ALLIANCE with the effects of a Rule <G14> violation.

The assessment of the conditions under which Rule <G14> may be invoked will be determined before any penalties are assessed. This is to prevent any ALLIANCE from intentionally getting a PENALTY to impose the Rule <G14> conditions on their opponent.

Game Play

Handling Empty Cells

Handling Empty Cells

Posted by FRC1529 at 01/07/2009 01:52:54 pm

What happens if a Payload Specialist throws an Empty Cell into an opponent's robot so that the robot now possesses more than one at a time? I realize a robot or team cannot be forced into a penalty, but would the robot be obliged to attempt to release at least one of the Empty Cells immediately? Is there some sort of grace period the robot has to expel an Empty Cell?

Causing Penalties

Posted by FRC2741 at 01/08/2009 02:25:05 pm

7.3.4.2 G18 states that the action of a robot shall not cause an opposing robot to break a rule.

Can a payload specialist from one team cause a robot to break a rule?

For example, a robot is controlling an empty cell, a payload specialist from the opposing team lands another empty cell on the robot. The robot now controls 2 empty cells. Would this cause a penalty?

Empty Cell Transport



Posted by FRC2421 at 01/09/2009 12:59:16 pm

If, while herding or carrying an Empty Cell, another Empty Cell launched by the opposing alliance lands on your robot and remains, will you be penalized?

Re: Handling Empty Cells

Posted by GDC at 01/12/2009 11:09:33 pm

No. Please refer to Rule <G18>, as amended in Team Update #3. The actions of a ROBOT or ALLIANCE can not cause the opposing ALLIANCE to receive a PENALTY. A ROBOT that receives an EMPTY CELL under these conditions will not be PENALIZED, and may use the EMPTY CELL as desired.

Game Play

Entering game pieces into the crater

Entering game pieces into the crater

Posted by FRC25 at 01/07/2009 03:23:54 pm

Regarding rules G<20> and G<40>, if a team's PAYLOAD SPE_____T stationed at a FUELING STATION, using the provided tongs, exerts a force upon a MOON ROCK in such a manner that it passes through the FUELING PORT and subsequently the AIR LOCK, will a penalty be assessed?

Likewise, may a SUPER CELL enter into the CRATER via the AIR LOCK?

Re: Entering game pieces into the crater

Posted by GDC at 01/12/2009 11:00:35 pm

Yes, this is permitted. Please refer to Rule <G20>, as amended in Team Update #3, for additional details.

Game Play

Placing empty cells during gameplay.

Placing empty cells during gameplay.

Posted by FRC378 at 01/07/2009 06:23:59 pm

During gameplay, If another team places an empty cell in your robot's trailer, can you still posses/herd an empty cell?

Re: Placing empty cells during gameplay.

Posted by GDC at 01/08/2009 03:37:12 pm

Yes. Game pieces in TRAILERS are not considered in POSSESSION of the ROBOT to which the TRAILERS is attached.

Game Play

Exchanging Empty Cells for Super Cells

Exchanging Empty Cells for Super Cells

Posted by FRC178 at 01/07/2009 07:17:57 pm

Do the empty cells have to be at the same fueling station as the super cells?

Each alliance has two fueling stations at opposite ends of the field, can four super cells be exchanged at one of these fueling stations?



Re: Exchanging Empty Cells for Super Cells

Posted by GDC at 01/09/2009 10:47:38 am

Yes, Empty Cells have to be at the same Fueling Station as the Super Cells for exchange.

No, there are only two Super Cells available on the Cell Rack in each Fueling Station.

Game Play

Penalty points

Penalty points

Posted by FRC378 at 01/08/2009 05:32:19 pm

How many Penalty Points are taken off for such actions seen in section "7.3.4.2 Penalties" in the First robotics competition manual?

Re: Penalty points

Posted by GDC at 01/12/2009 05:14:13 pm

Section 7.3.4.2 describes when and how PENALTIES are applied to ALLIANCES. It does not describe specific actions that result in PENALTIES.

Game Play

Game Pieces Leaving Field

Game Pieces Leaving Field

Posted by FRC907 at 01/09/2009 06:45:21 pm

<G25>

GAME PIECE Out of Bounds - GAME PIECES that leave the CRATER or FUELING STATIONS will be placed back in play at the earliest safe opportunity. The GAME PIECE will be placed back in the CRATER or FUELING STATION at the approximate location where it exited

Who places the "lost in space" game pieces and how is it determined if it was airborne?

If A Super Cell is lost and returned by the above method, can it be used by an opposing alliance?

Re: Game Pieces Leaving Field

Posted by GDC at 01/12/2009 12:14:48 pm

The field reset crew will be responsible for placing GAME PIECES back in play.

GAME PIECES are not assigned to either ALLIANCE, and can be scored by either ALLIANCE.

Game Play

handling moon rocks

handling moon rocks

Posted by FRC1073 at 01/10/2009 02:11:13 pm

Once moon rocks are introduced to the crater by the outpost's payload spe____t, are they allowed to return to the outpost? Can they be passed back through the shield from the crater side?

Re: handling moon rocks

Posted by GDC at 01/12/2009 11:32:57 pm



Please refer to Rule <G20>, as amended in Team Update #3.

Game Play

<G14> Awareness and Penalized Scores

<G14> Awareness and Penalized Scores

Posted by FRC1276 at 01/12/2009 01:53:03 pm

Is the twice the opposing alliances score determined with a penalized or unpenalized score? (i.e. if the Blue Alliance has an unpenalized score of 30 points, but receives 2 penalties while the Red Alliance has an unpenalized score of 62 and receives no penalties, will the Red Alliance's teams lose 1 or 2 EMPTY CELLS/SUPER CELLS during their next match? As written, I'd assume it would be the penalized score, but that would seemingly take the Red Alliance's fate out of the Red Alliance's hands.

Will <G14> "penalties" be announced and made public (perhaps with the real time rankings?), or will it be the responsibility of the team to inform their next alliance partners?

Re: <G14> Awareness and Penalized Scores

Posted by GDC at 01/15/2009 03:07:46 am

Please refer to Team Update #3. Unpenalized scores will be used.

The Field Management System will track the implications of <G14>, and the Audience Display will indicate CELL loss penalties.

Game Play

Questions on Penalties

Questions on Penalties

Posted by FRC41 at 01/12/2009 03:14:28 pm

I have a two questions pertaining to penalties.

1. G18 states that another team cannot force us to commit a penalty. What occurs if our opponent makes us possess two empty cells, thus breaking G24? One example would be if an opposing robot threw an empty cell in an open hopper while we were in possession of one.

2. Pertaining to G14, what happens if your opponent scores 0? Also in the event that both teams score 0 what would happen?

Thank you,
Team 41

Re: Questions on Penalties

Posted by GDC at 01/15/2009 04:55:21 pm

For the answers to both questions, please see Team Update #3.

Game Play

Scoring with already scored balls

Scoring with already scored balls

Posted by FRC1124 at 01/12/2009 07:35:54 pm



If a trailer flips over, and the moon rocks/empty cells/super cells fall out, can they be picked up and rescored?

Re: Scoring with already scored balls

Posted by GDC at 01/13/2009 12:04:44 pm

Yes.

Game Play

Super cells in corners

Super cells in corners

Posted by FRC316 at 01/14/2009 04:07:56 pm

If the corner stations, I think they are called fueling stations, get a third empty cell how do they convert it into a super cell or don't they?

Re: Super cells in corners

Posted by GDC at 01/19/2009 02:53:31 pm

As noted in Rule <G13>, each FUELING STATION is only supplied with two SUPER CELLS. As the SUPER CELLS in each FUELING STATION may only be used by the PAYLOAD SPECIALIST assigned to that FUELING STATION (Rule <G13>), this effectively limits the number of EMPTY CELLS that can be converted in each location.

Game Play

<g24> & <g20>

<g24> & <g20>

Posted by FRC1529 at 01/17/2009 11:58:44 am

<G24> states that a ROBOT may possess one EMPTY CELL at a time. We understand that a team cannot force another team into a penalty. If a Payload Spec1a11st inadvertently tosses an EMPTY CELL into an opposing ROBOT that already has one, would the ROBOT be obliged to get rid of one of the EMPTY CELLS? Is there a grace period time limit associated with this(i.e. 5 seconds to expel one of the EMPTY CELLS)?

If the ROBOT chooses to keep both and dumps them into the FUELING STATION to exchange for SUPER CELLS, would a penalty be assigned? If so, how could the team avoid such a penalty?

Re: <g24> & <g20>

Posted by GDC at 01/18/2009 10:40:32 pm

As indicated in Rule <G18>, the actions of an ALLIANCE cannot cause the opposing ALLIANCE to receive a PENALTY. There is no time limit associated with this rule. If a PAYLOAD SPECIALIST deposits an EMPTY CELL in an opposing ROBOT, the opposing ROBOT may use it at their convenience.

Game Play

possession of multiple super cells

possession of multiple super cells

Posted by FRC766 at 01/18/2009 02:27:39 am

I would like to clarify the rules regarding robot possession of multiple super cells simultaneously – i.e., are there any? We know that simultaneous possession/herding of empty cells breaks the following rule:



[quote]/<G24>rule text edited for brevity/[/quote]

However, I don't see any similar rule regarding super cells. Can we assume that it is legal for the robot to:

- 1) Possess more than one super cell at the same time (up to a hypothetical maximum of eight, if we get really lucky)
- 2) Accept two super cells from one fueling station (assuming that the requisite two empty cells have received at that station and that there are fewer than 20 seconds left in the match)
- 3) Attempt to score as many super cells as it (the robot) has in its possession by launching them into a trailer on the opposing alliance
- 4) Transfer possessed or herded super cells back to the payload special!st via the fueling port if necessary to be scored manually

Or more simply put, during the last 20 seconds of the match, assuming the appropriate number of empty cells have been exchanged, can super cells be treated exactly like moon rocks?

Thank you.

P.S. Isn't there a way to disable vBulletin's spam filtering? The many instances of "payload spe_____t" are a bit distracting.

Re: possession of multiple super cells

Posted by GDC at 01/18/2009 10:38:17 pm

The rules do not limit the number of SUPER CELLS possessed by a ROBOT.

Game Play

G14 penalties

G14 penalties

Posted by FRC1983 at 01/18/2009 09:16:46 pm

During elimination rounds, if an alliance has a penalty for scoring more than 2X the opposing team's score, will the penalty be 3 supercells or 1 supercell in the next match?

In regular team non-surrogate team play, each team would receive a 1 supercell penalty in the next match. This would seem to indicate that during the elimination rounds this would result in 3 supercells being lost in the subsequent elimination match. Can you please clarify how G14 will be used during the elimination rounds?

Thank you for your help

Re: G14 penalties

Posted by GDC at 01/19/2009 12:34:00 pm

Rule <G14> is applied in the same way during the Qualification Rounds and the Elimination



Rounds.

Game Play

Shooting Balls past the Fueling station

Shooting Balls past the Fueling station

Posted by FRC1986 at 01/19/2009 02:08:46 pm

If a robot were to shoot a ball in such a way that it would pass over the territory that the fueling station covers, but never go into it and then go out of bounds, would it be returned to the fueling station by a ref, or would it incur a penalty from G20?

Re: Shooting Balls past the Fueling station

Posted by GDC at 01/22/2009 03:05:25 pm

If it was determined that the shot outside the ARENA were accidental, then the GAME PIECE would be placed back in the CRATER at the approximate exit location (Rule <G25>). If the shot outside the ARENA were determined to be intentional, then a violation of Rule <S01> may be assessed.

Game Play

<G14> between Qualification/Elimination matches

<G14> between Qualification/Elimination matches

Posted by FRC341 at 01/19/2009 03:51:23 pm

1. It is clear that rule <G14> applies to both qualification and elimination matches. But does it carry over between them? For example, if a team doubles or triples its opponents' score in its last qualification match, and said team makes it into the elimination tournament, are game pieces removed during the first elimination match? Rule <T08> explains that yellow cards get "reset" between the qualification and elimination matches, but we can find nothing that would suggest that <G14> penalties get "reset". Is this an accurate assessment?

2. If a surrogate team is used in the elimination tournament because of a disabled robot, would its final qualification <G14> status apply to its first elimination match?

2. Likewise, do <G14> penalties carry over between different playoff brackets (i.e. the last round of semifinals may affect the game pieces available in the first finals match?)

Thank you for your time!

G14 during the playoff rounds

Posted by FRC386 at 01/20/2009 12:39:49 pm

How is rule <G14> enforced during the playoff rounds? For example, during round 3 of the finals, the blue alliance defeats the red alliance by a margin of 3X. In this case, are super cells removed from the blue alliance during the first round of the semifinals? Or does this rule/penalty even apply in the playoff rounds?

Re: <G14> between Qualification/Elimination matches

Posted by GDC at 01/22/2009 04:28:29 pm

<G14> always takes the last MATCH in which a team played into account. The only two MATCHES at a regional competition where this will not be the case are every team's first match and any match in which a team acted as a surrogate (which can only occur as their third



match of the tournament).

Game Play

Game piece out of bounds penalties

Game piece out of bounds penalties

Posted by FRC2856 at 01/20/2009 04:45:14 pm

Will inadvertently causing a game piece to leave the crater cause a penalty to be incurred?

Re: Game piece out of bounds penalties

Posted by GDC at 01/22/2009 06:47:17 pm

No.

Game Play

trailer starting position

trailer starting position

Posted by FRC316 at 01/20/2009 09:45:32 pm

Can the trailer start in any direction on the wall as long as it is touching the wall?

Re: trailer starting position

Posted by GDC at 01/22/2009 06:45:02 pm

No. The trailer will be positioned with its "back" end (opposite the trailer tongue) flush against the edge of the Arena.

Game Play

Re: trailer starting position

Re: trailer starting position

Posted by FRC2505 at 01/23/2009 01:51:12 am

[url]http://forums.usfirst.org/showthread.php?t=11494[/url]

[quote=<G10>]The ROBOT and TRAILER are then placed entirely within the LAUNCH PAD, and positioned such that the TRAILER is in contact with the AIRLOCK or guard rail (as appropriate).[/quote][quote=GDC]The trailer will be positioned with its "back" end (opposite the trailer tongue) flush against the edge of the Arena.[/quote]

These two statements are not equivalent. Please update the rules or the previous Q&A response to reflect the actual procedure.

Re: trailer starting position

Posted by GDC at 01/26/2009 10:41:23 am

These two statements are functionally equivalent. There are a limited number of arrangements where a ROBOT connected to a TRAILER can fit entirely within the Launch Pad boundaries when the TRAILER is in contact with the ARENA perimeter (guard rail or Airlock). In virtually all cases involving an archetype 28x38 robot and the Trailer Hitch approximately centered on the rear edge of the ROBOT, the corner of the TRAILER opposite the Trailer Hitch will be the point of contact with the ARENA. It is recognized that there are some unique ROBOT configurations that are technically possible that might yield different results (e.g. a 1-inch by 1-inch ROBOT). But these are not typically realistic configurations and therefore ignored for this discussion.



Game Play

<G10> Starting Conditions Not Met

<G10> Starting Conditions Not Met

Posted by FRC2505 at 01/23/2009 02:09:12 am

If a match begins with a robot or trailer in an illegal position, what happens?

Will the team be penalized and/or carded for violating <G10>? Will the effect of the violation factor into the decision (e.g. whether an advantage was gained)?

Is this the responsibility of the field reset staff, and therefore a field fault? Under what circumstances will the match be replayed?

Re: <G10> Starting Conditions Not Met

Posted by GDC at 01/26/2009 02:43:42 pm

The Head Referee will not start the match until all field elements and ROBOTS are in their proper starting position and configuration.

Game Play

Assigning Penalties

Assigning Penalties

Posted by FRC2505 at 01/23/2009 02:23:41 am

[quote=7.2]PENALTY: A 10-point decrement in the ALLIANCE score assigned when a deserving violation of the game rules has been identified by a Referee.[/quote]Can penalties be assigned for a violation of [U]any[/U] game rule, or are they limited to the rules which mention a penalty as the result?

Re: Assigning Penalties

Posted by GDC at 01/26/2009 10:33:18 am

Assigned penalties must be justified by the Manual. If a team's behavior is egregious, but does not necessarily map to a specific rule (if we tried to write a manual that specifically prohibited all egregious behavior, the Manual would be excessively long), then the referee may issue the team a yellow or red card.

Game Play

Moon Rock Container

Moon Rock Container

Posted by FRC175 at 01/27/2009 07:16:01 am

The manual says that a moon rock storage container is located with each human player (Para 6.27 & 7.3.4.1/G11). Please describe the container as it must be capable of initially holding 20 balls. Please describe its location relative to each field location. Can the seated player readily reach the balls, especially the last one at the bottom, far corner. Can the containers be moved to accommodate the human players and is there an out of bounds relative to the container. Please release a general overview or team update regarding all of the specifics relative to the storage container.

Re: Moon Rock Container

Posted by GDC at 02/01/2009 02:46:16 pm



Please refer to Section 6.2.7 of The Manual and this Q&A Forum answer. Two containers are provided for the temporary storage of Game Pieces at each PAYLOAD SPECIALIST location. Each container is approximately 26 x 14 x 12 inches (large enough to hold approximately 10 GAME PIECES). In the FUELING STATION, they are located behind the PAYLOAD SPECIALIST as they are facing the field; in the OUTPOST they are located to either side of the seat.

The containers may be moved around within the area, but must stay on the floor, please refer to Team Update 8.

Game Play

G10 ROBOT Starting Positions

G10 ROBOT Starting Positions

Posted by FRC885 at 02/05/2009 02:06:46 pm

G10 ROBOT Starting Positions rule states that "...The ROBOT and TRAILER are then placed entirely within the LAUNCH PAD ..." My question is: With the bumpers attached to the robot, how do the referees determine that the robot is within the "LAUNCH PAD"? Does <R11> apply and the bumpers are allowed to be outside the "LAUNCH PAD"?

Re: G10 ROBOT Starting Positions

Posted by GDC at 02/09/2009 08:30:03 pm

BUMPERS are considered part of the ROBOT (unless otherwise explicitly noted - e.g. Rule <R11>). As such, the entire ROBOT including the BUMPERS, and the entire TRAILER including the BUMPERS, must be placed within the Launch Pad prior to the Match to satisfy Rule <G10>.

Robot Operations

Robot Operations

Blocking the trailer

Blocking the trailer

Posted by FRC1606 at 01/07/2009 12:53:18 pm

We would like to know if there are any rules against blocking the opponets orbit balls from entering our own trailer

Re: Blocking the trailer

Posted by GDC at 01/07/2009 08:16:38 pm

Please reference Team Update #1 and the FRC Game Manual.

Robot Operations

Moon Rocks through Airlock to the fueling port

Moon Rocks through Airlock to the fueling port

Posted by FRC123 at 01/07/2009 10:15:17 pm

If a robot is moving moon rocks from the crater to the air lock do they have to go under the railing or can they go over?

Question on the Airlock

Posted by FRC1551 at 01/08/2009 10:55:22 pm



2009 Q&A Forum Export

generated: 02/18/2009 11:47:54 am EST

There does not appear to be any kind of cover on the FUELING PORT, either in the pictures or the CAD drawings. I want to make sure that it is legal (and possible!) to dump balls over the top of the AIRLOCK, instead of through the AIRLOCK.

Please confirm when you get the time.

Thank you very much!

Patrick, Team1551

Re: Moon Rocks through Airlock to the fueling port

Posted by GDC at 01/12/2009 11:03:13 pm

Yes, passing GAME PIECES over the AIRLOCK is permitted. Please refer to Rule <G20>, as amended in Team Update #3.

Robot Operations

Scoring Super Cells

Scoring Super Cells

Posted by FRC234 at 01/07/2009 11:30:48 pm

If a Super Cell is thrown into the playing field early, it incurs two penalties per G23.

If this cell lands in a trailer before the final 20 seconds, does it score?

Does it matter if the trailer belongs to the penalized alliance or the other alliance?

If the cell lands in the crater and not in a trailer, is the cell still considered "in play" for either alliance?

Scoring of Super Cells

Posted by FRC1518 at 01/08/2009 07:19:59 am

Scoring Secetion 7.3.3

<G23> SUPER CELL scoring – During the last 20 seconds of the MATCH, the PAYLOAD SPE_____T may launch the available SUPER CELLS over the Alliance Station Wall and into the CRATER. The PAYLOAD SPE_____T can SCORE a SUPER CELL by launching it into a TRAILER. If a SUPER CELL is launched into the CRATER before the last 20 seconds of the MATCH, then two (2) PENALTIES will be assigned.

This rule called Super Cell Scoring makes no reference of a Robot being able to score a Super Cell.

My question: Can a Robot pick up a Super Cell from the Crater floor and then place it in an opposing alliances trailer?

Robot Scoring of Super Cells

Posted by FRC365 at 01/08/2009 08:14:36 am

Can a robot score a Super Cell that is put in play in the last 20 seconds by a Human Player?

Super Cell Scoring

Posted by FRC971 at 01/09/2009 07:09:07 pm



Can a robot score with a super cell if a human thrower misses?

Scoring Super Cells

Posted by FRC1477 at 01/09/2009 11:25:37 pm

<G23> allows for a Payload Spec. to introduce Super Cells into the Crater as well as score a Super Cell. We do not see an allowance for a robot to score a Super Cell nor do we see a disallowance.

Can Super Cells only be scored by a Payload Spec. or can they be scored by robots as well?

Team 1477

Re: Scoring Super Cells

Posted by GDC at 01/12/2009 11:05:37 pm

Yes, ROBOTS are permitted to SCORE the SUPER CELLS once they have entered into play. Please refer to Rule <G23>, as amended in Team Update #3.

Robot Operations

Using Fans to Deflect Balls

Using Fans to Deflect Balls

Posted by FRC1540 at 01/08/2009 12:17:04 am

Update #1 makes the point that:

"...The purpose of the trailer is to serve as an open collection site for MOON ROCKS, EMPTY CELLS, and SUPER CELLS. As such, an attempt to cover the open top of any trailer or remove scored balls would be considered a disruption of ARENA elements and not be allowed..."

We take this to mean that teams may not interfere through the use of fans with other teams attempting to score in a trailer. We assume this would be a disruption of a field element. Is this a correct assumption?

That being said, if a team were to use a fan as a method of propulsion, wouldn't that team need to be careful not to blow that (very strong) blast of air backwards over their trailer or other trailers of their alliance?

Re: Using Fans to Deflect Balls

Posted by GDC at 01/12/2009 10:33:13 pm

A fan-induced airstream used to deflect an incoming MOON ROCK away from the TRAILER is not prohibited by the rules. However, use of a fan to descore a GAME PIECE would not be permitted.

Robot Operations

Robot Dimensions with Game Pieces

Robot Dimensions with Game Pieces

Posted by FRC1466 at 01/08/2009 02:58:28 pm

The robot height is restricted to 60 inches during the match. My question is: If a robot has a moon rock hopper on top, is it permissible to have the diameter of the moon rocks penetrate the 60 inch plane?



Re: Robot Dimensions

Posted by GDC at 01/12/2009 10:34:52 pm

GAME PIECES are not considered part of the ROBOT. As such, they are not limited by the dimension restrictions in Rule <R11>.

Robot Operations

Touching the goal pvc posts

Touching the goal pvc posts

Posted by FRC2775 at 01/09/2009 06:28:22 pm

Is it legal to touch/ spread apart the pvc posts on the goals in order to facilitate in scoring, as long as the team does not get larger than their starting size.

Re: Touching the goal pvc posts

Posted by GDC at 01/11/2009 10:09:22 pm

No, grasping and spreading apart the vertical pipes on the TRAILER would be considered a violation of Rule <G29> (the TRAILER is part of the ARENA, and therefore covered by all applicable ARENA rules).

Robot Operations

pinning

pinning

Posted by FRC1073 at 01/10/2009 02:16:01 pm

Is there any limit on the length of time for which one robot can pin another?

Re: pinning

Posted by GDC at 01/11/2009 11:00:44 pm

No.

Robot Operations

double empty cell penalty

double empty cell penalty

Posted by FRC1683 at 01/12/2009 07:27:19 pm

is there a grace period for accidentally hitting to empty cells at once? Ex. trying to move one and running into an other one

Re: double empty cell penalty

Posted by GDC at 01/15/2009 02:47:11 am

Assuming "to" means "two," incidental contact with a second empty cell is not penalized. A slap shot toward a FUELING PORT would not be judged to be incidental.

Robot Operations

Manipulation of game pieces

Manipulation of game pieces

Posted by FRC135 at 01/20/2009 06:33:53 pm

Is it acceptable to use adhesives or tapes to help gain grip on the balls? More specifically, is double-sided tape allowed?

Re: Manipulation of game pieces



Posted by GDC at 01/22/2009 06:23:22 pm

Generically, the use of tape is not prohibited. However, the use of any adhesives or tapes that leave residue or alter the surface condition of the GAME PIECES would be considered a violation of Rule <G30>.

Robot Operations

Robot to robot contact

Robot to robot contact

Posted by FRC316 at 02/03/2009 03:57:28 pm

To clarify it is illegal if two robots at metal contact? No matter what. such as if a robot with a concave front hits a square robot and their metal at their tops touch then that is a penalty to both, is this correct?

Re: Robot to robot contact

Posted by GDC at 02/05/2009 03:58:39 pm

Please resubmit referencing the particular rule you have in mind. Thank you.

Robot Operations

Confusion regarding rule update 9 general note #2

Confusion regarding rule update 9 general note #2

Posted by FRC2353 at 02/04/2009 11:09:52 am

The rule regarding the bumper perimeter is rather confusing. Our team is wondering if it is legal if we have a starting configuration that is shorter than 60 inches and during game play we extend to 64 inches, would that be legal under this rule update?

Re: Confusion regarding rule update 9 general note #2

Posted by GDC at 02/05/2009 11:30:21 pm

No.

Robot Operations

robot interaction

robot interaction

Posted by FRC316 at 02/06/2009 04:48:02 pm

<G32> ROBOT to ROBOT Interaction...

In rule G32 it states "In all cases involving ROBOT-to-ROBOT or ROBOT-to-TRAILER contact, the TEAM may receive a PENALTY and/or their ROBOT may be disqualified if the interaction is inappropriate or excessive." does this mean any time two robots collide at two unbumpered area they will both get a penalty?

In rule G32 it also states "C. If a portion of the BUMPER PERIMETER polygon is unprotected by BUMPERS, any contact by another ROBOT within the unprotected region (including the vertical projection of the unprotected region) will be considered incidental contact and will not be penalized.

D. Contact with a tilted or tipped ROBOT outside the BUMPER ZONE (particularly by the BUMPERS of the contacting ROBOT) will generally be considered incidental contact and



will not be penalized." does this mean that any unprotected area of a concave robot that collides with another robot at the top of the two robots is not a penalty?

Could you please clarify what this rule means.

Also if a robot that is concave on the floor and then has a square top that collides with metal-to-metal or "ROBOT-to-ROBOT" contact is or is not a penalty?

Re: robot interaction

Posted by GDC at 02/09/2009 02:04:58 pm

The intent of the <G32> is to make clear that BUMPER-to-BUMPER interaction is unregulated. This year no ramming rules are included. Rule <G32> also makes clear that ROBOT parts left unprotected by BUMPERS must survive even if they make contact with other ROBOTS' unprotected parts.

Robot Operations

question regarding height...

question regarding height...

Posted by FRC2185 at 02/08/2009 01:16:16 am

Ok i have a question regarding the height restrictions... During the game, may the orbit ball go over the 60 inch limit as long as no part of the actual robot is over?

Re: question regarding height...

Posted by GDC at 02/09/2009 08:14:59 pm

Yes.

Robot Operations

<G36> - Arena Reset - Release and removal of game pieces

<G36> - Arena Reset - Release and removal of game pieces

Posted by FRC1018 at 02/14/2009 01:48:08 pm

We understand we cannot power up the robot to release/remove game pieces after a match is over, however is it permissible to use an external power source after the end of a match (i.e. extra battery carried onto the field) to power a single conveyor motor to facilitate removal of game pieces remaining in the robot?

Re: <G36> - Arena Reset - Release and removal of game pieces

Posted by GDC at 02/15/2009 09:50:31 pm

No, that would be a violation of Rule <R54>.

Team Member Actions

Team Member Actions

Human Player During Autonomous

Human Player During Autonomous

Posted by FRC378 at 01/07/2009 05:21:23 pm

Is there any human interaction allowed during the autonomous period? Such as moon rock throwing...etc.?

Re: Human Player During Autonomous



Posted by GDC at 01/08/2009 03:28:02 pm

There is nothing in the rules that prohibit the Payload Specialists from throwing Moon Rocks during Autonomous.

Team Member Actions

Use of Tongs

Use of Tongs

Posted by FRC2373 at 01/08/2009 10:41:34 am

Does the payload spe_____t have to use the tongs at the beginning of the game..can they use their hands to begin with? Does anyone know what the tongs look like? We would like some more clarification about the use of tongs and thier description.

Re: Use of Tongs

Posted by GDC at 01/13/2009 04:49:32 pm

As specified in Rule <G40-C>, the PAYLOAD SPECIALIST must use the provided tongs when retrieving GAME PIECES from the FUELING PORT. This is true at all times during the MATCH.

The tongs are 36-inch Unger "Nifty Nabbers." Information about the tongs can be found at [URL="http://www.ungerglobal.com/retail/products/specialty_tools/#nabber"]http://www.ungerglobal.com/retail/products/specialty_tools/#nabber[URL].

Team Member Actions

Breaking the plane of the FUELING PORT

Breaking the plane of the FUELING PORT

Posted by FRC1743 at 01/09/2009 08:42:56 am

Will a PENALTY be assessed to a PAYLOAD SPECIALIST who breaks the plane of the FUELING PORT with the tongs?

Re: Breaking the plane of the FUELING PORT

Posted by GDC at 01/12/2009 11:03:47 pm

This is permitted when the PAYLOAD SPECIALIST is retrieving GAME PIECES from the "dead space" between the AIRLOCK and the FUELING PORT. Please refer to Rule <G40>, as amended in Team Update #3.

Team Member Actions

Human Player Scoring

Human Player Scoring

Posted by FRC1033 at 01/09/2009 09:41:37 am

This years balls are able to interlock, and fit inside each other.

Is it legal for a human player to fit them inside each other and throw the combination of balls onto the field and or into the goal?

Also is there a box that the human player must remain inside while thoring balls onto the field, or may they go anywhere as long as they throw the balls over the wall and not around?

Re: Human Player Scoring



Posted by GDC at 01/12/2009 10:50:56 pm

Nesting multiple GAME PIECES inside each other is contrary to the intent of the game, and would not be permitted. The PAYLOAD SPECIALISTS must remain within their assigned FUELING STATIONS or OUTPOST during the MATCH. Please refer to Rule <G38> and Rule <G39>.

Team Member Actions

Human Player Devices

Human Player Devices

Posted by FRC971 at 01/09/2009 09:46:14 am

Can the human players use any devices to increase throwing accuracy or distance, such as a slingshot?

Re: Human Player Devices

Posted by GDC at 01/12/2009 05:11:09 pm

No. Please refer to Rule <T22>.

Team Member Actions

Empty Cell Delivery

Empty Cell Delivery

Posted by FRC907 at 01/09/2009 06:35:22 pm

<G21>

Introducing EMPTY CELLS – EMPTY CELLS enter the CRATER when the PAYLOAD SPE_____T passes the EMPTY CELL through the payload port in the OUTPOST shield, or over the Alliance Station Wall from the FUELING STATION. EMPTY CELLS shall not enter the CRATER through any other means (e.g. an EMPTY CELL can not be thrown over the OUTPOST shield and into the CRATER). A violation will cause a PENALTY to be assigned.

Are there any restrictions on the use the provided tongs in the above rule.

Re: Empty Cell Delivery

Posted by GDC at 01/12/2009 12:12:15 pm

The tongs are provided to permit the PAYLOAD SPECIALIST to safely manipulate GAME PIECES in the FUELING PORT. They are not intended for any other use.

Team Member Actions

Commander actions

Commander actions

Posted by FRC173 at 01/09/2009 10:15:16 pm

Is the commander allowed to use the tongs to retrieve game pieces, provided they do not touch game pieces?

Is the commander allowed to grab the temporary storage bin in the local alliance fueling station?

Re: Commander actions

Posted by GDC at 01/11/2009 10:42:38 pm

The tongs are provided to permit the PAYLOAD SPECIALIST to safely manipulate GAME



PIECES in the FUELING PORT. The COMMANDER may not use them to manipulate a GAME PIECE - to do so would be considered a violation of Rule <G40>. The temporary storage bin in the FUELING STATION is provided for the convenience of the PAYLOAD SPECIAL1ST. It may not be manipulated by any other member of the TEAM.

Team Member Actions

Team Member Actions: Colored Bibs

Team Member Actions: Colored Bibs

Posted by FRC1746 at 01/11/2009 10:52:24 am

Can Payload Specia1ist in Fueling station wear a Bib that matches the color scheme of the Vision Target to aide tracking of the Fueling station?

Re: Team Member Actions: Colored Bibs

Posted by GDC at 01/11/2009 10:23:43 pm

No. That would be a violation of Rule <T22>.

Team Member Actions

Tong usage and supplier

Tong usage and supplier

Posted by FRC1746 at 01/11/2009 10:57:38 am

1. What is the model number and supplier for the Tongs used to fetch Moon Rocks?
2. Can the tongs extend over the glass?
3. Can tongs reach uner the wall into triangular fueling port to fetch moon rocks?

Re: Tong usage and supplier

Posted by GDC at 01/13/2009 04:48:05 pm

The tongs used to retrieve GAME PIECES are Unger "[URL="http://www.ungerglobal.com/retail/products/nifty_nabber/"]Nifty Nabbers[/URL]" 36-inch length. The tongs are tethered to the side of the FUELING PORT, and cannot reach over the top of the Alliance Station Wall (confirm this). The tongs can be used to retrieve GAME PIECES from the "dead space" between the AIRLOCK and the FUELING PORT. Please refer to Rule <G40>, as amended in Team Update #3.

Team Member Actions

Moon Rock access

Moon Rock access

Posted by FRC1746 at 01/11/2009 11:00:45 am

When can Payload Specia1ist touch the moon rocks in autonomous? Can they 'pre-load' or do they have to wait until the period begins before picking up and 'rocks.'

Re: Moon Rock access

Posted by GDC at 01/11/2009 10:25:47 pm

PAYLOAD SPECIAL1STS must wait until the start of the MATCH before they can take MOON ROCKS from the temporary storage containers in each FUELING STATION. They cannot "preload" prior to the MATCH.



Team Member Actions

team member actions

team member actions

Posted by FRC1051 at 01/11/2009 02:35:58 pm

I have two questions;

1) can the payload special1st reach beyond the alliance station wall into the airlock with the tongs to retrieve balls?

2) can the outpost player extend a tool through the outpost wall opening, like a thin cross-section chute to deliver the ball further into the crater?

Re: team member actions

Posted by GDC at 01/12/2009 11:28:39 pm

1. Yes, within limits. Please refer to Rule <G40>, as amended in Team Update #3.

2. No. This would be considered a potential safety violation.

Team Member Actions

passing balls

passing balls

Posted by FRC1683 at 01/12/2009 07:25:05 pm

are orbit balls aloud to be passed from payload spe_____t to payload spe_____t?

Re: passing balls

Posted by GDC at 01/15/2009 03:03:54 am

There are no rules that specifically prohibit this. Please review Section 7.3.4.3 carefully to insure legal transfer of Game Pieces.

Team Member Actions

Pushing Moon Rocks -out- of Port

Pushing Moon Rocks -out- of Port

Posted by FRC111 at 01/13/2009 09:36:21 am

Can an PAYLOAD SPECIALIST use the "tongs" to push MOON ROCKS out of the FUELING PORTS?

This post talks about "safe manipulation" using the tongs:

[url]http://forums.usfirst.org/showthread.php?t=11111[/url].

However, it is still unclear as to what "manipulate GAME PIECES in the FUELING PORT" means.

Does "manipulate" just mean PAYLOAD SPECIALIST uses the tongs to extract MOON ROCKS from the fueling station?

Thanks!



2009 Q&A Forum Export

generated: 02/18/2009 11:47:54 am EST

Re: Pushing Moon Rocks -out- of Port

Posted by GDC at 01/15/2009 02:49:27 am

Please refer to Team Update #3.

Team Member Actions

Team T-Shirts

Team T-Shirts

Posted by FRC2859 at 01/14/2009 03:55:40 pm

We know that our robot can't be hot pink or vibrant green because of the vision system but, are teams allowed to have team t-shirts be that colored out in the crowd and out on the field as drivers and human elements(or "pilots" and "payload spe_____ts").

Re: Team T-Shirts

Posted by GDC at 01/18/2009 11:09:29 pm

Teams are urged to use caution when wearing colors that are similar to the vision target in the vicinity of the playing field. As a guide, if you can see a robot, it can see you.

Team Member Actions

Team Color and Drive Team

Team Color and Drive Team

Posted by FRC172 at 01/15/2009 05:33:39 pm

Our team color is hot pink. We understand from our prior Q&A that we need to be very careful with the use of our color on the robot to comply with <R02.C>. Our entire team wears hot pink shirts, hats, etc. We have a substantial investment in those shirts. Are all 4 members of our drive team prohibited from wearing our team shirt and related team paraphernalia under Rule <T22>? We are not wearing a colored bib to aid in targeting, the subject of another Q&A under Team member action. We simply want to be able to wear our team shirt and color.

Re: Team Color and Drive Team

Posted by GDC at 01/18/2009 10:51:33 pm

With 1700 teams involved in the competition this year, we unfortunately could not find a color combination for the vision target that would not conflict with some percentage of the established teams. We would strongly recommend that you consider an alternate color scheme for your team gear. If your team has large areas that are the same color as the vision targets, it is likely that you will confuse the vision systems of both your opponents and alliance partners. If this is determined to be the case, this will be considered to be a violation of Rule <R02-C> (particularly if you are knowingly using the exact color as the vision targets), and the situation will have to be corrected before the team will be allowed back on the field.

Team Member Actions

Passing a moon rock

Passing a moon rock

Posted by FRC696 at 01/19/2009 11:39:23 am

according to thread [url]<http://forums.usfirst.org/showthread.php?t=11244>[/url] there is no rule prohibiting passing moon rocks from payload specialist to payload specialist, is this true for the specialist behind the airlock to the one at the outpost?

Re: passing a moon rock



Posted by GDC at 01/19/2009 01:37:53 pm

Yes, provided the moon rock is passed through the port in the outpost shield.

Team Member Actions

Spectator to Human Player Interaction

Spectator to Human Player Interaction

Posted by FRC135 at 02/03/2009 09:11:28 pm

Is it legal for a spectator to hold up a sign informing the human player on whether or not to play a super cell?

Re: Spectator to Human Player Interaction

Posted by GDC at 02/05/2009 03:23:24 pm

No. As defined in Chapter 7 of The Manual, Lunacy is played by a TEAM with four members: a COMMANDER, a PAYLOAD SPECIALIST, and two PILOTS. Receiving direct, specific input from the audience intended to provide a competitive advantage would effectively add a fifth person to the TEAM. This would be contrary to the definition of the TEAM and the intent of the game.

Team Member Actions

Orbit Ball Throwing Maximum

Orbit Ball Throwing Maximum

Posted by FRC2859 at 02/03/2009 10:54:16 pm

Are payload specialists allowed to throw more than one orbit ball at a time?

Re: Orbit Ball Throwing Maximum

Posted by GDC at 02/05/2009 11:28:15 pm

Yes.

Team Member Actions

Payload Specialist scoring when team is disable?

Payload Specialist scoring when team is disable?

Posted by FRC980 at 02/07/2009 09:23:46 pm

If a team's robot is disabled (E-stop or by FMS) is the payload specialist for that team able to continue to score game pieces?

Re: Payload Specialist scoring when team is disable?

Posted by GDC at 02/09/2009 08:18:36 pm

Yes.

Team Member Actions

Can the payload specialist use a tool?

Can the payload specialist use a tool?

Posted by FRC1102 at 02/12/2009 08:00:58 pm

Can the Payload Specialist at the Outpost use a simple tool that remains outside the field boundary to aim the empty cell through the port in the Outpost shield?

Re: Can the payload specialist use a tool?

Posted by GDC at 02/14/2009 07:55:13 am



No. This would be a violation of Rule <T22>.

Team Member Actions

Outpost Payload Specialist

Outpost Payload Specialist

Posted by FRC1254 at 02/12/2009 09:20:36 pm

In what ways can the outpost payload specialist "get" the ball through the hole?

Can they drop it through the hole onto the floor for us to pick up?

Is there a page in the rule book that discusses the options?

I am just interested in the Outpost Payload Specialist not the corner people.

Thanks.

Re: Outpost Payload Specialist

Posted by GDC at 02/14/2009 07:53:04 am

The Payload Specialist must pass Empty Cells through the port in the Outpost shield, and not over or around the shield (Rule <G21>). Empty Cells must be passed through the port by hand, and not using any other equipment or artificial aids (Rule <T22>). Other than that, there are no restrictions.

Team Member Actions

Passing Moonrocks through Airlock

Passing Moonrocks through Airlock

Posted by FRC1718 at 02/13/2009 10:06:39 pm

Providing that the payload special1st does not cross the plane of the alliance station wall, can they roll moonrocks into the crater through the airlock without using the tongs?

Re: Passing Moonrocks through Airlock

Posted by GDC at 02/16/2009 07:55:54 am

Yes.

Team Member Actions

Commander Touching Operator's Console

Commander Touching Operator's Console

Posted by FRC100 at 02/15/2009 06:40:42 pm

Is the Commander allowed to plug in a head's up display (worn by one of the pilots) to the operator's console at the beginning of the Teleoperated period or would this be a violation of rule G41? The Commander would not be directly controlling the robot.

Re: Commander Touching Operator's Console

Posted by GDC at 02/16/2009 01:41:11 pm

If any team member other than the PILOTS operate the OPERATOR CONSOLE during the MATCH (connecting, disconnecting, or enabling of elements of the OPERATOR CONSOLE would be considered "operation"), it will be considered a violation of Rule <G41>.

Referee Interactions



Referee Interactions

Referees are Scorekeepers?

Referees are Scorekeepers?

Posted by FRC2859 at 01/31/2009 10:29:11 pm

We spoke to volunteer alumni and other FRC Teams, and we wanted to ask because nobody was going to but are the referees going to be both the scorer and the referee because we asked a referee alumni and he said that it was difficult when you kept score but didn't have the ability to call a penalty because your hands were full with a score keeping controller.

Re: Referees are Scorekeepers?

Posted by GDC at 02/02/2009 01:07:06 pm

The Arena staff will include a Head Referee (who is responsible for all decisions regarding matches), 3 Referees (responsible for monitoring game play and ensuring fair play) and 6 Official Scorers (responsible for keeping track of the game pieces in the trailers).

Definitions

Definitions

Renumbering of rules in Rev G of section 8

Renumbering of rules in Rev G of section 8

Posted by FRC330 at 02/02/2009 01:02:36 pm

It appears that in Rev G of section 8, a misnumbering of the rules were silently corrected.

Prior to Rev G (excluding Ref F), the rules went:

<R65> <R66> <R67> <R66> <R67> <R68> <R69> <R70>

With Rev G, they go:

<R65> <R66> <R67> <R68> <R69> <R70> <R71> <R72>

I understand that mistakes happen, but this should not have been silently corrected. Now any rule reference in the Q/A after this sequence is wrong (unless those have also been silently corrected). At a minimum this should have been mentioned in team update 8. I would have preferred if the mistake was corrected without renumbering the rules after the sequence. For example, the following sequence would have been much better: <R65> <R66.1> <R67.1> <R66.2> <R67.2> <R68> <R69> <R70>.

Re: Renumbering of rules in Rev G of section 8

Posted by GDC at 02/05/2009 11:26:50 pm

Thank you for the feedback. This was a correction to an earlier mistake and restores the original numbering that was in place at Kickoff. Please see Team Update 9.

The Q&A responses have been updated for the appropriate rule numbers.

Safety & Damage Prevention

Safety & Damage Prevention

Caster or device for floor tracking, but non-supportive

Caster or device for floor tracking, but non-supportive



Posted by FRC1771 at 01/07/2009 12:19:27 pm

<R06> ROBOTS must use ROVER WHEELS....No other forms of traction devices (wheels, tracks, legs, or other devices intended to provide traction)are permitted....The intent of this rule is that the ROVER WHEELS be used in as close to their “out of the box” condition as possible, to provide the intended low-friction dynamic performance during the game.

With this rule in mind, would it be legal to install a wheel encoder (non KOP wheel)in a caster arrangement to measure velocity and position? This wheel would not provide traction as the only resistance to turning would be encoder friction. The KOP encoders won't do much good for velocity and position detection because the wheels slip too much.

If the preceding is not legal, what about an optical device (like an optical mouse) in contact with the floor, riding on a teflon bearing?

Re: Caster or device for floor tracking, but non-supportive

Posted by GDC at 01/07/2009 08:09:31 pm

An information gathering device like this would not be considered a traction providing device, and would thus be permitted.

Safety & Damage Prevention

Propellers

Propellers

Posted by FRC1771 at 01/07/2009 12:20:00 pm

Can a team use model aircraft propellers, mounted in a tube and properly guarded, as a means of propulsion and maneuvering?

Re: Propellers

Posted by GDC at 01/07/2009 08:13:08 pm

There is nothing in the rules that would prevent this, provided there is no damage to field elements and it does not present a safety hazard.

Safety & Damage Prevention

Can Robot touch surface

Can Robot touch surface

Posted by FRC695 at 01/07/2009 12:25:16 pm

Can any part of your robot...other than the FRC supplied wheels...make contact with the playing surface if their intention is not to provide traction to propel or stop the robot?

Re: Can Robot touch surface

Posted by GDC at 01/07/2009 08:15:00 pm

Yes.

Safety & Damage Prevention

Are bumpers required on all sides of the robot?

Are bumpers required on all sides of the robot?

Posted by FRC121 at 01/07/2009 02:09:30 pm

The first section of Rule <R08> states that:



"The BUMPER location and design have been specified so that ROBOTS will make BUMPER-to-BUMPER contact during any collisions. If implemented as intended, a ROBOT that is driven into a vertical wall in any normal PLAYING CONFIGURATION will always have the BUMPER be the first thing to contact the wall."

Does this mean that bumpers are required on all sides of the robot. For example, if a ball-gathering mechanism were to be mounted on one side of the robot, would it be legal to not have any bumpers on that side, provided that the 2/3 coverage requirement would be met?

Clarification on Bumpers and Corners

Posted by FRC1100 at 01/09/2009 10:09:07 pm

This question has two separate parts:

1. The manual states that all corners must be protected by a bumper 'overhang' so that there is not an exposed 'box' on the corner. What is not clear however, is if the bumper must 'wrap' around the corner (if a bumper must exist on both sides, or if just an overhang must exist). None of the example pictures address this situation one way or the other. Is a 'one-sided' corner protected bumper acceptable? or must we have a 6" bumper on each side of the corner and the overhang?

2. Another unclear areas is the question of curved areas on the bumper zone. The language of the manual seems to not address the possibility of a round (partially or in whole) bumper zone. If an area that would normally be a corner is 'rounded' into a curve, is it still a corner? or does it only need to comply with the rule that states the robot must make collisions with bumpers? Basically, could we round a corner out that would normally require 2 6" bumpers (as described above, potentially) so that it instead only requires a single curved 6" bumper?

Bumper Segments and Corners

Posted by FRC968 at 01/10/2009 01:44:47 pm

Rule <R08-A> states that "BUMPERS must be built in segments, with a minimum length of six inches, and a maximum length that does not exceed the maximum horizontal dimension of the ROBOT."

1. What defines a bumper "segment"?
2. From where is the length of a bumper "segment" measured?
3. Is the bumper that wraps around the left rear corner of the robot in Overhead View Figure 8-2 in the Robot Manual considered a single bumper "segment"?
4. May a 6-inch-long bumper "segment" wrap around a corner, in any proportion, such that for example 2 inches of the 6-inch segment may exist on one side of the robot, and 4 inches exist on the adjacent perpendicular side of the robot. Is this still considered a single "segment" for the purposes of satisfying <R08-A>?

Rule <R08-I> states "BUMPERS must protect all exterior corners of the BUMPER PERIMETER".

1. What defines a "corner"?
2. At what radius is a "corner" no longer considered a "corner"?
3. From which direction of contact must corners be protected?



Bumper corner clarification

Posted by FRC157 at 01/10/2009 04:23:32 pm

what is considered a "corner" on the robot regarding bumper rules? is there a minimum angle to what is considered a corner or does a curve count as a corner?

is the termination of a bumper considered a corner in regards to leaving it open. I.E. we have a curve on the front of the robot and an opening for the ball collection system does the outside of the robot and the inside of the opening considered a corner?

Re: Are bumpers required on all sides of the robot?

Posted by GDC at 01/12/2009 07:49:36 pm

1. Please refer to Rule <R08-J> and Figure 8-2 in The Manual. Both sides of the corner must be protected by BUMPER segments.

2. Technically, every corner is a curve of very small radius with two tangential extensions. A specific minimum radius threshold to determine the difference between corners and curves has not been, and will not be, defined. A "corner" will be determined to be a "corner" when upon inspection any reasonably astute observer perceives it to be a "corner" and not a curve.

3. Rule <R08-i> requires BUMPER protection on every exterior corner of the BUMPER PERIMETER. If the corner is an interior corner (e.g. does not form a vertex of the BUMPER PERIMETER) then protection on both sides of the corner is not required.

Safety & Damage Prevention

R08 Bumper Length

R08 Bumper Length

Posted by FRC1458 at 01/07/2009 03:35:05 pm

<R08>

"A. BUMPERS must be built in segments, with a minimum length of six inches"

If we plan on having one bumper segment that curves a corner(ex. page 10 of part 8, the bottom left bumper of the top right picture) is the entire length required to be 6 inches? or each "span" of the bumper six inches.

Re: R08 Bumper Length

Posted by GDC at 01/09/2009 10:17:31 pm

Each segment (or span) of the BUMPER must be at least 6 inches long. Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[URL].

Safety & Damage Prevention

methods of propulsion

methods of propulsion

Posted by FRC1339 at 01/07/2009 05:19:35 pm

may we use ducted fans or shielded propellers for propulsion, assuming that they are properly covered to prevent safety violations? If so, what constitutes proper safety covering (chicken wire, size of openings, etc.)?



thank you!

Re: methods of propulsion

Posted by GDC at 01/09/2009 10:29:13 am

There is nothing in the rules that would prevent this, provided there is no damage to field elements and it does not present a safety hazard.

Please refer to Rule <R05> for more information about mitigating hazards to personnel safety. Beyond that, we cannot provide specific design recommendations.

Safety & Damage Prevention

Minimum Length Bumper Segments

Minimum Length Bumper Segments

Posted by FRC1114 at 01/07/2009 05:58:04 pm

<R08>-A states "BUMPERS must be build in segments, with a minimum length of six inches..."
<R08>-J states "Corners and joints between BUMPER segments may be filled with short vertically oriented pool noodle..." Will bumpers be measured by the length of the plywood backing, or the plywood backing + any vertically oriented pool noodles used for corners? i.e. Can we have a minimum length 6" bumper, with less than 6" of plywood.

Cheers,

Re: Minimum Length Bumper Segments

Posted by GDC at 01/09/2009 10:11:08 pm

Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[URL]. As indicated in Rule <R08>, BUMPERS must include a solid plywood backing (as well as the pool noodles, clamping angles, and fabric cover). The length of the the bumper assembly that includes all of these items is what determines the "bumper length."

Safety & Damage Prevention

Articulating Frame

Articulating Frame

Posted by FRC449 at 01/07/2009 09:50:02 pm

Can a frame with attached bumpers articulate to repel other robots and/or the arena, as long as the bumpers stay within the bumper zone and the robot within the sizing box?

Re: Articulating Frame

Posted by GDC at 01/12/2009 05:12:56 pm

Yes, as long as all parts of the articulated system remain within the volume limitations specified in Rule <R11> and the BUMPERS remain within the BUMPER ZONE. Note that such a system will result in a dynamic definition of the Bumper Perimeter Polygon. All parts of the ROBOT must remain within the vertical projection of this polygon at all times, no matter what size or shape it may be. Also, if the repulsion system results in any damage to other ROBOTS and/or the ARENA, appropriate PENALTIES may be assessed.

Safety & Damage Prevention

Bumper Coverage

Bumper Coverage



Posted by FRC973 at 01/09/2009 02:48:01 am

Rule R08 states

" If

implemented as intended, a ROBOT that is driven into a vertical wall in any normal PLAYING CONFIGURATION will always have the BUMPER be the first thing to contact the wall. "

A simple rectangular frame, the kitbot for example, with bumpers on all but one side, with the soft part of the bumpers adjacent to the side with no bumper extending the legal 3.5" past the bumper perimeter of the side with no bumper, meets all the stipulations in R08.

Is this a legal configuration?

Re: Bumper Coverage

Posted by GDC at 01/12/2009 10:45:20 pm

Not quite. Both "sides" of the exterior corner must be protected by the BUMPERS. This would cause at least part of the fourth side of the ROBOT to have BUMPERS in place. Please see Team Update #2 for additional discussion on this topic.

Safety & Damage Prevention

Must bumpers cover all sides of the robot?

Must bumpers cover all sides of the robot?

Posted by FRC61 at 01/09/2009 12:16:52 pm

Rule <R08> Part I states that "BUMPERS must protect all exterior corners of the BUMPER PERIMETER (see Figure 8 - 2)" AND Part K states that "BUMPERS must protect a minimum of 2/3 of the BUMPER PERIMETER."

We are debating a design that will leave one entire side of the robot without a bumper. This design will meet the 2/3 minimum requirement (88" covered by bumpers) but seems to possibly violate the "all exterior corner" rule as we will have 2 corners that are not protected but only in one direction.

Will this be allowed???

Re: Must bumpers cover all sides of the robot?

Posted by GDC at 01/12/2009 12:18:49 pm

All clauses of Rule <R08> must be satisfied, including the corner protection clause. Both sides of the corner must be protected. See Team Update #2 for additional discussion.

Safety & Damage Prevention

Bumper section length defintion

Bumper section length defintion

Posted by FRC2775 at 01/09/2009 06:14:11 pm

According to R08 a bumper can be constructed to wrap around a corner as a single piece as seen in the lower left corner of figure 8-2 in the robot section of the manual. In this instance is the bumper length determined by the total length from where the fabric starts and stops on it's



end or does the length start on each change in angle.

This question is also relative to the rule clarification in Team update 2 about goals entering the bumper perimeter as a single piece bumper wrapping the side and front would allow for a larger opening on the front of the machine.

Re: Bumper section length definition

Posted by GDC at 01/12/2009 12:16:20 pm

Please refer to Team Update #2. Each segment of the BUMPER must be at least 6 inches long. As indicated in Rule <R08>, BUMPERS must include a solid plywood backing (as well as the pool noodles and fabric cover). The length of the the bumper assembly that includes all of these items is what determines the "bumper length."

Safety & Damage Prevention

Bumper attachment

Bumper attachment

Posted by FRC2775 at 01/09/2009 06:18:21 pm

Please define the term "STRUCTURE/FRAME" in regards to R08 below. Specifically in regards to robot designs with outward cantilevered wheels.

M. The entire length of the BUMPER backing must be supported by the structure/frame of the ROBOT (i.e. the backing material must not be in "free space" between or beyond attachment points) (see Figure 8 – 3)

Bumper Attachment

Posted by FRC1718 at 01/10/2009 11:05:09 am

Rule <R08> section M states: The entire length of the BUMPER backing must be supported by the structure/frame of the ROBOT (i.e. the backing material must not be in "free space" between or beyond attachment points) (see Figure 8 – 3).

I'm concerned because many teams have their wheels mounted to the outside of their chassis with support posts coming out to attach the bumpers to. Will this be legal?

Re: Bumper attachment

Posted by GDC at 01/12/2009 12:05:18 pm

Under the provisions of Rule <R08-M>, the entire length of the BUMPER must be structurally backed by the frame of the ROBOT. Standoffs, stanchions, and spacers used to mount the BUMPERS that result in lengths of the BUMPERS being unsupported will be considered a violation of this rule.

This is necessary to minimize the potential for damage due to the high speed collisions that are likely to occur during Lunacy. During early testing of the game, it was found that unsupported BUMPERS (even backed with high-grade 3/4" plywood) could break and splinter during collisions with the field and other ROBOTS with relative ease.

Safety & Damage Prevention

Dynamic Bumpers

Dynamic Bumpers



Posted by FRC2669 at 01/10/2009 06:49:36 am

Hello GDC,

We looked over the game rules and did not find any thing saying the following idea is illegal and would like an additional clarification from you.

Is it legal that the bumpers themselves will have an ability of a slight movement, as long as they are moving along with the part of the chassis that is attached to them and do not violate any rule of the robot dimensions or safety?

Thanks

Re: Dynamic Bumpers

Posted by GDC at 01/12/2009 12:07:53 pm

If the design does not violate any rules, this design doesn't seem illegal. Please note however, we can not provide specific evaluations of systems which we have not directly examined. Final authority for the determination of the legality of such a device rests with the lead inspector at each event.

Safety & Damage Prevention

Is Rule <R04> Rescinded by Update 1?

Is Rule <R04> Rescinded by Update 1?

Posted by FRC2180 at 01/10/2009 11:14:19 am

Does Update 1 specifically rescind Rule <R04> in Section 8 "The Robot", which allows a protrusion from the robot to "form the 'leading edge' of the ROBOT"? The rule further gives as examples "forklifts, lifting arms, grapplers, etc." Are these now prohibited by Update 1?

Re: Is Rule <R04> Rescinded by Update 1?

Posted by GDC at 01/11/2009 10:12:57 pm

Rule <R04> is not altered by Team Update #1. Any protrusions from the ROBOT must not pose a safety hazard. All parts of the ROBOT must remain within the vertical projection of the BUMPER PERIMETER. These two statements are not contradictory.

Safety & Damage Prevention

Bumper attachment

Bumper attachment

Posted by FRC2116 at 01/10/2009 07:46:00 pm

May one end of a bumper be connected further out from the frame than its opposite end, if the furthest end of the bumper end is within the core dimensions of the robot?

I could not find anywhere that said that the bumper attachment must be a uniform distance between the bumper and frame for the length of the bumper.

We want to use two separate bumper segments on the right and left side of the front of our robot as a plow, and connect the one end of each bumper segment 2 inches from the frame while connecting the other end of bumper segment directly to the frame.

Re: Bumper attachment



Posted by GDC at 01/12/2009 12:02:56 pm

If we understand your question correctly, this would not be permitted. This apparently describes a configuration where one end of the BUMPER assembly is spaced two inches away from the rest of the ROBOT and unsupported. This would be a violation of Rule <R08-M>.

Safety & Damage Prevention

<R08>, Update 2, <G32> interactions

<R08>, Update 2, <G32> interactions

Posted by FRC1120 at 01/10/2009 08:08:17 pm

Thank you for Team Update 2; we appreciate that insight. Some clarifying questions:

- (1) are two pictured configurations in Update 2 "legal"? They seem to meet all parts of <R08> and thus we are assuming they are legal. Correct assumption?

- (2) Is it acceptable for the robot to extend over the bumper zone of the TRAILER (not of the robot), that is the "opponent's trailer", as shown? is this "incidental contact"?

- (3) If it IS ok to extend, any limits on reaching/touching the trailer posts?

Thank you for your volunteer support to answer our question.

Sincerely,

Re: <R08>, Update 2, <G32> interactions

Posted by GDC at 01/11/2009 10:57:48 pm

We believe that the two example illustrations in Team Update #2 are correct and satisfy the conditions defined in Rule <R08> as intended.

As shown in the illustrations, it is physically possible for a legal ROBOT configuration to partially enclose a TRAILER, including extending over the BUMPERS of the TRAILER. There are no rules that would prevent this, provided the TRAILER (including the BUMPERS, base, and vertical pipes) is not grasped, grappled, or attached to in a manner that would cause a violation of Rule <G29>).

Safety & Damage Prevention

Bumper Length

Bumper Length

Posted by FRC1746 at 01/11/2009 10:32:53 am

BUMPERS Part 1:

This response seems to contradict Update #2: '...The length of the the bumper assembly that includes all of these items is what determines the "bumper length." '

Team update #2 clearly shows that the 6" is measuring just the plywood backing - otherwise the max opening in the graphic would be 26" + 2.5 + 2.5 or 31 inches.



So .. just to be sure: How will the Bumper Segment Length be measured?

BUMPERS Part 2:

Will bumpers be required on the angled faces of design like this:
[url]http://www.chiefdelphi.com/media/photos/32317?[/url]

The current rules would indicate no, as long as the sharp corner is covered by a bumper running up the side. Please verify.

BUMPERS Part 3:

<R18E> "The Trailer Hitch must be placed such that, as the TRAILER swings from side to side, the first contact between the TRAILER and ROBOT is BUMPER-to-BUMPER and not TRAILER-tongue-to-BUMPER (to prevent placing excessive stress upon, and possibly damaging, the TRAILER tongue). See Figure 8-6."

Does this REQUIRE a team to place bumpers on the back of the robot?

Seems like we could design a TrailerBumper-to-RobotChassis contact that would save the same purpose of minimizing stress on the trailer hitch, especially since there will be other exposed areas of the robot that will be making this kind of bumper-to-chassis contact with other robots.

Question: Is the Trailer bumper ONLY allowed to contact the Robot Bumper (per <R18E>), or can the trailer bumper contact an exposed non-sharp area of the frame?

Re: Bumper Length

Posted by GDC at 01/15/2009 01:11:01 pm

1. The statements are not contradictory. The length of a BUMPER is determined by the portion of the assembly that includes all the required elements (pool noodle, fabric covering, clamping angles, and plywood backing) in the cross-section of the assembly. The length of this portion of the BUMPER assembly must be at least six inches. This is consistent with the previous answers and the statements/drawings in Team Update #2.
2. As indicated in Rule <R08-I>, all exterior corners of the BUMPER PERIMETER must be protected by BUMPERS. Both "sides" of the corner must be protected.
3. Rule <R18-E> requires that the ROBOT be designed such that contact between the ROBOT and the TRAILER (other than the Trailer Hitch) must be BUMPER-to-BUMPER. There are no exceptions to this.

Safety & Damage Prevention

Bumpers and acute corners

Bumpers and acute corners

Posted by FRC1270 at 01/11/2009 01:17:52 pm

In update #2 the robot is a rectangle with the front of the robot allowing for a 26" opening in the



center. The two 6" front sections are perpendicular to the side rails and on opposite sides of each other. Would it be a violation of rule <R08-A> if the two side sections were angled 45 degrees towards the center of the robot – still covered with a bumper. Would the bumpers attached to the 6" angled section be considered enough protection to the corners and not in violation of rule <R08-C>?

Bumpers for Concave Designs

Posted by FRC341 at 01/12/2009 11:08:21 am

We have a question about exterior corners of the robot that are less than 90 degrees. For clarification, this is one specific illustration of this design, but our question refers to these sorts of corners in general: [url]http://www.chiefdelphi.com/media/photos/32317?[/url]

It seems that there are four possible ways to interpret the rules about such corners:

1. Bumpers must be present on either side of the corner (per this Q&A response: [url]http://forums.usfirst.org/showthread.php?t=11159[/url]). Thus, the interior angled sections of the robot must have bumpers.
2. Bumpers must be located on the BUMPER PERIMETER (<R08>). Thus, bumpers cannot be present on the interior angled section, as they are not part of the convex hull of the robot polygon.
3. These sorts of exterior corners are not permitted because (1) and (2) cannot simultaneously be satisfied.
4. The interior angled sections of the robot must be padded so as not to damage the trailer (preserving the intent of the bumpers in the first place), but since they are "bumpers" rather than "BUMPER", they are not exempt from weight and size withholdings.

Which is the correct interpretation? Thanks.

Re: Bumpers and acute corners

Posted by GDC at 01/15/2009 11:28:40 pm

Based on previously provided information, you have correctly concluded that all exterior corners must be protected by BUMPER segments (Rule <R08-I>). Each BUMPER segment must be a minimum of six inches in length (Rule <R08-A>), and must be attached to the BUMPER PERIMETER (Rule <R08-L>). Effectively, this means that an exterior corner of the ROBOT can not be at an angle that is more acute than the coincident corner of the BUMPER PERIMETER. It follows that the example configuration you cited would not be permitted.

Safety & Damage Prevention

Bumper length question

Bumper length question

Posted by FRC2844 at 01/11/2009 01:45:13 pm



The way I read the bumper rule is that a bumper consist of all its parts. So if a bumper hangs over the side to protect the corner like required, that is included in the bumper length. Is that correct?

Re: Bumper length question

Posted by GDC at 01/15/2009 01:10:01 pm

The length of a BUMPER is determined by the portion of the assembly the includes all the required elements (pool noodle, fabric covering, clamping angles, and plywood backing) in the cross-section of the assembly. The length of this portion of the BUMPER assembly must be at least six inches.

Safety & Damage Prevention

Bumper coverage of external corners

Bumper coverage of external corners

Posted by FRC2449 at 01/12/2009 11:58:42 am

This is in response to the answer to the post titled "Bumper Length" on Sunday at 8:32am and the team update #2.

According to the second part of the reply by GDC, <R08-l> is interpreted as BOTH sides of all exterior corners must be protected. Originally we interpreted this as just using a vertical noodle at the end of a segment to cover the corner, but the posts and rule update seem to be implying that 6" of bumper need to be used on both sides of all corners. Is this true, or is a vertical noodle ok?

- So what constitutes a corner? Is a rounded turn with a 2" radius considered a corner? 10" radius?
- As shown in figure 8-2 of rule <R08>, a ~120 degree corner is covered with a single segment, so can one flat side of that segment be < 6". Specifically, 2" as long as the total segment is longer than 6"? Or is a segment defined as a straight piece? Based on the other questions that have been posted on this, the replys seem to contradict the bottom left bumper of figure 8-2 of the original rule.
- Based on the post that BOTH sides of every corner must be protected, and the implying that 6" of bumper must be on each side of these corners, this has a more profound effect on a short width robot than a wide width, so why was the wide width called out? I assume it is because of the 2/3rds rule and not because we need 6" of bumpers on the side of every corner.
- Finally, if the intent of the rule is so that we cannot eat a trailer with a wide mouth, what if we have a 6" center bumper in the middle of our mouth, as shown in the following link, does that apply? Obvious it violates the both sides of all corners, but I am hoping that 6" of bumper will not be required on both sides of every corner.

[url]http://groups-beta.google.com/group/team2449/web/2449_Bumpers.gif[/url]

Thanks for your help!

Re: More bumper clarifications

Posted by GDC at 01/15/2009 04:06:55 pm

The interpretation that "both sides of an exterior corner must be protected with segments of



bumpers, and the bumper segments must be a minimum of six inches" is correct. The requirement for both sides of the corner to be protected is independent of the angle of the corner.

A "corner" has not been explicitly defined. A corner will be accepted as a "corner" when in the judgement of a reasonable astute person it is perceived as a corner.

The illustrations and figures used in The Rules and Team Updates are typically examples and used for illustrative and clarification purposes. They are not, unless otherwise noted, exclusive or all-encompassing design solutions. Rule <R08> and the associated illustrations do not make any direct statements regarding a preference for wide-side- or narrow-side-first orientations for the ROBOT. Please try to not over-analyze the illustrations beyond their intended purpose.

Safety & Damage Prevention

Further Clarification of Legal Bumper Configuration

Further Clarification of Legal Bumper Configuration

Posted by FRC1086 at 01/12/2009 12:16:21 pm

Let me first reference the following so our question can be further understood:

- 1) R08-A: BUMPERS must be built in segments, with a minimum length of six inches, and a maximum length that does not exceed the maximum horizontal dimension of the ROBOT.
- 2) R08-B: BUMPERS must use a stacked pair of 2-1/2 inch "pool noodles" as the bumper material.
- 3) R08-I: BUMPERS must protect all exterior corners of the BUMPER PERIMETER (see Figure 8 - 2).

As our team starts to really finalize our robot design and the bumpers that will be on our robot, we have some further clarification that is needed on what are legal bumper designs and configurations. Our team is looking at having several segments of bumpers around the robot. Our question really focuses on two segments that have the same design. This design has the segment having a 90-degree turn in the design so as it creates one continuous bumper around the corner of the robot. So the end result would be a bumper that looks like an "L". The small length of the "L" measures 3 inches and the long length of the "L" measures 33 inches. The bumper is designed so it satisfies all other bumper requirements other than those mentioned above and hopefully those mentioned above.

Questions:

- A) Would it be legal to have the bumper design setup so that it is continuous around the 90-degree corner?
- B) Would this design consist of one segment or two segments?
- C) If the design would be one segment, would we be able to use a vertical piece of pool noodle for the corner or would all pieces in the continuous segment of bumper have to be horizontal pieces of pool noodle?

Re: Further Clarification of Legal Bumper Configuration



Posted by GDC at 01/15/2009 04:04:03 pm

The length of a segment of BUMPER is determined by the portion of the assembly that includes all required elements (pool noodle, fabric covering, plywood backing, and clamping angles) in the cross-section of the assembly. The minimum length of each segment of the BUMPER is six inches. "Hard" parts of the BUMPER assembly cannot extend into the corners. The described BUMPER construction would not satisfy these conditions.

Safety & Damage Prevention

Bumper Attachment and <R08> M

Bumper Attachment and <R08> M

Posted by FRC1276 at 01/12/2009 01:05:01 pm

Is it permissible for a team's method of attachment to create a small space (approximately 1/8") between the plywood BUMPER backing and the robot frame?

In addition, it appears that the method of attachment picture in figure 8 - 1 is not in compliance with Part M of <R08>. It appears that that the plywood backing will never be in contact with the frame because of the aluminum angle holding the fabric and the shape of the robust fastener. Does supported not necessarily mean contact?

[QUOTE=<R08> M]The entire length of the BUMPER backing must be supported by the structure/frame of the ROBOT (i.e. the backing material must not be in "free space" between or beyond attachment points) (see Figure 8 - 3).[/QUOTE]

"Free Space" behind Bumpers

Posted by FRC2062 at 01/13/2009 09:33:56 pm

R08-M:"the entire length of the BUMPER backing must be supported by the structure/frame of the ROBOT".

1. May the robot frame that supports the bumper backing be along only one edge of the bumper backing to be legal? Or must the full area or perimeter of the bumper backing be supported by the robot frame?
2. May attachment points be located inside the members of a boxed frame as long as the box frame is supporting the entire length of the bumper backing? ("beyond attachment points" is confusing).

Re: Bumper Attachment and <R08> M

Posted by GDC at 01/15/2009 04:01:54 pm

The intent of Rule <R08-M> is to ensure that sufficient structural reinforcement is provided to the BUMPERS to allow them to withstand the high-speed, high-energy impacts that are likely to occur during a typical Lunacy MATCH without failing. Inspectors will be looking for structures sufficient to provide this function. Small spaces, up to the thickness of the aluminum clamping angles retaining the fabric covering, will be permitted between the bumper backing and the supporting structure.

Safety & Damage Prevention

Figure 8-2 implications for things other than corners



Figure 8-2 implications for things other than corners

Posted by FRC1625 at 01/12/2009 11:03:38 pm

Ok, lets simplify this. If the "Not OK" bumper corner indicated in <R08> Figure 8-2 "Overhead View" was changed to one of the "OK" bumper corners would the resultant bumper configuration for the robot base be legal?

Re: Figure 8-2 implications for things other than corners

Posted by GDC at 01/15/2009 04:12:34 pm

No. Figure 8-2 is intended to only illustrate the legality of some of the possible ways in which BUMPERS could be arranged on exterior corners. Please do not infer any other conclusions from that example.

Safety & Damage Prevention

Dynamic bumper perimeter

Dynamic bumper perimeter

Posted by FRC2924 at 01/13/2009 01:17:11 am

May the bumper perimeter be dynamic, changing through the course of game play as long as all dependencies to it change appropriately to maintain their regulations?

Re: Dynamic bumper perimeter

Posted by GDC at 01/15/2009 03:09:54 am

Yes.

Safety & Damage Prevention

Bumper coverage of robot perimeter

Bumper coverage of robot perimeter

Posted by FRC1350 at 01/13/2009 12:56:27 pm

Can one side of the robot be without bumpers if the other three sides are completely covered?
Is there a minimum amount of coverage that is required on each/all sides /

Re: Bumpers

Posted by GDC at 01/15/2009 04:05:57 pm

Please refer to <R08>.

Safety & Damage Prevention

Green LEDs?

Green LEDs?

Posted by FRC885 at 01/13/2009 01:01:55 pm

We were thinking of displaying our team number in green flashing LEDs. Height of the numbers may be up to 8". Is this allowed? We are not doing this to intentionally cause anyone interference.

TNX

Re: Green LEDs?

Posted by GDC at 01/18/2009 10:48:05 pm

Depending on the particular implementation of the proposed display, it may or may not interfere with other ROBOTS. If it is determined that it does cause interference, then this will be considered a violation of Rule <R02> and potentially Rule <S01>.



Safety & Damage Prevention

Bumper protection for interior corners?

Bumper protection for interior corners?

Posted by FRC810 at 01/13/2009 04:20:01 pm

If there is a rectangular notch cut out of the chassis of the robot, in order to obey the "I. BUMPERS must protect all exterior corners of the BUMPER PERIMETER (see Figure 8 - 2)", does the 6" minimum peice of bumper need to extend inside the notch to protect that side of the corner?

Bumper Confusion

Posted by FRC157 at 01/13/2009 08:20:01 pm

On figure 8-2 (overhead view) it shows a robot with an opening with no bumper, but with

3. Rule <R08-i> requires BUMPER protection on every exterior corner of the BUMPER PERIMETER. If the corner is an interior corner (e.g. does not form a vertex of the BUMPER PERIMETER) then protection on both sides of the corner is not required.

The rule says that an inside part that connects with the outside polygon perimeter must have a bumper.... please clarify does the inside part of the robot opening need a bumper as stated by the rule or does it not need a bumper as shown in figure 8-2 of the robot section of the manual

Re: Bumper protection for interior corners?

Posted by GDC at 01/15/2009 04:04:59 pm

An "exterior corner" of the ROBOT is one where the BUMPER PERIMETER forms a vertex. An interior rectangular notch in an otherwise straight side of the ROBOT would not form exterior corners. Thus, these corners would not be covered by Rule <R08-I>.

Safety & Damage Prevention

Extentions of bumper backing

Extentions of bumper backing

Posted by FRC2929 at 01/13/2009 07:38:42 pm

Rule <R08-N> states (in part) "Hard" parts of the BUMPER (i.e. plywood backing, fastening system, and clamping angles) may extend up to a maximum of one inch beyond the BUMPER PERIMETER.

Rule <R08-M> states The entire length of the BUMPER backing must be supported by the structure/frame of the ROBOT (i.e. the backing material must not be in "free space" between or beyond attachment points) (see Figure 8-3).

Rule <R08-O> states The BUMPER backing must not extend beyond the "edge" of the ROBOT.

Rule <R08-N> appears to me to be contradictory to rules <R08-M> and <R08-O>. I cannot conceive of a means by which to perform the allowed operation of Rule <R08-N> that doesn't violate <R08-M> or <R08-O>.



It is my belief that the definition of BUMPER PERIMETER is the same as saying the "edge" of the ROBOT. Is that a correct interpretation?

Could you please provide clarification to this apparent contradiction and an example of what WOULD be allowed by <R08-N>? Thanks.

Re: Extensions of bumper backing

Posted by GDC at 01/15/2009 04:00:58 pm

Rule <R08-N> permits the BUMPERS to be attached to the ROBOT such that the "back" of the BUMPER is coincident with the BUMPER PERIMETER. This clause of the rule allows the bumper backing (specified as 3/4 inch plywood) to extend 3/4 inch out from the ROBOT in a direction normal to the BUMPER PERIMETER (as measured at the mid-point of any straight BUMPER PERIMETER segment). The head or end of any fasteners used to attach the BUMPERS may then extend a fraction of an inch beyond that and still remain within the allowances of this clause of the rule.

Safety & Damage Prevention

Bumper Length redux

Bumper Length redux

Posted by FRC171 at 01/13/2009 07:40:08 pm

The manual says that the minimum bumper length must be 6". It also says that a bumper consists of noodles, backing, and fabric. It is also says that the noodle may extend past the bumper perimeter 3.5 inches.

By this definition, could a bumper with a 3 inch long backing and noodles that stick out an additional 3 inches, meet this requirement? Would they be legal to use in competition?

Re: Bumper Length

Posted by GDC at 01/15/2009 03:58:18 pm

No. BUMPERS are defined as an assembly where all of the required elements - pool noodle, fabric covering, clamping angles, and plywood backing - are present in the cross-section of the assembly. When combined with Rule <R08-A>, this means that each piece of bumper backing must be at least six inches long.

Safety & Damage Prevention

Team Update #2 illustrations

Team Update #2 illustrations

Posted by FRC2279 at 01/14/2009 02:12:44 pm

are the pictures on the last page to indicate what is acceptable or not acceptable. the pictures show that the bumpers are ok but another robot could go past the robot perimeter. I question we will be able to create an opening inside the robot to accept balls that will not be a problem if we have to keep other robots from that opening.

Re: Team Update #2 illustrations

Posted by GDC at 01/15/2009 03:59:02 pm

The illustrations in Team Update #2 are intended to only illustrate the cumulative effects of certain clauses of Rule <R08> and the resulting effects on the location and length of BUMPER segments on exterior corners. Please do not infer any other conclusions from that example.



Safety & Damage Prevention

Maximum Bumper Length

Maximum Bumper Length

Posted by FRC2929 at 01/14/2009 06:18:36 pm

Rule <R08-A> states that "BUMPERS must be built in segments, with a minimum length of six inches, and a maximum length that does not exceed the maximum horizontal dimension of the ROBOT."

In existing Q & A responses concerning how the length of a bumper is measured the reponse is "The length of a BUMPER is determined by the portion of the assembly the <that> includes all the required elements (pool noodle, fabric covering, and plywood backing) in the cross-section of the assembly. The length of this portion of the BUMPER assembly must be at least six inches."

If the length of a bumper cannot exceed the maximum horizontal dimation of the ROBOT, doesn't that prevent having a single bumper that spans the length of one side plus extends into the corner? Since at least one of the bumpers at a corner must extend to protect the corner per rule <R08-I>.

As an example, consider a square robot that is 20" on a side. There is no way to put a single bumper on each of the four sides that doesn't violate either the maximum lenght portion of rule <R08-A> or rule <R08-I>.

Is this a correct interpretation?

Thanks,
Team 2929

Re: Maximum Bumper Length

Posted by GDC at 01/15/2009 04:00:06 pm

The conclusions are almost correct. The full BUMPER assembly (pool noodles, fabric covering, clamping angles, and plywood backing) can only be as long as the maximum horizontal length of the ROBOT. But soft parts of the BUMPER (i.e. the pool noodles and fabric covering, which by themselves do not form a complete BUMPER assembly) can extend beyond that length and protect the corner space.

Safety & Damage Prevention

Bumper Support

Bumper Support

Posted by FRC599 at 01/15/2009 06:10:01 pm

"Under the provisions of Rule <R08-M>, the entire length of the BUMPER must be structurally backed by the frame of the ROBOT. Standoffs, stanchions, and spacers used to mount the BUMPERS that result in lengths of the BUMPERS being unsupported will be considered a violation of this rule."

We plan to place aluminum plate (say 1/8in in thickness) across standoffs along the length of



the robot so to meet the intent of this rule. The bumpers would be mounted to this plate. Would 1/8" aluminum be considered "structurally backed"?

Re: Bumper Support

Posted by GDC at 01/18/2009 10:29:35 pm

No. The intent of Rule <R08-M> is to ensure that sufficient structural reinforcement is provided to the BUMPERS to allow them to withstand the high-speed, high-energy impacts that are likely to occur during a typical Lunacy MATCH without failing. A simple flat 1/8-inch aluminum plate mounted on standoffs is unlikely to provide the required structural support for the BUMPERS.

Safety & Damage Prevention

Bumper Corners and Kit Frame

Bumper Corners and Kit Frame

Posted by FRC57 at 01/15/2009 09:50:56 pm

Previous answers have made abundantly clear that both sides of a corner in the bumper perimeter must be protected by a bumper. However, it is not clear what should be done about a corner of the bumper perimeter that is a void on one side.

In the "Short and Wide" construction of kit frame, certain corners are not two pieces of channel butted to form a rectangular corner. They are instead butted corner to corner, leaving a void in the bumper perimeter. The bumper perimeter of the robot is effectively a rectangle with chamfered corners. These 1.5" diagonal segments of the bumper perimeter cannot be protected by a plywood backed bumper.

Is it legal for a team to build full bumpers up to the end of the channel and wrap the bumpers around the corner to protect this chamfer?

Re: Bumper Corners and Kit Frame

Posted by GDC at 01/18/2009 10:28:37 pm

Yes. Please refer to <R08-J>.

Safety & Damage Prevention

RE: Figure 8-2 Implications for things other than corners

RE: Figure 8-2 Implications for things other than corners

Posted by FRC1625 at 01/16/2009 11:10:23 am

In your response to the original question... (If the "NOT OK" bumper corner indicated in <R08> "Overhead View" was changed to one of the "OK" bumper corners would the resultant bumper configuration for the robot base be legal?) you write ..."Figure 8-2 is intended to only illustrate the legality of some of the possible ways in which bumpers could be arranged on exterior corners. Please do not infer any other conclusions from that example."

Yet you additionally conclude the resulting bumper configuration would not be legal by answering "No". This begs the following question: would you please list the rules the resultant bumper configuration violates?

Re: Figure 8-2 Implications for things other than corners

Posted by GDC at 01/18/2009 10:23:07 pm



No. The referenced illustration was provided to provide insight into one particular clause of one rule. It was not intended to provide a complete example of every Robot Rule. To provide an exhaustive list of every rule violation that could be associated with a cartoon representation of a single instance of the rules would be imprudent.

Safety & Damage Prevention

mounting pool noodles vertically

mounting pool noodles vertically

Posted by FRC2473 at 01/16/2009 06:10:40 pm

The manual clearly shows that the pool noodles should be mounted horizontally on the 3/4 plywood. We would like permission to mount the pool noodles vertically. We've experimented with this and found that vertical mounting results in a more resilient bumper with much better corners.

We hold the vertical pool noodles on the plywood with 2 pieces of nylon webbing that are screwed to the plywood between each pool noodle. The resulting bumper is wrapped in the 1000 Denier nylon cloth.

Thanks for considering our request.

Chuck Williams #2473

Re: mounting pool noodles vertically

Posted by GDC at 01/18/2009 10:27:42 pm

That would not be permitted. The BUMPERS must be constructed as defined in Rule <R08>.

Safety & Damage Prevention

Bumper Clarifications

Bumper Clarifications

Posted by FRC854 at 01/17/2009 12:23:14 am

Hello, I am from team 854, and after reading all the bumper rules, and changes, I have several questions.

1) Since the trailer hitch must be mounted to the robot on the bumper perimeter, it is obvious that the bumpers must have a minimum of a 7" gap to accommodate the trailer spacer, and trailer mount bar. However, as stated in <R18> E, there must be adequate clearance in the bumpers on either side of the hitch, as to not interfere with the bumper to bumper contact between the trailer and the robot as it swings. I was having difficulty figuring out just how much clearance this would require, and was wondering if you could help. Basically I was just wondering how big a gap we need to have on the rear bumper to accommodate both the trailer hitch, and the adequate clearance for the trailer's swing.

2) It was illustrated in Team Update #2, that the maximum gap in the front of a wide drive robot is 26", is this restriction to prevent the trailer from entering your robot's foot print, or was it stated because that is the biggest gap possible in order to maintain the 2/3 coverage with the bumpers. If it was intended to prevent the trailer from entering your robot, can this be solved by having a "divider" in the center of this gap (1" framework which would divide the opening in



two).

3) There were some previous questions already asked about this, but the answers weren't fully clear to me. If a bumper consists of two horizontal pool noodles 28" long, mounted on a 28" piece of plywood, as well as two vertical 5" pieces of noodle attached at either end (to protect the corners), will this bumper length be considered 28", or the full 33" (28+2.5+2.5).

I would greatly appreciate blunt, simple answers to these questions, as I am currently confused by the changes to the rules, and some of the previous Q&A answers, and these questions are critical to the overall design of our robot. Thank you for your time. Good luck teams!

- 854 Martingrove Robotics (Toronto)

Re: Bumper Clarifications

Posted by GDC at 01/18/2009 10:24:29 pm

1) The exact amount of space required between the BUMPER segments around the Trailer Hitch to ensure BUMPER-to-BUMPER contact by the TRAILER is dependent upon the design of the ROBOT. In particular, the shape and size of the back of the ROBOT and the mounting locations of the BUMPERS will affect this decision. We cannot provide design solutions for every possible design option. This is left to the TEAM to determine, based upon the details of your design.

2) Again, the illustrations in Team Update #2 are intended to only illustrate the cumulative effects of certain clauses of Rule <R08> and the resulting effects on the location and length of BUMPER segments on exterior corners for one particular design example. Neither the illustration nor the narrative made any explicit statements regarding an intended effect (or lack thereof) on the amount of penetration inside the Bumper Perimeter by the TRAILER. Please do not infer any other conclusions from that example.

3) Once again, the length of a BUMPER is determined by the portion of the assembly that includes all the required elements (pool noodle, fabric covering, clamping angles, and plywood backing) in the cross-section of the assembly. The length of this portion of the BUMPER assembly must be at least six inches. In the example you cited, the length of the BUMPER would be 28 inches.

We would also note that there have not been any changes to Rule <R08> (the BUMPER rule) since The Manual was released at kick-off. So we are confused by what changes to the rules; are causing your confusion.

Safety & Damage Prevention

Vertical pool noodles in BUMPER corners

Vertical pool noodles in BUMPER corners

Posted by FRC135 at 01/17/2009 12:54:47 pm

Is it possible to place a vertical pool noodle on the corner of your robot, connecting to the bumper along the side, to protect the corner as the rules stipulate?



Re: Vertical pool noodles in BUMPER corners

Posted by GDC at 01/18/2009 10:26:56 pm

Please refer to Rule <R08-J>.

Safety & Damage Prevention

Clearance holes in bumper backing

Clearance holes in bumper backing

Posted by FRC58 at 01/17/2009 01:56:42 pm

The Kitbot frame has bolt heads on the outside of the frame rail. To have the bumper plywood fit flush against the outside rail the 3/4" plywood backing would need to have small recesses to accommodate the bolt heads. Is it permissible this year to have the small recesses in the bumper backing?

Bumpers - Clearance Holes in Plywood

Posted by FRC1346 at 01/17/2009 04:22:24 pm

I believe it is implied in the rules that the only holes (through, partially through or otherwise) in the 3/4" plywood bumper backing material are those specifically used for bumper mounting, but I have not been able to see where it is specifically stated.

In past years some teams have assumed that they may make shallow, blind holes, carvings or other excavations in to the bumper backing so that they may more easily mount their bumpers around inconvenient protrusions from the robot, such as the head of an axle bolt, so long as such holes have insignificant impact on bumper integrity.

I believe it would help teams and tech inspectors to have specific clarification of the following points:

A) Other than holes used specifically for mounting the bumper, is a hole, of any diameter or depth, in the 3/4" plywood bumper backing material permissible?

B) In the event a team has mistakenly drilled a non-compliant hole in the 3/4" plywood bumper backing material (for example they may have drilled a hole for a mount point, then moved the mounting point leaving that hole unused), is it acceptable for the team to re-fill the hole in a suitable fashion (epoxy and saw dust, or a glued dowel or plug are a couple possibilities) to satisfy the bumper construction requirements.

Thank you,

Jason

Re: Clearance holes in bumper backing

Posted by GDC at 01/18/2009 10:25:58 pm

Holes in the plywood backing of the BUMPERS for the purposes of accommodating protrusions on the ROBOT are not prohibited by the rules. Likewise, there is no prohibition against moving a hole.

Safety & Damage Prevention

Bumpers - Aluminum Clamping Angles



Bumpers - Aluminum Clamping Angles

Posted by FRC1346 at 01/17/2009 04:03:00 pm

In some Q&A replies the aluminum angle has been referred to (parenthetically) as a required element in the construction of bumpers, yet it is not specifically referred to as such in the rules.

Yes, it is shown in figure 8.1, however, as we are reminded, the figures are examples, not rules unto themselves.

In previous years the aluminum angle has been optional. Could you please clarify whether the aluminum angle is a required part of bumper construction, or merely a recommended part of bumper construction.

Thank you,

Jason

Re: Bumpers - Aluminum Clamping Angles

Posted by GDC at 01/19/2009 08:04:31 pm

The required elements of the BUMPER assembly include pool noodles (Rule <R08-B>, plywood backing (Rule <R08-C>) and fabric covering (Rule <R08-D>). The clamping angles are optional, but highly recommended to distribute impact stresses across a larger area and avoid shredding the covering fabric.

Safety & Damage Prevention

Bumper mounting

Bumper mounting

Posted by FRC1764 at 01/17/2009 04:34:50 pm

We have a question concerning the bumper mounting. We are considering making two U-shaped bumpers that fit on the sides of our robot and wrap around both the front and the back, providing at least 6 inches in bumper protection on the front/back as it wraps. We wanted to make sure that this was okay as it stated in Rule <R08> that it must be made in sections no smaller than 6". Also, the 3/4 in backing will not go past the frame edging and a verticle tube will be used in the corner.

We wanted to do this as to have to eliminate the number of bolts (currently 2) that would have to be used to mount to the front and back per bumper. If we wrap, a single, more accessible bolt would mount to the frame, and then would be supported on the side by the other bolts.

Here is a link to a design.

[url]www.liberty.k12.mo.us/hs/libertyrobotics/bumper.bmp[/url]

Re: Bumper

Posted by GDC at 01/19/2009 03:28:42 pm

Please resubmit your post and include a specific question. Thank you!

Safety & Damage Prevention

Alteration of wheels due to running on standard surfaces?

Alteration of wheels due to running on standard surfaces?



Posted by FRC2462 at 01/17/2009 06:37:34 pm

Would running the robot on a non-regolith surface (tile, concrete) cause damage to the wheels which would be considered altering due to surface scratches or other roughening of the wheels? If so, would that mean that practice or even just testing the driving ability of the robot should only be done on the regolith material?

Re: Alteration of wheels due to running on standard surfaces?

Posted by GDC at 01/22/2009 07:06:50 pm

It may be possible to cause excessive wear and/or damage to the tread of the Rover Wheels by driving on any of a number of different surfaces. However, if the tread surface is restored back to an effectively "as new" condition, the wheel may still be used for competition.

Please refer to Team Update 5 for suggestions about restoring your wheels for competition.

Safety & Damage Prevention

Robot Colors

Robot Colors

Posted by FRC2115 at 01/18/2009 01:00:47 am

Is it permitted to paint your robot with colors similar to the colors used on the trailer marker to confuse other robot vision systems.

Re: Robot Colors

Posted by GDC at 01/18/2009 10:36:34 pm

Please refer to Rule <R02>.

Safety & Damage Prevention

Drilling Through the bumper

Drilling Through the bumper

Posted by FRC696 at 01/18/2009 06:27:29 pm

I know from previous posts that a "segment" of bumper is defined by having all parts (hard backing, noodle and cloth). As it is, our robot design has the chain tensioning blocks at the front of the robot, such as that they would be covered by a 6" bumper segment in order to protect the corners "<R08>-A and -I". Two questions:

1. Can we drill a hole through the frame supporting the bumpers so that we can stick an allen wrench through it, and still have it count as "no open spaces"?
2. Can we drill a hole through the bumper backing and cut a hole in the cloth cover such that we could stick an allen wrench through the bumper without removing it, and not violate the definition of a bumper segment?

Re: Drilling Through the bumper

Posted by GDC at 01/19/2009 03:20:28 pm

1: Yes

2: Yes

Safety & Damage Prevention



Bumper clarifications ...

Bumper clarifications ...

Posted by FRC1746 at 01/18/2009 07:30:21 pm

We just re-read ALL of the bumper posts (several times), and there are still a few open questions:

1. Angled rear

[url]http://forums.usfirst.org/showthread.php?t=11257&highlight=bumper[/url]

The above Q&A response says figure 8-2 would NOT be legal, even if the highlighted issue was fixed, but didn't say why.

We assume it is because the angles to the left and the right of the trailer hitch do not have 6" of bumper on both side of the joint/corner. Please verify.

2. Max bumper length

[url]http://forums.usfirst.org/showthread.php?t=11316&highlight=bumper[/url]

The above Q&A response says the maximum bumper length is the maximum horizontal length of the robot.

What if the robot is shaped like an "C"? There are no corners, all rules are satisfied (assuming opening in the C is tangential with bumper perimeter), so wouldn't this be the maximum possible bumper length?

3. Would a "C" chassis be a legal configuration?

Assume the front has an opening along a flat portion of the "C" and the back has a flat run where the trailer hitch could be mounted securely. Please verify that this would be legal.

4. What is a corner?

There have been several responses to this request - all stating that a corner will not be defined and it will be left to an astute individual to determine. Do we really want to open ourselves up to the arguments that are likely to ensue in inspection? It would be extremely helpful (to us AND the inspectors) if we could get a minimum radius to help clearly define what a corner is for the purposes of this game.

Thank you for your time and apologies for yet another bumper question ...

Re: Bumper clarifications ...

Posted by GDC at 01/19/2009 03:16:17 pm

1: No. Figure 8-2 was provided to provide insight into one particular clause of one rule. It was not intended to provide a complete example of every Robot Rule. To provide an exhaustive list of every rule violation that could be associated with a cartoon representation of a single



instance of the rules would be imprudent.

2: Any BUMPERS attached to a C-shaped ROBOT must still comply with all applicable BUMPER rules. When factoring in the gap that must be left for the attachment of the Trailer Hitch, as well as the other clauses of <R08>, it is not at all clear that the resulting BUMPER would be longer.

3: A "C" configuration chassis for the ROBOT would be legal if, and only if, it satisfies all applicable Robot Rules.

4: A specific minimum radius threshold to determine the difference between corners and curves has not been, and will not be, defined. A "corner" will be determined to be a "corner" when upon inspection any reasonably astute observer perceives it to be a "corner" and not a curve.

Safety & Damage Prevention

Non-Rover Wheel caster

Non-Rover Wheel caster

Posted by FRC2036 at 01/19/2009 02:31:33 pm

<R06> explicitly states that traction may only be provided by Rover Wheels, but we are planning to use COTS casters for balancing stability since they will not provide traction.

Can you confirm that this is legal? If not, what exactly prohibits this?

Casters used for balance

Posted by FRC2929 at 01/20/2009 02:05:59 am

[url]http://forums.usfirst.org/showthread.php?t=10943[url] posted 1-9-09 answered the question "Besides the low friction wheels can any other part of the robot contact the crater floor?" with the statement "Other parts of the Robot may contact the floor, as long as the part does not provide any traction for the Robot."

[url]http://forums.usfirst.org/showthread.php?t=11098[url] posted 1-11-09 and [url]http://forums.usfirst.org/showthread.php?t=11201[url] posted 1-12-09 both deal with casters that are use for sensing movement (which requires some amount of traction). The official ruling was "Any portion of the ROBOT (other than ROVER WHEELS) in contact with the surface of the CRATER that provides tractive/braking forces in any direction will be considered a violation of Rule <R06>. If a high-friction wheel is being used to drive an encoder, it must be both free-rolling and freely-swiveling to avoid a violation." and "Acceptable sensors will gather information, but not affect the tractive performance of the ROBOT. They will produce only resistive traction, be direction independent, and be invariant during the entire MATCH. The TEAM must be prepared to provide test data verifying that the maximum sensor traction is not more than 5% of the maximum traction of the ROBOT (acceptable validation methods would include test data logging total drawbar pull both with and without the sensor in place).

Based on those original rulings, our design concept (and implementation) has been to have ROVER WHEELS on the left and right sides but centered front-to-back. In addition we have



free-rolling and freely-swiveling casters (along with being low-friction material) placed toward the front and rear of the robot. The ROVER WHEELS are mounted slightly lower than the casters to guarantee that the ROVER WHEELS are always in contact with the CRATER - this will provide a slight "tipping" action depending on weight distribution, contact with other robots, etc. However, with the weight properly balanced, the vast majority of weight would be on the ROVER WHEELS and very little would be on either the front or rear casters (and therefore would "not provide any traction for the Robot.")

But the official response [\[url\]http://forums.usfirst.org/showthread.php?t=11255\[/url\]](http://forums.usfirst.org/showthread.php?t=11255) posted 1-18-09 appears to rule that casters for the purpose of balance are illegal, regardless of the amount of traction/drag that they might have.

So my specific question is: Will a design that utilizes casters that are free-rolling and freely-swiveling, and also for the purpose of balance, be allowed (either with or without the supporting test documentation)?

Thanks,
Team 2929

Re: Non-Rover Wheel caster

Posted by GDC at 01/22/2009 06:20:04 pm

Thanks for the thoughtfully posed question. The intent of the ROVER WHEELS-only rules and their interpretations has been to make sure that all ROBOTs have equal opportunity for traction without giving the robot inspectors an impossible job. We have tried to be consistent with regard to ROVER WHEEL-only traction rules while ruling favorably on questions related to sensors being used to measure ROBOT's movement.

COTS casters used as you describe are a violation of <R06>. You have many options for accomplishing what you desire using ROVER WHEELS.

Safety & Damage Prevention

<R08> Many Bumper Questions

<R08> Many Bumper Questions

Posted by FRC2505 at 01/19/2009 03:06:20 pm

We have several questions about bumpers:[list=1]

[*]Does <R08> apply in playing configurations, starting configurations, or both?

[*]What is the "maximum horizontal dimension of the ROBOT"? It could be the longest side length, the longest diagonal in the plane of the floor, or something else. And does this refer to the maximum robot size limits, or to the size of the robot itself?

[*]Is there a perpendicularity tolerance on the bumpers?[list][*]Where is it measured?[*]Does the compression of the noodles affect it?[*]Which rules is this clarification based on? Note that <R08> relies on pictures to convey perpendicularity implicitly, and <R17> refers to robots, not bumpers.[/list]

[*]Are corners like the ones in figures 8-2 and 8-4 the only places where pool noodles can extend past the backing wood? What about vertical pool noodles extending into the cutout in figure 8-2, as extensions of the bumpers shown there?

[*]When a pool noodle exists beyond the backing wood, does it have to be a vertical piece?



What if horizontal noodles extend beyond the wood? Is there a size limit on such an extension?

[*]Does it matter if the pool noodles are not round, or don't have holes in them?

[*]Can we use noodles with diameters that are not exactly 2-1/2"? What if the pool noodle is sold with a nominal diameter that is not 2-1/2", but still is within an acceptable tolerance of that size? Is plus or minus 1/4" an acceptable diameter tolerance for this rule?

[*]Can we use many short pieces of pool noodle horizontally inside a bumper, instead of two continuous noodles?

[*]Can we use pool noodles that have been modified so that they are no longer their original cross-section? For example: [list][*]Can we shave material from the sides of pool noodles, so that the faces sit flush against the plywood and use these as stacked pool noodles? (Does the amount of material matter?)[*]Can we insert a wedge-shaped piece of a vertical pool noodle in an obtuse corner?[*]Can we sand or turn down the diameter of an oversized noodle?[/list]

[*]Assume that we have a standard bumper extending 27" along one side of the robot. Can we cut a notch into lower part of the bumper in order to give clearance for the trailer hitch? If yes, does the entire length count toward the perimeter requirement? If no, could we instead use two 10" sections beside the hitch, and a 7" notched section above it (and which pieces count toward the perimeter limit)?

[*]Can we design the bumper so that a portion of one pool noodle extends beyond the portion with stacked noodles? (One noodle is longer than the other.) Please consider cases with bevelled ends, and with rectangular ends. Does this constrain the design of the other parts of the bumper in any way?

[*]Can the plywood be non-rectangular? (Why or why not?)

[*]How is the height of the plywood measured, and does the height requirement apply over the entire piece of wood? (If applicable, consider the cases above that deal with angles, bevels, cutouts and other features.)

[*]Figure 8-1 shows aluminum angle. [list][*]Are all components shown in 8-1 mandatory? (Particularly the angle.)[*]Does the size of the angle matter?[*]Does it have to be continuous and on both the top and bottom?[*]Does it have to extend the entire length of the bumper?[*]May it extend into the corners?[*]Do we have to use wood screws to attach it?[/list]

[*]Can we drill holes into the bumper plywood or aluminum angle to lighten them? Does it matter if the holes don't go all the way through?

[*]Imagine figure 8-2 with bumpers along the three sides of the rectangular cutout. Some, but not all bumpers are fixed to the perimeter. Is this a violation of <R08> (especially points L and N)? Are these non-perimeter bumpers considered non-standard, and therefore part of the robot?

[*]Does the 3-1/2" rule (point N) refer to the outside of the perimeter only, and not to things inside it?

[*]Are the bumpers used on the trailer precise examples of legal standard bumpers? If so, please list and justify the discrepancies between the field construction documents, the bumper rule in the manual, and the Q&A responses. If not, please clearly state that the trailer bumpers are governed by different requirements.

[*]Consider the following as an illustrative example: there is a frame containing the drivetrain attached all around the bumpers at a height of 2" from the ground. There is another frame at 6-1/2" from the ground that serves some other purpose. There is no connection between the frames, except through the bumpers. Assume everything else is legal.[list][*]Can a robot be



composed of multiple independent segments, joined only by the bumpers? (Such as the upper and lower frames in the example.) [*]Would anything prevent the upper frame from being a "multi-part attachment system" that is part of the bumper? (Assume that it meets weight and size specifications.)[*]What if there are connections between the segments, in addition to the connections through the bumpers? (These connections might be rigid or non-rigid.)[/list]
[/list]

Re: <R08> Many Bumper Questions

Posted by GDC at 01/19/2009 08:30:23 pm

Please read Rule <R08> carefully. Please read Team Update#1 through Team Update #4 carefully. Please read the relevant sections of the Q&A forums regarding bumper implementations carefully. Many of the answers to your questions will be found in those resources. If there are any remaining questions after that, please re-submit each question individually so that they may be properly considered and addressed.

Safety & Damage Prevention

More Bumper clarification

More Bumper clarification

Posted by FRC231 at 01/19/2009 05:13:24 pm

I'm from Team 231 and have been reading the bumper Q&A traffic. I have an illustration at [!]<URL removed>[/!] with three possible options/bumper configurations we are considering. In (A), the front of the outer sides of the robot are angled in slightly and the 6"+ bumpers on those sides extend beyond the ends. In (B), the side bumpers (on the 38" sides) also extend beyond the corner (by the approved vertical segment; backing ends at the corner). In (C), additional bumpers have been added to the inner angles (these would have to be counted in the weight and cost of the robot as they aren't on the perimeter). Are any of these configurations legal?

Re: More Bumper clarification

Posted by GDC at 01/22/2009 07:21:32 pm

The purpose of the Q&A is to provide clarification on specific rules. The forum cannot be used to review specific designs, as that function is accomplished at each event. Teams are required to examine the rules and design their systems to comply with the rules.

Safety & Damage Prevention

bumper inside robot perimeter

bumper inside robot perimeter

Posted by FRC753 at 01/19/2009 11:54:51 pm

would the bumpers in the picture be legal (green is bumper). specifically would this count as protecting the corner, would the bumper "inside" the robot be exempt from the robot weight, and could a ball manipulator be placed above the bumpers, out of the bumper zone, in other words, would the manipulator be within the bumper perimeter (red is ball manipulator)

Re: bumper inside robot perimeter

Posted by GDC at 01/22/2009 07:23:48 pm

This BUMPER/BUMPER PERIMETER configuration has already been fully discussed in [URL="http://forums.usfirst.org/showthread.php?t=11170"]this Q&A Forum thread[/URL]. The answer has not changed.



Safety & Damage Prevention

Wrap-around Bumpers?

Wrap-around Bumpers?

Posted by FRC811 at 01/20/2009 12:12:54 pm

Our team has been studying the rules and the discussions regarding bumpers, and we are rather anxious regarding some of the discussions, in particular this one: [url]http://forums.usfirst.org/showthread.php?t=11170[/url].

We want to have one side of our robot open to accept the Orbit balls from the floor. The side we are (currently) using is the narrow side (28" wide). The above forum post implies that we would need two 6" long bumpers to protect the corners of the robot. This would obviously limit our gullet to at most 16" wide, making ball gathering more difficult.

We recognize the need to have all corners fully protected by bumpers, and are wondering if the following would be acceptable. As this picture shows ([I][URL removed][I]), could we add an extra 5" piece of pool noodle to our side (38" long) bumpers, wrapped in the bumper cloth, so that the extra part provides the corner protection? We feel that this extra piece would be in compliance with the following rules:

Rule <R08-I> Bumpers must protect all exterior corners of the Bumper Perimeter

Rule <R08-J> Corners and joints between Bumper segments may be filled with short pieces of vertically oriented pool noodle, by wrapping the pool noodles around the corners

Rule <R08-N> Only soft parts of the Bumpers (i.e. pool noodles and cloth covering) may extend more than one inch beyond the Bumper Perimeter

Rule <R08-O> The Bumper backing must not extend beyond the edge of the Robot

We hope this solution to our problem is acceptable, as the alternative would require a reconsideration of our strategy or a significant redesign of our entire robot.

Re: Wrap-around Bumpers?

Posted by GDC at 01/22/2009 04:56:49 pm

The thread you mention is unambiguous. Each bumper segment must be at least 6 inches in length.

Also note that Bill's Blog (1/15/09) offers a quick check on bumper geometry.

Safety & Damage Prevention

Bumpers

Bumpers

Posted by FRC1091 at 01/20/2009 08:59:25 pm

We have a collection system in our open gap in the front of our robot. We do have 6 inches of bumper on either side of that gap. If we drop a baricade in front of that gap when we lift the collection system, would this baricade have to have bumpers??

Re: Bumpers

Posted by GDC at 01/22/2009 04:58:52 pm



Assuming "in front of the gap" means outside the Bumper Perimeter - Dropping a barricade in front of a gap in the BUMPERS would mean that the barricade extended beyond the BUMPER PERIMETER. This would be a violation of Rule <R16>, as amended in Team Update #1.

Safety & Damage Prevention

Chassis and Bumpers

Chassis and Bumpers

Posted by FRC295 at 01/20/2009 09:57:06 pm

The following was recently stated:

"The intent of Rule <R08-M> is to ensure that sufficient structural reinforcement is provided to the BUMPERS to allow them to withstand the high-speed, high-energy impacts that are likely to occur during a typical Lunacy MATCH without failing. A simple flat 1/8-inch aluminum plate mounted on standoffs is unlikely to provide the required structural support for the BUMPERS."

Question, Is 3.2 mm aluminum that has been strengthened and is on standoffs "likely to provide the required structural support for the BUMPERS." If not, what thickness is the GDC going state is the required thickness that will "likely to provided the required structural support for the BUMPERS".

The intent of the question is "not to lawyer the rules" but get clarification on a chassis that has been completed - meaning designed, cut, and welded. Completed before the most recent "clarification" in the Q&A on the use of standoffs.

Bumper support clarification

Posted by FRC2177 at 01/22/2009 02:53:54 pm

In a previous Q&A response, you stated:

"No. The intent of Rule <R08-M> is to ensure that sufficient structural reinforcement is provided to the BUMPERS to allow them to withstand the high-speed, high-energy impacts that are likely to occur during a typical Lunacy MATCH without failing. A simple flat 1/8-inch aluminum plate mounted on standoffs is unlikely to provide the required structural support for the BUMPERS."

What are the limits that will be used to determine structural support? Would a 1/4-inch flat aluminum plate provide the required structural support? Or a 1/4 inch flat steel plate?

Re: Chassis and Bumpers

Posted by GDC at 01/23/2009 12:10:07 pm

It is impossible to provide a single, simple litmus test to determine the suitability of any one particular material for this task. The structural capabilities provided by a system are determined by many factors, including the material composition, thickness, shape, support type/location, integrity, etc of the structure.

As previously indicated, the purpose of Rule <R08-M> is to ensure that sufficient structural reinforcement is provided to the BUMPERS to allow them to withstand the high-speed, high-energy impacts that are likely to occur during a typical Lunacy MATCH without failing.



A simple 1/8-inch thick, 1-inch tall, piece of flat aluminum bar supported at a minimal number of locations by tall standoffs across an entire side of a ROBOT is unlikely to provide the required structural support. Conversely, a piece of 1/8-inch thick, 3-inch tall piece of aluminum that has been folded into a 1x1-inch C-channel, stress relieved, heat treated, oriented properly to provide maximum bending resistance against side impacts and fully integrated into the fundamental structure/frame of the ROBOT would be perfectly acceptable. Where a particular solution might be placed along the spectrum of possible solutions between these two points must be determined by the TEAM and the inspectors.

We would also note that there have not been any changes to Rule <R08> (the BUMPER rule) since The Manual was released at kick-off. Nothing has changed that would cause any changes to a chassis designed in compliance with the original rules.

Safety & Damage Prevention

BUMPER height question

BUMPER height question

Posted by FRC2888 at 01/23/2009 04:12:30 pm

Does anyone know how high off the ground the robot bumpers are supposed to be? I cant find this in the rules. Thanks

Re: BUMPER height question

Posted by GDC at 01/26/2009 04:14:11 pm

Please refer to the definition of BUMPER ZONE in Section 8 of The Manual, and Rule <R08-P>.

Safety & Damage Prevention

bending bumpers around corners

bending bumpers around corners

Posted by FRC316 at 01/23/2009 10:43:38 pm

Is it the plywood or the bumper (noodle, cloth, etc.) that counts as the bumper? We would like clarification on Figure 8-2 and figure 8-4. Our understanding is that 8-2 states that if the the plywood is bent around a corner but doesn't extend out over the corner and is one piece of plywood then it is counted as one bumper. Our understanding of 8-4 is that if two pieces of plywood cover a corner and one extends to cover the other piece to reach 6 inches than it is illegal. Is this correct? Thank you for the clarification.

Re: bending bumpers around corners

Posted by GDC at 01/26/2009 02:06:07 pm

There is no inconsistency between Figure 8-2 and Figure 8-4. The plywood backing of a BUMPER cannot extend past the "edge" of the ROBOT (Rule <R08-O>). Thus, the bumper backing cannot wrap around a corner. Figure 8-2 illustrates some possible configurations for the "soft" bumper elements to wrap around a corner. But the plywood backing does not violate the corner space.

Safety & Damage Prevention

Bumper Attachment with Rivets



Bumper Attachment with Rivets

Posted by FRC148 at 01/23/2009 11:12:20 pm

Rule <R08>F states that bumpers "must be designed for quick and easy installation and removal, to aid in weighing and inspection".

We would like to use aluminum pop-rivets as part of our bumper attachment system. We know these are easy install and even easier to remove. As a prominent WFA winner mentor once said "I bet I can remove a rivet faster than you can unscrew a bolt."

We will be the ones installing/removing the rivets, and take full responsibility for ensuring that the bumpers can be installed/removed in a timely manner.

Is this attachment method permissible?

Re: Bumper Attachment with Rivets

Posted by GDC at 01/26/2009 10:46:45 am

Yes.

Safety & Damage Prevention

90 degree 6 inch bumper

90 degree 6 inch bumper

Posted by FRC2156 at 01/24/2009 01:48:32 pm

are we in compliance 6 inch minimum section rule if a bumper rounds a 90 degree corner, with 3 inches on both sides. the 6 inch segment had a metal backing bent to a 90 degree angle

Re: 90 degree 6 inch bumper

Posted by GDC at 01/26/2009 10:37:45 am

No. That would be a violation of Rule <R08-A>, Rule <R08-C> and Rule <R08-O>.

Safety & Damage Prevention

Bumper corners

Bumper corners

Posted by FRC1322 at 01/25/2009 04:57:36 pm

Figure 8-2 section 8 regarding bumpers show an angle on each side of the space for the hitch location. They do not show a bumper on each side of that corner. We designed our robot with an angle very similar but with more angle and when the robot contacts our robot it contacts our bumpers before it contacts the trailer tong. When we posted a picture of our robot on Chief Delfi [[Re: Bumper corners](http://www.chiefdelphi.com/media/photos/32484?[/a>] we have been told that we are violating rule <802> BUMPERS must protect all exterior corners of the BUMPER PERIMETER (see Figure 8 - 2). Figure 8-2 does not show a bumper on each side of the angle near the hitch and it would be difficult for us to fit a six inch bumper segment in a one inch space between the angle and the hitch as shown on figure 8-2. Is that an exterior corner that we have to redesign or is this location behind the robot considered not an exterior corner. If a minor angle change is not a corner than at what degree of angle is a corner?</p></div><div data-bbox=)

Posted by GDC at 01/27/2009 01:58:03 am

As has been mentioned multiple times, Figure 8-2 is solely intended to illustrate the legality of



some ways in which BUMPERS could be arranged on the four indicated exterior corners (marked "OK" or "Not OK"). This is to provide insight into one particular clause of one rule. It is not intended to provide a complete example of every Robot Rule. Please do not infer any other conclusions from that example (e.g. the location of the Trailer Hitch is intentionally not shown in Figure 8-2; please do not make any assumptions about the legality/illegality of the Trailer Hitch location based on this illustration).

Regarding your specific question, a "minor angle change" will be determined to be a "corner" if it causes a change in the shape of the BUMPER PERIMETER.

Safety & Damage Prevention

bumper corner

bumper corner

Posted by FRC2960 at 01/26/2009 11:31:07 am

Our robot design involved 2 ball pickup areas in the front of the robot. we are planning to use the narrow side(28 in) for the front. Our "U" shape front end utilizes 1 bumper segment, wrapping around the corner (at least 2in). we believe this is legal because: all corners are protected, and we have no individual segments smaller than 6 inches. we believe that if a bumper is one segment going around the corner, then it does not need to be 6 inches after the corner.

Am I stating everything correct. would this be legal.

thanks

2960

Re: bumper corner

Posted by GDC at 01/26/2009 02:04:34 pm

No. The length of a BUMPER segment is determined by the length of the portion of the BUMPER assembly which includes all required elements (pool noodle, fabric covering, bumper backing) in the cross-section (Rule <R08>). The minimum length of a BUMPER segment must be six inches (Rule <R08-A>). The "hard parts" of the BUMPER (the bumper backing) cannot extend into the corner space beyond the "edge" of the ROBOT (Rule <R08-O>). One combined effect of these rules is that a single BUMPER segment cannot wrap around a corner. Therefore, the described solution would not be legal.

Safety & Damage Prevention

Bumper Colors

Bumper Colors

Posted by FRC233 at 01/27/2009 08:59:02 am

Since a camera being used to view vision targets would, or at least could have the lower edge of its field of view high enough that it would not see the BUMPERS of other robots, should the use of BUMPERS of any color not be legal under <R02.C>?

Thanks for a response.

Re: Bumper Colors

Posted by GDC at 02/02/2009 09:36:08 am



It is impossible to predict all the potential fields of view of the camera placements/orientations implemented by all teams. Particularly when viewing ROBOTS that may be some distance down-field, it is entirely likely that the entirety of the ROBOT will be in the field of view of the camera. Thus, if your ROBOT has large areas that are the same color as the vision targets, it is likely that you will confuse the vision systems of both your opponents and alliance partners. If this is determined to be the case, this will be considered to be a violation of Rule <R02-C> (particularly if you are knowingly using the exact color as the vision targets), and the situation will have to be corrected before the ROBOT will be allowed back on the field.

Safety & Damage Prevention

Bumper Segment question (from FRC2156)

Bumper Segment question (from FRC2156)

Posted by GDC at 01/27/2009 12:04:31 pm

If a bumper goes around the corner of a robot, and each half of the the bumper is 3 inches does this qualify as a 6" segment? For instance, If we use a 6" metal plate bent to support the bumper.

Re: Bumper Segment question (from FRC2156)

Posted by GDC at 01/27/2009 12:05:06 pm

No. This would be a violation of Rule <R08-A>, Rule <R08-C> and Rule <R08-O>.

Safety & Damage Prevention

Bumpers and trailer hitch

Bumpers and trailer hitch

Posted by FRC1350 at 01/27/2009 07:21:37 pm

Can we clarify the bumper issue so we can move on?

Is the trailer hitch considered part of the bumper perimeter?

If the back of the robot has 2 angles that end at the trailer hitch is it legal?

Thanks

Re: Bumpers and trailer hitch

Posted by GDC at 01/30/2009 11:13:28 am

A: Yes.

B: The Trailer Hitch must be attached along the BUMPER PERIMETER (Rule <R18-D>).

C: Every exterior corner of the BUMPER PERIMETER must be protected by BUMPERS (Rule <R08-I>). Each segment of the BUMPERS protecting an exterior corner must be a minimum of six inches in length (Rule <R08-A>). The Trailer Hitch must be attached along the BUMPER PERIMETER (Rule <R18-D>), so it cannot be mounted to the BUMPERS. These three rules, taken together, would mean that there can not be corners of the BUMPER PERIMETER immediately adjacent to the ends of the Trailer Hitch.

Please refer to [URL="http://frcdirector.blogspot.com/2009/01/bumper-musings.html"]this



post[/URL] from Bill's Blog for advice about determining bumper legality.

Safety & Damage Prevention

Edge Equals Tangent?

Edge Equals Tangent?

Posted by FRC781 at 01/28/2009 01:29:56 pm

Dear GDC,

We recognize that bumper questions seem to be endless this year but please recognize this is due to the fact that the robot frame is the most difficult thing to change at a competition. Most frame changes require tooling that typically is not available at competition, not to mention that all other robot design is affected.

We are planning a "narrow" front design with 18.5" opening to enable a larger ball intake (this opening size should in no way interfere with the trailer or cause damage to other robots as there would always be bumper to bumper contact). The front "side" of the frame with the ball opening is curved from the "longer" sides and there is no straight (linear) frame in the bumper zone on the front of the robot. All bumper segments are longer than 6" with solid plywood backing curved or straight to match and be fully supported by the straight and curved portions of the frame. All rules that we see have been followed but there is obviously room for interpretation.

Your response to FRC2960 26JAN2009 would indicate that "any" change in linear direction of the robot frame is considered an "edge" and therefore the maximum opening of a "narrow" robot frame would be 16" given sharp 90-degree frame corners. Following this logic the "edge" as it applies to robot frame is the tangent of the curve and linear sides of the robot and all bumper segments past the "edge" must be 6" along the robots linear sides. Therefore curved frames would be much more restrictive in frame opening size and a round frame could not have an opening.

Is our robot frame/bumper design legal?

If we are not legal is the interpretation of a robot frame "edge" stated above correct i.e. its the tangent?

Thanks,
Team781

Re: Edge Equals Tangent?

Posted by GDC at 01/29/2009 11:23:09 pm

Please refer to Team Update 6 and Team Update 8.

Please understand that are not able to approve or prohibit a design in the Q&A forum (it's analogous to a doctor diagnosing a patient over email). Please focus your questions on Competition Manual topics, parts questions, and rule clarifications.

Safety & Damage Prevention



Minimum distance from bumper to ground.

Minimum distance from bumper to ground.

Posted by FRC1415 at 01/29/2009 04:49:57 pm

What is the minimum distance they can be between the bumpers and the playing field?

Re: Minimum distance from bumper to ground.

Posted by GDC at 02/02/2009 09:34:31 am

You must make sure the BUMPERS are within the BUMBER ZONE defined in Section 8.2 of the Manual.

Safety & Damage Prevention

Bumper Q's

Bumper Q's

Posted by FRC2521 at 01/30/2009 06:53:38 pm

It is clear that both sides of every vertex in the bumper perimeter must be covered by standard bumpers.

If a robot has a "U" shaped indentation such that at a vertex of the bumper perimeter one of the sides is void, can this be legalized by adding a segment of standard bumper on the inside of the the bumper perimeter?

Re: Bumper Q's

Posted by GDC at 02/02/2009 11:13:33 am

If the vertex forms a corner of the BUMPER PERIMETER, then it must be protected by BUMPER segments (on both sides of the corner). If the bumper segment does not follow the BUMPER PERIMETER, then it is not in compliance with Rule <R08>, and would just be considered extra padding.

Safety & Damage Prevention

Curved Frame

Curved Frame

Posted by FRC781 at 01/30/2009 07:42:35 pm

Dear GDC,

This is a second posting of the same question. Please delete the first posting as it may have been too specific. If we are too late please delete this posting.

- 1) Can a robot frame be curved with a matching 6" or longer bumper segment complete with curved plywood fully supported by the curved frame in the bumper zone?
- 2) If your response to 1 above is yes - does there have to be 6" of straight bumper section on every side of the robot?
- 3) If your response to 1 above is no - your response to FRC2960 26JAN2009 would indicate that "any" change in linear direction of the robot frame is considered an "edge" and therefore the maximum opening of a "narrow" robot frame would be 16" given sharp 90-degree corners. Following this logic the "edge" as it applies to robot frame is the tangent of the curve and linear



sides of the robot and all bumper segments past an "edge" must be 6" along the linear sides of the robot. Therefore curved frames would be much more restrictive in frame opening size. Is this interpretation of an "edge" correct as it relates to the robot frame?

Thanks,
Team781

Re: Curved Frame

Posted by GDC at 02/02/2009 09:34:58 am

- 1) Yes.
- 2) Please refer to Team Update 8.
- 3) n/a

Safety & Damage Prevention

Dynamic BUMPER PERIMETER POLYGON

Dynamic BUMPER PERIMETER POLYGON

Posted by FRC1270 at 01/31/2009 05:57:30 pm

Would we be in violation of rule <R08>, Section L if the BUMPER PERIMETER POLYGON dynamically increased or decreased during competition provided the overall dimensions of the robot stay within the specified Maximum Dimensions of 28"x 38" x 60"? We understand that Team Update #8 clearly states that the method of determining the BUMPER PERIMETER is to "wrap a string around the robot". What is not clear is whether the robot can have a dynamic frame design, resulting in a dynamic BUMPER PERIMETER POLYGON.

Re: Dynamic BUMPER PERIMETER POLYGON

Posted by GDC at 02/02/2009 09:35:48 am

The BUMPER PERIMETER can be dynamic, as long as all applicable rules are satisfied at all times.

Safety & Damage Prevention

Bumper Corner Braces

Bumper Corner Braces

Posted by FRC2166 at 02/02/2009 02:15:05 pm

Is there any legal way to attach adjacent bumpers. I understand from "<R08> O." that the backing may not attach to each other, but what about mounting a brace such as the one seen in the link below. The brace would be within the bumper perimeter, but would have to be attached to the backing (ie, not removeable) to uphold its purpose. Would this be a legal piece on the bumper assembly and count toward the bumper weight?

Essentially, we want to wrap the fabric around the corners of the bumpers so there isn't a section of soft noodle hanging off the end that another robot could unintentionally rip off. It would be best for assembly and durability (specifically when attaching and removing bumpers for inspection) to attach adjacent bumpers. This would result in two bumper pieces (one each side) to attach to our robot.

[url]<http://www.chiefdelphi.com/forums/attachment.php?attachmentid=7292&d=1233599363>[url]



Thanks

Re: Bumper Corner Braces

Posted by GDC at 02/02/2009 04:13:57 pm

The "soft" parts of the BUMPER assembly (the pool noodles and fabric covering) can extend around corners and be continuous assemblies. The BUMPER backing must not extend into the corner spaces. So, adjacent segments of BUMPERS can be attached to each other through their "soft" elements, but through those elements only.

Safety & Damage Prevention

bumpers

bumpers

Posted by FRC1158 at 02/02/2009 07:42:50 pm

We have a robot that measures 27 by 36 on 3 sides with 80/20 and our 4th side angles at a 60 degree angle into our ball pickup mechanism 11" back. Our question is do we have to cover the metal angling back under our outside shell dimensions with a 6" piece of bumper?

We have 86" of bumper on the robot which meets the 2/3 coverage of the robot.

Re: bumpers

Posted by GDC at 02/05/2009 04:34:44 pm

Please refer to the BUMPER rules. Your question can be interpreted to imply that you are in violation of several BUMPER rules.

Safety & Damage Prevention

6" minimum bumper

6" minimum bumper

Posted by FRC1158 at 02/02/2009 08:20:29 pm

Is the 6" length of a segment considered the length of the plywood or the length of the covered noodle?

bumper

Posted by FRC1158 at 02/04/2009 08:15:49 pm

We would like to know what is considered a bumper segment. Is it the length of the covered noodle or the length of the plywood?

Re: 6" minimum bumper

Posted by GDC at 02/05/2009 04:20:33 pm

As previously noted, the length of a BUMPER segment is determined by the length of the portion of the BUMPER assembly which includes all required elements (pool noodle, fabric covering, bumper backing) in the cross-section (Rule <R08>). The minimum length of a BUMPER segment must be six inches (Rule <R08-A>).

Safety & Damage Prevention

Laser Optical Mouse

Laser Optical Mouse

Posted by FRC1038 at 02/03/2009 06:50:22 am



We know that laser pointer devices are illegal for safety reasons. But is the use of a laser optical mouse for position tracking legal?

Re: Laser Optical Mouse

Posted by GDC at 02/05/2009 03:22:02 pm

As long as the laser is not exposed and does not pose any potential eye hazard, this would be permitted (as long as the use of the optical mouse does not provide any tractive force).

Safety & Damage Prevention

Robot LEDS

Robot LEDS

Posted by FRC1640 at 02/03/2009 09:19:17 am

What color LEDs can we use on the robot? Are there colors that might confuse the judges and you would like use not to use?

Re: Robot LEDS

Posted by GDC at 02/05/2009 03:50:59 pm

There are no restrictions on the LED colors that a team may use on their robot, however it's wise to avoid bright pink or fluorescent green, as they may result in a violation of Rule <R02>.

Safety & Damage Prevention

Robot Frame and Bumper Clearance Holes

Robot Frame and Bumper Clearance Holes

Posted by FRC1379 at 02/03/2009 04:47:56 pm

In the thread [[url](http://forums.usfirst.org/showthread.php?t=11389)]<http://forums.usfirst.org/showthread.php?t=11389>[/url], the response indicates that it is allowable to drill clearance holes in the plywood backing of the bumper to accomodate boltheads or other protrusions that extend beyond the bumper perimeter. However this would appear to be in violation of R16 which states that "When in the PLAYING CONFIGURATION, no part of the ROBOT may extend outside the vertical projection of the BUMPER PERIMETER." Many teams use frame designs which are bolted together or have minor protrusions through the frame for shafts, bearings, bushings or other parts.

Do teams need to design their robots such that the bumper perimeter is a flat surface with no protrusions whatsoever or does the no protrusion beyond the bumper perimeter rule only apply to robot parts above the bumpers?

Re: Robot Frame and Bumper Clearance Holes

Posted by GDC at 02/05/2009 04:28:28 pm

Limited protrusions (less than 1/2 inch in depth) through the BUMPER PERIMETER by small items (e.g. heads of fasteners, ends of shafts/axles, bearing shoulders, other items of less than 1 inch in cross-section.) will be permitted.

Safety & Damage Prevention

Structural support for bumpers.

Structural support for bumpers.

Posted by FRC1254 at 02/03/2009 04:59:42 pm

In one message it was stated that a 1/8" aluminum piece across the length of the robot is not strong enough to be considered supportive for the bumpers. If we had that at the top as well



as connecting it to the frame at the bottom would that be good enough. I am not sure what type of material would be considered good enough. What if we ran two pieces? Given we were not given much framing in the KOP, what is considered good enough?

Thank.

Re: Structural support for bumpers.

Posted by GDC at 02/05/2009 04:12:54 pm

We are comfortable that [URL="http://forums.usfirst.org/showthread.php?t=11503"]this Q&A thread[/URL] provides appropriate guidance for teams to use in making design decisions.

Safety & Damage Prevention

Connection of adjacent bumper segments

Connection of adjacent bumper segments

Posted by FRC2743 at 02/03/2009 10:04:02 pm

Regarding the bumper part of the multi-part bumper brackets:

Is there a limit to the intrusion depth into the robot perimeter that the bumper attached bracket may penetrate?

Is there a limit to the number of bumper segments that one bumper bracket may attach to?

It seems like a previous question and drawing could be modified to be legal if the corner joint between adjacent bumper segments were moved from the outside of the robot perimeter to the inside of the robot perimeter, say above and below the frame, rather surrounding the frame.

Re: Connection of adjacent bumper segments

Posted by GDC at 02/05/2009 04:26:42 pm

A: No.

B: No.

C: We cannot comment on possible modifications to potential designs.

Safety & Damage Prevention

Chain Guard

Chain Guard

Posted by FRC135 at 02/04/2009 07:08:45 pm

Do any special measures need to be taken to cover chain from the outside of a robot? I imagine it's not important because bots can't have anything extending beyond their perimeter this year. Any chain just inside of the frame of our bot should be fine without guards right?

Re: Chain Guard

Posted by GDC at 02/05/2009 03:26:39 pm

There is not a rule that specifically requires the use of chain guards. However, chain guards may be appropriate in certain circumstances to satisfy Rule <R05>, if an exposed chain would pose an undue hazard or entanglement potential.

Safety & Damage Prevention

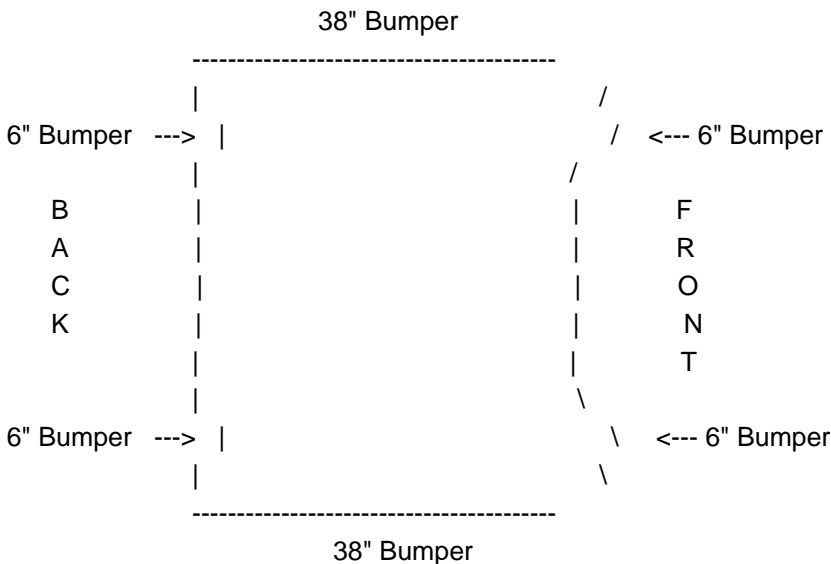
Another bumper question



Another bumper question

Posted by FRC386 at 02/08/2009 10:09:34 pm

Per rule <R08-J Rev H> bumpers must protect a minimum of 2/3 of the bumper perimeter. Our team's robot is 38" long and 28" wide This gives us a total perimeter of 132 inches (38+38+28+28") around the robot, 2/3 of which is 88 inches. We have fully covered the two 38" sides and we have added two 6 inch bumpers to the back of the robot to ensure bumper to bumper contact between the trailer and robot per rule <R18-E Rev H>. This gives us 88 inches (38+38+12) of bumper coverage along the bumper perimeter which meets the minimum requirements of rule <R08-J>. For the front of the robot, we decided to add a slight angle to the front surfaces (approximately 20 degrees) on either side in order to help funnel the moon rocks into the pickup mechanism (see diagram).



At no point during robot operation does any part of the robot exceed this envelope. On each of the front angled surfaces of the robot we mounted additional 6 inch bumpers as indicated on the diagram. These ensure that the robot makes bumper-to-bumper contact during any collisions as specified in <R08>. All of the bumpers are oriented in a straight-up or vertical position. There is no angle with respect to the vertical.

Is this a legal configuration? If not, would removing the front bumpers make it legal since 2/3 of the robot perimeter is still covered by bumpers? Rule <R08> does not state that all sides of the robot must be protected by bumpers, only that a minimum of 2/3 of the robot be covered.

With all of the rumors flying around about this subject, more definitive guidance is needed. Thanks in advance for your patience and assistance.

Re: Another bumper question

Posted by GDC at 02/09/2009 02:34:35 pm

Although this ROBOT would have sufficient bumpers to satisfy Rule <R08-K>, this design would be in violation of Rule <R08-I> and Rule <R08-L>. As has been discussed previously, such as in [URL="http://forums.usfirst.org/showthread.php?t=11170"]this Q&A discussion[/URL], all exterior corners must be protected by BUMPER segments (Rule



<R08-l>). As has been discussed previously, this requires a BUMPER segment on each side of an exterior corner. Each BUMPER segment must be a minimum of six inches in length (Rule <R08-A), and must be attached to the BUMPER PERIMETER (Rule <R08-L>). Effectively, this means that an exterior corner of the ROBOT can not be at an angle that is more acute than the coincident corner of the BUMPER PERIMETER. It follows that the example configuration you cited would not be permitted.

Safety & Damage Prevention

Budget constraints include bumpers?

Budget constraints include bumpers?

Posted by FRC2743 at 02/08/2009 10:16:28 pm

<R22> says that Operator Console parts are excluded from the \$3500 budget.
8.2.0 says that Bumpers are excluded from weight and volume of Robot.

Do costs of Bumpers need to be included in the \$3500?

Re: Budget constraints include bumpers?

Posted by GDC at 02/09/2009 02:35:10 pm

Yes, the cost of the BUMPERS are included in the budget constraints for the ROBOT.

Safety & Damage Prevention

Bumper: to ship or not to ship

Bumper: to ship or not to ship

Posted by FRC2743 at 02/08/2009 11:27:09 pm

Does bumper fabrication need to meet schedule requirement for ship date?

Re: Bumper: to ship or not to ship

Posted by GDC at 02/09/2009 02:32:57 pm

Yes.

Safety & Damage Prevention

Safety Concerns Re: Using Fans For Thrust

Safety Concerns Re: Using Fans For Thrust

Posted by GDC at 02/09/2009 04:53:18 pm

The students would like to use fans as a supplemental way to propel their robot. They plan on using a motor from the KOP and they have the material to make a fan. There is great concern, though, regarding the safety of a spinning propeller. The students do not want to arrive at the competition and be forced to remove their fans because they are deemed unsafe.

We plan on applying the safety requirements from the standard UL 507 - Electric Fans; specifically the ones regarding accessibility by hands and fingers.

Are there requirements that, if we met them, FIRST could guarantee that the fans would be considered safe and admissible in the competition?

Re: Safety Concerns Re: Using Fans For Thrust

Posted by GDC at 02/09/2009 04:54:40 pm

Please understand that we cannot pre-approve designs. Please refer to Team Update 11 for added clarity on guarding propellers.



Safety & Damage Prevention

Entanglement Hazards

Entanglement Hazards

Posted by FRC3022 at 02/11/2009 12:50:54 am

Team 3022 here, and we have a question for the inspector. Here we have a picture and we're wondering if this violates rule <R07> the one about "mechanism or components on the robot shall not pose obvious risk of entanglement." We're wondering if you guys can take a look at this and tell us whether it will pass inspection or not so we can fix the problem before the competition. The part of the robot we are worried about is the metal strip mesh at the top.

[url]http://i699.photobucket.com/albums/vv359/phhsrobotics/IMG_4611.jpg[/url]

[url]http://i699.photobucket.com/albums/vv359/phhsrobotics/IMG_4614.jpg[/url]

Re: Robot Inspector

Posted by GDC at 02/12/2009 03:24:05 pm

We cannot provide evaluations of specific designs. We can only provide insight into how the rules are to be interpreted at the competitions. Please consider your question in the context of a specific rule. For example, if you were to ask: "We believe one valid interpretation of Rule <R07> would permit the use of stiff metal bands to form a capture cage for the GAME PIECES that is entirely within the BUMPER PERIMETER of the ROBOT. Presuming the construction of the cage were robust enough to withstand the normal rigorous play expected during a Lunacy match and therefore never leave the BUMPER PERIMETER, it would not pose an entanglement hazard. Is this a valid interpretation of the rule?" We would then respond "yes, this is an acceptable interpretation of the rule."

Safety & Damage Prevention

Bumpers

Bumpers

Posted by FRC1415 at 02/11/2009 04:41:41 pm

We are confused does the bottom of the bumper need to be 1inch to 7inches off the ground or does the whole bumper need to reside between one to seven inches from the ground? Thank You

Re: Bumpers

Posted by GDC at 02/12/2009 04:04:02 pm

Please refer to the definition of BUMPER ZONE in Section 8 of The Manual, and Rule <R08-P>. You must make sure the BUMPERS are entirely within the BUMPER ZONE.

Safety & Damage Prevention

Bumper Specification?

Bumper Specification?

Posted by FRC1257 at 02/11/2009 06:22:29 pm

Team 1257 wants to know: Can the noodle part of the bumpers be cut at 45 degree angles to make a neat corner. For instance if we are covering the left, right and front of the robot can the two corners be cut in that way?

Re: Bumper Specification?



Posted by GDC at 02/12/2009 03:08:29 pm

Please read Rule <R08-J> .

Safety & Damage Prevention

Bumper construction

Bumper construction

Posted by FRC116 at 02/13/2009 10:22:51 am

In this discussion ([\[url\]http://www.chiefdelphi.com/forums/showthread.php?p=819502\[/url\]](http://www.chiefdelphi.com/forums/showthread.php?p=819502)) on Chief Delphi, the FRC Lead Inspector states that any materials can be added to the BUMPERS as long they are within the 1-inch-deep "hard parts only area." This seems to be a direct contradiction to Rule <R08> and Figure 8-1, which indicate that the BUMPERS are to be constructed from plywood backing, pool noodles, fabric covering, aluminum clamping angles (optional), and the fastening system. Can you please confirm if the BUMPERS are limited to construction from just these items, or if we can indeed add steel angles, leftover Chinese food from lunch, steel plates, small rodents, lead blocks, feathers, depleted uranium, etc to the BUMPERS to increase their weight to the maximum 18 pounds?

Re: Bumper construction

Posted by GDC at 02/14/2009 08:01:42 am

BUMPERS must be constructed as described in Rule <R08> and illustrated in Figure 8-1. The BUMPERS must be constructed from foam pool noodles, plywood backing, fabric covering, aluminum clamping angles, and a robust fastening system (as shown in Figure 8-1). The aluminum clamping angles are optional (see [\[URL="http://forums.usfirst.org/showthread.php?t=11394"\]](http://forums.usfirst.org/showthread.php?t=11394)this Q&A forum response^[/URL]) but highly recommended.

Other structures or materials are NOT permitted. Steel angles, steel plates, lead blocks, etc. are prohibited. There is no rule that would allow these additions.

It is also noted that posting on Chief Delphi and other forums are not official communications, and do not represent opinions, rulings, or determinations by FIRST or the GDC. As helpful and informative as these forums may be, they will not be used by any competition officials for FRC rulings.

Safety & Damage Prevention

Bumpers

Bumpers

Posted by FRC1684 at 02/13/2009 05:09:57 pm

Hello, I would like to know if it is required to use plywood or if there is a possibility for us to use other materials to back our bumpers?

Re: Bumpers

Posted by GDC at 02/16/2009 07:51:34 am

Rule <R08> is specific. The bumper backing must be made of 3/4" plywood.

Safety & Damage Prevention

Bumper back plate.



Bumper back plate.

Posted by FRC1717 at 02/14/2009 04:03:33 pm

In past years our team has taken the four aluminum angle pieces, shown in part A, that hold the fabric for the bumper onto the plywood and combined them into one solid piece, shown in part B, as seen in the attached image. Is this legal in this years competition? We are using 1/16 inch aluminum and the weight of the bumpers is well below the 18lbs limit. The intention of this is not more weight, it is to provide a contiguous surface to mount to our chassis, thereby increasing the effectiveness of protecting our robot with the bumper, and aid in the prevention of the cloth slipping out. In past years, when we have used this design, we have had numerous comments from inspectors, judges, and other teams about the elegance and efficacy of this design. We want to be sure that we do not end up pulled from a competition for trying to improve the design of our bumpers.

[IMG]<http://www.dpengineering.org/images/qa/bumper.jpg>[/IMG]

Re: Bumper back plate.

Posted by GDC at 02/15/2009 09:52:34 pm

While we understand and admire your tested design, we must insist that "aluminum angle" be aluminum angle, not an aluminum tray. This year the bumper rules are being contested in detail and we are trying to insure that the robot inspectors are not left in a difficult position.

Safety & Damage Prevention

Bumper hard part

Bumper hard part

Posted by FRC494 at 02/15/2009 08:04:53 pm

R8 figure 8-1 shows one inch of hard material may go beyond the BUMPER PERIMETER. May our bumpers have hard material that extends INSIDE the BUMPER PERIMETER an inch or more to secure the bumpers to the frame. This hard material would be alm. channel that fits over our frame and attaches the bumpers to the robot. The material would be part of the bumper so that the total of hard material on the bumper would be two inches but less than one inch of the hard matreial would extend beyond the BUMPER PERIMETER. Is this permitted?

Re: Bumper hard part

Posted by GDC at 02/16/2009 02:08:01 pm

The hard material, or bumper backing, must be 3/4" plywood and cannot extend inside the bumper perimeter.

It sounds like the aluminum you describe is part of a fastening system, to which the first part of our answer may not apply. Please refer to Rule <R08-H> for more information about using fastening systems for the bumpers.

General Robot Design

General Robot Design

Robot Configuration During Match

Robot Configuration During Match

Posted by FRC1033 at 01/06/2009 03:45:04 pm

It states clearly in this section that the starting configuration is static, and the match



configuration is dynamic. I heard that the configuration of the robot cannot change more than the 28x38x60in starting max. I just want to clarify if we can extend beyond this or not as we dont wanna design and find out later we're in violation.

Thanks

Re: Robot Configuration During Match

Posted by GDC at 01/12/2009 10:40:34 pm

Please refer to Rule <R11> and Team Update #1. The volume limitations described therein are valid at the start of, and during, the MATCH.

General Robot Design

hight limits

hight limits

Posted by FRC1606 at 01/07/2009 12:55:30 pm

are there any hight requirements during the game

Re: hight limits

Posted by GDC at 01/07/2009 08:18:50 pm

There are no height requirements, however please reference <R11> for size limitations.

General Robot Design

Flexible Frame

Flexible Frame

Posted by FRC2505 at 01/07/2009 12:57:40 pm

Imagine our robot has a flexible frame. The bumper perimeter changes, but is always at least 2/3 covered. The robot always fits within the size limits. The trailer hitch is fixed to the perimeter with respect to part of the robot, but not the rest. Is this legal, and if not, what rules is it violating?

Re: Flexible Frame

Posted by GDC at 01/07/2009 08:45:09 pm

We can not provide specific evaluations of systems which we have not directly examined. Final authority for the determination of the legality of such a device rests with the lead inspector at each event.

General Robot Design

Wheel Construction

Wheel Construction

Posted by FRC2493 at 01/07/2009 02:34:23 pm

As stated on these forums, the rotation of the axis has to be parallel with the floor. As long as the rotation of the axis is parallel with the floor, can the wheel not be perpendicular with the floor in the case of trying to cause a wobble effect while turning the robot? Will this go against any of the rules regarding the construction of the robot?

~Robokong, Team 2493

Re: Wheel Construction

Posted by GDC at 01/12/2009 05:08:27 pm



No it may not; this would be a violation of Rule <R06>.

General Robot Design

Allowable crater floor contact and air jets

Allowable crater floor contact and air jets

Posted by FRC2354 at 01/07/2009 03:39:17 pm

1. Besides the low friction wheels can any other part of the robot contact the crater floor?
2. Would a non-driven high friction wheel attached to an encoder be allowed?
3. Would any non traction device be allowed to contact the crater floor?
4. Would pneumatic jets be allowed for control of moon rocks either airborne or on the crater floor?
5. Would pneumatic jets be allowed if they provide propulsion?

Re: Allowable crater floor contact and air jets

Posted by GDC at 01/09/2009 10:58:04 am

1. Other parts of the Robot may contact the floor, as long as the part does not provide any traction for the Robot.
2. If the wheel provides no traction/breaking forces, it would be permitted.
3. Yes.
4. A fan used to deflect an incoming Moon Rock away from the trailer is not prohibited by the rules. However, use of a fan to descore a Game Piece would not be permitted.
5. Yes.

General Robot Design

Ball Possession, Robot Orientation, and Fans

Ball Possession, Robot Orientation, and Fans

Posted by FRC854 at 01/07/2009 04:34:05 pm

My team and i had a couple questions about the 2009 game rules regarding the robot.

First we were wondering if we were allowed to drive the robot "sideways" this year. Meaning we would still fit within the 28X38 limits, but instead of the trailer being attached to the 28" side, it would be attached to the 38" side, and the opposite side would be the front of our robot. I have seen robots drive like this in past years, but i was just wondering if there were any restrictions for this years game.

Our second question is about ball possession and robot limits. If a ball is in possession and being held by the robot, and the robot does not exceed the maximum dimensions, but a portion of the ball sticks outside the robot, and consequently exceeds the maximum dimensions, would this result in a penalty?

Thirdly, some of our team members have been reading threads posted on Chief Delphi talking about making a hover craft. We find a hovercraft impractical, however we were wondering if the use of fans to provide additional forwards backwards thrust would be allowed. It doesnt violate any rule i could find, and they would obviously be well protected and encased in a secure mesh enclosure. Personally i think the use of fans would allow for some more creativity in terms of the drive aspect or the robot (since the wheels are so limited this year), and it really is thinking outside the box.



Thanks for you time, and good luck everyone,
-Team 854

Re: Ball Possesion, Robot Orientation, and Fans

Posted by GDC at 01/08/2009 03:16:31 pm

Regarding the first part of your question - there are no rules that prohibit this. The rules do not mandate a specific ROBOT orientation.

Regarding the second part of your question - Game Pieces are not considered part of the ROBOT, and thus extensions beyond the ROBOT volume (as defined by Rule <R11>) by Game Pieces, is not prohibited and would not be penalized.

Regarding the third part of your question - there are no rules prohibiting the use of forced air for propulsion or thrust, provided it is not a safety hazard and does not cause damage to the field.

General Robot Design

Height of hopper with balls

Height of hopper with balls

Posted by FRC378 at 01/07/2009 05:08:07 pm

Can the balls be higher than the 60" limit. For example, if you have a hopper, can the balls in the hopper be above 60".

Height/Vertical Constraint of Robot

Posted by FRC178 at 01/07/2009 07:27:43 pm

As stated in Rule <R16>, "The robot must be designed such that the playing configuration of the robot shall not exceed the dimensions specified in Rule <R11>. When in the playing configuration, no part of the robot may extend outside the vertical projection of the bumper perimeter."

Is a robot allowed to extend vertically beyond the 60 inches as defined in Rule <R11> in its playing configuration (assuming it stays within the bumper perimeter)?

Re: Height/Vertical Constraint of Robot

Posted by GDC at 01/08/2009 04:19:01 pm

No, per the statement quoted from Rule <R16>, the ROBOT may not extend beyond any of the dimensions specified in Rule <R11>.

General Robot Design

wheels

wheels

Posted by FRC316 at 01/07/2009 05:12:59 pm

Are we allowed to use more than 4 wheels on our robot?

Re: wheels

Posted by GDC at 01/08/2009 03:25:12 pm

There are no rules that would prohibit additional ROVER WHEELS on the ROBOT.



General Robot Design

trailer

trailer

Posted by FRC316 at 01/07/2009 05:21:47 pm

Are we allowed to build over the top of the trailer as long as we do not touch it?

Re: trailer

Posted by GDC at 01/08/2009 03:28:34 pm

No. Please refer to Team Update 1.

General Robot Design

vacuum for traction

vacuum for traction

Posted by FRC441 at 01/07/2009 05:34:57 pm

We understand in the rules that R06 it states that "No other forms of traction devices are permitted"

Is is alright to use the previous year vacuum cup?

Re: vacuum for traction

Posted by GDC at 01/12/2009 10:36:26 pm

Vacuum-based devices are permitted on the ROBOT. However, under the terms of Rule <R06>, such a device may not be used to alter/increase the traction of the ROBOT. It must be used for other purposes.

General Robot Design

Sensor touching Regolith

Sensor touching Regolith

Posted by FRC1764 at 01/07/2009 06:28:07 pm

Team 1764 is looking at having a position sensor made of 2 Vex Omni wheels at 90 degrees to each other. Currently, this is planned to touch the "regolith". It is not meant to add traction or gain an advantage, but is used for positioning. We do not feel this would be in violation of rule R06, but we would like feedback concerning this. Thank you.

Re: Sensor touching Regolith

Posted by GDC at 01/09/2009 10:13:07 pm

As long as the wheels are free-turning and do not provide traction, information gathering devices like this would not be considered a traction providing device, and would thus be permitted.

In all cases, the role of the device must be to provide information, not traction, to the ROBOT.

General Robot Design

Shape of Robot

Shape of Robot

Posted by FRC178 at 01/07/2009 07:22:06 pm

Can a robot be shaped in such a way that it will partly surround an opposing team's trailer



(without entanglement or attaching to it)?

Re: Shape of Robot

Posted by GDC at 01/09/2009 10:19:04 pm

Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[URL].

General Robot Design

trailer hitch

trailer hitch

Posted by FRC316 at 01/07/2009 07:32:53 pm

Concerning the weight of the trailer hitch, Is the weight subtracted each time form the weigh in or does it need to be removed each time?

Re: trailer hitch

Posted by GDC at 01/11/2009 10:35:47 pm

Like other items that are not included in the ROBOT weight, the TEAM should remove the Trailer Hitch before any weight check.

General Robot Design

Trailer hitch location

Trailer hitch location

Posted by FRC2745 at 01/07/2009 08:25:48 pm

Can the trailer hitch be inside the bumper parameter?

Re: Trailer

Posted by GDC at 01/08/2009 03:43:05 pm

Please refer to Rule <R18>, part D. The Trailer Hitch must be located on the BUMPER PERIMETER.

General Robot Design

Unpowered wheels for steering

Unpowered wheels for steering

Posted by FRC1126 at 01/07/2009 09:49:28 pm

Our question is in regards of <R06>. Would it be permissible to use non-powered wheels that are in contact with the ground (other than the rover wheels) for steering?

Non-driven wheels

Posted by FRC2421 at 01/09/2009 04:09:44 pm

Previous Q&A threads have indicated that non-driven wheels are allowed, does this mean non-driven wheels may be used to steer robots?

Re: Unpowered wheels for steering

Posted by GDC at 01/12/2009 10:39:19 pm

Any device that contacts the floor with enough traction to provide a steering function for the ROBOT will, by definition, be a traction device. As such, the only wheels that can provide this capability would be the provided ROVER WHEELS.

General Robot Design



Robot height

Robot height

Posted by FRC1606 at 01/08/2009 12:32:59 pm

Can the robot extend the 60" during play hight wise?

Re: Robot height

Posted by GDC at 01/11/2009 10:05:02 pm

Under Rule <R11> a ROBOT may extend up to, but may not exceed, 60 inches during the MATCH.

General Robot Design

"Shoveling" up the balls

"Shoveling" up the balls

Posted by FRC1807 at 01/08/2009 12:50:57 pm

I see you've already responded to a non-KOP wheel part of robot touching the surface ([url]http://forums.usfirst.org/showthread.php?t=10919[url]). However, is it legal to have a shovel-type of device that would lift/raise the balls off of the crater floor (assuming of course that the device is within the robot footprint)?

Re: "Shoveling" up the balls

Posted by GDC at 01/11/2009 10:03:06 pm

Any such device that does not actually contact the floor should not have any problems. Any device that does make contact with the Regolith will have to be carefully designed and constructed to avoid applying braking forces (which are tractive forces) to the ROBOT. Even though not intended as a brake, any device that has that affect would be a violation of Rule <R06>.

General Robot Design

Vacuum/pressure to increase normal force

Vacuum/pressure to increase normal force

Posted by FRC2354 at 01/08/2009 02:42:50 pm

Are Vacuum systems banned? Bill's Blog say's they will damage the floor. If we find a way to prevent damage; would a vacuum system be allowed?

Air pressure to increase normal force

Posted by FRC2220 at 01/08/2009 06:11:43 pm

Though Bill in his blog said 'don't waste time designing a Suction system to interact with the field as even a little suction will damage the field' he didn't come out and say it was illegal.

If a device is fabricated to reduce the air pressure beneath the robot that is assured not to touch or damage the field, is it allowed in the competition?

Increasing Normal Force with a Fan

Posted by FRC178 at 01/09/2009 03:19:33 pm

Can we increase the normal force with a fan or other component, so long as it does not harm the ARENA?



Re: Vacuum/pressure to increase normal force

Posted by GDC at 01/12/2009 12:10:34 pm

No. Any vacuum/suction/fan system that alters the traction characteristics of the ROBOT would be considered a violation of Rule <R06>.

General Robot Design

Brushes to collect Game Pieces?

Brushes to collect Game Pieces?

Posted by FRC123 at 01/08/2009 11:13:37 pm

Thinking about using brushes to pickup the ball. Something like a long wall paper brush or maybe hair brush. Would the bristles pass inspection?

<R05> and Brushes

Posted by FRC2175 at 01/09/2009 12:50:52 am

Our team was wondering about the implications of <R05> on using brushes to contact the game pieces. A strict reading of the rules would seem to suggest that this would not be allowed as the bristles are smaller than the listed .030 inch radius.

Would a brush be legal for contacting a game piece?

Brush system used to roll balls into robot

Posted by FRC2844 at 01/10/2009 05:06:59 pm

Can we use a brush that is similar to a hair brush bristles to create a roller system to roll the ball into our robot, as long as we stay within our size requirements?

Re: Brushes to collect Game Pieces?

Posted by GDC at 01/12/2009 12:04:03 pm

Rule <R05> would be applied to the entire brush construction, not the individual bristles. As such, as long as the brush was not so stiff that it would cause damage to the GAME PIECES, it is unlikely to cause a conflict with Rule <R05>. There are no other rules that would generically prohibit the use of a brush assembly to collect GAME PIECES.

General Robot Design

Netting and <R11>

Netting and <R11>

Posted by FRC1448 at 01/09/2009 09:37:33 am

If our robot uses tight-mesh netting to contain moon rocks in an open-air hopper, and the hopper becomes so full of moon rocks that it bulges beyond the specified dimensions in <R11>, would this be considered a penalty?

Re: Netting and <R11>

Posted by GDC at 01/12/2009 10:49:44 pm

Yes, this would be a violation of Rule <R11>.

General Robot Design

Materials Allowed for an Encoder Wheel

Materials Allowed for an Encoder Wheel

Posted by FRC2477 at 01/09/2009 04:54:55 pm



I've already seen a response to using a "high traction" wheel as an encoder wheel and that as long as the wheel does not provide traction this is allowed if the wheel does not provide any traction/braking. For example if the encoder wheel is parallel to the drive wheels and the bot is only driving forward and backward, I can see how a "high traction" wheel would provide little resistance. However, if the bot slides side to side, I can see that the "high traction" wheel will provide at least some resistance to the sideways motion of the bot.

What is the rule's definition of traction? Is my example above, the wheel provides less traction when the bot is rolling back and forth than when the bot is sliding. For example, would using a rubber wheel (that is not driven) as an encoder wheel be allowed?

Re: Materials Allowed for an Encoder Wheel

Posted by GDC at 01/11/2009 10:39:20 pm

Any portion of the ROBOT (other than ROVER WHEELS) in contact with the surface of the CRATER that provides tractive/braking forces in any direction will be considered a violation of Rule <R06>. If a high-friction wheel is being used to drive an encoder, it must be both free-rolling and freely-swiveling to avoid a violation.

General Robot Design

Is this robot legal?

Is this robot legal?

Posted by FRC1270 at 01/09/2009 05:56:43 pm

We would like to know if a robot built in the following manor would be legal. Here is a description of our design:

- Robot starts at the max size of 38" x 28" and never extends out of that footprint
- Flappers in the front, and pivot side to side never exceeding the legal robot size restrictions
- Flappers are covered, inside and out, with bumpers. Therefore, the flappers will always be in a bumper to bumper contact scenario if touching any robot or game element in an open or closed position.

View this link for a picture of the design

[url]<http://i146.photobucket.com/albums/r253/mike88216/untitled-2.jpg>[/url]

Re: Is this robot legal?

Posted by GDC at 01/11/2009 10:40:34 pm

We can not comment on the legality of a specific team robot design. if there is a question about how a particular rule that could affect your design may be interpreted, please feel free to submit that question.

General Robot Design

Trailer hitch and robot dimensions

Trailer hitch and robot dimensions

Posted by FRC378 at 01/10/2009 11:22:58 am



I understand the dimensions of the trailer hitch itself.. but I do not know exactly if it is included in the overall 28" x 38" parameters. Like, can it be sticking out of the robot?? or...

Is the hitch excluded from base dimensions

Posted by FRC2116 at 01/10/2009 07:29:56 pm

Is the hitch excluded when measuring compliance with the basic 28x38 dimensions of the robot?

Re: Trailer hitch and robot dimensions

Posted by GDC at 01/11/2009 10:16:11 pm

Please refer to Rule <R11> as amended in Team Update #1.

General Robot Design

expanding vertically beyond 60"

expanding vertically beyond 60"

Posted by FRC1606 at 01/10/2009 01:59:47 pm

can a manipulator expand past the 60" height limit during play?

Re: expanding vertically beyond 60"

Posted by GDC at 01/11/2009 10:59:27 pm

Please read Rule <R11> carefully. The size limits specified by the rule are applied to the ROBOT (and all parts of the ROBOT) during the entire MATCH.

General Robot Design

Trailer Hitch Mounting Requirements

Trailer Hitch Mounting Requirements

Posted by FRC1746 at 01/11/2009 10:35:52 am

1. Will trailer hitch need to be removable for inspection (we assume so)?
2. What will the tolerance be in the height of the hitch. Currently there is ZERO tolerance.

Trailer hitch height per <R18> Par. B.

Posted by FRC980 at 01/12/2009 01:36:31 am

For teams using the "west-coast"-style 6-wheel drive, how is the height of the trailer hitch determined? The lowered center wheels result in the robot being somewhat "tippy", so the trailer hitch centerline has a +/- variation of about a 1/4". Is the 2-13/16" dimension cited in <R18> Paragraph B. a nominal, minimum, or maximum value?

Re: Trailer Hitch Mounting Requirements

Posted by GDC at 01/12/2009 07:57:15 pm

During inspection, acceptable tolerance on the Trailer Hitch altitude will be +/- 0.25 inches. During the MATCH, acceptable tolerance on the Trailer Hitch altitude will be +/- 0.50 inches, based on the dynamic motion of the ROBOT.

General Robot Design

Trailer Hitch Attachment

Trailer Hitch Attachment

Posted by FRC1746 at 01/11/2009 10:49:03 am

1. Per Update #1, Trailer Hitch is NOT part of the Robot Weight.



Per <R18> "The Trailer Hitch is composed of the 'Trailer Spacer' .. and the Trailer Mount Bar.."

Does this mean that the hardware used to mount the trailer IS part of the robot weight and bumper envelope?

2. Are there any limitations on the mounting hardware for the trailer hitch? ie: could we use standoffs? <R18B> only requires "Rigid" attachment. Doesn't say how ...

If so, Are the standoffs part of the hitch or the robot?

Re: Trailer Hitch Attachment

Posted by GDC at 01/12/2009 05:16:28 pm

Any hardware used to mount the Trailer Hitch is considered part of the ROBOT and not the Trailer Hitch. As such, it must be weighed and volume-checked with the ROBOT.

The specific method for mounting the Trailer Hitch to the ROBOT is left to the TEAM to decide, based on the particulars of their design. Note however, that an inadequate design that is not robust enough to keep the TRAILER attached to the ROBOT will result in a violation of Rule <G35>.

General Robot Design

Trailer hitch and bumper perimeter

Trailer hitch and bumper perimeter

Posted by FRC2028 at 01/11/2009 03:24:19 pm

This may be what one other post referred to called "flexible frame". If the robot mounting location for the trailer hitch was a rigid secure location, but it was an articulating assembly as a whole assembly. Considering that a robot may have many articulating features, would the trailer hitch be allowed to be attached to a point on the robot that "moved" in such a way?

The robot would always be within size limits, and the bumpers would cover 2/3 of the bumper perimeter. The bumpers are not allowed to articulate, but is the trailer hitch?

Re: Trailer hitch and bumper perimeter

Posted by GDC at 01/12/2009 10:54:09 pm

We can not provide specific evaluations of systems which we have not directly examined. Final authority for the determination of the legality of such a device rests with the lead inspector at each event.

General Robot Design

Moving parts and bumpers

Moving parts and bumpers

Posted by FRC1270 at 01/11/2009 07:09:34 pm

In update #2 the robot is a rectangle with the front of the robot allowing for a 26" opening in the center, this leaves two appendages extending forward on either side of the opening. Would it be a violation to rule <R08-P> if the two extended appendages were actually designed to pivot towards each other since the bumpers are attached to the appendage and the appendages



move?

Re: Moving parts and bumpers

Posted by GDC at 01/12/2009 10:25:52 pm

Provided the frame is moving, and not just the appendages, there are no rules that would prohibit this.

Please understand however, we can not provide specific evaluations of systems which we have not directly examined. Final authority for the determination of the legality of such a device rests with the lead inspector at each event.

General Robot Design

Clarification of robot traction per Rule <R06>

Clarification of robot traction per Rule <R06>

Posted by FRC1619 at 01/12/2009 12:00:06 am

I would appreciate clarification of robot traction per Rule <R06>, especially after reading the following post (and the related ones before it):

[url]http://forums.usfirst.org/showthread.php?t=11098[/url]

The response to the above post indicates a high-friction wheel could be used to drive an encoder if the wheel is both free-rolling and freely-swiveling (like a caster wheel, I presume). That type of configuration still provides traction, albeit limited (via the rolling/swiveling pivots). Thus, how does one determine the degree of additional traction allowed beyond the rover wheels, even though Rule <R06> seems to indicate that no traction device between the robot and ground is allowed beyond the rover wheels?

Thanks in advance for your response.

Re: Clarification of robot traction per Rule <R06>

Posted by GDC at 01/12/2009 10:31:59 pm

Acceptable sensors will gather information, but not affect the tractive performance of the ROBOT. They will produce only resistive traction, be direction independent, and be invariant during the entire MATCH. The TEAM must be prepared to provide test data verifying that the maximum sensor traction is not more than 5% of the maximum traction of the ROBOT (acceptable validation methods would include test data logging total drawbar pull both with and without the sensor in place).

General Robot Design

Size of maximum opening on front of robots.

Size of maximum opening on front of robots.

Posted by FRC254 at 01/12/2009 12:15:14 am

According to the illustration in Section 8 of Update 2, the maximum opening on the front of a 38" wide robot is 26". Does that mean that the maximum opening allowed on the front of a 28" wide robot is 16", assuming that the corners on either side of the opening are protected by 6" bumper segments per <R08>?

Re: Size of maximum opening on front of robots.



Posted by GDC at 01/12/2009 05:06:34 pm

The illustration provided in Team Update #2 is a single example of one configuration that is in compliance with the Rules (particularly Rule <R08>). It is not intended to be the ONLY legal configuration possible. Please do not assume universal applicability of this one example.

General Robot Design

design in compliance with all rules?

design in compliance with all rules?

Posted by FRC1625 at 01/12/2009 12:26:46 am

My teams robot bumper perimeter polygon, other than some proportional dimension differences, was inspired by and is virtually identical to "Overhead View Figure 8-2" of page 10 of 32 of the Robot section of the Competition Manual. Our robots bumper configuration, other than the above mentioned dimension differences, the left and right sides of the robot covered completely by bumpers (without the gaps shown in the drawing), and our bumper meeting corners all to be of the three conditions indicated as acceptable in the overhead view, will be virtually identical to "Overhead View Figure 8-2". It is our intent to meet all of the other requirements of <R08> as included in the competition manual and team updates to date. Assuming we are successful in meeting these requirements will our robot be legal with respect to these items? my team has invested a lot of time, financial resources and energy in an almost complete chassis and robot design as described above and your timely response will be much appreciated.

Thank you

Re: design in compliance with all rules?

Posted by GDC at 01/12/2009 05:09:22 pm

Lacking the ability to directly examine a particular robot, we cannot comment on the specific level of compliance with all the rules that may be represented by an individual design. That is the responsibility of the team of inspectors at each competition event.

General Robot Design

Trailer Hitch Part of Bumper?

Trailer Hitch Part of Bumper?

Posted by FRC1511 at 01/12/2009 02:49:20 pm

Is the Trailer Hitch considered part of the 2/3 Bumper Perimeter that must be covered by Bumpers? Or is it considered uncovered?

Specifically if there is a 28"x38" robot, it has a perimeter of 132", thus 44" of the robot can be uncovered (provided it meets all other rules in R08). Does the Trailer Hitch count as part of the 88" of covered bumper perimeter, or the 44" of uncovered bumper perimeter?

Re: Trailer Hitch Part of Bumper?

Posted by GDC at 01/15/2009 04:13:14 pm

The Trailer Hitch is not a BUMPER. It is included in the portion of the BUMPER PERIMETER that is not protected by BUMPERS.

General Robot Design



<R06> and Mass Manipulation

<R06> and Mass Manipulation

Posted by FRC2175 at 01/12/2009 02:55:10 pm

One idea that came up during our teams discussion of potential ways to increase propulsive force available to our robot was a system to manipulate a large mass inside the robot. One such system would involve dropping large mass from the top of the robot down to the bottom. The impact of this mass with the bottom of the robot would result in an increased normal force applied at the wheels for a very short period of time. This increased normal force would technically increase traction and this may be where we run into trouble.

It now appears this would be illegal based on the response given regarding fans/vacuums given here:

[url]http://forums.usfirst.org/showthread.php?t=11025[/url]

Could you clarify the legality of this please?

Re: <R06> and Mass Manipulation

Posted by GDC at 01/15/2009 02:56:22 am

<R06> would preclude mass manipulation as a traction aid.

General Robot Design

extending beyond the bumper perimeter

extending beyond the bumper perimeter

Posted by FRC2973 at 01/12/2009 04:03:14 pm

From Update #1:

"...If implemented as intended, a ROBOT that is driven into a vertical wall in any normal PLAYING CONFIGURATION will always have the BUMPER be the first thing to contact the wall."

This rule restricts any arms, mechanisms, hoods, etc from extending beyond the BUMPER PERIMETER.

1) Is the statement that is quoted in update #1 a requirement? That is, must the design intent be that the bumper will always be the first thing to contact the wall? Because the second statement is not correct; the remainder of the rule does not restrict anything from extending beyond the bumper perimeter. If a robot has dimensions of 30 x 28 at the bumper zone and 38 x 28 above the bumper zone, there will be about a 6.5 inch overhang to the bumpers on the front of the robot.

2) Is the statement above in update #1 that says "This rule restricts any arms, mechanisms, hoods, etc from extending beyond the BUMPER PERIMETER." also a requirement? If the answer to question 1 is "yes", it is possible to have retracting mechanisms such that they would not contact the wall first but could still extend beyond the bumper perimeter when required.

Re: extending beyond the bumper perimeter



Posted by GDC at 01/15/2009 02:39:20 am

Extensions beyond the BUMPER PERIMETER are not allowed.

General Robot Design

Trailer Tongue/Bumper Interaction

Trailer Tongue/Bumper Interaction

Posted by FRC2987 at 01/12/2009 04:47:48 pm

Our team is having a hard time figuring out how to design the rear end of our robot. We would like to have a design where the back side of our robot is shorter than our front. Two rules seem to make this design very limited. R08-I states that all exterior corners of the BUMPER PERIMETER must have bumpers. Also, R18-E states that the first contact between TRAILER and ROBOT is to be BUMPER to BUMPER. So, in order to not have any exterior corners and comply with R18-E, there is a minimum length that the rear of your ROBOT must be. Correct?

Our team was wondering if the REAR-Most side of our ROBOT could be only 7" long (the same length as the hitch) thus not creating an exterior angle which would need to have a BUMPER on it? Otherwise the Rear-Most side of every teams ROBOT would have to be some minimum length, 2X the arc of the TRAILER tongue. Can I get some clarification on this? Thank you!

Re: Trailer Tongue/Bumper Interaction

Posted by GDC at 01/15/2009 04:03:15 pm

You seem to be interpreting the rule correctly. The design of the rear of the robot is constrained. Without the bumper-to-bumper contact specified, the TRAILER's tongue would be vulnerable.

General Robot Design

Trailer Hitch hardware

Trailer Hitch hardware

Posted by FRC2973 at 01/12/2009 05:52:33 pm

From your response in the Q&A regarding Trailer Hitch Hardware:

"Any hardware used to mount the Trailer Hitch is considered part of the ROBOT and not the Trailer Hitch. As such, it must be weighed and volume-checked with the ROBOT."

OK I'll play - how will the hardware be volume checked? Fasteners between the trailer spacer and the trailer mount bar will be floating in space without the spacer and mount bar removed.

Re: Trailer Hitch Attachment

Posted by FRC2505 at 01/12/2009 07:45:14 pm

[url]http://forums.usfirst.org/showthread.php?t=11161[/url]

[quote=GDC]Any hardware used to mount the Trailer Hitch is considered part of the ROBOT and not the Trailer Hitch. As such, it must be weighed and volume-checked with the ROBOT.[/quote]If the trailer hitch spacer must be mounted so that its back face is on the bumper perimeter, doesn't that mean that bolts that penetrate the spacer and hitch (like in the drawing) will extend beyond the bumper perimeter?



How can an attachment outside of the bumper perimeter (the bolts) be part of the robot?

Wouldn't it make more sense to exclude the hitch fasteners in the same way that bumper fasteners are excluded from the robot?

Re: Trailer Hitch hardware

Posted by GDC at 01/19/2009 02:00:09 pm

The hardware used to mount the trailer hitch will be included on the robot when it's weighed at inspection. In order to ensure volume compliance, the hardware will be checked to insure that it does not add volume to the robot (for example, washers cannot be used on the outside of the robot volume to offset the hitch from the robot), and is only used to secure the hitch to the robot.

General Robot Design

fabric brushing on ground

fabric brushing on ground

Posted by FRC372 at 01/12/2009 07:07:03 pm

according to rule R06 No other forms of traction devices (wheels, tracks, legs, or other devices intended to provide traction) are permitted.

would it then be against the rules for a piece of fabric to be hanging down off the robot just far enough to be brushing on the ground?

Re: fabric brushing on ground

Posted by GDC at 01/19/2009 02:32:51 pm

Your question does not provide sufficient information for us to provide an answer. We can conceive of ways that fabric brushing on the ground would be prohibited. We can also conceive of ways that it would be legal.

General Robot Design

Possessed balls used for traction?

Possessed balls used for traction?

Posted by FRC1807 at 01/12/2009 08:47:52 pm

If your robot possesses game balls within its bumper perimeter, is it allowable to impart force on the balls against the crater floor such as to increase traction?

Re: Possessed balls used for traction?

Posted by GDC at 01/15/2009 02:50:45 am

Using a moon rock as a brake or as a "pusher" would violate Rule <06>.

General Robot Design

R06 Caster used for occasional stability

R06 Caster used for occasional stability

Posted by FRC846 at 01/12/2009 09:28:36 pm

Consider a non-Rover caster or wheel where *all* of the following conditions apply:

*) that is intended to provide stability when the robot is moving.

*) that when the robot is statically balanced, the caster does not touch the playing surface. *) that only touches the playing surface when the robot tips during movement.



*) that is not used for motive traction.

*) that is not used as a brake device, but which unavoidably has some drag.

May this non-Rover caster or wheel be used in this manner (to prevent tipping)?

Teflon balancers?

Posted by FRC1095 at 01/13/2009 04:56:57 pm

We are centering our wheel on the sides of our robot, and our robot is 28" wide, 38" long. We are wondering if we can place UHMW at the front and rear of our robot to balance it. We know that nothing on the floor can provide traction or braking, and simply want to know if this is allowed. We are not sure what the coefficient of friction is (UHMW is similar to teflon and is used for sliding), but we would simply place blocks of it as a slider to give our robot balance.

Re: R06 Caster used for occasional stability

Posted by GDC at 01/18/2009 10:53:52 pm

This would be a violation of <R06>.

General Robot Design

Trailer Hitch Orientation

Trailer Hitch Orientation

Posted by FRC2152 at 01/13/2009 11:52:10 am

The trailer hitch "altitude" on GE-90040 implies but does not explicitly state that the axis of the pin holes is orthogonal with the floor. The tolerance of ± 0.25 in "static" and ± 0.50 "dynamic" is good to know but not sufficient to fully characterize the swivel without a tolerance on the orthogonal.

Since the hitch swivel (GE-09036), hitch, and pin are a tight fit (actually worst case too tight by the given tolerances), it seems clear that the design intent is that when attached the inside bottom of the C channel of the hitch will be parallel with the trailer, although with planes possibly offset by the 0.49 vertical range of the hitch swivel when mounted.

Considering that in some designs not all wheels may be co-planar, may we have some sort of tolerance on the angle or alternatively, may we assume that the "static" altitude tolerance applies to the robot on the floor without the trailer, and the "dynamic" tolerance applies to the robot when attached to the trailer?

Re: Trailer Hitch Orientation

Posted by GDC at 01/20/2009 04:19:26 pm

Please refer to Team Update 5. The hitch pin hole in the Trailer Tongue will be slightly oversized to permit some angular misalignment between the Trailer Tongue and the Trailer Hitch. As long as the Trailer Hitch is horizontally mounted when at rest, and it remains within the stated static and dynamic tolerances, there should not be a problem.

General Robot Design

Trailer Hitch Mounting "Fixed Position"

Trailer Hitch Mounting "Fixed Position"

Posted by FRC94 at 01/13/2009 12:11:55 pm

Rule R18-B states:



>>>

The Trailer Hitch must be rigidly attached to a fixed location on the ROBOT, with the long dimension of the Trailer Hitch horizontal and the opening of the C-channel facing away from the ROBOT. The horizontal center line of the Trailer Hitch must be 2-13/16 inches above the floor.

<<<

My question concerns meanings of >>>Fixed Location on the ROBOT<<<.

I would assume that as long as we have one mounting location, and the hitch is rigidly and securely attached there, that would qualify as a fixed position. (i.e. the hitch does not move appreciably relative to its mounting location during play). (Note based on Figure 8-5, I think everywhere I say hitch, I think I actually mean "trailer spacer".)

Is this a reasonable interpretation of the rules?

I ask because I am anticipate a large part of our robot moving relative to the hitch point, possibly a majority, or even a vast majority. I wanted to make sure that the hitch doesn't have to have its position fixed to any specific component, or fixed relative to anything other than what it is directly mounted to. (e.g. the beam/plate/structure the hitch bolts to.)

My question covers a broad range of motions that would fall into the discussion, "Is the ball moving down towards the earth or is the earth moving up towards the ball?"

Thank you for your time. I appreciate the support.

Happy building!

-TechnoJay2
on behalf of Team 94 "The TechnoJays"

Is it legal to move the trailer purposefully?

Posted by FRC2543 at 01/13/2009 07:51:34 pm

Our team is thinking of placing a motor on the wall to which the trailer is attached to. We plan to have the motor oscillate the wall and consequently the trailer itself. The movement of the wall would move the trailer from side to side. Is this OK? The rules seem to leave some room for interpretation and we would like to make sure this is allowed before we do anything.

Thank You,
Team 2543

Re: Trailer Hitch Mounting "Fixed Position"

Posted by GDC at 01/19/2009 07:47:36 pm

A Trailer Hitch attached to a mechanism specifically designed to move a TRAILER independent of the ROBOT motion would not be considered fixed, and thus not permitted.



Wheels - More than 4?

Posted by FRC94 at 01/13/2009 12:28:19 pm

Hello,

The rules <R06> (below) definitely said we could use as many of the rover wheels as we'd like. Well we've only got the four and I'm interested in more.

>>> [rule text edited for brevity] <<<

Under the additional parts section of the "The Kit of Parts Rev A", section 10.2.4.1 states:

>>> [rule text edited for brevity] <<<

My question, based on the phrasing here, is:

Can we use any wheels we can find, as long as the traction surface is made of the same material, and has the same coefficients of friction? (e.g. could we by bigger diameter wheels, etc?)

Normally, based on the way the rules are phrased elsewhere, I would assume not since the point seems to be, "Use these wheels." But since you did not provide a part number and a vendor, I would not be able to assure that any extra wheels purchased are actually identical to the provided four. This can cause engineering problems but more importantly, I don't want to buy "bad" wheels and get our students DQ'ed.

So the final phrasing of my question is:

- (1) Can we use any wheels we can find, as long as the traction surface is made of the same material, and has the same coefficients of friction?
- (2) If not, could you please provide a part number and a vendor to purchase more wheels identical to the provide four?
- (3) Alternatively, if you cannot provide (2) and the wheels must be identical, can good faith be assumed? "I know they're not identical, they are actually .050" wider/narrower/taller/shorter but that's the closest we could find." Gracious Professionalism and all...

Thank you so much for your time.

-TechnoJay2

on behalf of Team 94 "The TechnoJays"

Re: Wheels - More than 4?

Posted by GDC at 01/18/2009 11:09:14 pm

1. No.
2. Please refer to the "Where to get more" document posted under Section 10 of the manual here.
3. N/A

General Robot Design

<5% Allowable Traction in All Directions with Fixed Wheels

<5% Allowable Traction in All Directions with Fixed Wheels

Posted by FRC111 at 01/13/2009 12:29:01 pm



In a recent Q&A response, [[url](http://forums.usfirst.org/showthread.php?t=11201)], it was stated that a robot traction wheel must be 'directionally independent' and be proven to provide a maximum of no more than 5% of the traction of the ROBOT.

If we were to have a -fixed- wheel (non-swiveling), and were able to provide testing data that proved that it did not provide more than 5% of the traction of the ROBOT when the ROBOT is moved in -ANY- direction, would this be considered 'directionally independent' and be allowed?

Thank You

Re: <5% Allowable Traction in All Directions with Fixed Wheels

Posted by GDC at 01/15/2009 02:44:45 am

Wheels used as sensors must be used only as sensors. The intent of the rule is to insure that all robots derive traction only from their ROVER WHEELS. For example, if a computer-mouse-like pair of orthogonally-mounted wheels float lightly over the Regolith and are used to sense the robot's movement without providing comparative traction advantage, that is in the spirit of the rule. 5% is intended to signal that "lightly" means "lightly."

General Robot Design

Trailer Hitch Mounting Height

Trailer Hitch Mounting Height

Posted by FRC2929 at 01/13/2009 05:52:27 pm

Rule <R18-B> specifies that "The horizontal center line of the Trailer Hitch must be 2-13/16 inches above the floor." Rule <R18> also directs the reader to the Trailer Hitch drawing GE-09040, which shows the height requirement as '2 1/2" Floor to Inside bottom of Hitch'

These appear to be contradictory.

The specification of the C-channel material from the andymark website states the material is 1/8" thick. That would make the inside dimension of the channel as 1", or 1/2" from the inside bottom of the hitch to the centerline, for a total of 3" from the floor to the center line.

The difference of 3/16" between the two specifications is significant since the answer to the question titled Trailer Hitch Mounting Requirements stated there is only a +/- 0.25 inch acceptable tolerance to the measurement.

As a somewhat minor addition, the CAD drawing of the wheel from the andymark website shows the wheel diameter as 6 1/8". That means that those of us using the provided C-channels as our chassis have the frame at a centerline height of 3 1/16". This doesn't match either of the specified values and means that the trailer hitch should not be mounted vertically even with the frame (not that that's impossible, but just odd).

Height of Trailer Hitch

Posted by FRC1507 at 01/14/2009 12:06:46 pm

Rule R18 says the horizontal centerline of the hitch should be 2 and 13/16 inches off the floor. However, the diagram GE-09040 shows the centerline of the hitch 3 inches off the floor. We



were wondering which number is correct?

Height of Trailer Hitch from Floor

Posted by FRC2341 at 01/14/2009 04:47:49 pm

According to <R18> "The horizontal center line of the Trailer Hitch must be 2-13/16 inches above the floor." And according to GE-09040 the dimension states "2 1/2 inches from Floor to Inside bottom of Hitch."

When we attach the hitch according to the dimension shown in GE-09040 this makes the Horizontal center line be right at 3 inches. Is this an acceptable height for the hitch from the floor?

Thanks,
Brett
Team 2341

<R18-B> Height of Trailer Hitch

Posted by FRC716 at 01/16/2009 10:05:19 am

<R18-B> specifies that the centerline of the trailer hitch must be 2-13/16" above the floor.

Drawing GE-09040 gives a dimension that would set the centerline at 3" above the floor. The 3" dimension fits with holes in the KOP chassis.

Will <R18> be amended or will the drawing be corrected?

<R18>B The Hitch

Posted by FRC1606 at 01/17/2009 02:31:53 pm

"The horizontal center line of the trailer hitch must be 2-13/16 inches above the floor." In this statement, does the word "must" mean exact, or can the hitch be mounted slightly above that measurement where the horizontal center line will be at 3 inches above the floor?

Mismatch in Spec of Trailer Hitch Height

Posted by FRC846 at 01/17/2009 09:43:54 pm

Rule <R18>B puts the centerline of the hitch at 2-13/16

But drawing GE-09040.pdf in the "2009 Game Specific Drawings" of Section 6 specifies that the inside base of the robot's hitch is at 2-1/2 inches, resulting in a 3" height of the centerline.

Re: Trailer Hitch Mounting Height

Posted by GDC at 01/19/2009 02:11:10 pm

The correct height of the centerline of the Trailer Hitch is 2-13/16 inches, as specified in Rule <R18-B>. The drawing is incorrect, and will be updated to be consistent with the rule. Please note that if you have already mounted your Trailer Hitch in an unalterable location, and you followed the drawing (which is not the rule) instead of the the rule (which is the rule), all is not lost. A Trailer Hitch mounted with the center line at 3 inches is within the +/- 0.25 inch tolerance of the correct center line (see [URL="http://forums.usfirst.org/showthread.php?t=11160"]this Q&A thread[/URL]), and will be accepted.



General Robot Design

ball cannon

ball cannon

Posted by FRC295 at 01/13/2009 05:56:33 pm

our ball cannon design uses a blower to launch the balls, the team would like to use this method because of its consistency with broken or damaged moon rocks. Is this legal, as the airstream in conjunction with the slight recoil will create a very small amount of normal force when firing? will this be illegal because of prior rulings, regarding traction advantages? it is not intended to be used to increase traction, it is designed to shoot the moon rocks into the opponents trailer.

Shooting Orbit Balls

Posted by FRC295 at 01/15/2009 05:24:42 pm

In response to rule <R06> it was stated that you cannot use anything to increase traction so would that rule out launching the orbit balls because it would temporarily increase your normal force ever so slightly while the ball is being launched?

Re: ball cannon

Posted by GDC at 01/19/2009 02:40:41 pm

Incidental changes in the force the robot exerts on the REGOLITH, e.g. downward pulse associated with launching a MOON ROCK, are part of the game. Overt attempts to manipulate the force between the REGOLITH and the ROVER WHEELS in an effort to change traction are not acceptable.

General Robot Design

Robot component movement within the Bumper Perimeter

Robot component movement within the Bumper Perimeter

Posted by FRC88 at 01/13/2009 06:33:09 pm

If there was to be an open front, U-shaped base, would the bumper zone limit any part of the robot from entering into the U-part of the base?

Re: Robot movement within the Bumper Perimeter

Posted by GDC at 01/15/2009 11:25:24 pm

There is no prohibition on the movement of parts of the Robot within the BUMPER PERIMETER provided there is not a violation of <S01> or <R11>.

General Robot Design

Robot Overall Dimensions & Inspection

Robot Overall Dimensions & Inspection

Posted by FRC1713 at 01/14/2009 01:05:15 pm

Are the trailer space bar and trailer mount bar included in the overall dimensions of the robot for inspection purposes?

Re: Robot Overall Dimensions & Inspection

Posted by GDC at 01/19/2009 02:56:22 pm

No. Please refer to this [URL="<http://forums.usfirst.org/showthread.php?t=11161>"]Q&A[URL].

General Robot Design



Robot Perimeter

Robot Perimeter

Posted by FRC2048 at 01/14/2009 02:39:06 pm

Can a robot extend past the perimeter of its base as long as it does not violate the 38x28x60 box at any time, given that the base is shorter than 38x28 (eg 28x28)?

Re: Robot Perimeter

Posted by GDC at 01/15/2009 04:42:08 pm

No. No part of the ROBOT may extend beyond the vertical projection of the Bumper Perimeter Polygon.

General Robot Design

Moon Rocks above 60 inches

Moon Rocks above 60 inches

Posted by FRC1466 at 01/14/2009 02:44:52 pm

Team 378 asked

"Can the balls be higher than the 60" limit. For example, if you have a hopper, can the balls in the hopper be above 60"."

The reply

"No, per the statement quoted from Rule <R16>, the ROBOT may not extend beyond any of the dimensions specified in Rule <R11>."

didn't answer the question. It is understood that the robot can't exceed 60" but I would still like an answer to the question about the moon rocks in a hopper sticking out beyond the 60" plane.

Re: Moon Rocks above 60 inches

Posted by GDC at 01/15/2009 11:49:32 pm

If the hopper exceeds the 60", illegal.

If only the moon rocks exceed the 60", legal.

General Robot Design

modification to Rover Wheel

modification to Rover Wheel

Posted by FRC1983 at 01/14/2009 04:14:38 pm

Can the kit Rover Wheels be modified by removing some of the tread material on each side to make them thinner. The rules state that the surface tread of the wheel cannot be modified in any way but can the wheel tread be made thinner to accomodate a different robot design?

This should not affect the tractional characteristics of the wheel in any way.

Re: modification to Rover Wheel

Posted by GDC at 01/18/2009 11:21:39 pm

Modifying the thickness of the tread is considered a modification and is not permitted.



General Robot Design

Robot Footprint & Inspection

Robot Footprint & Inspection

Posted by FRC1713 at 01/15/2009 06:03:14 am

At Inspection time - is the Trailer Spacer Bar and Trailer Hitch Bar included in the 28" x 38" dimensions?

Re: Robot Footprint & Inspection

Posted by GDC at 01/15/2009 11:52:03 pm

Please refer to Rule <R11>, as amended in Team Update #1.

Also, please note that submitting the exact same question three times will get it answered it any faster. It just slows down the process by adding more redundant questions to the queue.

General Robot Design

Must all perimeter angles of robot be 90° ?

Must all perimeter angles of robot be 90° ?

Posted by FRC2116 at 01/16/2009 08:24:35 pm

Based on the bumper discussions, especially the response with regards to the acute angles, are we to interpret the rules with regards to the shape of the robot, that no corner angles on the perimeter corners of the robot can be less then 90 degrees?

Re: Must all perimeter angles of robot be 90° ?

Posted by GDC at 01/19/2009 03:31:26 pm

No. It is possible for corners of the BUMPER PERIMETER and corners of the ROBOT to legally be more acute than 90 degrees. They just must not be more acute than each other.

General Robot Design

Floor contact by partial wheels

Floor contact by partial wheels

Posted by FRC148 at 01/17/2009 06:16:01 pm

We are considering utilizing un-powered "Rover Wheels" as wheelie bars on our robot.

Are we allowed to use a "pizza slice" of a Rover Wheel instead of the full wheel, provided that only the unmodified portion of the wheel touches the ground?

Can we use a chunk of Rover Wheel "tread" as a skid provided only the unmodified tread touches the field surface?

It seems as though this would be legal because we would not gain any traction or braking advantage over a "locked" Rover wheel, it would only serve to save weight.

Re: Floor contact by partial wheels

Posted by GDC at 01/19/2009 02:39:09 pm

As specified in Rule <R06>, the Rover Wheels must be used in an "out of the box" condition. The rule explicitly states that the tread of the wheel may not be modified. Cutting the wheel to create a "pizza slice" of the wheel would be a modification of the tread, and would be contrary



to the cited intent of the rule. This would not be permitted.

General Robot Design

Dynamic Wheel Height

Dynamic Wheel Height

Posted by FRC79 at 01/18/2009 02:11:56 pm

1. Must the tread of the rover wheels always be in contact with the ground or would a device that raises or lowers 1 or more rover wheels be permissible per <R06>, assuming that the motion does not cause a significant change in the height of the robot chassis, bumper or trailer hitch.

2. If this is permissible, may this device function by pivoting about an external point if the rotation is limited to a few degrees, and in such a manner that the wheel's primary axis of rotation (the only one that causes motion) remains parallel to the ground and through the wheel hub at all times. The motion would be slow as to not cause impact forces that would alter the traction characteristics of the robot as a whole, but merely change which wheel the majority of the robot's weight is resting on.

Re: Dynamic Wheel Height

Posted by GDC at 01/19/2009 12:35:09 pm

There are no rules that would prevent this.

General Robot Design

Bumper Colors

Bumper Colors

Posted by FRC696 at 01/18/2009 06:45:43 pm

The squares of colors provided in the 2009 FRC kit of parts are the exact same as the material we have for our team colors, this is the material we are planning to use on our bumpers.

Will we be allowed to use these colors on our bumpers?

Re: Bumper Colors

Posted by GDC at 01/19/2009 03:19:48 pm

With 1700 teams involved in the competition this year, we could not find a color combination for the vision target that would not conflict with some percentage of the teams. We would strongly recommend that you consider an alternate color scheme for your ROBOT. If your ROBOT has large areas that are the same color as the vision targets, it is likely that you will confuse the vision systems of both your opponents and alliance partners. If this is determined to be the case, this will be considered to be a violation of Rule <R02-C> (particularly if you are knowingly using the exact color as the vision targets), and the situation will have to be corrected before the ROBOT will be allowed back on the field.

General Robot Design

Trailer Attachment

Trailer Attachment

Posted by FRC423 at 01/18/2009 11:06:22 pm

Can the Trailer Spacer be mounted interior to the 'Bumper Perimeter Polygon' as long as rules



R08 and R18 and Update 2, are met ?

Re: Trailer Attachment

Posted by GDC at 01/18/2009 11:31:44 pm

No. Please refer to Rule <R18>, as amended in Team Update #1. The Trailer Hitch must be mounted on the BUMPER PERIMETER.

General Robot Design

Coefficient of Friction test

Coefficient of Friction test

Posted by FRC2028 at 01/19/2009 04:19:25 pm

See the video on this Chief Delphi link.

[url]http://www.chiefdelphi.com/forums/showthread.php?p=803814#post803814[/url]

We tested the wheel and flooring coefficients of friction by dragging the platform with the fixed wheels. We don't find a difference in the inline and transverse dynamic values. Since the flooring is random orientation of the gel coated pebble finish, and the wheels appear to be injection molded and thus would have no orientation to the "grain" of the wheels, how are the inline and transverse coefficients different?

Re: Coefficient of Friction test

Posted by GDC at 01/22/2009 04:36:11 pm

Please see Team Update 6.

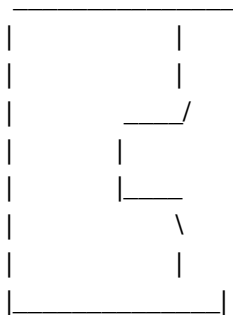
General Robot Design

Trailer Attachment followup question

Trailer Attachment followup question

Posted by FRC423 at 01/19/2009 07:12:57 pm

Is this bumper perimeter polygon legal ?



Re: Trailer Attachment followup question

Posted by GDC at 01/22/2009 03:07:10 pm

The purpose of the Q&A is to provide clarification on specific rules. The forum cannot be used to review specific designs, as that function is accomplished at each event. Teams are required to examine the rules and design their systems to comply with the rules.

General Robot Design



Frame

Frame

Posted by FRC2343 at 01/20/2009 05:17:46 pm

We were wondering how low we can put the frame to the ground so that we could lower our center of gravity? The rules say that the bumpers have to be any inch off the the ground, same for frame?

Re: Frame

Posted by GDC at 01/22/2009 06:16:54 pm

There are no explicit rules about the height of a Robot's frame.

General Robot Design

Green LEDs part II

Green LEDs part II

Posted by FRC885 at 01/20/2009 07:06:21 pm

"Depending on the particular implementation of the proposed display, it may or may not interfere with other ROBOTS. If it is determined that it does cause interference, then this will be considered a violation of Rule <R02> and potentially Rule <S01>."

The above is the GDC's answer to our question regarding the use of green LEDs that would outline our team number in a flashing mode on our robot. I appreciate your answer but it is neither testable nor measurable and therefore not much guidance.

<R02.C> States: "Any devices or decorations specifically intended to jam or interfere with the remote sensing capabilities (including vision systems, acoustic range finders, sonars, infra-red proximity detectors, etc.) of another robot (i.e. changing ROBOT color to confuse opponent's vision system)". We have no intention of causing interference but rather providing an opportunity for the kids on the team to work with LEDs and have something to draw attention to our robot. Who and how will "...determined that it does cause interference..." or that "...it may or may not interfere with other ROBOTS..." be judged? I am sure you understand that we have limited resources and don't want to implement the flashing green LED number sign only to have it rejected at the competition by some unknown criteria. Either outlaw it or allow it. TNX for your efforts.

Re: Green LEDs part II

Posted by GDC at 01/22/2009 03:15:09 pm

You are asking for a definitive answer regarding a specific implementation that has never been fully described, seen, reviewed, or inspected. We cannot do that. We have provided best guidance possible, given the circumstances. If you are still unable to determine if your implementation would be in violation of the rules or not, you should probably consider leaving the system off, and finding another means to draw attention to your robot.

General Robot Design

Trailer Hitch Swivel

Trailer Hitch Swivel

Posted by FRC2484 at 01/21/2009 11:37:44 am

Does each team need to fabricate a trailer hitch swivel and trailer hitch pin, or are those two things to be provided at the competition? Team Drawing GE-09036 is unclear about whether



the trailer swivel drawing is just for reference, or if the swivel needs to be fabricated by the team.

Re: Trailer Hitch Swivel

Posted by GDC at 01/22/2009 06:39:10 pm

Please refer to Rule <R18-C> and Rule <R18-D>.

General Robot Design

Wheel contact

Wheel contact

Posted by FRC1865 at 01/22/2009 03:57:41 pm

Can we have a non-driven wheel in contact with the floor in this year's project, for the sole purpose of determining actual speed and distance for the robot?

Re: Wheel contact

Posted by GDC at 01/26/2009 10:29:48 am

This has been previously addressed in [URL="http://forums.usfirst.org/showthread.php?t=11201"]this Q&A thread[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=11265"]this Q&A thread[/URL].

Wheels used as sensors must be used only as sensors. Acceptable sensors will gather information, but not affect the tractive performance of the ROBOT. They will produce only resistive traction, be direction independent, and be invariant during the entire MATCH. The intent of the rule is to insure that all robots derive traction only from their ROVER WHEELS.

For example, if a computer-mouse-like pair of orthogonally-mounted wheels lightly contact the Regolith and are used to sense the robot's movement without providing comparative traction advantage, that is in the spirit of the rule. The TEAM must be prepared to provide test data verifying that the maximum sensor traction is not more than 5% of the maximum traction of the ROBOT (acceptable validation methods would include test data logging total drawbar pull both with and without the sensor in place). 5% is intended to signal that "lightly contact" means "lightly contact."

General Robot Design

<R06> and ball collection

<R06> and ball collection

Posted by FRC467 at 01/22/2009 06:22:44 pm

Our team is looking at using a horizontal roller to help collect moon rocks from the playing field. During the collection process, the roller will pass over the moon rock slightly compressing the ball between the roller and the floor. Would the momentary very very slight increase in traction as the roller goes over the ball be a violation of <R06>?

Thanks!

Re: <R06> and ball collection

Posted by GDC at 01/26/2009 10:39:01 am

No.



General Robot Design

height requirement

height requirement

Posted by FRC2156 at 01/23/2009 05:28:54 pm

if the robot is 60" tall, but a basket tips over and it extends over the 60" limit, say 65" would we be penalized?

Re: height requirement

Posted by GDC at 01/26/2009 10:39:31 am

Yes.

General Robot Design

Floor Mat Material

Floor Mat Material

Posted by FRC1002 at 01/26/2009 06:12:40 pm

G05 states that "All points and corners that would be commonly expected to contact a GAME PIECE should have a minimum radius of 0.125 inches to avoid becoming a snag/puncture hazard. All edges that would be commonly expected to contact a GAME PIECE should have a minimum radius of 0.030 inches."

Team 1002 was wondering about using the Office floor mat material to aid in the manipulation of the orbit balls. The 'nubs' of the mat have a diameter of .092" and come to a point diameter .083". We were unsure if this would be legal under G05, as long as it is in compliance with G30 and does not cause any damage to the balls, even under maximum loads.

--

Thanks

FRC Team 1002

Re: Floor Mat Material

Posted by GDC at 01/29/2009 10:54:58 pm

The 0.083" point diameter of the material is less than the required 0.125" radius for points of material in contact with the GAME PIECES. Therefore, it would not be permitted.

General Robot Design

Trailer hitch

Trailer hitch

Posted by FRC1322 at 01/26/2009 08:51:14 pm

We built the trailer according to the team drawings and were able to make the trailer turn very sharp. We then looked at the competition trailer hitch and it is different. We found that if we turn it more than 35 degrees the 1 inch square tube will fit inside the robot hitch if perfectly centered but during use it will not be centered at times and will hit the robot hitch assembly.

If the competition trailer hitch hits the robot hitch when turning will this be in violation of <R18> E or is this considered normal trailer robot hitch interaction?

Re: Trailer hitch



Posted by GDC at 02/05/2009 03:47:32 pm

Please see Team Update 9.

General Robot Design

Extra Wheels for Sensors

Extra Wheels for Sensors

Posted by FRC2081 at 01/27/2009 09:58:48 pm

It was said that "dummy" wheels could be added for sensing purposes if they didn't provide traction. Would an FTC wheel (2.75" dia Wheel [url]http://www.vexrobotics.com/vex-motion-products.shtml[url]) be defined as giving the robot more friction?

Clarification on unpowered wheels

Posted by FRC401 at 01/28/2009 07:34:40 pm

We have seen in other posts that an unpowered wheel in a caster configuration, used to measure velocity and direction, would be allowed, where an unpowered normal wheel that might provide sideways traction would not be allowed. We were hoping to use an omnidirectional wheel to gather data (not in a caster configuration) in place of a caster, and wondering whether this would be acceptable.

Re: Extra Wheels for Sensors

Posted by GDC at 01/29/2009 11:09:28 pm

It depends on if the wheel is free-rolling and free-swiveling (in the case of a caster configuration, or if it is completely free-rolling (in the case of an omni-wheel). If it is, then it may be used as an information-gathering device (e.g. odometry sensor). If it is not, then it would be considered a violation of Rule <R06>.

General Robot Design

Rover wheels for uses other than traction?

Rover wheels for uses other than traction?

Posted by FRC1717 at 01/28/2009 07:32:41 pm

Are we allowed to modify a rover wheel and use it for transportation of balls in a way that will not provide traction for the robot or come into contact with the playing field, or is it the intention of the rules that moon wheels only be used to drive the robots and nothing else?

Re: Rover wheels for uses other than traction?

Posted by GDC at 01/29/2009 11:14:27 pm

As long as the modified wheel does not make contact with the floor, and therefore does not provide any traction for the ROBOT, this would be permitted.

General Robot Design

Wheel Tread Cracks

Wheel Tread Cracks

Posted by FRC1458 at 01/28/2009 11:15:31 pm

One of our rover wheels rolled off the table and there is a crack all the way across the wheel. Can we use this wheel still?

Re: Wheel Tread Cracks



Posted by GDC at 01/29/2009 10:57:44 pm

A damaged wheel in which the tread is fractured would not be allowed under Rule <R06>. It must be replaced before the competition.

General Robot Design

Brushes on Ball Collectors

Brushes on Ball Collectors

Posted by FRC1540 at 01/30/2009 04:39:04 pm

We're planning on using a collection of zip tie ends (not the end with the ratchet) to make a rotating "brush" in the front of our robot. Others are using rotating brushes of other materials to collect balls. That seemed fine to us since the balls would not be damaged by such devices. However, upon seeing the ruling [\[url\]http://forums.usfirst.org/showthread.php?t=11618\[/url\]](http://forums.usfirst.org/showthread.php?t=11618) some clarification is in order.

Would zip tie ends which have been rounded off to a radius equal to or greater than 0.125 meet rule R05?

How about brushes (like a push broom) with bristles smaller than 0.125?

Re: Brushes on Ball Collectors

Posted by GDC at 02/02/2009 09:40:17 am

As indicated in [\[URL="http://forums.usfirst.org/showthread.php?t=11054"\]](http://forums.usfirst.org/showthread.php?t=11054)this Q&A thread^[/URL], Rule <R05> would be applied to the an brush construction, not the individual bristles. As such, as long as the brush was not so stiff that it would cause damage to the GAME PIECES, it is unlikely to cause a conflict with Rule <R05>.

General Robot Design

Entanglement via Music Wire

Entanglement via Music Wire

Posted by FRC263 at 01/30/2009 06:21:02 pm

We would like to carry moon rocks and cells in a large basket on our robot.

The frame of the basket will be of 1x1 square tubing welded together.

To contain the balls within the frame, we intend to create a mesh of stainless steel music wire held taught by machine screws at each end.

The question is: how does rule R07 affect our plan?

I am assuming that "four square inches in cross section" will necessitate our wire grid to be less than 2x2.

Will we have problems at inspection?

Should we take another approach?

Thanks for your response.



Re: Entanglement via Music Wire

Posted by GDC at 02/02/2009 09:38:01 am

We cannot provide evaluations of specific designs which we have not seen. Determination of whether a ROBOT element forms an entanglement hazard will depend on the construction methods and materials, and the likelihood of the subsystem's ability to interact with other ROBOTS.

General Robot Design

Caster wheels

Caster wheels

Posted by FRC2048 at 02/04/2009 05:19:59 pm

Are we aloud to use caster wheels with material like the wheels provided in the kit of parts? It does not have any traction, and is the same exact material.

Re: Caster wheels

Posted by GDC at 02/05/2009 03:24:45 pm

Yes, provided they satisfy all the previously-stated restrictions on acceptable caster wheel configurations and properties.

General Robot Design

Color LED(s) on robot.

Color LED(s) on robot.

Posted by FRC1640 at 02/05/2009 07:15:03 pm

Are there any color LEDs that can not be used on the robot to give drivers sighting information when the front can not be seen?

Re: Color LED(s) on robot.

Posted by GDC at 02/09/2009 08:11:50 pm

LEDs that are excessively bright, are confusing to the ROBOT cameras, that interfere with the vision of TEAM members, or cause any type of safety hazard are prohibited.

General Robot Design

Robot Clearance

Robot Clearance

Posted by FRC614 at 02/06/2009 03:36:01 pm

Is there a minimum clearance between the robot's chassis and the Lunacy surface? We know the bumpers need to be at least one inch above the Lunacy surface, but haven't found any rule about the robot itself. Thanks for any information you can provide.

Re: Robot Clearance

Posted by GDC at 02/09/2009 08:28:29 pm

The rules do not establish a minimum height of the ROBOT, other that the requirement that the BUMPERS remain within the BUMPER ZONE.

General Robot Design

Modifying the width of the rover wheel



Modifying the width of the rover wheel

Posted by FRC1197 at 02/09/2009 03:01:10 pm

Currently, our drive train does not allow for the unmodified width of the KOP ROVER WHEEL. To fit the wheels into our drive train, we necessitate shearing the ROVER WHEELS by 1-2mm on each side (the long dimension not making contact with the ground, not the dimension of the tread).

Rule <R06> states that "alterations to the wheel profile ... [is] prohibited," but also states that "The intent of the rule is that the ROVER WHEELS be used in as close to their "out of the box" condition as possible, to provide the intended low-friction dynamic performance during the game." The modifications should not violate the intent of the rule, and may even put the robot at a disadvantage.

Is this modification okay?

Re: Modifying the width of the rover wheel

Posted by GDC at 02/12/2009 03:15:27 pm

No. That would be a violation of Rule <R06> ("The surface tread of the ROVER WHEELS may not be modified except through normal wear-and-tear.").

General Robot Design

Extension into bumper zone

Extension into bumper zone

Posted by FRC135 at 02/10/2009 09:37:20 pm

Can our camera be mounted to the outside frame of the robot and protrude 1 inch into the bumper zone? The bumper will still be the first thing to strike the wall or another robot in the event of a collision.

Re: Extension into bumper zone

Posted by GDC at 02/12/2009 03:22:20 pm

No. Please read Rule <R16>.

General Robot Design

Power usage of "decorations"

Power usage of "decorations";

Posted by FRC3070 at 02/11/2009 01:14:10 am

Is it acceptable to use an LCD screen as a decoration, with power provided by the main power distribution board, and sufficient voltage regulator circuits used?

Re: Power usage of "decorations";

Posted by GDC at 02/12/2009 03:42:09 pm

As long as the decoration does not violate Rule <R02>, Rule <R19>, Rule <R49>, or Rule <R69>, then this would be acceptable.

General Robot Design

Game Piece Visibility

Game Piece Visibility

Posted by FRC1717 at 02/11/2009 01:50:04 am



Must the game pieces within a robot be visible from the outside of the robot during a match?

Re: Game Piece Visibility

Posted by GDC at 02/12/2009 03:42:58 pm

There is no rule that would require this.

General Robot Design

Possible Breach of Rules

Possible Breach of Rules

Posted by FRC2980 at 02/12/2009 03:02:39 pm

If it is physically possible for a robot to break the rules, but it never does, will the part of the robot physically capable be disqualified/robot be penalized?

Example: We have an arm on the front/top of our robot. It is possible for the arm to extend out of the bumper zone, but it never will because of software lockouts. Is the arm legal?

Re: Possible Breach of Rules

Posted by GDC at 02/14/2009 07:58:28 am

Just having a ROBOT element that is capable of exceeding the Rule <R11> volume constraints is not a violation of the rule. It is not a violation unless the volume constraint is actually exceeded during a MATCH (Rule <G16>).

General Robot Design

flag holder

flag holder

Posted by FRC1158 at 02/12/2009 10:43:37 pm

Do we need a flag holder this year and where did I find the specifics if we do need one?

Re: flag holder

Posted by GDC at 02/14/2009 07:52:33 am

There is no requirement for a flag holder.

General Robot Design

Robot Paint Color

Robot Paint Color

Posted by FRC3098 at 02/13/2009 12:15:17 pm

Our team colors are green and black, and since the targets are pink and green, we were wondering what shade of green is acceptable to use due to <R02-C>.

1. If the color is significantly different than the material/color provided in the KOP, would this be allowed? Is there a specific color range we must stay away from?
2. What if the color is only use for detail, not the main color, would this be allowed?
3. Could green lights be used?

Re: Robot Paint Color

Posted by GDC at 02/14/2009 08:00:58 am



Rule <R02> is quite explicit about purposefully confusing another team's robot vision system. Be very careful not to violate that rule especially since the robot you confuse may be your alliance partner. Please see [URL="http://forums.usfirst.org/showthread.php?t=11423"]this Q&A forum response[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=10930"]this Q&A forum response[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=11628&highlight=color"]this Q&A forum response[/URL] for more information on this topic.

General Robot Design

second robot?

second robot?

Posted by FRC1073 at 02/13/2009 07:11:16 pm

We had heard about, and thought we saw in the manual, rules pertaining to a second robot. We thought that we were allowed to build a second robot, identical to the one we will ship, for the purposes of writing code and allowing our drivers to practice. However, we can't find that rule any longer, and were hoping you could clarify whether it exists (and if so, what - exactly - it is).

Thanks :)

- 1073

Re: second robot?

Posted by GDC at 02/16/2009 07:52:23 am

There are not, and there have not been, any rules specifically regarding second (practice) ROBOTS.

Budget Constraints

Budget Constraints

Globe Motor

Globe Motor

Posted by FRC2783 at 02/10/2009 03:40:57 pm

We have received globe motors from another team and need to enter them into our BOM. We have used the web address in section 10 to try to obtain information on globe motors, but the businesses listed have not been able to identify the exact part to give us a price. What should we record for a price on the BOM?

Re: Globe Motor

Posted by GDC at 02/12/2009 03:12:28 pm

If the motors are being used as direct one-to-one replacements for the Globe motors supplied in your 2009 Kit Of Parts, then you may mark them as "KOP" on the Bill Of Materials for your ROBOT. If the motors are being used in addition to the ones supplied in your 2009 Kit Of Parts, then this is a violation of Rule <R52>.

Budget Constraints

Bom

Bom



Posted by FRC2783 at 02/10/2009 03:46:04 pm

Another FRC team donated a few sheet metal parts to us. The material cost was \$10, the parts were made by a FRC student (labor time was 1 hour, or less). Do we need to record labor fees? If so, how do we calculate them?

Re: Bom

Posted by GDC at 02/12/2009 03:18:54 pm

This situation is very similar to the first example in Section 8.3.3.1-D of The Manual. If the student is not a member of your team (and since a student cannot be on more than one team, this must be the case), then this would be considered donated labor. The value for the labor must be determined (via comparison with local labor rates, standard trade rate estimates, fabrication cost estimates by a local sheet metal shop, etc.) and included in the cost accounting for the robot.

Budget Constraints

Withholding Allowance - COTS parts

Withholding Allowance - COTS parts

Posted by FRC2973 at 02/11/2009 08:37:40 am

If a COTS part is put into an assembly and then disassembled to it's original state, is it a COTS part and not included in the weight budget for withholding or is it considered an altered part?

Example 1) If we keep the kit gearboxes and then disassemble the parts for reassembly at the competition, does the wear on the parts make them altered?

Example 2) If we keep the distribution panel and then remove all the connections and breakers, does the wear on the connecting surfaces from insertion make it altered?

Example 3) If we solder connections to the FP motor tabs and then de-solder to remove it, is the motor considered altered?

Re: Withholding Allowance - COTS parts

Posted by GDC at 02/13/2009 12:10:55 am

The intent behind Rule <R35> is that it applies to true "Commercial, Off-The-Shelf" items. The definition of COTS items provided in Section 8.2 identifies them as items in their "unaltered, unmodified state." If, upon inspection by a reasonably astute individual, the item has been modified, altered, used, or abused, then it no longer satisfies the definition or the intent.

Here is a simple litmus test: if you were purchasing the item with your own money, and it was presented by the vendor as "brand new," would you accept it and pay for it as a "new" item or identify it as a "used" item (and ask for a discount)?

Budget Constraints

Re: Bom

Re: Bom

Posted by FRC2505 at 02/13/2009 02:39:48 am

[url]http://forums.usfirst.org/showthread.php?t=11896[/url]



[quote]The value for the labor must be determined (via comparison with local labor rates, standard trade rate estimates, fabrication cost estimates by a local sheet metal shop, etc.) and included in the cost accounting for the robot.[/quote]When you pay a shop to build something, you're probably paying for their skill and experience, and possibly their tools and production capacity. You can't generally expect the same quality from a student, and therefore you should not usually expect to pay them the same rate as a tradesperson. If this is a task that can be completed by an unskilled student, why shouldn't the rate be the local minimum wage (for example)?

If, in this case, shop rates are required instead of unskilled rates, how would you expect a team to know that the "estimated normal cost of the labor" is related to what an uninvolved business would charge for services that were actually provided by a student, working for free or for minimum wage?

Or was that response an example of one possible legal way, among others, to determine the value of fabrication services?

Re: Bom

Posted by GDC at 02/14/2009 07:58:54 am

The value of the labor associated with the fabrication of an externally-provided part, donated or purchased, must be established and accounted for by the team. The value of the labor is dependent upon a large number of factors - time required to fabricate, special tooling/equipment required, special knowledge/skills required, prevailing local rates, special conditions, labor availability, overhead rates, competitive factors, etc. We cannot provide a single universal answer for how this value is determined. That is left to the teams, based on local experiences and abilities.

Fabrication Schedule

Fabrication Schedule

Withholding Allowance

Withholding Allowance

Posted by FRC839 at 01/09/2009 08:14:30 am

The rule as quoted from the manual is here:

"<R26> [rule narrative edited out for brevity]"

Ok, so I'm having a little trouble getting my puny head and little brain power around the Withholding Allowance. (Maybe it's just not enough coffee yet.)

If I can build a base that weighs under 40 pounds, including the new control system, I can ship every thing else and keep my drive base home??

I don't think this is the intent, but it would be legal??

<R26> Withholding Interpretation, keeping of subsystems

Posted by FRC1501 at 01/10/2009 11:18:19 pm

We want to make sure we interpret R26 very carefully. We understand clearly the intent of R26 is to allow time with the new controls (thank-you), however we interpret "subsystems" in this



manner:

If our drive base "subsystem" which includes "fabricated" frame assembly, motors, wheels, and transmissions, along with the entire robot electrical system is less than 40 LBS, which meet the WITHHOLDING rules of <R36>.....

Are we allowed to keep the entire drive base, motors, wheels, transmissions and robot electrical system and bring it with us to our competition?

Re: Withholding Allowance

Posted by GDC at 01/11/2009 10:55:40 pm

Under the Withholding Allowance, the TEAM may bring up to 40 pounds of ROBOT materials to the competition event. These materials may be any combination of FABRICATED ITEMS and ROBOT parts withheld from shipping. This can be any part or subsystem of the ROBOT - including a drive base - as long as it does not exceed the permitted incoming weight allowance specified in Rule <R36>.

Fabrication Schedule

Shipping Robot Control System

Shipping Robot Control System

Posted by FRC1053 at 01/09/2009 01:51:15 pm

On page 17, section 8, <R26>, it states that the robot control system can be withheld from shipping. Am I reading this correctly or is it only the operator console that can be withheld?

Re: Shipping Robot Control System

Posted by GDC at 01/12/2009 12:07:23 pm

As explained in Rule <R26>, one of the intents of the WITHHOLDING ALLOWANCE is to permit teams to retain their control systems after the ROBOT is shipped and continue the development of the ROBOT software.

We are unable to determine if you are reading Section 8 of The Manual correctly or not. Because that would immediately call into question whether you were reading this explanation of why we can't determine if you are reading The Manual correctly or not, correctly or not.

Fabrication Schedule

Operator Console Shipment

Operator Console Shipment

Posted by FRC2484 at 02/06/2009 12:06:57 pm

Does the operator console (User control board, joysticks, etc) need to be shipped with the robot, or can that be brought by the team to the competition. Our team wants to build a "case" for the operator board after the six weeks. Is this legal?

Thanks

Re: Operator Console Shipment

Posted by GDC at 02/09/2009 02:03:34 pm

To ensure that your team stays within the WITHHOLDING ALLOWANCE rules, review the manual carefully.



Fabrication Schedule

Shipping Bumpers

Shipping Bumpers

Posted by FRC2783 at 02/10/2009 03:43:08 pm

Do robot bumpers have to be shipped in the crate? If not, do they count towards the 40lb withholding allowance?

Re: Shipping Bumpers

Posted by GDC at 02/12/2009 03:17:53 pm

The BUMPERS should be shipped in the crate with the ROBOT. If they are not shipped in the crate then they must be brought to the competition as part of the WITHHOLDING ALLOWANCE.

Fabrication Schedule

Withholding Allowance - Batteries

Withholding Allowance - Batteries

Posted by FRC178 at 02/16/2009 08:45:29 pm

The withholding allowance allows:

"Teams may bring a maximum of 40 pounds of custom FABRICATED ITEMS (SPARE PARTS, REPLACEMENT PARTS, and UPGRADE PARTS, plus all WITHHOLDING ALLOWANCE items) to each competition event to be used to repair and/or upgrade their ROBOT at the competition site."

Since batteries are not FABRICATED ITEMS, can we bring 40 lbs of FABRICATED ITEMS and spare batteries to the competition?

Basically, is the weight of batteries (if we choose to bring them with us instead of shipping them) included in the 40 lbs of the Withholding Allowance?

Re: Withholding Allowance - Batteries

Posted by GDC at 02/17/2009 10:16:40 pm

Additional batteries do not need to be considered part of the WITHHOLDING ALLOWANCE. You may bring as many spare batteries as you like to the competition events, as long as they are in compliance with Rule <R38>.

Fabrication Schedule

R36 Clarification - What counts for 40lbs

R36 Clarification - What counts for 40lbs

Posted by FRC177 at 02/17/2009 10:19:06 am

I am trying to ensure that any and all of the items I bring to an event comply with R36. There are some items which we are not clear whether they count toward our 40 lbs or not. The question is the same for all 8 of these items. Does this item count toward the 40 lbs allowed to be carried into an event by R36?

1) Unmodified KOP item which is commercially available



- 2) Unmodified KOP item which is not commercially available
- 3) Unmodified KOP item which is bolted to a COTS
- 4) 2 or more COTS items assembly with no modifications (eg. COTS gear on COTS shaft, COTS gearbox 1 bolted to COTS gearbox 2)
- 5) Tapped rover wheels
- 6) Tapped rover wheels assemble to an unmodified COTS part (eg. Sprocket)
- 7) Roller chain cut to a given length
- 8) KOP motors with connectors attached (no modifications to shaft, gearbox, etc.)

Re: R36 Clarification - What counts for 40lbs

Posted by GDC at 02/17/2009 10:18:37 pm

Unmodified COTS items that have not be altered (i.e. are still in their "out of the box" condition) may be brought to the events in unlimited amounts, under Rule <R35>.

COTS items that have been assembled, attached, connected, or wired to each other in any way form a MECHANISM, and are considered FABRICATED ITEMS. All FABRICATED ITEMS brought to the competition events must fit within the WITHHOLDING ALLOWANCE.

COTS items that have been altered from their "out of the box" condition (e.g. drilled, tapped, cut, painted, welded, bent, mangled, machined, coated, heat treated, manufactured, flattened, folded, spindled or mutilated) are, by definition, FABRICATED ITEMS. All FABRICATED ITEMS brought to the competition events must fit within the WITHHOLDING ALLOWANCE.

With these considerations, the cases mentioned would be:

- 1) KOP & COTS
- 2) KOP
- 3) FABRICATED ITEM
- 4) FABRICATED ITEM
- 5) FABRICATED ITEM
- 6) FABRICATED ITEM
- 7) FABRICATED ITEM
- 8) FABRICATED ITEM

Material Utilization & Parts Use Flowchart

Material Utilization & Parts Use Flowchart

Use of gyroscopes

Use of gyroscopes

Posted by FRC57 at 01/07/2009 09:55:59 pm

Since gyroscopes may be useful for generating turning moments and holding course, teams may want to use them. I assume that they should follow common sense safety rules and shield the high speed spinning parts with sturdy material. Beyond this, are there any specific restrictions on flywheels or gyroscopes on robots, such as size or rotational velocity?

Re: Use of gyroscopes

Posted by GDC at 01/12/2009 05:15:08 pm

Within the limits of safety issues, there are no specific rules that would prevent the use of



gyroscopes on your ROBOTS.

Material Utilization & Parts Use Flowchart

Fans for propulsion

Fans for propulsion

Posted by FRC2185 at 01/07/2009 11:39:08 pm

If we wish can we use fans to propel us while still being supported by the frc rover wheels and still driving with the cim and tough boxes?

Also can we exceed the height restrictions but not the size(width and length) restrictions during the game?

Fans

Posted by FRC2081 at 01/08/2009 12:10:48 am

Are fans allowed to be used as a means of propulsion if it is not facing down?

Fan-powered propulsion

Posted by FRC449 at 01/09/2009 04:03:30 pm

Would we be allowed to use a standard enclosed commercial fan with a [I]FIRST[I] kit motor to propel the robot?

Re: Fans for propulsion

Posted by GDC at 01/12/2009 10:37:59 pm

There are no rules that would prohibit the use of fans for purely propulsive purposes (i.e. not altering the traction characteristics of the ROBOT). Note however, that any fans must be powered by motors provided in the Kit Of Parts, or be one of the fans provided in the Kit.

Material Utilization & Parts Use Flowchart

Lead-free solder

Lead-free solder

Posted by FRC386 at 01/08/2009 04:53:57 pm

Is lead-free solder required when building the robot? We note that the Safety Manual mentions the "NEW" requirement to use lead-free solder "at the event." The competition, however, is silent on the subject. Are all soldered joints going to be tested for the presence of lead? Additional discussion on the subject might be useful. Re-soldering a lead-containing joint, or example, can be very messy and difficult. The old solder must be completely removed and the required heat when using the lead-free stuff is significantly higher.

Re: Lead-free solder

Posted by GDC at 01/12/2009 10:47:48 pm

No, it is not a required item for all soldered joints. Note that teams are urged to use their best engineering judgement and take all appropriate precautions whenever using any hazardous materials while in their home fabrication facilities.

Material Utilization & Parts Use Flowchart

Use of COTS fans

Use of COTS fans

Posted by FRC2220 at 01/09/2009 12:39:38 pm



Would an unmodified commercial-off-the-shelf (COTS) Automotive Fan be an allowable COTS component, or would it be disallowed because it has a "Non-KOP" motor integral to it?

Re: Use of COTS fans

Posted by GDC at 01/12/2009 10:55:22 pm

An unmodified automotive fan (hub and fan blades) would be a permitted COTS item, presuming it did not violate any other rules (in particular, Rule <R02> and <S01>). A fan/motor assembly would not be permitted, as it would be a violation of Rule <R52>.

Material Utilization & Parts Use Flowchart

Are Omni Wheels permitted?

Are Omni Wheels permitted?

Posted by FRC1091 at 01/09/2009 08:09:17 pm

Team 1091 just wants to make sure that omni wheels, that provide no traction for the robot are allowed to be used on the robot.

Re: Are Omni Wheels permitted?

Posted by GDC at 01/12/2009 12:09:23 pm

There is no rule that specifically prohibits omni-wheels on the robot. However the permissibility of their use is dependent upon the particular implementation of the omni-wheel mounting and use.

Material Utilization & Parts Use Flowchart

Velcro?

Velcro?

Posted by FRC1157 at 01/14/2009 11:07:20 am

Is Velcro allowed as a means of picking up the balls? I couldn't find mention of it in the manual...

Re: Velcro?

Posted by GDC at 01/18/2009 11:08:31 pm

By design, velcro is a mechanical fastener, which as a result requires that a surface provide attachment points for the velcro to adhere to. While not explicitly prohibited, extensive testing is urged to make sure that in fact the game pieces are not damaged by velcro.

Material Utilization & Parts Use Flowchart

Material Utilization and Parts Use Flowchart

Material Utilization and Parts Use Flowchart

Posted by FRC1261 at 01/18/2009 05:33:18 pm

We are looking for clarification on the use of an electric wrap spring clutch. This is a device that utilizes an electric magnet to attract a control ring that is used to wrap a spring onto a hub. This device is not a solenoid. There is no moving shaft or actuator. By definition a solenoid converts energy to linear motion by a coil enclosing a movable iron slug. In this device, there is no movement, no movement into a 'locking' position. If the device is overpowered by force, it slips and/or breaks.



In our mind, it passes through the flow chart as an 'allowable' part. We are looking for further clarification. In past years, electric magnets were allowed as long as there was no EMF that would cause interference to other controls and robots.

[url]http://www.reell.com/index.php?page=how-reell-electric-wrap-spring-clutches-work[/url]

Re: Material Utilization and Parts Use Flowchart

Posted by GDC at 01/19/2009 02:07:28 pm

The device is an electric solenoid, which is explicitly prohibited by Rule <R52-B>.

Material Utilization & Parts Use Flowchart

Pneumatic Tubing

Pneumatic Tubing

Posted by FRC2048 at 01/19/2009 02:19:05 pm

Are we aloud to use different color pneumatics tubing, ordered from freelin-wade.com with everything else the same as the one provided in the kit except the color.

Re: Pneumatic Tubing

Posted by GDC at 01/22/2009 06:38:06 pm

Please refer to Rule <R71-E>.

Material Utilization & Parts Use Flowchart

Material Utilization and Parts Use Flowchart

Material Utilization and Parts Use Flowchart

Posted by FRC1261 at 01/19/2009 10:51:42 pm

This is a follow up to our thread:

[url]http://forums.usfirst.org/showthread.php?t=11421[/url]

What is the official First definition of an 'electric solenoid'?

According to all our research and industry standards an 'electric solenoid' is a coil of wire that when energize with electricity, a linear motion is created to a iron or steel 'slug' causing a mechanical 'action'. Examples are electric solenoid valves, exactly what the pneumatic valves are that First provides in the KOP that utilize a coil to cause a metal shaft to move producing the mechanical effect of controlling airflow. An electric solenoid when energize causes a metal pin to move to mechanical 'lock' pieces together. A hard disk drive uses an electric solenoid that when energized, moves a metal frame holding the 'head'. An eletric magnetic field is produced with the design to cause MOVEMENT, linear motion, mechanical movement to produce an effect.

This device consists of an electric coil that is as close as possible to what is called a 'control ring'. When the coil



is electrically energized, there is no motion, no linear motion, no mechanical motion. There is no pin that is moved to 'LOCK' any pieces together. This device consists of no moving parts.

An example of an electric clutch that when energized, causes a MOTION of a pin to cause a mechanical movement to lock two pieces together would be the use of an electric solenoid.

We are not looking for 'loopholes', but an industry standard definition.

Re: Material Utilization and Parts Use Flowchart

Posted by GDC at 01/22/2009 04:46:24 pm

Rule <R52> expressly prohibits electric solenoid actuators. A clutch requires some form of actuation, or movement. An electromagnetic clutch includes an electric solenoid actuator.

Material Utilization & Parts Use Flowchart

C Channel for Trailer Hitch

C Channel for Trailer Hitch

Posted by FRC176 at 01/20/2009 03:23:07 pm

Can we use last year's kit bot C channel for the trailer hitch?

Re: C Channel for Trailer Hitch

Posted by GDC at 01/22/2009 06:48:18 pm

No. Rule <R18> specifies "TEAMS must use a Trailer Hitch constructed from materials provided in the 2009 Kit Of Parts." Elements from the 2008 Kit Of Parts cannot be used.

Material Utilization & Parts Use Flowchart

velcro on conveyer belt...

velcro on conveyer belt...

Posted by FRC271 at 01/20/2009 04:59:47 pm

Can we use sandpaper belt/roller in the construction of the collector mechanism if it tests out to not damage the field pieces ?

velcro on conveyer belt...

Posted by FRC2185 at 01/21/2009 12:52:08 pm

Is velcro on the conveyor belt a means of damaging the balls?

Would this violate the rules?

Thanks,

Team 2185

Re: velcro on conveyer belt...

Posted by GDC at 01/22/2009 06:30:31 pm

No rules expressly prohibit the use of sandpaper or velcro. Damage to GAME PIECES is a violation of <G30>.



Material Utilization & Parts Use Flowchart

Duct Tape Allowed?

Duct Tape Allowed?

Posted by FRC467 at 01/20/2009 07:03:14 pm

Is duct tape allowed on the robot, in either decorative or non-decorative use? The Duct Tape Bandits are anxious to know.

Thanks.

Re: Duct Tape Allowed?

Posted by GDC at 01/22/2009 04:50:16 pm

Yes.

Material Utilization & Parts Use Flowchart

Use of mercury in components

Use of mercury in components

Posted by FRC2826 at 01/20/2009 11:28:06 pm

Our team has found a rotary electrical coupling (slip ring) that contains 0.07 grams of mercury as an electrical conductor. The unit is sealed and has no easy way of getting the mercury out without taking a hammer to it. <R02> list many specific "do not's" but mercury does not necessarily fall into any listed category. Can you let us know if this scenario would be permitted?

Re: Use of mercury in components

Posted by GDC at 01/22/2009 06:46:19 pm

Yes, as long as the device is maintained in it's sealed, unmodified condition.

Material Utilization & Parts Use Flowchart

Question about chassis

Question about chassis

Posted by FRC2368 at 01/21/2009 08:34:19 pm

We would like to use the kit bot chassis from last year due to some mounting features. Due to some of the wording in this years rules we are not sure if this is leagle. The individual parts are still available to all teams through IFI's web site and that is a requirement. But some of the other wording makes it iffy. Could someone clairfy.

Team 2368

Re: Question about chassis

Posted by GDC at 01/22/2009 03:21:11 pm

Please refer to Rule <R32-B>. The 2008 kit-bot chassis was custom-made for the 2008 FRC competition. Re-use of any custom parts from your 2008 ROBOT is prohibited for the 2009 competition.

However, COTS items are permitted (so, a new frame purchased as a COTS item would be legal).



Material Utilization & Parts Use Flowchart

BaneBots 56mm Gearbox

BaneBots 56mm Gearbox

Posted by FRC1477 at 01/23/2009 09:53:51 am

Are the BaneBots 56 mm gearboxes (GP-56012), same as used in the 2007 KoP, allowed this year? They are in closeout on the BaneBots web site.

Thank you,
Team 1477

Allowed gearbox

Posted by FRC1889 at 01/25/2009 11:57:21 am

Hi,

We'd like to use some banebots P56 gearboxes, which are the same as those apparently supplied in the 2007 KOP. We would buy these new at this time. But Banebots says they're a closeout item ("We recently found a few boxes of these - take advantage of our find with a great low closeout price.")

Under the definition of VENDOR, sub-section E states:

"[I]E. The VENDOR makes their products available to all FIRST Robotics Competition teams. VENDORS must not limit supply or make a product available to just a limited number of FIRST Robotics Competition teams.[/I]"

Would these be allowed because they were used before, or are they considered limited supply by this definition? Theoretically, everything is in limited supply as nothing is infinitely available, and Banebots does make it available to all teams still, so I'm not clear on what the delineation is.

Thanks.

Re: BaneBots 56mm Gearbox

Posted by GDC at 01/26/2009 10:59:23 am

The Banebots P56 gearboxes were custom-made products supplied for the 2007 Kit Of Parts. As such, they are prohibited from use in the 2009 competition by Rule <R32-B>. However, Banebots P56-HC gearboxes, which are improved versions of the model supplied in the 2007 Kit, are available COTS items and may be used.

Material Utilization & Parts Use Flowchart

RE: Question about chassis

RE: Question about chassis

Posted by FRC1743 at 01/23/2009 01:23:47 pm

This question is in response to this thread:
[url]http://forums.usfirst.org/showthread.php?t=11519[/url]

According to a contact at Innovation First, the kitbot chassis that came in the 2008 KOP is identical to the kit currently sold by the company, thus satisfying all relevant rules for COTS



part usage (assuming that it is still in mint condition). Can you please specify which components were custom to the 2008 KOP? Since IFI sells the kitbot components individually, I suspect that there must be something in that box that is still legal for use. Thank you for your guidance.

On legality of IFI Kitbot

Posted by FRC1618 at 01/25/2009 03:33:25 pm

This thread (<http://forums.usfirst.org/showthread.php?t=11519>) indicates that the IFI Kitbot chassis is not legal under <R32-B>. As I understand their site, item KITBOT from Innovation First, Inc. (who presumably meets all requirements of a VENDOR) is still commercially available for anybody (you, me, NASA, Uncle Bubba's Robot Shop) to purchase and use in a multitude of configurations.

This brings up two questions:

- a) Would a team that purchased a KITBOT from Innovation First after the 2009 FRC Kickoff be able to use it?
- b) Would a team that stored away a KITBOT from a past season (or passed one out of charity) be able to raid the closet for it, provided that the COMPONENTS used are still considered COTS?

Re: Question about chassis

Posted by GDC at 01/26/2009 01:57:24 pm

The 2008 kit-bot chassis was custom-made for the 2008 FRC competition by Innovation First, Inc. That IFI now sells the chassis as a COTS item does not change the status of the 2008 chassis elements provided as part of the 2008 Kit Of Parts. COTS items recovered from a previous ROBOT can only be used if all three conditions listed in Rule <R32> are satisfied. A 2008 kit-bot chassis does not satisfy item <R32-B>, and would therefore be a prohibited item. Note however, that a current chassis element similar in form/function, obtained as a purely COTS purchase (i.e. not re-used from a previous ROBOT) would be permitted under Rule <R31>.

Material Utilization & Parts Use Flowchart

Further <R32> Clarifications

Further <R32> Clarifications

Posted by FRC57 at 01/26/2009 05:04:51 pm

A few more clarifications on the recent questions concerning the IFI KITBOT chassis and <R32>. Specifically, <R32> as written only pertains to COTS ITEMS from previous ROBOTS entered in a FIRST competition, and COTS ITEMS no longer commercially available. I presume the KITBOT chassis is covered under ITEMS from previous ROBOTS, as it is obviously still commercially available. So I would like to know which of the following would be legal:

1. A 2008 KITBOT chassis, from the 2008 KoP, that was never used on a ROBOT entered in a FIRST competition.
2. A 2008 KITBOT chassis, purchased in addition to the 2008 KoP chassis, that WAS used on



a ROBOT.

3. A 2008 KITBOT chassis, purchased in addition to the 2008 KoP chassis, that was never used on a ROBOT.

Finally, if #3 is illegal, what would be the specific cut off date for purchase of a KITBOT chassis that would make it legal? That is, given that the KITBOT has been continuously available for purchase since the 2008 Kickoff, when did it lose the status of "custom made for FIRST"?

Re: Further &R32& Clarifications

Posted by GDC at 01/29/2009 11:06:31 pm

1: Use of this item would be prohibited by Rule <R32>.

2 and 3: Use of the item would be permitted by Rule <R32>, as long as the item is still in an unmodified "out of the box" condition, or modified only after the 2009 Kickoff (otherwise, it becomes a FABRICATED ITEM, and prohibited under Rule <R33>).

This rule is part of an attempt to level the figurative playing field between veteran and rookie teams. Veteran teams could have an ample stock of custom materials from previous kits. Rookie teams do not, and would thus have to purchase the materials. The institution of Rule <R32> aims to remove one of the many advantages inherent in veteran teams.

Material Utilization & Parts Use Flowchart

Withholding allowance

Withholding allowance

Posted by FRC696 at 02/07/2009 04:00:30 pm

According to section 8-The Robot under WITHHOLDING ALLOWANCE, A limited amount of FABRICATED ITEMS that are permitted to be withheld from the ROBOT shipping requirements (specified in Section 4.10 and Rule <R25>)

Rule <R25> states (... with the exception of the items covered by the WITHHOLDING ALLOWANCE)

section 4.1 is

4.1. OVERVIEW

This section provides information regarding crate specifications, shipping and associated requirements, the drayage system, and an introduction to the FedEx® donation. Please make sure

those persons responsible for building and shipping your team's crate(s) understand and follow the guidelines for these processes.

Can you please list our WITHHOLDING ALLOWANCE, or give us the URL of where we can find the list?

Re: Withholding allowance

Posted by GDC at 02/09/2009 08:23:39 pm

There is no pre-defined set of items that may be withheld. Each team decides which items, if



any, are to be retained under the WITHHOLDING ALLOWANCE, based on their needs.

Material Utilization & Parts Use Flowchart

What distinction between R35 and R36?

What distinction between R35 and R36?

Posted by FRC2743 at 02/08/2009 11:52:26 pm

Background: We have 4 weeks from ship date to competition, and would like to build a _____ second drive base to practice driving and working on control systems as seems to be the intent of R36 during this time.

Please elaborate on the spirit and intent of R35 (unlimited COTS for upgrade) vs R36 (40lb withholding allowance for Fabbed items) regarding the following concept:

- strip the robot of many expensive but easily installed COTS items before shipment and use them on practice bot.
- bring all those COTS items under R35 plus upto 40lbs additional R36 items to reassemble the robot at competition.

The examples provided in R24 are very helpful. I would find it helpful if your elaboration include similar example to the following:

Q1: Rover wheels are a COTS item, so we can ship our Robot without wheels, and bring the wheels under R35, right?

Q2: Does installing KOP sprockets, bearings, spacers, screws onto Rover wheels make them a FABRICATED mechanism, therefore ineligible for R35, unless re-disassembled?

Q3: The CRio, each 9201 & 9403 module, each analog bumper, each DB37 cable, each Jaguar, each Spike, etc from the KOP is a COTS (or exact KOPS replacement item for itself), so R35 applies to them in unassembled form, but not in assembled form, right?

Q4: An unassembled Toughbox in its original shipping pouch would presumably be a R35 COTS item. Would it still be R35 COTS if it was assembled per std drawings?

Re: What distinction between R35 and R36?

Posted by GDC at 02/09/2009 08:13:22 pm

- 1: Yes
- 2: Yes
- 3: Yes
- 4: Yes

Material Utilization & Parts Use Flowchart

Tape

Tape

Posted by FRC135 at 02/13/2009 08:04:26 pm

Is it legal to use a 1 inch wide piece of masking tape to cover sharp edges on lexan? we have almost cut ourselves a few times, and would like to prevent any such event from happening in the future.



Re: Tape

Posted by GDC at 02/16/2009 01:40:36 pm

Yes, you can use tape. However, a more appropriate (and more robust) treatment for this problem might be to remove the sharp edges from the lexan with a file or sanding belt. Otherwise, you run the risk of violating Rule <R05>.

Material Utilization & Parts Use Flowchart

Duct tape

Duct tape

Posted by FRC1001 at 02/14/2009 01:19:34 pm

We did not find the usual prohibition on using tape on the robot. Are we allowed to use duct tape to attach elements of the robot this year?

Re: Duct tape

Posted by GDC at 02/16/2009 07:56:27 am

There is no prohibition against the use of tape this year, as long as it is used in compliance with all other robot rules. Note that the unlimited use of tape is being permitted as an experiment. We are anxious to see if tapes can/will be used in an aesthetically and structurally appropriate manner, without having myriad robots "held together with duct tape and baling wire" appear at the competitions. Please consider the use of tape carefully, so that the return of tape restrictions will not be necessary.

Power Distribution

Power Distribution

Battery

Battery

Posted by FRC1302 at 01/13/2009 07:15:35 pm

Is it legal to design a system that allows the battery to move with respect to the robot?

Re: Battery

Posted by GDC at 01/15/2009 03:06:20 am

There is nothing in the rules that would prohibit this.

Power Distribution

low-amp fuses

low-amp fuses

Posted by FRC246 at 01/17/2009 04:41:53 pm

According to the manual, we are supplying up to 20A to the pneumatics breakout (<R46>E), but in previous years the spikes limited the load on the solenoids to 5A. Is there an internal fuse or do we need to get 5A fuses and wire them ourselves?

Thanks for the help,
Team 246

Re: low-amp fuses

Posted by GDC at 01/18/2009 11:20:11 pm

No additional fusing is required.



Power Distribution

Power Distribution Questions

Power Distribution Questions

Posted by FRC2505 at 01/19/2009 03:08:57 pm

We have some questions about power distribution:[list=1]

[*]<R42> says that red and black wire must be used for primary power connections, but <R47> allows other colours for branch wiring. Is there a reason for the different colour conventions? Will the rules be updated to harmonize the conventions?

[*]Can we use non-kit Anderson connector leads for the battery and the robot? (AndyMark sells something like this.) What if we use wires with greater thickness, length and/or flexibility? (Also, shouldn't figure 8-6 say "6 AWG (or Larger) Wire", to match <R42F>?) Can we use Anderson connectors that can carry more current than the KOP versions?

[/list]

Re: Power Distribution Questions

Posted by GDC at 01/22/2009 06:50:47 pm

1: Rule <R42> and Rule <R47> are not in conflict with each other. They will remain as written.

2: No. Rule <R42-A> is specific. Teams must use the Anderson connectors to connect the battery to the power system of the ROBOT.

Power Distribution

Re: Power Distribution Questions

Re: Power Distribution Questions

Posted by FRC2505 at 01/23/2009 01:37:44 am

[url]http://forums.usfirst.org/showthread.php?t=11447[/url]

[quote=<R42A>]The battery must be connected to the ROBOT power system through the use of the Anderson Power Products (APP) connector.[/quote]

Question 2 in the original post has several parts. Are you answering no to all of them? <R42A> is not specific enough to answer our question, because it just talks about "the" APP connector.

To understand exactly what is meant by the rule, we've rephrased this into seven points:[list=a][*]Can we use Anderson Power Products connectors from a non-kit source (e.g. a vendor) to connect the battery to the robot?

[*]If yes to a: can these APP connectors be different than the ones in the kit? (Anderson produces many [url=http://www.andersonpower.com/files.php?file=DS-SB50(2).pdf]versions of the SB50[/url], as well as [url=http://www.andersonpower.com/products/]other types of connectors[/url]. Consider these when answering.)

[*]If yes to b: are we limited to APP connectors that can carry equal or greater current than the KOP versions? (Why?)[*]When the rules refer to the "connector", does that include the wiring attached to it? (See <R42E> for an example.)[*]Is it legal to replace the wire on the connector with a larger gauge? (If yes to d: this would be a non-kit connector. If no to d: we believe <R42F> permits this.)[*]Is it legal to replace the wire on the connector with a longer length [u]on the robot side[/u]? (If yes to d: this would be a non-kit connector.)[*]Is it legal to replace



the wire on the connector with wire of the same gauge and length, but different properties (e.g. flexibility)? (If yes to d: this would be a non-kit connector.)[/list]

As a guideline, after reading your answer, it should be clear whether or not the APP SB175 or APP PowerMod HP are legal for this purpose, when attached to 12 inches of 4 gauge car audio wire on the battery side and 20 inches on the robot side. It should also be clear which parts of the rules, if any, are being violated by that configuration.

Re: Power Distribution Questions

Posted by GDC at 01/26/2009 10:35:25 am

A: Anderson Power Products connectors obtained from other sources may be used if and only if they are the same make and model as the ones supplied in the 2009 Kit Of Parts.

B: No.

C: n/a

D: The definition of "the connector" is context dependent.

E: Yes, you may use wire of the same or larger gauge.

F: Yes, as long as it is wire of the same or larger gauge.

G: Yes.

Power Distribution

Use of Switches

Use of Switches

Posted by FRC2199 at 01/28/2009 11:29:58 am

Is it legal to put switches in circuits from the Power Distribution Board powering control system components on the robot?

For example, we would like to put a switch in the power line to the wireless bridge so that we can easily turn it off while it is not being used when the robot is tethered.

There seems to be no rule preventing this, but we would like to be sure. One concern we have could be with <R43>, but switches do not alter power pathways but rather simply add a gate to them per se. The other is with <R42>, which prohibits electrical loads other than those specifically designated from drawing power from certain ports on the Power Distribution Board. We think that this will not be a problem either, since switches do not draw power themselves.

It may seem like we have answered our own question, but we would just like to be sure that FIRST agrees with our interpretations of <R43> and <R42> as they could relate to switches.

Thank you!

Re: Use of Switches

Posted by GDC at 01/29/2009 11:02:29 pm

No, this would not be permitted. As you noted, this would be a violation of Rule <R44>.

Power Distribution

Power Distribution Sys. SEC. 3

Power Distribution Sys. SEC. 3

Posted by FRC1137 at 01/31/2009 10:47:00 am



Ref. Component Datasheet, Rev 0.5 page 13 of 38.

Rules state use of 20, 30, & 40 amp breakers only on the Power Distribution Power.

Our concern is using a 20amp breakers (Rule R46C) with a 22AWG wire feeding power to the Digital Sidecar.

The above mentioned reference, shows "a 5A breaker is acceptable here". We have searched with no success for a 5A circuit breaker.

Re: Power Distribution Sys. SEC. 3

Posted by GDC at 02/02/2009 09:39:47 am

Rule <R46-C> requires that Digital Sidecar circuits be protected by a 20-amp breaker. Rule <R45-C> requires the use of 18 AWG wire (or larger) on all 20-amp circuits. Using a 5-amp breaker or 22 AWG wire to supply the Digital Sidecar would be violations of these rules.

Please note that the competition manual is the ultimate authority for the game rules. Other documentation, including the control system documentation, are meant as supplements to the manual and do not supersede it.

Power Distribution

Circuit Breakers

Circuit Breakers

Posted by FRC1071 at 01/31/2009 01:16:03 pm

I have read through the Robot Rules and I cannot find a rule that shows what circuit breaker size is for what motor. I know CIM motors need 40amp breakers. Do all other motors use 30amp breakers exclusively? Can some use 20amp breakers (and therefor smaller wire)? What is the determining factor when matching a motor to its appropriate breaker size?

Re: Circuit Breakers

Posted by GDC at 02/02/2009 09:38:22 am

Each motor must be protected by a circuit that is appropriate for the current that it is likely to draw. There is not a rule stating the specific level of protection required for each type of motor. Whether the motor needs a 20-, 30- or 40-amp circuit (with associated protection and wire sizing) will be determined by your design.

Power Distribution

Inspection of Circuit Breakers

Inspection of Circuit Breakers

Posted by FRC1776 at 02/06/2009 02:27:42 pm

I am probably overthinking this, but I'm asking anyway. Thank you for your patience.

Historically, the 120A circuit breaker needed to be placed in an immediately accessible position for safety reasons, while other circuit breakers could be located in an enclosed area providing they were able to be made accessible for inspection without too much difficulty. For example, our design in 2008 had the assorted power distribution panels and so forth inside a box which could easily be opened to make the breakers accessible for inspection, but which was zip tied shut during competition to keep debris out, with the 120A breaker on the outside of the box for easy access.



In the rules this year, I see that <R42-G> calls for all breakers to be accessible for inspection, which the previous example or similar designs would accommodate (although the geometry would have to change significantly due to the new control system).

On the other hand, the inspection checklist indicates "all breakers (120A main breaker and all PD breakers) must be readily accessible", which I am interpreting to mean that a design such as the one above in which the 20-40A breakers are not immediately reachable in full playing configuration would not pass inspection.

Am I misinterpreting the checklist, is it incorrect, or do we need to adjust this year's design to permit full access to the breakers on the PDB in addition to the already accessible 120A breaker? If we need to make changes, I'd appreciate a bit of explanation of the thinking behind this to make sure we accommodate your intent.

Re: Inspection of Circuit Breakers

Posted by GDC at 02/09/2009 08:45:14 pm

Rule <R42-G> specifies that all breakers must be accessible for inspection. There are no rules regarding accessibility during a match. The checklist will be updated.

Power Distribution

Power Distribution Board Malfunction

Power Distribution Board Malfunction

Posted by FRC8 at 02/17/2009 10:53:37 am

This morning, we discovered that our 5 volt Vdc supply terminal for the camera supplied in the 2009 KOP stopped working. The LED on the board remains off at all times, and there is no voltage difference across the terminals. It was working properly the previous day.

<R43-C> states that "the camera power feed must be connected to the 5 volt Vdc supply terminal". In consideration of the last-minute failure of our 5 volt Vdc supply, may we attach the camera to a 5 volt regulator connected to a 20 amp breaker on the power distribution board?

Due to our turreted design and advanced aiming algorithms, the camera is vital to the success of our robot. Would this be allowed? If not, what other solutions might we pursue?

Re: Power Distribution Board Malfunction

Posted by GDC at 02/17/2009 10:17:45 pm

The camera power feed must be connected in a manner consistent with Rule <R43>. The Power Distribution Board must be either repaired or replaced.

Motors & Actuators

Motors & Actuators

Globe Motor modifications

Globe Motor modifications

Posted by FRC1477 at 01/09/2009 11:37:42 pm

Globe motors were allowed to be detached from their transmissions last year. This year, <R53> only allows for the modification of Fisher-Price motors. Are globe motor modifications illegal this year?

Team 1477



Motors & Transmissions

Posted by FRC1720 at 01/10/2009 02:57:18 pm

Can the transmissions on the globe motor be modified?

Normally, no modifications can be made to the motors. In the case of the Globe motor, the transmission is pinned to the motor and may be considered integral to the motor.

Is a modification to the Globe transmission legal?

In general, are the transmission considered part of the motor, other than with the "Fisher Price" motor as described in the rules?

Re: Globe Motor modifications

Posted by GDC at 01/12/2009 11:36:33 pm

Please refer Rule <53-B> as amended in Team Update #3.

Motors & Actuators

Motors allowed if not used as a motor

Motors allowed if not used as a motor

Posted by FRC63 at 01/12/2009 07:35:56 pm

Are we allowed to modify a CIM motor such that it cannot be used as a motor anymore? If we can modify the motors, can we use the modified motors in addition to 4 CIMs on the robot? (4 unmodified CIMs, and additional modified versions not used as a motor) We would modify the motors by either removing the armature entirely, or modifying the armature so that it would not function as a motor anymore. If we cannot modify/use additional CIM motors, would we be allowed to do the same modifications to another motor that isn't a CIM or in the Kit of Parts?

Thank you

Re: Motors allowed if not used as a motor

Posted by GDC at 01/15/2009 02:59:29 am

Rule <R53> is quite clear - the provided motors cannot be modified in any way, other than within the explicitly described exceptions. If a Kit motor is modified, whether it is used afterwards as a motor or not, it will be considered a violation of Rule <R53>. Any additional motors, whether modified or not, are expressly prohibited by Rule <R52>.

Motors & Actuators

Allowable Motors

Allowable Motors

Posted by FRC1730 at 01/14/2009 09:06:37 pm

When originally reading the rules, the team thought that additional BaneBot 545 motors were allowed. In re-reading the rules, we can only find <R50> and <R51> allowances. We would like to use a total of 8 BaneBot 545 motors, which would be 6 motors than provided in the KoP. Is this allowable?

Re: Allowable Motors

Posted by GDC at 01/15/2009 03:02:32 am

No. Rule <R52A> prohibits additional motors to those provided in the Kit Of Parts. The only



exceptions are those described in Rule <R51>.

Motors & Actuators

Clarification on motors not used as motors

Clarification on motors not used as motors

Posted by FRC57 at 01/15/2009 10:43:39 am

In a recent Q&A, the GDC stated that it is illegal to modify motors or use additional motors, even if they are no longer used as motors (ie. do not conduct electricity). The ruling seemed to be based on the logic that anything called a motor must be a motor, or possibly that anything potentially usable as a motor is a motor. This seems at odds with the parts usage flowchart and common sense. In short, is a "motor" defined according to the conventional name applied to it in the retail market, by its mere potential to be used as a motor, or by its actual use as an electrical actuator on a robot? Some counter-intuitive examples follow:

1. The parts usage flowchart first asks if a part is designed to conduct electricity, THEN asks if it is a motor. If a motor is no longer designed or intended to conduct electricity, the flow chart would indicate it is legal, but the ruling declare it is not.
2. DC generators can be back-fed and used to generate torque, but are not commonly called motors, actuators, or servos. If the ruling is based solely on the naming of an item, these could be powered from a speed controller <R66B> and used to actuate a device on the robot.
3. DC tachometer generators are useful sensors that could be used as motors, are fundamentally identical to motors, but aren't used as such. If the ruling is based on potential, DC tachs are illegal.
4. Two bearings connected by a common conductive shaft can be used as an inefficient, but spectacular, motor. Again, a ruling based on potential makes supported metal shafts illegal.

In short, the parts usage flow chart and common sense seem to indicate a motor should be defined by its actual use as an electrically conductive actuator on a robot.

Re: Clarification on motors not used as motors

Posted by GDC at 01/15/2009 04:44:25 pm

We never let common sense stand in the way of convoluted logic.

The Parts Use Flowchart is intended as an aide to work through some of the basics of parts/materials selection. It is not intended to replace or override any of the rules defined in Section 8 of The Manual. In every case, if there is a perceived conflict between the written Rule and the Parts Use Flowchart, the written Rule takes precedence.

Rule <R50> and Rule <R51> are very clear. They specifically list the motors that are allowed for use on a ROBOT entered in the 2009 FIRST Robotics Competition. If a motor is not explicitly permitted by those rules then it is not allowed, whether it is powered or used as a motor or not (even if it has lipstick).

Motors & Actuators



Fisher Price motors

Fisher Price motors

Posted by FRC935 at 01/15/2009 03:45:38 pm

Where can more fisher Price motors be purchased?

Re: Fisher Price motors

Posted by GDC at 01/18/2009 11:18:35 pm

Information about where to get additional kit parts is posted in the [I]Where to get more[/I] document posted [URL="http://www.usfirst.org/community/frc/content.aspx?id=452"]here[/URL]. Currently, we do not have confirmation on the source for the Fisher Price motor, but once confirmation is received, the [I]Where to get more[/I] document will be updated.

Motors & Actuators

Banebots Gear Motors Acceptable?

Banebots Gear Motors Acceptable?

Posted by FRC2930 at 01/16/2009 01:20:12 pm

Maybe a dumb question, but trying to clarify the motor use rules. Since the kit contains two RS545 motors, is it allowable to use a Banebots RS545 gearmotor (gbox and motor sold as one) as long as we only use two on the robot? Or are we required to use the exact two motors we received in the KOP?

Re: Banebots Gear Motors Acceptable?

Posted by GDC at 01/19/2009 02:43:22 pm

You are allowed to use COTS motors as direct one-to-one replacements for Kit Of Parts motors, as long as they are the EXACT same vendor and model as the supplied motors. Please see Rule <R51>, as amended in Team Update #5.

Motors & Actuators

Continuous Rotation Servos

Continuous Rotation Servos

Posted by FRC1717 at 01/16/2009 11:44:44 pm

Is it allowable to use continuous rotation servos that still fall within the speed and torque requirements set forth by R51 part B of The Robot?

Re: Continuous Rotation Servos

Posted by GDC at 01/18/2009 10:33:43 pm

Yes, that is permitted.

Motors & Actuators

Modification to Window Motors

Modification to Window Motors

Posted by FRC2158 at 01/18/2009 12:29:53 pm

Rule <R53>A states: [QUOTE]The mounting brackets and/or output shaft/interface of the motors may be modified to facilitate the physical connection of the motor to the ROBOT and actuated part.[/QUOTE]



Would it be legal to drill a hole on the back side of either of the window motors, and through the output shaft in order to connect a potentiometer? Our thinking was that it would be legal because it would be a modification to the output shaft/interface, and does not alter the available power from the motor.

Re: Modification to Window Motors

Posted by GDC at 01/19/2009 12:32:36 pm

Drilling a hole in the output shaft of the window motor would be permitted by Rule <R53-A>. Drilling a hole in the motor casing is prohibited.

Motors & Actuators

<R53> Equivalence of Motors

<R53> Equivalence of Motors

Posted by FRC2505 at 01/19/2009 03:13:07 pm

Can the gears on the Fisher-Price 00968-9015 motors be removed and/or replaced? Can the 00968-9015 Fisher-Price motors from 2008 (with 19 teeth instead of 16) be used this year? (We think this is justified by <R53>, and the fact that Fisher-Price uses more than one size of gear on the 00968-9015 motors.)

Re: <R53> Equivalence of Motors

Posted by GDC at 01/22/2009 06:49:34 pm

The gear on the output shaft of the motors may be replaced (Rule <R53-A>). The Fisher-Price motor supplied in the 2008 FRC Kit Of Parts is the same vendor/part number as the one supplied in 2009. Only the attached output gear is different. You may use the 2008 Kit Of Parts Fisher-Price motor as a direct replacement for a 2009 Fisher-Price motor.

Motors & Actuators

<R50> and previous years CIMs

<R50> and previous years CIMs

Posted by FRC2175 at 01/22/2009 12:28:40 am

As written <R50> would appear to limit using 2.5" CIM motors used on previous robots to being used for spares only.

Can CIM motors, up to 2, (with the correct PN as specified by R51) be retrieved from previous competition robots and used on a 2009 robot provided that the total number of CIM motors used on the robot is 4 or less?

Re: <R50> and previous years CIMs

Posted by GDC at 01/22/2009 06:25:10 pm

If the CIM motors scavenged from a previous-year ROBOT are of the identical part number, identical configuration, unaltered, unmodified, and still in "out of the box" condition, then they may be used as the 1 or 2 additional CIM motors permitted under Rule <R51>.

Motors & Actuators

P60 Gearbox with 550 motor

P60 Gearbox with 550 motor

Posted by FRC2165 at 01/22/2009 11:52:06 am

Is a P60 gearbox (64:1) with a 550 motor legal this year?



Re: P60 Gearbox with 550 motor
Posted by GDC at 01/22/2009 04:51:20 pm
No. Please refer to Rule <R52>.

Motors & Actuators

Servo Gearbox

Servo Gearbox

Posted by FRC296 at 01/28/2009 11:37:32 am

Our team would like to use a COTS servo gearbox similar to:

[url]http://servocity.com/html/spg645_pan.html[/url]

with one of the legal (HITEC HS-475HB) servos.

This requires modifying the servo feedback potentiometer to utilize the external pot (but this does not change servo power), and we would like to know if this is permitted before continuing with our design.

Thank you,

J.Charlton
Head Mentor
Team 296
Montreal, Quebec

Re: Servo Gearbox

Posted by GDC at 01/29/2009 11:01:52 pm

No, this would not be permitted. Servos may not be modified. This would be a violation of Rule <R53>.

Motors & Actuators

Banebots GP-56012-HC

Banebots GP-56012-HC

Posted by FRC1415 at 01/29/2009 04:23:16 pm

I found a forum where the GP-56012 was illegal but the GP-56012-HC is legal so is this correct?

Thank You

Re: Banebots GP-56012-HC

Posted by GDC at 02/02/2009 09:42:49 am

Please refer [URL="http://forums.usfirst.org/showthread.php?t=11555"]to this thread[/URL].

Motors & Actuators

<R53> Equivalence of Keyang Motors

<R53> Equivalence of Keyang Motors

Posted by FRC2145 at 01/30/2009 08:08:39 pm

Would the Keyang window motor 1662761 from a previous years kit be considered equivalent



to the 16631023 supplied in this year's KOP?

We only plan to use one, so it would not be a discrepancy regarding the number of motors, but the 1662761 has a 9 tooth gear versus the 12 tooth gear. We think this would be okay because the nine tooth gear and the 12 tooth gear are both removable/replaceable. The 9 tooth motor is also still available as a replacement part on automotive parts sites.

Re: <R53> Equivalence of Keyang Motors

Posted by GDC at 02/02/2009 09:41:52 am

The 1662761 is not equivalent to the 16631023 and is not permitted.

Motors & Actuators

Component modifications

Component modifications

Posted by FRC1137 at 02/03/2009 05:53:55 pm

Reference: 2009 motor/gearbox assembly, 12vdc w/ 19 tooth pinion - 90015 motor, P/N 00968-2910, listed on page 14 KOP check list.

Question: Can this gear box be modified to allow an additional out shaft attached to an intermediate gear on this gear box?

Re: Component modifications

Posted by GDC at 02/05/2009 03:29:13 pm

Yes.

Motors & Actuators

Component modification #2

Component modification #2

Posted by FRC1137 at 02/03/2009 05:59:39 pm

Reference:2009 Keyang Motor, 12 tooth, P/N 16631023, listed on page 14 of KOP check list.

Question: Can the gear box on this motor be modified, such that part of the gear box casing be removed to allow use of the motor shaft, with out the gear box?

Re: Component modification #2

Posted by GDC at 02/05/2009 03:27:43 pm

No. As supplied, this gearbox is integral to the motor. Under Rule <R53>, it may not be modified.

Motors & Actuators

Motors - Transmissions

Motors - Transmissions

Posted by FRC2469 at 02/03/2009 06:40:22 pm

We have two, 2 1/2 Cim motors (part # FR801-001) from last year. <R51D> states we can use them, but rule <R50> states that motors from previous years can not be used. Is this rule talking about the motors from previous years that are no longer available to everyone?

We have 2 transmissions from last year. They are toughbox by Andy Mark they are both unmodified and available to other teams. I think I found them on his web site (Item# am-0011)



Can we use these 2 motors and 2 transmissions?

Thanks 2469

Re: Motors - Transmissions

Posted by GDC at 02/05/2009 03:37:12 pm

Rule <R50> allows the use of motors from previous robots as direct one-to-one replacements for 2009 motors (e.g. in the event of motor damage, failure, loss, missing parts, etc). Rule <R51-D> permits the use of two CIM motors in addition to the two supplied in the Kit Of Parts. The combined effect of these rules is that you may use up to two CIM motors from previous robots to "replace" the two allowed additional CIM motors.

The Andymark Toughbox transmissions are generally available transmissions that were not custom-produced for the FRC competition. As such, under Rule <R32>, it may be re-used on a 2009 robot as long as it is in the original, unmodified, "out of the box" condition.

Motors & Actuators

Using New Fisher Price motors from previous years

Using New Fisher Price motors from previous years

Posted by FRC469 at 02/05/2009 12:19:57 pm

If a team has spare brand new Johnson Fisher Price motors from last year on hand, but the motors have a slightly different part no, can they be used legally this year? The part number this year ends in 15 and last year ended in 12. Everything else seems to be identical.

Re: Using New Fisher Price motors from previous years

Posted by GDC at 02/05/2009 03:19:42 pm

Rule <R50> is explicit on this point. Only the Fisher-Price motor with part number 00968-9015 may be used.

Motors & Actuators

Number of servos on single PWM Sidecar

Number of servos on single PWM Sidecar

Posted by FRC175 at 02/07/2009 08:34:23 am

How many servos can be powered off a single PWM terminal on the Sidecar?

Re: Number of servos on single PWM Sidecar

Posted by GDC at 02/12/2009 03:44:43 pm

One device per port, and three amps total, per DSC.

Motors & Actuators

Fisher Price Motors

Fisher Price Motors

Posted by FRC894 at 02/09/2009 01:18:47 pm

This year the fisher price motor contains a 16 tooth pinion. We have recently broke our KOP motor for this year. Andymark only sells 19 tooth pinion motors. Is there an official supplier that we could get a replacement motor from?

Thanks for your help,



Team 894

Re: Fisher Price Motors

Posted by GDC at 02/12/2009 03:48:09 pm

Per the "Where to get more" document, AndyMark is the only known source for the -9015 motor.

Swapping the output pinion would be considered a modification, but it is a permitted one. It is a modification of the output shaft, which is explicitly permitted under Rule <R53>.

Motors & Actuators

Modifying Fisher Price Motor gear boxes

Modifying Fisher Price Motor gear boxes

Posted by FRC2116 at 02/10/2009 01:58:27 pm

Regarding Rule 53, Is a team allowed to modify a Fisher Price gear box for use with the Fisher Price motor to accomodate a different output shaft with a potentially faster output speed (less gear reduction)?

<R53> So that the maximum power level of every ROBOT is the same, motors and servos used on the ROBOT shall not be modified in any way, except as follows:

A. The mounting brackets and/or output shaft/interface of the motors may be modified to facilitate the physical connection of the motor to the ROBOT and actuated part.

B. The gearboxes for the Fisher-Price and Globe motors are not considered "integral" and may be separated from the motors.

Re: Modifying Fisher Price Motor gear boxes

Posted by GDC at 02/12/2009 03:13:13 pm

Yes. The gearbox with the Fisher-Price motor is not considered an integral part of the motor. You may modify the gearbox as you wish.

Motors & Actuators

COTS Transmission 00968-2911?

COTS Transmission 00968-2911?

Posted by FRC2145 at 02/12/2009 08:33:45 pm

Can the 16T output gear on the 2009 KOP FP motor, 9015, be removed and replaced with a 19t gear and used in the 00968-2911 FP transmission? Our research shows that this transmission is still available from authorized Power Wheels Service Centers, for example:
[url]http://www.householdappl.com/downloads2/service_center_only.pdf[/url]
[url]http://www.householdappliance.com/power_wheels_gearboxes.html[/url]

Thanks.

Re: COTS Transmission 00968-2911?

Posted by GDC at 02/14/2009 07:54:46 am

Yes. Changing the output pinion is a permitted modification of the output shaft of the motor



(Rule <R53>). Use of the transmission is permitted as a COTS item (Rule <R31> and Rule <R32>).

Control, Command, & Signal System

Control, Command, & Signal System

Robot color and vision target

Robot color and vision target

Posted by FRC172 at 01/07/2009 01:50:45 pm

Our team color is the identical hot pink to that on the trailer vision target. For the past 3 years we have used the same 1000-denier cordura fabric as the sample in the Kit of Parts for our bumpers and for other purposes on the robot (e.g., shielding, decoration). Our use of our team color is not "specifically intended" to interfere with anyone's vision system. Do we comply with <R02.C> by limiting the height at which we use our team color on our robot to below 59" (the lowest point of the vision target per Manual §6.4)?

Bumper Fabric

Posted by FRC1816 at 01/09/2009 10:57:26 pm

Are we allowed to use 1000 Denier Cordura Fluorescent Green Fabric (#1089) for our bumpers on our robot since this is the same color as the vision target?

Re: Robot color and vision target

Posted by GDC at 01/12/2009 05:27:15 pm

With 1700 teams involved in the competition this year, we unfortunately could not find a color combination for the vision target that would not conflict with some percentage of the established teams. We would strongly recommend that you consider an alternate color scheme for your ROBOT. If your ROBOT has large areas that are the same color as the vision targets, it is likely that you will confuse the vision systems of both your opponents and alliance partners. If this is determined to be the case, this will be considered to be a violation of Rule <R02-C> (particularly if you are knowingly using the exact color as the vision targets), and the situation will have to be corrected before the ROBOT will be allowed back on the field.

Control, Command, & Signal System

Digital Sidecar operations

Digital Sidecar operations

Posted by FRC368 at 01/07/2009 02:33:04 pm

We believe our digital sidecars are defective and were wondering how we would get replacements. Everything works okay except when we try to plug in a servo and the associated jumper. The jumper causes the whole digital sidecar to not work. For example, we had two Jaguars and two Victors plugged in and programmed to work. We turned off the machine, plugged in the servo and jumper, turned on the machine, and then all Jaguars and Victors were blinking (no signal). We turned off the machine, took out the jumper and turned it back on. Everything was fine.

It was hard for us to diagnose the problem since we didn't start using servos until this week. Is the schematic to the digital sidecar board available, or do you have any idea on the problem? Both of our digitalside cars have this problem.



Thanks.

Re: Digital Sidecar operations

Posted by GDC at 01/19/2009 01:36:57 pm

Please visit the control system forum at [\[url\]http://forums.usfirst.org/forumdisplay.php?f=743\[/url\]](http://forums.usfirst.org/forumdisplay.php?f=743). Beta teams and other control system experts are monitoring it and will be happy to help troubleshoot hardware issues.

Schematics are posted at [\[url\]http://www.usfirst.org/community/frc....aspx?id=11838\[/url\]](http://www.usfirst.org/community/frc....aspx?id=11838).

Control, Command, & Signal System

Modifying control system components <R59>

Modifying control system components &R59>

Posted by FRC330 at 01/07/2009 02:48:31 pm

<R59> covers modifying control system components. It does not mention not being able to modify the digital sidecar, the analog and solenoid breakouts, or the power distribution module. Are teams allowed to modify these items?

Re: Modifying control system components &R59>

Posted by GDC at 01/12/2009 11:02:36 pm

No, these items may not be modified. Please refer to Rule <R59>, as amended in Team Update #3.

Control, Command, & Signal System

Use of Camera

Use of Camera

Posted by FRC88 at 01/07/2009 09:02:05 pm

Is it possible to hook up the camera given with the electronics kit to the robot and use it during the matches? In other words, can our drivers use the camera through a laptop to view the match from the robots perspective?

KOP Camera Video Feed

Posted by FRC2104 at 01/11/2009 03:15:49 pm

Hello,

Is it allowed to return video images from the KOP camera to the driver station? We are considering that for manual targeting.

Thanks,

John Clayton

Team 2104

Re: Use of Camera

Posted by GDC at 01/13/2009 04:59:27 pm

It is technically possible to capture an image obtained by an on-board camera, pass it through the Mobile Device Controller, transmit it back to the Driver Station, and display it on a dashboard display. However, limitations on the data transfer rate provided by the wireless communication system may provide a practical limit on the effectiveness of the implementation.

Feedback On Laptop



2009 Q&A Forum Export

generated: 02/18/2009 11:47:56 am EST

Posted by FRC1241 at 02/12/2009 05:42:53 pm

As I have read around, I noticed that we are able to connect a laptop to our driver station, I was just wondering if we are allowed a video stream back to our laptop. And if we are what restrictions are there?

PS: We are using 160x120 resolution.

Re: Use of Camera

Posted by GDC at 02/13/2009 10:37:33 am

Please refer to the answer above, it is still applicable.

Control, Command, & Signal System

Code for controller

Code for controller

Posted by FRC123 at 01/07/2009 10:07:34 pm

In the past the controller default code and manual could get a team up and running, I am not seeing that with the new system (or am I missing something). Looking for code and documentation that has the basic functions joysticks and buttons are mapped to what pwm and relay ect.

Re: Code for controller

Posted by GDC at 01/12/2009 10:18:25 pm

Please visit the Control System Public Forum at <http://forums.usfirst.org/forumdisplay.php?f=743>. Beta test teams and other control system experts are monitoring it and are available to help.

Control, Command, & Signal System

Ribbon cable for Digital I/O module

Ribbon cable for Digital I/O module

Posted by FRC58 at 01/08/2009 09:41:46 am

Can we replace the supplied 37 pin cable from the Digital I/O module to the Digital Sidecar with a shorter ribbon cable version fabricated by the team?

Flat Ribbon Cable

Posted by FRC668 at 01/11/2009 11:42:30 pm

Would it be legal to use flat ribbon cable from the modules to the analog and pneumatic breakouts or from the cRIO to the digital sidecar.

Re: Ribbon cable for Digital I/O module

Posted by GDC at 01/12/2009 02:29:33 am

Yes, this is permitted.

Control, Command, & Signal System

<R03> Servo Synchronizers

<R03> Servo Synchronizers

Posted by FRC2505 at 01/09/2009 03:01:27 am

Are COTS servo synchronizers considered custom circuits that directly affect output devices?



These devices take a PWM input, and distribute and balance it across several outputs (and optionally, reverse it). The original PWM signals from the Sidecar would be the only input signals. This avoids consuming several PWM ports on the Sidecar.

Since the Sidecar's PWM signal and PDB's power are [b]not[/b] bypassed, we believe that this meets the intent of <R03>.

Re: <R03> Servo Synchronizers

Posted by GDC at 01/12/2009 10:44:07 pm

No, this would not be permitted. This would be a violation of Rule <R03>, Rule <R43-G>, Rule <R54-B> and Rule <R62>. Each servo must be directly connected to the PWM port on the Digital Sidecar, with no intermediate custom circuitry.

Control, Command, & Signal System

Removing unused cRIO modules...

Removing unused cRIO modules...

Posted by FRC1448 at 01/09/2009 09:14:46 am

Are teams allowed to remove unused/unwanted modules from the NI cRIO?

Re: Removing unused cRIO modules...

Posted by GDC at 01/12/2009 05:10:18 pm

Yes, this is permitted (except you cannot remove the module in Slot #1, to preserve the battery monitoring function). If you do remove unused modules from the cRIO Mobile Device Controller, we highly recommend that you use the spare port covers provided with the controller to cover the exposed connections at the bottom of the cRIO to prevent foreign debris contamination.

Control, Command, & Signal System

Camera Calibration

Camera Calibration

Posted by FRC668 at 01/09/2009 09:24:24 pm

The lighting of the arena seems to affect the camera's readings. Will there be a period where we will be allowed to go onto the field and calibrate the robot's camera?

Thanks,
Team 668

Re: Camera Calibration

Posted by GDC at 01/19/2009 12:32:07 pm

During the lunch period on each day of the competition event the field will remain open, with full competition lighting, for the purpose of ROBOT camera calibration. During this time, field access will be exclusively dedicated to this purpose - no other activities (practice driving, autonomous operation validation, etc) will be permitted.

Control, Command, & Signal System

2 Cameras on one robot

2 Cameras on one robot

Posted by FRC2669 at 01/10/2009 06:51:06 am

Is it legal to have 2 cameras on the robot, while they are both connected to the same hub,



which is connected to networking port 2 on the CRio, and we will have an automatic switch changing between them?

Thanks

Parts allowance

Posted by FRC1885 at 01/11/2009 06:40:26 pm

Hi,

Are we allowed to use an extra axis camera? Also, are we allowed to use another ethernet switch for use with the extra camera?

Thanks,

Team 1885

Re: 2 Cameras on one robot

Posted by GDC at 01/11/2009 10:14:19 pm

There is no rule that would prohibit this.

/edit/ Update: our previous answer was incorrect. This would be a violation of Rule <R67> and therefore prohibited. /edit/

Control, Command, & Signal System

Custom circuits connecting to serial port on CRIO

Custom circuits connecting to serial port on CRIO

Posted by FRC111 at 01/11/2009 03:06:41 pm

R66 and R67 as written do not allow a custom circuit to connect to the Serial Port on the CRIO. However, connecting a custom circuit to the CRIO serial port would seem to fit within the spirit of the custom circuit rules, which are that it cannot directly affect a motor output, and would make it easier to interface with serial-based sensor devices. We would like to know if R66 and R67 can be amended to include interfacing a custom circuit to the CRIO serial port.

Re: Custom circuits connecting to serial port on CRIO

Posted by GDC at 01/12/2009 05:19:38 pm

The serial port on the cRIO is not available for use with custom circuits during the 2009 FRC competition. Rule <R66> and Rule <R67> will remain as written.

Control, Command, & Signal System

Clarification of wireless hardware per Rule <R87>

Clarification of wireless hardware per Rule <R87>

Posted by FRC1619 at 01/12/2009 12:16:57 am

Rule <R87> indicates that other than the system provided by the arena, no other form of wireless communications shall be used to communicate to, from or within the operator console. Furthermore, it indicates that wireless network cards and Bluetooth devices are not permitted on the operator console. If we have a PC that has integrated wireless network and Bluetooth cards (like many laptops do), is that PC permitted to be part of the operator console? I realize that Rule <R87> seems to prevent that scenario, though that scenario seems to fall



within the spirit of what is allowed in that rule.

Re: Clarification of wireless hardware per Rule <R87>

Posted by GDC at 01/12/2009 05:07:33 pm

If a device such as a PC has integral wireless circuitry, then it may only be used if there is a method to disable (i.e. turn off) the wireless capability. The wireless capability must be disabled at all times when in the Arena.

Control, Command, & Signal System

4 robot electronics questions

4 robot electronics questions

Posted by FRC41 at 01/12/2009 03:27:18 pm

On the cRIO the second ethernet port is allocated for the camera. By reading R67 we cannot use it for anything else. Additionally we could not use the serial port on the cRIO. Also there is an I2C port on each digital sidecar. By R67 we cannot use it either. Are we not allowed to use them or is this just missing from the rules?

Is there a limit on a capacitive load we can have on a circuit?

What wire gauge is required for supplying power to the digital sidecar (DSC)? Do we default to <R45C> since the DSC is connected to a 20A breaker?

Given that the RSL pins on the DSC are current limited at 2.2 Amps, can we use a wire gauge smaller than the 18 AWG required by the wire gauge rules <R45C> for a 20 Amp breaker?

Thanks,
Team 41

Re: 4 robot electronics questions

Posted by GDC at 01/15/2009 02:58:01 am

The only devices that can be connected to the ethernet ports on the cRIO are the provided camera and wireless bridge. The serial port on the cRIO is not available for use this year. Nothing can be connected to this port.

Rule <R45> specifies minimum wire sizes for circuits used on the ROBOT, including the 20-amp circuit that supplies the Digital Sidecar.

Control, Command, & Signal System

FRC webcam

FRC webcam

Posted by FRC2399 at 01/12/2009 03:35:19 pm

Page 16 of the manual "Using the FRC Framework" describes using a dashboard VI that includes viewing image data from the remote webcam. There is a note that says:

"You can send image data to the host computer only during development, not during the FRC competition."



This surprises me. Is this an actual rule? (It is not contained in the formal FRC rules, only buried in this NI manual).

If we cannot send raw images to an operator station, can we send processed images? Is there a bandwidth ruling?

Re: FRC webcam

Posted by GDC at 01/19/2009 01:27:02 pm

It is technically possible to capture an image obtained by an on-board camera, pass it through the Mobile Device Controller, transmit it back to the Driver Station, and display it on a dashboard display. However, limitations on the data transfer rate provided by the wireless communication system may provide a practical limit on the effectiveness of the implementation.

Please refer to Team Update 5 for more information.

Control, Command, & Signal System

Multiple camera clarification

Multiple camera clarification

Posted by FRC111 at 01/12/2009 09:35:51 pm

In a recent Q&A thread, a question was asked: "Are we allowed to use an extra axis camera? Also, are we allowed to use another ethernet switch for use with the extra camera?" The GDC answer was: "There is no rule that would prohibit this." Our reading of the manual is that an additional camera and Ethernet switch would be Additional Electronic Devices (per the parts use flowchart) and would therefore be subject to R67, meaning that while they could technically be used, they cannot be connected to the Ethernet port on the CRIO, which would limit their usefulness. Is this understanding correct?

Also, if extra cameras are allowed, may they be powered from the 5vdc power on the PD board? R43C says that only the camera supplied in the Kit of Parts may be connected there, and no other electrical load may be connected to those terminals.

Re: Multiple camera clarification

Posted by GDC at 01/15/2009 02:41:14 am

Your post is correct - an additional camera used as described would be a violation of Rule <R67>. We have amended the previous response. Thank you!

Control, Command, & Signal System

Removing loose capacitor on digital sidecar

Removing loose capacitor on digital sidecar

Posted by FRC330 at 01/13/2009 08:52:35 pm

In the following thread on the control system forums, [url]<http://forums.usfirst.org/showthread.php?p=20637>[/url] teams are advised to remove a loose capacitor on the digital sidecar. Should this be allowed in <R59>?

Re: Removing loose capacitor on digital sidecar

Posted by GDC at 01/15/2009 05:04:26 pm

The removal of the loose component referred to in the thread is not considered a modification



and is perfectly acceptable.

Control, Command, & Signal System

R67 Clarification

R67 Clarification

Posted by FRC1771 at 01/14/2009 12:15:16 pm

[quote]<R67> All [u]outputs[/u] from [b]sensors[/b], custom circuits and additional electronics shall connect to only the

following:

- A. Other custom circuits, or
- B. Input/output ports on the Digital Sidecar, or
- C. Input/output ports on the Analog Breakout.[/quote]

The Axis camera is clearly a sensor, and according to this rule, it may [b]not[/b] be connected to the Ethernet port on the cRIO. The only other rule that mentions the camera is <R43>-C which states how the Axis Camera must receive its power.

Obviously the intent of this wording is not to prevent the use of the Axis Camera, however, it clearly does. So...

May we connect the Axis Camera to the Ethernet port?

May we connect custom circuits to the Ethernet port?

I believe it is in the spirit of FIRST and this years rules to allow advanced vision functionality such as multiple cameras, which require "custom" circuits (a switch). I also know that the intent of this rule is to provide safety and control of the robot in the face of crazy code. If I understand correctly, this Ethernet port is already firewalled to only allow connections on certain ports.

Thanks!

Re: R67 Clarification

Posted by GDC at 01/16/2009 10:15:17 pm

Please refer to Rule <R67>, as amended in Team Update #4.

Control, Command, & Signal System

Wiring the Gyro Sensor

Wiring the Gyro Sensor

Posted by FRC623 at 01/14/2009 12:17:38 pm

Neither the sensor manual nor the silk screen on the board explicitly indicates the proper wiring connections for the gyro sensor. The wiring may be inferred by following the traces on the board and having knowledge of the typical FIRST sensor pinouts, but for a rookie team the documentation should spell this information out explicitly.

Re: Wiring the Gyro Sensor

Posted by GDC at 01/19/2009 07:27:03 pm

Please submit your post, as a specific question, to the [URL="http://forums.usfirst.org/forumdisplay.php?f=743"]Control System Forum[/URL].



Control, Command, & Signal System

Legality of I2C on digital sidecar

Legality of I2C on digital sidecar

Posted by FRC190 at 01/14/2009 05:55:59 pm

Are we allowed to connect sensors and custom circuits to the I2C ports on the digital sidecar?
Rules R66 and R67 are somewhat ambiguous on this.

Re: Legality of I2C on digital sidecar

Posted by GDC at 01/15/2009 03:40:09 pm

Please see Team Update 4.

Control, Command, & Signal System

Control Panel visibility

Control Panel visibility

Posted by FRC316 at 01/15/2009 08:05:26 pm

Do the lights need to be visible during the match? Or just during inspection?

Re: Control Panel

Posted by GDC at 01/19/2009 02:02:07 pm

Rule <R58> requires that the Robot Signal Light must be visible when standing three feet in front of the ROBOT when it is in the STARTING CONFIGURATION. There is no specific rule regarding the visibility of the Robot Signal Light when the ROBOT is in a PLAYING CONFIGURATION. However, it is strongly recommended that the Robot Signal Light be mounted in a location that is easily visible at all times. The light is used for diagnostic purposes by field personnel. It is to your advantage to make sure they are always able to see the light, to assist in identifying and correcting any problems that may occur during a match.

Control, Command, & Signal System

GPIO Refresh Rate

GPIO Refresh Rate

Posted by FRC418 at 01/16/2009 04:05:23 pm

What is the refresh rate of the digital inputs on the DIO Module? Specifically, our team would like to use the kit encoders but are worried about the cRio being capable of tracking the encoder count on an axle with a high rpm.

Re: GPIO Refresh Rate

Posted by GDC at 01/18/2009 11:17:04 pm

Digital inputs are sampled at 153kHz. That means that for a quadrature encoder, which has 4 edges per "pulse", the maximum pulse rate is 38,314 pulses per second.

Control, Command, & Signal System

issues with camera pan and tilt kit...

issues with camera pan and tilt kit...

Posted by FRC2185 at 01/17/2009 02:21:29 am

Hello, i was wondering with the camera pan and tilt kit, should the servos be moving in a semi jerky fashion? like not smooth as say a motor is? That is when gimbal track is on... Also how easily should the camera detect the colors with gimbal track using the frc provided sample



code? And also once it sees the color what should the program/camera or servos be doing? Should it stop?

Thanks,

Team 2185

Re: issues with camera pan and tilt kit...

Posted by GDC at 01/19/2009 07:58:00 pm

The Q&A forum is for questions about FRC rules and their interpretation. This question is more appropriate for the [URL="http://forums.usfirst.org/forumdisplay.php?f=743"]Control System Forum[/URL]. It is being moved there for an answer.

Control, Command, & Signal System

Modified PWM Signal

Modified PWM Signal

Posted by FRC1986 at 01/19/2009 02:26:38 pm

Is it allowed to use a modified PWM signal to control an electronic pressure regulator to control pneumatics?

A low pass filter would be used to convert the 5v digital PWM signal into a 0-5v analog signal.

Re: Modified PWM Signal

Posted by GDC at 01/22/2009 06:41:00 pm

No. That would be a violation of Rule <R67>.

Control, Command, & Signal System

Dashboard Restrictions in Competition

Dashboard Restrictions in Competition

Posted by FRC418 at 01/20/2009 03:53:28 pm

Which TCP ports will the dashboard be allowed to use, and will teams have their bandwidth limited in any way? Also, must the robot communicate with the dashboard using the built-in protocol (user data, match info, raw module values transmitted), or can teams write their own protocols using TCP to communicate with the robot?

Re: Dashboard Restrictions in Competition

Posted by GDC at 01/22/2009 03:45:53 pm

Please see Team Update #5.

Control, Command, & Signal System

Programing joysticks for tank mode

Programing joysticks for tank mode

Posted by FRC2343 at 01/20/2009 05:01:40 pm

We were wondering how to program the joysticks for the tank mode? Is it a program that you install or comes with the parts.

Re: Programing joysticks for tank mode

Posted by GDC at 01/22/2009 06:32:47 pm



There is template code to get a team started for both the C/C++ and LabView programming environments. A CD with installers came in your kit of parts. Please refer to the [URL="http://www.usfirst.org/community/frc/content.aspx?id=10934"]Software Documentation[/URL] located on the FIRST website for more information.

Control, Command, & Signal System

Serial port and <R66> <R67>

Serial port and <R66> <R67>;

Posted by FRC57 at 01/23/2009 04:18:52 pm

The Labview and Windriver environments seem to have robust support for the cRIO's serial port, but Rules <R66> and <R67> do not list the cRIO serial port as one of the legal interfaces for custom circuits. So is the cRIO serial port a legal interface for custom circuits, or should we ignore these functions in the FRC Libraries provided to teams?

Re: Serial port and <R66> <R67>;

Posted by GDC at 01/26/2009 10:44:12 am

The serial port is not available for use during the competition this year. Use of this port is not permitted.

Control, Command, & Signal System

Blue Housing on Analog Module

Blue Housing on Analog Module

Posted by FRC41 at 01/23/2009 07:13:35 pm

Is the blue housing on the analog and solenoid modules considered an integral part of the module?

What if we modified these prior to January 3rd? Do they need to be replaced?

Thanks,
Team 41

Re: Blue Housing on Analog Module

Posted by GDC at 01/29/2009 10:55:39 pm

Yes, the blue housing on the analog and solenoid modules is considered an integral part of the module. Please restore the housing to its original condition as best you can.

Control, Command, & Signal System

Electronics Mounting

Electronics Mounting

Posted by FRC1415 at 01/24/2009 03:00:24 pm

Is it allowable to use velcro to mount our electronics if they are on a horizontally laying table or do we have to bolt or screw them?

Thank You

Re: Electronics Mounting

Posted by GDC at 01/26/2009 02:49:58 pm

There are no rules that prohibit the use of Velcro to attach electronics to the ROBOT.



Control, Command, & Signal System

Limit switch inputs - Jaguar controller ruling?

Limit switch inputs - Jaguar controller ruling?

Posted by FRC2220 at 01/28/2009 12:08:58 pm

Is it legal to utilize the two limit switch inputs on the Jaguar controller?
Or must teams use the digital inputs on the Digital Sidecar as they had to do last year?

Limit Switches connected to Jaguar Limit Switch inputs

Posted by FRC330 at 01/28/2009 06:20:58 pm

May the output from a limit switch be connected to the limit switch inputs on the Jaguar speed controllers as described in the Jaguar Getting Started Guide? <R66> and <R67> as written do not seem to allow this, however it is a very useful feature.

Re: Limit switch inputs - Jaguar controller ruling?

Posted by GDC at 01/29/2009 11:15:54 pm

No, the limit switch inputs on the Jaguar speed controllers are not legal for use this year. This would be a violation of Rule <R62>. The rules in the Manual supersede all other documentation.

Control, Command, & Signal System

Required control system modifications disallowed by <R58>?

Required control system modifications disallowed by <R58>?

Posted by FRC330 at 01/28/2009 06:12:29 pm

In Team Update 7, <R82.1> was added, which requires a slight modification to the Drivers Station. It would seem that for clarity, that modification should be listed as an exception to <R58>.

Furthermore, in this [[url=http://forums.usfirst.org/showthread.php?t=10621](http://forums.usfirst.org/showthread.php?t=10621)]thread[[url](#)] on the control systems forums, a FIRST engineer recommended that teams make a few modifications to the Digital Sidecar. This does not seem to be allowed by <R58>. If this really is a problem, it should probably be mentioned in a team update.

Re: Required control system modifications disallowed by <R58>?

Posted by GDC at 01/29/2009 10:58:07 pm

Please refer to Team Update 9 for the first part of your question.

Removing loose components is not considered a modification, and therefore permitted.

Control, Command, & Signal System

C++ template program

C++ template program

Posted by FRC1763 at 01/28/2009 08:49:39 pm

There seems to be a fair amount of confusion among teams as to which example C++ programs are best suited to use as a template to start programming their robot for this year's competition. Could FIRST or WPI please respond to this thread with some clarification?
[[url\]http://forums.usfirst.org/showthread.php?t=11592&referrerid=10213\[/a>\]](http://forums.usfirst.org/showthread.php?t=11592&referrerid=10213)



Thank you.

Re: C++ template program

Posted by GDC at 02/01/2009 02:49:03 pm

Please see Team Update 8.

Control, Command, & Signal System

Robot Signal light(s)

Robot Signal light(s)

Posted by FRC2116 at 02/03/2009 09:16:46 am

[b]Every year we add a signal light to the front of our robots and I am wondering if I can place two of them on our robot this year...[/b]

This year we are building our robot to resemble a certain animal (part of our team motif) and the head portion where our shooter is situated will rotate. We could place the warning light on the front like every one else [u]but we would like to place two for them on the head[/u] to resemble eyes. One of these would be visible at all times as the head rotates but I did not see anything in the rule book disallowing the use of two warning/signal lights this year.

[b][u]Can I get a ruling on this please?[/b][u]

Thank you

Jeff p

FRD team 2116

Re: Robot Signal light(s)

Posted by GDC at 02/05/2009 04:04:57 pm

The Digital Sidecar only accommodates one RSL. If you choose to have two RSLs on your robot, you must have two Digital Sidecars, with one Digital Sidecar driving each RSL.

Control, Command, & Signal System

Sidecar PWM output current

Sidecar PWM output current

Posted by FRC175 at 02/04/2009 09:17:04 am

I have been trying to determine the maximum current output for each of the Sidecar PWM terminals. I have found the following sidecar data in the Manual:

1. 6 volt, 3A Buck power supply and,
2. 15 mA output source

I am not sure if either of these are giving me the correct info I need to operate at least two Hitec 322HD servos on the same PWM output without causing overload. The specs I got from Hitec are:

a no load current of 180 mA,



idle current of 7.4 mA,
stall current of 800 mA.

I want to be sure the sidecar PWM terminal can handle more than 1.6 amps.(1600 -2000 mA)

Re: Sidecar PWM output current

Posted by GDC at 02/05/2009 11:41:45 pm

We've moved this question to the appropriate, FRC Control System Forum. Experts monitor the forum and will be able to help troubleshoot your technical issues.

Control, Command, & Signal System

Wireless Router and Bridge HELP!!!!

Wireless Router and Bridge HELP!!!!

Posted by FRC1415 at 02/04/2009 04:29:51 pm

Hello,

I followed the directions on the FIRST Control systems manual chapter 5 configuration to allow communication between the wireless-N router and the wireless-n bridge and these will still not communicate. the wireless bridge is plugged into the power distribution board and the wireless router is on the control board plugged into ethernet port one on the driver station. I can download Lab View code when I have everything connected by an ethernet cable to the cRio. The bridge is on 10.14.15.1 and the router is on 10.14.15.4. any suggestions on what might be my problem? Thank You

Re: Wireless Router and Bridge HELP!!!!

Posted by GDC at 02/05/2009 03:25:36 pm

We've moved this question to the appropriate, FRC Control System Forum. Experts monitor the forum and will be able to help troubleshoot your technical issues.

Control, Command, & Signal System

Rule <R59> and parts repair

Rule <R59> and parts repair

Posted by FRC2996 at 02/06/2009 07:41:43 pm

Our team experienced a number of Jaguar failures. Analysis showed that in some cases it was due to bad solder joints on the screw terminals. These are easily soldered to repair them. There is some concern that rule <R59>, preventing tampering, modifying, or adjusting a number of components, would prohibit fixing our broken Jaguars.

Please confirm if under rule <R59> we are permitted to "repair" failed subsystems using competent individuals experienced in these procedures.

Re: Rule <R59> and parts repair

Posted by GDC at 02/09/2009 02:25:47 pm

Yes, this would be a violation of Rule <R59>.

Faulty components should be reported to the manufacturer (in this case, [url]www.luminarymicro.com/jaguar[/url]).



Control, Command, & Signal System

Limit Switches within a circuit

Limit Switches within a circuit

Posted by FRC2996 at 02/06/2009 08:07:03 pm

The recent inspections conference call implied that it would be illegal to use limit switches in any way directly involved with a speed controller or motor, requiring that limit switch inputs be processed through the robot's programming. If the program were not working properly, the safety cutoffs may not function properly. Would it be legal, according to rule <R62>, to wire a limit switch directly into the circuit of a speed controller or motor as a safety cutoff device for that device?

Re: Limit Switches within a circuit

Posted by GDC at 02/09/2009 02:01:46 pm

No. This would be a violation of Rule <R54> and Rule <R62>.

Control, Command, & Signal System

Robot Signal Light Wire Gauge

Robot Signal Light Wire Gauge

Posted by FRC2199 at 02/07/2009 04:53:42 pm

What gauge of wire is required for running power from the Digital Sidecar to the Robot Signal Light?

The only wires that came in the Kit of Parts that mate with the RSL header on the sidecar are the 22AWG RC extension cables and the smaller 2-wire jumper cables.

Re: Robot Signal Light Wire Gauge

Posted by GDC at 02/09/2009 02:29:03 pm

22AWG wire for the Robot Signal Light is acceptable.

Control, Command, & Signal System

Painting of Jaguars

Painting of Jaguars

Posted by FRC1618 at 02/07/2009 07:00:55 pm

Suckers for aesthetics that we are, we decided to seek clarification on <R59> with regard to the Jaguar speed controllers. Can the exterior of the Jaguars be painted without running afoul of the rule?

Re: Painting of Jaguars

Posted by GDC at 02/09/2009 08:22:01 pm

No, this would be a violation of Rule <R59>.

Control, Command, & Signal System

Potentiometer use

Potentiometer use

Posted by FRC1302 at 02/07/2009 07:14:53 pm

We are using a potentiometer attached to a servo to create 0-5 volt variable output. We are using this as a control signal for an electronic regulator on the robot. Is this a legal setup?



Re: Potentiometer use

Posted by GDC at 02/09/2009 02:18:39 pm

Please refer to Section 8.3.8 and rephrase your question in relation to a specific rule if you cannot find your answer.

Control, Command, & Signal System

3 Digital input questions...

3 Digital input questions...

Posted by FRC2116 at 02/08/2009 04:08:46 am

Three questions about digital inputs...

1. Can a team connect a breakout box with passive switches to the driver station digital inputs to set which bit of autonomous code the team wants to be run during the autonomous period (and LEDs to Digital outputs for tele-operated mode)? Additionally, are the Driver Station digital inputs readable during Autonomous mode (unlike previous years)?
2. Do the digital inputs on the Digital Sidecar require external pull up or pull down resistors to guarantee a non-floating erroneous state on these inputs?
3. Does adding a break out box with switches and status LEDs to the driver station or external resistors to the digital inputs (as mentioned in questions 1 & 2) require special circuit permission from FIRST as this might qualify as "special electronics" and if so, how do we get that approval?

Thank you in advance for clarifying these points for me...

Re: 3 Digital input questions...

Posted by GDC at 02/16/2009 01:52:09 pm

1. The Driver Station only blocks joysticks/digital inputs during the Autonomous/Enable mode, otherwise the values are passed to the ROBOT. If the robot code is looking for the joysticks/digital inputs during either Autotonomous/Disable or Teleoperated/Disable, then the inputs can be seen by the ROBOT.
2. The DS inputs must be actively pulled low or high to ensure proper operation. This can be done by using a single pole, double throw switch. Tie the common center (the switched part) to the signal input and tie 5V to one side of the switch and gnd to the other side. This will allow either 5V or gnd to be connected to the digital input.

The published schematics for the DSC show 10K pullups to +5V.

3. No, special permission is not required for these sorts of custom circuits.

The DS outputs must be current limited (target less than 10mA) when driving LEDs with a resistor in series to prevent shorting out the DS power supply.

Control, Command, & Signal System

Grounding the Driver Station



Grounding the Driver Station

Posted by FRC1629 at 02/08/2009 05:50:59 pm

This question relates to <R85.1>: Grounding the Driver Station.

To facilitate easier connection to operator switches and indicators, Team 1629 had designed a custom breakout board, which plugs into the DS I/O pins and converts the 90 pins into a 24 pin ribbon cable.

Once the initial warning came out about static issues, we re-designed this board (based on the modification instruction) to incorporate a ground lug for providing a connection between the ground pins and the case.

This ground lug is then strapped to the outside of the DS case as per the standard instructions.

A recent Q&A response indicated that ONLY the method shown in the instructions was permitted.

We would like a clarification as to whether our method is in violation of the instructions.

Based on the Q & A's at the end of the document itself we understood that the instructions were minimum guidelines, and open to improvement. It was not our intention to ignore the proposed method, but to provide a more reliable and robust method. From the document.....

Q: Do I have to use a PWM Cable or RC Extension Cable?

A: No. These instructions assume that most teams have a PWM cable on hand. Just be sure to minimize the impedance between the pins and the case. We have used 0.1" IDC successfully.

Q: How do I use the analog inputs?

A: You can use the ground pins from the digital input / output. They are all common on the PCB, so your only impact will be ease of wiring. If you find a cleaner method, please share!

We feel that our method is MUCH cleaner, and unlikely to be accidentally knocked free.

Do we need to redesign and manufacture our PCB yet a third time?

Re: Grounding the Driver Station

Posted by GDC at 02/09/2009 02:07:04 pm

The solution proposed in the referenced question involved opening the Driver Station case and modifying the internal elements. This would be a violation of Rule <R59>, and prohibited. Your proposed solution would not involve an internal modification. As long as a sufficient grounding path back to the Driver Station case is provided (and it apparently is) then your proposed solution would be acceptable.

Control, Command, & Signal System

revisit: limit switch inputs - jaguar controller rulling (post 11658)

revisit: limit switch inputs - jaguar controller rulling (post 11658)

Posted by FRC1073 at 02/09/2009 09:02:14 pm



I would like to revisit the rulling prohibiting use of the limit switch inputs on the JAGUAR's. These are the inputs that sense the state of external switches. These switches are used to shut the motor off if and only if it is about to exceed some hardware defined physical limits. Exceeding these limits could result in the robot being damaged.

These switches should be allowed because they offer a safety buffer that will protect both the robot and students from accidental glitches in software or malfunctions in the other sensors used by the software to determine a motors location. Furthermore, these limit switch inputs cannot be used to bypass any IO to enable the motors, so they do not appear to violate Rule R61. Their only purpose is to disable a motor.

Re: revisit: limit switch inputs - jaguar controller rulling (post 11658)

Posted by GDC at 02/12/2009 03:46:09 pm

No. The previous answer still stands.

We understand the purpose of the limit switch inputs on the speed controllers. We also understand that the Jaguar speed controllers are brand new devices that have never been used in a FIRST Robotics Competition before. The same is true for the cRIO mobile device controllers, the wireless communications system, the field management hardware, and the field management software. Until the complete operational capabilities of these devices are proven in a full competition environment, systemic risk is being managed (in part) by controlling the number of new elements that are introduced this year. As these elements are more fully characterized and understood, their extended capabilities may be enabled in future competitions.

Control, Command, & Signal System

Dip Switches on Robot Controller

Dip Switches on Robot Controller

Posted by FRC2081 at 02/11/2009 07:53:19 pm

If the robot is in autonomous mode will it will be able to read dip switches on the robot controller?

We would be using it to set which autonomous mode we would use, but we don't know if the robot can communicate to the robot controller to sense the dip switches.

If someone knows anything about this it would be really helpful.

Thanks

Re: Dip Switches on Robot Controller

Posted by GDC at 02/12/2009 11:55:57 pm

There is no "Robot Controller" on the ROBOTS this year. Please clarify if you mean the cRIO Mobile Device Controller or the Driver Station. Specify if you're using non-KOP items, and also please elaborate on the dip switches you've mentioned. Thank you.

Control, Command, & Signal System

Extra power regulators



Extra power regulators

Posted by FRC3070 at 02/16/2009 01:37:25 am

We have heard reports on the cheif delphi forums of the gaming adapters frying. After hearing this, we took a look at our power distribution board and found that in the corrector connector, we were getting voltage upstepped to over 13v, and hearing some very annoying high-pitched noise.

Is it proper to use a linear voltage regulator put directly into a 20A connector on the power distribution board, to ensure that our gaming adapter doesn't fry. Considering that voltage regulators (at least _____ linear ones) , have a max output of 1A, is this allowed? Would it be better purchase another fuse/whatever it is rated for 1A? do these even exist? and if not, do we need to adhere to the wire-size guidelines for this? (its hard to nearly impossible to solder large wires to voltage regulator leads)

Re: Extra power regulators

Posted by GDC at 02/16/2009 01:44:00 pm

No. This would be a violation of Rule <R44> and Rule <R46>.

Pneumatic System

Pneumatic System

Lack of Pneumatic Fittings

Lack of Pneumatic Fittings

Posted by FRC358 at 01/07/2009 01:18:02 pm

Without the typical donation of plastic hose fittings as part of this year's kit, the pneumatics is impossible for rookie teams to setup out-of-the-box.

Will you publish guidelines and recommended sources for rookies who don't have the ready supplies of past parts that the veterans have?

Re: Lack of Pneumatic Fittings

Posted by GDC at 01/12/2009 10:41:43 pm

There are many, many parts contained within the FRC Kit Of Parts that require some modification and/or adaptation before they can be used on a robot. It is not intended that the Kit provide a complete, comprehensive, single source solution for building the entire ROBOT. Rather, the Kit is intended as a starting point from which the TEAMS may design and construct a full custom solution to suit their own particular objectives. We may direct TEAMS to vendors that have supplied parts that are included in the Kit so that they may obtain replacement or additional Kit parts. But we do not provide general statements regarding sources for non-Kit items. That is left up to the TEAMS, based on their individual unique needs.

Pneumatic System

Allowed pneumatic port

Allowed pneumatic port

Posted by FRC2396 at 01/09/2009 03:43:52 pm

Rule 71 states "All such valves must have a maximum 1/8" NPT port diameter". Many commonly used valves such as the FESTO VPLE18-M5H-4/2-1/4 supplied in the kit don't have NPT ports at all, instead a different type of port intended to push a 1/4" od line into. I have



some donated valves with ports like the FESTO. 1/8" NPT has a outer diameter of about .40", so does this mean that any porting connector smaller than that is allowed? Or is the meaning intended to limit the exit to 1/8" id (common for a 1/8" NPT fitting), which would disallow the 1/4" quick connect?

Re: Allowed pneumatic port

Posted by GDC at 01/15/2009 11:57:17 pm

Rule <R71> limits additional valves to those with a maximum 1/8" NPT port diameter. Note that Rule <R71> applies to items "in addition to those provided in the Kit Of Parts," but does not limit the use of parts provided in the Kit. Thus, the FESTO valve is a legal item.

Pneumatic System

Robot Controlled Pneumatic Regulator

Robot Controlled Pneumatic Regulator

Posted by FRC1212 at 01/12/2009 12:28:40 pm

We have a pneumatic setup where there is a secondary regulator placed after the primary regulator. The secondary is able to control the pressure going to a solenoid powering a piston, and has a max pressure(physical regulator max) of 60 PSI. Can we attach a servo or small motor to this regulator and adjust it between 0-60 psi during competition?

Electronic regulator

Posted by FRC1302 at 01/18/2009 05:32:15 pm

Is it legal to use a pressure regulator device that can be electronically controlled by the cRio during a game? Would that device be allowed to use a servo as long as the servo complies with <R51>?

Re: Robot Controlled Pneumatic Regulator

Posted by GDC at 01/20/2009 03:38:50 am

This would be permitted, as long as the resulting assembly is in full compliance with all applicable rules (particularly Rule <R51>, Rule <R67>, and Rule <R71>).

Pneumatic System

Permitted Pneumatic Cylinders

Permitted Pneumatic Cylinders

Posted by FRC2175 at 01/15/2009 01:36:26 am

According to rule <R71> any pneumatic cylinder up to 2" max diameter and 24" max stroke are allowed. I just wanted to make sure that manufacturer's other than Bimba and sizes other than those available through the Bimba Free Order form are legal before the team makes any design or purchase decisions around this.

Are all cylinders up to these sizes legal for this year's competition?

Re: Permitted Pneumatic Cylinders

Posted by GDC at 01/15/2009 03:01:16 am

Yes, Rule <R71> is written as intended. Air cylinders from any manufacturer, of any size up to 2" diameter and 24" stroke, are permitted.

Pneumatic System

Pneumatic Solenoid Source



Pneumatic Solenoid Source

Posted by FRC2813 at 01/19/2009 01:58:56 pm

Where can we buy additional pneumatic solenoids? The Kit Of Parts and the Checklist has one solenoid included. The Pneumatic manual says that there should be two in the kit. We are rookie team that needs more, but FESTO directs us to email FIRST for additional ordering. Where should we go to buy additional pneumatic solenoids?

Re: Pneumatic Solenoid Source

Posted by GDC at 01/22/2009 06:42:57 pm

Pneumatic components are available of any of a number of industrial supply sources. You may want to try suppliers such as [URL="http://www.smcusa.com/"]SMC Corporation[/URL], [URL="http://www.motionindustries.com/"]Motion Industries[/URL], or [URL="http://www.parker.com/portal/site/PARKER/menuitem.75b3c0354ff8851afa93ebde76108a0c/?vgnextoid=03b6981ef31a0110VgnVCM10000048021dacRCD&vgnextfmt=default"]Parker Pneumatics[/URL].

Pneumatic System

Pneumatics System Clarification Question

Pneumatics System Clarification Question

Posted by FRC1086 at 01/25/2009 09:18:26 pm

Our team is unsure if it would be legal to have the following setup of a pneumatic system, as there is nothing in the rules that references how many solenoids are allowed to provide air pressure to an actuator. The setup in question is all downstream from the Primary Regulator (low pressure side) and to the best of our knowledge in accordance with all pneumatic rules in Section 8 of the Manual. In order to achieve a dual force in piston force we are looking to setup a system in which Solenoid-A is downstream and in-line with the 60psi working pressure of the Primary Regulator. There is a Secondary Regulator that will be downstream and in-line with the Primary Regulator to dial down the pressure even more. Solenoid-B will be downstream and in-line with the Secondary Regulator. Both Solenoids will be then be connected to the same Piston Actuator, thus creating a system in which either of the Solenoids would be able to provide air to the Piston, which one would be determined during the game by our drivers.

Re: Pneumatics System Clarification Question

Posted by GDC at 01/26/2009 02:54:48 pm

There is no rule that would prohibit this.

Pneumatic System

Norgren Pressure Regulator

Norgren Pressure Regulator

Posted by FRC2859 at 01/31/2009 10:08:19 pm

Our team noticed when installing our pneumatics that the max outlet pressure of the Norgren Pressure Regulator Model No. R07-100-RNEA was 50 psi. Is this the max working pressure that pneumatics can operate even though <R75> states that "Working' air pressure on the ROBOT must be no greater than 60psi." So, we would like to run at 60 psi because it'll make our components run more effectively but



running at max working pressure greater than the max output pressure of the regulator would be a clear violation of rule <R02>.

We respectfully request a clarification on this issue. Thank you.

Re: Norgren Pressure Regulator

Posted by GDC at 02/02/2009 04:15:13 pm

The Norgren pressure regulator is adjustable via the front knob. It may be adjusted so that the maximum outlet pressure is 60 psi. Norgren has certified that this is permitted for these regulators for FRC competitions only (which are normally limited to 50 psi).

Pneumatic System

Bimba Only, Spring Loaded?

Bimba Only, Spring Loaded?

Posted by FRC1729 at 02/02/2009 09:41:00 am

We've heard but can't find a rule that indicates a) we can only use Bimba pneumatic cylinders, and b() that spring loaded cylinders are not allowed (specifically Bimba Model #092-NR)

Re: Bimba Only, Spring Loaded?

Posted by GDC at 02/02/2009 01:06:01 pm

The rules do not limit teams to only Bimba pneumatic cylinders. There are no rules that would specifically prevent the use of spring-loaded cylinders (assuming the spring loading would not cause any cascading rules violation; e.g. a safety concern).

Pneumatic System

Inspection Checklist - Relief Valve(s)

Inspection Checklist - Relief Valve(s)

Posted by FRC1262 at 02/04/2009 09:04:03 am

In the inspection checklist for the pneumatic system, it states that if utilizing an off-board compressor there must be a relief valve both on and off the robot. However, <R73> states that the relief must be attached directly to the compressor.

Is this an error on the inspection sheet?

If the robot is supplied with air from the KoP compressor properly outfitted with the relief valve as per rules, is there a real need for two relief valves?

Please advise.

Re: Inspection Checklist - Relief Valve(s)

Posted by GDC at 02/05/2009 03:38:29 pm

The inspection checklist is correct. Rule <R76> requires that a pressure relief valve be directly connected to the compressor. Rule <R73> requires that any pneumatic circuit also include a pressure relief valve. If the compressor is off-board, then under Rule <R73> the on-board portion of any pneumatic circuit must include a second pressure relief valve (obviously, not connected to the compressor). The second valve is required as a safety relief, to prevent any over-pressure conditions (e.g. when a pneumatic cylinder is back-driven by a load sufficient to overcome the applied pneumatic force).



Pneumatic System

Non-Kop Solenoids

Non-Kop Solenoids

Posted by FRC1302 at 02/07/2009 07:12:20 pm

Rule <R71> states that any non-kop solenoid valves have a maximum Cv of 0.32. As we search for valves, many manufacturers do not state a Cv value for their solenoid valves. Would these valves be illegal? Is there another maximum specification we should be looking for?

Re: Non-Kop Solenoids

Posted by GDC at 02/09/2009 08:20:34 pm

Every pneumatic device has a flow coefficient, or Cv. This rating is a standard measure of the ability to support the flow of pneumatic fluid (gas or liquid) under a pressure differential. This information should be available in the device specifications. Please check the device data sheets carefully, or obtain it directly from the device manufacturer.

Pneumatic System

Pneumatic Cylinders

Pneumatic Cylinders

Posted by FRC1415 at 02/09/2009 04:17:50 pm

We have old pneumatic cylinders from past years that we ordered that were not from any past Kit of Parts and wish to use them. Is this legal? I cannot find any rule prohibiting this.
Thank You!

Re: Pneumatic Cylinders URGENT PLEASE HELP!!

Posted by GDC at 02/12/2009 03:49:15 pm

Yes, that is permitted, as long as they are no greater than 2" bore and 24" stroke (Rule <R71-D>).

Operator Console

Operator Console

Dashboard QQuestion

Dashboard QQuestion

Posted by FRC1557 at 01/16/2009 10:54:13 am

I understand that we are allowed to have a "Dashboard" on a laptop connected to driver station. Does this dashboard have to be written in LabView using the template? Or can we write our own dashboard in Visual Studio (for instance) using the same communication protocol as the LabView dashboard?

Re: Dashboard QQuestion

Posted by GDC at 01/18/2009 10:58:45 pm

You may use either the provide LabView template to create your dashboard program, or write your own using the development environment of your choice.

Operator Console

Dashboard Restrictions in Competition

Dashboard Restrictions in Competition



2009 Q&A Forum Export

generated: 02/18/2009 11:47:56 am EST

Posted by FRC418 at 01/16/2009 04:01:23 pm

Which ports will the dashboard be allowed to use, and will teams have their bandwidth limited in any way?

Re: Dashboard Restrictions in Competition

Posted by GDC at 01/19/2009 01:23:09 pm

Sorry, after internal discussion on our end, we can not decide if you're referring to hardware or software ports. Please resubmit your question with added specifics. Thank you.

Operator Console

Operator Console - pedal on floor

Operator Console - pedal on floor

Posted by FRC2348 at 01/26/2009 06:56:55 pm

According to <R78>:

The OPERATOR CONSOLE designed by the team must fit on the 60" wide by 12" deep shelf in the Alliance Station (excluding any items that are held or worn by the PILOTS during the MATCH).

Is it possible to have a control input (such as a pedal) place on the floor as long as it stays within the team's operator control area?

Re: Operator Console - pedal on floor

Posted by GDC at 01/29/2009 11:05:47 pm

Yes.

Operator Console

Base Player Stations

Base Player Stations

Posted by FRC1137 at 01/27/2009 03:35:04 pm

Is it permissible to have a Laptop computer hooked to the Operator Console by an hard wired ethernet cable?

Re: Base Player Stations

Posted by GDC at 01/29/2009 11:12:50 pm

Yes.

Operator Console

Grounding Driver Station

Grounding Driver Station

Posted by FRC753 at 01/30/2009 10:21:11 pm

Are we required to ground the driver station in the method provided, more specifically, can we open up the driver station and ground it internally.

Re: Grounding Driver Station

Posted by GDC at 02/02/2009 01:09:38 pm

You are required to ground the Driver Station per Team Update 7. Your method would be a violation of Rule <R59> and would also void the warranty.



Robot Inspection

Robot Inspection

Slick Wheels

Slick Wheels

Posted by FRC2775 at 01/09/2009 06:22:12 pm

How will inspectors be determining if a wheel is in "like new" condition? And will replacements be available at the events for any teams who's wheels are not in this condition?

Re: Slick Wheels

Posted by GDC at 01/12/2009 10:24:09 pm

Inspectors will examine wheels for treads that have the potential for increased traction on the field or damage the field surface.

The list of items that will be available to teams at events has not yet been released.

Robot Inspection

Inspection checklist and Inspection BOM Template

Inspection checklist and Inspection BOM Template

Posted by FRC2353 at 01/28/2009 11:16:12 pm

The status next to both of these fields show "Coming Soon," which has been that way for the last 3 weeks. When are they actually suppose to become available?

Re: Inspection checklist and Inspection BOM Template

Posted by GDC at 02/06/2009 10:30:08 pm

Please see Team Update 9.

Tournament Rules

Tournament Rules

Order of set-up on the field?

Order of set-up on the field?

Posted by FRC234 at 01/07/2009 11:10:27 pm

What is the order of making person, moon rock and robot placement decisions for each match? For example, do teams place robots, and then decide the number of moon rocks to place in their robot and with their Payload Spe_____ts - or how will this be done? The order of the activity can affect match strategy.

Re: Order of set-up on the field?

Posted by GDC at 01/12/2009 05:24:56 pm

As indicated in Rule <T15>, each TEAM must specify the selected locations for the ROBOT and PAYLOAD SPECIALIST while queued for the MATCH (i.e. before taking the field). Teams apportion their assigned MOON ROCKS between their ROBOT and PAYLOAD SPECIALIST during field setup. They must do so in a timely manner, and not cause undue delay in the start of the MATCH.

Tournament Rules

communication



communication

Posted by FRC1683 at 01/12/2009 07:19:43 pm

can people in the stands communicate with the people in the arena?

Re: communication

Posted by GDC at 01/13/2009 05:00:45 pm

Please refer to Rule <T22> and Rule <T23>.

Tournament Rules

Communication part 2

Communication part 2

Posted by FRC1683 at 01/12/2009 07:23:06 pm

are disply boards aloud to communicate?

Re: communication part2

Posted by GDC at 01/18/2009 11:09:48 pm

Please refer to Rule <T22> and Rule <T23>.

Tournament Rules

Announcement of Penalties

Announcement of Penalties

Posted by FRC365 at 01/23/2009 12:19:51 pm

In the past, although sporadic from regional to regional, it was a best practice that, upon the announcement of the match score, the announcer also included what penalties were assessed, which teams incurred the penalties, and why.

This is important information for team scouts to obtain.

Is there any chance that this could be made into a standard procedure at all events this season?

Thank you.

Re: Announcement of Penalties

Posted by GDC at 01/29/2009 11:00:00 pm

Thank you for bringing this to our attention. The volunteer Game Announcers will be instructed to announce penalty specifics along with the match results. FIRST will continue to work with the announcers, head referees, and the rest of the volunteer staff to bring as much continuity among events as possible.

Tournament Rules

Communicating Strategy to Alliance Members

Communicating Strategy to Alliance Members

Posted by FRC1676 at 01/23/2009 04:41:46 pm

According to rule <T23>, teams are allowed to use devices to track strategy for communication of that strategy to alliance members as long as it does not affect the outcome of the match. Is the PAYLOAD SPEC1ALIST opposite the ALLIANCE BASE or at the OUTPOST allowed to wear something attached to their clothing or an addition to their clothing (such as wristband) to



signify their status if the sole purpose is to communicate to their alliance members?

Re: Communicating Strategy to Alliance Members

Posted by GDC at 01/26/2009 10:42:20 am

Rule <T22> prohibits bringing anything but the ROBOT, OPERATOR CONSOLE and team in to the ARENA (except materials to support a physical impairment). Rule <T23> permits limited strategy communication aids in the Alliance Zone. It does not permit anything special in the Outpost or opposite Fueling Station. There are no rules that make exceptions for materials to be brought into those areas. Therefore, such items would not be permitted.

Tournament Rules

Practice Robots

Practice Robots

Posted by FRC973 at 02/10/2009 06:38:21 pm

It is common for teams to build two identical robots each season; one to keep at home and practice with, one to ship to competition.

Would it be permissible for a team to bring their practice robot, and use it during the practice matches on Thursday while potential repairs, upgrades and rework are being done to the competition robot.

This is assuming all parts of the practice robot are specifically not going to be used as spares or upgrades, and no parts on it would be declared in the withholding allowance. No part from the practice robot will ever be removed and used on the competition robot. Ever. We promise.

Re: Practice Robots

Posted by GDC at 02/12/2009 03:20:12 pm

No. Only competition robots may be used on the competition field or practice fields at the events. Any additional equipment (such as a practice robot) would be prohibited by Rule <T22>.

Tournament Rules

Field Management System Question

Field Management System Question

Posted by FRC131 at 02/10/2009 08:33:50 pm

Team update 9 states that:

During each MATCH, the Field Management System will cycle each Driver Station through the following states:

- * Autonomous - Disabled
- * Autonomous - Enabled (for 15 seconds)
- * Autonomous - Disabled
- * Teleoperated - Disabled
- * Teleoperated - Enabled (for 120 seconds)
- * Teleoperated - Disabled

Is there a minimum duration for any of these states - especially, for the



first "Autonomous-Disabled" state?

Re: Field Management System Question

Posted by GDC at 02/12/2009 03:21:18 pm

No.

Championship Additions

Championship Additions

Choosing Backup Teams at the Championship

Choosing Backup Teams at the Championship

Posted by FRC2505 at 01/23/2009 03:21:55 am

[quote=9.6.2]The ALLIANCE CAPTAIN will be presented the option of having one of the three lead Division Finalist TEAMS, chosen randomly, from their division join the ALLIANCE as a BACKUP TEAM.[/quote]We would like clarification of the backup team procedures at the Championship:[list=1][*]What is meant by a "lead Division finalist...from their division"? (This looks like a typo.)[list=a][*]Randomly select one team from their division's finalist alliance to join.[*]Randomly select a division; the alliance captain ("lead") of that division's finalist alliance joins.[*]The alliance captain ("lead") of their division's finalist alliance joins. (Random selection from a set of one.)[/list][*]In case a backup was already selected by the finalist alliance, the replaced team cannot continue with tournament play, but remains a member of the alliance; is the replaced team still included in the selection?[*]If yes to 2, what happens if you select an already-replaced team (i.e. that alliance used a backup)?[list=a][*]You get the replaced team and its ineligible robot.[*]You get the replacement team and robot. (Does this mean that you have two chances to pick the replacement: once as a regular member of the alliance, and once because picking the replaced team gives you its replacement instead?)[*]An upcoming rule change will detail some other method (e.g. highest-picked, highest-seeded or select again).[/list]/list]

Re: Choosing Backup Teams at the Championship

Posted by GDC at 01/26/2009 11:21:54 am

- 1: This is not a typo. Properly parsed, this is equivalent to item "A" in the original question.
- 2: No.
- 3: N/A.

Part Information

Part Information

Additional copies of LabView software?

Additional copies of LabView software?

Posted by FRC2185 at 01/07/2009 11:39:47 pm

Was there any new Labview software that should of come in the KOP? or are we just using the same disk that we got with the early control system?

Re: Additional copies of LabView software?

Posted by GDC at 01/20/2009 04:42:55 pm

The software disk that arrived in your original control system and any updates posted [URL="http://www.usfirst.org/community/frc/content.aspx?id=10934"]here[/URL] is all you need to run the LabVIEW software.



Part Information

Spare 12 Volt Bateries (ES17-12)

Spare 12 Volt Bateries (ES17-12)

Posted by FRC1254 at 01/08/2009 04:10:57 pm

What is the best source to purchase spare ES17-12 batteries for the competition?

Re: Spare 12 Volt Bateries (ES17-12)

Posted by GDC at 01/19/2009 03:05:14 pm

Please see Team Update 5.

Part Information

replacing parts after the request deadline

replacing parts after the request deadline

Posted by FRC85 at 01/10/2009 02:32:10 pm

Today we found out that both relay modules are faulty from the 2009 controller kit, the 2008 relays are working. How can we go about having the 2009 replaced? The TIMS Replacement Parts Section had a deadline, but what about the situations that are discovered after the deadline date?

Defective Jaguar

Posted by FRC1633 at 01/12/2009 12:38:39 am

During Bench Test it was determined that one of the Jaguars from the KOP was defective. Serial number 405521-005825 only allows operation in one direction using PWM cable input - OFB Program. The red direction operates correctly; the green direction does not operate at all and shows flashing red. When the Jaguar was replaced with another from the KOP everything worked fine. Is it possible to get a replacement for this defective Jaguar? If so who do we contact?

Team 1633 faculty adviser

Re: replacing parts after the request deadline

Posted by GDC at 01/19/2009 02:47:32 pm

It is the responsibility of each team to inventory and check all Kit Of Parts elements before the replacement request deadline. FIRST is not able to replace parts that become damaged, or are identified as damaged, after the replacement request deadline.

Part Information

Rover Wheels

Rover Wheels

Posted by FRC653 at 01/26/2009 06:13:45 pm

Who do we contact to purchase extra Rover Wheels, wheel bearings and sprocket spacers. Section 10 of the manual "Where to get more parts" indicates that Altium is the supplier. We checked with Altium and they are not the supplier of the wheels.

Re: Rover Wheels

Posted by GDC at 01/29/2009 11:08:37 pm

As noted in the "Where to get more" document, please contact AndyMark at [url]www.andymark.biz[/url].



Part Information

KOP says Fisher Price has 19 teeth, ours has 16

KOP says Fisher Price has 19 teeth, ours has 16

Posted by FRC1310 at 01/28/2009 10:33:08 pm

The KOP says the FP has a 19 tooth pinion. We took ours apart today and found it had 16. All the gear ratios are completely different from last year resulting in the output being 23% slower. Were we given the correct part or was the KOP incorrect ?

Also, the KOP says we got 1 Festo valve. Page 4 of the Pneumatics manual says we got 2 Festo valves.

Re: KOP says Fisher Price has 19 teeth, ours has 16

Posted by GDC at 02/05/2009 11:38:31 pm

Thank you for the note. Please see Team Update 9.

Kit Of Parts - General

Kit Of Parts - General

Encoder Mounts

Encoder Mounts

Posted by FRC368 at 01/07/2009 02:33:56 pm

Were these supposed to come with the encoders?

Re: Encoder Mounts

Posted by GDC at 01/11/2009 10:44:12 pm

The encoders were supplied as raw material to use on the robot. As such, you may need to manufacture additional mounts that may be needed to use these sensors.

Kit Of Parts - General

Obtaining a second Driver Station

Obtaining a second Driver Station

Posted by FRC1296 at 01/09/2009 01:00:15 pm

Where can we buy a 2nd driver station(the blue box with the FIRST Logo on it). We have found everything else but that.

Thanks,

Team 1296

Re: Obtaining a second Driver Station

Posted by GDC at 01/11/2009 10:45:51 pm

Additional Driver Station units may be purchased through AndyMark, Inc. (see [URL="http://www.andymark.biz/am-0269.html"]http://www.andymark.biz/am-0269.html[/URL]).

Kit Of Parts - General

Missing KOP items

Missing KOP items



2009 Q&A Forum Export

generated: 02/18/2009 11:47:56 am EST

Posted by FRC175 at 01/15/2009 02:48:46 pm

When will missing KOP items be shipped? Filled out TIMS document before 1/7 deadline.

Re: Missing KOP items

Posted by GDC at 01/18/2009 10:50:02 pm

We are currently processing the replacement parts requests and forwarding them to the appropriate fulfillment group. Your parts will be shipped via FedEx 2-day shipping.

Some requests spawned questions, and a representative from FIRST will contact your team for clarification. Given the processing time, please allow for up to two weeks for your replacement parts to arrive, although it will likely be much shorter for requests for which there were no questions.

We thank you for your patience.

Kit Of Parts - General

Pan and Tilt mount for Axis Camera

Pan and Tilt mount for Axis Camera

Posted by FRC2353 at 01/15/2009 04:44:42 pm

The diagram for the pan and tilt assembly for the Axis Camera mount calls for part called servo modified, what does this mean? Our team is confused on how to connect the servo to axis case because the assembly diagrams are vague regarding this connection. How should this connection be made?

Thanks from everyone on Team 2353

Re: Pan and Tilt mount for Axis Camera

Posted by GDC at 01/23/2009 08:55:11 am

Please see Team Update 5.

Kit Of Parts - General

accelerometer sensor board

accelerometer sensor board

Posted by FRC653 at 01/29/2009 11:39:19 pm

Our accelerometer sensor board has a chip which is damaged. Who do we contact about purchasing another accelerometer?

Re: accelerometer sensor board

Posted by GDC at 02/02/2009 11:19:14 am

Please refer to the "[URL="http://www.usfirst.org/uploadedFiles/Where%20to%20get%20more%20Rev%20A.pdf"] Where to get more?[URL]" document. These particular items are not available commercially, however similar products are available at a variety of sources.

Kit Of Parts - General

Trailer spacer

Trailer spacer

Posted by FRC157 at 01/31/2009 04:55:51 pm

Our trailer spacer has been broken..... can we just fabricate a new one? or do we need to



obtain one from FIRST?

Re: Trailer spacer

Posted by GDC at 02/09/2009 02:13:50 pm

Yes, you can acquire your own replacement, provided it is 1" x 1" x 7" x 1/16" wall-thickness steel tubing.

Kit Of Parts - General

Driver Station

Driver Station

Posted by FRC1922 at 02/05/2009 10:10:19 pm

As we were working on program downloading tonight we lost our Ethernet connection. We have determined that it is the Ethernet connection on the driver station. Yes we tried and tested several different cables. As you can imagine this is creating many problems for us. We need to received feedback from our robot in order to calibrate settings. At this point we have not figured a work around. Are there driver stations available? Has anyone had a similar problem? Is there any recourse?Thanks

Re: Driver Station

Posted by GDC at 02/09/2009 02:23:10 pm

Please refer to the "Where to get more" document posted on the FIRST website at (insert link).