



Communication - General

Communication - General

Payment for Championships, re: NYC Regional

Payment for Championships, re: NYC Regional

Posted by FRC1807 at 01/17/2008 01:36:35 pm

On the "Calendar of Important Deadlines", it indicates that payment for the Championships is due by April 4th. For those teams competing in the New York City Regional on April 4-6, and who learn of Championship eligibility as an outcome of that regional, when would their payment be due?

Re: Payment for Championships, re: NYC Regional

Posted by FRCOPS at 01/18/2008 09:33:54 am

Please reference section 4.14.1.

Teams have until the Tuesday following their qualifying event to inform [I]FIRST [I](and Shepard Exposition Services) whether they will attend and register for the Championship. Please contact [I]FIRST [I]Finance no later than the Tuesday following your qualifying event to make immediate payment arrangements.

Communication - General

Overdrive Logo?

Overdrive Logo?

Posted by FRC174 at 01/26/2008 09:21:52 am

Can our team use the first overdrive logo on our shirts and awards, and can we use it in black and white instead of color?

Re: Overdrive Logo?

Posted by FRCOPS at 01/28/2008 01:20:07 pm

Please adhere to the following guidelines when using the "[I]FIRST [I]Overdrive" game logo:

1. Graphic cannot be printed on a white T-shirt
2. Graphic cannot be altered or deconstructed in any way
3. Graphic must be surrounded by 1/4" protected space
4. Graphic cannot be incorporated into anything for sale without written approval from [I]FIRST [I]Marketing. Please e-mail requests to [I]FIRST [I]Marketing and allow 2 business days for response.

Communication - General

Logo Usage - Style Guidelines

Logo Usage - Style Guidelines

Posted by FRC1311 at 01/27/2008 10:21:27 pm

This years FIRST Overdrive logo is designed for a logo on white background only.

?? Will FIRST consider a "REV" reversed logo for black background where

the the phrase "2008 FIRST Robotics Competition" is changed from black to white.



and

the background is changed to black.

The only other effect is the drop shadows off the flag and text disappears.

Re: Logo Usage - Style Guidelines

Posted by FRCOPS at 01/28/2008 03:25:16 pm

[I]FIRST [/I]has no issues with a team changing the black text of 2008 [I]FIRST [/I]Robotics Competition to white text in instances where it will appear more clearly (i.e., on a black or dark colored object).

In order to screen on a non-white item, a white screen has to be laid down before any of the colors are added, so the drop shadows would only appear lighter than the background, not necessarily disappear.

Team Registration

Team Registration

Section 3.8 - Consent Forms for FRC and FTC

Section 3.8 - Consent Forms for FRC and FTC

Posted by FRC180 at 01/30/2008 10:38:12 am

Are students who have submitted consent forms for FTC events required to resubmit consent forms for FRC events?

The forms indicate that they cover all FIRST events, but Section 3.8 indicates that consent forms must be turned in at the initial FRC event attended.

Re: Section 3.8 - Consent Forms for FRC and FTC

Posted by FRCOPS at 01/31/2008 12:04:09 pm

Yes, all are required to submit the [I]FIRST [/I]Consent/Release forms at FRC events, separate from those submitted at their FTC event.

Team Registration

consent forms at kickoff sufficient?

consent forms at kickoff sufficient?

Posted by FRC1001 at 01/30/2008 05:08:57 pm

We turned in our team's consent forms at our local kickoff. Do we need new ones for our regional competition or is a team roster plus additional consent forms for new members sufficient?

Re: consent forms at kickoff sufficient?

Posted by FRCOPS at 01/31/2008 11:30:53 am

Section 3.8.1

During registration at your team's [I][B]initial [/B][/I]2008 FRC Regional (only), you must hand in a team roster AND a completed Consent and Release Form for each team member and mentor attending the event.



The forms that you turned in at the Kickoff event were only sufficient for the 2008 FRC Kickoff event.

The Pit

The Pit

Team Update #6 IR Disconnect

Team Update #6 IR Disconnect

Posted by FRC41 at 01/29/2008 07:32:59 pm

Update 6 states that IR receivers must be "disconnected" from the robot while in the pits. Just how "disconnected" must they be? Can we use electronics to isolate the reciever? Would a switch be satisfactory? Or, must there be a physical removal of any apparent connection?

Re: Team Update #6 IR Disconnect

Posted by GDC at 01/31/2008 12:44:01 pm

To guarantee that untended robot activations do not happen, the sensors associated with Robocoach interactions must be deactivated in the pits. Removal is not required, but unambiguous electrical disconnects are required. If a switch is used, for example, it must be clearly labeled so "Off" is obvious. It must also be located so that inadvertent activation is not likely. Please just use common sense.

The Pit

Wireless

Wireless

Posted by FRC971 at 02/02/2008 05:12:29 pm

Two Questions.

Would it be okay to use a 2.4 Ghz wireless router in a competition for scouting purposes? It shouldn't interfere with the 900 mhz radios used on the robots.

Would it be okay if the aforementioned wireless router was securely fastened on a wooden tower under 10 feet tall mounted on the floor? The router and tower would be inside of the pit area at all times.

Re: Wireless

Posted by GDC at 02/07/2008 02:19:58 pm

This may or may not be acceptable as certain venues may have rules about this. Please check with your pit administrator (who can then check with the Event Manager) when you get to your event.

The Pit

Pit design Inquiry

Pit design Inquiry

Posted by FRC195 at 02/03/2008 12:50:13 pm

Are we allowed to secure an approximate 4 feet high x 6 feet long x 1 foot wide shelving unit on top of an approx 4 feet high x 6 feet long x 2 1/2 feet wide workbench in our pit area? It would be well secured and not exceed the 10 feet high pit area limitation. This shelving unit would be used to organize tools. Thank you



Re: Pit design Inquiry

Posted by FRCOPS at 02/04/2008 09:46:40 am

Yes. Please read section 3.9.4.3 carefully.

The Pit

Fabrication During Competitions

Fabrication During Competitions

Posted by FRC1510 at 02/21/2008 06:03:54 pm

According to rule <R31>, we are allowed to fabricate parts during the competition starting on Thursday once "the Pit area is open for normal operations". We are going to the Oregon Regional, and the three representatives go into the pits at 7:45 am to un-crate. At 8:30 everyone is then allowed to enter the pits. Does this mean we are allowed to start fabricating at 7:45, or 8:30?

Re: Fabrication During Competitions

Posted by FRCOPS at 02/25/2008 04:07:44 pm

Please read Section 3.7 of The Manual. The early entry period is for uncrating only - not fabrication.

Team Spirit and Team "Look"

Team Spirit and Team "Look"

Buttons

Buttons

Posted by FRC2560 at 01/15/2008 08:42:36 pm

our inquiry is based on the number of buttons that teams usually use at an event. This is potentially time critical application because our team does not have the man power to manufacture buttons and must have them ordered soon.

Re: Buttons

Posted by FRCOPS at 01/18/2008 11:39:57 am

If you are referring to the "giveaway" buttons that teams handout, trade and collect among each other, those are completely [B]optional[B] (Section 3.15.1). Each team has a different budget and there are no specific guidelines on quantities that teams typically produce.

Team Spirit and Team "Look"

Banner display at Regionals

Banner display at Regionals

Posted by FRC2340 at 02/20/2008 03:17:36 pm

Please clarify restrictions to displaying your team's banner at the regional. If we can display in the Pit area as well as the stadium, are there any restrictions to size, location etc?

Thanks,

Re: Banner display at Regionals (RIT)

Posted by FRCOPS at 02/25/2008 04:23:38 pm

3.9.4.3 Space Regulations

Each team is allotted approximately the same amount of workspace at an event, usually



about 10' by 10'; however, the size will vary from event to event, and in many cases the space is smaller. Be sure your equipment will fit in a space smaller than those dimensions. In all cases, the height cannot exceed 10'. This includes the height of signs, flags, banners, etc.

3.15.4 Banners and Flags

Sponsors provide FIRST with banners so we can display them in specified areas as a way of thanking them for their generosity. We encourage teams to bring team flags and/or sponsor banners, but we ask that you adhere to the following:

- * Do not hang them in the competition area, since this area is designated for official FIRST sponsors' banners.
- * You may bring banners to the competition area while your team competes, but do not leave them or use them to section off seating. Saving group seats is not permitted.
- * Hang banners in your Pit station only, not on the Pit walls.

At the Events - General

At the Events - General

Filler line

Filler line

Posted by FRC2331 at 01/18/2008 06:32:11 pm

6.3.1.2 says, "Teams from the Filler Line will be used on a first come, first serve basis to fill empty spots in practice matches left by other teams that do not show up for their own practice match."

What constitutes a team not showing up? For example, Practice Match #6 is running. Four teams from Practice Match #7 have reported to the field. There are teams in the Filler Line. At what time will the teams from the Filler Line be included in Match 7? What if one of the originally scheduled teams shows up at the field after a Filler team has been placed, but before the match is ready to begin?

Re: Filler line

Posted by FRCOPS at 01/25/2008 11:19:07 am

Teams will be drawn from the Filler Line as the scheduled teams take the field. If a late, scheduled team shows up after they have been replaced by a filler team, they have missed their match and will not be able to practice again until a) their next practice match or b) they are used as a filler team.

At the Events - General

Walkie-Talkies

Walkie-Talkies

Posted by FRC2181 at 02/16/2008 01:59:36 pm

Can we use walkie-talkies at the event?

Re: Walkie-Talkies

Posted by FRCOPS at 02/18/2008 09:02:08 am



Please read Section 3.17, specifically the tenth bullet.

Battery Update

Battery Update

Batteries

Batteries

Posted by FRC2466 at 01/29/2008 05:09:51 pm

Aloha,

How do you ship your 12 volt batteries if you already threw out the original packing equipment?

Is the small battery called "back-up battery", the only back up battery that can be used on the robot? Can you use the second 12 volt battery on the robot as a back up, for quick change if the first battery gets used up? (Only having one of the 12 volt batteries hooked up at any one time)

Re: Batteries

Posted by FRCOPS at 02/04/2008 05:03:37 pm

Please refer to Section 4.2.

To safely and securely ship your batteries, please try your best to recreate the original packaging (ie: in a secure box with similar size/dimensions).

Battery Update

Battery box inside crate

Battery box inside crate

Posted by FRC980 at 02/11/2008 10:00:55 pm

Have the rules for battery box construction changed for 2008?

In prior years (2004-2007), we used a similarly constructed battery box that held up to eight batteries. In the Senior Mentor telecon today (Mon. Feb. 11), a statement was made that the battery box needed to be the same as the example shown in Section 4.3 of the Game Manual.

Are we required to build a battery box of identical dimensions, or can we use a larger box inside the crate?

Re: Battery box inside crate

Posted by FRCOPS at 02/13/2008 08:52:37 am

This is the first year that [I]FIRST [/I]has provided recommended specifics on constructing the battery box. The information is not mandatory. Please keep safety in mind when packing your batteries.

Crate Information

Crate Information

Crate



Crate

Posted by FRC2353 at 01/11/2008 01:12:10 pm

Does the \$3500 limit apply towards the supplies used to build the crate (ie. plywood and paint)? In addition, do we have to list the weight of the individual parts used in building the crate? What if we only used part of a large sheet of plywood, how do we list the weights on the chart?

Thank you from team 2353

Re: Crate

Posted by GDC at 01/15/2008 11:46:45 pm

The crate is not considered part of the Robot. The crate is not included in the cost, volume or weight restrictions imposed on the Robot.

Crate Information

Crate Construction Materials

Crate Construction Materials

Posted by FRC100 at 01/25/2008 12:16:48 am

Section 4.4.1. ("Crate Construction Specifications and Construction Suggestions") is ambiguous. Is it permissible to construct our robot crate out of metal?

Re: Crate Construction Materials

Posted by FRCOPS at 01/28/2008 04:56:33 pm

Yes, however the crate must still follow the guidelines as specified in section 4.4.1.1. A crate made of metal is likely to be heavy and therefore may also incur greater shipping costs.

Crate Information

4.4 Crate Information

4.4 Crate Information

Posted by FRC2477 at 01/26/2008 05:19:36 pm

From Team 2477,

- 1.The "4 X 4's" we purchased actually measure 3.5" X 3.5".
- 2.We plan for our footprint to be 40" X 30" and set our "4 X 4"s on 18" centers on the long axis.
- 3.We would like to use our crate as a workbench. If OK, we will design it to an appropriate height and surface finish.
- 4.Since we will drive to Hawai`i Regional, we don't plan for a battery box in our crate.

jy

Re: 4.4 Crate Information

Posted by FRCOPS at 01/29/2008 02:02:34 pm

- 1.The "4 X 4's" we purchased actually measure 3.5" X 3.5".

[COLOR="Blue"]OK.[/COLOR]

- 2.We plan for our footprint to be 40" X 30" and set our "4 X 4"s on 18" centers on the long axis.

[COLOR="Blue"]As long as the 4' x 4's are 28" apart...see section 4.4.1.1.[/COLOR]



3. We would like to use our crate as a workbench. If OK, we will design it to an appropriate height and surface finish.

[COLOR="Blue"]Teams may choose to keep their robot crate within their 10'x10' pit space, as long as it (and your team) do not spill out into the aisles of the Pit.[/COLOR]

4. Since we will drive to Hawai'i Regional, we don't plan for a battery box in our crate.

[COLOR="Blue"]OK. (Section 4.2)[/COLOR]

Crate Information

Base of the Crate

Base of the Crate

Posted by FRC2423 at 02/04/2008 08:26:55 am

We would like to use a shipping pallet as the base of our crate. Such a pallet is designed to be moved by forklift and to support significant weight.

Does this conform to the crate size rules?

Re: Base of the Crate

Posted by FRCOPS at 02/04/2008 04:00:37 pm

The pallet must be attached to the crate. If it can be properly lifted by a forklift, then it should meet the specifications in section 4.4 of the 2008 FRC Competition Manual.

Crate Information

Question about crate construction

Question about crate construction

Posted by FRC1547 at 02/05/2008 01:16:57 pm

We are Team 1547 and we plan on using a shipping crate which we have used for the past 3 FIRST seasons. Our crate meets all of the 07/08 specifications but varies slightly on one specification....the one pertaining to the 4" x 4" supports on the bottom.

Our crate has three 4" x 4" supports. The two outside ones are at least 28" apart however we have a third one which runs right down the middle. The spacing between each of the three 4" x 4" supports is 18". It has worked fine for forklift access.

Can you please let me know if this is acceptable.

thank you

Team 1547

Re: Question about crate construction

Posted by FRCOPS at 02/06/2008 09:54:55 am

Yes, this should be fine.

Crate Information

How do we build the crate?



How do we build the crate?

Posted by FRC2413 at 02/07/2008 03:51:03 pm

We have found directions on how to build the small box inside the crate but none on how to build the actual large crate. Are there any directions/guidelines about this?

Re: How do we build the crate?

Posted by FRCOPS at 02/11/2008 08:57:28 am

There are no specific crate construction instructions. Section 4.4.1 provides crate construction [B]specifications [B]and [B]suggestions[B].

Crate Information

Crate Pallet Size

Crate Pallet Size

Posted by FRC2414 at 02/13/2008 07:28:01 am

If we use a pallet instead of 4x4s for the base, does the pallet need to conform to the 48" by 48" size limitation?

Re: Crate Pallet Size

Posted by FRCOPS at 02/18/2008 08:52:52 am

Please be sure that your crate can be carefully and safely lifted with a forklift.

Shipping Your Robot

Shipping Your Robot

Robot Shipment

Robot Shipment

Posted by FRC2604 at 02/13/2008 05:05:00 pm

I'm looking for an itemized list of what is required to be shipped and what is optional. Batteries? Control Board, Bumpers? etc. Looking to save some shipping weight but want to comply with the rules.

Re: Robot Shipment

Posted by GDC at 02/14/2008 12:26:07 pm

As specified in Rule <R28>, the entire ROBOT (including all FABRICATED ITEMS intended for use during the competition in alternative configurations of the ROBOT) and OPERATOR CONSOLE must be crated and out of team hands by the shipment deadline specified in Section 4.5.1.1. As specified in Rule <R08>, for the purposes of shipping deadlines STANDARD BUMPERS are considered part of the ROBOT, and must be shipped in the crate with the ROBOT. All other items (batteries, tools, supplies, spare parts, team members, etc.) are optional, and may be either shipped with the Robot or brought to the competition.

Shipping Your Robot

clarification on ship date

clarification on ship date

Posted by FRC2015 at 02/14/2008 10:03:18 pm

According to the manual the robot must ship out of our hands "BY" the 19th. Does this mean by midnight on the 18th or by midnight on the 19th?

On the form "2008 robot shipping - FedEx Donation" it states verify that the create was picked



up or deliver on or before Feb 19. Please verify which day it is.

Re: clarification on ship date

Posted by FRCOPS at 02/18/2008 08:59:47 am

Your crate must be out of your team's possession by end of day, 2/19/08 (Robot Ship Day).

Robot Transportation - General

Robot Transportation - General

CMP Shipping - Consignee Address Label

CMP Shipping - Consignee Address Label

Posted by FRC716 at 02/04/2008 12:52:27 pm

The 2008_CMP_Shipping file lists the 2008 Peachtree Regional in Duluth on the top of the Consignee Address Label.

Should we use it anyway or will it be updated?

Re: CMP Shipping - Consignee Address Label

Posted by FRCOPS at 02/04/2008 03:51:18 pm

Thank you for bringing this to our attention.

The Championship Shipping & Drayage link has now been corrected:
[URL="http://www.usfirst.org/uploadedFiles/Community/FRC/Events/2008/2008_CMP_Shipping.pdf"]http://www.usfirst.org/uploadedFiles/Community/FRC/Events/2008/2008_CMP_Shipping.pdf[URL]

CMP - Shipping clarification

Posted by FRC716 at 02/05/2008 03:12:30 pm

The link to the shipping and drayage was correct before. The consignee label says it is for the Championship and has Atlanta for the consignee address, but has the Peachtree address at the top instead of the Georgia Dome.

Re: CMP - Shipping clarification

Posted by FRCOPS at 02/06/2008 10:55:25 am

The Consignee address (drayage site) is the same for both events. The form is correct.

You do not ship your robot directly to the Georgia Dome, or any other regional event site for that matter.

The Autodesk Design Competition

The Autodesk Design Competition

2008 Visualization Award

2008 Visualization Award

Posted by FRC1676 at 01/10/2008 11:03:45 am

This season, our team is interested in designing our animation submission in an anaglyphical format (3D). Is this allowed? We plan on supplying 3D glasses with the submission to the judges and to all the teams at the regional we plan on submitting at. Any assistance would be greatly appreciated.



Re: 2008 Visualization Award

Posted by FRCOPS at 01/14/2008 02:23:29 pm

This, in itself, is not against the rules. We are sure that it would be fun to watch, however, is it is just not practical for the audience and the way the competition works. The judges for this award are all over the U.S. and Canada. If the animation does, in fact, make the top five, the winner is then decided by the students of the FRC program. There would be no way to provide 3D glasses to all of the potential people that might watch the video all over the world. We would advise against it so that your submission has equal opportunity to be seen by everyone.

Chairman's Award

Chairman's Award

Chairman's Award

Chairman's Award

Posted by FRC1259 at 02/16/2008 12:53:24 pm

Are their any guidelines on specifics for the essay ?

Re: Chairman's Award

Posted by FRCOPS at 02/18/2008 09:15:02 am

Please read section 5.4.3.2 thoroughly.

Website Award

Website Award

website

website

Posted by FRC2370 at 02/07/2008 10:20:59 am

Are we allowed to use the FIRST Game Animation on our website? Thanks

Re: website

Posted by GDC at 02/11/2008 02:50:19 pm

You may use the FRC Game Animation on your website, however please make sure that you reference the source appropriately. To reference the video, please cite the 2008 FRC Game: "[i]FIRST[/i] Overdrive. Used with permission of FIRST, NASA, Havabanana Productions. (c) 2008."

Website Award

Website Award Question

Website Award Question

Posted by FRC2348 at 02/13/2008 02:16:16 am

The FRC Manual (Section 5.28.1) states, "The websites must be completed and functioning by the date of submission."

Does this mean that additional updates cannot be made to the website after 2/14/08? I was just wondering because several teams' older websites have full documentation of the entire build season (which would be the only additional updates made to content of our website) once submitted. The uploading shouldn't interfere with the site being "down."



2008 Q&A Forum Export

generated: 02/27/2008 09:26:59 am EST

Thanks!
Team 2348

Website Submission and Fix-it Windows

Posted by FRC1351 at 02/13/2008 11:29:07 am

What work are we allowed to do on our website after we submit it for the website award?

For example, may we correct errors in content? If a video is not loading properly, may we continue to work on it? If the site looks fine in most browsers but is having issues in Explorer, may we fix that?

When is the site evaluated for each event?

Thanks,
1351

Re: Website Award Question

Posted by FRCOPS at 02/13/2008 11:57:06 am

Judging for the Website Award will begin after the date of submission, and we cannot guarantee that any changes made to your website after the submission date will be reviewed. Your website should appear and function as you'd like it to appear and function by the date of submission.

Website Award

website promo video

website promo video

Posted by FRC2370 at 02/13/2008 07:04:48 pm

Are we allowed to use the 2008 FIRST promo video from here: <http://www.usfirst.org/community/resourcecenter.aspx?id=652> on our team site. We would use our own but we do not have one yet. also if we can use it how would you like credit given? thank you

Re: website promo video

Posted by GDC at 02/14/2008 12:03:13 pm

Teams are welcome to use the [FIRST Promo Video](#) on their team sites. Please credit "Video courtesy of [FIRST](#)."

Rookie Awards

Rookie Awards

Rookie All Star/Chairman's Award

Rookie All Star/Chairman's Award

Posted by FRC2348 at 02/07/2008 05:49:43 pm

I am a little confused about our submission for the Chairman's Award. We are a rookie team and section 5.4.2 states:

"Rookie Teams: If you prepare a Regional Chairman's Award, print a copy to give the Judges



2008 Q&A Forum Export

generated: 02/27/2008 09:26:59 am EST

when they visit you at your Pit Station, judges will not be viewing them online."

Does this mean we shouldn't even submit our write-up through the [url]www.firstawards.org[/url] website?

If we don't complete a submission online, are we ineligible at the regional to win the Rookie All Star Award?

If we do complete a submission online, are we allowed to change/add to it (the printed copy) since our regional is at the end of March?

Thanks!

Re: All Star Rookie/Chairman's Award

Posted by FRCOPS at 02/11/2008 09:43:45 am

No formal submission is required to win this award.

Rookie teams that chose to use the Regional Chairman's Award submission process as part of the consideration for the Rookie All Star Award need to print out their submission and give it to the judges at the event. The judges will use this submission as part of their consideration for judging this award. Giving the judges the submission does not give a team an edge in winning the award, it only gives the judges additional information about the team.

Rookie Awards

Rookie All-Star Award

Rookie All-Star Award

Posted by FRC2363 at 02/08/2008 07:10:38 am

Please provide us with clarification on the Rookie All-Star Award. Section 5.4.2 of the game manual and the e-mail sent by FIRST on Thursday, February 7th, indicate that rookie teams wishing to submit documentation for the Rookie All-Star Award should print out a copy and present it to the judges at the regional events. Does this imply that there is no requirement to submit the documentation to the on-line system, and that the ONLY copy of the award that is used for determining the winners of the award are those presented at the regional events? If so, is it permissible for rookie teams to work on their submission between February 21st and the regional event, or must work on the award submission cease at 11:59pm on February 21st when the Chairman's Awards entries are due?

Thank you!

Team 2363

Re: Rookie All-Star Award

Posted by FRCOPS at 02/11/2008 09:37:25 am

Rookie teams are encouraged to submit a "Chairman's Award" submission for practice and to develop the history of what they are doing that might qualify them for the RCA in future years. This submission can be used for the Rookie All Star Award at the regionals, however no formal submission is required to win this award. Rookie teams that chose to use the RCA submission process as part of the consideration for the Rookie All Star Award need to print out their submission and give it to the judges at the event. The judges will use this submission as part



of their consideration for judging this award. Giving the judges the submission does not give a team an edge in winning the award, it only gives the judges additional information about the team.

The Track

The Track

Carpet

Carpet

Posted by FRC1610 at 01/09/2008 01:29:12 pm

We are looking for a place to purchase carpet that is similar to or is the same carpet used for competition.

Re: Carpet

Posted by GDC at 01/10/2008 07:54:25 pm

[I]FIRST [/I]gets the carpet used at the competitions from a company called S+S Mills. To order carpet from them, call 800-241-4013 and ask for Debbie Collins. Please mention "Gary Ulbin" when you call so that she can associate you with [I]FIRST[/I].

Field Carpet

Posted by FRC836 at 01/11/2008 12:42:06 pm

I con not find anywhere in the documentation, what type of carpet is used on the arena field. Can anyone give me this information?

Thanks

B

Re: Carpet

Posted by GDC at 01/11/2008 08:04:09 pm

Please see prior answer.

Carpet

Posted by FRC2560 at 01/14/2008 08:20:21 pm

My team was curious about what are the specs on the carpet on the arena? Also how much would the cost per square yard? Any help would be most appreciated.

Re: Carpet

Posted by GDC at 01/15/2008 12:59:50 am

Please see prior answer.

The Track

What is Guardrail System's shield made of?

What is Guardrail System's shield made of?

Posted by FRC1594 at 01/09/2008 05:18:49 pm

Lexan? Does the shield act as a wall around the tracks?

Re: What is Guardrail System's shield made of?

Posted by GDC at 01/10/2008 09:16:21 pm

The Guardrail shield specified in Section 6 of the Manual is made of clear plastic. It acts as a continuous wall (from the floor to the top of the Guardrail) along the length of the Guardrail.



The Track

Overpass height clarification

Overpass height clarification

Posted by FRC1629 at 01/10/2008 07:14:20 pm

The manual says that the horizontal portion of the overpass is 6-1/2 feet above the floor. Is this measurement taken from the top or bottom of the pipe that makes up the overpass?

Re: Overpass height clarification

Posted by GDC at 01/11/2008 11:35:04 pm

The design of the Overpass is such that it is 6 feet, 6 inches from the floor to the top of the pipes from which the Overpass is constructed. Note, however, that this height is approximate, and may vary slightly from arena to arena.

The Track

Robocoach wall interference

Robocoach wall interference

Posted by FRC846 at 01/16/2008 03:32:06 am

Is the area separating the field and the Robocoach going to be covered with Lexan? If so, are there any remedies for possible interference from the dirty/oily Lexan or are teams going to have to find a way to deal with it?

Re: Robocoach wall interference

Posted by GDC at 01/16/2008 10:53:02 pm

Please refer to Section 6.2.1 of The Manual. The corner of the RoboCoach Station is protected by a panel of an open-weave wire mesh fence.

The Track

Track Kit

Track Kit

Posted by FRC2173 at 01/17/2008 09:10:04 am

We are interested in purchasing a kit to build the official track. Is there a vendor who sells this?

Re: Track Kit

Posted by GDC at 01/31/2008 12:41:54 pm

There are no official "field kits" available this year for teams to buy. However, teams are welcome to take the posted drawings and contact our welding vendors to purchase a field. Price and lead times are uncertain (and may be expensive/lengthy) and up to our vendors to determine based on their schedules.

Below is the vendor responsible for making the field components that are re-used most years (our basic field: player station, rails, etc.):

Bri-Weld (Brian Potter)
55 Gold Ledge Ave.
Auburn, NH 03032
Phone: 603-622-9480



Fax: 603-627-8770

Here is the vendor responsible for making all game specific components this year (overpass, divider, trackball fence etc.)

Loyal Manufacturing Corporation (Steve Adams)
1121 S. Shorridge Road
Indianapolis, IN 46239
Phone: 317-359-3185
Fax: 317-353-9284

The Track

flat surface in the arena?

flat surface in the arena?

Posted by FRC2429 at 01/17/2008 10:16:38 am

Is the surface of the arena totally flat or is there a bump under the overpass. If so, how high would the bump be? Thanks

Re: flat surface in the arena?

Posted by GDC at 01/20/2008 09:51:06 pm

Please refer to Chapter 6 of [URL="http://www.usfirst.org/community/frc/content.aspx?id=452"]The Manual[URL] and the [URL="http://www.usfirst.org/community/frc/content.aspx?id=7684"]official drawings[URL] of The Track. Most of The Track is flat. There are small (up to 1/2 inch) bumps near the Lane Divider, where the carpet-covered base plates for the Lane Divider are located

The Track

finish line

finish line

Posted by FRC848 at 01/23/2008 01:50:16 pm

In the manual the the rules state that a robot may not break the plain of any zone in a clockwise direction. In regards to the finish line, does the plain begin at the checkered zone or at the red or blue stripe?

Re: finish line

Posted by GDC at 01/24/2008 03:00:47 pm

The red or blue stripe (i.e. the portion co-planar with the similarly colored pipes of the Overpass structure).

The Track

S&S Mills (non)response to carpet question

S&S Mills (non)response to carpet question

Posted by FRC2560 at 01/24/2008 02:23:13 pm

As instructed in a previous thread, I contacted Debbie Collins at S&S Mills to ask for information on the carpet. She stated that she wasn't going to tell about the kind of carpet because she didn't want "to give away business", presumably to whatever local supplier we would choose.



She said she'd given the specs to Gary (Ulbin?) and that she was unwilling to tell me any more. I thanked her politely for speaking with me.

Are these specs available online at the FIRST site? If not, can anyone give a rookie team info as to the general type of carpet to look for--open/closed loop, length of loops/strands, material, etc?

Re: S&S Mills (non)response to carpet question

Posted by GDC at 01/31/2008 01:29:40 pm

The thread referenced provided information about where teams can buy the same carpet used for the 2008 [I]FIRST [I]Robotics Competition field. S&S Mills is the vendor of the carpet and the recommended supplier.

If you would like to find your own source for the carpet (basic end use is tenant, retail, or office), the carpet has the following properties:

- level loop pile
- 100% polypropylene
- 20 Oz./ Sq. Yd.
- .187" pile height
- .118" finished pile thickness
- .273 total thickness
- 11.3 stitches/inch
- 6102 Oz./Cubic Yard

The Track

Robocoach Stations

Robocoach Stations

Posted by FRC449 at 01/24/2008 04:15:20 pm

What are the approximate dimensions of the chain link used to separate the robocoach stations from the track? That is, how thick is the wire and how widely spaced is it?

Re: Robocoach Stations

Posted by GDC at 01/28/2008 01:49:32 pm

Wire: 10 gauge...approximately (.145" measured)
Spacing: 1.5" diamond shaped mesh

The Track

Finish Line tape material

Finish Line tape material

Posted by FRC340 at 01/24/2008 06:31:21 pm

From Section: 6.2.1: Boundaries and Markings

[quote]

A red or blue "FINISH LINE" is marked on each side on the carpet under the OVERPASS. The FINISH LINE is indicated by a six-inch wide tripe of black-and-white checkered tape, followed by a two-inch wide stripe of colored gaffers tape. The pipes of the OVERPASS structure



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coplanar with the vertical projection of the gaffers tape are colored to provide further indication of the plane of the FINISH LINE. For the red FINISH LINE, the gaffers tape and pipes are red, and for the blue FINISH LINE the gaffers tape and pipes are blue.

Arena Layout and Markings Has this text for the lines as 3" TAPE BLK/WHT W/3" STRIPE EVERY 3", TWO STRIPS[/quote]

Is there a source for this finish line tape? All that I can find is a 2 inch tape, or a 3 inch tape, with 3 rows.

Re: Finish Line tape material

Posted by GDC at 01/31/2008 01:41:34 pm

The checkered tape was custom printed and is not available by roll, or even by case. For large volume orders (80 rolls minimum), you can contact the original vendor, Wholesale Tape, at 1-800-642-8273. The tape is white 3-inch gaffers tape, printed with a 3-inch square black checkerboard pattern.

If "close enough" is "good enough" for your purposes, 1" vinyl checkered tape is readily available from such sites as [url]http://www.findtape.com[/url] (click on "Racer's Tape").

The Track

Finish Line in the arena

Finish Line in the arena

Posted by FRC340 at 02/01/2008 11:16:18 am

[quote]The checkered tape was custom printed and is not available by roll, or even by case. For large volume orders (80 rolls minimum), you can contact the original vendor, Wholesale Tape, at 1-800-642-8273. The tape is white 3" gaffers tape, printed with a 1-1/2" square black checkerboard pattern.[/quote]

This is contradicting the 2008 Arena Markings and Layout pdf here:

[url]http://www2.usfirst.org/2008comp/Drawings/2008%20Field/2008%20Arena_Layout_and_Marking.pdf[/url]

Where it clearly states the finish line as: 3" TAPE BLK/WHT W/3" STRIPE EVERY 3", TWO STRIPS

Will there be an update to reflect this new configuration of the finish line?

Those considering a bottom looking sensor to detect the finish line may be surprised if they get to the regional Arena only to see the configuration you described!

Re: Finish Line in the arena

Posted by GDC at 02/04/2008 02:28:37 pm

Thank you for catching this! We meant to indicate that the custom tape was printed with a 3-inch square pattern. The previous answer has been corrected.

The Track

What's under the Carpet?

What's under the Carpet?



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Posted by FRC1501 at 02/04/2008 02:44:12 pm

One of our students read that the cables, for the lap counters, will go under the carpet creating a raised area.

I said that the only thing under the carpet will be the steel plates holding up the center wall.

Who is right?

Keep up the great work!

Re: What's under the Carpet?

Posted by GDC at 02/07/2008 12:56:09 pm

The cables for the lap counters are attached to the Overpass, above The Track. The support plates for the Lane Divider are placed on top of the carpet, and covered with a second piece of carpet that is taped in place. Under the main carpet of The Track you would find (depending upon the venue):

- Wood planking or concrete floor or iso-grid plastic matting , then
- Plywood subfloor or ice (optional), then
- Floor joists or reinforced concrete, then
- A crawlspace (optional), then
- Packed soil, then
- Clay, then
- Bedrock, then
- Continental crust, then
- The Moho Discontinuity, then
- Upper Mantle (primarily composed of molten peridotite, eclogite, olivine, spinel, garnet, pyroxene, perovskite, and other oxides), then
- Lower Mantle (primarily composed of magnesium and silicon oxides), then
- Core (primarily composed of iron and oxygen, sulfur, and nickel alloys)

Thank you regarding Arena Construction

Posted by FRC467 at 02/09/2008 02:34:15 pm

Thank you for clarification of what is under the carpet. We were under the mistaken impression that the Moho Discontinuity was ABOVE the Upper Mantle. This will alter the design of our robot, but not significantly.

Re: Thank you regarding Arena Construction

Posted by GDC at 02/11/2008 02:55:01 pm

The Moho Discontinuity may be above or below the Upper Mantle, depending upon your frame of reference and the direction from which you are approaching it. Obviously, one of us is upside-down.

Game Pieces

Game Pieces

Broken Ball

Broken Ball

Posted by FRC353 at 01/09/2008 08:01:07 pm

If the ball breaks during the game , #1 is it replaced, and #2 is the debris removed from the field?



Re: Broken Ball

Posted by GDC at 01/10/2008 08:16:08 pm

A broken Trackball will be replaced by a new ball and inserted into the field by the field reset personnel at roughly the same location. The debris will not be removed until the next safe opportunity or after the match.

Game Pieces

The ball

The ball

Posted by FRC585 at 01/09/2008 10:11:21 pm

Does the ball have a standard PSI?

If a ball stays on the overpass from the start of the match and remains there until the end of the match, do we get the bonus points from the ball remaining on top of the overpass during the entire match?

If an opponent places a ball on their overpass, and we knock it over forward, do they get the 8 points for the ball hurdling?

Re: The ball

Posted by GDC at 01/10/2008 09:34:21 pm

There is not a specific inflation pressure for the Trackballs. For the competitions, they will be inflated to size. Instructions for properly inflating the Trackballs can be found in Section 10.2.8.1 of the Manual.

If a Trackball is on the Overpass at the end of the Match (within the constraints specified in Rule <G14>), it will earn a 12-point bonus - regardless of whether it has been there for the entire Match or not.

Knocking an opponent's Trackball off the Overpass before the end of the Match would prevent them from collecting the 12-point bonus. But if the Trackball is knocked "forward" and as a result it completes a Hurdle, then the opponent will receive 8 points.

Game Pieces

deflated ball

deflated ball

Posted by FRC484 at 01/10/2008 08:39:55 pm

our track ball was punctured and deflated. during the game (1) how to score with a deflated track ball - it will not roll across the finish line on its own. (2) is there a rule relating to a deflated ball caught on a robot - can another ball be carried? Our ball was punctured with a minimal accident and the bladder ripped open.

Re: deflated ball



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Posted by GDC at 01/14/2008 12:56:32 pm

If a Trackball becomes damaged or completely deflated, it will be replaced by a new Trackball at the next safe opportunity. Once the new ball enters the field, the damaged ball is invalidated, considered field debris, and no longer scorable.

Game Pieces

Ball pressure

Ball pressure

Posted by FRC2181 at 01/12/2008 01:34:20 pm

what pressure is the ball inflated to?

Re: Ball pressure

Posted by GDC at 01/13/2008 01:00:31 am

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8024"]this answer[/URL].

Game Pieces

Trackball weight

Trackball weight

Posted by FRC1511 at 01/12/2008 08:40:58 pm

Section 6.3 states that the approximate trackball weight will be 10 pounds. However, we and several other teams have weighed our trackballs at around 7.2 pounds. Which is correct?

Re: Trackball weight

Posted by GDC at 01/24/2008 10:29:11 pm

Thanks for calling our attention to the discrepancy. Please refer to Team Update #4.

Game Pieces

Depth of Ball When on Overpass

Depth of Ball When on Overpass

Posted by FRC1350 at 01/23/2008 05:24:45 pm

When a trackball is resting in one of the three target locations in the overpass, how far below the bottom of the 1.5 inch OD pipe does the bottom edge of the ball extend? Where is this covered in the manual?

Thank you.

Re: Depth of Ball When on Overpass

Posted by GDC at 01/24/2008 03:11:12 pm

Please refer to the field drawings (and recognize the potential variations discussed in Section 6 of the Manual) posted on the [I]FIRST [/I]website [URL="http://www.usfirst.org/community/frc/content.aspx?id=7684"]here[/URL]. Given the dimensions of the field components, this can be determined through a series of geometric and trigonometric calculations. You can also build a replica of the field elements of which you're inquiring and measure it.

Game Pieces

Weight / size of Trackball



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Weight / size of Trackball

Posted by FRC2669 at 01/28/2008 10:11:51 pm

Hey GDC, thanks for the support and the fast responses, we have some additional questions about this year's rules.

...

4) We could really use an additional clarification on ball size and ball weight. We have seen various version of both measurments (weight goes from 7.2 / 10 pounds and size goes from 102 -120 CM).

...

We are sorry if there are too many questions in here and you are gonna have to split it into seperate messeges in different sub-forums, but we also believe that it will be easier for you guys to get this answered then 5 different posts, if not please say so and the next questions we will be making are going to be in seperate posts.

Thanks a lot, KY Bots, FRC2669.

Re: A few questions 4

Posted by GDC at 01/31/2008 03:03:49 pm

Question 4: Please refer to Section 6.3 of The Manual, as amended in Team Update #4. When inflated, each Trackball is approximately 40 inches in diameter, and weighs approximately 7.3 pounds.

Game Pieces

EXACT TRACKball bladder Source (vendor) Needed

EXACT TRACKball bladder Source (vendor) Needed

Posted by FRC39 at 02/01/2008 02:38:24 pm

DGC directs users to Update 2 for a Trackball source. Update number 2 simply gives a spec of 2500 gm for the bladder but no vendor. Besides appearing to be just a bit light on the mass, update 2 is not not specific enough in terms of a source for obtaining the ball. There is an additional issue of the anti burst addative that is added to bladders. This can affect the compliance or "bouncieness" of the ball. Because of the exacting nature of building launching devices for hurdlers Team 39 wishes to purchase the EXACT EXACT OEM Bladder that will be found on the Game feild (ours has burst). Here is what we have learned.

=====

I just had a detailed discussion with Sportogo.

Sportogo says they were the vendor to FIRST for the trackball cover but not the ball.

The FIRST balls (bladder+cover) weighs 7.2 lbs. We did this measurement on a really good load cell.

The FIRST ball cover weighs ~1.5 lbs (weighed by Sportogo today on their spring scale with



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1/10 lb graduations). This would suggest that the FIRST bladder should weigh 5.7 lbs.

The \$20.50 Sportogo ball SP01501 weighs 4.4 Lbs (per Sportogo) and does not have the "anti burst additive" that makes the PVC have the closed cell foam texture.

The \$30 Sportogo Ball SP100001 weighs 4.8 lbs and does have the antiburst additive. They lead you to believe that this is the OEM component of the Web page but detailed discussion with Sportogo revealed that in fact FIRST obtained bladders from a different vendor.

Yes, the Sportogo web site lists the bladder weights for the above balls as identical (2200 gm) but they tell me they are not identical and gave me the above numbers.

Both of the above bladders are ~ 1 lb underweight. We are still on the hunt for the EXACT EXACT FIRST bladder. The weight (mass) is pretty important for catapult development and the energy needed is $E = mgh$

We are looking for contact information for the vendor of the EXACT replacement bladder so that our development program uses an EXACT Game piece with the EXACT physical properties we will find on the playing field.

Warmest Regards

Re: EXACT TRACKball bladder Source (vendor) Needed

Posted by GDC at 02/04/2008 02:33:21 pm

The manufacturer of the Trackball bladders provided in the Kit of Parts and used in [i]FIRST[/i] Overdrive does not sell directly to end users.

The bladders available from Sportogo are made to the same specifications, however tolerances will vary from manufacturer to manufacturer.

We strongly recommend that you design your Robot to be tolerant of production variations in Trackball construction.

Game Pieces

Ball Pressure

Ball Pressure

Posted by FRC1771 at 02/06/2008 03:15:18 pm

We have discovered that small variations in ball inflation, even within the "proper inflation guidelines" in the KOP manual (which are very subjective) make a huge difference in the "shootability" of a trackball. For instance, a trackball inflated to the low side of the subjective criteria will almost not shoot at all, while one inflated to the high side will almost reach orbit.

Temperature variations make LARGE differences in inflation. We inflated the ball inside, went outside (on a very cold day) and within a few minutes, were unable to shoot. We re-inflated outside, and after bringing the ball back inside, had to release huge quantities of air to prevent a catastrophic failure.



My question is: how consistent will the trackball inflation be at the competitions? I can envision a match with two trackballs, at slightly different inflations, where it will be difficult to predict how far the ball will go when fired.

Re: Ball Pressure

Posted by GDC at 02/07/2008 01:06:01 pm

As previously indicated, at the competitions the Trackballs will be inflated to size, not to a specific pressure. During the course of the competitions the Trackballs are expected to undergo normal wear and tear for an event of this type. This may cause changes in the condition of the fabric cover, the internal pressure, and the rebound properties. The Trackballs will remain in service unless they are damaged to the point that they are unusable. Robots should be designed to accommodate variations in the pressure, size, surface condition, and symmetry of the Trackballs.

Alliance Zones

Alliance Zones

Competition Cable Length

Competition Cable Length

Posted by FRC180 at 01/15/2008 12:32:15 pm

We are designing an operator console that has the competition port about 18" above the shelf of the player station.

What is the length of the cable at the player station that we will be plugging into our competition port?

Re: Competition Cable Length

Posted by GDC at 01/31/2008 01:22:51 pm

The competition cables are 6' long and come from the side of the Station Control Cabinet.

This is long enough to comfortably reach from the station control cabinet (located under the center players' station) to 16" above the center of each drivers' station shelf.

Definitions

Definitions

The term "pre-college" in section 7.2

The term "pre-college" in section 7.2

Posted by FRC2604 at 01/10/2008 02:35:02 pm

I have a student on my team that is dual enrolled - that is enrolled as a senior in high school but also taking classes at the community college. Is he precluded from being a "driver" in the game because of this?

Re: The term "pre-college" in section 7.2

Posted by GDC at 01/16/2008 12:20:35 am

As the student is still enrolled as a high school student, having him as a Driver is acceptable.

Definitions

Definition of Hurdle



Definition of Hurdle

Posted by FRC846 at 01/10/2008 08:15:30 pm

In the definition of a "hurdle", it mentions that the trackball should cross over the overpass. Does it still count as a hurdle if either robot or ball makes contact with the overpass in the act of scoring?

Hurdling

Posted by FRC2344 at 01/11/2008 10:08:39 am

Does the ball have to clear the overpass during a hurdle? Or Can it bounce off and still count?

Re: Definition of Hurdle

Posted by GDC at 01/16/2008 12:22:19 am

Yes. The Trackball and the Robot may contact the Overpass while in the process of Hurdling.

Definitions

Definitions 7.2

Definitions 7.2

Posted by FRC1501 at 01/11/2008 07:42:33 am

The manual defines the Driver and Robocoach as pre-college. Does this mean we can use an 8th grader as a Driver or Robocoach?
In previous years it was limited to 9th - 12th grades.

Re: Definitions 7.2

Posted by GDC at 01/15/2008 11:44:09 pm

Any pre-college student may be used as a driver. It is perfectly acceptable to use an 8th-grade student as a driver if the team so chooses (and this has been done in the past - there has not been rule against this).

Definitions

Height of possessed trackball before releasing

Height of possessed trackball before releasing

Posted by FRC1807 at 01/12/2008 07:04:51 am

In the Game Definitions, it describes Hurdling as: "...in POSSESSION of TRACKBALL ... and elevating the TRACKBALL so that the top of the TRACKBALL is higher than the LANE DIVIDER".

Would this mean that if you built a trackball-launching device that released the trackball from a position LOWER THAN THE SIX-FOOT LANE DIVIDER, you would be penalized? or prevented from competing?

How will this six-foot plane be evaluated? during inspection or competition?

Re: Height of possessed trackball before releasing

Posted by GDC at 01/16/2008 12:31:18 am

The item you reference defines the act of Hurdling. This definition is used when determining if a Robot is protected while Hurdling (under Rule <G42>). There is no requirement that a Trackball in the possession of a Robot be held such that the top of the Trackball is above six feet.



Definitions

Adult Coach?

Adult Coach?

Posted by FRC846 at 01/16/2008 03:30:22 am

In previous years, our team has used 4 members that are all students, including the coach. We feel that this allows an additional member to experience the game from a "more privileged" point of view. During this year's kickoff video, it was mentioned that teams must have 3 students and 1 adult. Is it legal to have 4 students with no adults? If not, please state which rule.

Re: Adult Coach?

Posted by GDC at 01/16/2008 10:54:00 pm

Please refer to Section 7.2 of The Manual, and the definitions of the team positions. The Coach may be either a student or adult mentor. There is no requirement that the Coach must only be an adult.

Definitions

Penalty definition

Penalty definition

Posted by FRC2331 at 01/27/2008 01:49:19 pm

In section 7.2, the definition of a penalty is given:

[quote]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]

What is "a deserving violation"? Is that any rule from any section of the manual, or only Section 7 rules? Does a penalty have to be noted in a rule for it to apply, or can the refs apply a penalty to any violation?

Re: Penalty definition

Posted by GDC at 02/04/2008 01:49:27 pm

Thank you for calling this ambiguity to our attention. Rule <R110> has been updated to clarify how these rules will be enforced. Please refer to Team Update #8.

Definitions

Possesion, Capturing, Herding

Possesion, Capturing, Herding

Posted by FRC224 at 02/11/2008 07:41:25 pm

Hello:

Under the definition of POSSESSION, there is two types: supporting and capturing. Capturing states a captured ball is one that stays in the same place relative to the robot while the robot is moving. My questions are: If the robot is by defintion HERDING, but also the ball is the same place relative to the robot even when the robot turns and move backwards, is it considered HERDING or POSSESSION?



What is the difference between HERDING and POSSESSION (more specifically the CAPTURED part)? What are examples of HERDING, but not CAPTURED? What are examples of CAPTURED?

An example:

IF a robot uses a net-like contraption laid on top to move the ball, is it considered POSSESSION or HERDING?

Thanks,
Team 224

Re: Possesion, Capturing, Herding

Posted by GDC at 02/14/2008 12:45:11 pm

The difference between Herding and Possession (specifically "captured") is inherent in the influence the Robot has over the Trackball's movement. A Robot is Herding if it pushes, bumps, rolls, etc a Trackball in a particular direction, but the Trackball is not controlled by the Robot. A Robot has "captured" a Trackball if it consistently controls the location of a Trackball with reference to the Robot.

We cannot comment on specific assemblies and designs.

Safety

Safety

<S02> Which team is disqualified when someone touches a robot?

<S02> Which team is disqualified when someone touches a robot?

Posted by FRC2505 at 01/09/2008 05:52:02 pm

When a member from Team A directly contacts Team B's robot, which teams are disqualified?
Is there a difference between "illegal contact" and any other form of contact?

Re: <S02> Which team is disqualified when someone touches a robot?

Posted by GDC at 01/10/2008 09:24:07 pm

The team associated with the human or robot that caused the infraction will be held responsible. During a Match, all contact between a human and robot will be considered violations of Rule <S02>.

Safety

Rule <S1> and the force to hurdle the trackball from the floor.

Rule <S1> and the force to hurdle the trackball from the floor.

Posted by FRC1716 at 01/10/2008 01:22:54 am

Is it allowed to hurdle the trackball from a location on the floor thus with enough force to clear the overpass at up to say at a 45 degree angle, or would this be deemed a possible safety design hazard?

Re: Rule <S1> and the force to hurdle the trackball from the floor.

Posted by GDC at 01/10/2008 08:42:37 pm

Your post does not provide enough information to determine whether or not your conceived



solution violates Rule <S01>. If your solution could damage the field or injure spectators, please consider your design carefully.

Safety

Trackball projection

Trackball projection

Posted by FRC540 at 01/10/2008 06:19:47 pm

What is the maximum velocity that we are allowed to project the trackball over the overpass for the hurdle points?

Also what is the maximum force we are allowed to store in a spring?

Thank you,

Mr. Henry Hurlburt
TEAM 540 Lead Mentor

Re: Trackball projection

Posted by GDC at 01/15/2008 11:39:17 pm

There is no specified limit to the velocity of the Trackball, as long as it does not present a safety hazard (Rule <S01>) or field damage (Rule <G35>) issue.

There is no specified limit amount of energy stored in a spring, as long as it does not present a safety hazard (Rule <S01>). Before developing such a system, please review Rule <R01> and Rule <R02> carefully.

Safety

Safety

Safety

Posted by FRC2340 at 01/23/2008 06:09:11 pm

In <S02> it states "...Illegal contact will result in TEAMS being disqualified"
Are teams disqualified from the entire competition or just the match?

Re: Safety

Posted by GDC at 01/24/2008 03:06:05 pm

Disqualification is only for the match.

Safety

E-Stop in practice match

E-Stop in practice match

Posted by FRC386 at 02/25/2008 12:17:34 pm

If, in a practice match, a team opts to press the E-Stop in autonomous to prevent their robot from damaging itself or another robot, will the team have the option of re-enabling their robot for teleoperated mode?

Again, this applies to practice matches only.



Thanks,
Chris
Team 386

Re: E-Stop in practice match

Posted by GDC at 02/25/2008 12:36:52 pm

No, once the E-Stop is pushed, the Robot is disabled for the match.

Game Periods

Game Periods

Scoring after the end of a period

Scoring after the end of a period

Posted by FRC1529 at 01/10/2008 03:30:54 pm

Are scores taken at the end of a period, or when all objects come to rest? For example, if the trackball crosses the finish line one second after the end of the Hybrid period, will it be worth 4 hybrid points, 2 teleoperated points, or 0 points for not happening within the bounds of gameplay?

Likewise, are there different rules for scores by robots versus scores for game elements?

Overdrive ROCKS!

Scoring after the end of a period

Posted by FRC1529 at 01/12/2008 07:35:00 am

When is a period over - when the time is up, or when all objects come to rest? If a trackball or robot crosses the finish line shortly after the period expires, will its score count? For example, if a trackball is put into motion during the Hybrid period, but does not cross the alliance finish line until after the end of the period, how is it scored - 4 points for a Hybrid trackball cross, 2 points for a teleoperated cross, or 0 points for not scoring within the time bounds of the game (which would effectively require the robot to make another lap with the trackball)?

Re: Scoring after the end of a period

Posted by GDC at 01/16/2008 12:27:23 am

The Hybrid Period and Teleoperated Period end when the clock reaches zero at the end of each period. Scores may be accumulated up until the clock reaches zero, but not after.

Game Periods

Wrong way during Hybrid Period

Wrong way during Hybrid Period

Posted by FRC354 at 01/28/2008 08:31:42 pm

...

5. If a robot goes the wrong way on the track during hybrid mode, is a penalty applied? (for example if robots try to act as obstacles by heading backwards into the opponent's stretch...?)

Thanks!
Team 354

Re: Wrong way during Hybrid Period



Posted by GDC at 01/31/2008 02:57:12 pm

Question 5: Yes. Please refer to Rule <G22>.

Game Periods

Questions about Hybrid Period

Questions about Hybrid Period

Posted by FRC354 at 01/28/2008 08:31:42 pm

1. I am assuming we get points for any ball we knock down - whether our alliance's or opponent alliance's. Correct?
2. Does a team get the 12 point bonus for having a ball on the overpass at the end of a match even if the ball was never removed from the overpass to start with?

...

Thanks!
Team 354

Track Balls left on the Overpass

Posted by FRC1108 at 01/29/2008 12:02:29 pm

If any track balls are left on the overpass the entire match, do they still earn the 12 point bonus at the end?

Re: Questions about Hybrid Period

Posted by GDC at 01/31/2008 02:53:21 pm

- Question 1: No. Please refer to Rule <G08>.
Question 2: Yes. Please refer to Rule <G14>.

Game Periods

Hurdling during Hybrid Period

Hurdling during Hybrid Period

Posted by FRC354 at 01/28/2008 08:31:42 pm

...

4. Would a team get points for hurdling during hybrid mode if it removed their own trackball from the overpass and then hurdled it over that same overpass (violation of rule G12) or must the team make a complete lap during hybrid mode in order to get hybrid hurdling points?

...

Thanks!
Team 354

Re: Hurdling during Hybrid Period

Posted by GDC at 01/31/2008 02:55:58 pm

Question 4: There are no "Hybrid Hurdling Points." A Trackball can score a Hurdle at any time during the Match (Hybrid Period or Teleoperated Period) as long as the Trackball has satisfied the Rule <G12> constraints.

Game Periods



When does game actually end?

When does game actually end?

Posted by FRC175 at 02/04/2008 01:59:40 pm

Ref G02 In past years the game didn't actually end until all motion stopped. If a robot coasts across the line or a ball is moving around on the overpass and falls off after power is cut for example do they count? Conversely, if power is cut and the robot arm sags and touches the ball after a few seconds would the ball still count.

Re: When does game actually end?

Posted by GDC at 02/07/2008 12:43:31 pm

From Rule <G02>: "The TELEOPERATED PERIOD ends when the arena timer displays zero seconds. This also indicates the end of the MATCH." Scores may be accumulated until the end of the Match, but not afterwards. If any objects are in motion as the Match ends (Trackballs in flight, Robots racing across the Finish Line, etc.) the Referees will determine, as best as they can within the limits of human perception, the state of the game at the moment the Match concluded. Scores will be assigned accordingly.

Scoring

Scoring

7.2 Hurdling

7.2 Hurdling

Posted by FRC1606 at 01/09/2008 12:57:16 pm

are there any rules against launching/throwing the trackball over the overpass?

7.2 Hurdling

Posted by FRC1891 at 01/10/2008 09:24:48 am

Must the ball be in "possession" all of the time when hurdling the overpass? Does hurdling mean that a robot must have control of ball until it is on the other side of the overpass?

Example: Robot has a telescoping manipulator that can possess the ball and raise it up to the overpass and then "bump" the ball over without extending the manipulator or ball over the overpass.

Example: Robot has the ability to throw the ball over the overpass either from the floor or a elevated position.

Sherbot

Team 1891

Re: 7.2 Hurdling

Posted by GDC at 01/10/2008 09:07:56 pm

A robot may break all contact with the Trackball as it passes over the Overpass. Likewise, a robot may be in contact with the Trackball when it passes over the Overpass. Either would be considered a valid Hurdle.

Scoring

hurdling score w/o crossing opponent line



hurdlng score w/o crossing opponent line

Posted by FRC1001 at 01/09/2008 01:52:41 pm

Does rule G13 apply to hurdling as well as rolling the ball; i.e., if one robot hurdles the ball and an alliance member kicks the ball back to them, will the 6 hurdling points be scored if the first robot hurdles the ball again over the same overpass?

Re: hurdling score w/o crossing opponent line

Posted by GDC at 01/10/2008 09:28:51 pm

Rule <G13> applies to all Trackballs, irrespective of whether they cross the Finish Line by going over or under the Overpass.

Scoring

Definition of Hurdle

Definition of Hurdle

Posted by FRC1503 at 01/09/2008 02:17:23 pm

Section 7 of the manual defines "hurdle" as the following:

[quote]HURDLE: When a TRACKBALL CROSSES a FINISH LINE while passing above the OVERPASS

and then contacts either the floor or another ROBOT before re-contacting the originating ROBOT.[/quote]

Does the use of the word "before" in this definition mean that if the trackball re-contacts the originating robot before contacting either the floor or another robot, the hurdle does not count at all?

For example, would it be considered a hurdle for the originating robot to throw the ball over the overpass, catch it in midair on the other side, and then in a controlled fashion bring the trackball into contact with another robot or the ground?

Finally, must the trackball re-contact the originating robot for the hurdle to count?

Hurdle

Posted by FRC254 at 01/09/2008 02:49:29 pm

A hurdle is currently defined as "When a TRACKBALL CROSSES a FINISH LINE while passing above the OVERPASS and then contacts either the floor or another ROBOT before re-contacting the originating ROBOT."

What if you pass the trackball over but it contacts your own robot on its way down before hitting the floor or another robot? Would this be ok as long as you are not in possession of the trackball on the way down?

Hurdle knocked awry?

Posted by FRC1594 at 01/09/2008 05:58:16 pm

Does a trackball score if, during hurdling, the ball crosses the finish line/overpass plane but then gets knocked backwards and lands on the ground or another robot, on the same side of the finish line where it started the hurdle?

Re: Definition of Hurdle

Posted by GDC at 01/10/2008 08:47:21 pm



If a Robot moves a Trackball over the Overpass, and then the Trackball re-contacts the originating Robot before contacting the ground or another Robot, then the Hurdle will not be awarded. A Trackball does not have to re-contact the originating Robot for the Hurdle to count.

Scoring

Ref G11 hurdling

Ref G11 hurdling

Posted by FRC175 at 01/09/2008 02:18:46 pm

Hurdling 'OVER' the overpass. Is rolling the ball across the overpass considered OVER or is OVER some form of toss. Is a ball placed on top and later removed by you or another alliance partner a hurdle.

Re: Ref G11 hurdling

Posted by GDC at 01/10/2008 08:54:10 pm

A Trackball may come in contact with the Overpass during the Hurdle without penalty. A Trackball may be placed on the Overpass at any time during a Match. It may be knocked forward off the Overpass at any time to complete a Hurdle.

Scoring

Posessing a ball

Posessing a ball

Posted by FRC1015 at 01/09/2008 05:20:44 pm

If a robot is touching a ball when it goes across the finish line, does that alliance get points for both the robot and the ball or just the robot?

Re: Posessing a ball

Posted by GDC at 01/10/2008 08:56:24 pm

If a Robot is in contact with a Trackball as it crosses the Finish Line under the Overpass (within the constraints of Rule <G10>), then only the points for the Robot crossing the Finish Line will be awarded. If a Robot crosses the Finish Line while in contact with a Trackball that is going over the Overpass (i.e. a Hurdle), then points will be awarded for both the Robot and the Trackball.

Scoring

If we knock down an opponent's ball during Hybrid Period?

If we knock down an opponent's ball during Hybrid Period?

Posted by FRC1594 at 01/09/2008 05:34:39 pm

Who scores if we knock an opponent's ball off the overpass in the Hybrid Period?

Re: If we knock down an opponent's ball during Hybrid Period?

Posted by GDC at 01/10/2008 09:22:16 pm

As noted in Rule <G08>, all Trackball scores are awarded to the Alliance associated with the scored Trackball, independent of what Robot may have caused the scoring action. So if you knock your opponent's Trackball off the Overpass during the Hybrid Period, the opponent will receive the points.

Scoring

If you un-cap your opponent's ball at the end of the match and it goes forward...?



If you un-cap your opponent's ball at the end of the match and it goes forward...?

Posted by FRC806 at 01/09/2008 10:05:05 pm

This question arose when viewing the end of the game animation. The robot that knocks off the trackball which was put back up for the 12 point bonus, knocks it forward over the opponent's finish line.

Since the rules say that a trackball scores points for its color alliance regardless of which robot caused the scoring, would doing such a thing rob your opponents of the 12 point bonus but give them 8 for a hurdle?

Re: If you un-cap your opponent's ball at the end of the match and it goes forward...

Posted by GDC at 01/10/2008 09:39:21 pm

Yes. Knocking an opponent's Trackball off the Overpass before the end of the Match would prevent them from collecting the 12-point bonus. But if the Trackball is knocked "forward" and as a result it completes a Hurdle, then the opponent will receive 8 points.

Scoring

Diagonal Hurdling

Diagonal Hurdling

Posted by FRC2468 at 01/10/2008 10:43:34 am

According to <G13> in section 7, A TRACKBALL that has CROSSED its own FINISH LINE must CROSS the opponent's FINISH LINE before it can score by CROSSING its own FINISH LINE again. Could two robots from the same alliance position themselves in opposite home stretches, and throw a Trackball diagonally in such a way that it crossed the finish line and lane divider each time, so that every two throws 8 points would be scored?

Re: Diagonal Hurdling

Posted by GDC at 01/10/2008 09:05:31 pm

Yes, this theoretically would be possible, as long as it was done in a manner that did not violate Rule <S01> and/or Rule <G35>. Please note that if the Trackball crosses the exact center of the Lane Divider and Overpass, it is not crossing the Finish Line and therefore no score is awarded.

Scoring

Hybrid Scoring

Hybrid Scoring

Posted by FRC2604 at 01/10/2008 02:44:44 pm

For clarification, please tell me what the score would be in the following scenario:

Hybrid Mode

Robot approaches ball and lifts it off the overpass

Robot has possession of it's own home stretch

Robot then "hurdles" it over the overpass

I'm trying to understand if that scenario is worth 8 or 16 points. Rule G8 and G11 suggests that the score is 8+8, however rule G12 suggests that G11 doesn't apply until the ball crosses a lane marker. What isn't clear is if G12 is applicable for both hybrid and tele-operated mode



or just tele-operated mode.

Re: Hybrid Scoring

Posted by GDC at 01/16/2008 12:23:19 am

Rule <G12> is applicable for the entire Match. Therefore, in the example scenario, the Alliance would earn 8 points for removing the Trackball from the Overpass. But no other points could be earned until Rule <G12> was satisfied.

Scoring

End Game Overpass count as Hurdling?

End Game Overpass count as Hurdling?

Posted by FRC846 at 01/10/2008 08:12:12 pm

Regarding the end game, if a red ball has been placed/is still on the overpass and the blue team knocks it off to descore it and the ball goes forwards, is that considered 8 points as a hurdle?

Re: End Game Overpass count as Hurdling?

Posted by GDC at 01/15/2008 11:37:26 pm

Knocking an opponent's Trackball off the Overpass before the end of the Match would prevent them from collecting the 12-point bonus. But if the Trackball is knocked "forward" and as a result it completes a Hurdle, then the opponent will receive 8 points.

Scoring

Contacting a Trackball after a Hurdle

Contacting a Trackball after a Hurdle

Posted by FRC1114 at 01/10/2008 10:11:01 pm

If a robot never loses contact with the ball as it passes over the overpass at what point would the contact need to be broken in order to complete hurdle. It is understood that once the contact is broken the trackball would be required to touch the floor or another robot in order to be scored.

Contacting a Trackball after a Hurdle

Posted by FRC190 at 01/12/2008 11:28:22 pm

According to the rules, you may still be in contact with a Trackball as it crosses through the plane of your finish line. If the ball crosses while still in possession of the hurdling robot, touches the ground while still in possession of the hurdling robot, and then the robot releases the ball (while it is still in contact with the ground), is that considered a valid hurdle, or must the robot NOT be in contact with the Trackball as it contacts the ground?

Re: Contacting a Trackball after a Hurdle

Posted by GDC at 01/16/2008 11:35:25 pm

The Robot must release and break all contact with the Trackball before it touches the ground or another Robot. There is no specified moment before which this must be done.

Note however, that the intent of the Game Designers was that a Trackball being passed over the Overpass would be released and dropped from at least the height of the Overpass, so it could then be retrieved by a partner Robot. We did not explicitly define a minimum "drop height" and hope it will not be necessary to do so.



Scoring

Trackball Crossing the Line

Trackball Crossing the Line

Posted by FRC1700 at 01/11/2008 12:12:55 am

In rule <G10>, the manual states: Each TRACKBALL that has CROSSED its own FINISH LINE while not in contact with a ROBOT of the same ALLIANCE will earn 2 points. A TRACKBALL that has CROSSED its own FINISH LINE which contacts ROBOTS of both ALLIANCES while CROSSING will earn 2 points.

Our team is confused as to whether or not this means our robot cannot be in contact with the trackball while it is crossing the finish line or if this means only one robot from an alliance may be touching the trackball as it crosses the finish line.

Trackball Crossing the Line

Posted by FRC663 at 01/11/2008 01:15:57 pm

Can you provide a clarification of rule G10, trackball crossing the finish line while not in contact with an alliance robot? Does this mean we must release the trackball before it breaks the plane of the finish line, and an alliance robot cannot touch it again until the trackball travels completely through the plane of the finish line? Or does the point at which the trackball touches the floor just need to be across the plane of the finish line?

I would like clarification on what is the criteria of separation from the trackball and alliance robots in order to get credit for the 2 point trackball score?

Trackball Crossing the Line

Posted by FRC753 at 01/12/2008 01:36:59 am

With regard to rule <G10>, does any contact between an alliance's ball and one of its robots while the ball has broken the plane of the finish line (i.e., within one diameter of the finish line) prevent the scoring of that trackball?

Would the score count if the ball contacts (bounces, rolls off, brushes) a robot of the opposing alliance at anytime while it has broken the plane of the finish line?

Re: Trackball Crossing the Line

Posted by GDC at 01/14/2008 12:46:55 pm

The intent of Rule <G10> is that no Robot (preferably from either Alliance) should be in contact with the Trackball while it crosses the Finish Line. If your Trackball contacts you, or one of your Alliance Partners, while crossing your Finish Line, the Trackball will not be awarded points. If your Trackball contacts an Opposing Robot, the Trackball will be awarded points.

To be awarded points for having a Trackball cross the Finish Line, the Trackball must be completely free of contact by the Alliance Robot during the entire process of passing through the vertically projected plane of the Finish Line. In other words, from the point where the Trackball is just about to begin crossing the Finish Line, until it is completely past the Finish Line, the Robot must not touch the Trackball.

There are no specific requirements for the separation between the Trackball and the Robot. However, to be counted, the separation must be clearly visible to the Referees that will be



making the determination of contact/no-contact. Therefore, you will want to avoid any designs which partially or completely surround the Trackball during the process of crossing the Finish Line and may obscure the ability to view the Trackball.

The provision of the second sentence in Rule <G10> is so that Robots from opposing Alliances do not get into pushing matches with Trackballs that are crossing the Finish Line (e.g. there is no advantage for an opponent to block a Trackball that is being pushed across the Finish Line).

Scoring

Points during hybrid mode

Points during hybrid mode

Posted by FRC2137 at 01/11/2008 02:06:51 pm

Our team would like to know if during the hybrid period does the ball have to touch the floor or another robot after it has been removed from the overpass or can it remain in possession of the robot and have the points count?

Re: Points during hybrid mode

Posted by GDC at 01/15/2008 11:50:12 pm

To earn the 8 points for removing the Trackball from the Overpass during the Hybrid Period, the Trackball merely has to be off the Overpass. It does not have to contact the floor or another Robot (that requirement is reserved for Trackballs that are Hurdling the Overpass).

Scoring

Scoring with a disabled robot

Scoring with a disabled robot

Posted by FRC971 at 01/11/2008 07:52:33 pm

If a robot on our alliance is disabled,(ie. e-stop) can it score the two points for crossing our finish line if our robot tows it around the track?

Re: Scoring with a disabled robot

Posted by GDC at 01/15/2008 11:47:42 pm

Yes, this would satisfy the criteria for scoring. But we would caution that to maintain civil relationships within your Alliance you will want to be sure to check with your Alliance partner first before you grapple their disabled robot and take it for a scrape around The Track.

Scoring

Trackball Scoring

Trackball Scoring

Posted by FRC2188 at 01/12/2008 10:30:28 am

When you are in teleoperated period, can you score your 2 points if you cross your finish line while in possession of the ball? Or do you need to either nudge or through the ball over your line to score?

Re: Trackball Scoring

Posted by GDC at 01/16/2008 12:10:46 am

If your Robot crosses your Finish Line (and has previously crossed your opponent's Finish Line) in Possession of a Trackball (and in accordance with all other rules), than your Robot will



score 2 points, however you will not get any points for the Trackball. If your Trackball crosses your Finish Line without you, you will gain an additional 2 points.

Scoring

Blocking a Hurdle Attempt

Blocking a Hurdle Attempt

Posted by FRC846 at 01/12/2008 03:16:48 pm

In Team Update #2, it states that a trackball shall not be subject to overt, blatant, or aggressive contact. However, if the need arises, is it legal to erect some sort of backboard to "bounce back" the trackball before it completes the hurdle on the other side of the overpass?

Re: Blocking a Hurdle Attempt

Posted by GDC at 01/14/2008 12:23:33 pm

If the Trackball is no longer in the Possession of the Hurdling Robot, and your Robot does not exceed the size constraints, this action would not be penalized.

Scoring

Hurdling dropping not throwing

Hurdling dropping not throwing

Posted by FRC49 at 01/13/2008 03:25:31 pm

Can a Robot on the home side of their finish line (before getting to the finish line) reach over the overpass past and the finish line then drop a ball to the floor and have it be counted as a hurdle?

Re: Hurdling dropping not throwing

Posted by GDC at 01/14/2008 12:48:24 pm

Yes. If only part of your Robot has crossed the Finish Line, the Robot has not yet Crossed and continues to be in the Homestretch. The Trackball has been Hurdled once it hits the floor or another robot.

Scoring

Trackball Crossing {answer}

Trackball Crossing {answer}

Posted by FRC2537 at 01/14/2008 04:21:29 pm

In an answer today to "Trackball Crossing the Line" you stated "The provision of the second sentence in Rule <G10> is so that Robots from opposing Alliances do not get into pushing matches with Trackballs that are crossing the Finish Line (e.g. there is no advantage for an opponent to block a Trackball that is being pushed across the Finish Line)." It clearly handles the case of "pushing matches" as long as defending robots remain in contact, however, consider the following:

- a) Blue is herding a Trackball towards their finish line.
- b) Blue stops 1 foot before the Trackball starts to roll over the finish line.
- c) Red blocks the trackball, stopping it while part of the plane of the finish line intersects the Trackball, and immediately releases it, to avoid "possession" of a foriegn Trackball.

If Blue pushes the Trackball and it crosses they get no points because they contacted the Trackball in the "no-touch" zone.



Thus Blue must move the ball clockwise across the finish line, without breaking the plane from the counterclockwise side, to try again. This is a difficult behavior, and clearly an advantage for Red. Even Red driving in front of the Trackball so that it slowly rolls back to the Blue herder takes that Trackball out of play for the time it takes it to clear the "no-touch" zone.

Are other rules in play here that eliminate this advantage? The 80" wide "no-touch" seems like a region, free of Blue robots, where Red robots can take a number of delaying actions under the rules. Perhaps the rule needs to be changed to permit Blue contact in the "no-touch" zone AFTER Red contact with the trackball. Just a suggestion.

Re: Trackball Crossing {answer}

Posted by GDC at 01/24/2008 04:00:07 pm

Rule <G10> states that "a Trackball that has crossed its own Finish Line, while contacting Robots of both Alliances as it is crossing, will earn 2 points." Note that there is no requirement for simultaneous contact with the Robots from the two Alliances. In this example, the two opposing Robots made contact with the Trackball while it was in the process of crossing the Finish Line. The requirements of the rule were satisfied. Therefore, the Trackball would still score 2 points.

Scoring

Hurdling question

Hurdling question

Posted by FRC2158 at 01/15/2008 12:33:21 am

We had a question regarding hurdling:

In the rules Crossing is defined as: [QUOTE]CROSSING: The act of a TRACKBALL or ROBOT passing through the plane defined by a line (i.e. LANE MARKER or FINISH LINE) when it is projected vertically upwards. A TRACKBALL or ROBOT shall have CROSSED a line when all parts of the object, while traveling in a counter-clockwise direction, have completely passed through the plane.[/QUOTE]

Hurdle is defined as: [QUOTE]HURDLE: When a TRACKBALL CROSSES a FINISH LINE while passing above the OVERPASS and then contacts either the floor or another ROBOT before re-contacting the originating ROBOT.[/QUOTE]

Hurdling is defined as: HURDLING: [QUOTE]The act of completing a HURDLE. To be considered in the process of HURDLING, the ROBOT must:

[LIST]

[*]be in its own HOME STRETCH, and

[*]be in POSSESSION of a TRACKBALL, and

[*]be moving toward the OVERPASS and/or elevating the TRACKBALL so that the top of the TRACKBALL is higher than the LANE DIVIDER.

[/LIST][/QUOTE]

Rule <G11> is defined as: [QUOTE]Each TRACKBALL that HURDLES its own FINISH LINE will earn 8 points (2 points for



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CROSSING the FINISH LINE and a 6 point bonus, yielding 8 points total).[/QUOTE]

So with all of this in mind, imagine that a team remains stationary inside the first quadrant under the overpass and next to the divider wall and has an arm that is holding the trackball at the end of it which is extended above the middle of the lane divider (i.e. higher than 8ft. 4in.). Then they rotate this arm so that the ball completely crosses over the 1st quadrant and into the the 2nd quadrant where the claw drops the ball but then picks it up again and then swings the trackball back into the 3rd quadrant and into the 4th quadrant and finally back into the 1st quadrant again. Whereupon they repeat the entire process again.

Now according to the rules, the robot has never crossed a line since not all of it ever completely entered a new quadrant. But the trackball has crossed into each quadrant since its entirety has been in each quadrant at a given time.

Each time the trackball is completely swung over its Alliance's overpass the claw releases the ball so it bounces on the ground before it is picked back up again, and the entire process is repeated over again.

The Trackball has moved counter-clockwise and has fully entered into each quadrant. It has touched the ground each time it passes over it's own overpass. Therefore we believe it meets all the requirements for Hurdling.

As long as there is an open passing lane around the robot at all times it would not be considered to be blocking.

Also, the robot never exceeds the imaginary 80in. cylinder.

In this scenario described above, were all the actions legal?

Is this a legal maneuver?

Thanks,
Team 2158

Re: Hurdling question

Posted by GDC at 01/24/2008 04:33:02 pm

As described, this would be a legal maneuver if it was possible to do it without violating Rule <R16> at any time. We must note, however, that any Robot attempting this maneuver would not be protected under the provisions of Rule <G42> (as the Robot no longer satisfies all the criteria of Hurdling) and any opposing Robot could interfere with the maneuver without Penalty. Furthermore, if any opposing Robot in the opposing Home Stretch raises a Trackball above their Overpass, and it is then impacted by your Robot or Trackball while conducting this maneuver, then you would immediately be Penalized under Rule <G42>.

Scoring

<G10> and <G11>

<G10> and <G11>



Posted by FRC461 at 01/15/2008 02:23:07 am

<G10> states that the trackball can score points by crossing the finish line and it must not be in contact with a robot from the same colored alliance.

<G11> states that hurdling gives the alliance eight points, two for crossing the line and six for hurdling over the overpass.

1. Can a robot contact the trackball as the trackball is crossing over the overpass and still get points for hurdling?
2. If the robot is touching the trackball as the ball is crossing the finish line, how many points are awarded?

Re: <G10> and <G11>;

Posted by GDC at 01/16/2008 11:24:47 pm

If a Robot is contacting the Trackball while it is Crossing the Finish Line, but passing under the Overpass, then it is a violation of Rule <G10> and no points are awarded. If a Trackball crosses the Finish Line by passing over the Overpass, then it is considered a Hurdle and a total of 8 points will be awarded. A Robot may be in contact with the Trackball while it is passing over the Overpass (as long as it breaks contact before the Hurdle is completed and the Trackball touches either the ground or another Robot).

Scoring

Section 7, Rule <G12>

Section 7, Rule <G12>;

Posted by FRC2604 at 01/15/2008 07:25:57 am

Is it considered crossing the lane marker when a ball is passed over the lane divider?

Re: Section 7, Rule <G12>;

Posted by GDC at 01/20/2008 10:27:30 pm

Yes. As noted in Section 6 of The Manual, the Lane Marker extends the length of The Track and under the Lane Divider. So passing a Trackball over the Lane Divider would, by definition, also pass it across the Lane Marker. Note also that a Robot reaching over the Lane Divider in a clockwise direction would also be reaching over the Lane Marker, and therefore committing a violation of Rule <G22>.

Scoring

Contact with scoring robot after hurdling

Contact with scoring robot after hurdling

Posted by FRC111 at 01/15/2008 12:20:42 pm

In multiple answers on this forum it has been stated that the ball can be in contact with the robot still in its home zone while the ball crosses the finish line during hurdling. One example used was a robot holding the ball while reaching over the overpass completely past the finish line before dropping the ball to the floor. The answer from the GDC stated that it was OK to do this and the hurdle would count once it hits the floor or another robot. Does this imply that the ball can be in contact with the scoring robot only above the overpass but may not contact parts of the robot under the overpass past the finish line? In other words, does it imply that the hurdle would not count if the robot holding the ball past the line drops it and it contacts this same robot again under the overpass before it hits the ground?



Re: Contact with scoring robot after hurdling

Posted by GDC at 01/16/2008 11:39:27 pm

If a Robot moves a Trackball over the Overpass, releases it, and then the Trackball re-contacts the originating Robot before contacting the ground or another Robot, then the Hurdle will not be awarded.

Scoring

Re-attempting to score after a failed attempt

Re-attempting to score after a failed attempt

Posted by FRC111 at 01/15/2008 12:20:54 pm

Just to be perfectly clear on this: If attempting to score a ball by it crossing your finish line either below or above the overpass, if the attempt fails due to improper contact by the robot, can scoring be attempted again without going all the way around and across the opponent's finish line?

Re: Re-attempting to score after a failed attempt

Posted by GDC at 01/17/2008 12:08:06 am

As specified in Rule <G13>, a Trackball that has crossed its own Finish Line must cross the opponent's Finish Line before it can score by crossing its own Finish Line again. This requirement is not mitigated by the success or failure of a Hurdle attempt.

Scoring

Co-operation Hurdling

Co-operation Hurdling

Posted by FRC1114 at 01/15/2008 04:20:45 pm

In reference to the following Q&A

[url]http://forums.usfirst.org/showthread.php?t=7975[/url]

Consider the situation where Teams Alpha and Beta are on the red alliance. Alpha is in possession of a red trackball, which they place on the overpass. After placing the ball, they continue driving around the track. Beta then approaches the same ball in a counterclockwise direction. Suppose Beta picks this ball up from the non-homestretch side of the line, while still remaining in their home stretch. Would this be considered a legal hurdle? Would the ball still need to contact the ground? (i.e. Is Alpha the hurdler or Beta?)

Cheers,

Re: Co-operation Hurdling

Posted by GDC at 01/24/2008 04:27:25 pm

Yes, the example provided above constitutes a legal hurdle, assuming that Beta never crossed the plane before touching the Trackball.

If, once the Trackball completes the hurdle, it is in contact with Beta, it has touched another Robot and does not have to touch the ground.

Alpha would be considered the Robot attempting the Hurdle.



Scoring

Scoring between Hybrid and Teleoperated periods

Scoring between Hybrid and Teleoperated periods

Posted by FRC1529 at 01/16/2008 09:33:29 am

This answer was posted by the GDC:

The Hybrid Period and Teleoperated Period end when the clock reaches zero at the end of each period. Scores may be accumulated up until the clock reaches zero, but not after.

To clarify, if a trackball is put in motion during the Hybrid Period, but doesn't pass the alliance finish line until slightly after the Hybrid Period ends, and before the Teleoperated Period begins, it will not score any points for the alliance at all?

Re: Scoring between Hybrid and Teleoperated periods

Posted by GDC at 01/16/2008 10:40:43 pm

As previously noted, scores are accumulated up until the end of the Match period, as indicated by the arena clock counting down to zero. Scoring actions which have fully satisfied the scoring requirements by the time the clock reaches zero will count. Actions which may have started before the end of the period, but do not complete until after (as determined within the limits of human perception) will not be scored.

Scoring

Trackballs and Overpass

Trackballs and Overpass

Posted by FRC932 at 01/16/2008 04:54:03 pm

When a trackball is placed on the overpass at the end of the game for the bonus does it matter which side the ball is placed on for example. does a red trackball need to be place on the red homestretch overpass to recive the bonus

Re: Trackballs and Overpass

Posted by GDC at 01/17/2008 02:26:31 am

Please refer to Rule <G14>. A Trackball may be located anywhere on the Overpass to earn the 12 point bonus.

Scoring

Definition of Hurdling

Definition of Hurdling

Posted by FRC190 at 01/18/2008 10:22:50 am

If a robot is in possession of a Trackball, in its home stretch, and is stationary, but is raising the ball into a launching position (ie, the ball is being elevated), is the robot considered to be hurdling, or must it also be moving towards the Overpass?

Re: Definition of Hurdling

Posted by GDC at 01/21/2008 12:32:02 pm

Yes, it would be considered to be "Hurdling." Please refer to the definition of "Hurdling" in Section 7.2 of The Manual. Note that a Robot will satisfy the definition if it is "...moving toward



the Overpass and/or elevating the Trackball..." (while also satisfying the other constraints in the definition).

Scoring

Possession of Ball during hurdle

Possession of Ball during hurdle

Posted by FRC188 at 01/19/2008 09:46:35 pm

Referring to question post at [\[url\]http://forums.usfirst.org/showthread.php?t=8151\[/url\]](http://forums.usfirst.org/showthread.php?t=8151) . If a team passes the ball over the overpass, does not lose contact, carries the ball around the track and then drops ball from 6" from floor before crossing their finish line, will they still get points for the hurdle? The intent was stated but the rule and other Q&A answers seem to say it is OK and points will be scored. Could you explain the rule and how it will be called?

Re: Possession of Ball during hurdle

Posted by GDC at 01/21/2008 01:35:01 pm

The post that you quote above clearly states that your proposed method is neither allowed, nor within the intent of the rules.

Scoring

Ball Knock Off

Ball Knock Off

Posted by FRC1507 at 01/22/2008 09:35:44 am

Our system to knock the ball off has us driving under the Overpass and hitting it off while moving. The ball almost always hits our robot on the way down after we've knocked it off. How will that action of the ball hitting our robot before it hits the ground or another robot effect our score?

Thanks
Warlocks

Hurdling

Posted by FRC1507 at 01/22/2008 02:55:06 pm

If while hurdling, we accidentally place on the Overpass, we then knock it off and on the way down, it accidentally hits our robot, what kind of points would we be looking at? Do we get the full hurdle points?

Thanks
Warlocks

Re: Ball Knock Off

Posted by GDC at 01/24/2008 03:19:35 pm

If you are knocking the Trackball off the Overpass at the beginning of the Match, then having it strike your Robot during its descent from the Overpass will not affect the score you will receive for removing the Trackball during Hybrid Period. If you are knocking the Trackball off the Overpass as part of a Hurdle attempt, then having the Trackball strike your Robot during its descent from the Overpass will negate the Hurdle attempt.

Scoring



rules clarification

rules clarification

Posted by FRC2648 at 01/23/2008 04:00:56 pm

Ok so my team and I have a question about the definition of clearing the ball over the rack. We are under the understanding that if we are to remove the ball from its starting position by bumping it down that it would be considered a legal move to place it up on our teams rack again and then removing it in the same fashion as we started and that would get us our full 8 points for clearing the rack.

Re: rules clarification

Posted by GDC at 01/24/2008 03:12:18 pm

Please review Rule <G12>. A Trackball that is removed from the Overpass during Hybrid Period will earn 12 points for its Alliance. Once removed, the Trackball will not be awarded points for a Hurdle until the conditions specified in Rule <G12> are satisfied.

Scoring

Defintion of Crossing/ Relation to trackball orientation

Defintion of Crossing/ Relation to trackball orientation

Posted by FRC2340 at 01/23/2008 06:04:40 pm

In the defintion of Crossing it states "the act of a trackball or robot passing through the plane defined by a line when it is projected vertically upwards"

How can a trackball be vertically oriented? Do you begin match with long dimension in verticle orientation?

Re: Defintion of Crossing/ Relation to trackball orientation

Posted by GDC at 01/24/2008 03:14:28 pm

Please parse the sentence in the definition carefully. "Crossing" is the act of a Trackball or robot passing completely through a virtual plane. The plane is defined by a line (e.g. a Finish Line or Lane Marker) that is projected straight upwards.

Scoring

Blocking Hurdles

Blocking Hurdles

Posted by FRC135 at 01/23/2008 08:40:06 pm

If a robot is attempting to hurdle via a lifting system, can an opposing robot stick their arm, fork or end effector over the vertical path of the ball if it doesn't touch the ball. This would not be blatant or aggressive contact (G42), but it would deter the hurdler from hurdling without impeding traffic.

Re: Blocking Hurdles

Posted by GDC at 01/24/2008 03:36:47 pm

As soon as the Trackball, while being raised, contacted the "goaltending" Robot, this would be considered overt contact designed to interfere with the Hurdle attempt. As such, it would be a violation of <G42> and would be penalized.

Scoring

Intermittent Contact / Final Point of Contact while Hurdling



Intermittent Contact / Final Point of Contact while Hurdling

Posted by FRC188 at 01/25/2008 04:20:37 pm

[b]Background:[/b]

- 1) Team Alpha has built a robot that can maintain only "intermittent" contact with the trackball while hurdling.

- 2) As Alphabot hurdles, the trackball changes state between contacting only Alphabot, only the overpass, both, and neither repeatedly.

- 3) The final point of contact between Alphabot and the trackball occurs just beyond the last overpass beam, at a height just below 6' 6".

- 4) The final point of contact occurs before the trackball has completely crossed the vertical plane of the finish line.

- 5) The final point of contact occurs before Alphabot has completely crossed the vertical plane of the finish line.

- 6) After the final point of contact, the trackball is allowed to fall from a reasonable quasi-overpass height, directly to the ground, or is contacted by another robot, completing the hurdling attempt.

[b]Questions:[/b]

- 1) With respect to the definition of HURDLE in section 7.2, will intermittent contact as described invalidate a hurdle attempt? Strictly speaking, re-contact occurs without satisfying HURDLE conditions.

- 2) With respect to the Q&A response at <http://forums.usfirst.org/showthread.php?t=8363>, would the final point of contact be considered as "striking the robot upon the trackball's descent," thus invalidating the hurdle attempt?

[i]Thank you kindly for all your time and effort in providing the Q&A![/i]

Re: Intermittent Contact / Final Point of Contact while Hurdling

Posted by GDC at 01/28/2008 01:57:53 pm

The rules and policies guiding the game will be implemented as best as possible by the referees and field personnel. If a robot has been designed such that it is difficult or impossible for the referee to determine if a Hurdle attempt is legal or not, then they must take the most conservative approach and not award the Hurdle. It is therefore in the best interest of the teams to design their Robots such that it is clear (when viewed by the referees and field personnel from beyond the field borders) when the Robot has completed a Hurdle attempt, and that the Robot has obviously not re-contacted the Trackball after it has passed over the Overpass. That is all that can be stated at this time. We can not provide an analysis of every potential hypothetical situation that may arise during game play.

Scoring



Lap Indicators

Lap Indicators

Posted by FRC846 at 01/27/2008 06:22:04 pm

Can the system for keeping track of laps be elaborated upon? For example, how exactly are the lap indicators going to work? Are laps going to be manually counted during hybrid mode and teleoperated mode? How are discrepancies between the lap indicator and a human count going to be addressed, specifically, what happens if the lap indicator is on the front portion of the robot and passes back and forth beneath the IR sensors?

Re: Lap Indicators

Posted by GDC at 01/28/2008 02:10:56 pm

Ball and robot laps will be counted via an automated system and verified by humans.

Scoring

Hurdle scoring

Hurdle scoring

Posted by FRC1763 at 01/27/2008 08:44:40 pm

It has been clarified that at the end of the match if we knock our opponent's ball forward off the overpass they will receive 8 points because we completed a hurdle for them. Therefore if one of our balls is on our overpass (perhaps it has never been removed during the match) can we knock the ball off forward ourselves during the tele-operated period, and assuming it meets the other hurdling requirements on the way down, also receive 8 points for completing a hurdle?

Re: Hurdle scoring

Posted by GDC at 01/28/2008 01:21:57 pm

It depends. If the Trackball has been on the Overpass since the start of the Match, then it will not have satisfied Rule <G12>, and will not be able to score a Hurdle. If the Trackball has been in play and has satisfied Rule <G12>, and is later placed on the Overpass, and then you knock it off as described, then yes.

Scoring

HURDLE without HURDLING?

HURDLE without HURDLING?

Posted by FRC1675 at 02/02/2008 10:10:15 pm

We are wondering if the definition of HURDLING applies to just the ROBOT or to the TRACKBALL as well. From the manual:

[quote]

HURDLE: When a TRACKBALL CROSSES a FINISH LINE while passing above the OVERPASS

and then contacts either the floor or another ROBOT before re-contacting the originating ROBOT.

HURDLING: The act of completing a HURDLE. To be considered in the process of HURDLING,

the ROBOT must:

- be in its own HOME STRETCH, and
- be in POSSESSION of a TRACKBALL, and



- be moving toward the OVERPASS and/or elevating the TRACKBALL so that the top of the TRACKBALL is higher than the LANE DIVIDER.

[B]<G11>[/B] Each TRACKBALL that HURDLES its own FINISH LINE will earn 8 points (2 points for CROSSING the FINISH LINE – re Rule <G10> - and a 6 point bonus, yielding 8 points total).

[B]<G13>[/B] A TRACKBALL that has CROSSED its own FINISH LINE must CROSS the opponent's FINISH LINE before it can score by CROSSING its own FINISH LINE again.

If a robot can HURDLE a TRACKBALL while not in its HOME STRETCH, provided [B]<G13>[/B] has been satisfied and the robot does not violate [B]<S01>[/B] or [B]<R16>[/B] does the HURDLE count? Do the three requirements of HURDLING apply to the ROBOT only for the sake of protection via [B]<G42>[/B]?

Thank You!

Re: HURDLE without HURDLING?

Posted by GDC at 02/04/2008 02:53:05 pm

The rules do not require that a Robot be in its Home Stretch when a Trackball completes a Hurdle. Note however, that any Robot attempting to do so will not satisfy the definition of "Hurdling" (the Robot is not in the Home Stretch), and therefore will not be protected under the provisions of Rule <G42>.

Scoring

Hybrid/Hurdling Questions

Hybrid/Hurdling Questions

Posted by FRC1510 at 02/04/2008 07:29:00 pm

Robot 1 pushes ball to robot 2 across opponents goal line. Robot 2 rebounds ball back to robot 1 who hurdles it diagonally over the lane marker across the overpass.

1. Is this legal?
2. If so, is it possible to score points this way, or would it be classified as breaking the vertical plane, and moving "clock-wise"?
3. Is it possible to hurdle over a lane marker period, or would it be penalized?
4. If Team ### builds a robot that is very short, is it legal for said robot to traverse underneath the lane marker, or must it move around the lane marker (I.E. Cut down the time needed to move around the entire track immensely, gaining more points faster)?

Re: Hybrid/Hurdling Questions

Posted by GDC at 02/07/2008 12:45:43 pm

There is insufficient information to answer this question. Also, it is impractical for us to provide an analysis of every possible hypothetical tactical situation on the field. Please review the rules as written to gain an initial understanding of whether a particular technique would be permissible.



On this specific topic, we would note:

- throwing or passing a Trackball over the Lane Divider is permitted.
- there is no requirement that a Hurdle be initiated from the Home Stretch.
- a Robot reaching across the Lane Divider in the "forward" (counter-clockwise) direction is permitted.
- a Robot reaching across the Lane Divider in the "backward" (clockwise) direction would violate Rule <G22>.
- we recommend you read Section 6.2.3 very carefully
- we really, really want to see any robot that can drive under the Lane Marker without damaging the field!

Scoring

Trackballs

Trackballs

Posted by FRC1448 at 02/07/2008 12:39:28 pm

In hybrid period, do you get points for knocking a ball of the opponent's color off of the overpass, or do you only score points for knocking your alliance's ball off of the overpass?
Thanks.

Re: Trackballs

Posted by GDC at 02/11/2008 01:26:25 pm

Please read Rule <G08> and Rule <G09> carefully.

Scoring

Bonus Points/Hurdling at end of match

Bonus Points/Hurdling at end of match

Posted by FRC1510 at 02/18/2008 11:45:24 pm

I read over rule <G08>

"All TRACKBALL scores are awarded to the ALLIANCE associated with the scored TRACKBALL, independent of the ROBOT that may have caused the scoring action to occur."

and rule <G11>

"Each TRACKBALL that HURDLES its own FINISH LINE will earn 8 points (2 points for CROSSING the FINISH LINE and a 6 point bonus, yielding 8 points total)."

and rule <G13>

"A TRACKBALL that has CROSSED its own FINISH LINE must CROSS the opponent's FINISH LINE before it can score by CROSSING its own FINISH LINE again."

and rule <G14>

"When the MATCH ends, each TRACKBALL that is at least partially supported by the OVERPASS and not in contact with any ROBOT of the same ALLIANCE will earn a 12 point bonus."

I am curious, because according to these rules, we can hurdle the trackball near the end of the match, then-without completely crossing the finish line-turn around and place it on the



overpass and get the bonus points.

Is this true? I find nothing to the contrary, since according to <G13> it has to cross the opponents finish line only if it will score by crossing its finish line.

Re: Bonus Points/Hurdling at end of match

Posted by GDC at 02/21/2008 01:24:57 pm

Yes, that is correct.

Scoring

IR Sensor

IR Sensor

Posted by FRC563 at 02/19/2008 01:03:20 pm

Since so many IR Sensors are bad, in all fairness is First still going to use the IR sensor the first 15 seconds of the match or is the teloperated period going to be 2 minutes and 15 seconds long?

Re: IR Sensor

Posted by GDC at 02/21/2008 01:36:19 pm

All Matches will be conducted in the manner described in The Manual.

It is noted again that the IR receiver boards are optional parts, and are not required to participate in a Match. There are multiple sources for IR boards if replacement boards are needed. Also, many different technologies (other than IR) can be used by the RoboCoach to signal the Robot during Hybrid Period.

Game Play

Game Play

Breaking the plane

Breaking the plane

Posted by FRC175 at 01/09/2008 02:31:15 pm

Ref G22 Breaking the plane. In past years when getting into your end zone for bonus points as an example, it was considered OK to have an arm extended over the line as long as it didn't touch the carpet and the wheels were in. Can an arm break the plane as long as the chassis doesn't break the plane.

Re: Breaking the plane

Posted by GDC at 01/10/2008 08:51:17 pm

Rule <G22> applies to any part of the Robot that may break the plane defined by the vertical projection of the line - not just the chassis or drive system.

Please remember that rules from previous FRC competitions do not apply to the 2008 FIRST Overdrive game.

Game Play

Not allowed to move counterclockwise, or not allowed to back over any lines?

Not allowed to move counterclockwise, or not allowed to back over any lines?



Posted by FRC175 at 01/09/2008 02:36:33 pm

Ref G22. Is it permissible to go clockwise after a ball or to assist a partner as long as you are between the lines forming a quadrant of the track and not interfering with opponents.

Not allowed to move counterclockwise, or not allowed to back over any lines?

Posted by FRC806 at 01/09/2008 10:09:36 pm

Some people's interpretation of rule G22 is that, since a penalty is assigned if a robot breaks a plane/crosses a line on the field going clockwise, within each "quadrant" of the field (between each finish line and each lane marker) any direction motion is permitted as long as nobody crosses a line the wrong way.

Is this interpretation too loose?

Re: Not allowed to move counterclockwise, or not allowed to back over any lines?

Posted by GDC at 01/10/2008 09:44:27 pm

The intent of Rule <G22> is that robots must move in a counter-clockwise direction when proceeding from "quadrant" (between a Lane Marker and Finish Line, or a Finish Line and Lane Marker) to "quadrant." However, robots may move freely within each quadrant in any direction.

Game Play

Trackball contact area

Trackball contact area

Posted by FRC533 at 01/09/2008 04:26:06 pm

Is there a minimum surface area required when contacting the trackball and applying a significant force? This question is in reference to attempting to dislodge the trackball from the ladder using by impacting it or using a plunger.

Re: Trackball contact area

Posted by GDC at 01/10/2008 09:25:38 pm

There is not a specific minimum contact area specified for the Trackball. However, any small surface area projections used to contact the Trackballs with appreciable force will be carefully inspected for compliance with Rule <R04> and Rule <G35>.

Game Play

Straddling a line

Straddling a line

Posted by FRC41 at 01/09/2008 04:54:54 pm

For any of the four lines on the field, if a robot is straddling the line, can it move backwards and not incur a penalty?

Re: Straddling a line

Posted by GDC at 01/10/2008 08:58:45 pm

As long as the Robot has not completely crossed the line (i.e. all parts of the Robot are past the vertically-projected plane of the line), then it may straddle or move back across the line without penalty.

Game Play

Is it illegal to move an opponent's ball in a clockwise direction?



Is it illegal to move an opponent's ball in a clockwise direction?

Posted by FRC1594 at 01/09/2008 05:22:12 pm

Is it illegal to move an opponent's ball in a clockwise direction? If so, is there a penalty?

Re: Is it illegal to move an opponent's ball in a clockwise direction?

Posted by GDC at 01/10/2008 09:18:21 pm

No.

Game Play

Ball velocity limits

Ball velocity limits

Posted by FRC585 at 01/09/2008 10:04:57 pm

Is there a velocity limit for propelling the trackballs from your robot?

Re: Ball velocity limits

Posted by GDC at 01/10/2008 09:42:29 pm

There is no specified limit to the velocity of the Trackball, as long as it does not present a safety hazard (Rule <S01>) or field damage (Rule <G35>) issue.

Game Play

7.3.4.2. <g22>

7.3.4.2. <g22>

Posted by FRC237 at 01/10/2008 04:37:01 pm

If you break the plane of the line during hybrid mode is a penalty assessed? 7.3.4.2. <G22>

Re: 7.3.4.2. <g22>

Posted by GDC at 01/15/2008 11:42:31 pm

If a Robot moves across either a Finish Line or Lane Marker in a clockwise direction, it will receive a Penalty in accordance with Rule <G22>. There is no exception for clockwise movement during the Hybrid Period.

Game Play

Launching Trackballs

Launching Trackballs

Posted by FRC2435 at 01/10/2008 07:46:11 pm

if one team of one definite alliance launches a ball over the hurdles to score the 8 points that would be given by those, and by accident would hit one of the other alliance's robot, would that team be disqualified?

Stored energy

Posted by FRC1158 at 01/10/2008 10:48:38 pm

What are the limitations on building a piece of the robot that would launch the trackball? If it had no sharp corners, could we compress, then release to throw the ball over the hurdle?

Launching Trackballs

Posted by FRC135 at 01/11/2008 08:02:46 pm

I would like to know if there are any restraints to launching the ball over the overpass. Not just placing or dropping, but actually launching with a spring or a pneumatic system. Are there any force restrictions?



Re: Launching Trackballs

Posted by GDC at 01/17/2008 12:28:28 am

"Launching" a Trackball over the Overpass would be permitted, as long as it is done in a manner that would not cause a safety concern and a potential violation of Rule <S01>.

Note that if a trackball strikes an opposing Robot while descending from a Hurdle attempt, it would not normally cause a penalty situation. However, if it is apparent that the Trackball was targeted at the opposing Robot, then it can be ruled a violation of Rule <G37>.

Game Play

go backwards

go backwards

Posted by FRC2435 at 01/10/2008 09:54:52 pm

Is it possible for a team to go backwards but NOT for scoring or does the team have to go all the way around the field with the robot to pick up a ball that was right behind the robot?

Thanks for helping TEAM 2435 Southern Riots

Re: go backwards

Posted by GDC at 01/16/2008 12:26:01 am

As indicated in Rule <G22>, the Robots must proceed around the Track in a counter-clockwise direction (from quadrant to quadrant). There is no provision that would allow the Robot to move backwards across a Finish Line or Lane Marker, whether it is attempting to score or not.

Game Play

blocking hurdling attempt

blocking hurdling attempt

Posted by FRC1158 at 01/10/2008 11:01:51 pm

Are you able to make a play on the ball without hitting the scoring robot during a hurdling attempt?

Re: blocking hurdling attempt

Posted by GDC at 01/13/2008 02:30:06 am

Please refer to Rule <G42>, as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[/URL].

Game Play

Starting Conditions and Rule <G20>

Starting Conditions and Rule <G20>

Posted by FRC190 at 01/11/2008 12:02:36 am

Rule <G20> states that once the balls have been randomly placed, no one may touch the robots. Are we allowed to adjust switches on the OI after the balls have been placed?

Starting Conditions and Rule <G20>

Posted by FRC1718 at 01/15/2008 01:26:19 pm

Rule G20 states:

<G20> TRACKBALL Locations - After all ROBOTS participating in the MATCH are in their



starting positions and the TEAM members are in the ALLIANCE ZONE and/or ROBOCOACH STATIONS, four TRACKBALLS will be placed on the OVERPASS. On each side of the OVERPASS there are three TARGET LOCATIONS for TRACKBALLS. The field management system will randomly choose an initial starting location for the TRACKBALLS before the start of each MATCH. One red and one blue TRACKBALL will then be positioned in the chosen TARGET LOCATIONS on each side of the OVERPASS. After this point in time no ROBOT may be moved or repositioned until the MATCH starts.

Can a team select their autonomous (hybrid) mode from their operator interface on the control board in the alliance station after the trackballs have been placed in their starting locations? This would be done completely within the alliance station without moving or contacting the robot.

Re: Starting Conditions

Posted by GDC at 01/16/2008 11:00:51 pm

No. Please refer to Rule <G20>, as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL]

Game Play

Typo error with direct answer.

Typo error with direct answer.

Posted by FRC188 at 01/12/2008 06:08:01 pm

Default Re: Not allowed to move counterclockwise, or not allowed to back over any lines?

The intent of Rule <G22> is that robots must move in a clockwise direction when proceeding from "quadrant" (between a Lane Marker and Finish Line, or a Finish Line and Lane Marker) to "quadrant." However, robots may move freely within each quadrant in any direction.

I believe the direction should be counter clockwise.

Re: Typo error with direct answer.

Posted by GDC at 01/13/2008 12:13:35 am

You are correct. That was a typo on our part, and the answer has been corrected. Thank you for catching it.

Game Play

Direction of travel

Direction of travel

Posted by FRC188 at 01/16/2008 09:09:19 am

Rule <G22> states :

<G22> Direction Of Traffic – ROBOTS must proceed around the TRACK in a counter-clockwise

direction. Once a ROBOT has CROSSED a LANE MARKER or FINISH LINE, it shall not break the plane of the line by moving in the clockwise direction. A PENALTY will be assigned for each infraction.



In the Arena section it states :

6.2.1 Boundaries and Markings

The TRACK is an octagonal carpeted 27 feet by 54 feet area, bounded by two Alliance Station Walls and a Guardrail System. and

As the ROBOTS move in a counter-clockwise direction around the TRACK, the quadrant of the TRACK immediately preceding the FINISH LINE for each ALLIANCE is known as the "HOME STRETCH."

As I have read in the Q&A in gives the indication that moving clockwise within a quadrant is allowed. Should the rule have stated that robots must move in a counter clockwise direction between quadrants but may move in any direct within the quadrant or is the rule correct that all traffic must be in a counter-clockwise direction?

Re: Direction of travel

Posted by GDC at 01/16/2008 10:41:59 pm

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8022"]this Q&A answer[/URL].

Game Play

penalty for pushing an opponent's ball clockwise?

penalty for pushing an opponent's ball clockwise?

Posted by FRC1594 at 01/16/2008 03:54:04 pm

Is there a penalty for moving an opponent's ball clockwise (backwards)?

Re: penalty for pushing an opponent's ball clockwise?

Posted by GDC at 01/16/2008 11:38:39 pm

No, there is no penalty for moving a Trackball clockwise around The Track.

Game Play

Hybrid mode use of on-board systems

Hybrid mode use of on-board systems

Posted by FRC1807 at 01/19/2008 11:54:39 am

Team Update #3 describes the 4 commands that can be utilized in Hybrid mode as "...more complex routines, as long as the routines rely only upon input from sensors and system on-board the robot".

As a team is placing their robot onto the field before the start of the match, and sets a series of toggle switches to pre-plan what hybrid routine it wants to employ for that particular match, can this setup be changed from match to match?

Put another way, can the 4 buttons/commands sent to the IR sensor call a routine that reacts to toggle switches pre-set on the robot before the start of the match?

Since these toggle switches are a "system on-board the robot", this approach seems legal ... correct?

Re: Hybrid mode use of on-board systems

Posted by GDC at 01/20/2008 06:19:38 pm



Yes, as long as the toggle switches (or other external inputs) were set before the Trackballs were put in position, then that would be permitted.

Game Play

Diagonal Hurdling

Diagonal Hurdling

Posted by FRC1006 at 01/20/2008 01:49:29 pm

If 2 teams on an alliance decide to try diagonal hurdling, must only a portion of the ball pass over the opposition finish line or must the full diameter of the ball pass over the opposition finish line? Significant effects on throwing position, angle, and force.

Re: Diagonal Hurdling

Posted by GDC at 01/21/2008 12:56:36 pm

Please refer to the definition of "Hurdle" and "Crossing" in Section 7 of The Manual. To be scored as a Hurdle, all parts of the Trackball must pass through the vertically projected plane of the Finish Line. Partial crossings do not count.

Game Play

Removing Opponent's Trackball from Overpass

Removing Opponent's Trackball from Overpass

Posted by FRC1717 at 01/20/2008 03:02:22 pm

Is it permissible to briefly possess an opponent's trackball in order to remove it from the overpass, preventing the opposing alliance from receiving 12 bonus points?

Re: Removing Opponent's Trackball from Overpass

Posted by GDC at 01/21/2008 12:57:52 pm

No. Rule <G29> does not specify a minimum time of possession - it prohibits possession for any period of time. There are many ways to remove a Trackball from the Overpass without violating this rule.

Game Play

Clarification/Possible Loophole in Rule <G30> and Team Update #4

Clarification/Possible Loophole in Rule <G30> and Team Update #4

Posted by FRC453 at 01/25/2008 02:36:13 pm

According to the fourth team update, if "a trackball becomes damaged or completely deflated, it will be replaced by a new one at the next safe opportunity".

Also, according to rule <G30>, "TRACKBALLS that leave the arena will be placed back on the TRACK at the earliest safe opportunity" and the "TRACKBALL will be placed on the TRACK at the approximate location where it exited".

Does this mean that if a trackball becomes damaged or deflated, it will be replaced at the approximate location of its damage? What if this location happens to be on a robot, or at a locale disruptive to gameplay? In this way, a team could take advantage of an opponent's trackball being destroyed, even if it was accidental, by remaining in the spot of damage, preventing the trackball from being removed or replaced. This could ruin the other team's chances of victory, and thus be used as an unfair advantage to win.



I would appreciate clarification of this issue.

-Nick, Team 453

Re: Clarification/Possible Loophole in Rule <G30> and Team Update #4

Posted by GDC at 01/28/2008 01:35:18 pm

The rules and policies guiding the game will be implemented as well as possible by the referees and field personnel. If a Trackball becomes damaged or deflated during a Match, it will be removed and replaced at the earliest safe opportunity. That is all that can be stated at this time. We can not provide an analysis of every potential hypothetical situation that may arise during game play.

Game Play

Starting Positions Rule <G15>

Starting Positions Rule <G15>

Posted by FRC453 at 01/25/2008 03:25:21 pm

Rule <G15> states the following: "Prior to the MATCH, the three alliance ROBOTS must be placed entirely inside their HOME STRETCH, touching their Alliance Station Wall or the angled fence in front of their local ROBOCOACH STATION, and not contacting any other ROBOTS".

If the robot is touching the angled fence, is the back face of the robot required to be FLAT against the fence, or may merely a corner touch it?

This would enable a robot to have a small advantage in being that much closer to the nearest lane divider, and four quick points in the hybrid mode.

Clarification will be appreciated.

-Nick, Team 453

Re: Starting Positions Rule <G15>

Posted by GDC at 01/28/2008 01:50:23 pm

The rule requires that the Robot touch the Alliance Station Wall or the angled fence in front of the local Robocoach Station. It does not specify how much (or how little) of the Robot has to be in contact with the wall or fence.

Game Play

Removing opponent's ball

Removing opponent's ball

Posted by FRC1763 at 01/27/2008 08:53:57 pm

Since our entire robot must pass through the plane to complete a crossing, could we stop underneath our opponent's overpass with only part of our robot through the plane, engage our opponent's ball with our manipulator and then move backwards (i.e. clockwise) in order to knock the opponent's ball backwards so as to avoid scoring a hurdle for them?

Also there have been postings about removing the opponent's ball from the overpass at the



end of the match. May we in fact remove the opponent's ball at any time we choose during the match?

Re: Removing opponent's ball

Posted by GDC at 01/28/2008 01:23:50 pm

Question 1: There is no rule that would prohibit that.

Question 2: There is no limitation on when an opponent's Trackball can be removed from the Overpass.

Game Play

defense

defense

Posted by FRC457 at 02/08/2008 12:58:19 pm

my team was wondering if this is against the rules. say if a team has builded there robot to launch the ball over the pass. can a team get in front of them to stop them from launching the ball or would they be protected with the hurdling rule <G42>.

Re: defense

Posted by GDC at 02/11/2008 01:11:19 pm

Rule <G42> protects a Robot and any Trackball that may be in its possession during the Hurdling attempt. The Trackball is only protected while it is in the possession of the Robot. If a Robot launches or throws a Trackball, then that protection is no longer in effect once the Trackball breaks contact with the Robot. So, an opposing Robot may attempt to block a launched Trackball. But any team building a Robot that will attempt to do so should be very aware of the effects of momentum, inertia, impulse loads on long moment arms, dynamic stability, and what happens when an unstoppable force strikes an immovable object.

Robot Operations

Robot Operations

Hybrid period passing/blocking rules

Hybrid period passing/blocking rules

Posted by FRC41 at 01/09/2008 04:56:37 pm

Do the "impeding flow of traffic" and "bump to pass" rules also apply during the hybrid period?
Will robots be penalized for impeding other robots during hybrid?

Hybrid Mode Impeding

Posted by FRC971 at 01/09/2008 05:56:49 pm

Is it okay if we impede in Hybrid mode accidentally?

Re: Hybrid period passing/blocking rules

Posted by GDC at 01/11/2008 09:49:02 pm

Good questions! Please refer to Rule <G38> and Rule <G40> as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[/URL].

Robot Operations

Bumping a Robot While Hurdling

Bumping a Robot While Hurdling



Posted by FRC1629 at 01/09/2008 06:36:28 pm

Per Section 7: THE GAME:

[quote]IMPEDING: Preventing or obstructing an opposing ROBOT'S ability to proceed around the TRACK in the direction of traffic.[/quote]

If a robot tips or is tipped into such a position that it impedes traffic, but it is unable to right itself, will that robot incur a penalty for impeding traffic? If so, will it be a single penalty or multiple infractions?

Bumping a Robot While Hurdling

Posted by FRC1540 at 01/09/2008 10:01:16 pm

Rule G38 states "A ROBOT may indicate a desire to pass an IMPEDING ROBOT...". This implies that only "impeding" robots may be bumped signaling a request to pass.

Rule G40 states "a ROBOT is not IMPEDING traffic if ... the ROBOT is in the process of HURDLING (except as noted in Rule <G43>)".

Rule G43 refers to impeding with multiple hurdlers, so it isn't relevant here.

If you can only bump an impeding robot, and a single hurdling robot is not impeding, it would seem to imply that you may not bump a single hurdling robot.

But, Rule G42 states "Bumping to signal to pass (see Rule <G38>) a HURDLING ROBOT is permitted if no passing lane is open (see Rule <G43>)."

However, G43 (multiple hurdlers) is not the only way that no passing lane might be open. Disabled or overturned robots could easily block what would otherwise be a passing lane. One robot hurdling near the center of the lane could easily prevent other robots from passing on either side, especially if some of the robots involved were close to the 80 inch maximum width.

Re: Bumping a Robot While Hurdling

Posted by GDC at 01/11/2008 09:53:30 pm

Good questions! Please refer to Rule <G36> as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[/URL].

Robot Operations

Launching track ball

Launching track ball

Posted by FRC85 at 01/10/2008 07:29:57 pm

We wanted to verify the answer to the following question:
Are robots allowed to launch/project/throw trackballs over the overpass?

Thank you

stored energy

Posted by FRC1158 at 01/11/2008 04:41:39 pm



Are we able to throw the ball over the hurdle? We are thinking of compressing a platform with pneumatics or a winch, then releasing it with the ball setting on it to throw it over.

Is it legal/

Re: Launching track ball

Posted by GDC at 01/11/2008 11:57:25 pm

Yes. Trackballs may be "thrown" over the Overpass.

Robot Operations

transporting balls

transporting balls

Posted by FRC2435 at 01/10/2008 07:34:53 pm

Is it permitted for a team of an alliance to steal the other alliance's ball and eventually transport it so that the other alliance can't score points with this ball(without being disqualified)?

Re: transporting balls

Posted by GDC at 01/11/2008 11:38:45 pm

It depends on whether the Trackball is in the "possession" of your Robot, or if it is being "herded." Please refer to Rule <G29> for details.

Robot Operations

blocking a hurdling move

blocking a hurdling move

Posted by FRC1158 at 01/11/2008 04:35:21 pm

Are we able to make contact with the ball during an opponent try to hurdle if we do not make contact with the robot just the ball?

Re: blocking a hurdling move

Posted by GDC at 01/11/2008 10:58:29 pm

Please refer to Rule <G42>, as amended in [\[URL="http://www.usfirst.org/community/frc/content.aspx?id=450"\]](http://www.usfirst.org/community/frc/content.aspx?id=450)Update #2[/[URL](#)].

Robot Operations

Disabled Penalties

Disabled Penalties

Posted by FRC1612 at 01/11/2008 08:33:26 pm

Do we receive a penalty if our robot becomes disabled (loss of power, etc.) and impedes other robots? What is to stop a team from disabling their robot to create an impedence? According to team update #2, rule <G36> states:

Disabled ROBOTS and PENALTIES - If a ROBOT becomes incapacitated (e.g. the ROBOT overturns and can not be righted, the battery falls out, etc.), it may be completely disabled by pressing the E-STOP Button in corresponding Player Station. ROBOTS that are disabled in this [B]manner can not incur further PENALTIES [B]/I](e.g. can not receive a PENALTY for IMPEDING). Disabled ROBOTS may be pushed out of the path of travel without PENALTY.

We are asking for clarification on the penalty portion of being disabled or incapacitated.



Re: Disabled Penalties

Posted by GDC at 01/16/2008 12:43:30 am

As specified in Rule <G36> (as amended in Team Update #2), if a Robot is disabled by having the team push the corresponding E-Stop button then it will not receive Penalties for the remainder of the Match. If a Robot is incapacitated but has not been disabled by the team (i.e. the E-Stop button has not been pushed) then it does not receive this protection.

A disabled Robot may be in a position where it can impede other Robots. But since it is disabled, it can not move out of the way. For this reason, other Robots are allowed to push the disabled Robot out of the way (note that we said "push" - not "ram"!!!) without penalty.

Robot Operations

IR sensor "commands"

IR sensor "commands";

Posted by FRC1208 at 01/12/2008 11:37:20 am

As stated in the rules, the robot cannot receive more than four commands. We know that a command could be "turn left", "hit ball", or "go forward even faster", but can the commands be "autonomous A- go around the bend, stop", "autonomous B- go forward, hit the ball", etc? And if so, what do we put on the card we submit to the officials?

Re: IR sensor "commands";

Posted by GDC at 01/16/2008 12:50:57 am

The Signaling Card specified in Rule <G49> just needs to contain a very brief, one line description of the action, command, or state that is sent to the robot by each of the four permitted transmissions of information. The action commanded by the message can be a complex, multi-step routine executed by the Robot.

Robot Operations

How Long?

How Long?

Posted by FRC1158 at 01/12/2008 03:02:53 pm

If a team can not impede with a hurdling play, then how long does a team have to make the move? Are you saying that a team could just set there and hold a ball until 2 seconds left in the game without the opposing teams able to knock it off; which would guarantee the 12 points for the one team and no way the opponent could react.

Re: How Long?

Posted by GDC at 01/15/2008 11:52:32 pm

There is no time limit on the Hurdling attempt. Note however, that if the Robot is not moving toward the Overpass, then it does not satisfy the definition of a Hurdling attempt, and is therefore not protected by Rule <G42>.

Robot Operations

Initial Scoring after the trackball is stripped from the overpass

Initial Scoring after the trackball is stripped from the overpass

Posted by FRC2137 at 01/13/2008 12:22:32 pm

During the initial stripping of the trackball from the overpass, can the stripping robot maintain



possession of the trackball, take it around the field and hurdle it without the trackball touching the floor or another robot?

Re: Initial Scoring after the trackball is stripped from the overpass

Posted by GDC at 01/16/2008 11:14:31 pm

Yes. The ball must touch the floor or another robot in order for a Hurdle to count. It is not required after removal of the Trackball from its initial position.

Robot Operations

Is a robot considered to have **CROSSED** any **LANE MARKERS** at the start of a match?

Is a robot considered to have **CROSSED** any **LANE MARKERS** at the start of a match?

Posted by FRC801 at 01/14/2008 06:52:58 pm

Is a robot that starts the match considered to have already **CROSSED** the **LINE MARKER** closest to its **HOME STRETCH**? If a robot touches the **LANE MARKER** closest to its **HOME STRETCH** as it is maneuvering out of its starting position, would a **PENALTY** be applied?

Re: Is a robot considered to have **CROSSED** any **LANE MARKERS** at the start of a match?

Posted by GDC at 01/16/2008 11:18:57 pm

Yes, and yes.

Robot Operations

Touching the rack while hurtling

Touching the rack while hurtling

Posted by FRC1350 at 01/15/2008 09:12:03 pm

Are there any limitations on touching or hitting the rack while hurtling?

Re: Touching the rack while hurtling

Posted by GDC at 01/16/2008 10:55:13 pm

Restrictions on contact between the Robot and the Overpass are defined in Rule <G34>.

Restrictions on contact between the Robot and The Rack are much more severe, as they would have to involve reverse time travel.

Robot Operations

Hybrid Blocking

Hybrid Blocking

Posted by FRC1510 at 01/21/2008 07:58:57 pm

Is it legal for 1 or 2 robots on the same alliance to block traffic, preventing any scoring for the opposing alliance? Or would they be penalized for it?

Re: Hybrid Blocking

Posted by GDC at 01/24/2008 03:25:25 pm

Rule <G38> and Rule <G40> were modified to remove any concerns that teams may have about inadvertently impeding robots during the Hybrid Period. This was to avoid an unrealistic requirement that the robots be able to autonomously recognize and respond to "Bump To Pass" signals or identify and steer around stalled robots on the Track during the Hybrid Period. The purpose of these modifications is not to permit the intentional blocking of the Track during Hybrid Period.



The accidental creation of obstructions on the Track during Hybrid Period may be unavoidable and will not be penalized. However, intentional strategies designed to block traffic during the Hybrid Period will not be permitted. This may be considered a Yellow Card offense.

Robot Operations

Robo Coach

Robo Coach

Posted by FRC1507 at 01/22/2008 02:51:38 pm

If a robot has no Robo Coach in either period, can it be penalized for impeding?

Thanks
Warlocks

Re: Robo Coach

Posted by GDC at 01/24/2008 03:01:56 pm

Yes. If it is doing so, a Robot can be penalized for impeding whether the team utilizes a RoboCoach or not.

Robot Operations

Blocking

Blocking

Posted by FRC1507 at 01/25/2008 04:32:35 pm

We've come up with a scenario where we place a Trackball on the Overpass and when we go to back up [to retract our arm/gripper mechanism], another robot blocks our path to back up [They haven't even touched us, they're just preventing us from backing up to retract the Arm/gripper and resume playing the game]. Would that warrant a penalty like when a robot rolls over top of our mechanism to impede us [3 seconds to get off] or be perfectly legal?

Thanks
Warlocks

Re: Blocking

Posted by GDC at 01/28/2008 02:30:41 pm

There is no rule that would prohibit the blocking robot's action. There are also no rules that would prohibit an appropriate counter measure by your robot. This scenario would likely become a pushing match.

Robot Operations

Appendages deployed in play configuration

Appendages deployed in play configuration

Posted by FRC885 at 01/27/2008 09:20:07 am

Is the following acceptable robot behavior:

A robot in its starting configuration is less than the 38 x 28" horizontal footprint limits <R11> but when competition begins has appendages that deploy above, below, and/or in (not violating the 1/3 rule in <R8>) zone beyond the bumpers <R8> but not in violation of the max 80" horizontal rule <R16>? Note these appendages would neither be sharp, pointed nor cause



entanglement <R4>. TNX for all your efforts!

Appendages in Start Configuration

Posted by FRC885 at 01/27/2008 09:22:37 am

Is the following robot behavior acceptable:

A robot in its starting configuration has appendages that protrude above, below, and/or in (not violating the 1/3 rule in <R8>) beyond the bumpers <R8> and the robot with the appendages meets rule <R11> i.e. less than the 38 x 28" horizontal footprint limits? Note these appendages would neither be sharp, pointed nor cause entanglement <R4>. TNX for all your efforts!

Re: Appendages deployed in play configuration

Posted by GDC at 01/31/2008 02:32:41 pm

There are no rules that would prohibit Robot appendages from extending beyond the Bumper Zone in its starting configuration (provided the volume does not exceed the 28" x 38" x 60" envelope) or playing configuration (provided it does not exceed the horizontal 80" envelope).

Please note, the use of such appendages is constrained by Rule <G37-d>.

Robot Operations

80" limit and fallen robot

80" limit and fallen robot

Posted by FRC1218 at 01/29/2008 08:51:37 am

Many, if not most, of the robots will be designed to extend more than 80" vertically in order to hurdle the ball. If the robot is knocked over or falls on its own account while in this configuration, it will probably extend beyond the 80" horizontal window. In most cases, the robot will be out of commission for the rest of the match, but will it also incur a yellow card penalty.

Re: 80" limit and fallen robot

Posted by GDC at 01/31/2008 12:51:02 pm

If a Robot becomes incapacitated during a Match (e.g. falls over and can not be righted, the battery falls out, the wheels fall off the Amanda-bot, etc.), the teams can take specific actions to prevent incurring any penalties related to the state of the Robot. Please refer to Rule <G36>, as amended in Team Update #2, for more information. Please note that the incapacitated Robot may also be gently pushed out of the way.

Robot Operations

<G42> Penalty

<G42> Penalty

Posted by FRC2377 at 01/29/2008 11:34:17 am

Is there a penalty associated with rule <G42>?

Re: <G42> Penalty

Posted by GDC at 01/31/2008 12:56:09 pm

Yes.

Robot Operations

Hybrid mode object avoidance.



Hybrid mode object avoidance.

Posted by FRC121 at 01/31/2008 08:51:43 am

Is it legal to have the robot react to objects around the field via data from sensors during hybrid mode? This would happen with no input from the robocoach.

Re: Hybrid mode object avoidance.

Posted by GDC at 01/31/2008 12:37:19 pm

Absolutely! We encourage the use of on-board sensing systems for this purpose.

Robot Operations

Drive wheels and skid marks

Drive wheels and skid marks

Posted by FRC2022 at 01/31/2008 07:55:39 pm

We have been testing different type of drive wheels. One type we have found leaves skid marks on the carpet. Is this permitted?

Re: Drive wheels and skid marks

Posted by GDC at 02/04/2008 01:10:18 pm

Marks on the competition carpet are considered part of normal wear and tear. However if the Robots damage the carpet (melting, tearing, etc), they will have violated Rule <G35>.

Robot Operations

Possession and not hurdling

Possession and not hurdling

Posted by FRC1073 at 02/05/2008 11:30:41 pm

If a robot is in possession of a trackball and not in the process of hurdling, as defined under HURDLING, we have not seen anything in the rules that would prevent another robot from trying to knock the trackball out of possession. Assuming the robot does not violate any of the other rules such as <G37>. Is this considered a legal move?

Re: Possession and not hurdling

Posted by GDC at 02/07/2008 01:09:03 pm

A Robot, and any Trackball in the possession of that Robot, only receives protection from interference while it is in the process of Hurdling (as specified in Rule <G42>). Neither the Robot nor the Trackball receive any special protection at any other time.

Robot Operations

Trackball location and RoboCoach signaling

Trackball location and RoboCoach signaling

Posted by FRC383 at 02/06/2008 07:28:21 pm

I couldn't find a reference anywhere on the manual or this forum, so I'm assuming that the trackball random position is independently determined for each side of the overpass (there's no position mirroring or equivalence, such that knowing the position of a red trackball on your side of the overpass does not guarantee you know the position of the red trackball on the opponent side of the overpass).

Given that, suppose a team has got four hybrid actions:



- a) Remove trackball in position 1 from the NEXT overpass;
- b) Remove trackball in position 2 from the NEXT overpass;
- c) Remove trackball in position 3 from the NEXT overpass;
- d) It's a race!

Assuming the robot can quickly and reliably remove the ball from its overpass, would commanding the robot again to remove the trackball from the opponent's overpass (of course, always going counterclockwise) be legal?

It will be quite a feat to watch, and I'm pretty sure this follows the intent of the rules, although I'm not so sure about the letter.

Re: Trackball location and RoboCoach signaling

Posted by GDC at 02/07/2008 09:10:25 am

Yes, this would satisfy the intent of the rules.

Robot Operations

Hybrid Period

Hybrid Period

Posted by FRC86 at 02/07/2008 04:10:26 pm

Scenario A: Blue 1 is a fast robot capable of scoring 28 points in the hybrid period by knocking down 2 balls and crossing 3 lines. The Red Alliance sets up Red 2 and Red 3 to block Blue 1 by setting up Red 3 to stop after moving 10 feet while Red 2 stops after moving 5 feet. Blue 1 turns the corner during the hybrid period and hits a blocking robot.

Is this a deliberate entanglement which is a violation of rules 37, 39, & 40?

Scenario B: Same as Scenario A with the addition that Blue 1 is tipped over by hitting the blocker?

Can Blue 1 be righted if a penalty is called against the Red Alliance?

Scenario C: Same as Scenario B with the addition that Blue 1 is damaged by hitting the blocker?

Will the red blocker(s) be disqualified?

Re: Hybrid Period

Posted by GDC at 02/11/2008 01:25:30 pm

The described situation is too context-dependent to provide a definitive analysis of the situation. The rules and policies guiding the game will be implemented as well as possible by the referees, based on the conditions and actions that are observed at the time.

Please note that we can not provide an analysis of every potential hypothetical situation that may arise during game play. Please review the rules as written to gain an understanding of whether a particular technique would be permissible.

Robot Operations

Rule <G42> Signal to pass while hurdling

Rule <G42> Signal to pass while hurdling



Posted by FRC1254 at 02/12/2008 03:06:47 pm

If we are raising our lift to hurdle a ball and someone bumps us to pass, do we have to stop hurdling the ball and move out of their way?

Do we finish hurdling and then move?

In order to move we may have to go up and then come down and then move. I am thinking that might take longer than 6 seconds. I could see that we might never get a hurdle if the three teams from the opposing alliance each kept going around fast and came up behind us and made us move. Especially since teams are reporting that they can get around the whole track in 10-15 seconds.

What if there is room for them to move around us? Then do we have to move if we are hurdling or do they?

Re: Rule &G42> Signal to pass while hurdling

Posted by GDC at 02/14/2008 12:34:05 pm

A Robot that is in the process of Hurdling is not considered impeding, per Rule <G40>. If there are multiple Robots Hurdling, they are subject to Rule <G43>.

Robot Operations

IR Reciever Feedback

IR Reciever Feedback

Posted by FRC1280 at 02/14/2008 07:44:50 pm

Our strategy for IR receiver use is to have the robot select one of four hybrid plays after the balls are placed but before the hybrid period begins. One of our concerns is the possibility that the robot might be accidentally signaled by another robocoach, so we would like to have an indicator of the selected state on the robot. This can be accomplished by wiring four LEDs to digital outputs, allowing the robo coach to directly see the selected state and correct it if an incorrect state is selected for some reason.

Is this allowed?

Re: IR Reciever Feedback

Posted by GDC at 02/18/2008 01:19:47 pm

Visual feedback from the Robot to the team is good practice and permitted.

We do want to note that any input from the robocoach or other team member before the start of the match is prohibited.

Robot Operations

Blocking the overpass/"impeding"

Blocking the overpass/"impeding"

Posted by FRC919 at 02/18/2008 07:46:46 pm

There are 3 positions on the overpass that an opponent can place one of the trackballs.



Would we be breaking Rule <G40>(impeding) or Rule <G42>, or breaking any other rules if we just stopped right under the overpass and extended an arm upwards to block two of the positions preventing the opponent from placing a trackball on the overpass?

There will still be a "passing lane".

What happens if the whole lane was blocked but one of the lanes is blocked by the opponent's robots. (Since Rule <G40> says you cannot be impeding if you are the same alliance) does it mean no one gets penalized or would only our team be penalized?

Re: Blocking the overpass/"impeding"

Posted by GDC at 02/21/2008 01:18:41 pm

There is no rule specifically against blocking an attempt to place a Trackball on the Overpass, other than how such an action may otherwise be affected by Rules <G37>, <G38>, <G40>, and <G41>. But note that it may be, for all practical purposes, impossible to make a distinction between an attempt to place the Trackball on the Overpass and an attempt to Hurdle prior to the completion of the action. In any such situations, the referees will make the conservative interpretation of these actions as attempts to Hurdle. In that case, you would risk a violation of Rule <R42>.

Team Member Actions

Team Member Actions

When can the Robocoach begin coaching?

When can the Robocoach begin coaching?

Posted by FRC111 at 01/15/2008 03:31:04 pm

At what point during the beginning of the match can the Robocoach begin to issue commands to the robot? Can the Robocoach send commands prior to the beginning of the Hybrid period, or must they only begin to transmit once the Hybrid period has started?

Re: When can the Robocoach begin coaching?

Posted by GDC at 01/16/2008 11:22:51 pm

The RoboCoach may begin sending signals to the Robot when the Hybrid period starts (as indicated by the arena clock starting to count down the time).

Team Member Actions

Robocoach signals from match to match

Robocoach signals from match to match

Posted by FRC1629 at 01/15/2008 07:30:31 pm

Update #3 has clarified that a robocoach may only send four unique messages to a robot within a match, but it did not address whether those messages can be different from match to match. Is it allowable for a team to change what those four unique messages signify from match to match, as long as the functions of each message are specified as indicated in <G49>?

Thank you in advance.

Re: Robocoach signals from match to match

Posted by GDC at 01/16/2008 10:15:38 pm



Yes, the signals sent by the RoboCoach may be different from Match to Match. In such a situation, you would use a different "signaling card" (as referenced in Rule <G49>) to indicate the signals to be used in each Match..

Team Member Actions

Robocoach

Robocoach

Posted by FRC67 at 01/16/2008 07:01:11 am

Can the robocoach send a message to our robot that tells it to do a task and we can see that the LED has lit when the command was given, then send it a second command to do a second task before the first task is completed. It will still finish the first task before starting the second task.

Re: Robocoach

Posted by GDC at 01/16/2008 10:45:03 pm

Yes, as long as no more than four different commands are sent to the Robot.

Team Member Actions

How many RoboCoach commands?

How many RoboCoach commands?

Posted by FRC354 at 01/28/2008 08:31:42 pm

3. Can the robocoach send only four commands in total to the robot or is it that the robocoach can send any number of commands from a selection of four possible commands programmed?

...

Thanks!
Team 354

Re: Questions about Hybrid Period 2

Posted by GDC at 01/31/2008 02:58:28 pm

Question 3: The Robocoach can repeat sending a command many times, as long as the command is from a menu of only four possible commands.

Team Member Actions

ROBOCOACH during TELEOPERATED period

ROBOCOACH during TELEOPERATED period

Posted by FRC1073 at 02/05/2008 11:09:42 pm

<G02> says that the robocoach can continue to signal the robot during teleoperated mode.
<G48> says that during the teleoperated period the local robocoach can move anywhere in the alliance zone. We wanted to make sure we were making a correct assumption that it is OK for the robocoach to signal the robot from anywhere in the alliance zone during the teleoperated mode.

Re: ROBOCOACH during TELEOPERATED period

Posted by GDC at 02/07/2008 09:14:04 am

Yes, that is correct.



Referee Interactions

Referee Interactions

Referee Training

Referee Training

Posted by FRC1746 at 01/10/2008 10:14:02 am

Will Teams have access to the Referee on-line training course?

It would be great if we could all get trained!

If so, how do we access it?

Re: Referee Training

Posted by GDC at 01/20/2008 09:46:30 pm

The referee training materials will not be released to the teams. Primarily, this is to prevent any confusion that may arise between "The Rules" and "the referee training" and which document the teams should focus upon.

Referee Interactions

Clarification between G53 and T04

Clarification between G53 and T04

Posted by FRC932 at 02/17/2008 04:43:44 pm

According to G53 discussion of rules, scores, or penalties must be between the drivers or robocoach and the head referee and that coaches may not have discussions on these topics.

According to T04 if a team needs clarification on a ruling or scoring a pre-college student from the team should address the head referee.

It seems to me that these two rules contradict each other.

Can you please clarify which rule is right? Can a pre-college student that is not a driver or robocoach talk to the head referees or does it have to be a member of the drive team.

And there is a good possibility this year that a pre-college student will be the coach for the team. Since the student is the coach is he banned from talking with the referees or does the fact that he is pre-college allow him to do this?

Re: Clarification between G53 and T04

Posted by GDC at 02/18/2008 12:48:55 pm

There is no conflict between the referenced rules. Rule <G53>, however, is stated more precisely. Any team member wishing to discuss calls, rules, scores, or penalties with the Head Referee must be either a Driver or Robocoach (under Rule <G53>). Drivers and Robocoaches must also be pre-college students. So by definition, a Driver or Robocoach will also be in compliance with Rule <T03>. A student Coach may not discuss these situations with the Head Referee. Although it would satisfy Rule <T03>, this would be a violation of Rule <G53>.

Safety & Damage Prevention



Safety & Damage Prevention

Strongest Magnetic Field

Strongest Magnetic Field

Posted by FRC178 at 01/09/2008 02:52:24 pm

What is the strongest magnetic field our robot can legally generate?

Re: Strongest Magnetic Field

Posted by GDC at 01/10/2008 07:58:37 pm

There is no specific limit to the strength of a robot's magnetic field. Please remember that whatever device is used, it must not violate <S01>, <R02>, or <R03>.

Safety & Damage Prevention

<G37d> bumper perimeters

<G37d> bumper perimeters

Posted by FRC2505 at 01/09/2008 06:03:28 pm

[quote=<G37d>]...If a ROBOT extends outside of the perimeter of the STANDARD BUMPERS (the perimeter of the bumpers is the polygon defined by the outermost corners of each STANDARD BUMPER segment), it is responsible for the extension's contact with other ROBOTS...[/quote]Does the perimeter of the standard bumpers of a robot include arc segments, such as when there are curved bumpers? (A polygon has only straight sides.)

Re: <G37d> bumper perimeters

Posted by GDC at 01/10/2008 08:11:29 pm

In this example the perimeter of the polygon would be the straight line segments approximating the arc of the bumper.

Safety & Damage Prevention

<R08> Bumper geometry

<R08> Bumper geometry

Posted by FRC2505 at 01/10/2008 11:22:15 am

Can we cut holes in the bumper plywood to lighten it? What about if the holes don't go all the way through the wood?

Can we attach our bumpers at the corners, using something like dovetails in the plywood? If we do this, is the vertical piece of pool noodle still optional in the corner?

Re: <R08> Bumper geometry

Posted by GDC at 01/20/2008 10:08:37 pm

Standard Bumpers must be constructed in a manner consistent with the specifications provided in Rule <R08>. Adjacent sections of bumpers may be connected via appropriate joinery. Any corners created in the bumpers should be protected with sections of pool noodle and fabric cover

Safety & Damage Prevention

R08 - Are bumpers required in starting configuration?

R08 - Are bumpers required in starting configuration?

Posted by FRC2104 at 01/10/2008 07:07:01 pm



According to R08: "STANDARD BUMPERS must remain within the BUMPER ZONE when the ROBOT is resting on the floor in PLAYING CONFIGURATION. They must not be articulated or moved outside of the BUMPER ZONE."

Does this imply that the STANDARD BUMPERS may be outside of the BUMPER ZONE in the STARTING CONFIGURATION, and brought into the BUMPER ZONE during a transition to the PLAYING CONFIGURATION?

Re: R08 - Are bumpers required in starting configuration?

Posted by GDC at 01/17/2008 01:21:14 am

Under Rule <G18>, Robots may change orientation between the Starting Configuration and the Playing Configuration. As long as the Bumpers are properly attached to the Robot and not hinged or articulated, then they may be outside the Bumper Zone when the Robot is in its Starting Configuration. Once the Robot transitions into Playing Configuration, the bumpers must be completely within the Bumper Zone (as required by Rule <R08>).

Safety & Damage Prevention

<G37d> bumper perimeters

<G37d> bumper perimeters

Posted by FRC1018 at 01/10/2008 11:00:02 pm

Regarding the question and your answer in this thread ([\[url\]http://forums.usfirst.org/showthread.php?t=8009\[/url\]](http://forums.usfirst.org/showthread.php?t=8009)), does this also apply if the bumpers are entirely within the 28" x 38" allowable starting footprint of the robot?

Re: <G37d> bumper perimeters

Posted by GDC at 01/16/2008 12:17:46 am

Yes.

Safety & Damage Prevention

<R08> Bumpers

<R08> Bumpers

Posted by FRC1203 at 01/11/2008 03:55:22 pm

We were wondering if we could mount the bumper with a spring between the wood and the frame of the robot. So the spring would be on the robot and still be mounted like figure 8-1.

Re: <R08> Bumpers

Posted by GDC at 01/16/2008 12:47:26 am

Bumpers must be attached to the robot with a robust bolt-and-fastener system that can withstand rigorous interactions during the match. The "bolt" can be on either side of the connection (i.e. the robot side or the bumper side).

You may use an L-bracket as your mounting point, however it is not considered part of the standard bumper design. The L-bracket must be part of your robot and its weight part of the robot's weight.

Safety & Damage Prevention

Bumpers - Rule R08 Robot Perimeter

Bumpers - Rule R08 Robot Perimeter



2008 Q&A Forum Export

generated: 02/27/2008 09:26:59 am EST

Posted by FRC766 at 01/14/2008 07:44:54 pm

We read Rule 08 regarding the construction and installation of bumpers and we are clear on the part that states "STANDARD BUMPERS must protect a minimum of 2/3 of the perimeter of the ROBOT within the BUMPER ZONE". We are contemplating using a robot design with a wide and deep frontal opening to receive and hold the ball. The width and depth of the opening is 17 and 20 inches respectively. Would the 17 inches be included in calculating the robot perimeter? We think the 2/3 is intended to accommodate openings and such but in our case the opening depth is so deep that it is just not feasible for another robot to make contact with the back of the opening. I think you can see where we are headed with this design concept. The high bumpers would not permit us to come up under the ball in the region around our opening.

Bumper Perimeters

Posted by FRC190 at 01/16/2008 08:21:53 pm

The rules state that the bumpers must cover 2/3 of the perimeter of the robot. At what height is the perimeter measured, and how is it determined? If the robot is approximately rectangular, is the perimeter simply twice the robot's maximum width plus twice the maximum length?

R08: Interpretation of perimeter for bumpers

Posted by FRC766 at 01/20/2008 12:19:06 pm

Re: R08 about bumpers protecting 2/3 of the robot's perimeter:

Interpretation of this rule is clear when the robot is a typical rectangular or convex polygonal shape, where any point in the outside perimeter might contact another robot. However our robot will have a large "notch" in the front, some 20" wide and 17" deep, that would not be contacting other robots, because some other portion of the frame would contact first. By "perimeter", does the rule apply only to the exterior perimeter of a robot, which could contact other robots, or would our "interior" perimeter length also have to be counted, even though there is no potential for bumping there?

P.S. We initially posted this question on Monday 1/14 but haven't seen a response yet, so we are afraid our original post may have gotten lost. Please reply as soon as you can, as this is a key factor in our design...

Perimeter Measurements

Posted by FRC190 at 01/23/2008 09:30:37 pm

How is the perimeter of the robot determined for the purposes of bumper coverage?

Re: Bumpers - Rule R08 Robot Perimeter

Posted by GDC at 01/24/2008 03:47:16 pm

Our apologies for the rule's ambiguity.

The intent of the rule was for the bumpers to cover at least 2/3 of the [I]exterior [I]perimeter of the Robot. If the Robot is somewhat rectangular, the perimeter is twice the Robot's maximum width plus twice the Robot's maximum length. For example, this would apply to the rectangular external perimeter of a U-shaped Robot.

Safety & Damage Prevention

Bumper Material



Bumper Material

Posted by FRC386 at 01/15/2008 08:32:15 pm

Team 386 has been using a material for the past 3 years to cover the bumpers called Herculite 90. It is easy for us to obtain and it is so strong we have not had rip or tear in the 3 years of use. Our team would like to continue using the Herculite instead of the material called out in the parts list. Could you give our team a ruling on this material. Thanks.

Okie Baughman
Mentor team 386

Re: Bumper Material

Posted by GDC at 01/16/2008 10:59:40 pm

As long as the material satisfies the requirements of Rule <R08>, it would be acceptable.

Safety & Damage Prevention

Improvement

Improvement

Posted by FRC381 at 01/16/2008 06:54:50 pm

We want to make a slight improvemnet to the standard bumper design, so that it can perform its function more efficiently on our robot. Specifically we want to know:

Can we replace the plywood support behind the pool noodle, with a similarly sized piece of polycarbonate so that the bumper will be flexible and shaped in one continuous strip around the curved part of our robot?

Re: Improvement

Posted by GDC at 01/17/2008 02:42:11 am

No. The bumpers must be constructed as detailed in Rule <R08>. This includes the requirement for the use of plywood as the backing material.

Safety & Damage Prevention

Bumper decorations

Bumper decorations

Posted by FRC2331 at 01/16/2008 09:16:53 pm

In past years there have been a number of ways in which teams decorate their bumpers. Since rules from past years do not carry over to the current season, and since it is not addressed in <R08>, what is allowed and what is not allowed to be put onto the cloth of the bumpers?

Re: Bumper decorations

Posted by GDC at 01/21/2008 07:28:15 pm

The bumpers are considered part of the robot, and may be decorated just like any other robot component. The only provision is that any decorations must not alter the basic functionality of the bumpers, must not interfere with their normal operations, and must not violate the basic construction methodology defined in Rule <R08>. For example, painting, coloring, tie-dying, embroidering, or screen-printing the fabric covers on the bumpers would be fine. Putting large metal stays in the bumpers and calling them "reflective decorations" would not be permitted, as they would change the functionality of the bumpers.



Safety & Damage Prevention

Custom bumper

Custom bumper

Posted by FRC1158 at 01/17/2008 10:46:17 pm

Using the materials allowed in the manual, can we make the bumper thinner to conform to our robot design(use of 1 tube versus 2) as long as we are willing to weigh the robot with the bumpers attached?

Re: Custom bumper

Posted by GDC at 01/20/2008 09:54:21 pm

No. The bumpers must be constructed in a manner consistent with the specifications in Rule <R08>.

Safety & Damage Prevention

bumpers

bumpers

Posted by FRC1158 at 01/18/2008 11:34:40 pm

Our robot has narrow side panels so the regular bumpers are to big. Are we able to make smaller bumpers? What restrictions do we have if we can use custom bumpers?

Re: bumpers

Posted by GDC at 01/20/2008 10:22:27 pm

Rule <R08> specifies the construction requirements for the bumpers. Custom designs, including smaller bumpers, are not permitted.

Safety & Damage Prevention

New Bumpers

New Bumpers

Posted by FRC1254 at 01/19/2008 02:17:03 pm

I asked this question on Chief Delphi and it was recommended that I ask it on the FIRST site.

Can bumpers from 2 years ago be used on this years robot, if they were made using the exact same diagrams/measurements/materials as this years are required to use or do all bumpers need to be newly made this year?

Carolyn Hinckley

Re: New Bumpers

Posted by GDC at 01/20/2008 10:24:14 pm

No. Please refer to Rule <R37>. All fabricated parts must be made within the constraints defined in Section 8.3.4 of The Manual.

Safety & Damage Prevention

Bumper Question

Bumper Question

Posted by FRC467 at 01/19/2008 07:45:15 pm

Are we allowed to glue individual pieces of laminate together to make our own plywood?



Re: Bumper Question

Posted by GDC at 01/21/2008 10:50:40 am

Rule <R08> describes the required fabrication methods for bumpers. The bumpers must be backed by commercial-grade 3/4-inch plywood. Team-fabricated laminates are not acceptable.

Safety & Damage Prevention

Bumper Question - curved bumpers

Bumper Question - curved bumpers

Posted by FRC467 at 01/19/2008 07:45:54 pm

Are we allowed to curve the plywood to make curved bumpers?

Re: Bumper Question - curved bumpers

Posted by GDC at 01/21/2008 12:45:32 pm

Yes.

Safety & Damage Prevention

Standard bumpers and bumper length

Standard bumpers and bumper length

Posted by FRC2593 at 01/20/2008 12:50:17 pm

Rule <R08> bullet number five (5) states that "...each STANDARD BUMPER segment must be a minimum of 6 inches in length..." Figure 8-2 shows that the ends of bumpers may have vertical segments which fill the corners between straight horizontal sections. We would like to know if the following bumper construction meets the intent of the rule and is acceptable. We would like to use a bumper section with a vertical noodle section on one end (2.5 inch OD, no plywood backing) attached to a 3.5 inch length of plywood backed, horizontally mounted "pool noodles", all covered by fabric and secured to the plywood by angle brackets. The overall length of this bumper segment would be 6 inches.

Re: Standard Bumpers

Posted by GDC at 01/21/2008 01:14:33 pm

Provided your bumper segment, measured accross the soft side of the bumper, meets the minimum length requirement, this would be permitted. Covering the ends of the bumpers is strongly encouraged.

Bumper Length

Posted by FRC171 at 02/12/2008 09:21:52 pm

According to <R08>: STANDARD BUMPERS may be segmented. However, each STANDARD BUMPER segment must be a minimum of 6 inches in length and must not include sections that weigh more than 3 ounces per inch (i.e. no short bumpers with giant heavy fasteners).

We have bumper segments which if measured by the length of the noodles, are over 6" due to a vertical noodle placed on the corner of the robot overlapping the end of a bumper perpendicular to it. However, the length of the actual plywood board is just under 6".

Are we legal or not?

Re: Standard Bumpers

Posted by GDC at 02/14/2008 02:22:42 pm



The previous answer still applies.

Safety & Damage Prevention

bumpers in corners

bumpers in corners

Posted by FRC1602 at 01/20/2008 09:41:08 pm

Are bumpers required to extend into the corners of our robot? According to <R08> the hard part of the bumpers cannot extend into the corners but it does not say the bumpers must. For example, if our robot is 36 x 26, can we have bumpers on all four sides that are 36 x 26 but have the corners of the chassis exposed (which is much less than 1/3 of the perimeter)?

Re: bumpers in corners

Posted by GDC at 01/21/2008 01:21:59 pm

There is not a requirement that every corner of the Robot be protected by bumpers. However, it is strongly recommended to protect your robot, your alliance partners, and your competitors' robots.

Safety & Damage Prevention

Re: <R08> Bumper geometry

Re: <R08> Bumper geometry

Posted by FRC2505 at 01/21/2008 09:44:45 am

[url]http://forums.usfirst.org/showthread.php?t=8039[/url]

The reply to the post linked above said that our bumpers "must be constructed in a manner consistent with the specifications provided in Rule <R08>" in response to a question about drilling holes in the bumper.

Since <R08> doesn't discuss drilling of [U]non-mounting[/U] holes in the bumper, does this mean that modifications to standard bumpers which are not discussed in the rule are "consistent with the specifications"? Or are these holes or recesses illegal because they are not described?

(The rest of the previous answer is clear. Thanks for the clarification.)

Re: <R08> Bumper geometry

Posted by GDC at 01/21/2008 01:23:52 pm

To clarify, non-mounting holes ("lightening holes," "swiss-cheesing," etc.) are not permitted. These holes would affect the structural integrity of the bumpers, which would defeat their entire purpose.

Safety & Damage Prevention

Insight on bumper

Insight on bumper

Posted by FRC1158 at 01/21/2008 11:19:26 am

Since we have to stick to standard bumper, we also realize that First is looking for creativity in design and concepts, do you have an idea on how to cover a round robot with a flat bumper?

Re: Insight on bumper



Posted by GDC at 01/24/2008 03:28:34 pm

The particular configuration selected for the robot, and how the bumper segments are attached to the robot, are choices to be made by the individual teams.

Safety & Damage Prevention

Bumper Corners

Bumper Corners

Posted by FRC1718 at 01/22/2008 02:16:38 pm

Is it permissible to mitre the corners of our bumpers as opposed to the verticle piece of pool noodle? The pool noodles and cloth would extend out from the corner at a 45 degree angle to form the mitre - the plywood backing would stop at the corner. Thanks.

Re: Bumper Corners

Posted by GDC at 01/24/2008 03:50:44 pm

No, the design described above does not match the Standard Bumper design.

Safety & Damage Prevention

Robot Bumper

Robot Bumper

Posted by FRC136 at 01/23/2008 04:21:56 pm

Can the standard bumper be fabricated with 4 plywood sides joined in the corner or bent into an elipse to form a strong plywood box in which we fasten pool noodles?

Re: Robot Bumper

Posted by GDC at 01/24/2008 02:51:29 pm

Bumpers must be fabricated in a manner consistent with the design specifications provided in Rule <R08>. Adjacent sections of bumpers may be connected via appropriate joinery. Any corners created in the bumpers are to be protected with sections of pool noodle and fabric cover. Note that bumpers may not exceed the robot volume constraints (specified in Rule <R11>) by more than 3-1/2 inches per side (see Rule <R08>). So any arcs, curves, or complex shapes formed by the bumpers must still satisfy this constraint.

Safety & Damage Prevention

Can bumpers be left on if robot makes size and weight with bumpers?

Can bumpers be left on if robot makes size and weight with bumpers?

Posted by FRC1519 at 01/24/2008 02:01:31 pm

The third item in <R08> states:

"STANDARD BUMPERS must be removable so that they can be weighed separately from the ROBOT."

If, however, a robot can meet the size and weight restrictions <R11> with the bumpers installed on the robot, is it permissible to have the robot sized and weighed with the bumpers on the robot for purposes of convenience?

Thanks!

Re: Can bumpers be left on if robot makes size and weight with bumpers?



Posted by GDC at 01/24/2008 02:38:28 pm

No. The Rule <R08> requirement for removable bumpers does not make an exception for smaller or lighter Robots and/or Bumpers.

Safety & Damage Prevention

Bumper Corners

Bumper Corners

Posted by FRC1764 at 01/25/2008 05:52:24 pm

Our robot is designed as an octagon, and we have bumpers on 7 of the 8 sides (87.5%). The wood of our bumpers does not extend into the corners, but the pool noodles do. They are cut at an angle so that the noodles on one bumper meet the noodles on the adjacent bumper. We read in the rule book that "hard bumper parts" cannot extend into the corner, but pool noodle and cloth may. As long as the wood pieces do not touch each other in the corners, are we okay?

Re: Bumper Corners

Posted by GDC at 01/28/2008 03:10:33 pm

No. As shown in Figure 8-2, corners must be filled with a vertical piece of pool noodle.

Please note that it's not practical to require inspectors to inspect and evaluate alternate bumper designs. The Standard Bumber is the design as defined in Rule <R08>.

Safety & Damage Prevention

Bumper joinery

Bumper joinery

Posted by FRC2331 at 01/26/2008 04:10:51 pm

This Q&A [[url](http://forums.usfirst.org/showthread.php?t=8039)] seems to indicate that the plywood pieces can extend beyond the corner of the robot frame to join with each other, as long as they are protected by a vertical piece of pool noodle and fabric. <R08> says, in part, "Hard bumper parts MUST NOT extend into the corners."

What am I missing?

Re: Bumper joinery

Posted by GDC at 01/28/2008 01:08:18 pm

Hard bumper parts must not extend into corners. If segments of bumper backing (plywood) are joined to form a sharp corner and left exposed, it will be a violation. If the corner is covered and protected by a vertical piece of pool noodle and fabric (as shown in Figure 8-2 of Chapter 8 of The Manual), then the outer edge of the soft bumper material will be the new "corner." This is acceptable.

Safety & Damage Prevention

TEAM SUGGESTION: build/purchase of a competition dongle - use the disable switch!

TEAM SUGGESTION: build/purchase of a competition dongle - use the disable switch!

Posted by FRC188 at 01/27/2008 11:45:09 am

If you haven't built one, or bought one, the competition dongle should be considered MANDATORY every time you power up your robot.



With this year's emphasis on speedy and powerful drivetrains, and the potential for large amounts of quickly released stored energy, time is of the essence during any mishap, even minor ones. Don't be caught fumbling trying to unplug a tether, power-adaptor, or pressing a breaker to disable your robot when someone's life could be at risk.

Always have a competition dongle connected. Always have someone right over the disable switch in the event of an accident.

Safety & Damage Prevention

Bumper Corners

Bumper Corners

Posted by FRC1764 at 01/27/2008 03:07:31 pm

We are confused about mitering the pool noodles on the bumpers because in rule <R08> it states that the "bumper parts must not extend into the corners." An answer to another team's question says "Any corners created in the bumpers are to be protected with sections of pool noodle and fabric cover." Another question asked "Is it permissible to mitre the corners of our bumpers as opposed to the verticle piece of pool noodle? The pool noodles and cloth would extend out from the corner at a 45 degree angle to form the mitre - the plywood backing would stop at the corner" the respose to this post was "No, the design described above does not match the Standard Bumper design".

Basically, we are confused about why mitred noodles are not the same as protecting corners with pool noodle and fabric cover. Why exactly is a mitred noodle not allowed? It seems like answers to similar questions are contracting. Can you elaborate as to why the the mitred noodles would not fit the rule of protecting corners with pool noodle and fabric cover?

Thank you.

Re: Bumper Corners

Posted by GDC at 01/28/2008 01:06:42 pm

Corners that are protected by a vertical piece of pool noodle, covered with fabric (as illustrated in Figure 8-2 of Chapter 8 in The Manual) provide a full diameter of pool noodle to cushion the bumper backing (plywood). This is the minimum thickness of material required over all "hard parts" of the bumper.

Please note that it's not practical for the inspectors to inspect and evaluate alternate bumper designs. The Standard Bumber is the design as defined in Rule <R08>.

Safety & Damage Prevention

End-of-arm-tooling: Claw

End-of-arm-tooling: Claw

Posted by FRC2493 at 01/28/2008 02:47:17 pm

Does the claw, being an extension outside of the general perimeter of the robot, have to have bumpers/padding on it to prevent it from being a hazard? Would it count as a hazard at all if it did NOT have the padding or bumpers?



Re: End-of-arm-tooling: Claw

Posted by GDC at 01/31/2008 01:05:22 pm

There is no rule that automatically requires bumpers on extensions that exceed the general perimeter of the Robot. We can not comment on unknown design concepts and how they might/might not be judged as hazards.

Safety & Damage Prevention

Bumper Mounting

Bumper Mounting

Posted by FRC434 at 01/28/2008 05:21:21 pm

According to <R08>, the bumpers must be mounted with a rigid bolt-and-fastener system. Is it possible to use another type of rigid mounting for the bumpers? We plan on using door hinges, with a removable pin. This mounting system would be rigid, but is not a bolt-and-fastener system. Is it legal?

Bumper Mounting

Posted by FRC434 at 01/30/2008 04:26:31 pm

Is it possible to have our bumpers mounted with a door hinge instead of a bolt-and-fastener system? According to the rule, the bumpers must be rigidly secured. A door hinge will satisfy this, but is not a true bolt-and-fastener system? Is this still legal?

Re: Bumper Mounting

Posted by GDC at 01/31/2008 01:21:46 pm

No. The design described above does not match the Standard Bumper design defined in Rule <R08>.

Safety & Damage Prevention

robot dimation

robot dimation

Posted by FRC2496 at 01/29/2008 03:12:21 pm

Our robot is 28x28 now without the bumpers. If the bumpers are added, it will exceed the 28 maximum width as stated in the Starting Configuration. The rule states that standard bumper is excluded from the calculation of robot's weight and volumn. So is our robot's dimension OK now, or we have to make it smaller in order to add standard bumpers on both sides?

Re: robot dimation

Posted by GDC at 01/31/2008 01:10:52 pm

Please read Rule <R08> very carefully. Note that in the Starting Configuration, Standard Bumpers may extend outside the horizontal dimensions for the ROBOT (as specified in Rule <R11>) by up to a maximum of 3-1/2 inches per side. Nothing other than pool noodles and cloth can extend more than 1 inch beyond the Robot boundaries.

Safety & Damage Prevention

Stock Bumpers Quick Disconnect

Stock Bumpers Quick Disconnect

Posted by FRC1989 at 01/29/2008 11:03:28 pm

We are planning to use quick disconnect pins in order to mount the bumpers to the frame. We still want to use the stock bumpers, but will adding a bracket and pin as shown in the picture



make them custom and count in our envelope?

Re: Stock Bumpers Quick Disconnect

Posted by GDC at 01/31/2008 01:09:30 pm

Please refer to Rule <R08>. A bolt and fastener system must be used to secure the Standard Bumpers to the Robot.

The Game Q&A is not intended as a drawing review. We cannot comment on specific designs.

Safety & Damage Prevention

Bumper Mounting

Bumper Mounting

Posted by FRC2122 at 01/31/2008 01:35:56 am

We have a design decision to make with respect to the mounting of the bumpers this year. Our robot has a couple of bumps on the outside of our frame which are less than 1/2" tall and fit well within the allowed robot width. We either need to put a couple of small pockets in the 3/4" inch plywood to allow it to rest against our frame or we need to put in some vertical spacers and space the bumpers off of our frame and over the top of the bumps. In the end pocketing the plywood will result in bumpers that are more rigid and structurally secure (consistent with the intent of the bumpers in general), but we do not want to take a path that will result having to remake the bumpers at the competition. Thank you for your consideration.

Re: Bumper Mounting

Posted by GDC at 01/31/2008 12:48:59 pm

Lightening pockets or other modifications to the bumper design provided in Rule <R08> are not permitted.

Safety & Damage Prevention

Bumpers and holes in noodles

Bumpers and holes in noodles

Posted by FRC1618 at 01/31/2008 03:43:03 pm

We're scouring for pool noodles (even in South Carolina, they're hard to find this time of year), and we think we've found a source:

[url]http://poolcenter.com/pooltoys_noodles_water_logs.htm[/url]

Figure 8-1 in R08 mentions something about center holes and 3/4", but it's cut off. The aforementioned noodles have a 1/2" hole, though the part of the diagram we can see says that hollow pool noodles are [i]preferred[/i]

In short, can we use pool noodles with 1/2" holes in them provided they meet the 2.5" requirement?

Re: Bumpers and holes in noodles

Posted by GDC at 02/04/2008 01:23:38 pm

Yes.

Another hole in pool noodle question



Posted by FRC2250 at 02/09/2008 02:30:39 pm

We have been able to find pool noodles that do not have holes in them and need to know if we can use them or not?

Re: Another hole in pool noodle question

Posted by GDC at 02/11/2008 02:56:02 pm

Although pool noodles with a hole in the center is the preferred material for bumper construction, solid pool noodles are acceptable.

Safety & Damage Prevention

Bumper Backing plate question

Bumper Backing plate question

Posted by FRC2232 at 01/31/2008 09:56:14 pm

Can we put holes in the 3/4" plywood backing plate for the bumpers to remove weight if we don't jeopardize the strength and integrity of the bumper? We are not trying to get around the bumper rule but instead we want to reduce the weight of the entire robot.

Bumper mounting

Posted by FRC383 at 02/02/2008 08:44:07 pm

Our robot design has traditionally favored a dead-axle approach, meaning the axle is screwed to the robot frame, with the screw's head extending past the chassis (the aluminum plate is not thick enough to accommodate a countersunk head). This year our wheels got bigger and the chassis came closer to the ground, such that the screws that hold the axles lie right in the bumper zone.

Are we allowed to drill a small blind hole in the bumper plywood to accommodate the screw's head? The depth and diameter of the hole would be as small as possible (approximately 4mm deep and 8mm diameter), exclusively serving that purpose.

This minor modification would not alter the bumper structural integrity at all and might be considered a mounting hole, allowing the bumper to remain flush with the robot frame and thus forming a more "rigid, robust connection to the robot structure".

Re: Bumper Backing plate question

Posted by GDC at 02/04/2008 12:53:09 pm

Lightening pockets, non-mounting holes, "swiss-cheesing," or other modifications to the bumper design provided in Rule <R08> are not permitted. These holes would affect the structural integrity of the bumpers, which could defeat their entire purpose.

Safety & Damage Prevention

stock bumper quick disconnect system

stock bumper quick disconnect system

Posted by FRC1310 at 02/01/2008 11:12:50 am

We too wish to use a quick disconnect system based on a U bracket bolted to the wood frame and held to the standard robot frame with a quick disconnect pin. It clearly meets all the functionality requirements of R8. Unfortunately its a well known problem that regional competition rule interpretation can vary with punishing consequences to the effected teams. The 3rd bullet in the R8 subsection " must be attached to the Robot with a bolt-and-fastener system..."s intent is crystal clear to me but unfortunately the specific words are imprecise both



from an engineering language and from an English language perspective. A "fastener" is usually a bolt (or bolt and nut). That means you have asked for a bolt and nut system. Our U bracket may or may not be interpreted as a "fastener" by some inspectors. I think FIRST meant to say "fastening" system.

In fact I suspect the intent was to say "must be attached with a fastening system that is rigid.... One example is the bold and blind nut system shown in the diagram but it is not the only acceptable implementation."

Again, sorry for the request for clarification but it will make both the 1500 teams jobs easier with one less stress point and the probably hundreds of inspectors jobs easier

Re: stock bumper quick disconnect system

Posted by GDC at 02/04/2008 01:54:13 pm

Thank you for pointing out our ambiguous/erroneous language. We will amend the inspection check-list so that bolt and nut fasteners are accepted. In your case, we suggest that the "quick disconnect" pin be a bolt-nut combination. Please be sure that the Bumpers you use are compliant with the rest of Rule <R08>.

Safety & Damage Prevention

Horizontal Bumper Zone

Horizontal Bumper Zone

Posted by FRC1658 at 02/01/2008 03:02:46 pm

We are confused about the horizontal BUMPER ZONE in PLAYING CONFIGURATION. In STARTING CONFIGURATION, our STANDARD BUMPER design satisfies all the rules. We plan on extending the horizontal perimeter of our robot during PLAYING CONFIGURATION and the bumpers will expand with the robot. The bumpers will always be in the vertical BUMPER ZONE ensuring bumper to bumper contact with other robots during the match. Is this an acceptable design?

Re: Horizontal Bumper Zone

Posted by GDC at 02/04/2008 01:20:43 pm

There are no rules that would prevent this. However, note that 2/3 of the perimeter of the Robot must be protected at all times (under Rule <R08>), even if you have a dynamic perimeter. When in actual use, the Robot must satisfy all the constraints defined in Rule <G37> (in particular, Rule <G37-d>).

Safety & Damage Prevention

Bumper End Covering

Bumper End Covering

Posted by FRC2423 at 02/02/2008 10:56:06 pm

In previous answers you state that, "Covering the ends of the bumpers is strongly encouraged". I assume that means one can get away without covering the ends. True.

Is there further guidance on how to cover the ends, should a team decide to do so? This was not specified in R08.

Re: Bumper End Covering



Posted by GDC at 02/04/2008 12:39:21 pm

The rules do not require that ends of the bumpers be covered. However, covering the ends with the same rugged fabric that covers the rest of the bumper is highly recommended. This will reduce the potential for parts of your bumper to get caught on opposing robots and damaged, and will improve your robot by providing a complete, finished look to their appearance.

Safety & Damage Prevention

Non-Rectangular Robot and Bumpers

Non-Rectangular Robot and Bumpers

Posted by FRC467 at 02/03/2008 02:44:43 pm

Our robot design is narrower on one end than the other. There is about a 20 degree angle on each side. Therefore we will need two sections of plywood for each side section. Assuming there is one pool noodle that extends the whole length of the side, which bends around the small angle, is it permissible to attach the two sections of plywood with hinges or other fastener, so as to not end up with many smaller sections that would need to be removed individually?

Re: Non-Rectangular Robot and Bumpers

Posted by GDC at 02/04/2008 01:02:32 pm

Yes, as long as the section are still attached to the robot via the required bolt-and-fastener system (defined in Rule <R08>).

Safety & Damage Prevention

Non-Cylindrical Bumpers?

Non-Cylindrical Bumpers?

Posted by FRC818 at 02/04/2008 03:46:44 pm

According to the diagram in the FIRST manual, it shows a cylindrical bumper being used. We have been unable to locate available bumpers like this in michigan because it is winter and all local pool stores are closed and were wondering if we are allowed to use a 5-petal, flower shaped pool noodle which satisfies the 2 1/2 inch diameter requirement.

Thank You,
Team 818

Hexagonal pool noodles instead?

Posted by FRC2068 at 02/05/2008 09:18:56 am

May we use hexagonal (cross-section) pool noodles that have a 2 1/2 inch diameter instead of the round ones? Our team has been unable to locate round noodles.

Re: Non-Cylindrical Bumpers?

Posted by GDC at 02/07/2008 09:08:52 am

Pool noodles (of many shapes, including round) are available through a multitude of web-accessible sources. Please use round ones as required by the design specified in Rule <R08>.

pool noodles for bumpers

Posted by FRC406 at 02/11/2008 02:07:14 pm



We live in Michigan and this year we are having a very hard time finding the round pool noodles. We can find the "flower" shaped ones. They are only slightly larger than the round noodles, can we substitute them?

Re: Non-Cylindrical Bumpers?

Posted by GDC at 02/11/2008 03:01:01 pm

The prior answer still applies.

Safety & Damage Prevention

Level of the Bumper

Level of the Bumper

Posted by FRC2543 at 02/04/2008 07:03:00 pm

We are trying to see if we are allowed to have the bottom of our bumper higher than the bottom of our chassis. The lower part of the bumper is currently is over 2.5 inches while the bottom surface of the chassis is 1.9 inches. Also, another concern with our bumper is whether the plywood of the bumper can be mounted on the surface of a PVC frame for support. This PVC frame would have to be integrated with the bumper whenever it would be removed.

Re: Level of the Bumper

Posted by GDC at 02/07/2008 09:07:22 am

As noted in Rule <R08>, Standard Bumpers must be in the region between 2.5 and 8.5 inches from the floor. There are no specified limits on the height of the robot frame. Inside the bumpers, the robot may extend upwards to the height limits defined in Rule <R11> and Rule <R16>, and may extend downwards all the way to (but not below) the surface of the Track.

Additional frames, structures, or supports for the Standard Bumpers beyond those defined in Rule <R08> are not permitted, as this would form a conflict between Rule <R08>, Rule <R11> and the exceptions granted in Rule <R13>. The bumpers must attach directly to the robot.

Safety & Damage Prevention

Yet another bumper question

Yet another bumper question

Posted by FRC1828 at 02/04/2008 11:40:45 pm

Is it permissible to have non-standard bumpers on a robot, as long as the required 2/3 of the perimeter is covered by standard bumpers?

For instance, our robot is currently protected on 3 of its 4 sides by bumpers. With our design, this comes to 71% protected, which is actually more than the required 66%. However, we also wish to protect certain components on the back of our robot. We would ordinarily use the standard bumper design for this, but, due to design constraints, we are unable to fit two stacked tubes in that space.

Would we be allowed to use a non-standard, 1-tube-thick bumper section, as long as it followed the same basic principles as the standard bumpers, and the required amount of the perimeter used the standard bumper design?

Re: Yet another bumper question

Posted by GDC at 02/07/2008 12:41:09 pm



As long as a minimum of 2/3 of the perimeter of the Robot is protected by Standard Bumpers, then you have satisfied the requirements of Rule <R08>. If you wish to include additional bumpers of your own design on your robot, that is permitted. Note that any additional custom bumpers must fit within the volume and weight constraints defined in Rule <R11> - they are not covered by the exceptions provided in Rule <R13>.

Safety & Damage Prevention

Warning Alarm

Warning Alarm

Posted by FRC1523 at 02/06/2008 08:15:10 am

May our robot use a horn, or similar device, to sound a warning that our robot is about to launch its trackball? Would an audio warning device violate rule R02?

Re: Warning Alarm

Posted by GDC at 02/07/2008 01:07:43 pm

In general, this is a noteworthy idea and an appropriate safety measure. However, if the emitted sound is sufficient to be a distraction during a Match, then it would be a violation of Rule <R02>. Please use your best judgement, and be prepared to make adjustments to the volume, duration, and/or frequency of the emitted sound at the competition events if required.

Safety & Damage Prevention

Bumper Mounts

Bumper Mounts

Posted by FRC1764 at 02/06/2008 01:15:20 pm

The standard bumper design shows one centered mounting bolt on the bumper. We have two mounting bolts on each side of the bumper in a vertical line, making 4 mounting holes in each bumper. Does this conform to the standard design? This is the same bolt and fastener system described in the rule, only with two more bolts per bumper.

Thanks!
1764

Re: Bumper Mounts

Posted by GDC at 02/07/2008 09:16:09 am

That would satisfy the intent of the design rule.

Safety & Damage Prevention

Painting Bumper Plywood

Painting Bumper Plywood

Posted by FRC1764 at 02/06/2008 01:20:05 pm

Can we paint the plywood on the back of our bumpers for a more polished look?

Thanks,
1764

Re: Painting Bumper Plywood

Posted by GDC at 02/07/2008 09:15:29 am

There is no rule that would prohibit that.



Safety & Damage Prevention

Bumper Frame

Bumper Frame

Posted by FRC2543 at 02/08/2008 02:22:34 pm

We previously posted this question:

Also, another concern with our bumper is whether the plywood of the bumper can be mounted on the surface of a PVC frame for support. This PVC frame would have to be integrated with the bumper whenever it would be removed.

And recieved this answer:

Additional frames, structures, or supports for the Standard Bumpers beyond those defined in Rule <R08> are not permitted, as this would form a conflict between Rule <R08>, Rule <R11> and the exceptions granted in Rule <R13>. The bumpers must attach directly to the robot.

My question is now,

If the "PVC" frame is part of our robot, in which the standard bumpers are attached to with nails but not "strong and stiff fasteners", and we do not take off the bumpers for weight, is it allowed to prevent the frame being illegally subtracted from the weight? Are we required for inspection to remove the bumpers? If so, is taking apart our bumpers and including a "strong and stiff fastener" into the frame to be able to remove the bumpers with out the PVC an acceptable design?

Re: Bumper Frame

Posted by GDC at 02/11/2008 01:13:20 pm

The bumpers must be attached to the robot with the fastening system defined in Rule <R08>. Attaching the bumpers with nails is not sufficient. The bumpers must be removable during the inspection process. If the PVC frame described is part of the Robot, and remains as part of the Robot when the bumpers are removed, then it would be acceptable.

Safety & Damage Prevention

Bumpers

Bumpers

Posted by FRC2081 at 02/09/2008 12:09:21 pm

If we had a part that attached to the back side of the bumpers, but is detachable, does it make the bumpers "custom bumpers"?

Re: Bumpers

Posted by GDC at 02/11/2008 12:57:06 pm

There is no rule that would prevent a part from being attached to the back of the bumpers, as long as the attachment method was consistent with the design specified in Rule <R08>. Note that when the bumpers are removed for inspection, nothing can be attached to the bumpers (as all other Robot parts must remain on the Robot for the inspection).

Safety & Damage Prevention

Wheel modifications & Rule <R06>



Wheel modifications & Rule <R06>

Posted by FRC2608 at 02/10/2008 10:38:05 pm

In rule <R06> it states that "Traction devices shall not have surface features such as metal, sandpaper, hard plastic studs, cleats, or other attachments." In previous years, added traction has been gotten by using tie straps wrapped across the wheels. Would these be considered "other attachments"?

Re: Wheel modifications & Rule <R06>

Posted by GDC at 02/11/2008 12:55:21 pm

Wrapping wheels with "tie wraps" to increase traction would not be a violation, as long as the "strap" portion of the tie wrap is the only part to contact the carpet (i.e. neither the "buckle" nor any sharp, protruding cut end of the tie wrap should contact the carpet where it might cause damage to the field).

Safety & Damage Prevention

Bumpers Not included in the Max length and width

Bumpers Not included in the Max length and width

Posted by FRC919 at 02/11/2008 04:22:07 pm

As per rules <R06> "Nothing other than pool noodles and cloth can extend more than 1 inch beyond the ROBOT boundaries."

And Figure 8-1

"3/4 inch plywood, 5 inches high and no longer than the maximum robot dimension"

as per rule <R13>

"these items are NOT considered part of the ROBOT and are NOT included in the weight and volume assessment of the ROBOT:

"Any STANDARD BUMPER assemblies included on the ROBOT that are in compliance with Rule <R08>, up to a maximum of 15 pounds,"

It is my understanding that the bumpers are not included in the length and width of the starting configuration as per Rule <R11> as long as the plywood and mounting screws extend no more than 1 inch and the entire bumpers extend no more than 3-1/2 inch beyond the boundaries stated in <R11>. So therefore as long as the robot itself fits in the starting configuration limits, it is fine.

Re: Bumpers Not included in the Max length and width

Posted by GDC at 02/14/2008 12:42:32 pm

Please resubmit your thread. We do not see a question in your post.

Safety & Damage Prevention

Bumper Mounting

Bumper Mounting

Posted by FRC2483 at 02/11/2008 07:25:53 pm

I asked this question earlier but do not know if it got through. If it is a repeat sorry. Can we



build the back frame out of 8020 on the wood and mount that to the robot frame using L brackets? This will give the strength of a sturdy mount.

Can we put L brackets in the corners of the bumpers to bolt them together to give them more structural strength.

We have checked the weight per inch and overall weight and we meet both requirements

Re: Bumper Mounting

Posted by GDC at 02/14/2008 12:41:21 pm

The bumpers must be constructed according to the design specified in Rule <R08>. The bumpers must be constructed of plywood backing, pool noodles, fabric covering, fabric retaining hardware, and fasteners only. Additional "back frame" structures (e.g. 80/20, PVC pipe, or other structure) are not permitted as part of the bumpers. Any such structure, if used, would have to be part of the Robot (and must therefore comply with all applicable Robot Rules). For example, if the L-brackets were part of the Robot, the corners described would be in compliance with the rules.

Safety & Damage Prevention

Use of 2.75 inch pool noodles

Use of 2.75 inch pool noodles

Posted by FRC919 at 02/11/2008 08:01:39 pm

Our team is having a hard time finding 2.5inch pool noodles for our bumpers. Can we use 2.75inch diameter pool noodles as long as the backboard for the bumpers is still 5inches and the fabric can go over the 2 pool noodles.

I did see a GDC respond for a previous year and was wondering if the answer still hold true
[url]<http://forums.usfirst.org/showthread.php?t=496&highlight=pool+noodles>[/url]

What about if we were to shave off the pool noodles so that they are 2.5inch in diameter?

The pool noodles we have are solid core, are we allowed to hollow out the pool noodles ourselves provided that the hollow core is only 3/4 in diameter (as per the rules)?

Re: Use of 2.75 inch pool noodles

Posted by GDC at 02/14/2008 12:47:10 pm

Yes, 2.75-inch diameter pool noodles are acceptable. As answered previously, solid (no hole) pool noodles are permitted, although ones with center holes are preferred.

Safety & Damage Prevention

Robot guarding

Robot guarding

Posted by FRC1756 at 02/14/2008 11:16:21 am

We are using a scissors lift mechanism on our bot, will we need to provide guarding at all the pinch points? Instead, can we mark the mechanism with yellow and black stripes to provide a warning?



Re: Robot guarding

Posted by GDC at 02/14/2008 12:20:28 pm

Rule <R05> requires that reasonable efforts be made to mitigate and/or protect pinch points. Shielding particularly dangerous pinch points is critical. For less hazardous pinch points, shielding is the preferred option. If this is physically not possible for less hazardous pinch points, then brightly colored warning stripes or other visual warning indicators would be an acceptable alternative.

Safety & Damage Prevention

Bumpers Question

Bumpers Question

Posted by FRC8 at 02/15/2008 07:58:32 pm

Pardon us if this question has already been answered, but we have a question about bumper mounting. We would like to mount the bumpers by using a piece of perforated aluminum channel (part of the kit frame, actually) and bolt those down into our boxbeam frame. Seeing as that is a bolt-and-fastener system, would these qualify as STANDARD BUMPERS, as per R08?

Re: Bumpers Question

Posted by GDC at 02/18/2008 12:35:11 pm

This would be permitted, provided the aluminum channel is and remains part of the Robot when the bumpers are removed.

Safety & Damage Prevention

Bumper/robot body covering

Bumper/robot body covering

Posted by FRC2220 at 02/17/2008 08:19:26 pm

Hi,

Our team nickname is Blue Twilight. Our students looked at the swatch of colors provided in the KOP for nylon fabric and decided to order and use the Electric Blue color for our robot. We created our bumpers with this color. We also choose to build flap-like covers over the body of the robot with the remaining fabric. This color blue is very close to the color of the blue trackballs. A question came up tonight about using this color and how that would effect other teams cameras. Would they track our robot instead of a blue trackball? If this turned out to be the case, would we be forced to somehow change out the color of our robots bumpers and body covering? We want to be prepared for this possibility at the competition.

Is using this color a violation of the game rules. We honestly did not think it was an issue as this was one of the color option on the swatch provide in the 2008 KOP. Please get me an answer as soon as possible. We would have to order more fabric and make a change at our first competition if this is an issue.

Re: Bumper/robot body covering

Posted by GDC at 02/18/2008 04:29:42 pm

This would be permitted. We recommend, however, that if you have the option of making the covering exchangeable (in case you do encounter a Robot that is confused by your color



scheme).

General Robot Design

General Robot Design

Robot Size Rules

Robot Size Rules

Posted by FRC533 at 01/09/2008 03:58:23 pm

What size and locations of the robot start size?

Weight Class

Posted by FRC457 at 01/09/2008 06:24:26 pm

On the inspection list it says that theres a weight class 6' is 100 lbs, 5' is 110 lbs, and 4' is 120 lbs put in rule 11 <R11> is says that your robot has to be 28x38x60 at 120 lbs i want to know is there a weight class or not.

Robot Size Rules

Posted by FRC1124 at 01/09/2008 08:07:35 pm

Our team has a question about the robot size restrictions. Section 8 and the 2008 Inspection Checklist say different things.

<R11> states:

Prior to the beginning of the MATCH, the ROBOT shall be placed in a STARTING CONFIGURATION that fits within the dimensions listed below:

Maximum Height: 60 inches (152.40cm)

Maximum Weight: 120 pounds (54.43Kg)

The 2008 Inspection Checklist states:

Robot Class_____ (1 = 4' + 120lbs, 2 = 5' + 110lbs, 3 = 6' + 100lbs)

Size: Must fit in sizing box (28" x 38" x class height)... <R11>

Weight: Must weigh no more than permitted given robot class... <R11>

Can you please clarify if the robot classes still exist, or if we have a maximum height of 60" and maximum weight of 120 lbs.? Thank you!

Re: Robot Size Rules

Posted by GDC at 01/10/2008 09:36:46 pm

The starting size and weight constraints are specified in Rule <R11>. The rules take precedence over any other documentation. The inspection checklist is in error (thank you for bringing our attention to this!), and will be updated to reflect the 2008 constraints.

General Robot Design

38" as the front of the robot?

38" as the front of the robot?

Posted by FRC818 at 01/09/2008 04:30:14 pm

Are we allowed to have the 38" demension of our robot be the "Front" and have the 28" demension be our "side"?



Thank You In Advance,
FRC818

Re: "as the front of the robot?"

Posted by GDC at 01/10/2008 09:13:22 pm

Yes.

General Robot Design

Wedges and Rule <R19>

Wedges and Rule <R19>

Posted by FRC2177 at 01/09/2008 11:08:48 pm

According to R19, "ROBOTS shall be designed so that opposing robots results in pushing rather than tipping or lifting." If a particular design doesn't meet the 10-degree requirement within the bumper zone, but could be shown to not lift or tilt another robot in a collision, may this be allowed? Would there be more leniency given if the parts that didn't meet the 10-degree requirement were made of some sort of pliable material (rubber, foam, etc)?

Can anyone help us out with this? Many thanks!

Team 2177

Wedges and Rule <R19>

Posted by FRC2177 at 01/09/2008 11:11:02 pm

If a wedge-like mechanism is deployed in order to harvest a trackball, but then is immediately retracted once the trackball is secured on top of the robot, would this be considered an infraction? The mechanism would only be deployed when the trackball was directly in front of the robot.

Team 2177

Re: Wedges and Rule <R19>

Posted by GDC at 01/10/2008 08:40:12 pm

Rule <R19> does not make exceptions for softer or more pliable materials. Rule <R19> does permit for extensions used beyond the bumper zone. If the extensions are not used as wedges against another robot, then they are permitted.

General Robot Design

80" limit and bumpers

" limit and bumpers

Posted by FRC467 at 01/11/2008 01:22:29 am

With respect to <R16>, are the bumpers included in measurement to determine if a robot has exceeded the 80" limit? Thanks

" cylinder limit and bumpers

Posted by FRC2377 at 01/11/2008 10:24:29 am

As per rule <R16>, robots may not expand beyond an 80" cylinder in their playing configuration. Are the bumpers considered part of the robot in this configuration and therefore must also fit within the 80" cylinder during gameplay?

80" cylinder limit and bumpers

Posted by FRC1511 at 01/12/2008 08:22:28 pm

As we read Rule R18, the ROBOT itself may not exceed the 80" diameter cylinder, because



this refers to R11 (STARTING CONFIGURATION), and the Bumpers are allowed to extend outside of the starting configuration per R8, are we correct in assuming the Bumpers ARE NOT included in the 80" cylinder?

Re: 80" cylinder limit and bumpers

Posted by GDC at 01/14/2008 12:32:55 pm

As noted in Rule <R13>, Standard Bumpers (and other items such as the battery, etc.) are considered part of the Robot, and must comply with all applicable rules. Based on that, the Standard Bumpers are included when determining if a Robot is in compliance with Rule <R16>.

Bumpers

Posted by FRC1507 at 01/22/2008 02:57:03 pm

Does the mandatory bumper count include or exclude the 80" diameter for the robot after the start?

Thanks
Warlocks

Re: Bumpers

Posted by GDC at 01/23/2008 11:07:43 pm

The previous answer still applies.

General Robot Design

<R16> Interpretation

<R16> Interpretation

Posted by FRC1889 at 01/12/2008 09:11:28 pm

"While in the PLAYING CONFIGURATION, the ROBOT may expand up to a maximum horizontal dimension of 80 inches (e.g. all parts of the ROBOT must fit within an imaginary 80-inch-diameter upright cylinder)."

Which is it, maximum horizontal dimension of 80 inches, or must fit in 80 inch diameter circle? They are not the same thing. For example, an equilateral triangle with 80 inch sides has a maximum dimension of 80 inches but does not fit in an 80 inch diameter circle.

<R16> Interpretation

Posted by FRC190 at 01/13/2008 12:25:50 am

Rule <R16> states: "...the ROBOT may expand up to a maximum horizontal dimension of 80 inches (e.g. all parts of the ROBOT must fit within an imaginary 80-inch-diameter upright cylinder)."

In which case (maximum horizontal dimension or must fit within cylinder) will be enforced? If I have a robot that is an equilateral triangle 80" on each side, it will not fit within an 80" diameter cylinder. Would that robot be legal or not?

Re: <R16> Interpretation

Posted by GDC at 01/14/2008 12:34:59 pm

The rule states that the Robot may not have any two points more than 80 inches apart when measured horizontally. The parenthetical phrase is intended as a clarifying example, but it



does not convey the same authority as the rule. It is recognized that a small set of configurations exist (with an equilateral triangle with 80 inch sides as the degenerate case) that are in compliance with the letter of the rule, but may violate the example. In all such cases the rule, and not the example, will be enforced.

General Robot Design

Maximum robot horizontal dimension w/ TRACKBALL?

Maximum robot horizontal dimension w/ TRACKBALL?

Posted by FRC1138 at 01/12/2008 09:49:22 pm

Is the TRACKBALL considered part of the robot when possessed by the robot? This is in reference to rule <R16> on not exceeding 80 inches of horizontal dimension in the playing configuration.

Re: Maximum robot horizontal dimension w/ TRACKBALL?

Posted by GDC at 01/16/2008 12:01:10 am

The Trackball is not considered part of the Robot when evaluating the Robot for compliance with Rule <R16>.

General Robot Design

Bumper Material

Bumper Material

Posted by FRC1511 at 01/13/2008 11:09:31 am

This question is regarding the Bumper Rule in R08 that states STANDARD BUMPERS must be covered with a tough smooth cloth.

Our team has searched for the last two years for a new source of red camouflage material, our team image, and is now short on enough to cover our bumpers. We came up with the idea of recycling our team pants, and using that camo material sewn together to cover the bumpers. Its a high grade, tough smooth material, but it would have seams in it. Would this be ok? We see no rules against seams, but wanted to check before we started cutting up our old pants! Thanks!

Re: Bumper Material

Posted by GDC at 01/15/2008 11:55:03 pm

Yes, provided the assembled material cover would be tough enough to withstand the typical wear and tear that is to be expected during the competition season, that would be acceptable. And you are to be applauded for your efforts to recycle your old team uniforms.

General Robot Design

Additional Clarification R16

Additional Clarification R16

Posted by FRC171 at 01/14/2008 02:53:31 pm

With the 80" horizontal dimensions, will this be measured in the absolute worst case scenario or in operation scenario.

For example if we have a double jointed arm that are both 48" long. When both joints are parallel with the floor you will be at least 96" and will break the dimensions. If we prevent this



with potentiometers, angles, and some programming that we are never outside this dimension during driver operation (match play) are we still fine?

Re: Additional Clarification R16

Posted by GDC at 01/16/2008 11:19:59 pm

Robots may be constructed such that it is physically possible to assume a configuration that would violate Rule <R16>. But if the Robot does not actually assume this configuration during the Match, then there is no violation.

General Robot Design

Robot size at start as shooter

Robot size at start as shooter

Posted by FRC39 at 01/15/2008 02:36:48 am

We are considering a ball shooter for hurdling.

Senior members on the team indicate that in 2006, when they were scrutineered, their shooter turret was moved by hand to see if it could be turned in a way to violate the size constraints.

We are looking at catapult and piston actuators to shoot the ball. Both of these are moving parts and could possibly extend beyond the 38 x 28 x 60 envelope.

Will we be directed to dry fire or put these actuators in the extended or "fired" position for the purpose of checking the 38 x 28 x 60 inch size envelope is not violated?

Regards
Frank Neuperger

Re: Robot size at start as shooter

Posted by GDC at 01/16/2008 11:23:54 pm

During inspection, the team will be asked to place their robot in its Starting Configuration. This is the configuration that will be evaluated for compliance with Rule <R11>.

General Robot Design

Penalty associated with <R16>

Penalty associated with <R16>

Posted by FRC2377 at 01/15/2008 08:18:11 am

Is there a penalty associated with violating rule <R16>? The manual does not state as such...

Also, how will referees be verifying that robots have not exceeded the 80" restriction during match play? Will the verification be done similarly to the verification of the 72" rule from 2007?

R16 - penalty?

Posted by FRC2331 at 01/16/2008 09:18:02 pm

What is the penalty for violation of R16, extending more than 80 inches in the horizontal direction?

Re: Penalty associated with <R16>

Posted by GDC at 01/24/2008 04:09:44 pm



Violation of the rule may result in a Yellow Card.

We recommend that you design and build your Robot so that you cannot exceed the 80" envelope. If your Robot is capable of expanding beyond the size restriction, it will be watched carefully during the match for infractions.

General Robot Design

Flag Holder Pipe Size

Flag Holder Pipe Size

Posted by FRC190 at 01/15/2008 11:46:09 am

The rules state that we need 1/2" ID PVC pipe. Do you mean 1/2" PVC pipe (which does not have a 1/2" ID) or do we actually need pipe that is 1/2" ID?

Re: Flag Holder Pipe Size

Posted by GDC at 01/24/2008 11:31:51 pm

Please refer Rule <R17> as amended in Team Update #4. The flag holder must be made of 1/2 inch (nominal) Schedule 40 PVC tube. This material has an outside diameter of 0.840 inches and an inside diameter of 0.622 inches

General Robot Design

<R16>, does the bumper get included in the 80" cylinder ?

<R16>, does the bumper get included in the 80" cylinder ?

Posted by FRC423 at 01/16/2008 12:33:11 pm

R 16 describes a very tight restriction in terms of the size of the ball and the maximum robot size.

Pls elaborate on this in detail.

For instance, do the bumpers have to fit in the 80" diameter ?

Will there be an 80" cylinder, 60 " high be available at the tech inspection stations at the regionals ?

Charlie Affel, mentor for the manipulator sub-team, team 423

Re: R61, does the bumper get included in the 80" cylinder ?

Posted by GDC at 01/16/2008 10:19:31 pm

Rule <R16> applies to the entire Robot, including the required Standard Bumpers. Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8159"]this Q&A answer[URL] for additional information.

<R16> Interpretation

Posted by FRC2081 at 01/19/2008 10:30:05 am

We would like to know if the bumpers are included in the 80" diameter for the robot. Thank you.

Re: <R16>, does the bumper get included in the 80" cylinder ?

Posted by GDC at 01/20/2008 12:23:54 am

The above answer still applies.

General Robot Design

Rule G<41a>



Rule G<41a>

Posted by FRC848 at 01/16/2008 06:11:27 pm

We are a bit confused about the 6 foot height limit that other teams are talking about this year. We have read the manual and cannot seem to find any rule that limits the height of the robot anywhere. Could you please clarify about any rule that restricts height limit in any zone this year?

Robot height limits

Posted by FRC848 at 01/16/2008 06:27:37 pm

We have read the manual and cannot find any reference to limiting the height of the robot anywhere on the playing field. We have read threads that mention a 72" height limit outside of the home zone. Please clarify.

Re: Rule G<41a>

Posted by GDC at 01/17/2008 02:23:10 am

Please refer to Rule <R16>, as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #1[/URL].

General Robot Design

R17 Flag Holder

R17 Flag Holder

Posted by FRC1501 at 01/17/2008 07:44:34 pm

In R17 it states that "The flag holder must be permanently mounted to the ROBOT such that when the ROBOT is in any PLAYING CONFIGURATION and the FLAG is approximately vertical and the top of the FLAG is 75" above the floor"

Two questions:

- 1) Can the FLAG be mounted on an arm that pivots away from the ROBOT and keeps the flag vertical?
- 2) Can the base of the flag holder be attached to a spring such that when the ball hits it it will move out of the way and than return to vertical?

Keep up the good work.

Re: R17 Flag Holder

Posted by GDC at 01/21/2008 01:01:22 pm

The answer to your question is yes, as long as you don't violate Rule <R16> in the process.

The flag holder can not be mounted on a spring, as that would not keep the flag holder vertical.

General Robot Design

<R17> Very short robot

<R17> Very short robot

Posted by FRC885 at 01/20/2008 06:39:01 pm

Here's our question regarding <R17>:

<R17> If a robot in its starting configuration has a maximum height of 8" above the floor for



the chassis and all mechanisms, is it permissible to include a flexible rod to a height of 51" above the floor that has fastened at the top a 12" long piece of 1/2" ID Schedule 40 PVC pipe for the flag holder?

Re: <R17> Very short robot

Posted by GDC at 01/21/2008 12:55:15 pm

That would be permitted, as long as the structure to which the flag holder is mounted is rigid enough to keep the flag holder in a vertical orientation. The structure to which the flag holder is mounted should be fixed with respect to the body of the robot.

General Robot Design

Pigtail? <R18>

Pigtail? <R18>

Posted by FRC885 at 01/22/2008 11:32:20 am

Question regarding pigtail <R18>: Would you please add some detail as to what is meant by "...or a remote "pigtail" connection to the Robot Controller port. ... " Please provide an example to help with understanding this concept. TNX for all your efforts!

Re: Pigtail? <R18>

Posted by GDC at 01/24/2008 02:58:49 pm

In electronics vernacular, a "pigtail" is a length of wire or cable used to extend the connection between a component and a circuit. Think of it as an extension cord for data/signal lines.

General Robot Design

Flag holder structure <R17>

Flag holder structure <R17>

Posted by FRC885 at 01/22/2008 11:33:45 am

Flag holder structure <R17>: Is it allowable that the flag holder structure can flex when another robot or the track ball contacts the holder and the flag holder returns to normal position configuration after the disturbance is removed? TNX agn for your efforts!!

Re: Flag holder structure <R17>

Posted by GDC at 01/24/2008 02:57:50 pm

As indicated in Rule <R17>, the flag holder must be mounted to the Robot so that the flag is held - and remains - approximately vertical.

General Robot Design

Bumper Volume Constraints

Bumper Volume Constraints

Posted by FRC135 at 01/24/2008 07:14:16 pm

In your response to the question you referred to rule <R13> in regards to size constraints. You said that the battery and standard bumpers were considered part of the robot, but in <R13> it says

"For the purpose of determining compliance with the weight and volume limitations specified in Rule <R11>, these items are NOT considered part of the robot and are NOT included in the weight and volume assessment of the robot."



In designing a frame, are we limited to 80 inches including the size of our standard bumper assemblies, or 80" excluding the size of our standard bumper assemblies? Additionally are we limited to the 28" X 38" frame with standard bumpers or without. If our battery sticks outside of this box will it violate the size constraint even though <R13> says it is not considered part of the robot? Thankyou

Re: Bumper Volume Constraints

Posted by GDC at 01/28/2008 02:02:35 pm

Rule <R13> provides an exception for the battery, bumpers, Operator Interface, and flag, to Rule <R11> only. It does not provide an exception from any other rules. Therefore:

- Rule <R16> applies to the entire Robot, including the bumpers.
- Rule <R13> provides an exception to Rule <R11> for Bumpers. Rule <R08> defines how far outside the 28" x 38" volume constraints the Bumpers may extend.
- Under a strict interpretation of Rule <R13>, the battery could be positioned outside the 28" x 38" x 60" starting volume constraints defined in Rule <R11>. However, any battery so positioned would immediately be considered a violation of Rule <R04>, Rule <R05> and <S01>.

General Robot Design

80" limit and bumpers

80" limit and bumpers

Posted by FRC2338 at 01/25/2008 04:41:53 pm

I am looking for clarification in the above post
[url]http://forums.usfirst.org/showthread.php?t=8160[/url]

GDC replies:

"As noted in Rule <R13>, Standard Bumpers (and other items such as the battery, etc.) are considered part of the Robot, and must comply with all applicable rules. Based on that, the Standard Bumpers are included when determining if a Robot is in compliance with Rule <R16>."

However, the first part of Rule <R13> states:

"For the purposes of determining compliance with the weight and volume limitations specified in Rule <R11>, these items are NOT considered part of the ROBOT and are NOT included in the weight and volume assessment of the ROBOT:

...

- Any STANDARD BUMPER assemblies..."

It would seem that by Rule <R13>, bumpers are NOT included in volume assessments - they are NOT part of the robot when determining volume assessment.

Please clarify - is the 'volume assessment' in <R11> different than the one in <R16>?

Re: 80" limit and bumpers

Posted by GDC at 01/28/2008 03:51:55 pm

Once again, the Standard Bumpers are included when determining if a Robot is in compliance



with Rule <R16>. We don't know how to make it any clearer than that. You may want to refer to [URL="http://forums.usfirst.org/showthread.php?t=8160"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8247"]this Q&A answer[URL] where this has already been addressed.

General Robot Design

Short Robot & Rule <R17>

Short Robot & Rule <R17>

Posted by FRC2608 at 01/27/2008 10:43:08 pm

So, having read the rules as they stand, and several of the posts on this I am still a little confused. It sounds like for our 20" tall robot, we will need to build a 31" tall rigid structure on top of the robot so the total is 51" off the ground. This structure cannot be flexible or it will not meet the rigid mount requirement. It also will need to be strong enough to handle being hit by flying trackballs and/or swinging robot arms to keep the flag vertical for the entire game. Is this understanding correct? It seems like a long lever arm that will result in a lot of small speedy robots winding up on their side.

Re: Short Robot & Rule <R17>

Posted by GDC at 01/28/2008 01:25:19 pm

As noted in Rule <R17>, the Flag Holder must be rigidly mounted to the Robot, with the top of the Flag Holder at 51 inches above the floor. This is necessary to ensure that the Flag and the Lap Indicator are positioned properly throughout the Match. How each team decides to design their robot to satisfy the requirement is left up to each team.

General Robot Design

The Robot Perimeter

The Robot Perimeter

Posted by FRC2493 at 01/28/2008 02:45:08 pm

We want to have our wheels on the outside of our robot's main frame and are thinking of adding a piece extended out as the perimeter so that the wheel can be in the perimeter. Would this be okay? Would it be considered as an extension beyond the perimeter? Also, does it have to be one straight piece all the way across or can it be curved around the wheels?

Re: The Robot Perimeter

Posted by GDC at 01/31/2008 01:45:28 pm

There is no rule that would specifically prohibit this, as long as your design satisfies the volume constraints defined in Rule <R11> and Rule <R16>.

General Robot Design

Flag Height and mount

Flag Height and mount

Posted by FRC280 at 01/31/2008 11:30:11 pm

How is it possible to mount the flag holder so it is 51" from the floor which would allow the flag to be at a height of 75" and yet be able to lift a 40" ball past it while maintaining a robot width of 38", We can't seem to figure out any possible way to mount the flag so as it does not get knock by the bay which is 2" larger than the robot itself.

Re: Flag Height and mount



Posted by GDC at 02/04/2008 01:06:53 pm

Identifying solutions that satisfy the design constraints included in [i]FIRST[/i] Overdrive is left to each team. Solving the design challenge is part of the fun!

General Robot Design

Lap Indicator Power Cable

Lap Indicator Power Cable

Posted by FRC433 at 02/02/2008 12:05:52 am

We will be custom making the cable to connect the lap indicator to the RC on our robot. Are all three conductors necessary, or will just the +5v & ground suffice?

Thanks.

Re: Lap Indicator Power Cable

Posted by GDC at 02/04/2008 02:49:31 pm

As specified in Rule <R18>, a standard male PWM connector must be located within 4 inches of the Lap Indicator mounting location. If an extension or pigtail is used for this connection, then it must provide a conductor for each of the three PWM pins.

General Robot Design

<R16> and tipping over

<R16> and tipping over

Posted by FRC383 at 02/02/2008 08:25:50 pm

Redateam builds a great robot that is physically unable to violate the 80" rule (<R16>) when its wheels are where they are supposed to be. Competition time arrives and, as the rulebook anticipated, "high speed accidental collisions" do happen. One of those collisions tip Redabot over such that it is well in violation of <R16>. Redabot is a great robot, however, and its arm/catapult/ball launcher is strong enough to successfully right the robot back up, putting Redabot back in the game.

Considering <G36> as of Update #2 and the fact that the team did not disable Redabot (until item d), please analyze the following statements:

- a) Redateam is penalized with a yellow card (<http://forums.usfirst.org/showthread.php?t=8205>) even though its behavior is hardly egregious even by the most severe grandmother standards';
- b) The team is penalized with ten points for violating <R16>;
- c) Grandma is a spoiler and Redateam gets away for following the intent of the rules;
- d) Redateam finds out Redabot is not that great and gives up trying to right themselves, disabling the robot. By <G36>, "ROBOTS that are disabled in this manner can not incur further PENALTIES", further meaning Redateam already got a penalty.
- e) Having been through d) before, Redateam doesn't even try to right Redabot up, disabling it



before it even hit the ground, as the crowd went "ahh" and that nasty CoG accelerated towards the floor at 9.81 m/s/s. No penalty assessed.

Which ones are correct?

Thanks to the GDC for a great game with easy, consistent and unfit-to-lawyering rules!

Re: &R16> and tipping over

Posted by GDC at 02/07/2008 12:35:12 pm

The described situation is too context-dependent to provide a definitive analysis of the situation (e.g. the effects of Rule <G23> could dominate the entire decision tree if applicable, the timing of the disabling of the Robot under Rule <G36> impacts if and when a Robot may receive a penalty, etc.). The rules and policies guiding the game will be implemented as well as possible by the referees and field personnel, based on the conditions and actions that are observed at the time.

Please note that we can not provide an analysis of every potential hypothetical situation that may arise during game play. Please review the rules as written to gain an understanding of whether a particular technique would be permissible.

General Robot Design

Rule <R16>, and February 8 update

Rule &R16>, and February 8 update

Posted by FRC2081 at 02/07/2008 09:42:40 pm

In the new phrasing of the 80" diameter cylinder. It says [B]"Can the robot exceed 80" max size" checkbox[/B]. Our team has two mechanisms that both extend. When both extended they do exceed. However we have software that prevents them from both being down at the same time. Is this still acceptable? We assumed that it would, however this rule confuses us.

Rule &R16>, and February 8 update

Posted by FRC1310 at 02/08/2008 07:56:22 am

Can the teams request the test of compliance be done under game playing conditions (ie robot powered up with code running) ? With the power on, our robot control software will use position sensors to not let the robot mechanisms violate R16. Without the power on, the mechanisms are uncontrolled and might be manually positionable in illogical or unstable locations (even 100% backwards) and so trigger R16 exceptions.

Re: Rule &R16>, and February 8 update

Posted by GDC at 02/11/2008 12:44:32 pm

The additional item in the inspection checklist is just to help indicate which robot are/are not physically capable of the 80 inch constraint defined in Rule <R16>. We fully recognize that just because a Robot is physically capable of exceeding this constraint does not mean that it will actually do so during a Match. A Robot that is capable of expanding beyond the size restriction will be watched carefully during the Match for infractions. Any violations of Rule <R16>, should they occur, will be assessed during the Match and not during inspection.

General Robot Design



Flag Holder <R18>

Flag Holder <R18>

Posted by FRC397 at 02/11/2008 07:48:09 pm

Does the flag holder have to be within the starting configuration at the beginning of the match?

Re: Flag Holder <R18>

Posted by GDC at 02/14/2008 12:45:56 pm

Please refer to Rule <R13> (specifically the third bullet) and Rule <G17>.

General Robot Design

flag & robot starting configuration

flag & robot starting configuration

Posted by FRC2475 at 02/12/2008 09:23:53 pm

Is the flag required to be within the robot starting configuration or can it be positioned outside of the starting configuration?

Re: flag & robot starting configuration

Posted by GDC at 02/14/2008 12:31:53 pm

Given the required location of the flag holder (specified in Rule <R17>) and the size of the provided flag (defined in Section 8.2 of The Manual) the flag will, by definition, extend outside the Starting Configuration of the Robot.

General Robot Design

Category – General Robot Design

Category – General Robot Design

Posted by FRC2340 at 02/15/2008 10:13:41 pm

<R14> Reads – “ROBOTS shall display their school name, and primary sponsor name and/or logo whenever the ROBOT is on the field (including practice sessions).”

Can the Robot be shipped without the school name, sponsor name and final decorations, then these items would be attached/installed after uncrating the Robot and prior to the start of the Regional Competition?

Thanks

Re: Category – General Robot Design

Posted by GDC at 02/18/2008 12:04:16 pm

Yes.

Robot side panel shipping

Posted by FRC2607 at 02/19/2008 04:51:28 pm

I'm the moderator of our rookie team. We have four lexan side panels for our robot that are used to display our team number and our sponsors. The paint was still wet and I didn't really consider them a significant part of the robot design, so I didn't place them in the crate. My intention was to just bring them to the competition.

After thinking more about it this afternoon and after the crate was picked up by FedEx, I realized that they might be considered an integral part of the robot which should have been



shipped in the crate.

Have I made a mistake? If so, can I possible package them up separately and deliver them to our local Sheppard warehouse? Can this result in a disqualification from our first FRC?

Thom Galie
Archbishop Wood High School
Team 2607
[xxx-xxx-xxxx]

PS: is this an issue for both shipping and robot requirements sections? if so, do I have to post additional thread to the robot forum?

Re: Category – General Robot Design

Posted by GDC at 02/21/2008 04:52:25 pm

The previous answer still applies. Bring them with you to the competition and put them on your robot when you get there.

General Robot Design

End of game scoring

End of game scoring

Posted by FRC449 at 02/16/2008 06:53:24 pm

None of the 6 alliance partners has the ability to strip the trackball from the overpass. At the end of the game does anyone score any points for having 4 trackballs on the overpass even though none have ever been removed from the overpass and only one of each of the trackballs is over the corresponding alliances finish line and home stretch?

Re: End of game scoring

Posted by GDC at 02/18/2008 12:36:35 pm

<G14> applies whether the Trackballs were removed during the match or not. <G14> applies to any Trackball anywhere on the Overpass.

General Robot Design

R18 - Lap Counter Face Backward ? Wiring

R18 - Lap Counter Face Backward ? Wiring

Posted by FRC1310 at 02/20/2008 03:58:58 pm

R18 does say anything about the direction of the lap counter "space". Our flag pole is mounted on the back side of a frame at the back of the robot. As a result we have 180 degree + unobstructed rear (and upward) access . Not having seen the counter we can only guess if our layout meets its need. Is there a requirement for the space to face forward ?

Might as well ask... We are making our "pwm" power cable to power the lap counter as per the rule. We plan to provide a 3 ping connector (for vibration resistance) but only run the black and red (not signal) wires to a AI connector on the RC. Any reason why this will not meet the rule ?

Re: R18 - Lap Counter Face Backward ? Wiring

Posted by GDC at 02/21/2008 01:09:02 pm

There is no requirement that the lap counter "space" face forward.



As part of Rule <R18>, teams are required to provide a standard male PWM connection. All pins (or conductors, if an extension is used to connect to the PWM port) must be provided.

Budget Constraints

Budget Constraints

KoP Cost Accounting

KoP Cost Accounting

Posted by FRC456 at 01/15/2008 12:34:08 pm

For the purposes of cost accounting (Section 8.3.3 of the Robot section of the manual), what is considered in the Kit of Parts? Just the stuff that came in the boxes we were given at Kickoff or is the other "free stuff" available to all teams from the various sponsoring suppliers considered Kit of Parts?

Example 1) The free Bimba cylinders. They are not in the KoP boxes but we are all allowed to choose 3 that fit our needs for free. Should we include these in our cost accounting?

Example 2) The wonderful people at Igus gave us all a nice bag full of misc. plastic bearings, aluminum shaft, etc. Included in that bag was a printed catalog with the specs of all the parts in the bag and inside the back cover was a description of their Y.E.S. (Young Engineers Support) program which includes FIRST. Through the Y.E.S. program, as I understand it, FIRST teams can request additional quantities of the stuff that came in the bag in the Kit of Parts as well as additional items from Igus' product line. Do we include the list price of the additional items received from Igus in our cost accounting? Is this any different than the free pneumatic cylinders from Bimba in example #1.

Re: KoP Cost Accounting

Posted by GDC at 01/16/2008 11:11:01 pm

The "Kit Of Parts" includes all items specifically listed in the [URL="http://www.usfirst.org/community/frc/content.aspx?id=452"]2008 Kit Of Parts Checklist[/URL], the three additional pneumatic pistons provided by Bimba, the downloadable animation software provided by Autodesk, the downloadable PTC software, the Altium Designer software, and the IR receiver board provided prior to the kick-off as "Hint #1." Other items that may be available to teams through generous offers from FIRST vendors and suppliers, for which we are very grateful, are not considered elements of the Kit Of Parts.

Budget Constraints

Cost Accounting - Local Shop Help

Cost Accounting - Local Shop Help

Posted by FRC2338 at 01/31/2008 05:35:09 pm

We are a rookie team and are looking for help on fabrication. We have found a local motorcycle shop owner willing to help us with some welding and machining. This shop would not be an official sponsor of our team (our primary sponsor has asked that we do not include other sponsors in our rookie year and the owner does not want the public recognition). If we have this shop help us, how would we have to account for the labor? Some of our students would be helping the owner with the fabrication - it wouldn't be merely "farming out" the work.



The rules section I'm referring to is 8.3.5.1:

"The cost of raw material obtained by a team + the cost of non-team labor expended to have the material processed further. Labor provided by team members and/or by a recognized team sponsor whose employees are members of the team does not have to be included."

Re: Cost Accounting - Local Shop Help

Posted by GDC at 02/04/2008 01:01:28 pm

If the shop is not a recognized team sponsor, or the work is not being done by team members, then it must be appropriately accounted for in the Robot budget. In this case, the fair market value of the welding and machining that the shop would charge any other customer must be determined and included in the budget. Alternately, the welders and machinists could join the team, in which case their work would not be included in the budget.

Material Utilization & Parts Use Flowchart

Material Utilization & Parts Use Flowchart

2007 transmissions

2007 transmissions

Posted by FRC2185 at 01/09/2008 05:48:07 pm

Are the 2007 banebots transmission considered "custom made parts" are per rule <R36>?

The manual specifically mentions 2006 transmissions but nothing is said about the 2007 ones.

thanks for the help

transmissions

Posted by FRC1606 at 01/09/2008 08:55:40 pm

is there anything against using the 2007 or 2006 transmissions?

Re: 2007 Banebots and other transmissions

Posted by GDC at 01/10/2008 08:17:46 pm

The BaneBots planetary transmissions (like those provided in the 2007 KoP) are commercially available and any revision may be used. The 2006 transmissions are not commercially available and therefore may not be used.

Transmission

Posted by FRC174 at 01/19/2008 09:27:57 am

Is our team able to use last year's transmission with the banebot?

Re: Transmission

Posted by GDC at 01/20/2008 10:08:10 am

The previous answer is still true.

Material Utilization & Parts Use Flowchart

Can I use pneumatic wheels

Can I use pneumatic wheels

Posted by FRC1946 at 01/11/2008 04:24:20 pm

I didn't find any related topic so I'm writing the questions in this



section.

My question is if we:

Can I use pneumatic wheels.

Thanks

Re: Can I use pneumatic wheels

Posted by GDC at 01/15/2008 11:51:15 pm

Yes, as long as they satisfy the constraints defined in Section 8 of the Manual.

Material Utilization & Parts Use Flowchart

Banebot CIM Gears from 2007 KOP

Banebot CIM Gears from 2007 KOP

Posted by FRC2669 at 01/12/2008 07:09:16 am

A couple of questions:

Is using the Banebot planetary gears mounted on the CIM motors, provided in the 2007 Kit Of Parts allowed. The product is still 'on the shelf', but in a slightly different version, so it can still be ordered by any team who wants it?

If not, is using the newer version of that gear allowed?

As an Israeli team, buying Sprockets and chains directly from IFI is rather expensive. Is using the same kind of chains and similar sprockets, bought from an Israeli supplier allowed?

The supplier we are talking about is linked here:
[url]http://www.ngb.co.il/english/index.html[/url]

Thanks a lot GDC, Overdrive is awesome!

Re: Banebot CIM Gears from 2007 KOP

Posted by GDC at 01/16/2008 12:09:07 am

Regarding the BaneBots planetary transmissions, please refer to this
[URL="http://forums.usfirst.org/showthread.php?t=8003"]thread[/URL].

The type of chain and sprockets you use is not restricted. Purchased items are considered COTS items provided they comply with the definition on page 4 of Section 8. Your source must be a Vendor as defined on page 6 of Section 8.

You may find the Parts Use Flowchart on page 30 of Section 8 useful for determining the legality of a part.

We're glad you like [I]FIRST [/I]Overdrive!

Material Utilization & Parts Use Flowchart

The Big Book

The Big Book

Posted by FRC2435 at 01/12/2008 02:12:19 pm



Are all the materials in the big book FIRST Approved?

Re: The Big Book

Posted by GDC at 01/16/2008 12:34:47 am

We are assuming that the reference to the "Big Book" means the catalog from MSC Industrial Supply. There is not a formal list of "[i]FIRST[/i] Approved" items other than those contained in the Kit Of Parts. However, parts from the MSC "Big Book" (as well as those from other sources) may be used as long as they are in compliance with all applicable rules from Section 8 of The Manual.

Material Utilization & Parts Use Flowchart

Materials for Robot

Materials for Robot

Posted by FRC57 at 01/14/2008 03:52:18 pm

Can "liquid" electrical tape be used in place of electrical tape as an electrical insulator?

Re: Materials for Robot

Posted by GDC at 01/16/2008 11:17:50 pm

Yes, that is permitted.

Material Utilization & Parts Use Flowchart

Old Victors and Spike Relays

Old Victors and Spike Relays

Posted by FRC1995 at 01/15/2008 02:02:07 pm

Just wanted to check on rule <R36> concerning old IFI KOP components

[QUOTE]COTS ITEMS from ROBOTS entered in previous FIRST competitions or COTS MECHANISMS that are no longer commercially available may be used under the following conditions:

[LIST]

[*]The item must be unmodified, and still in its original condition as delivered from the VENDOR

[*]The item must not be a part custom made for the FIRST competition and provided in the Kit Of Parts for a previous FIRST Robotics Competition (e.g. 2006 FRC transmissions, custom-made motor couplers, custom sensor strips, 2006 IFI CMUcam II modules, etc. are not permitted)

[*]The item must satisfy ALL of the rules associated with materials/parts use for the 2008 FIRST Robotics Competition)

[/LIST][/QUOTE]

Are Victor 884 Speed Controllers and Spike Relays from the 2007 KOP legal to use as on 2008 robots in addition to those in the 2008 KOP?

Re: Old Victors and Spike Relays

Posted by GDC at 01/16/2008 11:13:34 pm

Yes. Note that they must still be properly accounted for under the Cost Accounting Rules in Section 8 of The Manual.



Material Utilization & Parts Use Flowchart

Use of automobile airbag components

Use of automobile airbag components

Posted by FRC2103 at 01/16/2008 12:23:05 pm

Our team has considered the use of automobile airbag components (inflator and bag) for trackball manipulation.

Q1: Is the use of the airbag within the scope of the rules?

Q2: Is the use of the airbag inflator within the scope of the rules?

Re: Use of automobile airbag components

Posted by GDC at 01/16/2008 10:20:29 pm

Fabric typically used for the construction of automobile airbags, may be used as a raw material for the fabrication of components on your Robot, provided its use is in compliance with all applicable rules in Section 7 and Section 8 of The Manual.

Gas charges, typically used for airbag inflation, are not permitted on the Robot, in the Pits, or in any competition venue, under any circumstances.

Material Utilization & Parts Use Flowchart

springs

springs

Posted by FRC1158 at 01/17/2008 10:56:45 pm

What is the limitations on size of springs able to be used on the robot?

Re: springs

Posted by GDC at 01/21/2008 12:35:18 pm

There are no specific values limiting the size, spring constant, location, or amount of stored energy for springs used on the Robot, as the appropriate values are highly context-dependent. The primary requirement for any springs or other deformation-based stored energy devices on the Robot is that they must be used and operated in a manner that is safe. You will want to be sure that the design offers no potential for a violation of Rule <R01> or Rule <S01>.

Material Utilization & Parts Use Flowchart

2007 Gear Tooth Sensor

2007 Gear Tooth Sensor

Posted by FRC171 at 01/18/2008 02:05:22 am

Would last year's KOP Gear Tooth Sensor be Legal on this year's robot as a replacement??
The boards look and function identical except for the color change from Green to Red.

Re: 2007 Gear Tooth Sensor

Posted by GDC at 01/21/2008 12:44:43 pm

No, this would not be permitted. It is prohibited by Rule <R36>.

Material Utilization & Parts Use Flowchart

Cold Cathodes - Use as Robot Decorations



Cold Cathodes - Use as Robot Decorations

Posted by FRC1810 at 01/20/2008 08:43:38 pm

In the past, the cold cathodes included with the kit of parts were not allowed to be used as decorations on the robot due to concerns that they might interfere with the CMU Cam vision systems, which homed in on that wavelength of green light. However, as this year's game does not involve green lights as homing beacons, nor are there any bright green game pieces or field elements (which teams could conceivably attempt to track with similar camera systems), is it permissible to use green cold cathodes as decoration on robots? They would add a really unique flair to our robot, and seem to pose very little risk of interference to other robots given the circumstances of this year's game.

Re: Cold Cathodes - Use as Robot Decorations

Posted by GDC at 01/21/2008 01:32:17 pm

Yes, they would be permitted as long as the decorations do not cause a violation of any other rules. Note that to prevent a possible violation of Rule <R02>, any team utilizing a vision system sensitive to the decoration emissions may request that the decorations on your robot be disabled during a Match.

Material Utilization & Parts Use Flowchart

Usage of "Custom" springs

Usage of "Custom" springs

Posted by FRC2630 at 01/21/2008 04:26:06 pm

Dear GDC,

My team is considering using springs as an integral part of our design, so we have approached a company which manufactures springs (that is all they do).

because of the nature of the product it is not common for two different customers to need two identical springs, so this company manufactures springs to order for anyone who needs them, to whatever size, stiffness and specification is required.

If we want to order from them we need to specify the exact properties we want and they will make only as much as we need.

However any team can walk in and request the same spring or any other spring they need and have it fabricated at exactly the same time span.

It is more like having an enormous catalog to choose from than having it custom made, because that is the only way they do business.

would it be legal to order a spring from this company and use it on our robot?

Thanks alot for your hard work,
-Leav (FRC2630)

Re: Usage of "Custom" springs

Posted by GDC at 01/24/2008 03:16:23 pm

Yes, the use of such a part would be permitted. It would be treated like any other fabricated



part on the robot. Note that it must be properly accounted for in the robot Bill Of Materials and cost accounting that is to be presented during inspection.

Material Utilization & Parts Use Flowchart

SKyway wheels from 2006 KOP

SKyway wheels from 2006 KOP

Posted by FRC2669 at 01/21/2008 05:34:17 pm

Is using the Skyway wheels from 2006 KOP legal?

Is using the Hubs and sprockets from the KOP in this year legal? The hubs are no longer a COTS item, but it is a small detail and we have been wondering if a special rulling regarding those hubs could be made.

Also, the 2007 and 2008 wheel sprockets are slightly different from each other. Does that mean that using the 2007 once would be considered illegal?

Thanks.

Re: SKyway wheels from 2006 KOP

Posted by GDC at 01/24/2008 03:27:42 pm

The Skyway wheels provided in the 2006 Kit Of Parts are off-the-shelf items that are still commercially available. As such, they may be used on 2008 competition robots.

The wheel hubs provided in the 2006 Kit Of Parts were custom made items for FIRST. As such, they can not be used in the 2008 Competition, under Rule <R36>. Likewise, the custom sprockets provided in the 2007 Kit Of Parts can not be used on 2008 competition robots. Commercial items that are very similar in function are available and may be modified to suit your needs.

Material Utilization & Parts Use Flowchart

Linear Actuators pt.2

Linear Actuators pt.2

Posted by FRC2410 at 01/21/2008 08:57:00 pm

Can we get pre-made linear actuators, then modify the actuator to fit a KOP motor? Would this comply with the rules?

Re: Linear Actuators pt.2

Posted by GDC at 01/24/2008 03:21:47 pm

Yes.

Material Utilization & Parts Use Flowchart

IR Remote Controller Decoder Board

IR Remote Controller Decoder Board

Posted by FRC2165 at 01/22/2008 11:18:35 am

Is it allowable to use more than one IR Learning IR Remote Controller Decoder Board on a robot to receive signals from a remote? The additional boards will not be used to obtain additional information.

Re: IR Remote Controller Decoder Board



Posted by GDC at 01/24/2008 03:20:33 pm

Yes, that is permitted.

Material Utilization & Parts Use Flowchart

Skin Restrictions?

Skin Restrictions?

Posted by FRC964 at 01/28/2008 04:37:59 pm

Are there any restrictions on the materials used for the robot to cover parts? Like a wall, if you will, for the side of the robot.

Re: Skin Restrictions?

Posted by GDC at 01/31/2008 01:03:42 pm

Please refer to the Materials Utilization section (Section 8.3.5) of The Manual.

Material Utilization & Parts Use Flowchart

Traction material on grippers

Traction material on grippers

Posted by FRC2669 at 01/28/2008 10:11:51 pm

Hey GDC, thanks for the support and the fast responses, we have some additional questions about this year's rules.

...

5) Is using a traction increasing material on our gripper legal? We have made some experiments and found that some materials are much more efficient when grabbing those slippery trackballs. Is making the end of our manipulator with a layer of this material (We are thinking of either rubber or something semiliar) legal?

We are sorry if there are too many questions in here and you are gonna have to split it into seperate messegues in different sub-forums, but we also believe that it will be easier for you guys to get this answered then 5 different posts, if not please say so and the next questions we will be making are going to be in seperate posts.

Thanks a lot, KY Bots, FRC2669.

Re: A few questions 5

Posted by GDC at 01/31/2008 03:02:24 pm

Question 5: There are no rules to prohibit this.

Material Utilization & Parts Use Flowchart

Magnets allowed?

Magnets allowed?

Posted by FRC1533 at 01/29/2008 01:40:35 pm

Hi,



The student designers would like to know if earth magnets are allowable parts on the robot. They are an available COTS part and would be used to lock an arm into position once it has dropped into place.

Thanks.

Re: Magnets allowed?

Posted by GDC at 01/31/2008 12:47:33 pm

There are no rules that would prohibit their use, as long as it is done in a safe manner (Rule <S01> and <R02>) and they do not interfere with the safe control of other robots (Rule <R02>).

Material Utilization & Parts Use Flowchart

Gears

Gears

Posted by FRC2571 at 01/30/2008 11:18:12 am

Are we able to modify the parts that were sent within the kit? We need to cut one of our gears and we were wondering if that was acceptable.

Re: Gears

Posted by GDC at 01/31/2008 01:17:44 pm

Yes. The motors, electronics, and pneumatics provided in the Kit Of Parts may not be modified (except as specified in Rule <R61>, Rule <R67>, and Rule <R92>). All other materials provided in the Kit may be modified to suit your needs.

Material Utilization & Parts Use Flowchart

gear tooth sensor

gear tooth sensor

Posted by FRC155 at 01/30/2008 09:56:33 pm

There were mixed messages using 2007 gear tooth sensor. On one post 1/21/08 it was stated that the gts from 2007 KOP was not considered custom circuits, but in a recent post it was stated that the gts from 2007 was not allowed on the 2008 robot. Please clarify.

Re: gear tooth sensor

Posted by GDC at 01/31/2008 12:45:13 pm

The gear tooth sensor provided in the 2007 Kit Of Parts was a custom part manufactured just for the FIRST competition. It is not commercially available. As such, under Rule <R36>, it may not be used on 2008 Robots.

Material Utilization & Parts Use Flowchart

Adhesive Surface

Adhesive Surface

Posted by FRC1230 at 01/31/2008 06:57:15 am

Hi,

Our team wants to use a lint roller to help capture the track ball. The lint roller has a sticky surface, but leaves no residue on the surface of the ball on contact. (In fact, it tends to clean it up a bit.)



The roller is not adhesive tape, and it does not cause damage to any field components (the trackball) when being used. Is the roller with its sticky surface permitted for use?

Thanks!

1230

Re: Adhesive Surface

Posted by GDC at 01/31/2008 12:54:07 pm

As described, and as long as no residue was left on the Trackball, this would be permitted.

Material Utilization & Parts Use Flowchart

Banebots transmissions from 2007 KOP OK for 2008?

Banebots transmissions from 2007 KOP OK for 2008?

Posted by FRC1001 at 02/01/2008 07:35:32 pm

Are Banebots 56 mm transmissions (GP-56012) as provided in the 2007 Kit Of Parts OK to use for the 2008 robot?

It seems they should be OK because they were available " off the shelf " in 2007 as a standard item from Banebots, but we are a little unclear because they are no longer available from Banebots (although they are selling something very similar).

We think <R36> would approve of the use of the Banebots transmission because it

- a) was provided in the 2007 KOP
 - b) is a COTS mechanism, no longer available
- (therefore <R36> applies)

and

- is unmodified from its originally delivered condition
- was not "custom made" for FIRST, although likely was the target market
- satisfies the other rules for 2008 parts

It seems that since I am an engineer, and not a lawyer, by definition in section 8.3, my interpretation of these rules must be correct. :-)

The part of the rules that makes the team a little uncertain is that 2006 transmissions are explicitly prohibited, and it isn't completely clear why. I assume it is because those transmissions were special made for the 2006 KOP and were not commercially available otherwise (but I don't really know, because I don't remember what I ate for breakfast, let alone who made what transmissions for whom in 2006). Perhaps they were cited as an example meant to illustrate that all transmissions previously provided in the KOP are prohibited. I didn't take it that way, but just want to be sure.

Evaluating the "spirit" component of the rules, we feel slightly guilty for not mining our own ore and making the transmissions from scratch, but that is just way beyond our team's resources. ;-)
That aside, the design the kids put together works great with the banebots transmissions,



and not so great with the AndyMark ones we got this year (which are otherwise awesome), so we would like to use the more compact planetary design, and reusing the parts from last year puts it within our budget (and I'm talking about cash outlay budget, not the <R26> Bill of Materials budget). The design would also work just fine with the current Banebots product line (P80A-43-0005-R2), perhaps even better, so we don't feel we are taking advantage of a part that is not available to other teams. Just being cheap.

Please advise if our logic is correct.

Thanks much,
David Fort
Rockwell Automation
Team 1001 Mentor
Brush High School
Lyndhurst, Ohio USA

Re: Banebots transmissions from 2007 KOP OK for 2008?

Posted by GDC at 02/04/2008 12:46:00 pm

The BaneBots planetary transmissions (like those provided in the 2007 KoP) are commercially available and any revision may be used. The commercial version of the gearbox includes required quality improvements, however the fundamental functionality remains unchanged. The 2006 transmissions are not commercially available and therefore may not be used.

Material Utilization & Parts Use Flowchart

vex camera use in competition

vex camera use in competition

Posted by FRC2103 at 02/04/2008 03:03:47 pm

Can you use a vex camera during the frc competition. Does the camera count as a separate transmitter?

Re: vex camera use in competition

Posted by GDC at 02/07/2008 09:09:25 am

The VEX Camera could be used as a sensor to provide input to the Robot Controller - IF AND ONLY IF the transmitter on the VEX Camera unit was completely disconnected and disabled. If the transmitter remains connected and powered, then it will be a violation of Rule <R64>.

Material Utilization & Parts Use Flowchart

Fisher Price motors gear box housing MOD

Fisher Price motors gear box housing MOD

Posted by FRC2344 at 02/05/2008 08:33:05 pm

We would like to drill 4 holes in the fisher price gear box for the purpose of mounting the motor gear box to the chassy. Is that permitted? Thank you

Re: Fisher Price motors gear box housing MOD

Posted by GDC at 02/07/2008 09:12:44 am

Yes. Modification of the provided gearboxes is permitted.

Material Utilization & Parts Use Flowchart



Hook and Loop Tape

Hook and Loop Tape

Posted by FRC1311 at 02/06/2008 11:04:20 pm

Clarification on <R38> please.

We want to use hook and loop (velcro) tape to attach a non-functional non-structural decoration to the robot.

This item weighs only a few ounces and is a nice graphics art logo mounted on Jetmount material. The purpose is to give a nice recognition to the team sponsors. The panel can be popped off by a service person to work on the robot.

Our reading of <R38> is that this is permissible.

Agreed ?

Re: Hook and Loop Tape

Posted by GDC at 02/07/2008 09:10:50 am

Yes, that use of hook and loop tape is permitted by Rule <R38>.

Material Utilization & Parts Use Flowchart

Is polycarbonate allowed for mounting electronics and body protection

Is polycarbonate allowed for mounting electronics and body protection

Posted by FRC2344 at 02/09/2008 11:48:28 am

Is polycarbonate allowed for mounting electronics and body protection? Is there a minimum thickness that is allowed?

Re: Is polycarbonate allowed for mounting electronics and body protection

Posted by GDC at 02/11/2008 01:01:26 pm

The choice of materials upon which to mount electronics and/or cover the Robot is left up to the teams.

Material Utilization & Parts Use Flowchart

Sensors

Sensors

Posted by FRC2081 at 02/09/2008 11:58:37 am

Are we allowed to use sensor from last year's KOP?

Re: Sensors

Posted by GDC at 02/11/2008 01:02:52 pm

If the sensor is a COTS item, and it has not been changed in any way from the "as received" condition in which it was provided, and it was not a custom part from the 2007 Kit Of Parts, and it satisfies all 2008 Robot Rules, then it may be used.

Material Utilization & Parts Use Flowchart

Can we use electro magnets?

Can we use electro magnets?



2008 Q&A Forum Export

generated: 02/27/2008 09:27:00 am EST

Posted by FRC272 at 02/10/2008 10:03:47 pm

We have a great design working with an electromagnet. I know I have seen robots with them specifically in the 2006 season. Can we use them? Are they legal?

Re: Can we use electro magnets?

Posted by GDC at 02/11/2008 12:54:08 pm

As long as the electromagnet does not cause interference with other Robots or violate any other parts use rules, then it would be acceptable

Material Utilization & Parts Use Flowchart

LEDs

LEDs

Posted by FRC1024 at 02/11/2008 09:52:49 am

Can you use an LED display that is decorative and functional on your robot?

Re: LEDs

Posted by GDC at 02/11/2008 12:50:31 pm

There is no rule that would automatically prohibit the use of an LED display on the robot. If you do use any such display, it must be used in a manner consistent with all the Robot Rules.

Material Utilization & Parts Use Flowchart

Fasteners and Bill of Materials

Fasteners and Bill of Materials

Posted by FRC2475 at 02/11/2008 06:30:07 pm

Section 8, <R25>

Since individual fasteners costing under \$1.00 are excluded from total cost calculations, are they also excluded from the Bill of Materials?

Re: Fasteners and Bill of Materials

Posted by GDC at 02/14/2008 12:46:30 pm

Yes.

Material Utilization & Parts Use Flowchart

Is Grip Tape Legal????

Is Grip Tape Legal????

Posted by FRC1683 at 02/12/2008 07:17:56 pm

We are using tennis racket grip tape to give our arms more friction. Does this count as adhesive tape (it has adhesive on the back)

Re: Is Grip Tape Legal????

Posted by GDC at 02/14/2008 12:31:10 pm

Please refer to Rule <R38>, particularly the first bullet item. As long as the material is being used to provide a high-friction surface finish, and not to structurally connect parts together, then it would be permitted.

Material Utilization & Parts Use Flowchart

Gyro Rules

Gyro Rules



2008 Q&A Forum Export

generated: 02/27/2008 09:27:00 am EST

Posted by FRC2477 at 02/13/2008 01:09:00 am

We are concerned that the dynamic range of +/-80deg is too little. May we use the 2007 ADXRS150s from last years competition? If so, we will try to purchase one from a local team.

wj

Gyro Rules

Posted by FRC2477 at 02/13/2008 06:14:23 am

Is it illegal to use the 2007 gyro in this year's competition. We are concerned that the dynamic range of +/-80deg/s is too little. If it is legal we will try to purchase an old gyro board from a veteran team in our hometown.

Thanks,
wj

Re: Gyro Rules

Posted by GDC at 02/14/2008 12:24:49 pm

The sensor strips (including the gyro) provided in the 2007 Kit Of Parts were custom-made for that competition. Under Rule <R36> they can not be used on a 2008 FRC Robot.

Material Utilization & Parts Use Flowchart

Fisher Price Gearbox

Fisher Price Gearbox

Posted by FRC1086 at 02/14/2008 11:55:31 am

Using this year's Fisher Price motor, can we use the motor with a different Fisher Price transmission?

Re: Fisher Price Gearbox

Posted by GDC at 02/14/2008 12:54:36 pm

As long as the different transmission is a commercially-available product, and not a custom item, then yes.

Material Utilization & Parts Use Flowchart

Bungee Cord

Bungee Cord

Posted by FRC772 at 02/18/2008 11:34:24 pm

We are currently using surgical tubing as supplied in the KOP however, are wondering if bungee cord is allowed?

Thanks,

- Adam

Re: Bungee Cord

Posted by GDC at 02/21/2008 01:14:34 pm

There is no rule that would automatically prohibit the use of bungee cords, as long as they are used in a safe manner that satisfies all applicable rules.



Material Utilization & Parts Use Flowchart

IR board COTS?

IR board COTS?

Posted by FRC39 at 02/24/2008 12:26:06 am

Is the IR board supplied to the teams and sold through IFI considered a COTS item?

Re: IR board COTS?

Posted by GDC at 02/25/2008 12:27:42 pm

Yes.

Power Distribution

Power Distribution

Slip Rings

Slip Rings

Posted by FRC1318 at 01/11/2008 02:49:50 am

Our team is designing an assembly on our robot that requires multiple rotations throughout the course of the game. We were planning on using slip rings to provide power to this assembly as it rotates. We believe that the rule regulating this is:

[QUOTE=<R68>]

Additional electronic components for use on the ROBOT must be either COTS items, or assembled from COTS items. Additional electronic components include any object that intentionally conducts electricity, other than Innovation First Inc. relays and speed controllers, wires, connectors, solder, and fabricated printed circuit boards.

[/QUOTE]

In our interpretation, this does not preclude the use of slip rings in our design. Our questions regarding this are as follows:

1. Are slip rings, as a rule, illegal on FIRST robots for any reason?
2. If not, would it be legal to use a COTS solution such as the one found at <http://www.mercotac.com/html/830.html> to transmit power to the assembly? Noting that the individual contacts in this example are rated to 30A each, and that we're planning on having a 40A-limited CIM motor powered by this slip ring, we are intending to split the amperage from the CIM motor over two connectors each way - this is an accepted practice in industry.
3. Another option we have looked at is manufacturing our own slip rings by etching large ring-shaped contacts onto PCBs. Placed face-to-face with a rod through the center and clamped together so they would stay in contact, we believe that, with large enough etches, this would be able to effectively transmit the power into the rotating assembly. The whole system would be electrically isolated from all other parts of the robot. Is this ruled out by any safety concerns?

Re: Slip Rings

Posted by GDC at 01/15/2008 11:40:36 pm



Provided they are in compliance with all applicable parts rules (please refer to Section 8 of The Manual), there is no general prohibition against the use of slip rings.

Power Distribution

CIM Speed Controller

CIM Speed Controller

Posted by FRC171 at 01/11/2008 08:31:46 am

Looking at the Power Distribution Diagram for the CIM Speed Controller it has the negative going back to the Power Distribution Block (PDB). I'm kind of worried that the wire might pop out from PDB over time with the smaller gauge wire. Would an legal alternative be to put a spade connector on it and wire it to the Circuit Breaker Panel? Obviously the +12v would still come from the Maxi Block.

Re: CIM Speed Controller

Posted by GDC at 01/14/2008 12:20:54 pm

Although not recommended, this is an acceptable approach for connecting the speed controllers to the power distribution system.

Power Distribution

12V Battery Charger

12V Battery Charger

Posted by FRC1332 at 01/15/2008 07:17:14 pm

Are teams allowed to make modifications to the supplied battery charger? As to splice the battery disconnects to the charger's terminal?

Re: 12V Battery Charger

Posted by GDC at 01/23/2008 10:35:17 pm

Please refer to Team Update #4. Rule <R67> has been updated to permit replacement of the alligator clips normally provided on the 12v battery charger with an Anderson quick-disconnect to interface with the battery cable.

Power Distribution

The IFI Back-Up Battery Charger

The IFI Back-Up Battery Charger

Posted by FRC842 at 01/17/2008 09:21:43 am

We have a question about the backup battery charger.

We are curious if we are supposed to connect the 12v in(of the charger) before the master breaker, or after the master breaker.

We currently have the 12v in connected after the master breaker (on the 20/30 fuse panel), the 'backup battery input on RC unit' connected to the battery input on the RC, and 'backup battery' label on the diagram connected to the backup battery.

Our situation occurs here. When we do not have the main 12v battery powered up, the 7.5v backup powers the system, through its connection on the 20/30 fuse panel.



If we were to connect the battery charger in the line before the master breaker, the 12v battery could be in -charging our 7.5 backup- while the breaker was restricting power to the rest of the robot. We are under the impression that this is illegal because that means that there is power running while the breaker is off (which defeats it's purpose, in a sense).

Re: The IFI Back-Up Battery Charger

Posted by GDC at 01/21/2008 12:28:47 pm

Please read Section 8.3.6 of The Manual very carefully, with emphasis on Rule <R50>. Both of the configurations you described are violations of Rule <R50> and will not be permitted. ALL connections into the power distribution system must be made "downstream" from the Power Distribution Block and breakout fuse panels. The primary circuit breaker, the Power Distribution Block, and the breakout fuse panels must not be bypassed.

If there is a concern about having the 7.2v backup battery powering the Robot Controller when the primary battery is not connected, note that the backup battery may be disconnected when it is not needed (as long as it is reconnected to the Robot Controller for the Match, as required by Rule <R73>).

Power Distribution

Alternate backup battery?

Alternate backup battery?

Posted by FRC178 at 01/17/2008 06:48:12 pm

Is a different 7.2v backup battery allowed for use on the robot?

Is an alternate connector for this backup battery allowed?

Re: Alternate backup battery?

Posted by GDC at 01/20/2008 09:58:13 pm

1. Yes. Please see Rule <R73>.
2. No. This would be prohibited by Rule <R67>.

Power Distribution

Robot Power Distribution Diagram

Robot Power Distribution Diagram

Posted by FRC2493 at 01/19/2008 06:32:56 pm

In the Robot Power Distribution Diagram, it says, "See section 8.9 of the FIRST Robotics Competition Manual for wire sizes and restrictions." We've looked in Section 8 and it only goes through 8.3. Are we missing parts of the section or is it only the wire sizes and restrictions in 8.3 that we need?

Re: Robot Power Distribution Diagram

Posted by GDC at 01/20/2008 10:13:43 pm

Thank you for catching this error! The note should read "See Section [b]8.3.6[b] of the FIRST Robotics Competition Manual for wire sizes and restrictions."

Power Distribution

Ground Stud for 40A Circuits



Ground Stud for 40A Circuits

Posted by FRC1114 at 01/22/2008 07:47:42 pm

Greetings GDC,

<R50> states that: "All circuit breaker distribution panels must be connected directly to the power distribution block. No intermediate connections are permitted."

We would like to know if it would be legal to connect all the ground wires returning from the Victors powered by a 40A breaker together at an intermediate ground stud. We would use one wire from this stud to connect back to the Power Distribution Block. Since these wires are not a connection between a breaker panel and power distribution block, we think this would be legal.

The reason we wish to do this is because the 40A maxi style circuit breaker panel does not have a ground stud, unlike the circuit breaker panel for the 30A and 20A fuses.

Cheers,

Re: Ground Stud for 40A Circuits

Posted by GDC at 01/24/2008 02:54:39 pm

As illustrated in the 2008 Robot Power Distribution Diagram, all ground returns must connect to either the Power Distribution Block or the common ground terminals on breaker panels. Note that ground returns from circuits energized via the Maxi breaker panels may be routed via common ground terminals on other breaker panels.

Power Distribution

Power distribution panel

Power distribution panel

Posted by FRC1137 at 01/23/2008 12:59:30 pm

Do all of the electrical components illustrated on the 2008 Robot Power Distribution Diagram have to be installed on the panel whether they are used or not?

Re: Power distribution panel

Posted by GDC at 01/24/2008 02:59:51 pm

The battery, Anderson power connectors, 120-amp breaker, power distribution block, robot controller, NiCad backup battery, and at least one circuit breaker panel must be used. The use of additional circuit breaker panels, speed controllers, relay modules, and motors is optional, and will be based on the particular design of each Robot.

Power Distribution

Wiring

Wiring

Posted by FRC695 at 01/23/2008 04:24:23 pm

Is it legal to use 14 AWG wire through 40 amp breakers, which connect to the CIM motors using 14 AWG wire?

Re: Wiring

Posted by GDC at 01/24/2008 02:52:47 pm



Please refer to Rule <R47>. All wires used for main and branch circuits protected by a 40A breaker must be 12 AWG or larger.

Also remember to refer to Rule <R62>. Each CIM motor must be connected to one Victor Speed Controller.

Power Distribution

Battery Terminal Connections

Battery Terminal Connections

Posted by FRC2062 at 01/23/2008 07:30:39 pm

Rule 50 (rev. D) states that power cables be attached to the battery terminals using the connectors provided in the FCI Burndy bag or "appropriate crimp-on lug connectors".

This is INCONSISTENT with the inspection checklist (rev. B) which states in item 22 that they shall be "copper lugs from FCI Burndy bag or similar lugs". There is no mention of "appropriate crimp-on lug connectors". The distinction is important.

We prefer to use properly crimped and soldered lugs because they are more reliable. The lugs provided in the KOP are overly large and have a tendency to come loose both at the battery and the wire clamp.

Also, AndyMark.biz supplies Anderson Power Products cable sets which already have terminals soldered and heat-shrunked on the end. I would be happy to show you pictures of them but photos are [COLOR="Red"]restricted [/COLOR]from this forum!!!

Will FIRST allow teams to use the AndyMark.biz cable assemblies on our batteries as supplied?

If we use correctly chosen terminals and crimpers for 6-gauge wire will we pass inspection? (Last year they made us cut them off and replace with the clamp-type lugs from the KOP. We suffered power reliability problems and a fractured battery as a result.)

Thank you for running a terrific program.

Re: Battery Terminal Connections

Posted by GDC at 01/24/2008 03:03:59 pm

Thank you for your feedback. The 2008 FIRST Robotics Competition Manual is the authority regarding rules. This means that appropriate crimp on connectors are permitted. Soldering the connectors to the wire is a good practice and recommended.

Meanwhile, we will request that the Inspection Checklist be clarified.

Power Distribution

Grounding to the robot?

Grounding to the robot?

Posted by FRC2560 at 01/24/2008 04:48:26 pm

Our Team's electrical guy is wondering if the 12v system can grounded to the chassis, like



modern automobiles.

Re: Grounding to the robot?

Posted by GDC at 01/24/2008 11:33:10 pm

Please refer to Rule <R51>, which directly addresses this topic.

Power Distribution

Question on connecting motors to the victors

Question on connecting motors to the victors

Posted by FRC2534 at 01/26/2008 03:49:22 pm

Is it legal to have a connection (ex. a lug or coupling) between a victor and a motor?

Re: Question on connecting motors to the victors

Posted by GDC at 01/31/2008 02:27:21 pm

Intermediate wire connections between speed controllers and motors are permitted as long as they are fully insulated.

Power Distribution

Circuit protection

Circuit protection

Posted by FRC2669 at 01/28/2008 10:11:51 pm

Hey GDC, thanks for the support and the fast responses, we have some additional questions about this year's rules.

...

3) The Inspection List has raised a few questions in meeting we held. here they are:

* Does the IR circuit has to be used through a 20A breaker?

* Does the Rockwell electric splitter (the one that looks like a red/black bus) has to be used?

We really dislike this single part as it has no protection and takes a lot of weight and place and we can split all the Positive and Negative electrical ends we need in the other panels, which are also protected by 20/30 A fuses. So is that part a 'Must' on the robot?

...

We are sorry if there are too many questions in here and you are gonna have to split it into separate messages in different sub-forums, but we also believe that it will be easier for you guys to get this answered than 5 different posts, if not please say so and the next questions we will be making are going to be in separate posts.

Thanks a lot, KY Bots, FRC2669.

Re: A few questions 3

Posted by GDC at 01/31/2008 03:04:54 pm

Question 3: The IR receiver circuit must be protected by a 20-amp circuit breaker (see Rule <R55>). The Rockwell Power Distribution Block must be used, as described in Rule <R50>.



Power Distribution

Batteries

Batteries

Posted by FRC2466 at 01/29/2008 05:09:51 pm

Aloha,

How do you ship your 12 volt batteries if you already threw out the original packing equipment?

Is the small battery called "back-up battery", the only back up battery that can be used on the robot? Can you use the second 12 volt battery on the robot as a back up, for quick change if the first battery gets used up? (Only having one of the 12 volt batteries hooked up at any one time)

Second Battery

Posted by FRC2051 at 02/06/2008 03:25:02 pm

I did not see an answer to the second half of this question:

[url]<http://forums.usfirst.org/showthread.php?t=8507&highlight=battery>[/url]

Section 4.2 referred to transport of battery.

Can a second battery be used as weight?

Re: Batteries

Posted by GDC at 02/07/2008 12:44:25 pm

The answer to your first question will be posted in the "Section 4" part of the Responses section of the forum.

Please refer to Rule <R45>. Additional primary and backup batteries are specifically prohibited from use on the Robot.

Power Distribution

Multiple Spikes, same breaker

Multiple Spikes, same breaker

Posted by FRC1279 at 01/31/2008 02:33:49 pm

Can multiple spikes be on the same circuit? For example, multiple spikes to drive multiple pneumatic valves, provided the total current is well under the breaker rating, and proper wire used.

from <R55>

.....

- Relay modules must be protected with a 20A circuit breaker.

.....

Relay Modules is plural (more than 1) with a single breaker would be allowed?

Spike Connections

Posted by FRC1598 at 02/03/2008 10:51:42 pm



Are you allowed to " Daisy Chain " Spikes. ie. one #14 wire from the breaker to one spike, then from that spike to another ... to up to four spikes that are powering solenoids? My guess is -- not.

Re: Multiple Spikes, same breaker

Posted by GDC at 02/04/2008 02:59:28 pm

Thank you for catching the potential ambiguity in Rule <R55>. The intent is that each power regulating device (speed controller, relay module, etc.) must be protected by one circuit breaker, and each circuit breaker must protect only one power regulating device. Please refer to Rule <R55>, as amended in Team Update #8.

Power Distribution

Connecting two CIM motors to one Victor

Connecting two CIM motors to one Victor

Posted by FRC201 at 02/01/2008 07:42:51 pm

Please clarify the following:

Rule R56 states that... "Each power regulating device shall control one and only one electrical load (motor, actuator or compressor)."

Yet Item number 31 of the 2008 Robotics Competition - Inspection Checklist states that:"Motors can only be driven by one Victor (although a Victor can drive more than more than 1 motor.)"

We desire to connect 2 motors (mounted to drive one transmission) to one Victor. Can we?

Thank you, Team 201

Re: Connecting two CIM motors to one Victor

Posted by GDC at 02/04/2008 12:47:49 pm

There are no exceptions to Rule <R56>. Each speed controller or relay module can control only one motor, actuator or compressor.

The rules contained in The Manual take precedence over all other documentation. Thank you for bringing the conflicting information in the Inspection Checklist to our attention. This error in the Inspection Checklist will be corrected in an upcoming revision.

Power Distribution

Rule <R50>

Rule <R50>

Posted by FRC1710 at 02/02/2008 02:23:40 pm

<R50> concerns electrical tubing and electrical tape. Does this apply only to the battery terminals, or to ALL power distribution connections?

Re: Rule <R50>

Posted by GDC at 02/04/2008 12:34:52 pm

Rule <R50> requires full insulation coverage of battery terminals and connecting lugs. It does not specify coverage of other power distribution connections. However, it is strongly



recommended that all other connections be similarly insulated. Proper insulation of all electrical connections consistent with industry standards offers protection against inadvertent shorting in the event foreign debris comes in contact with the power distribution system of the Robot.

Power Distribution

PWM Fan Connection

PWM Fan Connection

Posted by FRC1310 at 02/03/2008 04:10:57 pm

Historically we have connected all PWM fans to one single 20amp breaker. However there is one very expensive failure mode with this design. That is if that 20 amp circuit fails, cooling to all of the very expensive pwms is cut off and there is no warning until pwms start failing (this happened to us on last years machine due to a wiring issue). We have searched for the keyword "fan" in the robot rules and checked the wiring diagram but haven't yet found any insights/requirements for some reason.

We would like to connect the pwm's fan directly to the pwm's own 12v input terminals which is protected by a 40 amp breaker of course. We would do this with insulated round connectors captured on the 12v terminals with short as possible fan wires (~1.5"). This guarantees that if a PWM has 12 volts, its fan will also have 12 volts and the above failure mode is eliminated. It's more secure, more maintainable, and better ties critical unmonitored interrelated circuits together.

We feel the difference in a 20amp versus 40a circuit breaker is a moot point as 20amps is already 20 times the size the fan should be protected with. These fans are very low power and always fail open circuit (probably by design) from what we can tell.

Please advise if this method can be expected to pass inspection.

PS I have seen another team do this in a previous year and pass inspection at a regional (but we don't want to risk it).

Re: PWM Fan Connection

Posted by GDC at 02/04/2008 12:56:31 pm

Either connection method is permitted. The small compact fan is considered an integral part of the Victor speed controller, so it may be powered by tapping off the source voltage and ground lines. Note that the fan should always be connected to the input side of the Victor (if it is connected to the regulated output ports, the fan will only operate when motor motion is commanded, and it will not provide optimal continuous cooling). Alternately, all the small compact fans may be ganged together and powered via a dedicated 20-amp circuit.

Power Distribution

Using 5V power from RC

Using 5V power from RC

Posted by FRC111 at 02/04/2008 04:07:50 pm

Innovation First has indicated that the 5 volt supply line provided on each analog and digital I/O line can provide up to 1 amp of current (combined). We wish to confirm that it is



permissible to power 5 volt sensors and/or circuits from the RC's 5 volt line, rather than from a separate 12 volt branch circuit.

When this question was asked last year the GDC answer was "This is permitted per Rule <R62>." We wish to confirm that this ruling has not changed for 2008.

Electrical question

Posted by FRC1629 at 02/05/2008 08:00:03 pm

Since the FIRST IR Receiver is an input sensor (not an actuator) and it only draws 20ma, is it legal to modify the board (as per the note on the schematic) to run it on the 5V DC supplied by the RC's Digital Input connector?

Re: Using 5V power from RC

Posted by GDC at 02/09/2008 02:11:13 am

Great question. This is permitted. Please refer to Rule <R55> as amended in Team Update 9.

Power Distribution

multiple solenoids & victors, 1 circuit breaker: Update 8

multiple solenoids & victors, 1 circuit breaker: Update 8

Posted by FRC1310 at 02/06/2008 02:29:20 pm

re Update 8

Our design has 6 pneumatic solenoids connected to 6 spikes. The sum total of all the current drawn is an order of magnitude less than 20 amps (0.11 amp max per solenoid if I read the manufacturers data correctly). From the point of view of electrical standards, wiring complexity, connectors, system reliability, cost and robot real-estate, why would you not allow them all connected to one circuit breaker What problem are you trying to solve by restricting it ? Now we have to buy another circuit panel, 5 more breakers etc , find the real-estate etc. Due to the timing of the update and our location, we will be hard pressed to receive them before the robot has to be delivered. Could First please revisit the spike statement in Update 8 with regards to solenoids, not just motors (for which of course update 8 makes perfect sense).

Also, is there any rule against multiple solenoids being connected to one spike (and hence one fuse) ? We want to fire 2 solenoids off one spike and hence one circuit breaker (for a specific high flow rate need). We do not wish to use two spikes as that introduces the possibility of software errors firing one solenoid but not the other leading to potential robot damage.

Re: multiple solenoids & victors, 1 circuit breaker: Update 8

Posted by GDC at 02/07/2008 01:04:23 pm

Under Rule <R55> each circuit breaker can protect one and only one speed controller or relay module, and each of these devices requires a dedicated circuit breaker. That has always been the intent and purpose of the rule. This rule is based on the manufacturers recommendations, the need to limit propagation of failures in the event of a short in the relay module or speed controller, and the need to support a manageable inspection process that can be completed in a reasonable amount of time. The update to the wording of the rule was to clarify - and not change - the intent of the rule.

Rule <R56> permits multiple pneumatic valves to be connected to a relay module.



Power Distribution

Removing Unused Portions of the Rockwell Block

Removing Unused Portions of the Rockwell Block

Posted by FRC111 at 02/07/2008 12:22:38 pm

In keeping with the electrical rules and the 2008_Robot_Power_Distribution_Diagram, the main battery positive lead must connect through the main breaker to the Rockwell block and the negative lead of the main battery must also connect to the Rockwell block. I also know that all three of the grey sections of the Rockwell block must be used to bind the terminal blocks together. However, can unused sections (red and black) of the Rockwell terminal block be removed to save some weight? If yes, can the yellow jumper be cut as needed? Can the DIN rail be cut to size as well?

Re: Removing Unused Portions of the Rockwell Block

Posted by GDC at 02/09/2008 02:10:08 am

Yes. Please refer to Team Update #9.

Power Distribution

Are RC's 7.2v pins not to be used for custom circuits?

Are RC's 7.2v pins not to be used for custom circuits?

Posted by FRC358 at 02/09/2008 09:26:37 am

Team Update #9's revision of R55 explicitly allows custom circuits to be powered via the RC's 5v pins. Does R55 therefore mean to exclude the use of the RC's 7.2v pins as a source of power for custom circuits?

Re: Are RC's 7.2v pins not to be used for custom circuits?

Posted by GDC at 02/11/2008 01:00:48 pm

The 7.2v connection on the Robot Controller is for power input from the backup battery only. Nothing else should be connected to these connectors.

Power Distribution

small fuses for sensors

small fuses for sensors

Posted by FRC279 at 02/11/2008 10:05:18 am

In the fuse panel, can we use 5A fuses for our gearchooth or other sensors? Can two sensors be powered by one 5A fuse? These are rule questions, as I know the electrical answers.

Thanks,
Jim Smith Team 279

Re: small fuses for sensors

Posted by GDC at 02/11/2008 12:52:06 pm

Rule <R55> requires that all branch circuits - including custom circuits and sensor circuits - be protected with a 20A, 30A or 40A auto resetting circuit breaker from the Kit Of Parts. If you wish to provide additional protection (such as a local 5A fuse) within your custom circuit, that is



permitted. But the additional fusing protection would have to be added within the circuit, and not at the breaker panel.

Power Distribution

RE: Are RC's 7.2v pins not to be used for custom circuits?

RE: Are RC's 7.2v pins not to be used for custom circuits?

Posted by FRC2505 at 02/11/2008 04:41:54 pm

[quote=GDC]The 7.2v connection on the Robot Controller is for power input from the backup battery only. Nothing else should be connected to these connectors.[/quote]Is this a recommendation or a rule change?

The backup battery charge circuits described in the rules connect to these pins, and require a separate connector for the backup battery. Can we connect a 7.2 V battery charge circuit (which is a custom circuit, and not necessarily of IFI's design) to these spade terminals? It would indirectly provide power to the 7.2 V terminals, as well as charging the battery.

What about passive adapters to connect a backup battery with a different connector to the 7.2 V spade terminals? (IFI sells these, and one was in the kit.)

What if the charge circuit combines other functions besides charging? Would this impact the legality?

Re: Are RC's 7.2v pins not to be used for custom circuits?

Posted by GDC at 02/14/2008 12:51:20 pm

The referenced Q&A answer was provided in the context of the original question. It was referring to the connection of custom circuits and sensors that are providing control input. The backup battery charger can be attached to the 7.2v inputs for the purposes of charging the backup battery.

Power Distribution

Valves and Spikes <R56>

Valves and Spikes <R56>

Posted by FRC397 at 02/11/2008 06:32:04 pm

Can multiple pneumatic valves be connected to one relay module?

Re: Valves and Spikes <R56>

Posted by GDC at 02/14/2008 12:51:57 pm

Please read Rule <R56> carefully, where this exact topic is addressed.

Power Distribution

Wire size for pneumatic solenoid valves

Wire size for pneumatic solenoid valves

Posted by FRC135 at 02/11/2008 09:46:06 pm

The rule book specifically says that we must use a 20A breaker for all spike relays. The book also states that 24 AWG can be used to power pneumatic valves. Since the pneumatic valves have to be triggered by the spike relay, is it acceptable to use 20 AWG with the 20A breaker on pneumatic solenoids.



If not would it be acceptable to use a smaller snap action break, like 5A?

Wire Size to Pneumatic Valves

Posted by FRC111 at 02/12/2008 02:37:26 pm

In the past, all pneumatic valves were required to be wired with 18AWG or greater wire since they were connected to a 20A breaker.

This year, however, <R47> states that we can use 24AWG for pneumatic valves.

Just to ensure that we interpret this correctly, this means that we must run 18AWG to the spike from the fuse panel (as it is a 20A circuit) and then we can run 24AWG from the spike to a single pneumatic valve, correct?

The confusion comes from the fact that the valve is still protected by a 20A breaker, and is then covered by the rule that says 20A breaker circuits should have 18 AWG wire, as well.

Thank you!

Re: Wire size for pneumatic solenoid valves

Posted by GDC at 02/14/2008 12:36:16 pm

The wiring sizes for each component of the circuit are specified in Rule <R47>. In the case of the described circuit, 18AWG (or larger) wire must be used between the circuit breaker panel (protected by a 20A breaker) and the relay module. 24AWG (or larger) wire must be used between the relay module and the pneumatic valve(s).

The 20A breaker protecting the relay circuit can NOT be replaced with a 5A breaker. Additional breakers can not be added between the breaker panel and the relay module, as that would be a violation of Rule <R53>. However, you can add a 5A breaker to the circuit "downstream" from the relay module (i.e. between the relay module and the pneumatic valves) if you want to provide additional protection.

Power Distribution

RC 7.2v PWM power outputs

RC 7.2v PWM power outputs

Posted by FRC358 at 02/12/2008 01:40:42 pm

Re: Team Update #9's revision of R55 explicitly allows custom circuits to be powered via the RC's 5v pins.

In addition to the labeled 5v pins, the Robot Controller has (18) 7.2v power output pins (so labeled) on the pwm outputs.

By omission, are we not allowed to use these 18 pwm outputs to power or direct custom circuits?

I apologize for not making a previous question of mine clearer.

Re: [URL]<http://forums.usfirst.org/showthread.php?t=8700>[URL]

I gave the mistaken impression that I was asking about the backup battery spade connection. I



am not. I am asking about RC .1" output power pins.

Re: RC 7.2v PWM power outputs

Posted by GDC at 02/14/2008 12:38:20 pm

Thank you for the clarification of your question.

To be precise, the two spade lugs on the Robot Controller labeled "+7.2V Backup" are for power input from the backup battery only. Nothing other than the backup battery (and the backup battery charger circuit, if used) should be connected to these connectors. This has been previously addressed.

To your specific question: the row of 0.1" output pins labeled "PWM Outputs" provide +7.2v sources. Custom circuits and sensors may draw power from these output pins, in the same manner that they may use power available via the +5.0v pins. The limitation is that the total current drawn through all the sources provided by the Robot Controller must not exceed 1 amp.

Power Distribution

IR sensor power source

IR sensor power source

Posted by FRC2551 at 02/13/2008 04:49:13 pm

The IR sensor docs suggest using an independent power source (i.e. 9v battery). Does this apply to bench testing only, or to use on the actual competition robot, or both?

If auxiliary battery power is allowed on the robot for this application, it would appear to be an alternative energy source and, as such, prohibited by <R01>.

Any clarification appreciated.

Thanks,

Dave
Team 2551 Mentor

Re: IR sensor power source

Posted by GDC at 02/14/2008 12:27:47 pm

As described in Rules <R01>, <R43>, <R45>, and <R49>, you may use only one 12v primary and one 7.2v backup battery on the Robot. No other source of electrical power is permitted.

Power Distribution

Servo Power

Servo Power

Posted by FRC2199 at 02/16/2008 08:28:29 am

Under rule <R62>, is it legal to power a servo from a set of 5 volt pins on the Robot Controller instead of the 7.2 volt PWM pins? The signal lead will still be connected to a PWM signal output and there will be no speed controller or relay module involved.



We wish to do this in order to preserve our backup battery.

Re: Servo Power

Posted by GDC at 02/18/2008 12:02:56 pm

No. Under Rule <R62> servos must be connected directly to the PWM ports on the Robot Controller. Under Rule <R53> and Rule <R03> you can not add any custom circuitry that would alter the power pathways of the servos.

Power Distribution

<R67> Clarification on backup batteries

<R67> Clarification on backup batteries

Posted by FRC2199 at 02/19/2008 11:10:09 am

In a previous post, you stated that under <R73> an alternate backup battery may be used but under <R67> the connector could not be changed.

To clarify, as most new RC type 7.2 volt battery packs come with either Tamiya or Deans type connectors would it be OK to change the pigtail provided in the KOP to accomodate these types of connectors? I understand not altering the actual pack but can't see where matching the pigtail would make a difference.

Thanks.

:confused:

Re: <R67> Clarification on backup batteries

Posted by GDC at 02/21/2008 01:20:27 pm

Under Rule <R67>, the backup battery may not be altered. However, there is no rule that prohibits the use of an adapter cable with appropriate connectors on each end to provide the appropriate physical interface between the (unaltered) backup battery and the control system.

Motors & Actuators

Motors & Actuators

CIM Motors

CIM Motors

Posted by FRC894 at 01/11/2008 04:24:46 pm

Team 894 has a question:

Previously we have used 2 old CIM motors in our drive train so we can have a 4 motor drive train. We wonder if this is allowed and what motors are legal.

Thanks Everybody!

Team 894

Re: CIM Motors

Posted by GDC at 01/15/2008 11:57:40 pm

Please refer to Rule <R58> and Rule <R59> for a complete description of the motors permitted on the Robot (and Rule <R60> for the ones that are prohibited).

Motors & Actuators

Wiring Rules

Wiring Rules



Posted by FRC1014 at 01/12/2008 03:11:11 pm

We would like to use keyed connectors to connect our motors to a control module. The connectors have their own wires of their own colors. Would it be against the rules to connect our red and black motor wires to these different color connectors?

Re: Wiring Rules

Posted by GDC at 01/16/2008 12:02:24 am

Wire colors are not limited to red and black, however color designations are specified in Rule <R54>. Rule <R46> mandates that all wire on the Robot be copper.

Motors & Actuators

<R59> Clarification

<R59> Clarification

Posted by FRC368 at 01/12/2008 05:31:20 pm

Hello,

As quoted in the following rule:

[quote]<R59> [B]Additional [/B]motors specifically permitted on 2008 FRC ROBOTS include:

- [B]All[/B] [B]motors[/B], actuators, and servos [B]provided in the 2008 Kit Of Parts[/B]
- [/quote]There seems to be some confusion regarding the interpretation of this rule. Because the word Additional precedes the line that includes all the 2008 kit motors, it may be interpreted that we can use an unlimited number of additional motors that are identical to the ones that have already been given to us in the 2008 kit. This would imply that we could use an unlimited amount of the same type of Banebot motors that was given to us in the kit. The only limitation seems to be the maximum number of CIM motors which is 4.

Although we may be wrong, this interpretation doesn't seem correct, as it isn't consistent with prior competition rules. Our assumption is that you can only use the number of motors given in the kit of parts plus 2 additional CIMS and additional servos, which would be consistent with previous competition rules.

Some rookie teams have asked us about this rule and an official clarification would be greatly appreciated.

Thank you,
TKM.368

Re: <R59> Clarification

Posted by GDC at 01/16/2008 12:06:10 am

The correct interpretation is the you may use the motors provided in the Kit Of Parts, unlimited HITEC servos, unlimited FTC servos, unlimited FTC motors, and up to two more CIM motors. You may not use an unlimited number of "Kit motors."

Motors & Actuators

CIM Motor Mods for Encoders

CIM Motor Mods for Encoders

Posted by FRC599 at 01/12/2008 05:44:21 pm



My team would like to attach encoders to the back end of the output shaft on the CIM motors. This would entail cutting three holes in the back end of the case: 2 for mounting the encoder and 1 for the encoder shaft. It would also entail drilling part of the output shaft for the encoder shaft. Is this legal?

Re: CIM Motor Mods for Encoders

Posted by GDC at 01/16/2008 12:04:53 am

This would be a violation of Rule <R61>, so it would not be permitted.

Motors & Actuators

motors on COTS part

motors on COTS part

Posted by FRC1782 at 01/14/2008 06:08:30 pm

We have a COTS part that has a motor on it. Does a non-KOP motor cause an otherwise legal COTS part to be illegal?

Re: motors on COTS part

Posted by GDC at 01/16/2008 11:15:48 pm

This would be a violation of Rule <R60> and would not be permitted.

Motors & Actuators

keyang motor

keyang motor

Posted by FRC67 at 01/16/2008 06:52:05 am

The kit of parts lists p/n 16627960 or 61 (left or right) and p/n 16631023 (right). We would like to use on our Robot two of the p/n 16627960 keyang motors and not use the p/n 16627961 or the p/n 16631023 on our robot. Is this allowed?

Re: keyang motor

Posted by GDC at 01/16/2008 10:47:54 pm

Under Rule <R58> and Rule <R60> this would not be permitted. You may only use the motors provided to you in the Kit Of Parts, and the ones explicitly allowed by Rule <R59>.

Motors & Actuators

Linear actuators

Linear actuators

Posted by FRC2410 at 01/19/2008 10:54:16 am

Stated in rule <R62> electric solenoid actuators are not allowed, but are linear actuators allowed since they are different? The main components of a linear actuator, motors, belts, and a threaded shaft are given to us in the KOP, is it allowed if we make our own?

Re: Linear actuators

Posted by GDC at 01/20/2008 06:18:21 pm

If the linear actuator is constructed by the team, from provided or permitted parts, and no additional motors or other prohibited items are used, then the team can construct a linear actuator for use on the Robot.

Motors & Actuators



Motors

Motors

Posted by FRC2174 at 01/20/2008 05:03:15 pm

Our team noticed that in the manual that you can only have 4 CIM motors on your robot. Is there a limit for other motors? Or is there a limit for how many total motors are on the robot?

Re: Motors

Posted by GDC at 01/20/2008 10:04:59 pm

Yes, the number and type of motors that you can use on your robot are very strictly limited. Please read Rule <R58>, Rule <R59> and Rule <R60> very carefully.

Motors & Actuators

CIM motor

CIM motor

Posted by FRC1513 at 01/22/2008 02:53:02 pm

Do we have to use current year CIM motors or can we use two from another year to run the mecanum system.

Also we have 2.25" noodles donated, do we have to use the specified 2.50", or will 2.25" be ok.

Re: CIM motor

Posted by GDC at 01/24/2008 02:56:41 pm

Please refer to Rule <R58>. Motors from previous robots and years may be used as one-to-one replacements for damaged or failed motors. Per Rule <R59>, up to four 2 1/2" CIM motors may be used on the robot.

If you use identical CIM motors from the previous years, please be sure that you account for it properly in the cost accounting rules in Section 8.3.3, specifically Rule <R26>.

Regarding the pool noodles, 2.25" pool noodles do not match the Standard Bumper design and would not be permitted.

Motors & Actuators

Globe motor control.

Globe motor control.

Posted by FRC281 at 01/24/2008 05:58:21 pm

Please forgive a veteran team an alzhimers moment, but, in years past (2001) globe motors were required to be supplied by a PWM. The 2008 Power Distribution diagram also shows the Globe motor supplied from a PWM, but <R62> only states that the CIMs and Fisher-Price motors are mandatory to be supplied from a PWM.

Can the Globe motor be supplied by a Spike relay?

Thanks

Re: Globe motor control.



Posted by GDC at 01/28/2008 03:04:25 pm

Globe motors may be powered via either a Victor speed controller or a Spike relay. Globe motors must NOT be directly connected to any of the PWM outputs from the Robot Controller.

Motors & Actuators

3" CIM (Fisher Price) motors

3" CIM (Fisher Price) motors

Posted by FRC2669 at 01/28/2008 10:11:51 pm

Hey GDC, thanks for the support and the fast responses, we have some additional questions about this year's rules.

1) We saw in some places that the 3" Fisher Price Motors are allowed to be used (Update #5 even mentions that they will soon be on sale at IFI). Does that mean that teams are allowed to use them, even though they have not been included in this year's KOP?

...

We are sorry if there are too many questions in here and you are gonna have to split it into separate messages in different sub-forums, but we also believe that it will be easier for you guys to get this answered than 5 different posts, if not please say so and the next questions we will be making are going to be in separate posts.

Thanks a lot, KY Bots, FRC2669.

Re: A few questions

Posted by GDC at 01/31/2008 03:06:45 pm

Question 1: Team Update #5 makes reference to replacement units for the Fisher-Price motors included in the 2008 Kit Of Parts. These are not the same as the 3-inch CIM motors in the 2007 Kit Of Parts. The 2007 large CIM motors can not be used on 2008 robots.

Motors & Actuators

Special notes on motors???

Special notes on motors???

Posted by FRC2188 at 01/29/2008 05:41:06 pm

Refer to p. 7 of 20 in 2008 Guidelines tips and good Practices.

An earlier printout of this section specified inclusion of a 1-FP801-005 mini-bike motor. later printouts do not specify this motor. What happened? We want to use this 1-FP801-005 !!! Can We use this motor???:)

Re: Special notes on motors???

Posted by GDC at 01/31/2008 01:13:21 pm

Please review Rule <R58>. The FP801-005 "mini bike" motors (also known as "3-inch CIM motors") that were included in the 2007 Kit Of Parts can not be used on 2008 Robots.

Motors & Actuators

Taigene Motor



Taigene Motor

Posted by FRC1633 at 02/02/2008 05:41:09 pm

Can we use two Taigene window motors PN16640238 (one from the 2008 KOP and one from a previous year since they have the same part number?

MWarner
Team 1633

Re: Taigene Motor

Posted by GDC at 02/04/2008 12:42:27 pm

No. Please refer to Rule <R58>.

Motors & Actuators

Keyang Motor Spur Gear

Keyang Motor Spur Gear

Posted by FRC2200 at 02/18/2008 11:53:02 am

Is it allowed within the rules to replace the spur gear on the inside of the gearbox of the Keyang motors with a metal direct replacement?

The intent would be to prevent the teeth from stripping off.

- FRC 2200

Re: Keyang Motor Spur Gear

Posted by GDC at 02/18/2008 01:04:34 pm

This is considered a modification of the gearbox, and not the motor itself. Under Rule <R61> this would be permitted.

Motors & Actuators

Vandoor Motor

Vandoor Motor

Posted by FRC1510 at 02/20/2008 11:54:49 pm

Are we allowed to use the Van Door Motor from previous years on this year's robot? We are unclear about rule <R58> "They may be used as direct one-to-one SPARE PARTS for those provided if the provided part fails or is damaged."

Re: Vandoor Motor

Posted by GDC at 02/21/2008 01:12:53 pm

No. "One-to-one spare" means that a part from a previous Kit Of Parts could be used as a replacement for a 2008 Kit Of Parts item if, and only if, it is the same part number, material, construction, and from the same vendor.

Control, Command & Signal System

Control, Command & Signal System

Robocoaches & Signalling Devices

Robocoaches & Signalling Devices

Posted by FRC1540 at 01/09/2008 02:09:21 pm



<R65> indicates that robocoach controls are limited to 4 inputs. <R69> elaborates on that. So that we're all on the same page, can you give us an official ruling on two strategies many might like to employ?

1) A button toggles between states. Example: Push once to go forward, press again to stop, press again to go forward...

2) A button that advances to the next step in a sequence. For example, press the button once to start hybrid mode and go forward. Press it again to stop. Press it again and the robot goes left, press it again the arm goes up, etc.

Robocoach controller limitations

Posted by FRC41 at 01/09/2008 04:48:09 pm

The rules specify that we can have up to 4 instructions transmitted from the robocoach to the robot, and that these four cannot change. How specific do these instructions have to be?

For example, could a button cycle through three speed settings, or must there be one button for each speed setting?

Also, can the buttons be used to send more than a simple instruction, like starting a sub-routine or telling the robot about the field state?

Re: Robocoaches & Signalling Devices

Posted by GDC at 01/17/2008 02:05:09 am

Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL]. With the guidance of the referenced "does it do the same thing every time?" litmus test, using a Signaling Device button to toggle Robot actions would not fit within the intent of Hybrid Mode. Nor would using the Signaling Device to step through a multi-step routine.

The messages sent by the Signaling Device can initiate more complex actions or routines that are completely pre-programmed on the Robot. The Signaling Device can also be used to transmit field state information instead of a specific command or action.

Control, Command & Signal System

Robocoaches

Robocoaches

Posted by FRC533 at 01/09/2008 02:09:21 pm

1) In the kick-off demonstration, a single robot had two (2) robocoaches, I have not seen any rule that allows more than one. Under what conditions can this be done?

2) The rules say the IR receiver must be designed to accept no more than four (4) commands. Are we allowed to use combinations of these four (4) commands to generate four (4) + functions? Can we use logic or binary?

Robocoaches

Posted by FRC971 at 01/09/2008 05:58:46 pm

Can one robocoach signal 2 robots?



Re: Robocoaches

Posted by GDC at 01/17/2008 02:10:50 am

Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL]. One RoboCoach can signal multiple Robots, as long as Rule <R65> and Rule <R69> are not violated. Using combinations of commands to encode larger message sets is prohibited under Rule <R65>.

Control, Command & Signal System

Robocoach Communications

Robocoach Communications

Posted by FRC41 at 01/09/2008 02:09:21 pm

Can the robocoach transmitter transmit the 4 instructions using more than 4 pulses? For example, to prevent interference to our robot, can we program it to recognize 4 different SETS of pulses as opposed to 4 different pulses? In this case, there are only 4 commands, but they come encoded to prevent our robot from responding to another signal.

IR patterns for inputs

Posted by FRC585 at 01/09/2008 10:45:50 pm

Using the IR sensor, are we allowed to encode patterns to define starting positions of the robot and the track balls?

For example: Robot starts in position 1, ball starts in position 3 and the second ball starts in position 2. The IR sends pattern "1","2","3". This tells the robot position of the balls and itself. One of the functions determines the robot starting position, another defines one ball location, and the 3rd defines the remaining ball location.

Re: Robocoach Communications

Posted by GDC at 01/17/2008 01:56:27 am

Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL]. The signal/message must be generated by utilizing a single input (i.e. one signal/message is transmitted when one button is pressed). So transmitting more than four signals to implement the four commands would not be allowed. Using the position of the signal in the sequence of messages would effectively become sequence-determined encoding. This would be a form of encoding larger message sets, which is prohibited under Rule <R65>.

Control, Command & Signal System

IR interference

IR interference

Posted by FRC41 at 01/09/2008 04:53:08 pm

Will there be any coordination at the event to prevent crosstalk between teams using IR?

Also, is there any rule limiting the intensity of IR transmitted by a device? We can conceive of a powerful IR transmitter "drowning out" other signals on the field (which would be bad).

Re: IR interference

Posted by GDC at 01/10/2008 08:01:17 pm

The only coordination at an event is up to the teams and the community to develop standards and mitigate opportunity for "crosstalk."



There is no specific limit to the intensity of the IR being transmitted as long as it does not violate Rule <S01>. If a device is designed to intentionally jam other transmitters, it is a violation of Rules <R02> and <R65>.

Control, Command & Signal System

<R67> Victor fans

<R67> Victor fans

Posted by FRC2505 at 01/09/2008 05:48:10 pm

May the fans be taken off of the Victors? May we substitute other fans for the Victor fans?

Re: <R67> Victor fans

Posted by GDC at 01/10/2008 09:32:39 pm

It is possible to remove the cooling fans from the Victor speed controllers, however it is NOT recommended. The team will be responsible for any damage or robot failure that may result from removing or not using the cooling fans. Cooling fans other than those provided in the Kit Of Parts may not be used (to do so would be a violation of Rule <R60>).

Control, Command & Signal System

Program

Program

Posted by FRC996 at 01/10/2008 05:54:51 pm

Is there or will there be a posted default program for the IFI controls?

Re: Program

Posted by GDC at 01/16/2008 12:11:46 am

Default/Master code can be found on Innovation First, Inc.'s website [URL="http://www.ifirobotics.com/rc.shtml#Programming"]here[URL].

Control, Command & Signal System

custom circuits

custom circuits

Posted by FRC1522 at 01/10/2008 09:33:45 pm

Is it permissible to use basic stamp motherboards or VEX controllers and sensors as components of a custom circuit assuming the circuit meets all requirements?

Re: custom circuits

Posted by GDC at 01/16/2008 12:15:52 am

Yes, provided the components and resulting custom circuits satisfy the constraints of all applicable rules (particularly <R23> and <R63> through <R85>).

Control, Command & Signal System

IR/Ultrasonic distance sensors

IR/Ultrasonic distance sensors

Posted by FRC2046 at 01/11/2008 05:39:54 am

Rule <R65> states that "SIGNALING DEVICES shall ... not be used to interfere with any other robot. The question is, would using an infrared/ultrasonic distance sensor at a low point on the



robot (~bumper level) be considered interfering because it is emitting infrared or ultrasonic energy?

Thanks,
Team 2046

Re: IR/Ultrasonic distance sensors

Posted by GDC at 01/15/2008 11:45:15 pm

No, provided the device is being used for its intended purpose (e.g. as a range finder) and not being intentionally pointed at an opposing robot to "jam" its sensing capability.

Control, Command & Signal System

Solid state laptop use

Solid state laptop use

Posted by FRC2046 at 01/11/2008 05:44:50 am

Would a "laptop" computer be considered a legal custom circuit as long as it used solid state disks, was fanless, and ran only off of power supplied by the robot's main battery? If not, what would the reason for the restriction be?

Thanks,
Team 2046

additional processors in custom circuits

Posted by FRC1522 at 01/14/2008 02:45:59 pm

May we use additional processors (eg. a basic stamp or the vex controller) as components in custom circuits?

Re: Solid state laptop use

Posted by GDC at 01/16/2008 12:39:49 am

As long as the device satisfies all the constraints defined in Section 8 of The Manual, there is no general prohibition against the use of such a device. Note in particular that it must satisfy the cost constraints (Rule <R23>) and not be used to directly control any devices (Rule <R53>, Rule <R77>, Rule <R82>, and Rule <R83>).

Control, Command & Signal System

Position switch on Robot

Position switch on Robot

Posted by FRC2344 at 01/11/2008 10:12:13 am

can we put a switch on the robot that tells the program what starting position the robot is in? Ex right middle left. can we have a seperate hybrid program for each switch position and set of remote commands?

Re: Position switch on Robot

Posted by GDC at 01/16/2008 12:19:24 am

That is permissible. Many teams will develop several programs that can run during the Hybrid Period, and select between them as the Robot is placed on the Track (via thumbwheels, toggle switches, rotary switches, etc.) to determine which one will execute during the Match.



Control, Command & Signal System

Supporting signaling device.

Supporting signaling device.

Posted by FRC2104 at 01/11/2008 06:13:41 pm

Is it permissible for a part of the signaling device to be supported by some other part of the body of the Robocoach, such a head-mounted pointer?

Re: Supporting signaling device.

Posted by GDC at 01/16/2008 12:29:25 am

Yes, as long as the entire signaling device assembly satisfies the constraints defined in Rule <R65> (including the 3 foot by 3 foot by 1 foot size limitation).

Control, Command & Signal System

Confirming applications and legalities of signaling devices

Confirming applications and legalities of signaling devices

Posted by FRC1618 at 01/11/2008 06:21:21 pm

One of <R65>'s bullet points says that robots shall "not receive any input or feedback directly from the ROBOT (the ROBOCOACH may receive feedback from the ROBOT and use it to control the SIGNALING DEVICE)". Would it be permissible for a robot to receive one command from the RoboCoach, then signal the RoboCoach for a second/third/Nth command (that may or may not be the same as prior commands) to execute directly after the first provided that all commands are on the signaling card as defined in <G49>?

Also, no part of the manual seems to define whether the signaling device is, for shipping and other related matters, part of the robot. However, the fact that the other key robot control mechanism (the operator console) is considered part of the robot makes one ponder: is the signaling device considered part of the robot?

Re: Confirming applications and legalities of signaling devices

Posted by GDC at 01/16/2008 12:32:42 am

Yes, provided that no more than four different commands are included on the Signaling Card and sent to the Robot.

For shipping purposes, the Signaling Device is considered part of the Robot, and must be shipped with the Robot (just as with other parts of the Operator Interface system).

Control, Command & Signal System

IR Sensor Regulator

IR Sensor Regulator

Posted by FRC368 at 01/11/2008 08:35:45 pm

Hello,

After blowing the regulator on our IR Board, we were wondering if it is alright to modify the board by using a standard LM-7805 Regulator in a TO-220 Package to replace the original TO-92 Regulator because we are unable to locate one of the original type.



Thank you,
TKM.368.

Re: IR Sensor Regulator

Posted by GDC at 01/16/2008 11:21:11 pm

By replacing the original voltage regulator with a different part, the FIRST IR board is now considered a Fabricated Item and must be treated as such.

Control, Command & Signal System

Substituting IFR in KOP

Substituting IFR in KOP

Posted by FRC2116 at 01/12/2008 06:07:02 am

Can we use any infrared device for sending signal commands to our robot or must we use the device provided in the KOP?

Re: Substituting IFR in KOP

Posted by GDC at 01/16/2008 12:28:25 am

Any IR device, as long as it satisfies the constraints defined in Section 8 of The Manual, may be used. The IR board provided in the Kit Of Parts is a optional, not required, part.

Control, Command & Signal System

VICTOR brake/coast

VICTOR brake/coast

Posted by FRC2537 at 01/12/2008 11:58:44 am

The VICTOR User's manual says "The speed controller checks the status of the jumper approximately 60 times per second. This allows the user to change from brake to coast during operation. A limit switch may be connected to the jumper connector instead of the jumper. The limit switch can be triggered by various means including the use of a servo."

Rule <R75> says "Digital outputs of the Robot Controller may be connected directly to brake/coast headers on the speed controllers to permit programmable control of this speed controller function. The brake/coast header on the speed controller may NOT be connected to any other circuit or input."

This doesn't seem to make electrical sense, and I'd rather not risk a VICTOR to try it.

The VICTOR says a passive jumper is needed between the center and the "coast" or "brake" pins. The digital outputs of the controller have +5v, controller ground, and a +5v signal. Is the "coast" pin +5v and the "brake" ground (or vice versa)? Is the VICTOR coast/brake center pin a digital input? How would we know that? Is there a ground-loop risk, if the ground level on the controller isn't identical to the VICTOR? Any ground current could easily damage the controller. Wouldn't it be better electrical isolation to just use a relay controlled by a relay output to switch the three wires on the VICTOR? A relay would seem to violate <R75>, and other rules.

<R75> also seems to prohibit the recommended limit switch, and using a limit switch and a servo one could make a Rube-Goldberg relay. Is <R75> intended to prohibit this?



Re: VICTOR brake/coast

Posted by GDC at 01/16/2008 12:52:03 am

The Victor speed controller is used in many applications in addition to the FIRST Robotics Competition. The user manual accompanying the Victor may describe techniques for use that are appropriate for other applications, but may not be permitted for this competition.

The method described in Rule <R75> is the only permissible method for dynamically altering the brake/coast feature of the Victor speed controllers. This method has been developed and validated by Innovation First, Inc., the developers of the Victor and the Robot Controller.

Control, Command & Signal System

Flasher Connection Instructions?

Flasher Connection Instructions?

Posted by FRC2116 at 01/12/2008 12:51:27 pm

where are the instructions for connecting the flasher?

Re: Flasher Connection Instructions?

Posted by GDC at 01/26/2008 12:14:50 am

Please refer to Rule <R66>, as amended in Team Update #5.

Control, Command & Signal System

Use of sensors

Use of sensors

Posted by FRC1612 at 01/12/2008 08:08:25 pm

What is the ruling if a team wants to use an ultrasonic sensor? Is there any rule against using a VEX robotic component?

Re: Use of sensors

Posted by GDC at 01/16/2008 12:00:00 am

Ultrasonic sensors are permitted, as long as they comply with all applicable rules in Section 8 of The Manual. The same is true of VEX robotic system components.

Control, Command & Signal System

Auxillary lighting on the Robot

Auxillary lighting on the Robot

Posted by FRC1501 at 01/15/2008 01:09:41 pm

Is it legal to mount forward facing lights on the robot.

We would like to use the camera to find the balls but we need a known wavelength light to adjust our camera software to. We would like to mount two automobile fog lights (white) on the front of our robot. Would this be allowed?

Keep up the good work.

Re: Auxillary lighting on the Robot

Posted by GDC at 01/17/2008 12:06:53 am

Yes, as long as they are used within the constraints specified in Rule <R02>, Rule <R03>, <R65>, and Rule <S01>.



Control, Command & Signal System

Robocoach Command Clarification

Robocoach Command Clarification

Posted by FRC449 at 01/15/2008 09:09:07 pm

According to rule <R65>, the signaling device may "be able to switch between no more than four states or conditions". According to rule <R69>, "The ROBOT shall not dynamically change the recognized command set during a MATCH." My question is, what constitutes a single state, or dynamically changing the command set?

For example, would toggling the position of an arm (high to low or low to high) count as one command? What about speeding up the motor by a constant amount, or changing angle by a predefined number? Would adding to a counter within the robot controlling the state within autonomous mode be allowed?

Hybrid mode command question

Posted by FRC2104 at 01/15/2008 09:51:32 pm

We had programmed our buttons to:

- A - turn left 10-degrees, unless already at the stops
- B - turn right 10-degrees, unless already at the stops
- C - speed up 2fps, unless already at maximum forward speed
- D - slow down 2fps, unless already at maximum reverse speed

It seems like this may not meet the letter of the law, since any button-push at the limits will not do anything, and the cases of crossing the zero-speed value reverse the direction of the robot. Any thoughts?

Re: RoboCoach Commands

Posted by FRC449 at 01/18/2008 11:18:06 am

According to Team Update 3,

[QUOTE]Examples of single commands might be "turn left," "turn right," "stop," etc.[/QUOTE]
[QUOTE]It may be as complex as ... "turn left, drive forward, [etc.]"[/QUOTE]

However, according to the post Re: Robocoach Commands,

[QUOTE]Nor would incrementing Robot speed or orientation by an indexed amount [fit the intent of Hybrid mode].[/QUOTE]

Given your examples, it seems as though a command to, say, turn left 90 degrees would be allowed (especially the second example, where it autonomously moves on from turning to driving forward). However, the forum post suggests that this would not be allowed, as the orientation is being incremented by a fixed amount. Which of these is the case? It seems to me that turning left will do the same thing no matter the state of the robot, but perhaps I am misinterpreting the rules.

Hybrid Period Commands

Posted by FRC449 at 01/22/2008 08:33:50 am

During the Hybrid Period, would the following constitute an acceptable command from the RoboCoach?



- 1) Turn left 90 degrees (or some other fixed amount)
- 2) Change direction left 90 degrees or some other fixed amount (with Mecanum wheels; for example, go from moving forward to moving left [i]without[/i] turning)
- 3) Change speed of the robot by a fixed amount (i.e. a button to speed up or slow down)

Robocoach Command Clarification

Posted by FRC41 at 01/22/2008 12:23:43 pm

OK...we've read Team Update 3 and the Q&A, and we are still a bit unclear about robocoach commands. We have two scenarios we may want to implement but are unsure if they are legal.

1. Can a button be programmed for a predictable incremental function, like "turn left an extra 10 degrees" or "go 2 ft/s faster"? Each time the button is pressed, the robot would increase speed by 2 ft/s (or increase its turn by 10 degrees), though at each press the resulting speed (or angle) would be different.

2. Is there a limitation on how the signal is sent? Must we use PCM if we are using IR, or can we use an alternative modulation scheme? For example, if we developed a 4 message quadrature constellation and implemented it using IR, would this be legal? Each of the 4 messages requires the transmission of 2 different simultaneous signals, but only 4 commands are conveyed.

Re: RoboCoach Commands / Hybrid Mode Commands

Posted by GDC at 01/24/2008 02:44:17 pm

Please refer to Team Update #3. With the guidance of the referenced "does it do the same thing every time?" litmus test, using a Signaling Device button to toggle arm position would not fit within the intent of Hybrid Mode. However, each of the following alternatives would satisfy the intent and pass the referenced litmus test (note that this is not intended to be an exhaustive list, but merely a few viable examples):

- • incrementing Robot speed or orientation by an indexed amount, or
- • commanding the robot to attain a pre-set speed, or
- • move to a pre-defined orientation angle, or
- • moving an arm to a pre-defined elevation

Control, Command & Signal System

IR Signaling

IR Signaling

Posted by FRC2423 at 01/16/2008 03:43:34 am

Re: <R65>

We understand that only 4 buttons on a remote signaling device are permitted, only 1 single input is permitted at one time, and only 4 messages are allowed.

Here are a few questions:

1. Does this preclude using a sequenced signaling system? What I mean is: can I use a 2 (or



more) button sequence to create (effect) a single message, where the buttons are pressed sequentially rather than simultaneously? For example, can I press "3", release, then press "4" in order to have the "go forward" message transmitted to the robot.

2. Can the software contain multiple actions, such that subsequent transmission of the same key message from the remote will cause different behaviors at different times? In other words, first press of the "UP" key on the remote causes the bot to go forward. The next press of the "UP" key causes the effector arm to raise and grab a ball. Is this permitted?

Thanks.

Re: IR Signaling

Posted by GDC at 01/16/2008 10:51:23 pm

1. This would not be allowed. Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL].

2. No. Please refer to [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #3[/URL].

Control, Command & Signal System

Robocoach device

Robocoach device

Posted by FRC179 at 01/16/2008 08:57:54 am

Can the RoboCoach use a fabricated ultrasonic Active Signaling Device to send it's 4 commands?

Re: Robocoach device

Posted by GDC at 01/16/2008 10:43:51 pm

Yes.

Control, Command & Signal System

Use of wireless vision systems

Use of wireless vision systems

Posted by FRC2103 at 01/16/2008 12:18:36 pm

Our team would like to use a 2.4GHz wireless/rechargeable USB device with secure communication to a notebook computer with appropriate secure receiver.

Q1: Is the use of wireless vision systems allowed under the rules?

Q2: Can this be used a rechargeable device or must it be wired to the onboard power supply?

Re: Use of wireless vision systems

Posted by GDC at 01/16/2008 10:39:50 pm

Please refer to Rule <R64> and Rule <R85>.

Control, Command & Signal System

Controllers for the Robocoach

Controllers for the Robocoach



Posted by FRC381 at 01/16/2008 07:18:03 pm

Can you give two remote controls to the robocoach that's in your team?

Re: Controllers for the Robocoach

Posted by GDC at 01/21/2008 01:37:52 pm

Yes, provided the accumulated total of all equipment used as Signaling Devices by the RoboCoach are in full compliance with Rule <R65> and any other applicable rules. For example, one remote could be used to send two messages, and a second remote could be used to send two other messages, as long as they were incapable of sending more than four messages in total. You could not use two different remotes to send four different messages each. That would be a total of eight possible messages that could be sent to the Robot by the RoboCoach during the Match, which would be a violation.

Control, Command & Signal System

Robocoach Commands

Robocoach Commands

Posted by FRC2177 at 01/16/2008 11:07:49 pm

In regards to a recent team update,

"The litmus test would be 'does sending the same message from the Signaling Device result in the same action on the Robot every time the message is sent?' If the answer is 'no' then it is probably not allowed."

One of our planned robot commands would be "Change speed state", so that every time we pushed the button the robot would flip between two different speeds (slow and fast). Viewed one way, it passes the litmus test - every time you push the button, the robot changes its speed, and does so in a very predictable way. Viewed another way, it could not pass - pushing it one time increases the speed, while pushing it another decreases the speed. Would a limited "change state" command like this be allowed?

Re: Robocoach Commands

Posted by GDC at 01/21/2008 12:24:56 pm

Using a single RoboCoach command to toggle between speed settings would not be within the intent of the RoboCoach signaling concept. Please refer to this [URL="http://forums.usfirst.org/showthread.php?t=8008"]Q&A answer [URL]for more information.

Control, Command & Signal System

4 Hybrid Commands & RoboCoach Program Time Out Options

4 Hybrid Commands & RoboCoach Program Time Out Options

Posted by FRC1529 at 01/17/2008 09:19:36 am

Thank you for the clarity regarding the commands allowed during the Hybrid Period in Update #3.

We understand that the RoboCoach may submit up to four different commands to the robot during the Hybrid Period. If the robot receives no signal from the RoboCoach and performs an autonomous task, is this non-command considered to be a 5th command?

RoboCoach Program TimeOut Option



Posted by FRC492 at 01/20/2008 05:54:05 pm

The RoboCoach is allowed to have 4 options on the remote for robot control, but are we allowed, for example, to have the robot execute a pre-programmed autonomous program after a time delay if no buttons are pressed by the RoboCoach?

Re: 4 Hybrid Commands & RoboCoach Program Time Out Options

Posted by GDC at 01/20/2008 09:49:56 pm

The Robot may (and would be expected to) execute a default autonomous program that controls its behavior in the absence of any over-riding signal inputs from the RoboCoach. This would not be considered a "fifth command." This form of command structure is typical of supervisory control systems, and is entirely within the intent of the Hybrid Mode of operation.

Control, Command & Signal System

Victor Speed Controllers

Victor Speed Controllers

Posted by FRC87 at 01/17/2008 01:25:49 pm

We are using multiple Victor Speed Controllers: some were in our inventory and others came with the kit of parts. Two controllers have red and black wires for the fan as opposed to the other controllers that came with the kit of parts having red and blue wires. Will this create a problem?

Thank you,
Team RVR87

Victor Speed Controller

Posted by FRC87 at 01/18/2008 07:30:18 am

We are using Victor Speed Controllers in our design - the ones that came with the kit have a red label. We have some in stock with a blue label - are we allowed to use them?

Re: Victor Speed Controllers

Posted by GDC at 01/20/2008 09:52:20 pm

As long as the Victor speed controllers in use are the Model 884 version from Innovation First, there should not be a problem. Check the text on the Victor label to be sure it is a Model 884. The color of the wires emanating from the cooling fan is determined by the vendor, and not under the control of the teams.

Control, Command & Signal System

Sensors

Sensors

Posted by FRC2220 at 01/18/2008 04:31:53 pm

Is the CMUcam3 allowed in FRC 2008? A magnetometer/digital compass?

CMU-II Camera

Posted by FRC433 at 01/22/2008 12:06:26 am

This thread, [\[url\]http://forums.usfirst.org/showthread.php?t=8296\[/url\]](http://forums.usfirst.org/showthread.php?t=8296), says that prior year CMUcams may not be used in 2008. However, the CMUcam2 is still available on the IFI website ([\[url\]http://www.ifirobotics.com/first-store.shtml\[/url\]](http://www.ifirobotics.com/first-store.shtml)). Doesn't that qualify it as a COTS item?



Re: Sensors

Posted by GDC at 01/22/2008 12:17:43 am

Updated answer:

CMUcam 3 units that are obtained from a valid source (see the definition of "Vendor" in Chapter 8 of The Manual), and that satisfy the materials use, cost accounting, and other Chapter 8 rules, may be used. Please note that, because they were custom items specifically developed for FIRST and no longer available, CMUcam modules retrieved from 2006 FRC kits may NOT be used in the 2008 competition. The CMUcam modules supplied in 2007 FRC kits are still available from the [URL="http://www.ifirobotics.com/first-store.shtml"].IFI web store[/URL], so they are COTS-equivalent parts and may be used.

There are no rules that would explicitly prohibit the use of magnetometers or digital compass units.

Re: Sensors

Posted by GDC at 01/22/2008 12:23:14 am

Thank you for catching that. We meant to indicate that the 2006 version of the FRC CMUcam could not be used, as it is no longer available. But we over-simplified the answer to address all versions of FRC CMUcams. The mistake has been corrected, and the answer has been updated.

Control, Command & Signal System

electronics

electronics

Posted by FRC1158 at 01/19/2008 02:56:47 pm

Are we able to use IR or acoustic sensors that read out 2 to 3 feet so that we can judge how close we are to another robot or the wall?

Re: electronics

Posted by GDC at 01/21/2008 01:35:55 pm

There is no rule prohibiting the general use of IR or acoustic sensors. As long as the sensors do not violate any other rules (e.g. causing interference with any other robots), they would be acceptable.

Control, Command & Signal System

Clarification of IR Commands

Clarification of IR Commands

Posted by FRC1777 at 01/19/2008 04:41:41 pm

Can the functions of the robocoach be used to set software states rather than specific robot movements. For example: Can IR command #1 set one register on the robot's controller and then a second IR command set the status of register two on the controller?

Then based on these register's settings, the robot would perform certain functions.

In other words, can the registers 10 do routine A, and register 01 do routine B, and register 11 do routine C.



Only four commands would be set to the robot, but they would set registers not directly initiate robotic actions.

Team 1777

Re: Clarification of IR Commands

Posted by GDC at 01/21/2008 01:03:39 pm

This would depend on how the software system used the registers. If there was a one-to-one mapping between the transmitted functions/register settings and the resulting commands/actions, then it would satisfy the signaling requirements. But if the register settings were used to provide higher-order encoding to enable a larger potential command set (such as by using the four registers to represent four bits, which could provide a binary encoding of 16 potential commands), then that would be prohibited.

Control, Command & Signal System

IR Sequence of Programming

IR Sequence of Programming

Posted by FRC1612 at 01/20/2008 09:45:25 am

We have programmed our IR Control and can operate the robot during autonomous hybrid period, but need clarification as to the types of sequences we can use. Currently, we have the remote programmed so a push of the right arrow button causes the robot to swerve to the right for a time (1.3s) or you can hold the right button for a continuous turn. According to the rule, would this be considered multiple function or a continuation of the same function, but not time dependent. Please advise.

Re: IR Sequence of Programming

Posted by GDC at 01/21/2008 12:48:48 pm

As described, those behaviors would be considered two different messages/actions ("turn right for 1.3 seconds" and "turn right continuously").

Control, Command & Signal System

<R67> RC Cabling

<R67> RC Cabling

Posted by FRC1311 at 01/20/2008 04:43:00 pm

In all prior years we have used a short M-F 9pin ribbon cable to connect the robot radio modem to the radio port on the RC.

The reason for this is to allow us to make a short neat 6 inch cable run.

<R67> states that 9pin cable is not to be tampered with. Does a wholesale replacement of the cable violate the spirit and intent of the GDC ?

Thanks

Re: <R67> RC Cabling

Posted by GDC at 01/21/2008 01:19:35 pm

No, that is not permitted. Please refer to Rule <R64>.



Control, Command & Signal System

gear tooth sensor wire gauge

gear tooth sensor wire gauge

Posted by FRC1787 at 01/21/2008 09:34:29 am

According to the Robot rule <R47>, custom circuits (which the FIRST gear tooth sensors appear to be) must be protected by 20A breakers. <R55> states that all circuits protected by 20A breakers must use 18 AWG or larger diameter wire. I can't see 18 AWG wire working for those tiny little sensors. When I asked on Chief Delphi, another member pointed out that <R55> allows smaller value fuses or breakers in custom circuits.

The question I'm asking is this: Is it acceptable for 18 AWG wire to be run from a 20A breaker in the KoP main breaker panel to a small sub-panel with smaller value fuses suitable for smaller wire (e.g., 5A fuses and 22 AWG wire), then for the smaller wire to be run to custom circuits? If not, what should be done to comply with all rules?

Re: gear tooth sensor wire gauge

Posted by GDC at 01/21/2008 07:05:06 pm

Yes, that would be acceptable. Note that 24AWG wire may be used for wiring sensors, and stated in Rule <R70>. Also, please note that while the gear tooth sensor boards were custom made for the FRC Kit Of Parts, they are not considered custom circuits.

Control, Command & Signal System

More Robocoach pedantry

More Robocoach pedantry

Posted by FRC1743 at 01/27/2008 12:59:10 am

All of the Robocoach rulings I have read seem to outlaw the notion of software state... the action conveyed by the press of a button should be independent of any previous button presses. However, the actions are allowed to be dependent on sensor readings. Is a hardware device solely intended to keep track of state (such as a servo coupled to a multi-position switch which feeds back to the RC) in order to address a larger set of commands in violation of the letter or spirit of any rules?

Re: More Robocoach pedantry

Posted by GDC at 01/28/2008 01:40:00 pm

This would be a violation of the spirit, but not necessarily the letter, of the rules.

Control, Command & Signal System

RC Decision-Making during RoboCoach Commands

RC Decision-Making during RoboCoach Commands

Posted by FRC188 at 01/27/2008 11:24:53 am

Background:

1) Team Alpha has created a RoboCoach command for Alphabot called "move Alphabot to correct heading." This RoboCoach command triggers the same sequence of RC commands



and decisions every time it is sent:

[quote]

a) Read heading of CMUCam which is successfully tracking a trackball.

b) If trackball heading is left of robot heading, turn robot left until headings are same, then stop.

c) If trackball heading is right of robot heading, turn robot right until headings are same, then stop.

[/quote]

2) Team Beta has created a RoboCoach command for Betabot called "move Betabot's arm to correct position." This RoboCoach command triggers the same sequence of RC commands and decisions every time it is sent:

[quote]

a) Read limit switches at both ends of arm travel.

b) If top limit switch is pressed, lower arm until bottom limit switch is pressed, then stop.

c) If bottom limit switch is pressed, raise arm until top limit switch is pressed, then stop.

[/quote]

Question(s):

1) With respect to the Q&A response at <http://forums.usfirst.org/showthread.php?t=8370>, due to RC decision-making, neither RoboCoach command will always result in the same robot action. Alphabot's RC may decide to rotate the robot left or right, Betabot's RC may decide to raise or lower the arm. In both cases however, the same RC command and decision sequence is triggered every time the RoboCoach command is sent. Can you comment on the legality of both of these RoboCoach commands?

2) Should it be accepted that Team Beta's RoboCoach command is just a poorly veiled attempt at "toggle arm position" (as described in the referenced Q&A response) and is contrary to the intent of the rules, or is there actually a valid distinction due to the presence of RC decision-making?

[i]Thanks again for all your time and effort in providing the Q&A. It is truly appreciated!!![/i]

Re: RC Decision-Making during RoboCoach Commands

Posted by GDC at 01/28/2008 01:33:12 pm

The Robocoach commands in both the Alpha and Beta examples satisfy the letter and intent of the rule. Both solutions involve reading sensors on the robot to perform the commanded functions.

Control, Command & Signal System

Interface

Interface



Posted by FRC2544 at 01/27/2008 02:48:35 pm

Does a interface from computer to robot controller come with the kit of parts.

Re: Interface

Posted by GDC at 01/28/2008 01:20:31 pm

For information on connecting the Robot Controller to a computer for downloading custom software, please refer to the "Programming Information" documentation on the [URL="http://www.ifirobotics.com/rc.shtml#Programming"]FRC Robot Controller [URL]page of the Innovation FIRST web site.

Control, Command & Signal System

InfaRed Sensors

InfaRed Sensors

Posted by FRC1448 at 01/29/2008 10:49:14 am

How many InfaRed sensors are allowed on a robot?

Re: InfaRed Sensors

Posted by GDC at 01/31/2008 12:54:40 pm

The rules do not limit the number of infrared sensors you can mount on your robot.

Control, Command & Signal System

LEDs on the Robot

LEDs on the Robot

Posted by FRC1351 at 01/29/2008 11:43:27 pm

Rule <R66> states that up to 4 LEDs can be installed on a robot - but does this rule only pertain to the diagnostic LED flasher?

Four red LEDs are placed on the robot with the IR receiver board. Our team wants to install four more colored LEDs on the robot which will flash when their corresponding IR command has been sent. The only purpose of these colored LEDs (green, blue, white, yellow) are to provide visual feedback to the Robocoach that the robot has indeed received its intended IR command. Is this within the rules?

On top of that, our team wishes to wire limit switches to more red LEDs as a warning system to indicate that our launcher is armed. We decided that this would be an effective way to keep our launcher safe.

Are these extra LED installations acceptable?

Re: LEDs on the Robot

Posted by GDC at 01/31/2008 01:16:57 pm

Rule <R66> pertains only to the diagnostic LED flasher provided in the Kit Of Parts (IFI part "ROBOT-LED-RB"). Additional diagnostic and status indicator LEDs may be added to the Robot, at the discretion of the team.

Control, Command & Signal System

Help with IR board!

Help with IR board!



Posted by FRC1228 at 01/30/2008 09:35:06 am

We wrote a program in Easy C for the IR Board and we tried many remotes searching for one that sent continuous signal and we finally found one that works, however we cannot get the signal to be recognized by our robot. The command is not sent as a continuous signal it is a pulsing signal and the robot doesn't recognize the change in the input value. Please advise

Re: Help with IR board!

Posted by GDC at 01/31/2008 01:18:33 pm

We are not able to provide design, debugging or diagnostic assistance directly to teams. We suggest you contact a mentor team in your area, or use one of the on-line team discussion forums, to request assistance.

Control, Command & Signal System

The Robot Radio

The Robot Radio

Posted by FRC842 at 01/31/2008 01:52:17 pm

Can the robot radio be mounted horizontally with the antenna vertically adjusted?

Re: The Robot Radio

Posted by GDC at 02/04/2008 12:37:55 pm

Yes.

Control, Command & Signal System

IR receiver board

IR receiver board

Posted by FRC330 at 01/31/2008 02:00:31 pm

Are we allowed to [U]change[U] the light sensor on the IR receiver board ????

Re: IR receiver board

Posted by GDC at 02/04/2008 01:13:48 pm

You may modify or even replace the IR receiver board.

Control, Command & Signal System

Modifying the IR Board

Modifying the IR Board

Posted by FRC964 at 02/01/2008 05:25:10 pm

Our team wants to create a casing for the IR board by changing it physically (holes, notches, etc). Is this allowed?

Re: Modifying the IR Board

Posted by GDC at 02/04/2008 01:15:32 pm

Yes.

Control, Command & Signal System

More RoboCoach Questions

More RoboCoach Questions

Posted by FRC449 at 02/02/2008 12:35:24 pm

Our team would like to make the robot as autonomous as possible, but we are not entirely



convinced of our robot's ability to sense and dodge other robots at high speed. Therefore, we are trying to use our RoboCoach commands as follows:

- 1) Drive Straight while button is pressed (for dodging other robots if necessary)
- 2) Drive Left while button is pressed (for dodging other robots if necessary)
- 3) Drive Right while button is pressed (for dodging other robots if necessary)
- 4) STOP the robot

We also have an autonomous routine, which would execute automatically if no button is pressed and which would drive the robot around the field. We would like the first three buttons to, when released, switch back automatically to the autonomous method. However, we would like the stop button to simply stop the robot and not go back to the autonomous method. To have the robot continue to drive around, we would press one of the other RoboCoach buttons, to make it temporarily drive straight/right/left, then release and have the release of that button make the robot to go back to the autonomous method. The functions of the buttons could also be described as follows:

- 1) Drive Straight while the button is pressed, and then continue the autonomous program
- 2) Drive Left while the button is pressed, and then continue the autonomous program
- 3) Drive Right while the button is pressed, and then continue the autonomous program
- 4) STOP, and then do not go back to the autonomous program

Would this be violating either the letter or the spirit of the rules?

Re: More RoboCoach Questions

Posted by GDC at 02/04/2008 02:10:19 pm

The application described violates the intent of the Robocoach signalling rule. The contact with the button should be momentary. By having your command contingent upon the length of the button press, you have encoded a variable "how long" command in addition to the "what" command.

Control, Command & Signal System

Hybrid Control System

Hybrid Control System

Posted by FRC2177 at 02/03/2008 10:28:45 am

In several places (Q&A, team update 3, rulebook) the hybrid control system limitations have been described, and indicate that, among other things, 4 buttons on the remote should correspond to 4 repeatable actions on the robot. It's also been ruled that using 4 multi-button sequences to encode your 4 messages isn't allowed. Some remotes, such as the Logitech Harmony series, allow you to plug them into your computer to program often used button sequences, such as turning on your TV, Tivo, and stereo system with one button press. Would using such a remote to create 4 encoded commands be legal? For example, pushing button 1 would send a command "1-2-3", while pushing button 2 would send the command "2-3-4", etc. We would still be limited to using 4 buttons on the remote, and those 4 buttons would initiate repeatable actions as have been described by the GDC previously, but through an encoding system built into the hardware/software like this, we would avoid possible interference with other teams remotes.



Re: Hybrid Control System

Posted by GDC at 02/04/2008 01:00:39 pm

No. This represents a higher-order encoding, which is explicitly prohibited.

Control, Command & Signal System

Additional IR Sensors

Additional IR Sensors

Posted by FRC1208 at 02/04/2008 10:55:18 am

Hello, FIRST!

I understand that rules <R81> and <R82> specify requirements for using additional electronics. We could add an extra IR sensor on our IR board, but our team was wanting to use two IR boards on our robot (still using only four commands), and we could not find a certain rule condoning or condemning it. If this is against the rules, please tell us!

Thank you very much. :D

1208

Re: Additional IR Sensors

Posted by GDC at 02/04/2008 12:57:45 pm

There is no rule prohibiting the use of multiple IR receivers on your Robot.

Control, Command & Signal System

How to verify OI version number?

How to verify OI version number?

Posted by FRC885 at 02/04/2008 10:25:03 pm

Would you please explain how to verify the OI version number is 15 as required by item 500 of the inspection check list?

What problems may we expect if we do development and testing using previous years OI on the tether or with the data link?

Thanks for your efforts!

Re: How to verify OI version number?

Posted by GDC at 02/07/2008 01:57:06 pm

The firmware version of the 2008 Operator Interface is Version "37" and the firmware version of the 2008 Robot Controller is version "15".

In order to verify the firmware version of an OI, with the power on to the OI, hold down the "Select Button" on the OI and press the "OI Reset" button on the OI one time while continuously holding down the "Select" Button. The number shown on the 4-digit display is the firmware version of the OI.

To check the firmware version of the RC, with no power applied to the OI, connect the tether cable between the RC and the OI. When the RC is powered on, the OI will also be powered up thru the tether cable. When the RC and OI are linked (all green LED's), the 4-digit display will



show C40. Pressing the "Select" button two times will show the firmware version of the RC in the following format, u015. This can only be done when the RC is initially powered up.

The communication between previous years OI's and RC's should work fine. Teams should not have any problems if they are using a 2006 or later OI's and RC's. 2004 and 2005 RC's have a different user processor which will require different compiling steps for programming. Pre 2004 RC's and OI's are not compatible with 2004 and later RC's and OI's.

Control, Command & Signal System

Using a robot controller as a Signaling Device

Using a robot controller as a Signaling Device

Posted by FRC1743 at 02/06/2008 01:40:38 am

Is there any rule prohibiting the use of either a 2007 IFI Robot Controller (sans radio) or the EDU-RC controller as part of your Signaling Device?

Re: Using a robot controller as a Signaling Device

Posted by GDC at 02/07/2008 09:14:54 am

As long as the complete signaling device assembly meets all the requirements in the Robot Rules, there is no rule that would prohibit this.

Control, Command & Signal System

IR system question

IR system question

Posted by FRC695 at 02/07/2008 04:44:00 pm

The range of the IR receiver on the IR board is very limited. Is there a way to extend this range? For instance, can a the trans-beam receiver be connected to the IR board and receive signals instead of the IR receiver already on the board? If so, how can this receiver be connected?

Re: IR system question

Posted by GDC at 02/11/2008 01:27:20 pm

We can not provide design assistance. We suggest that you consult with your mentors or other teams with relevant expertise. We recommend that you focus on the range of your transmitter as opposed to the receiver.

Control, Command & Signal System

Re: More RoboCoach Questions

Re: More RoboCoach Questions

Posted by FRC449 at 02/07/2008 04:51:15 pm

[QUOTE="GDC"]The application described violates the intent of the Robocoach signalling rule. The contact with the button should be momentary. By having your command contingent upon the length of the button press, you have encoded a variable "how long" command in addition to the "what" command.[/QUOTE]

In that case, would it be allowable to have a fixed-time command? For example, could our team have the robot stop for one second, then go back to the regular autonomous programming? Or are timed commands only allowed as part of larger routines?



Re: More RoboCoach Questions

Posted by GDC at 02/11/2008 01:22:26 pm

When the RoboCoach sends a signal to the Robot, the Robot may respond by executing a software routine that relies on internal sensor readings to determine what to do. If you choose to make part of that routine "turn off all the motors and sit in place for 'xx' seconds" that is within both the letter and the intent of the rules.

Control, Command & Signal System

IR Board Alternative

IR Board Alternative

Posted by FRC2100 at 02/08/2008 03:39:00 pm

Our team, 2100, was wondering if we are allowed to use, instead of the IR Board, magnetic receivers to manipulate our robot with the human coach.

Re: IR Board Alternative

Posted by GDC at 02/11/2008 01:15:06 pm

Yes.

Control, Command & Signal System

IR Commands

IR Commands

Posted by FRC2199 at 02/08/2008 03:41:18 pm

One of our hybrid mode commands is to make the robot stop for two seconds, then continue move forward. We would like to be able to press the stop button again while the robot is stopped and it would reset the two-second timer so the robot would stay stopped. Is this legal?

The alternative is to press stop about every two seconds, but obviously there would be a short time between when the robot starts moving and when the stop command is received again to make the robot stay stopped, and this is a safety hazard.

Re: IR Commands

Posted by GDC at 02/11/2008 01:17:40 pm

There is no rule that would prevent this.

Control, Command & Signal System

R53 - Lowering Power to motor

R53 - Lowering Power to motor

Posted by FRC27 at 02/09/2008 08:22:25 pm

Can a resistor be added in series with a motor to lower the speed of the motor? ie. resistor added between the spike relay and motor. R53 states "Custom circuits shall NOT directly alter the power pathways between the battery..., relay, motors or other elements of the robot control system. It appears the intent of R53 is to prohibit active circuits that would inhibit direct control of the robot by the robot control system, not a passive component such as a resistor, which does not inhibit direct control. The resistor being the electrical equivalent of gears to mechanically reduce the speed. Can a resistor be used for this? Electrically Inclined.

Re: R53 - Lowering Power to motor

Posted by GDC at 02/11/2008 01:07:36 pm



No. Motor speed can be controlled with Victor speed controllers. No other method is permitted.

Control, Command & Signal System

LED Flasher Placement

LED Flasher Placement

Posted by FRC885 at 02/12/2008 07:51:11 am

We have mounted the Diagnostic LED Flasher behind a protective aluminum panel that is .125" thick with .375" dia holes 0.575" center to center. We all can clearly see the flasher from three feet in front of the bot even the old mentors with glasses as required by <R66>. It seems as though we are compliant, the question is: are we compliant with <R66>?
TNX for your work!!

Re: LED Flasher Placement

Posted by GDC at 02/14/2008 12:49:16 pm

We can not provide specific design analysis, and it is impossible to determine rule compliance from the information provided. At best, we must note that Rule <R66> requires that the diagnostic LED flasher must be mounted in a location that is clearly visible.

The LED flasher is to be used to your advantage. It is there to provide rapid diagnostic information to help you correct any problems that may occur while your robot is on the field. It is in your best interest to make sure the diagnostic LED flasher is clearly and easily visible to the field personnel. If the LED flasher is located behind an aluminum panel, even if there are some "view ports" it is unlikely that the LED flasher will be easily visible.

Even old mentors with glasses have feelings.

Control, Command & Signal System

Flashlight as signal device

Flashlight as signal device

Posted by FRC246 at 02/13/2008 02:58:41 pm

Would we be allowed to use a flashlight that is between 1 and 3 feet long if it is held horizontally pointing at the field (i.e. when pointing at the field it might be more than 1 foot "deep"). We want to be sure that this would not violate the "3 feet tall by 3 feet wide by 1 foot deep" part of R65.

Thank You,
Team 246

Re: Flashlight as signal device

Posted by GDC at 02/14/2008 12:30:08 pm

If the flashlight is more than one foot long, and it is held horizontally, and it is pointed at the field, then it would be more than one foot deep (as viewed from the field). This would be a violation of Rule <R65>, and would not be permitted. We're confident that your team can overcome this problem.

Control, Command & Signal System

Hybrid Receiver Disconnect Rule



2008 Q&A Forum Export

generated: 02/27/2008 09:27:01 am EST

Hybrid Receiver Disconnect Rule

Posted by FRC1280 at 02/14/2008 11:47:55 am

In team update 6 it is stated that hybrid receivers must be disconnected while the robot is in the pit. Our receiver is connected with a molex header that also contains connections for other robot functions and is difficult to remove and replace. For the purpose of satisfying the rule, is it sufficient to place disconnect switches in line with the data lines in the project box containing the receiver so that it may be easily disconnected by flipping the switches? In addition to making it easy to disconnect the receiver, this also makes it easy to see that it has been disconnected.

Re: Hybrid Receiver Disconnect Rule

Posted by GDC at 02/14/2008 12:53:52 pm

Yes. Either a logical or physical disconnect is acceptable. If a switch is used, "OFF" must be clearly indicated.

Control, Command & Signal System

RC Busted -- Can we Use 2007?

RC Busted -- Can we Use 2007?

Posted by FRC1551 at 02/14/2008 04:21:58 pm

Hello,

Through a display of stunning brilliance I won't detail out of sheer embarrassment, we managed to damage the tether port on our 2008 RC -- it will now supply power to, but no communication from, the OI.

<R63> states "ROBOTS must be controlled via the wireless, programmable Innovation First 2008-Robot Control System provided in the 2008 Kit of Parts."

I called Innovation First and was told that the 2007 and 2008 RCs are identical in both hardware and software. (Specifically, "the only difference between the two is the sticker on the side says 2008").

Thus, would it be acceptable to use the 2007 controller as a 'spare part', or must we purchase a brand new RC?

Thank you very much for your timely reply,

Patrick Freivald
Team 1551

Robot Controller

Posted by FRC1569 at 02/15/2008 08:49:33 am

Our team has damaged our Robot Controller. Can we use last years Robot Controller on this years Robot.

Re: RC Busted -- Can we Use 2007?

Posted by GDC at 02/18/2008 12:44:50 pm

If the 2008 Robot Controller becomes inoperable, a 2007 Robot Controller may be used as a



replacement/spare. This information will also be included in Team Update #11.

2007 Rc

Posted by FRC1551 at 02/18/2008 12:51:37 pm

Dear GDC,

I asked this question once before but received no reply... Our 2008 RC tether port is damaged (it provides power, but the orange light is on, signalling 'packet loss'. We can get power to our OI, but cannot actually control anything through the tether cable, change our team number, etc.). I assume that this will also be a safety issue in the pits. We do not have the funding to purchase another RC.

My question is this: Can we use the 2007 RC instead of the 2008 RC? InnovationFirst assured me that they are identical, but I want to make sure that this is the case before changing over. Time is very tight -- please reply as soon as you can.

Thank you very much for your attention to this matter.

Sincerely,

Patrick Freivald
Team 1551

P.S. You can call me at [xxx-xxx-xxxx], or e-mail me directly (I am the main contact for the team). Thanks again.

Re: RC Busted -- Can we Use 2007?

Posted by GDC at 02/19/2008 05:23:38 pm

The previous answer (to your own question) still applies.

Control, Command & Signal System

Replacement autonomous board/infrared sensors

Replacement autonomous board/infrared sensors

Posted by FRC1370 at 02/14/2008 05:02:18 pm

We have received a faulty board and repair has not been possible. They are no longer available for purchase - is there anyway to get another so that we may compete in the autonomous mode?

Allowable IR board Replacement at Event

Posted by FRC2038 at 02/14/2008 08:39:16 pm

Like a significant number of other teams, we have a defective IR board. As noted in other posts, IFI is out of the boards for the season. Also as noted in other posts, none of the links mentioned in the team updates have an alternative board available. With only a few days till ship, it is extremely unlikely that we will be able to find a replacement and get it onto the bot before shipping. We will have to ship with the defective board installed on the bot.

Our question is how will the replacement part rule be interpreted at the event in relation to IR boards? There is no direct replacement available so will we be allowed to bring and install a functionally equivalent sensor at the event? If we are allowed to bring a functionally equivalent



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board, does it have to be completely COTS or can we include a custom translator, if necessary, to make a COTS product interface in the identical manner to the robot controller?

Our intent is to have equivalent functionality to what the KOP IR board was supposed to do. Considering that a significant number of teams appear to have been affected by this supplier side problem, I hope that a fairly liberal interpretation of the rules will be allowed.

Replacement IR sensor

Posted by FRC1652 at 02/15/2008 08:49:48 pm

Hello FIRST

We have damaged our IR sensor unit. It is possible that we may not be able to repair it before submitting our robot. We are not able to purchase a replacement unit because IFI Robotics has sold out of them. We have found that several other teams are in the same situation we are in.

Is it permissible to use a similar IR sensor board for the Hybrid Mode portion of the competition? If this is allowed, are there any limitations that FIRST would enforce during inspection (i.e. number of signals it can learn)? The sensor we are considering is made by the same vendor who supplied FIRST's IR sensors.

Re: Replacement autonomous board/infrared sensors

Posted by GDC at 02/18/2008 12:00:51 pm

The IR receiver boards provided in the Kit Of Parts were limited-quantity custom parts. Replacements are no longer available. However, IR receiver boards with similar functionality are available from a number of commercial sources. Commercial IR sensors that are obtained for use on the Robot will be treated just like any other COTS part.

As noted in Rule <R40>, teams may bring an unlimited amount of commercial-off-the-shelf items to the competitions. If you purchase a replacement IR sensor board and it does not arrive in time to ship with the Robot, it may be brought to the competitions by the team and be installed at the event.

Control, Command & Signal System

Aluminum Electrical Board

Aluminum Electrical Board

Posted by FRC1719 at 02/16/2008 03:07:47 pm

Hi,

We are using 2 sheets of 3/16" thick aluminum for our electrical board. The bottom board supports the drive motors' victors and 40 amp circuit breaker, while the top board supports everything else. Because both boards are bolted to the chassis frame, they are not electrically isolated from each other. Assuming we have successfully isolated the ground from the chassis, is there any potential inspection and/or safety hazard associated with such a design?

Thanks,

Mike Dennis



Team 1719

Re: Aluminum Electrical Board

Posted by GDC at 02/18/2008 04:33:04 pm

It is impossible for us to comment on any potential hazards or inspection issues with only the provided information. You must use your best engineering judgment and a complete review of the rules to determine if there is an issue with your design. If you still have some concerns when you arrive at the competition, please consult with one of the inspectors for an informal review that will allow them to point out any areas of concern prior to your formal inspection.

Control, Command & Signal System

IR commands in hybrid mode

IR commands in hybrid mode

Posted by FRC919 at 02/18/2008 09:53:54 pm

Would it be legal if 1 of the 4 commands we send during the hybrid period to the robot be stop all motors(set pwms to 127) and pulse solenoid 2(relay2_fwd = 1)(making the piston retract).

Since this same code will always do the same thing, making the pwms 127 and relay2_fwd=1, I think it is ok.

BUT this one command can yield 4 different "visible" actions since if the robot is already stopped, the button will do nothing and if the piston is already retracted, the button will also do nothing since pulsing relay2_fwd=1 will do nothing as it is already retracted.

Effectively this means we can also use this one button to do 2 actions, stop the robot(if not already stopped), and retract the arm(if not already retracted).

Is this all legal?

Re: IR commands in hybrid mode

Posted by GDC at 02/21/2008 01:19:26 pm

As described, this would satisfy the letter of the rule. The same button produces the same action and executes the same software routine each time the corresponding message is sent.

Control, Command & Signal System

Broken RC replacement?

Broken RC replacement?

Posted by FRC885 at 02/19/2008 07:26:13 am

Our Robot Controller backup battery function does not work. Battery is 7.9V but the PWM output will not power the servos and the backup battery warning LED on the OI is lit all time.

All other functions on the RC work mighty fine. The question is how can we get replacement? Can we exchange it for a good one at the BAE Regional? Can we send it to IFI for a replacement/repair? Do we have to buy a new one?

Thanks for all your efforts.

Re: Broken RC replacement?

Posted by GDC at 02/21/2008 01:23:06 pm

Please contact IFI directly, per Section 1.4 of the manual, to discuss repair/replacement options.



Control, Command & Signal System

IR Sensor

IR Sensor

Posted by FRC563 at 02/19/2008 01:05:28 pm

Where can we purchase a replacement IR Sensor since our sensor is bad?

Re: IR Sensor

Posted by GDC at 02/21/2008 01:21:40 pm

Spare FIRST IR Boards were available for purchase at the FIRST store, but are now sold out. You have two options: 1) see Team Update #10 for information that may help you get your board functioning 2) purchase a different COTS IR sensor. Note that there are multiple technologies other than IR that could be used by the Robocoach, these are options for you as well.

Control, Command & Signal System

IR Recv Board Alternatives

IR Recv Board Alternatives

Posted by FRC1583 at 02/23/2008 01:50:13 pm

A recent forum post on stated

"You can build your own IR receiver board. You can also buy a different IR receiver board from any of a number of commercial sources (there are lots of them available with similar functionality). You can also use a completely different signaling technology. The IR boards provided in the Kit Of Parts are optional items - there is nothing that says you have to use them."

Our team has spent a lot of time focusing on the Hybrid period. We're very concerned about the reliability of the IR receiver. Is the post correct in stating "You can also use a completely different signaling technology"? If so could we use 2.4 Ghz spread spectrum technology? I fly large scale radio controlled model aircraft with this technology and it is both safe and reliable. In addition it has no conflicts with the field radio control system.

Re: IR Recv Board Alternatives

Posted by GDC at 02/25/2008 12:12:25 pm

Please read Rule <R65> carefully. Many different technologies may legally be used as the core technology for the signaling device. Note, however, that 2.4GHz spread spectrum transmissions would be prohibited under the first bullet of the "Active Signaling Devices" section of Rule <R65>.

The IR receiver board is provided to teams for their use. But just like many other items supplied in the Kit Of Parts, use of the item is not required. For example, wheels, wires, chains, sprockets, frame materials, pneumatics, sensors, bearings, gearboxes, etc. are all provided. However, teams are always welcome to substitute their own innovative and creative alternatives for any of these items (as long as the alternative solution satisfies all applicable rules).



Pneumatic System

Pneumatic System

Pneumatics regulators and cylinders

Pneumatics regulators and cylinders

Posted by FRC1741 at 01/09/2008 12:41:41 pm

My three pneumatics questions are:

1. Can more than one Norgren primary regulators be used in parallel if all are set at 60 psi maximum working pressure?
2. Is there any restriction against locating some of the Clippard air receiver tanks after the Norgren Primary regulator as long as they are filled through the regulator at 60 psi or less?
3. Can Bimba air cylinders be used that are identical to the ones on the Free Air Cylinder order sheet be used in model number with the exception of length different than those listed?

Rule &R89& Question

Posted by FRC835 at 01/10/2008 04:44:37 pm

The Rule reads:

In addition to the pneumatic cylinders provided in the Kit Of Parts and the "free" pneumatic cylinders available for order through the Free Pneumatic Components Order Form, additional air cylinders or rotary actuators may be used. All cylinders, regardless of source, must be identical to those listed on the Free Pneumatic Components Order Form (e.g. same part numbers). Any additional air cylinders must source from Bimba or Parker Hannifin, or be recovered from prior year FIRST Kit Of Parts.

We are wondering if we are able to purchase a cylinder with a longer stroke than those listed in the Free Pneumatic Components Order Form on bimba.com. We called Bimba and they indicated that a change in length would change the part number. However, would this be a violation of the rules? We would still be using the same basic cylinder, only longer.

Thanks,
Team 835

1.5" bore/24" stroke

Posted by FRC832 at 01/10/2008 05:03:23 pm

Is this cylinder legal this year? We used it in 2005 and it was legal, but it was not on the Bimba order page of form. There is a 2" bore/24" stroke, but that's a lot of air, and we don't need that much pressure! Thanks

Re: Pneumatics regulators and cylinders

Posted by GDC at 01/10/2008 07:50:26 pm

1. As noted in Rule <R88>, there is no limit to the number of regulators that may be used in the pneumatic circuit. However, for the sake of a predictable and reasonable inspection process, only one primary regulator may be used to separate the high-pressure (120 psi) portion from the working-pressure (60 psi) portion of the pneumatic circuit. All additional regulators must be located "downstream" from the primary regulator.



2. Locating one or more of the Clippard tanks "downstream" from the primary regulator is permitted, as long as they are only used to store compressed air at or below 60 psi.

3. No. All cylinders used must be identical to those specified on the "Free Pneumatic Components Order Form" - including the specified lengths and diameters.

Pneumatic System

Pneumatics valves

Pneumatics valves

Posted by FRC2081 at 01/09/2008 02:06:20 pm

Is it allowable to use the 1/4 turn valve that is normally a manual pressure bleed valve as a high flow valve if only KOP parts are used to build the system with all required safety elements? Essentially a standard KOP circuit would be used to actuate the unmodified 1/4 turn valve.

Re: Pneumatics valves

Posted by GDC at 01/10/2008 09:30:55 pm

If we understand the question correctly, you would use a second pressure relief valve (the first one must still be used for it's intended purpose - to enable manual venting of all circuit pressure) in the main line of the pneumatic circuit. This valve would then be actuated via some other onboard actuator. As long as the actuation method is in compliance with all safety rules and other appropriate rules in The Robot section of the Manual, it would be permitted.

Pneumatic System

Pneumatics Question

Pneumatics Question

Posted by FRC238 at 01/10/2008 11:46:20 am

In our prototyping we are using a piston with only one port connected to a solenoid, the other is just being vented. We haven't found any rules that would disallow this but all the schematics and reference pictures have both ports connected. I would like to make sure that this is a legal configuration before finalizing a design.

Thanks

Re: Pneumatics Question

Posted by GDC at 01/11/2008 11:29:55 pm

Venting a port of the piston directly to the atmosphere is permitted.

Pneumatic System

<R89> Quantity and source of cylinders

<R89> Quantity and source of cylinders

Posted by FRC2505 at 01/10/2008 01:08:36 pm

When <R89> allows cylinders to be recovered from previous years' kits, does this mean in unlimited quantities, or the quantities specified in those years? Does that refer to only the parts given out inside of the old kits, or does it also include previous years' free cylinders (from the form)?



Re: <R89> Quantity and source of cylinders

Posted by GDC at 01/16/2008 11:06:52 pm

Rule <R89> specifically permits additional pneumatic cylinders to be used on the robot. These cylinders may be obtained from a Bimba or Parker Hannifin distributor, or "scavenged" from a prior-year Robot. There is no limit on the number of cylinders that may be used, regardless of the source.

Pneumatic System

Clippard Cylinders

Clippard Cylinders

Posted by FRC2365 at 01/10/2008 01:34:55 pm

Where do we obtain the 2 additional cylinders that we can have on the robot? The IFI website said to contact FIRST.

Re: Clippard Cylinders

Posted by GDC at 01/11/2008 11:29:13 pm

Clippard volume tanks (Clippard part AVT-32-16) are available from multiple sources. We recommend checking the Clippard web site (<http://www.clippard.com/>), or other web resources, for availability.

Pneumatic System

Flow control valves mandatory?

Flow control valves mandatory?

Posted by FRC2081 at 01/11/2008 11:02:14 am

Is the use of flow control valves mandatory?

Re: Flow control valves mandatory?

Posted by GDC at 01/11/2008 11:05:10 pm

If you are referring to the SMC flow control valves provided in the Pneumatics Kit (SMC part number NAS2201F-N01-07S), then no. Their use can provide significant flexibility in the design of your pneumatic system, but their use is optional and not required.

Pneumatic System

Allowable Pneumatics Tubing Sizes

Allowable Pneumatics Tubing Sizes

Posted by FRC1730 at 01/12/2008 04:28:14 pm

We have tried to use the tubing that comes with the KOPs and found that it did not give us enough air flow to perform well. We would like to increase the ID of the tubing to .250" (with 3/8" OD). <R87> states that additional 1/8" ID tubing that is functionally equivalent to the KOP can be used. When we measured the KOP tubing, it measures .160". So, it appears that it is permissible to use tubing with a larger ID than 1/8". However, how much larger can it be?

Re: Allowable Pneumatics Tubing Sizes

Posted by GDC at 01/16/2008 01:13:28 am

You may use the 0.160" ID tubing provided in the Kit Of Parts, and you may use additional 0.160" ID tubing beyond that provided in the Kit Of Parts. You are not permitted to use any tubing with a larger inside diameter. This is an intentional restriction designed to limit the maximum flow rate of air through the pneumatic circuits to a safe level for the competition.



Pneumatic System

Pressurized air cylinder

Pressurized air cylinder

Posted by FRC1087 at 01/13/2008 12:24:57 am

Can a team charge a cylinder with air by holding the piston down and releasing it with a latch rather than a using a storage tank?

Re: Pressurized air cylinder

Posted by GDC at 01/16/2008 12:07:22 am

Per Rule <R93>, compressed air for the pneumatic system must come from the Thomas Industries compressor. No other source is permitted.

Pneumatic System

Pneumatics Question

Pneumatics Question

Posted by FRC49 at 01/13/2008 08:02:46 pm

In our prototyping we are using a Bimba air cylinder with each port connected to two solenoid valves. When one port is pressurized the other port vents to atmosphere at a controlled rate. This allows stopping the piston at any position. Additional pressure relief valves are used between the solenoid valves and cylinder ports to maintain the working pressure below 60 psig. When the manually operated Parker plug valve is open to vent the system all pressure in the cylinder and rest of circuit is released. Is this system configuration legal.

Re: Pneumatics Question

Posted by GDC at 01/16/2008 11:42:19 pm

There do not appear to be any rules that would prohibit this design.

Pneumatic System

Number of cylinders

Number of cylinders

Posted by FRC2344 at 01/14/2008 08:10:31 pm

Does R89 allow unlimited number of cylinders on the robot as long as they are listed on the order form?

Re: Number of cylinders

Posted by GDC at 01/16/2008 11:16:47 pm

Yes.

Pneumatic System

Air Storage other than Clippard tanks

Air Storage other than Clippard tanks

Posted by FRC2028 at 01/15/2008 08:58:29 am

Are we allowed to store air in something other than the Clippard tanks so long as the storage vessel is manufacturer rated at 150 psi?

Re: Air Storage other than Clippard tanks

Posted by GDC at 01/16/2008 11:26:43 pm



No. That would be a violation of Rule <R01> and Rule <R86>.

Pneumatic System

Piping for pneumatics

Piping for pneumatics

Posted by FRC578 at 01/15/2008 11:13:15 pm

I need to know whether 1/4" black iron pipe is OK to use for pneumatics. thanks so much!

pneumatics Parts

Posted by FRC578 at 01/16/2008 10:30:17 pm

I need to know whether 1/4" black iron pipe is OK to use for pneumatics. I know we should not use excessive material so we can have more storage area, I am talking about enough to deliver the compressed air quicker.

pneumatic parts

Posted by FRC578 at 01/16/2008 10:32:55 pm

I need to know whether 1/4" black iron pipe is OK to use for pneumatics. I know we are not supposed to use extra hose to increase storage of PSI. I am talking about using it to deliver more air faster.

Re: Piping for pneumatics

Posted by GDC at 01/17/2008 02:33:29 am

No. The use of black iron pipe for pneumatics is not permitted. Please read Section 8 of The Manual very carefully, with particular attention to Section 8.3.9. The rules regarding the use of permitted pneumatic components are very specific.

Pneumatic System

Pneumatic dimensions

Pneumatic dimensions

Posted by FRC2103 at 01/17/2008 05:14:26 pm

Is there a limit on pneumatic stroke length?

Re: Pneumatic dimensions

Posted by GDC at 01/20/2008 09:57:07 pm

Yes. Please refer to Rule <R89> and the 2008 Pneumatics Manual (in particular, the "Free Pneumatic Components Order Form" on the last page) for a list of the available piston sizes, and how they may be used.

Pneumatic System

Pneumatic valves

Pneumatic valves

Posted by FRC1771 at 01/18/2008 09:18:14 am

Rules <R86> and <R87> seem to limit the pneumatic valves to the ones in the KOP (from this or previous years). However, rule <R88> appears to allow any solenoid valve, regulator, gauge, or fitting, as long as they are off the shelf, and and rated for at least 125 PSI.

My question is: can we use other valves and fittings than those supplied in the kit. Specifically, Valves with larger Cv than the ones in the kit, and other one touch fittings such as muliti-T's



etc.

Re: Pneumatic valves

Posted by GDC at 01/21/2008 12:32:44 pm

Rule <R88> specifically permits the use of additional (not-Kit Of Parts) solenoid valves and fittings. Valves with a larger internal Cv than the KOP valves are permitted by this rule. Note, however, that all valves and fittings must connect to, and use, 0.160" ID pneumatic tubing. This is a safety constraint (as the Cv for the entire pneumatic system is dominated by the tubing flow rate) and must not be violated.

Pneumatic System

Pneumatics R88 Question

Pneumatics R88 Question

Posted by FRC8 at 01/18/2008 06:25:01 pm

Rule R88 in the pneumatics section states:

There is no limit to the number of solenoid valves, pressure regulators, pressure gauges, and connecting fittings that may be used on the ROBOT.

Does this statement include the Norgren pressure regulator that acts as the primary regulator. More specifically, are we allowed to have a system with one compressor and one set of air storage tanks that feed two of the Norgren primary pressure regulators. The effect is to have two independent working air systems feed by a single air supply system.

Re: Pneumatics R88 Question

Posted by GDC at 01/21/2008 10:49:27 am

As long as the regulators are configured in a manner consistent with all pneumatic rules (in particular, Rule <R98>), then there is nothing that would prohibit using multiple Norgren regulators. But please note that under Rule <R98>, and for the purposes of a predictable and reasonable inspection process, there is to be only one primary regulator connecting the "high pressure" part of the pneumatic system with the "working pressure" part of the system. Any additional regulators (Norgren or otherwise) supplying branch circuits of the system must be located downstream of the primary regulator.

(edited to clarify a possible misinterpretation that could appear to be in conflict with the rules)

Pneumatic System

repost - pneumatics question

repost - pneumatics question

Posted by FRC2103 at 01/18/2008 09:04:17 pm

Is there a limit on the length of stroke on a pneumatic device?

Re: repost - pneumatics question

Posted by GDC at 01/20/2008 06:16:32 pm

Please refer to Rule <R90>, and the 2008 Pneumatics Manual. The Free Pneumatic Components Order Form is on the last page of the pneumatics manual. This form lists all the permitted piston stroke lengths and diameters.



Pneumatic System

Air Spring?

Air Spring?

Posted by FRC39 at 01/18/2008 10:49:30 pm

I hope this is not a duplicate but I do not see our previous posts.

Can we use a pneumatic actuator as an air spring? This would involve plugging one of the vent holes and using the trapped air against the piston as a spring. There would be no further plumbing or pneumatic components connected to this sealed pneumatic actuator.

Note that some scenarios the position of the piston in the actuator will cause the air to compress and may result in pressure that is greater than 60 psig in the compressed air in sealed pneumatic actuator. With the pressure at atmospheric pressure (0 psig) when the air spring is fully extended, it is possible to reach over 60 psig at compression of ~5.5:1. Would this violate any of the pneumatics rules if we exceeded 60 psig at some compression scenarios.

If the above does not violate any rules, can we pre-pressurize the extended air spring to a pressure less than 60 psig and then during the game compress the air spring by some means it knowing that the pressure may exceed 60 psig in the compressed state?

If the above does not violate any rules, can we start the game with the spring in the compressed state knowing that the trapped air in the sealed actuator may be at a pressure greater than 60 psig.

Note that the intent is to achieve the same function as the nitrogen filled springs commonly used to lift hoods and hatches in automotive applications but without the damping.

Re: Air Spring?

Posted by GDC at 01/20/2008 10:18:38 pm

No, this would not be permitted. In the described configuration, the contained air can easily be compressed to a point where it would exceed the permitted pressures. This would be a violation of multiple rules.

Note however that, under Rule <R87>, commercial closed-loop pneumatic (gas) shocks - which are designed for this purpose - may be used to perform this function.

Pneumatic System

Clippard Cylinders at 60 psi after regulators

Clippard Cylinders at 60 psi after regulators

Posted by FRC1640 at 01/19/2008 10:39:27 am

Can we use two of the four clippard cylinders in the pneumatics system after the pressure regulators if the pressure in these clippards is at 60 psi or below? The rule is not clear about lower pressure storage after the regulators.

Re: Clippard Cylinders at 60 psi after regulators

Posted by GDC at 01/21/2008 10:51:46 am



Yes, this is permitted. The rules specify the maximum stored pressure and maximum working pressure that you can use in the pneumatic circuits. There is no minimum stored or working pressure - you can tailor this to suit your needs.

Pneumatic System

Pneumatics

Pneumatics

Posted by FRC842 at 01/21/2008 03:47:39 pm

I know you have to use the pressure relief valve but can you add a T right on the output on the compressor before the pressure relief? We will have one of the output of the T for the pressure relief valve.

Re: Pneumatics

Posted by GDC at 01/24/2008 03:26:15 pm

The pressure relief valve must be connected directly to the Thomas compressor. No intermediate connectors are permitted. This is required by Rule <R95>.

Pneumatic System

Custom Pneumatic Cylinders

Custom Pneumatic Cylinders

Posted by FRC1341 at 01/22/2008 08:59:19 am

In the Pneumatics Manual, under the heading CUSTOM BIMBA CYLINDERS, the first part of the paragraph states

"You will again be able to order custom cylinders for your robot again this year. You have a choice of 3/4" bore (diameter), 1-1/2" bore and 2" bore. You can order the amount of stroke you require. This will significantly increase your ability to design a great robot. Most of the bore and stroke models are in stock and Bimba is ready to ship directly to your team."

Does this mean we are limited to the 3/4", 1-1/2", and 2" bore cylinders only? Also there are a limited number of choices for stroke length for the different bore dimensions on the Bimba site - can we use a different stroke length than what's listed, if it's available? For example, could we order a 1" bore 40" stroke cylinder from Bimba, if Bimba or Parker carried or could sell that size?

Re: Custom Pneumatic Cylinders

Posted by GDC at 01/24/2008 03:18:22 pm

You are limited to 3/4" 1" and 2" diameter cylinders.

You are limited to the stroke lengths shown on the Free Pneumatic Components Order Form on the last page of the 2008 Pneumatics Manual.

Pneumatic System

Parallel Norgren regulators 120 - 60 psi

Parallel Norgren regulators 120 - 60 psi

Posted by FRC95 at 01/25/2008 10:45:18 am



We would like to use multiple Norgren primary regulators (120 - 60 psi) in parallel to supply pistons at 60 psi but allow greater air flow rate than is possible with only one primary regulator.

Careful reading of the rules indicates that this would pass safety considerations (working pressure no greater than 60 psi).

However, two Q&A threads posed this question slightly differently and received conflicting answers: Pneumatics R88 Question - yes it would be permitted; Pneumatics regulators and cylinders - not permitted "for the sake of a predictable and reasonable inspection process."

Can we use multiple Norgren primary regulators (120 - 60 psi) in parallel to supply pistons at 60 psi with greater total air flow rate than is possible with only one primary regulator?

We would pay special care to ensure that the system is easily understood during inspection.

Re: Parallel Norgren regulators 120 - 60 psi

Posted by GDC at 01/28/2008 03:17:43 pm

It is permissible to use multiple Norgren regulators. But under Rule <R98>, and for the purposes of a predictable and reasonable inspection process, all regulators, valves, cylinders, and other elements of the "working system" must be located downstream from the (one) primary regulator. Any additional regulators (Norgren or otherwise) must be located downstream from this one primary regulator.

The answers to the other questions have been clarified to make sure this is understood.

Pneumatic System

Pneumatics: Latch and Release

Pneumatics: Latch and Release

Posted by FRC1346 at 01/25/2008 03:45:27 pm

While I cannot find a rule prohibiting this, some answers referring to the intended purpose of the 1/4" tubing as a flow restrictor, and the reply to this question (<http://forums.usfirst.org/showthread.php?t=8152>) have left me seeking clarification as to the legality of the following.

A cylinder is fully retracted. A valve opens and the cylinder begins to extend. As the cylinder reaches a set distance, perhaps about 1/3 of the full stroke, it is impeded from opening further by a mechanism (perhaps a latch) on the robot. The pressure in the cylinder rises to the full 60 psi permitted on the working side of the system. At some arbitrary point in time, the latch mechanism is released and the cylinder extends (rapidly) to its full stroke length. The valve is switched to vent and the cylinder retracts to a fully retracted position.

At no point is the air in the cylinder compressed by anything other than the compressor, and at no point during the stroke of the cylinder is the actuating valve closed, so the pressure in the cylinder cannot exceed the allowable 60 psi.

Thank you on behalf of Team 1346,

Jason



P.S. If this is not allowed, I would suggest making specific reference to it in a team update as I have reason to believe this strategy may form an integral part of the launcher designs of several teams.

P.P.S. If this is a duplicate post, my apologies... the system logged me out, and doesn't appear to show that my post was received.

Re: Pneumatics: Latch and Release

Posted by GDC at 01/28/2008 01:53:10 pm

There is no rule that would prevent this configuration as described, with the provision that while the piston is being restrained the valve is kept open. This would prevent the situation described in [URL="http://forums.usfirst.org/showthread.php?t=8300"]this Q&A answer[/URL].

Pneumatic System

Pneumatics R88 Question, Parker-Hannifin cylinders

Pneumatics R88 Question, Parker-Hannifin cylinders

Posted by FRC304 at 01/26/2008 11:33:29 am

Are we allowed to use Parker-Hannifin pneumatic cylinders from previous years (as long as they are physically identical to those available on the Custom Cylinder Order Form)? Bimba part numbers are quite different from Parker-Hannifin part numbers (even for identical cylinders).

[QUOTE]<R89> In addition to the pneumatic cylinders provided in the Kit Of Parts and the "free" pneumatic cylinders available for order through the Free Pneumatic Components Order Form,

additional air cylinders or rotary actuators may be used. [B]All cylinders, regardless of source, must be identical to those listed on the Free Pneumatic Components Order Form [I](e.g. same part numbers)[/I]. Any additional air cylinders must source from Bimba [I]or Parker Hannifin[/I], or be recovered from prior year FIRST Kit Of Parts.[/B]

<R90> Items specifically PROHIBITED from use on the ROBOT include:

 Any air compressor other than, or in addition to, the one provided in the Kit Of Parts.

 [B]Pneumatic cylinders and actuators different from those in the Kit or found on the Free

Pneumatic Components Order form, with the exception of those specifically permitted by Rule <R89>[/B].

(emphasis added)

Re: Pneumatics R88 Question, Parker-Hannifin cylinders

Posted by GDC at 01/28/2008 03:06:56 pm

Under the conditions of Rule <R89>, certain Parker Hannifin cylinders are permitted on 2008 FRC robots if:

• they have been recovered from prior-year Kits Of Parts, [b]and[/b]

• they are one of the permitted sizes (i.e. same bore and stroke as those identified on



the 2008 Free Pneumatic Components Order Form), [b]and[/b] they are physically identical (i.e. same stroke, diameter, mounting method, external dimensions, port configuration, and material) to one of the permitted Bimba cylinders.

Pneumatic System

Pneumatic Cylinder Stroke Restrictions

Pneumatic Cylinder Stroke Restrictions

Posted by FRC384 at 01/26/2008 03:37:32 pm

Can we use any pneumatic cylinder listed on the Bimba website (not just the FIRST portion) as long as it doesn't exceed the maximum stroke listed on the FIRST portion of the website. Specifically, can we use a .75" bore and a 20" stroke pneumatic cylinder listed under the commercial off the shelf (COTS) portion of the website.

Re: Pneumatic Cylinder Stroke Restrictions

Posted by GDC at 01/28/2008 03:45:02 pm

No. For more information, you may wish to refer to [URL="http://forums.usfirst.org/showthread.php?t=8362"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8281"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8299"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=7965"]this Q&A answer[/URL] where this has already been addressed. Oh yeah, and [URL="http://forums.usfirst.org/showthread.php?t=8447"]this Q&A answer[/URL].

Pneumatic System

Pneumatics - Single Acting

Pneumatics - Single Acting

Posted by FRC555 at 01/28/2008 01:46:14 pm

In the current KOP there is not a single acting pneumatic cylinder. Are we allowed to use single acting cylinders from Bimba?

Re: Pneumatics - Single Acting

Posted by GDC at 01/31/2008 12:46:21 pm

No. Please read Rule <R89> (particularly the second sentence).

Pneumatic System

pneumatic actuator

pneumatic actuator

Posted by FRC1541 at 01/28/2008 08:05:26 pm

Are there any limitations on stroke length or bore size of the actuator? On the Bimba site it listed that it was ok to have a 12 or 24" stroke length but it did not specify 18 or 20" stroke length. Is it ok to special order these lengths?

Re: pneumatic actuator

Posted by GDC at 01/29/2008 01:01:42 am

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8362"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8281"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8299"]this Q&A answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=7965"]this Q&A answer[/URL]



answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8447"]this Q&A
answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8449"]this Q&A
answer[/URL] where this has already been addressed.

Pneumatic System

Can a pressure transducer be used in place of the NASON switch?

Can a pressure transducer be used in place of the NASON switch?

Posted by FRC1501 at 01/29/2008 04:07:36 pm

<R87> States that a pressure transducer may be used, however can the transducer replace the KOP NASON pressure switch or must it be used in conjunction with the NASON pressure where the NASON pressure will be programmed in a such a way to have high authority in the software to over ride the pressure transducer?

In other words, can we use a pressure transducer in place of the NASON pressure switch? The NASCON pressure switch would not be mount, the transducer would take it's place.

<R91> States a pressure "switch" must be used as a minimum, which we understand, however does <R87> pressure transducer "act" as a pressure switch and satisfy <R91>?

Re: Can a pressure transducer be used in place of the NASON switch?

Posted by GDC at 01/31/2008 01:12:35 pm

As specified in Rule <R91>, the pressure switch (provided in the Kit Of Parts) must be used. So pressure transducers may be used in addition to the pressure switch, but not in place of the pressure switch.

Pneumatic System

Question on connecting valves to cyclinders

Question on connecting valves to cyclinders

Posted by FRC612 at 01/31/2008 08:59:26 am

In a response in the Q&A section 8 under pneumatics, GDC said:

"Rule <R88> specifically permits the use of additional (not-Kit Of Parts) solenoid valves and fittings. Valves with a larger internal Cv than the KOP valves are permitted by this rule. Note, however, that all valves and fittings must connect to, and use, 0.160" ID pneumatic tubing. This is a safety constraint (as the Cv for the entire pneumatic system is dominated by the tubing flow rate) and must not be violated."

I cannot find reference in R88 or elsewhere to the rule "all valves and fittings must connect to, and use, 0.160" ID pneumatic tubing".

Could you please clarify this? We were planning to connect a solenoid valve directly to a cylinder, and could find nothing in the rules that would preclude us from doing this.

Re: Question on connecting valves to cyclinders



2008 Q&A Forum Export

generated: 02/27/2008 09:27:01 am EST

Posted by GDC at 01/31/2008 12:39:45 pm

Rule <R86> prohibits the use of any pneumatic materials or devices other than those provided in the Kit Of Parts or specifically permitted by the pneumatics rules. Rule <R87> permits the use of additional 0.160 inch ID pneumatic tubing. No other sizes of tubing are permitted.

Note that pneumatic devices (valves, cylinders, gauges, etc.) may be connected to each other either with pneumatic tubing or with the brass fittings provided in the Kit Of Parts (or ones similar to those provided). The referenced Q&A system answer was addressing the issue of larger diameter tubing. It was not meant to imply that tubing was the only acceptable interconnection method.

Pneumatic System

Pneumatics

Pneumatics

Posted by FRC61 at 01/31/2008 08:21:24 pm

One of our students noticed that the Norgren Regulator is rated for 50 PSIG max not 60. (Norgren R07-100-RNEA 4.7 oz. Main regulator) This was also the case in 2007 as we double checked that regulator.

Is this acceptable to use???

Re: Pneumatics

Posted by GDC at 02/04/2008 12:59:14 pm

Great catch! Please refer to Team Update #8.

Pneumatic System

Pneumatics valves

Pneumatics valves

Posted by FRC39 at 02/01/2008 06:30:12 am

The following Q&A thread indicates that all non KOP valves and fittings must use connect to and use 0.160 ID tube.

[url]http://forums.usfirst.org/showthread.php?t=8529[/url]

Does this preclude connecting the KOP SMC valves that have only 1/8 NPT female thread (not 0.160 tubing connectors), directly to an actuator using a KOP (~0.220" ID) 1/8 NPT brass nipple. And then connecting input side of SMC valve direct to a clippard using same type KOP brass nipple. Note that there is no use of 0.160 tubing in this scenario yet all parts are KOP parts.

Now, can we then buy a cots low Cv valve with same 1/8 NPT threads as SMC valve and use it in place of the SMC valve in the above scenario?

Regards

Frank

Re: Pneumatics valves

Posted by GDC at 02/04/2008 01:04:39 pm



Note that pneumatic devices (valves, cylinders, gauges, etc.) may be connected to each other either with pneumatic tubing or with the brass fittings provided in the Kit Of Parts (or ones similar to those provided). The referenced Q&A system answer was addressing the issue of larger diameter tubing. It was not meant to imply that tubing was the only acceptable interconnection method.

Pneumatic System

Cylinders

Cylinders

Posted by FRC2279 at 02/01/2008 11:49:45 am

Can I use a 1.25" Dia. Bore pneumatic cylinder from Clippard instead of the 1.5" or 2" Dia. Bore from Bimba?

Re: Cylinders

Posted by GDC at 02/04/2008 01:22:20 pm

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8489"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8362"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8281"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8299"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=7965"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8447"]this Q&A answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8449"]this Q&A answer[URL] where this has already been addressed.

Pneumatic System

Pneumatics

Pneumatics

Posted by FRC1922 at 02/02/2008 10:25:41 pm

Could you respond to a mentor question

The restrictions on pneumatic cylinders for 2008 isn't clear and I'd argue that it's open to interpretation.

- > I ordered a 3/4 bore by 28 stroke cylinder based on the Pneumatics
- > manual "You can order the amount of stroke you require" statement.
- > The First order form only shows 3/4 inch cylinders up to 10" long,
- > 1-1/3 inch cylinders up to 11" long and 2 inch cylinders up to 24
- > inches long. I now wonder if that 3/4 x 28 cylinder is acceptable or
- > not. If not, we could possibly stay with our strategy of mounting a
- > cylinder on the fixed mast but we'd need to go to a 2 x 24 single
- > cylinder, something that would use much more air and we haven't
- > ordered yet. The other option would be to stitch three 3/4"
- > cylinders together.
- >
- > Another alternative is to have less stroke but place the cylinder on
- > the moving mast. This could work but would require more control,
- > another service loop of tubing (moving loop with possible snags) and



- > maybe more time to actuate.
- >
- > Can you please inquire with FIRST regarding the contradiction in
- > rules? Maybe we should execute a back-up plan in case the 3/4 x 28
- > cylinder isn't acceptable.

Re: Pneumatics

Posted by GDC at 02/04/2008 01:12:49 pm

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8299"]this Q&A
answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8281"]this Q&A
answer[/URL] and [URL="http://forums.usfirst.org/showthread.php?t=8362"]this Q&A
answer[/URL] where this has already been addressed.

Pneumatic System

Vacuum System

Vacuum System

Posted by FRC2630 at 02/04/2008 10:59:02 am

Hello,
Our team is looking into using a vacuum grabber for the trackball.

since vacuum generating devices do not count as pneumatics would this extend to vacuum tanks?

The idea is to "store vacuum" inside a large tank and use the ambient pressure to create the air flow.

We kindly request clarification regarding the following:

- 1)are we allowed to use any suction cup we want? would this include one made by the team?
- 2)if using the above described system of "vacuum tank" valve and suction cup, is it necessary to include the safety regulators? if so where would these need to be placed?
- 3)because of the inherently low pressure (-1 atmosphere maximum compared to ambient) are we allowed to use our own pressure tank and not those provided?

thank you very much for your hard work!

-FRC2630

Emek Hefer, Israel

Re: Vacuum System

Posted by GDC at 02/04/2008 01:31:30 pm

Question 1 - You may purchase or manufacture a suction cup, as long as it does not violate any other material use rules.

Question 2 - Rule <R87> permits the use of devices that create (relative) vacuum. Components attached to that mechanism as part of a vacuum-storage system would be covered by this part of the rule, and would not be considered a pneumatic device. Based on that, the design would not need to include a regulator, pressure gauge, etc in the vacuum-based portion of the system.



Question 3 - Yes.

Pneumatic System

<R92> Question and orientation of ports on Thomas compressor

<R92> Question and orientation of ports on Thomas compressor

Posted by FRC587 at 02/05/2008 08:18:33 pm

<R92> states that modifying pneumatics is not legal, but provides an exception for connecting components using preexisting threads. Our question is, can we unscrew the top part of the compressor (the metal plate with the output ports on it), rotate it 90 degrees, and screw it back on using the preexisting threaded holes? The functionality of the compressor would not be changed; the modification would merely allow for the outputs to be oriented perpendicular to the long dimension of the compressor instead of parallel.

Thank you.

Orientation of ports on Thomas compressor

Posted by FRC1889 at 02/06/2008 11:32:05 am

The ports on our compressor are oriented side to side; the pictures on page 4 and 14 of the pneumatics manual show the ports oriented front to back. Are we allowed to remove the 4 bolts on the compressor head and rotate the ports 90 degrees?

Edit previous question - Compressor ports

Posted by FRC1889 at 02/06/2008 10:50:43 pm

The compressor I was looking at with the ports side to side was on last year's robot, and apparently another mentor rotated the head 90 degrees last year, so there is not an issue with differences in compressors as shipped - sorry about the confusion. The question is, are we allowed to disassemble and reassemble the compressor head in order to rotate the ports to a different orientation?

Re: <R92> Question and orientation of ports on Thomas compressor

Posted by GDC at 02/07/2008 09:11:31 am

As delivered from the factory, the ports on the Thomas compressor are oriented along the length of the body of the compressor. Removing the top of the housing and rotating the ports would be a modification of the compressor, and is explicitly prohibited by Rule <R92>.

Pneumatic System

Is coiled tubing legal?

Is coiled tubing legal?

Posted by FRC368 at 02/06/2008 03:08:31 am

[COLOR=black]Hello,[/COLOR]

[COLOR=black]May we use self-retracting coiled pneumatic tubing which has a 1/4" outer diameter, .16" inner diameter and is made out of polyurethane. R87, quoted below, states that the tubing must be "functionally equivalent."[/COLOR]

[quote]



<R87> Additional pneumatic system items specifically permitted on 2008 FRC ROBOTS include:

[LIST]

[*][COLOR=black]Additional 0.160" inch inside diameter pneumatic tubing [B]functionally equivalent[/B] to that [/COLOR][COLOR=black]provided in the Kit Of Parts, with the pressure rating clearly factory-printed on the exterior of [/COLOR][COLOR=black]the tubing (note: alternate tubing colors are acceptable).[/COLOR][[/LIST][[/quote]

[COLOR=black]This tubing is essentially the same as the tubing provided in the kit of parts and is made out of the same material and dimensions with the sole exception that it is molded into a tight coil so that it self retracts. This would help prevent entanglement by keeping the tubing contained within the robot as our lift extends and contracts.[/COLOR]

[COLOR=black]We've seen this on other robots in the past but wanted to clarify if it was legal this year.[/COLOR]

[COLOR=black]Thank you, [/COLOR]

[COLOR=black]TKM.368[/COLOR]

Re: Is coiled tubing legal?

Posted by GDC at 02/07/2008 01:59:03 pm

Yes, as long as the coiled tubing is rated for a minimum of 125 psi and the rating is clearly printed on the tubing, this would be acceptable.

Pneumatic System

<R87> and Printed Ratings on Tubing

<R87> and Printed Ratings on Tubing

Posted by FRC48 at 02/07/2008 03:04:57 am

Freelin-Wade, supplier of the KOP pneumatic tubing, is graciously offering a one-time 50% discount to all FIRST teams on their orders. They have been suggesting to teams the use of a specific style of coiled and straight pneumatic tubing they sell. This Fre-Thane product is 0.160" ID polyurethane tubing rated for the pressures of a FIRST robot per rule <R87> bullet. However, upon receiving their shipments, teams have found that this tubing product does not have a pressure rating clearly printed on it, a requirement per another bullet of <R87>. Because they have already paid a decent amount of money for their product and are concerned, many teams have contacted Freelin-Wade about this matter looking for guidance, and they have referred it to FIRST, who referred it to me.

The printed rating requirement of <R87> obviously exists to aid inspectors in quickly verifying the tubing is rated for robot use. Considering the fact that many teams have already spent quite a bit of money purchasing these products (and assumed most manufacturers print their name and ratings on their pneumatic products) to the point F-W is concerned about this revelation, they are seeking a compromise from the GDC that would let teams still use this perfectly valid pneumatic product and not expend further time, energy, and money on this matter.

My suggestion - is it acceptable to "prove" the suitability of unmarked but properly rated Freelin-Wade tubing at a competition by showing a printed copy of the team's F-W invoice to



the inspectors as well as a printout of the F-W spec sheet for the product?

Re: <R87> and Printed Ratings on Tubing

Posted by GDC at 02/07/2008 02:10:57 pm

Freelin-Wade has generously offered a significant discount to [I]FIRST [/I]teams.

It has come to our attention that the tubing provided by Freelin-Wade through this offer, although with appropriate specifications, does not have the rating, etc printed on it.

To allow teams to take advantage of this offer, we will make a special exception to Rule <R87> and allow Freelin-Wade tubing. The team is responsible for maintaining and providing sufficient documentation (i.e. receipt and specification sheet) to allow inspectors to verify that the tubing is rated for the expected pressures. Tubing that can not be verified as rated for the required pressures will be rejected during inspection.

Pneumatic System

Rule <R87> and vacuum

Rule <R87> and vacuum

Posted by FRC2656 at 02/07/2008 05:03:47 pm

Rule <R87> states:

"For the purposes of the FIRST competition, a device that creates a vacuum is not considered to be a pneumatic device and is allowed. This includes, but is not limited to, venturi-type vacuum generators and off-the-shelf vacuum devices (as long as they are powered by provided or permitted motors)."

We are attempting to mount a store-bought Oreck vacuum on the chassis with a hose that runs out to the end of the arm, which can then use the vacuum to lift the track ball.

The rule referenced above states that we may use an off-the-shelf vacuum, given that it uses "provided or permitted motors". Our question applies to the definition of "permitted motor". This particular Oreck unit runs 110V AC.

Could we receive clarification on the legality of using this motor? And if it should be illegal, how we could potentially improvise or substitute the motor or vacuum system?

Re: Rule <R87> and vacuum

Posted by GDC at 02/11/2008 12:49:11 pm

Please refer to Rule <R59>. The Oreck motor is not permitted.

Design decisions (i.e. what motor do we use?) is up to the discretion of the team.

Pneumatic System

Plug valve

Plug valve

Posted by FRC58 at 02/07/2008 10:53:44 pm

Our plug valve leaks slightly. Can we use a similar brass valve that is rated for 150psi but is not the Parker valve?



Re: Plug valve

Posted by GDC at 02/11/2008 01:23:02 pm

Rule <R86>, Rule <R87> and Rule <R91> combine to require the use of the provided Parker valve. If the valve provided in the Kit Of Parts (Parker part number PV609-2) is leaking, you may replace it with an identical replacement part.

Pneumatic System

Gas Springs

Gas Springs

Posted by FRC341 at 02/08/2008 12:51:18 am

We were considering using gas springs (like you would find on a car hatchback) as a dampening and support device. These gas springs are completely enclosed springs and are COTS materials available at McMaster-Carr.

They seem to pass the flow chart but I want to be sure.

Thanks!

Re: Gas Springs

Posted by GDC at 02/11/2008 01:23:48 pm

Please refer to the last bullet of Rule <R87>, where this specific topic is addressed.

Pneumatic System

Bimba Pneumatic Model Number Question

Bimba Pneumatic Model Number Question

Posted by FRC1816 at 02/08/2008 02:35:04 pm

Team 1816 is in need of another Bimba pneumatic cylinder. Our local distributor has one with model number MRS-175-DP. The model number for the one that Bimba would send us that is FIRST legal is M-175-DP. My question is, would it be FIRST legal to use the one our local distributor has rather than waiting for and shipping the other one?

Team 1816 The Green Machine

Re: Bimba Pneumatic Model Number Question

Posted by GDC at 02/11/2008 01:14:35 pm

Although externally similar, Bimba "MRS" cylinders (magnetic reed switch, double acting) are internally different from the permitted Bimba "M" cylinders (standard "Original Line" series). Bimba MRS series cylinders are not permitted on the Robot.

Pneumatic System

Use of a Festo Pneumatics

Use of a Festo Pneumatics

Posted by FRC135 at 02/09/2008 11:15:11 am

Can we use the "Festo" pneumatics solenoid valve to pneumatically actuate a detent pin?

Re: Use of a Festo Pneumatics

Posted by GDC at 02/11/2008 12:41:50 pm

The only permitted pneumatic devices are those explicitly permitted by the pneumatics rules in Section 8.3.9 of The Manual. Pneumatic detent pins are not permitted devices.



Pneumatic System

Sencondary Reg. & Primary

Sencondary Reg. & Primary

Posted by FRC842 at 02/09/2008 12:34:27 pm

I need to know if it is legal to not have a secondary regulator (the yellow one).

Also why does the primary regulator says 0 - 50 psi but it goes higher than that, this is making our secondary leak our air. Is it a defective product?

Re: Sencondary Reg. & Primary

Posted by GDC at 02/11/2008 12:57:53 pm

There is no requirement to use a secondary regulator. It is provided as an optional device, for use if it is advantageous to your design.

Please refer to Team Update #8 regarding the Norgren regulator. This regulator has a nominal output pressure of 0-50psi. However, Norgren has approved the operation of this regulator up to 60psi for FIRST teams.

Pneumatic System

Pneumatics and Air Tanks

Pneumatics and Air Tanks

Posted by FRC1711 at 02/09/2008 03:58:31 pm

The rules specify that the pressure release valve, gauges, and a few other things on pneumatic systems have to be easily accessible and reached to be legal but we are not sure if the air tanks have to be. We're thinking about storing our air tanks with in our channel frame and have the other parts be accessible. Is the air tanks being out of reach a violation of any rules?

Re: Pneumatics and Air Tanks

Posted by GDC at 02/11/2008 01:05:41 pm

While that would be within the rules, we would caution against doing so. Placing the pneumatic storage tanks, or other pneumatic components, in inaccessible locations may be a maintenance problem if the pneumatic system has any leaks that must be accessed to be repaired.

Pneumatic System

SMC ordering more valves

SMC ordering more valves

Posted by FRC1254 at 02/12/2008 03:52:23 pm

I called the SMC distributors and they do not show a part number SY3240-6H-S Double Solenoid valve - 12vdc complete that is listed in the Pneumatic Component Bill of Material.

They have a SY3240-6HZ-X70-S in stock. This is a part number on one we have (not sure if it is last years or not).



Can we order the SY3240-6HZ-X70-S and use it?

Carolyn Hinckley

Re: SMC ordering more valves

Posted by GDC at 02/14/2008 12:23:24 pm

These are both SMC "Series SY3000" valves, rated for at least 125psi. As such, either version is permitted under Rule <R88>.

Pneumatic System

Air Compressor

Air Compressor

Posted by FRC2501 at 02/15/2008 03:19:41 pm

pump did not work because it broke in cylinder head bolt. We had to take off the head and replaced the bolts with new ones. does this violate any rules about modifying the pump?

I so, how do I get a new one?

Re: Air Compressor

Posted by GDC at 02/18/2008 11:59:29 am

As long all all parts of the repaired compressor were re-assembled in exactly the same manner as the original configuration, and the compressor is returned to its "out of the box" condition, then this repair would be permitted.

Pneumatic System

Compressed air management

Compressed air management

Posted by FRC1126 at 02/15/2008 09:13:10 pm

This question pertains to a potential for recovering compressed air. Suppose the following sequence of events

- 1 Air cylinder is prevented from motion mechanically (i.e. latched)
- 2 Solenoid valve to cylinder opens
- 3 Air cylinder is pressurized against the latch to 60 psi
- 4 Solenoid valve is closed.
- 5 Latch is released (solenoid valve still closed)
- 6 Cylinder extends
- 7 Air cylinder is mechanically moved back to position in step #1 at a slow speed

If absolutely no leaks exist in the pneumatic system you would return to 60 psi without ever exceeding 60 psi. If there are any leaks (small leaks are always present) the maximum pressure is less than 60 psi! Is this legal?

Re: Compressed air management

Posted by GDC at 02/18/2008 01:20:40 pm

No. Step 7 would compress the air that was in the cylinder, thereby creating a source of pressurized air. This would be a violation of Rule <R93>.

Pneumatic System



Cylinder stroke length

Cylinder stroke length

Posted by FRC1126 at 02/15/2008 09:16:43 pm

I know the rule regarding air cylinders states that the diameter and stroke must be listed on the last page of the Pneumatics manual. We want to use a 2 inch diameter cylinder with a 16 inch stroke. There is one listed at 12 inches and then it jumps to 24 inches. Why can't we use a stroke size that is within this range?

Pneumatics

Posted by FRC1876 at 02/18/2008 09:06:42 am

Are we limited to using only the three bore sized air cylinders that are supplied free from Bimba? More specifically, are 1" or 1 1/4" bore cylinders legal. We need to know quickly because of ship date deadline. This only came up at a scrimmage we attended on Sat. but there wasn't any true FIRST official there. We got many different opinions but would like an official ruling.

Thank you,
John Quindlen
Mentor Team 1876

Re: Cylinder stroke length

Posted by GDC at 02/18/2008 01:09:00 pm

The rules and the Free Pneumatic Components Order Form clearly indicate what size pneumatic cylinders are permitted on the Robot. This information has not changed since kick-off. To consider exceptions to these rules now would be grossly unfair to all the teams that read and understood the rules thoroughly at the beginning of the build season and have successfully designed their robots to be in compliance.

Pneumatic System

clippard tank downstream of soleniod

clippard tank downstream of soleniod

Posted by FRC1280 at 02/16/2008 03:05:50 am

We would like to know if we can use a clippard tank downstream of a soleniod in order to increase the volume of 60 psi air available for a "latched" air powered ball launcher. We could do this with another pneumatic cylinder, but using a clippard tank would reduce weight and remove the additional moving shaft.

Re: clippard tank downstream of soleniod

Posted by GDC at 02/18/2008 12:01:49 pm

Yes.

Pneumatic System

Using Bimba 044-DXP vs DP

Using Bimba 044-DXP vs DP

Posted by FRC2116 at 02/16/2008 10:23:21 am



2008 Q&A Forum Export

generated: 02/27/2008 09:27:01 am EST

Our distributor for Bimba sent us 3/4" bore - 4 in stroke DXP actuator (044-DXP). Can this model be substituted for the 044-DP actuator listed in pneumatics doc?

Bimba lists the 044-DP for the free pistons but not the DPX. However, they do list the DXP models for the 2" actuators.

the only difference between the DXP and DP for the 044 is the rear nut mounting.

Thanks

Rob London
Team 2116

Re: Using Bimba 044-DXP vs DP

Posted by GDC at 02/18/2008 12:01:22 pm

No. As specified in Rule <R89>, you must use cylinders with the same part numbers as those available on the Free Pneumatics Components Order Form (or with identical physical characteristics - stroke, bore, materials, mounting styles, pressure rating, piston rod interfaces, etc.). 044-DXP is not a valid part number shown on the form. Therefore, they may not be used.

Pneumatic System

Heat-treating tubing?

Heat-treating tubing?

Posted by FRC1675 at 02/16/2008 12:09:42 pm

Can we take 175 PSI tubing, coil it through heat treatment and check to make sure it still supports 125 PSI?

Re: Heat-treating tubing?

Posted by GDC at 02/18/2008 12:46:46 pm

No. Any additional tubing used on the Robot must satisfy Rule <R87> and be functionally identical to the tubing provided in the Kit Of Parts. Heat treating the tubing will alter the physical characteristics of the tubing, and make it dissimilar from the tubing provided in the Kit. Coiled tubing rated for 125psi that is functionally identical to the tubing provided in the Kit Of Parts is available from several commercial sources.

Pneumatic System

Legality of Pneumatics Configuration

Legality of Pneumatics Configuration

Posted by FRC401 at 02/16/2008 04:04:19 pm

Can you please comment on the legality of the following pneumatic system. Please assume the air flowing from the compressor has all the necessary gauges, sensors, and valves before it flows to any other components.

If two sets of two tanks were connected to solenoids in the following fashion, would it be legal:

From the compressor, a line runs to a double acting solenoid valve such that the air flows into the P positions. EA and EB are closed, A flows into the the end of two tanks (connected in



series, referred to as TANK SYSTEM A) and B flows into a second set of two tanks (connected in a similar fashion, referred to as TANK SYSTEM B). Each set of tanks has their own pressure gauge.

The other side of TANK SYSTEM A is connected to the A port of a second double acting solenoid valve and the exhaust side of TANK SYSTEM B is connected to the B port of the second solenoid. Ports AE and BE on the second solenoid are closed. The P port is connected to the rest of the system

The purpose of the two solenoids is to have an ability to pump TANK SYSTEM A and TANK SYSTEM B independently. One tank system will provide air to any pneumatic devices down system while the other TANK SYSTEM is being filled up by the compressor. During the robot's operation the TANK SYSTEM that is being filled by the compressor or being used to power any devices switches as needed.

Re: Legality of Pneumatics Configuration

Posted by GDC at 02/18/2008 01:14:01 pm

Provided your tank farm is downstream from the primary regulator, there are no rules that would prohibit this configuration.

Pneumatic System

Legality of Pneumatics Configuration - 2

Legality of Pneumatics Configuration - 2

Posted by FRC401 at 02/16/2008 04:20:52 pm

Is it legal to use two separate solenoid valves to control a pneumatic piston such that you can regulate the extending stroke motion and the retracting stroke motion at different pressures?

The system is connected in the following fashion (please assume that the air flow into the system is from a compressor and tank system that follows all regulations):

Air flows into a "t" connection. One side of the "t" flows into the B port of the first double acting solenoid. The P port flows into the bottom port on a pneumatic cylinder (that causes extension). The other port of the pneumatic cylinder (that causes retraction) is connected to a regulator (that regulates at 20 psi -- for example). The regulator in turn is connected to the A port of a second double solenoid valve. The P port on the second solenoid valve connects to the other end of the previously mentioned "t" connector. The B port on the second solenoid valve is connected to a second pressure regulator (that regulates at 60 psi -- for example). The other side of the second regulator is connected to the A port of the first solenoid.

All AE and BE ports on both solenoids are open for exhaust.

When in use, only one regulator is affecting the flow of the air of the pneumatic cylinder at a given time.

Re: Legality of Pneumatics Configuration - 2

Posted by GDC at 02/18/2008 12:03:30 pm

As described, there are no rules that would prohibit this configuration.



Pneumatic System

ordering pneumatic valves

ordering pneumatic valves

Posted by FRC2279 at 02/17/2008 05:22:04 pm

Can I order additional 3000 series valves that are 3 position instead of 2 position?

Re: ordering pneumatic valves

Posted by GDC at 02/18/2008 11:58:36 am

As long as the valves are rated for at least 125 psi, then yes.

Pneumatic System

Pneumatics Configuration: Follow-up

Pneumatics Configuration: Follow-up

Posted by FRC401 at 02/18/2008 11:41:38 pm

During testing , we have found the following pneumatics system to help reduce the drain on the battery. Can you please comment on the legality:

Please note the following firstly:

As per rule <R98>, all "working" air flowing to pneumatic actuators is run through a regulator that limits pressure to roughly 40 psi.

Additionally, the 125 psi relief valve is connected to the compressor and a digital pressure switch is connected to the "storage" part of the air system.

The system in question has two sets of tanks used to hold the "storage" air in the system as (mentioned in rule <R91>). One double acting solenoid, located between the compressor and the storage tanks, is used to transfer air between the two sets of tanks. The solenoid is set up so that as one set of tanks is being pumped, the other set provides "storage" air (through a regulator) to a pneumatic piston. Each set of tanks has their own pressure gauge and relief valve.

Throughout this process, all of the air in the tanks is "storage" air and does not flow to any "working" part of the system until it hits the pressure regulator.

Since both sets of tanks are containing "storage" air and all "working" air going to cylinders is downstream of the regulator, would this set-up be legal?

Re: Pneumatics Configuration: Follow-up

Posted by GDC at 02/21/2008 01:16:05 pm

No, this configuration would not be permitted. All cylinders, valves and actuators are part of the "working" system, and must be located "downstream" of the primary Norgren regulator.

Pneumatic System

Pneumatic Hose Rating

Pneumatic Hose Rating

Posted by FRC111 at 02/19/2008 10:58:46 am

In this [URL="http://forums.usfirst.org/showthread.php?t=8802"]question[/URL], the GDC



mentioned that the rating on the pneumatic hose must be equivalent to that of the KOP hose, and that 175 PSI hose would not meet this requirement.

However, in our KOP, our pneumatic hose is clearly labeled with the following:

"Freelin-Wade CoilHose Fre-Thane 95A PUR .250" O.D. X .160" I.D. X .045" Wall [B]175 PSI[/B] WP 0 75F Made In USA"

As this was the KOP hose that we received, we used it. Looking at previous years' KOP, we found the same exact hose with the 175 PSI rating, as well.

Since we purchased additional hose from Freelin-Wade that is identical to this, including the 175 PSI rating, we were wondering if this was legal for us to use?

Thanks

Tubing Question

Posted by FRC435 at 02/19/2008 11:25:41 am

GDC:

We are confused about one of your recent replies, that states:

[QUOTE]175 psi tubing would not satisfy this criteria.[/QUOTE]

[URL]<http://forums.usfirst.org/showthread.php?t=8802>[/URL]

Does this mean that all 175 psi (or anything above 125) tubing would not satisfy the criteria? Or what criteria was that post referring to?

The reason we ask is because we originally heat treated the KOP tubing (which is labeled as 175 psi), and then read the Q&A which said that heat treated coiled tubing is illegal if made by teams. So we are looking at buying coiled tubing from Freelin-Wade, but the rating is 155 psi.

So, our questions are:

- 1) Is the tubing we got in the KOP which is labeled as 175 psi legal to use on the robot?
- 2) Is the coiled tubing from Freelin-Wade which is labeled as 155 psi legal to use on the robot?

Re: Pneumatic Hose Rating

Posted by GDC at 02/20/2008 11:03:23 am

The Freelin-Wade tubing labeled "175 PSI" provided in the Kit Of Parts, and equivalent tubing, absolutely can be used. We made a mistake in the wording of our answer, and did not mean to imply otherwise. The answer on the referenced question has been corrected.

Pneumatic System

definition of similar needs clarification

definition of similar needs clarification

Posted by FRC39 at 02/20/2008 02:28:45 pm

This question is related to the following response from GDC to another pneumatics question.

[B]"Note that pneumatic devices (valves, cylinders, gauges, etc.) may be connected to each other either with pneumatic tubing or with the brass fittings provided in the Kit Of Parts (or



ones similar to those provided)."/>

We need clarificatin on the definition of "...similar to those provided.."

Can a fitting be stainless steel. Note that these are generally rated at pressures in excess of 125psi.

definition of "similar" needs clarification part 2

Posted by FRC39 at 02/20/2008 02:35:07 pm

The question is intended to clarify if "similar to those provided" means similar in size vs similar in function.

This question is realted to the following response from GDC

"Note that pneumatic devices (valves, cylinders, gauges, etc.) may be connected to each other either with pneumatic tubing or with the brass fittings provided in the Kit Of Parts (or ones similar to those provided)."

Note that largerst male-male fitting in KOP is "1/8" NPT.

Can we use a 1/4" NPT male-male fitting [B]OR[/B] a 1/4" NPT pipe nipple as long as the 125psi rating is satisfied.

Re: definition of similar needs clarification

Posted by GDC at 02/21/2008 01:07:33 pm

Under Rule <R88>, an unlimited number of connecting fittings may be used in addition to those provided in the Kit Of Parts. There is no requirement that the fittings be made of the same material, or of the same inside diameter, as the provided versions. But all additional items must be used as connecting fittings, and not used for purposes for which they were not designed (such as to form an additional volume chamber, which would be a violation of Rule <R01>).

Pneumatic System

Is a manifold a legal fitting

Is a manifold a legal fitting

Posted by FRC39 at 02/20/2008 02:38:02 pm

Can we use a COTS 1:3 manifold intended for air distribution applications if we can show that it is rated for 125 psi?

legal pneumatics part (port size)

Posted by FRC39 at 02/20/2008 02:59:01 pm

Can we use a manifold that has qty three 1/4" NPT ports to one 3/8" NPT port.

Intent is to use a reducer fitting for the 3/8" NPT port to get it down to 1/4 NPT.

Is this combination of the manifold and the reducer legal?

Re: Is a manifold a legal fitting

Posted by GDC at 02/21/2008 01:12:08 pm



No, this would not be permitted. A 1:3 manifold is not one of the parts explicitly permitted by Rule <R88> or any other pneumatics rule. Therefore, under Rule <R86>, it is a prohibited item.

Pneumatic System

legal pneumatic part question

legal pneumatic part question

Posted by FRC39 at 02/20/2008 02:54:05 pm

Is a short stainless or brass pipe nipple with male NPT thread on each end considered a legal part if it is a premade COTS part [B]AND[B] it is rated to 125psi or higher?

Re: legal pneumatic part question

Posted by GDC at 02/21/2008 01:10:47 pm

Commercially available pipe nipples specifically designed and intended for pneumatic use would be permitted under Rule <R88> (as a pneumatic fitting), if they are used for their intended purpose (connecting two other fittings, valves, regulators, or other pneumatics components) and they are rated for at least 125psi. The part can NOT be used as a volume chamber to store compressed air.

Note: standard commercial plumbing parts (including pipe nipples) commonly available from home center stores are NOT intended for high-pressure use, and are PROHIBITED from this application.

Pneumatic System

assurance of psi test pressure.

assurance of psi test pressure.

Posted by FRC39 at 02/20/2008 03:23:18 pm

Many COTS pneumatics fittings do not have 125PSI rating stamped on them. If we use an unstamped part, is it sufficient proof to have the following chain of documentation in hand as proof that the part is legal?

1. Data sheet, catalog page or letter of conformance from the manufacturer showing the part number or sku and the 125 or more psi rating.

AND

2. The same part in an unopened package showing the part number or SKU on the outside of the package.

Re: assurance of psi test pressure.

Posted by GDC at 02/21/2008 01:09:51 pm

Yes, that would be sufficient to document that the part satisfies the requirement.

Pneumatic System

Custom Bimba Cylinder Legality

Custom Bimba Cylinder Legality

Posted by FRC2175 at 02/20/2008 07:49:07 pm

We are wondering if a Bimba cylinder we picked from a local dealer is legal.



It is 1.5" bore, 10" stroke cylinder with no magnets and FRC mounts. The part number is BIMBA SR-1710-DP. It the SR prefix we are worried about.

We looked through the Pneumatics Manual, these forums, Chief Delphi, and even had a lengthy discussion with the local Bimba representative and FRC requirements for part numbers are still unclear. Our current part was our best attempt at meeting the apparent requirements.

For our peace of mind, can you please confirm that our cylinder is legal?

Thank you very much.

Re: Custom Bimba Cylinder Legality

Posted by GDC at 02/21/2008 01:03:59 pm

The "SR-" prefix on the part number is an indication that the piston rod is stainless steel instead of regular carbon steel. The part is the same as the "1710-DP" version in all other aspects (bore, stroke, port configuration, pressure rating, operational characteristics, mounting style, cylinder materials, etc.), however the parts are not identical. Therefore, this would not be permitted.

Pneumatic System

Cylinders from Previous KOP

Cylinders from Previous KOP

Posted by FRC781 at 02/21/2008 04:03:16 pm

Team 781 is utilizing additional air cylinders per R89 "recovered from prior year FIRST Kit Of Parts". The cylinder is a Humphrey, 1-1/2" bore * 1-1/2" stroke. The problem is that this is a DX mount cylinder and not a DP as per the Pneumatics Manual. The only difference between these cylinders is the back mount for DX is threaded and DP is pivot. We are not using the back mount in our design so this is not a concern. We did however order spares from Bimba 171.5-DX that are "direct replacements".

Please advise if we can:

- 1) use the KOP cylinder?
- 2) use the direct replacements we purchased?

Thanks,
Team 781

Re: Cylinders from Previous KOP

Posted by GDC at 02/25/2008 12:25:37 pm

1) According to our records, "Humphrey" cylinders have never been provided in the Kit Of Parts. Based on that, this cylinder does not satisfy the requirements of Rule <R89>, and therefore it may not be used.

2) No. Bimba 171.5-DX cylinders are not permitted. They would have to be 171.5-DP versions.

Pneumatic System

Valves must be "Down Stream"



2008 Q&A Forum Export

generated: 02/27/2008 09:27:01 am EST

Valves must be "Down Stream";

Posted by FRC401 at 02/21/2008 11:38:14 pm

Hello!

A senior mentor on my team has already asked if we can have a valve controlling which storage tanks get filled when to better utilize the compressor. Your response was a flat "no" because valves are to be "down stream" in all cases and must be considered part of the working system even though our valve is before the norgren regulator. I just have to ask that you reconsider on the following grounds:

1) the manufacturer has rated said valve (double acting solenoid) for the pressures it is to experience.

2) This is a great exercise in applied physics and all of my students will be quick to point out that placed between the compressor and the storage tanks the valve is doing no actual work at all in a force over distance sense. The solenoid in question is only redirecting flow of air between compressor and the tanks where it is to be stored. The solenoid that actually pressurized our cylinder is downstream of a norgren set to 60psi.

3) We did in good faith study the rules and decided that we were working the spirit of safety and within the letter of the law.

4) We actually have two norgren regulators/ one per set of tanks upstream of our one cylinder in addition to the manual pressure release valve, and electronic pressure sensors on each set of tanks. If the Shuttle can fly on double redundancy could you please let us fly with triple?

5) As the lead teacher of this team I have worked long and hard to get us to do more than the tried and true chain and sprocket. We have a four-bar linkage that is powered by a pneumatic system that is technically a circular breather in much the same physical sense as a bird's respiratory system or a aboriginal digereedo player!

Please forgive my tone, but we have a creative solution that is safe, efficient, and really cool! Please consider allowing the our solenoid valve to stay upstream of the tanks. We will submit technical drawings, photos, and measurements to anyone you deem necessary to get this approved.

Thank you.

Re: Valves must be "Down Stream";

Posted by GDC at 02/25/2008 12:21:10 pm

No. All cylinders, valves and actuators are part of the "working" system. As defined in Rule <R98>, the working system must be located "downstream" of the primary Norgren regulator.

The rules will be enforced as written. To change the rules just to accommodate your configuration, no matter how creative, would be massively unfair to all the teams that have complied with the rules.



Pneumatic System

fittings

fittings

Posted by FRC39 at 02/22/2008 04:38:35 am

The 2" bore bimba actuators and the T's provided in KOP have 1/4" NPT female threads. A 1/4" male-male fitting or nipple would be helpful to connect these components. The strength of this fitting to resist bending or breakage would be helpfull.

Can we use a 1/4" NPT male-male fitting OR a 1/4" NPT pipe nipple as long as the 125psi rating is satisfied.

Length would be short (~1.5 inches). No intent of air volume storage.

Re: fittings

Posted by GDC at 02/25/2008 12:18:36 pm

As previously stated, commercially available pipe nipples specifically designed and intended for pneumatic use would be permitted under Rule <R88> (as a pneumatic fitting), if they are used for their intended purpose (connecting two other fittings, valves, regulators, or other pneumatics components) and they are rated for at least 125psi. The part can NOT be used as a volume chamber to store compressed air.

Standard commercial plumbing parts (including pipe nipples) commonly available from home center stores are NOT intended for high-pressure use, and are PROHIBITED from this application.

Pneumatic System

Bimba Cylinders

Bimba Cylinders

Posted by FRC470 at 02/22/2008 03:03:00 pm

In the course of building our robot this year, we ended up borrowing cylinders from a couple older robots, and were working right up to the end. As such, we didn't order cylinders earlier in the season as designs were modified, and we didn't know exactly what was needed at an earlier point. The robot has now shipped, and we went to the BIMBA site to order a set of cylinders to duplicate what was borrowed, so we would have spares at competition, and so we could replace the the ones on the older robots afterward. The FIRST link is nowhere to be found, and when I called, they said the program had ended. This is rather unfortunate, as nowhere in the manual, could I find listed a cutoff date, and I imagine there are also other teams who might wish or need to order replacements during the competition season. Would FIRST please consider listing any cutoff dates in the manuals for future competitions, so teams could be informed and be sure to order parts while they still can?

Thanks,
Team 470

Re: Bimba Cylinders

Posted by GDC at 02/25/2008 12:16:36 pm

Thank you for your feedback. The "Free Pneumatic Components" order cut-off date is not



under [I]FIRST[/I]'s control. In the future, we will attempt to identify and publicize them earlier where possible.

Pneumatic System

Pneumatics Valves

Pneumatics Valves

Posted by FRC39 at 02/23/2008 12:54:53 pm

Can we use SMC valves from the SY line but a differect series, ie 5000 or 7000, if they are COTS and rated at above 125psi/
Jeff

Re: Pneumatics Valves

Posted by GDC at 02/25/2008 12:12:57 pm

Yes.

Pneumatic System

Robot pneumatics valves

Robot pneumatics valves

Posted by FRC39 at 02/23/2008 04:25:24 pm

In an effort to increase flow to one end of our pneumatic cylinder, can we use two or more KOP valves in a parallel circuit assuming we use legal fittings and hoses

Jeff

Re: Robot pneumatics valves

Posted by GDC at 02/25/2008 12:10:46 pm

There is no rule that would prohibit this.

Pneumatic System

Pneumatic Manifolds as fittings revisited

Pneumatic Manifolds as fittings revisited

Posted by FRC1540 at 02/23/2008 11:12:58 pm

The Q&A [[url](http://forums.usfirst.org/showthread.php?t=8860)] concerning pneumatic manifolds came as quite shock to our team. In previous years there's been no official ruling on these so teams, and evidently the robot inspectors, considered them glorified fittings as permitted by R88. Their use greatly reduces the clutter of mulivalve installations make makes everything more compact and safer.

This year we have 8 KOP SMC pneumatic valves all mounted on a common manifold. Switching these out at our week 1 competition will involve considerable expense to the team in both time and weight assuming we can even get the bases in time. We'll probably miss a good part of the practice day between that work and the search to lose the additional weight individual valves will inflict. If we succeed, the end result will be a big mass of tubing and fittings.

In light of the fact that this Q&A was POSTED AFTER SHIP and that these manifolds have been used in the past and considered fittings, would you consider revisiting this ruling, at least



for this season?

Re: Pneumatic Manifolds as fittings revisited

Posted by GDC at 02/25/2008 12:10:11 pm

As we interpreted it, the referenced question had to do with connection manifolds (such as the SMC Series KD or Series KM manifolds). Manifolds such as these would not be permitted, for the reasons cited in the previous answer.

Multi-port base mounts for solenoid valves (such as the SMC Series SS5 bases, occasionally called manifolds) are different items. These are considered integral parts of the solenoid valves. Items such as these are permitted (in fact, they are required for the correct operation of the valves).

Operator Interface

Operator Interface

Rule <R101> and Driver Pedals

Rule &R101& and Driver Pedals

Posted by FRC1716 at 01/10/2008 01:24:58 am

Are we allowed to use pedals on the floor for robot control during the teleoperated period at the player's station? If we can do they have to fit on the shelf prior to the start of the match or are they considered excluded like items held or worn?

Re: Rule &R101& and Driver Pedals

Posted by GDC at 01/10/2008 09:10:13 pm

Under the provisions of Rule <R101> all Operator Interface components that do not fit on the shelf in the Players Station must be either held or worn at the start of the Match. So a set of pedals could be used, but they would have to be held by the Driver during the Hybrid Period and then put in place once the Hybrid Period ends and the Drivers can step forward into position.

Operator Interface

Question on Re: Rule <R101> and Driver Pedals

Question on Re: Rule &R101& and Driver Pedals

Posted by FRC1716 at 01/14/2008 12:19:14 pm

If the pedal assembly has a spot on the shelf during the Hybrid Period, could it then be put in place once the Hybrid Period ends and the Drivers can step forward into position? We now know it is legal to have a control on the floor during the tele-operated period, thank you.

Re: Question on Re: Rule &R101& and Driver Pedals

Posted by GDC at 01/16/2008 11:37:15 pm

Yes, that would be permitted.

Operator Interface

Joystick Controller

Joystick Controller

Posted by FRC496 at 01/16/2008 07:59:32 pm

Are we allowed to substitute the joystick from the kit of parts with an alternate controller in



conjunction with a reprogrammed chicklet. We will be using the existing robot controller from the kit of parts.

Re: Joystick Controller

Posted by GDC at 01/17/2008 02:43:36 am

Yes, that would appear to be within the rules.

Operator Interface

Nonfunctional Operator Interface Decorations

Nonfunctional Operator Interface Decorations

Posted by FRC1458 at 01/31/2008 09:23:40 pm

Are nonfunctional decorations allowed on the OI?? If so, can they be powered by an external battery??

Re: Nonfunctional Operator Interface Decorations

Posted by GDC at 02/04/2008 12:36:43 pm

Yes, and yes.

Operator Interface

Operator Console Depth

Operator Console Depth

Posted by FRC1523 at 02/10/2008 02:56:20 pm

We are considering an off-the-shelf case that is 13" deep for our console. This will overhang the Station shelf by at least 1". In regards to <R101> is this legal?

Re: Operator Console Depth

Posted by GDC at 02/11/2008 12:56:28 pm

Yes, this is fine, provided the console is fully supported by the shelf.

Operator Interface

Robot Controls

Robot Controls

Posted by FRC201 at 02/15/2008 04:33:17 pm

Are the robot controls required to be shipped in the crate with the robot?

Re: Robot Controls

Posted by GDC at 02/15/2008 04:42:02 pm

Please refer to Rule <R28>. The Operator Console must be packed in the crate and shipped with the Robot before the shipping deadline.

Operator Interface

<R67> OI Cabling

<R67> OI Cabling

Posted by FRC1379 at 02/18/2008 10:35:38 am

<R67> states that the 9-pin cables on the OI and RC cannot be modified, and a previous Q&A response said that replacing the RC-radio cable with a custom cable is illegal. As part of our OI, we have custom extensions for the OI radio and tether ports. I think I remember from previous competitions that the competition port is used for match communications and neither



the radio nor the tether port is actually used during competition.

Do we have to connect FIRST serial cables to the radio and tether ports on the OI, or can we use extensions?

Re: <R67> OI Cabling

Posted by GDC at 02/18/2008 12:37:56 pm

Rule <R104> specifies that nothing can be connected to the tether port of the Operator Interface during a Match. Rule <R107> specifies that the competition cable at the Alliance Station must connect directly to the competition port on the Operator Interface. No intermediate connectors, extension cables, or “pigtails” are permitted.

Robot Inspection

Robot Inspection

Electrical Wiring Inspection

Electrical Wiring Inspection

Posted by FRC1311 at 01/12/2008 10:19:19 pm

Last year we went to the regional and passed inspection.

At the Championship Event at re-inspection the only item that came up was they required us to insulate the wiring connectors going into the victors and other devices with electrical tape or heat shrink tubing. Nothing had changed on the robot and the request seemed unusual but we complied.

Will this requirement be in place again this year ? You would expect the PIDG crimp terminals to be sufficient to terminate the wire into the victors. Industry practice doesn't require this addition.

Please advise.

Re: Electrical Wiring Inspection

Posted by GDC at 01/17/2008 12:00:58 am

Extra insulation on Victor connections should not normally be necessary, unless there is a concern (due to a particular wiring configuration) about a potential short-to-frame issue that may cause a violation of Rule <R51>.

Robot Inspection

Ball Shooter Safety

Ball Shooter Safety

Posted by FRC39 at 01/15/2008 02:55:05 am

We are considering a shooter to achieve the hurdle. This could require applying force to the ball with a moving part so that the ball and the force applying device (an arm or a piston) will go ~10 m/s and have a range of movement of a foot or 2. The amount of force is approximately the equivalent of a foot kick (~80 joules) that can make the 7.2 lb ball go 7 or 8 feet high.

If the design has stored energy at the event start, we could lock the mechanism with a "Remove before flight" pin/flag (safety interlock) that is normally in place but removed when the bot is placed on the playing feild.



Is there some sort of scrutineering criteria in terms of a safety threshold velocity for rapidly moving parts or the kinetic energy of the moving part?

We see this as not much different than an arm that can move quickly. Would it be evaluated as such?

Regards
Frank Neuperger

inspection for safety - stored energy

Posted by FRC1391 at 01/15/2008 11:03:12 am

When 'armed', our robot has a significant amount of stored energy in spring form. Our concern centers on inspection judges and their determination of the safety of this stored energy. The rulebook for the year is vague about what constitutes safety in this case - are there more concrete rules, constraints, etc, regarding safety and stored energy?

Re: Ball Shooter Safety

Posted by GDC at 01/26/2008 12:29:22 am

Please refer to Team Update #5.

Robot Inspection

Bill of Materials form

Bill of Materials form

Posted by FRC1763 at 01/19/2008 07:01:00 am

Our team has developed our own spreadsheet for creating our Bill of Materials. May we use it rather than the form provided in this year's game manual?

Re: Bill of Materials form

Posted by GDC at 01/21/2008 01:30:40 pm

As long as your form provides the same information as the recommended form provided in the [I]FIRST [/I]documentation, in a legible, easy-to-read, and easy-to-understand format, then alternative forms are acceptable.

As a courtesy to the inspectors, we ask that you also use the same order of information for the sake of consistency.

Robot Inspection

Inspection at competition

Inspection at competition

Posted by FRC1391 at 01/24/2008 08:01:49 pm

The handbook states that robots that are found to be unsafe by the inspectors at competition may be rejected. We are seeking some rather more specific guidelines, particularly with respect to stored energy. Our system will use surgical tubing for stored energy, and we would like to know in advance what constitutes a danger and what we can do to assure our inspector that the stored energy system is safe. Thanks



Re: Inspection at competition

Posted by GDC at 01/26/2008 12:16:39 am

Please refer to Team Update #5.

Robot Inspection

Robot Inspection

Robot Inspection

Posted by FRC2081 at 02/09/2008 11:54:56 am

We know that during the inspection we need to have no air in the system. We have a part that extends past the limit. When there is air, it won't extend. Could we tie the part down for inspection because it will be in the starting box before the game play.

Re: Robot Inspection

Posted by GDC at 02/11/2008 01:02:12 pm

There is not a requirement that the Robot be completely unpressurized during the inspection process. To the contrary, if pneumatics are used on the Robot, you will be required to pressurize the system during inspection so that the maximum stored and working pressures can be verified.

Qualification Matches

Qualification Matches

Highest seed determination for alliances, in <T15>

Highest seed determination for alliances, in <T15>

Posted by FRC2505 at 01/09/2008 05:39:33 pm

[quote=<T15>]The higher seeded ALLIANCE will have the last opportunity to orient their ROBOTS within the selected locations.[/quote]In the qualifying rounds, how is the higher seeded alliance defined? Is it the alliance with the highest seeded individual team, or the highest average tier among alliance members, or some other method? (9.3.1.0 deals only with [i]team[/i] seeding, not alliances.)

Re: Highest seed determination for alliances, in <T15>

Posted by GDC at 01/11/2008 10:02:23 pm

Good questions! Please refer to Rule <T22> as amended in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[/URL].

Qualification Matches

surrogate team assignments

surrogate team assignments

Posted by FRC2669 at 01/28/2008 10:11:51 pm

Hey GDC, thanks for the support and the fast responses, we have some additional questions about this year's rules.

...

2) We realize that some regionals are going to have a few teams playing more games than others so all teams will have the minimum games played. We believe that a situation in which a team that is chosen to play a game not going to it's statistics is likely to occur. Is it possible



that in this kind of situation another team who wants to play (practice for drivers/code) can replace them with a short notification ahead?

...

We are sorry if there are too many questions in here and you are gonna have to split it into seperate messages in different sub-forums, but we also believe that it will be easier for you guys to get this answered then 5 different posts, if not please say so and the next questions we will be making are going to be in seperate posts.

Thanks a lot, KY Bots, FRC2669.

Re: A few questions 2

Posted by GDC at 01/31/2008 03:05:44 pm

Question 2: No. The field scoring system will make all team Alliance assignments (see Section 9.3.2). Selections of surrogate teams, if necessary, will be made by that system.

Tournament Rules

Tournament Rules

Wireless at the event

Wireless at the event

Posted by FRC41 at 01/09/2008 04:45:02 pm

Are there restrictions on the use of Part 15 compliant consumer wireless devices at the event?
For example, are bluetooth headsets for cell phones permissible?

Re: Wireless at the event

Posted by GDC at 01/10/2008 09:02:44 pm

Such devices are permitted within the event venues. However, they are not permitted on the field during a Match, and may not be used by team members during a Match per Rule <T22>.

Tournament Rules

Robocoaches

Robocoaches

Posted by FRC585 at 01/09/2008 10:47:21 pm

Are the robocoaches allowed to bring a foot high stepladder to help seperate their signal from other signals?

Re: Robocoaches

Posted by GDC at 01/10/2008 09:46:28 pm

No, this would be a violation of Rule <T22>.

Tournament Rules

Wireless at the event (follow up)

Wireless at the event (follow up)

Posted by FRC41 at 01/10/2008 09:12:35 pm

<T22> states that devices carried to the field that are not part of the operator console shall not



communicate outside the alliance zone. What if the device in question (Part 15 compliant consumer wireless) IS part of the operator console? Can it communicate inside the alliance zone? Can it send information (one way) out of the alliance zone (information not influencing the outcome of a match)? We assume that sending information from the outside into the alliance zone would be illegal.

Re: Wireless at the event (follow up)

Posted by GDC at 01/16/2008 12:24:46 am

Rule <T22> limits equipment that may be brought to the field at the Operator Console and any special equipment that may be required by a disability. Chapter 8 defines the Operator Console as the equipment required to operate the Robot. Devices (e.g. Bluetooth or wireless headsets) used to communicate within or from the Alliance Zone do not satisfy this definition. Therefore, they are not permitted.

Tournament Rules

color sensors

color sensors

Posted by FRC2435 at 01/10/2008 09:17:36 pm

Is it possible for a team to do certain modifications on color sensors once the team knows in which alliance it is? or is it forbidden to make any modifications on it after knowing the alliance the team it is?

Thanks for answering TEAM 2435 Southern Riots

Re: color sensors

Posted by GDC at 01/16/2008 12:45:48 am

Per <T14> and section 9.3.1, the schedule of alliance partners and colors will be known before each match. The suggested modifications would be permitted as long as the modifications (parameter setting, calibration, filter changes, etc.) can be accomplished before the Robot is placed on the Track, and the modifications do not cause a delay in the start of the Match.

Tournament Rules

Team Member Materials inPlayer Stations

Team Member Materials inPlayer Stations

Posted by FRC492 at 01/14/2008 11:41:07 am

Are team members allowed to bring materials (non-electronic) into the player stations? (Could our coach bring a rule book, for example)

Re: Team Member Materials inPlayer Stations

Posted by GDC at 01/16/2008 11:09:21 pm

Certain materials are permitted if they are used to plan strategy with your Alliance. Other materials (such as the Rule Book) are prohibited. Please refer to Rule <T22> for details.

Tournament Rules

Scouting Reports?

Scouting Reports?

Posted by FRC2181 at 02/02/2008 10:37:52 am

Does any one have a link to the scouting reports? We need some.



Re: Scouting Reports?

Posted by GDC at 02/04/2008 01:05:13 pm

[i]FIRST[/i] does not provide scouting reports of team performance.

Tournament Rules

Scouting Reports 2

Scouting Reports 2

Posted by FRC2181 at 02/06/2008 10:39:19 am

I meant "Does anyone have any blank Scouting report forms?" Sorry for the confusion.

Re: Scouting Reports 2

Posted by GDC at 02/07/2008 01:38:43 pm

[i]FIRST [/i]does not provide scouting sheets. These are to be created by each team, based on the particular needs, characteristics and capabilities they wish to identify for potential alliance partners and opponents. In the spirit of cooperating while competing, teams are encouraged to (and do) share scouting forms and information at the competitions. You may want to check with neighboring teams to see if they have any suggestions.

Part Information

Part Information

Trackball Suppliers and Sources

Trackball Suppliers and Sources

Posted by FRC1889 at 01/09/2008 12:43:13 pm

Can you please tell me where to obtain Trackballs? Supplier and Part Number. Thanks

Ball?

Posted by FRC135 at 01/09/2008 02:10:40 pm

Where can we order another ball?

We have a blue one, but we want to use a sensor that can tell the difference between Red and Blue. In order to do this, we need a Red ball.

Thank You

Team 135

How to buy another ball ?

Posted by FRC423 at 01/09/2008 04:25:13 pm

We got a blue one. We'll need to test with red as well.

They don't seem to be on the list at IFI.

Thanks,

Charlie Affel

Trackball Manufacturer

Posted by FRC1124 at 01/09/2008 08:09:11 pm

Hi, our team was wondering where we can find the trackballs for the 2008 game. They are not



available on IFI under the KOP section, and the manufacturer was not listed in Section 10 of the 2008 Manual.

Game Piece

Posted by FRC157 at 01/10/2008 10:29:52 am

Where can a team get a complete ball bladder and most importantly shell for the game piece?

How much does a new trackball cost?

Posted by FRC1250 at 01/10/2008 06:55:06 pm

How much does a new trackball cost?

track ball replacement

Posted by FRC484 at 01/10/2008 08:34:22 pm

where to purchase additional track balls?

Track balls

Posted by FRC2081 at 01/11/2008 03:41:21 pm

Where can we buy additional track balls? We are building a practice field and do not want to deal with hauling balls to and fro.

Re: Trackball Suppliers and Sources

Posted by GDC at 01/11/2008 09:41:36 pm

Good questions! Please refer to
[URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[URL].

Busted Track Ball

Posted by FRC195 at 01/14/2008 11:34:51 am

Where do we buy new trackballs?

Re: Trackball Suppliers and Sources

Posted by GDC at 01/15/2008 01:09:49 am

Please refer to prior answer.

Part Information

IR Board Supplier

IR Board Supplier

Posted by FRC1889 at 01/09/2008 12:48:51 pm

Can you please provide information for purchasing an IR board (supplier and part number)? Documentation says it is a "modified TinyIR2 board", but none of the 5 sources listed in KOP manual under "where to get more" have any listing for the FIRST-specific board. Thanks.

How to buy an IR sensor (Hint 1)

Posted by FRC423 at 01/09/2008 04:23:30 pm

Where can we buy one ?
They don't seem to be in the list at IFI.

Thanks,

Charlie Affel

I.R. Board- 10.2.2-obtaining additional parts

Posted by FRC545 at 01/09/2008 08:42:46 pm



Where can i gett more I.R. Boards identical to the ones sent out as the clue? Can we use more than one of these I.R. boards? Thank you

Team 545- robodawgs

Re: IR Board Supplier

Posted by GDC at 01/12/2008 09:00:20 pm

Great questions! Please refer to Team Update #2 and Section 10, Rev B.

Part Information

Fisher-Price 00968-9015

Fisher-Price 00968-9015

Posted by FRC2505 at 01/09/2008 04:05:56 pm

Is there anywhere that we can download the torque-speed curves and specifications for the Fisher-Price 00968-9015 motor from the kit? It's not in the Guidelines, Tips & Good Practices manual.

Re: Fisher-Price 00968-9015

Posted by GDC at 01/11/2008 09:46:10 pm

Good questions! Please refer to [\[URL="http://www.usfirst.org/community/frc/content.aspx?id=450"\]](http://www.usfirst.org/community/frc/content.aspx?id=450)Team Update #2[\[URL\]](http://www.usfirst.org/community/frc/content.aspx?id=450).

Part Information

AutoDesk Invertor Software

AutoDesk Invertor Software

Posted by FRC842 at 01/09/2008 06:57:03 pm

The disk was not included in the KoP. Is it a download somewhere?

Re: AutoDesk Invertor Software

Posted by GDC at 01/10/2008 08:27:47 pm

Information about acquiring the Autodesk software was included in the Email Blast dated 11/20/2007. It can be found online in the [\[I\]FIRST \[I\]Email Blast](http://www.usfirst.org/community/frc/content.aspx?id=6616) archive, located [\[URL="http://www.usfirst.org/community/frc/content.aspx?id=6616"\]](http://www.usfirst.org/community/frc/content.aspx?id=6616)here[\[URL\]](http://www.usfirst.org/community/frc/content.aspx?id=6616).

Part Information

2008 Motor Specifications

2008 Motor Specifications

Posted by FRC190 at 01/11/2008 12:06:23 am

In previous years, the motor data has been available in the "Guidelines, Tips and Good Practices" documents. Will similar motor data be available this year?

2008 Motor Specifications

Posted by FRC968 at 01/11/2008 03:10:23 pm

Will motor specifications (particularly for the 9015 Fisher Price) be made available this year?

Re: 2008 Motor Specifications

Posted by GDC at 01/11/2008 10:40:21 pm

Please check the motor specification references in [\[URL="http://www.usfirst.org/community/frc/content.aspx?id=450"\]](http://www.usfirst.org/community/frc/content.aspx?id=450)Team Update #2[\[URL\]](http://www.usfirst.org/community/frc/content.aspx?id=450).



Part Information

Taigene motor specs

Taigene motor specs

Posted by FRC2377 at 01/11/2008 10:32:23 am

Hello,

Our team attempted to retrieve the Taigene motor specs from the link posted in section 10.2.3.4 of the manual but the link does not work. What is the correct link?

Re: Taigene motor specs

Posted by GDC at 01/11/2008 11:32:58 pm

The 2008 motor specifications can be found
[URL="<http://www.usfirst.org/community/frc/content.aspx?id=482>"]here[URL].

Part Information

Van Door Motor

Van Door Motor

Posted by FRC2339 at 01/11/2008 04:12:32 pm

Are there specifications available on the motor and/or Gear assembly?
Are there spares?

Re: Van Door Motor

Posted by GDC at 01/15/2008 11:49:03 pm

Please check [URL="<http://www.usfirst.org/community/frc/content.aspx?id=482>"]here[URL].
Note that spare Taigene van door motors are not available.

Part Information

Accelerometer and Gyro bandwidth

Accelerometer and Gyro bandwidth

Posted by FRC41 at 01/11/2008 05:42:34 pm

What is the bandwidth for both the DAA and Gyro boards?

Re: Accelerometer and Gyro bandwidth

Posted by GDC at 01/16/2008 12:12:42 am

For information about the sensors included in the 2008 Kit of Parts, please refer to the [URL="http://www.usfirst.org/uploadedFiles/Community/FRC/FRC_Documents_and_Updates/2008_Assets/Manual/2008_Sensor_Manual.pdf"]2008 Sensors Manual[URL]. It contains directions and links to the manufacturers' datasheets.

Part Information

Ordering new IR sensor boards

Ordering new IR sensor boards

Posted by FRC1208 at 01/12/2008 11:30:55 am

Our team may have accidentally destroyed our IR sensor board. Where should teams look to purchase new IR sensor boards?

Re: Ordering new IR sensor boards



Posted by GDC at 01/13/2008 01:35:58 am

Sources for additional IR boards are identified in [URL="http://www.usfirst.org/community/frc/content.aspx?id=450"]Team Update #2[/URL].

Part Information

Where can we get a new tooth counter board

Where can we get a new tooth counter board

Posted by FRC2344 at 01/12/2008 12:48:09 pm

Where can we get a new tooth counter board? We tested outs today and one of the two is bad?

Gear tooth sensors

Posted by FRC291 at 01/14/2008 04:48:27 pm

With respect to the gear tooth sensor circuit boards, our team had several questions:

1. Are the gear tooth sensor circuit board assemblies that came in the kit the only kind we can have on the robot?
2. Are we permitted to have more than 2 of the gear tooth sensor circuit board assemblies that came in the kit on the robot?
3. Where can we purchase spare gear tooth sensor circuit board assemblies like those that came in the kit?
4. If we are permitted to have gear tooth sensor circuit board assemblies other than those in the kit, is there any limit in quantity to how many we can have on the robot?

GearTooth sensor supplier

Posted by FRC1023 at 01/15/2008 11:51:24 am

Is there a supplier for the kit GearTooth sensor boards? One of ours appears to have been damaged by a soldering attempt. I couldn't find any listed in the team documentation. Thanks for any help!

Gear Tooth Sensor

Posted by FRC171 at 01/16/2008 09:51:38 pm

Is there a source through Divsys or IFI that we can order replacement Gear Tooth Sensors from???

Re: Where can we get a new tooth counter board

Posted by GDC at 01/16/2008 11:44:42 pm

The gear tooth sensors provided in the Kit Of Parts are a limited-supply item. Additional KoP gear tooth sensors are not available. However, there are commercial gear tooth sensors that provide similar functionality that are available from a number of electronic supply houses.

Part Information

IR board

IR board

Posted by FRC1334 at 01/14/2008 01:36:42 pm



2008 Q&A Forum Export

generated: 02/27/2008 09:27:02 am EST

A few posts have asked how to get a replacement IR board. Responses lead to Update #2 which lists five websites where we should be able to find replacement IR boards. I've visited all of these sites and can find no information on the supplied IR board. More information please - a part number reconized by the supplier would help.

IR Board

Posted by FRC1334 at 01/16/2008 03:43:03 pm

I submitted a request for information a few days ago and have not yet received any response. The IR boards do not seem to be available anywhere. The five websites listed as suppliers are no help.

1. Are replacement IR boards available anywhere?
2. If so, where and when might they be available.

Re: IR board

Posted by GDC at 01/16/2008 11:54:26 pm

The IR receiver boards will be available through the [URL="http://www.ifirobotics.com/first-store.shtml"]IFI FIRST web store[/URL]. The part is not yet in stock, but should be available within a few more days. Please check there periodically to determine availability.

Part Information

Rockwell Automation Terminal Blocks

Rockwell Automation Terminal Blocks

Posted by FRC75 at 01/15/2008 11:43:05 am

We are looking for a retailer for the Rockwell Automation Terminal Block and accessories. The local retailer only sells them in bulk (qty of 50 @ \$4 ea.). Does FIRST have an authorized retailer or supplier for smaller quantities?

Re: Rockwell Automation Terminal Blocks

Posted by GDC at 01/16/2008 11:41:24 pm

Please refer to Section 10.1.2 of The Manual.

Part Information

Where Can We Buy These Parts?

Where Can We Buy These Parts?

Posted by FRC1665 at 01/15/2008 05:27:54 pm

Our team is looking to purchase Powergrip GT2 belts and sprockets made my Gates as well as parts for the 1020 series made by 80/20 Inc. We are having a hard time finding suppliers near us. Where could we go?

Re: Where Can We Buy These Parts?

Posted by GDC at 01/16/2008 11:40:45 pm

Please refer to Section 10.1.2. Gates, Inc. has provided information about the use of, and sources for, their belt and sprocket products. 80/20 provides a list of distributors on their web site that you may want to refer to.



Part Information

Accelerometer and Gyro Bandwidth (follow up)

Accelerometer and Gyro Bandwidth (follow up)

Posted by FRC41 at 01/16/2008 12:21:52 am

The manufacturer's page (and pdf) discusses how the capacitance on the outputs of the gyro and accelerometer dictate the bandwidth. Our question regards not the spec of the MEMS IC, but the construction of the board we were given in the KoP. What capacitance values were used on these boards? This will allow us to compute bandwidth, which will aid in circuit and program design.

Re: Accelerometer and Gyro Bandwidth (follow up)

Posted by GDC at 01/31/2008 02:30:49 pm

Please refer to Team Update #6. The schematics have been posted [URL="http://www.usfirst.org/community/frc/content.aspx?id=482"]here [URL]on the [I]FIRST [I]website.

Part Information

Ordering additional Fisher Price Motors

Ordering additional Fisher Price Motors

Posted by FRC987 at 01/16/2008 10:43:25 am

Teams in Las Vegas have been unable to find a source for ordering additional 08 Fisher Price motors and FIRST headquarters suggested we use the Q and A format to find out how to get more of the 00968-9015 models. Fisher Price and Mattel have given names of service companies as a source but they all told us their contracts with the toy companies does not allow them to sell motors to us. Can you help us and many other teams with same problem?

Sources for Fisher-Price 00968-9015

Posted by FRC341 at 01/22/2008 11:18:04 am

Does FIRST Have a suggested vendor source for Fisher-Price 00968-9015 motors. I did not see it in the FIRST documentation or forum. I just wanted to find out before knock myself out searching for it. ;-)

Thanks!

Replacement FisherPrice 9015s

Posted by FRC1771 at 01/24/2008 03:17:34 pm

I have checked with the Mattel/Powerwheels service centers for replacement FisherPrice motors, and they tell me to contact FIRST. Is there a system to acquire replacement 9015 motors? One of ours is not working.

Fisher Price motors

Posted by FRC1717 at 01/24/2008 03:27:54 pm

Our team has contacted our local distributor of Fisher Price motors to try to procure small, 00968-9015 motors, however they have informed us that they will no longer provide motors to FIRST teams. We would appreciate any information as to when and where the motors might be available through FIRST.

Re: Ordering additional Fisher Price Motors



Posted by GDC at 01/26/2008 12:21:21 am

Please refer to Team Update #5.

Part Information

22 tooth wheel sprocket in 2008 kit of parts

22 tooth wheel sprocket in 2008 kit of parts

Posted by FRC931 at 01/16/2008 03:56:37 pm

The 2008 kit of parts includes two 22 tooth wheel sprockets (shown on the Checklist as p/n 79203709). Our team would like to purchase or otherwise obtain two additional sprockets identical to those in the kit, so that we can provide power to two additional wheels. As we understand <R35> this would be allowed, provided that the kit 22 tooth sprockets are COTS components. We have not been able to find a supplier that can sell us 22 tooth sprockets identical to those in the kit; however, another FRC team may be willing to sell, swap, or donate unused 22 tooth sprockets from their kit.

Are these sprockets COTS components? Can we use two additional kit 22 tooth sprockets that are purchased from or donated by another FRC team?

Sprockets

Posted by FRC2175 at 01/17/2008 07:40:18 pm

Are last year's KOP wheel sprockets (22 tooth) legal to use on this year's robot, or were they custom made for FIRST and therefore not legal?

Re: 22 tooth wheel sprocket in 2008 kit of parts

Posted by GDC at 01/28/2008 03:39:29 pm

The 22-tooth sprockets provided in the 2008 Kit Of Parts are custom-fabricated parts, and are not commercially available. As such, you are limited to the quantities of the custom parts provided in the Kit Of Parts. Also, under Rule <R36>, the 2007 version of the 22-tooth sprockets may not be used on 2008 Robots. However, similar parts are available from [URL="http://www.msdirect.com"]MSC Industrial Supply [/URL] and other sources. These parts may only require drilling mounting holes to make them functionally equivalent to the sprockets supplied in the Kit Of Parts.

Part Information

IR Board

IR Board

Posted by FRC2435 at 01/19/2008 04:40:35 pm

We are trying to program the IR sensor, but we can't figure out how the numbers work. We can't seem to get pass 1. The instructions aren't doing any help. How can we fix the problem?

Re: Ir

Posted by GDC at 01/26/2008 12:28:02 am

Please refer to the "IR Board Video" on the [URL="http://www.usfirst.org/community/frc/content.aspx?id=482"]FRC Technical Resources[/URL] web page. This may provide some clarification.

Part Information

bad gear tooth



bad gear tooth

Posted by FRC1249 at 01/22/2008 08:19:14 am

We seem to have a problem with one gear tooth sensor like several other teams. Is there a problem with the original group of these sensors since several have the same problem?

Re: bad gear tooth

Posted by GDC at 01/31/2008 01:23:55 pm

Great questions. Please refer to Team Update #6.

Part Information

Parts usage from previous KoPs

Parts usage from previous KoPs

Posted by FRC1743 at 01/25/2008 02:40:22 pm

Neither the 2007 Banebots transmission nor the 2006 CMUCam module are available COTS any more. However, both are available COTS in slightly modified formats... the Banebots transmission has been upgraded, and the CMUCam module has had the servo headers removed. According to a previous Q&A response, the Banebots transmissions are still allowed, but per <R36>, the 2006 CMUCam is given as an example of a former KoP part that is no longer allowed because it has been revised. Can you please explain how to determine if a non-COTS part from a previous KoP is covered by the "etc." in <R36>? Thank you.

Re: Parts usage from previous KoPs

Posted by GDC at 01/28/2008 10:52:55 pm

The rule differentiates between parts that are functionally and materially equivalent to available commercial versions, and parts that are functionally different due to revision updates and other changes.

The CMUcam II modules provided in the 2006 Kit Of Parts (which are no longer commercially available) are functionally different than that currently-available versions. So, the 2006 CMUcam II modules are prohibited. The CMUcam modules provided in the 2007 Kit Of Parts are still commercially available, so they may be re-used.

The Banebots gearboxes are a special case. The new version of the gearbox includes required quality improvements, however the fundamental functionality remains unchanged.

Part Information

ir "meltdown"

ir "meltdown"

Posted by FRC2052 at 01/26/2008 06:11:44 am

our ir board overheated and does not work. it appears other teams have had similar problems. is there a plan to replace these, free of charge?

Re: ir "meltdown"

Posted by GDC at 01/28/2008 03:08:59 pm

Replacement IR boards are available from the [\[URL="http://www.ifirobotics.com/first-store.shtml"\]](http://www.ifirobotics.com/first-store.shtml)IFIRST Store^[/URL]. Other boards with similar functionality are available from many commercial sources.



Part Information

Accelerometer repair/replacement

Accelerometer repair/replacement

Posted by FRC172 at 01/26/2008 11:57:53 am

Our accelerometer is not working. Can it be repaired and if so, where do we send it? Can we buy a replacement and if so, where? We have not found it as a replacement part at the FIRST/IFI Stores.

Re: Accelerometer repair/replacement

Posted by GDC at 01/28/2008 03:24:45 pm

Replacements and/or additional quantities of these custom items are not available.

You may substitute commercial items with similar functionality at your discretion.

Part Information

Received defective gear tooth sensor

Received defective gear tooth sensor

Posted by FRC518 at 01/28/2008 09:52:53 pm

Our team has received a defective gear tooth sensor. We hadn't tested the sensor until now because our robot hadn't progressed to the point where we could test it. Upon testing, we discovered that we had received a defective gear tooth sensor (one sensor showed the expected square wave on a scope, the other a constant voltage), and we're depending upon this sensor for our design. Where can we acquire a replacement sensor?

Re: Received defective gear tooth sensor

Posted by GDC at 01/29/2008 01:00:41 am

The gear tooth sensors provided in the Kit Of Parts are a limited-supply item. Additional KoP gear tooth sensors are not available. However, there are commercial gear tooth sensors that provide similar functionality that are available from a number of electronic supply houses.

Part Information

Fisher Price Gearbox

Fisher Price Gearbox

Posted by FRC1717 at 01/29/2008 03:50:20 pm

What is the gear ratio for this year's Fisher Price motor gearboxes? We have so far been unable to find it in any of the specs.

Re: Fisher Price Gearbox

Posted by GDC at 02/11/2008 12:53:36 pm

The reduction for the FisherPrice gearbox provided in the 2008 KoP is 124:1.

Part Information

RC Frequency

RC Frequency

Posted by FRC971 at 02/02/2008 11:00:18 am

What frequency does the Robot Controller operate on?



Re: RC Frequency

Posted by GDC at 02/04/2008 12:32:26 pm

The frequencies utilized by the provided radio modems are proprietary. The format of the radio link is not under the control of the teams, and is not to be interfered with, interrupted, or intercepted.

Part Information

Defective KOP Parts Question

Defective KOP Parts Question

Posted by FRC2624 at 02/19/2008 02:03:28 pm

We're a rookie team and we counted all of our kit's parts on the first day but unfortunately we did not test out all of the electrical components. We have discovered that two of our Victor 884s arrived defective. Would it be possible for us to exchange them at this point?

Thank you for your consideration,

Robert Steadman
Staff Advisor
Team 2624

Defective KOP Parts Question

Posted by FRC2438 at 02/19/2008 08:09:47 pm

Is there a way to get replacements for KOP parts that either didn't work out of the box or failed after brief trials (we had two bad relay modules and 2 solenoids that manually discharged but wouldn't respond to electrical stimuli)? Or do we just order whatever extras we need?

Re: Defective KOP Parts Question

Posted by GDC at 02/21/2008 01:39:14 pm

Replacements for Kit Of Parts defective/missing items had to be requested by January 9. These items are no longer available through FIRST. They may be obtained through the sources identified in Chapter 10 of The Manual.

Defective Victor 884's

Posted by FRC2624 at 02/22/2008 10:03:04 am

We're a rookie team and we counted all of our kit's parts on the first day but unfortunately we did not test out all of the electrical components. We have just discovered that two of our Victor 884s arrived defective. Would it be possible for us to exchange them at this point?

Thank you for your consideration,

Robert Steadman
Staff Advisor
Team 2624

Re: Defective Victor 884's

Posted by GDC at 02/23/2008 11:27:09 am

The previous answer still applies.



Kit of Parts - General

Kit of Parts - General

Tips -- FP801-005 3" Mini Bike motor mentioned in documentation - incorrectl

Tips -- FP801-005 3" Mini Bike motor mentioned in documentation - incorrectl

Posted by FRC1153 at 01/09/2008 03:20:06 pm

FIRST 2008 Guidelines, Tips & Good Practices

Section - G.5.2 DC Motors - page 7 - mentions the 3" CIM mini bike motor as being in the kit of parts which it is not. This is probably a reference to the 2007 game. Documentation should be changed to be in sync with KOP

Thanks - Mark Gallivan 1153

Mini Bike motors and Banebots gearboxes?

Posted by FRC191 at 01/10/2008 01:37:06 pm

The Kit of Parts includes 2 - 2.5" CIM motors and no Banebots gearboxes. The Guidelines Tips and Good Practices states that there is also a Mini Bike motor and Banebots planetary gearboxes in ther KOP.

"Special Notes on Motors

CIM motors - The 2008 Kit of Parts provides two FR801-001 CIM Motors. The kit also includes 1 - FP801-005 Mini-bike motor. The Parts kit also includes a pair of NEW 12:1 56mm planetary gearboxes supplied by BaneBots. These assemblies readily accept mounting of FR801-001 CIM motors supplied in the kit. Section G.5.4.1 describes a procedure to fit the motor onto the gearbox."

There also is no section G5.4.1 in the Guidelines Tips and Good Practices. What is the accurate information?

Re: Tips -- FP801-005 3" Mini Bike motor mentioned in documentation - incorrectl

Posted by GDC at 01/10/2008 08:21:01 pm

Thank you for bringing this to our attention. The 3" CIM motor was a one-time inclusion in the 2007 Kit Of Parts. It is not included in the 2008 Kit. The Guidelines, Tips and Good Practices document will be updated to remove this reference.

Kit of Parts - General

Labview Licenses

Labview Licenses

Posted by FRC2353 at 01/09/2008 07:07:32 pm

How many licenses do we get with the kit for the Labview program? In addition, how many computers can the software be installed on by the license?

Re: Labview Licenses

Posted by GDC at 01/16/2008 12:35:49 am

The LabVIEW software is a 25 seat license and can be installed on up to 25 machines and can only be used for the FIRST Robotics Competition.

Kit of Parts - General

Purchase of Additional KoP parts



Purchase of Additional KoP parts

Posted by FRC2479 at 01/24/2008 02:31:58 pm

Where can I purchase additional quantities of the the following items: Wheel bearings, R8 1/2" ID, 1 1/8" OD PN blank (Ref p5 of Black tote checklist item 6);output sprocket #35, 15 tooth, 1/2" bore, 1/8" keyway PN 36684974 (ref p6 of Black tote checklist item 1); Wheel sprocket, 22 tooth #35, #10 mounting holes in a 1.875" D circle (ref p6 of Black tote checklist item 2); Checked with Innovation First about the wheel bearings and the output sprocket and they had only flanged wheel bearings and the ones that came with the kit didn't seem to have a flange. They did not have the output sprocket. `

Re: Purchase of Additional KoP parts

Posted by GDC at 01/28/2008 03:22:42 pm

Please refer to the table in Section 10.1.2 for a list of sources of the commercially-available items contained in the Kit Of Parts. If an item not listed in the table, the item is not available through [i]FIRST[/i] resources. Note that items custom-produced for the Kit Of Parts (such as the referenced sprockets) will not be commercially available. In such cases, additional quantities can only be obtained by purchasing and modifying closest-approximation commercial versions.

Kit of Parts - General

KoP Missing items replacements?

KoP Missing items replacements?

Posted by FRC2423 at 01/28/2008 10:55:11 am

We submitted our "missing parts" report after receiving our KoP's. However we have received no acknowledgement of this report, nor any replacements.

When will we receive the replacement parts?

Re: KoP Missing items replacements?

Posted by GDC at 01/28/2008 02:06:39 pm

Please refer to Team Update #5.

Kit of Parts - General

Gear counter Malfunction

Gear counter Malfunction

Posted by FRC2493 at 02/04/2008 04:48:06 pm

One of our gear counters does not work. So how would we go about getting a lap indicator, since it is mandatory. Do we need to get another one? Also, if we got a new one, we heard that we would have to buy new boards. Is this true, or can we just get another gear counter?

~FRC2493

Re: Gear counter Malfunction

Posted by GDC at 02/07/2008 01:24:38 pm

If needed, the gear tooth sensors provided in the Kit Of Parts can be substituted with any of a number of commercially-available sensors with similar capabilities. Please refer to Team Update #6 regarding malfunctioning gear tooth sensors.



The Lap Indicator will be provided to teams to place on their robots when they are in the queuing line preparing for a Match. All you have to do is provide a mounting location that is in compliance with Rule <R17> and Rule <R18>.

Kit of Parts - General

Pistons Permitted

Pistons Permitted

Posted by FRC2543 at 02/04/2008 06:55:06 pm

We are currently using Bimba pistons in our robot, but we are not sure whether they are permitted for the competition. They have a 3/4 inch bore and a 14 inch stroke. Another option for us would be using a Schrader-Bellows piston .75dsrm10.00 with 3/4 inch bore and 10 inch stroke. The specifications seem to be the same as those permitted in the second piston but we aren't sure whether they have to be Bimba.

Pneumatic Cylinder Question

Posted by FRC2543 at 02/05/2008 07:17:39 pm

We have a question about some cylinders we have, and are not sure if they are legal or not.

They are Bimba pistons with a 3/4" bore with a 14" stroke.

Another alternative would be using a piston with a 3/4 inch bore with a 10 inch stroke. It has the same specifications as those specified in the FIRST Manual but it not from Bimba.

Re: Pistons Permitted

Posted by GDC at 02/07/2008 01:10:51 pm

Please refer to [URL="http://forums.usfirst.org/showthread.php?t=8489"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8362"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8281"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8299"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=7965"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8447"]this Q&A
answer[URL] and [URL="http://forums.usfirst.org/showthread.php?t=8449"]this Q&A
answer[URL] where this has already been addressed.

Kit of Parts - General

Bad air compressor

Bad air compressor

Posted by FRC2582 at 02/05/2008 12:41:54 pm

Under the guidance of a College Pneumatics Instructor we attempted to run our compressor for the first time on Monday. After experiencing a low compression volume we "dead-headed" the compressor for testing and are only getting 20psi. It is believed that the compressor is bad. Can we get a replacement compressor under warranty or do we have to purchase a new one?

Re: Bad air compressor

Posted by GDC at 02/07/2008 01:01:57 pm

Missing or damaged parts from the Kit Of Parts had to be requested by 11:59pm, January 9, 2008 to be provided or replaced. After that, replacement compressors can be obtained



through the Innovation First web store
([URL="http://www.ifrobotics.com/first-store.shtml"]http://www.ifrobotics.com/first-store.shtml/
URL]).

Kit of Parts - General

IR board

IR board

Posted by FRC2100 at 02/05/2008 01:45:01 pm

We have damaged our IR board. Our team has placed an order and has come to realize that they are out of stock. Will FIRST provide another one or will we have to fix it ourselves:confused:.

Re: IR board

Posted by GDC at 02/07/2008 12:42:32 pm

The IR boards provided in the Kit Of Parts are limited quantity custom parts. Any spares are available through the Innovation First web store. The FIRST-provided boards are based on the Tiny-IR decoder IC. If those are out of stock, boards with similar functionality are available from many on-line resources.

Kit of Parts - General

Keyang motor connectors in KoP

Keyang motor connectors in KoP

Posted by FRC2642 at 02/06/2008 05:00:25 am

We are looking for a connector for the 16631023 Keyang motors. We may have lost one. We have one connector in the KoP, however, we can't find a connector housing for the other motor (023) (different style connector).

I've seen two answers.

1. BOTH connectors were supplied.
2. One connector was supplied, the other was not and we will have to attach wires to this motor or locate a proper connector.

Section G.5.2 says...

"There are two Keyang window motors in the 2008 Kop, PNs 16627960 or 61 and 16631023. The 16627960 (or 61) has an automotove quick-connect 2-piece electrical conector supplied in the KoP."

This quote leads me to belive that there is not a connector supplied for the 16631023. Is that correct? If we attach wires to this motor, will we be in trouble?

Regards,

Bill McClung
Engineering Mentor
Team 2624 - The Falconators



Re: Keyang motor connectors in KoP

Posted by GDC at 02/07/2008 01:14:18 pm

Per the KoP Checklist, only one connector housing was provided (four terminals were provided, but only two are required for connector assembly). The connector housing provided (PN 12064749) fits the Keyang motor (PN 16627960 or -961).

If you want to use the Keyang motor (PN 16631023), you are responsible for creating a safe, robust connection.

Kit of Parts - General

Ordering spare parts

Ordering spare parts

Posted by FRC766 at 02/07/2008 07:40:44 pm

How do we order spare 2-1/2" diameter CIM motors, part# FR801-001? I read and reread Section 10.1.2 of the manual and I just can't seem to locate a reference to how to order parts supplied by FIRST and not from outside suppliers.

Thank You
Team 766

Re: Ordering spare parts

Posted by GDC at 02/11/2008 12:47:59 pm

Please check the [URL="http://www.ifirobotics.com/first-store.shtml"]FIRST [I]Store[/URL].

Kit of Parts - General

Motors available at Spare Parts at regionals

Motors available at Spare Parts at regionals

Posted by FRC555 at 02/09/2008 10:24:28 am

Will the Keyang (van door) motor be available at spare parts this year, since there are no other spares available to teams?

Also, since there are no spare motors available to teams, is there any motor that can be used in substitution on the robot? (Keyang motors from previous years, a different motor, etc.)

Re: Motors available at Spare Parts at regionals

Posted by GDC at 02/11/2008 01:31:31 pm

Part 1: The contents of the spares cases will be published before Week 1 of the FRC Competition Season. There will be Keyang window motors in the spares cases, but it is unlikely that there will be Taigene van door motors.

Part 2: No motors other than those permitted under Rule <R58>, <R59> and <R60> are allowed to be used on the Robot.

Kit of Parts - General

IR Board and Board Master Code

IR Board and Board Master Code

Posted by FRC1513 at 02/18/2008 10:41:09 am



2008 Q&A Forum Export

generated: 02/27/2008 09:27:02 am EST

Our IR card does not work.

I heard that the code could have been corrupted.

What equipment is required to get the code put back into the chip?

Will there be that equipment at Regionals?

Will they be reprogramming the chip at Regionals?

Is there a workaround since there are no more to buy and no time to get a new one?

IR Board Master Code

Posted by FRC1127 at 02/18/2008 10:53:08 am

Will there be a way to load the new master code for the corrupted IR boards at FIRST regionals?

Re: IR Board and Board Master Code

Posted by GDC at 02/18/2008 01:02:30 pm

Please refer to Team Update #10. The PIC master code has been posted on the [I]FIRST [I]website on the [URL="http://www.usfirst.org/community/frc/content.aspx?id=482"]Additional Technical Resources[/URL] page.

PIC reprogramming equipment will not be available at the events.