

January 7, 2008

TEAM UPDATE #1

GENERAL NOTICES

Important Messages from *FIRST* Headquarters:

1) We would like to remind teams that illustrative resources, such as the Kickoff video, the game animation, etc. are intended to provide overviews of the game. The ultimate authority regarding game rules is the 2008 *FIRST* Robotics Competition Game Manual posted on the *FIRST* website (<http://www.usfirst.org/community/frc/content.aspx?id=452>).

2) Thank you to the teams who let us know that the link for the *2008 Pneumatics Manual* and the *2008 Sensors Manual* were broken. Our apologies for the inconvenience! The links have since been fixed and can be found on the *FIRST* website (the link is included in item 1 above) under *Section 8*.

Section 0 - Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 – The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7 – The Game has been updated as follows:

- Rule <G36> has been removed. There is no longer a height restriction in an opponent's homestretch.
- The reference to Rule <G10> has been deleted from Rule <G11>. Robot contact with a trackball while hurdling is permitted, however a trackball passing under the Overpass and across the finish line must not be in contact with a Robot, per Rule <G10>.

Section 8 – The Robot

Section 8 – The Robot has been updated as follows:

- The phrase “other than those specified in Rule <G36> about not exceeding the maximum permitted height while in the opponent's HOME STRETCH” has been deleted from Rule <R16>.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

The *Kit of Parts Checklist* has been updated as follows:

- The quantity of DryLin S Aluminum Shaft, Part Number AW116 has been changed from 4 to 2.
- The quantity of FisherPrice Gearboxes has been changed from 1 to 2.
- The quantity of the Terminal Blocks, Part Number BM-M092CS has been changed from 1 to 2.
- The phrase “rubber antenna” has been removed from the description of the Radio Modem for the Robot Controller. Both of the radio modems have metal antennas.
- The quantity of the Transmission mount – bottom has been changed from 1 to 2.

Please accept our apologies for the mistakes in the manual. We're grateful to the *FIRST* community for its thorough evaluation and gracious feedback. Thank you for finding the oversights so quickly!

January 11, 2008

TEAM UPDATE #2

GENERAL NOTICES

Please note:

Modifications to rules are highlighted in yellow.

Section 0 – Introduction

Section 0 – Introduction, Rev B has been modified to include the following change:

The Chairman's Award winning team in 1997, Team 47 "Delphi International & Pontiac Central High School", changes to "Delphi Corporation & Pontiac Central High School"

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

Important Reminder

Per Section 4.9.1, Teams requesting permission to bring robots home after their last event must submit a request for removal by February 15, 2008.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7 – The Game, Rev C has been modified to include the following changes:

Rule <G36>

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 the corresponding Player Station. ROBOTS that are disabled in this manner can not incur further PENALTIES (e.g. can not receive a PENALTY for IMPEDING). Disabled ROBOTS may be pushed out of the path of travel without PENALTY.

Rule <G38>

Signal To Pass – During the Teleoperated Period, a ROBOT may indicate a desire to pass an IMPEDING ROBOT by approaching the opponent ROBOT and “bumping” the back of the opponent ROBOT (relative to the Direction of Traffic).

- All “bump to pass” signals must be made with or against a STANDARD BUMPER, and inside the BUMPER ZONE, or
- If in POSSESSION of a TRACKBALL, the ROBOT may “bump” the IMPEDING ROBOT with the TRACKBALL outside the BUMPER ZONE, providing the contact is made exclusively with the TRACKBALL.

Signaling a desire to pass by “bumping” must still be executed within the constraints indicated in Rule <G37>. E.g. high-speed intentional ramming or using the TRACKBALL to intentionally damage or topple an opponent are still not acceptable actions, and will be penalized.

Rule <G40>

IMPEDING Traffic – ROBOTS shall not intentionally IMPEDE the flow of traffic around the TRACK. During the Teleoperated Period, a ROBOT will be considered to be IMPEDING traffic if it is preventing an opposing ROBOT from proceeding around the TRACK. A ROBOT can be found to be IMPEDING traffic if:

- the ROBOT is traveling slowly relative to the approaching ROBOT, and moving to prevent the approaching ROBOT from passing, or
- the ROBOT is stopped on the TRACK and there is no clear lane of passage for the opposing ROBOT, or
- the ROBOT pins an opposing ROBOT against an arena element, border, or another ROBOT

Note that a ROBOT is not IMPEDING traffic if:

- there is a clear “passing lane” around the ROBOT, or
- the IMPEDING ROBOT and the approaching ROBOT are from the same ALLIANCE (i.e. a ROBOT can not impede another ROBOT of the same ALLIANCE), or
- the ROBOT is in the process of HURDLING (except as noted in Rule <G43>).

Rule <G42>

Protection While HURDLING – Neither a ROBOT in the process of HURDLING, nor a TRACKBALL in its POSSESSION, shall be subjected to overt, blatant, or aggressive contact that interferes with the HURDLING attempt. Each incident will be PENALIZED. Bumping to signal to pass (see Rule <G38>) a HURDLING ROBOT is permitted if no passing lane is open (see Rule <G43>). Incidental contact while passing the HURDLING ROBOT or otherwise engaged in normal game play is permitted.

Section 8 – The Robot

The Inspection Checklist, Rev B has been modified to include the following change:

“Robot Class” has been removed from the top of the document

Section 9 – The Tournament

Section 9 – The Tournament, Rev B has been modified to include the following change:

Rule <T15>

During the Elimination Matches, the higher seeded ALLIANCE will have the last opportunity to orient their ROBOTS within the selected locations. During the Qualification Matches, the ALLIANCES will position and orient their ROBOTS simultaneously.

Section 10 – The Kit of Parts

Section 10 – The Kit of Parts, Rev B has been modified to include the following changes:

Section 10.1.2

- Added location to purchase additional *FIRST* IR boards
- Added location to purchase additional Trackball shells and bladders

Section 10.2

This section of the manual provides additional information about some of the parts included in your KoP. For a complete list of the 2008 KoP contents, please refer to the 2008 KoP Checklist located on the *FIRST* homepage, <http://www.usfirst.org/community/frc/content.aspx?id=452>

Section 10.2.3

- Specifications for the Denso motor have been removed.
- The motor curve for the FisherPrice motor can be found on www.usfirst.org/community/frc/content.aspx?id=482
- Specifications for the Taigene motor can be found on www.usfirst.org/community/frc/content.aspx?id=482
- Specifications for the Keyang motors can be found on www.usfirst.org/community/frc/content.aspx?id=482

Section 10.2.8.1

The 2008 Trackballs require some care in assembly and inflation. Each Trackball consists of two parts: a Bladder and a Cover. The bladder has a 120cm diameter and is made of 2500g PVC.

FIRST Guidelines, Tips and Good Practices

FIRST Guidelines, Tips and Good Practices, Rev B has been modified to include the following changes:

- The reference to the FisherPrice Minibike CIM motor has been removed.
- BaneBots planetary transmission reference has been changed to the AndyMark Toughbox.

January 15, 2008

TEAM UPDATE #3

GENERAL NOTICES

Modifications to rules are highlighted in **yellow**.

Note to FRC Teams: RoboCoaching and Use of the Signaling Device

There have been a number of questions about different implementation methods and options for the RoboCoach, and how the Signaling Devices may be used. We would like to expand a little on the information that has been provided, and see if we can clarify the intent behind the relevant rules. Note that this discussion is intended to provide some insight into the rules, what the members of the GDC were thinking when they were written, and how they will be interpreted. This discussion is NOT intended to replace or negate any of the existing rules.

For the sake of discussion, and since most questions are about this arrangement, we will assume that the desired Signaling Device is a standard off-the-shelf infrared television remote control, paired with one of the *FIRST*-provided IR receiver boards on the Robot.

The RoboCoach may use up to four different buttons on the TV remote to transmit up to four different messages to the Robot. To transmit “message #1” she would press Button #1, to transmit “message #2” she would press Button #2, etc. Only four buttons are available for use in this manner. All other buttons or combination of buttons should be ignored by the Robot. Pressing multiple buttons simultaneously, or in a sequence, also should not result in a valid message recognized by the Robot.

Note that only four messages can be sent by the RoboCoach, and only four actions can be initiated by the Robot in response to those messages. Each individual message can be sent to the Robot more than once (e.g. the RoboCoach can send the “turn left and drive forward” command many times) but the total number of available messages to send is limited to four.

The actions that the Robot takes in response to the messages received should be repeatable and predictable. In practical terms, this means that when the RoboCoach presses Button #3, Action #3 always occurs. Robot responses that are time-dependent or message sequence dependent are not allowed. For example, programming the Robot so that it initiates Action “A” if Button #3 is pushed during the first five seconds of the Hybrid Period, and it initiates Action “B” if button #3 is pushed during the second five seconds of the Hybrid Period, etc. would not be allowed. This time-dependent context for the message interpretation is equivalent

to the ability to send more than four single, unique messages, and is contrary to the intended RoboCoaching concept.

Similarly, if the Robot is programmed such that it initiates Action “C” when “Message #4” is sent and the previous message was “Message #2,” but executes Action “D” when “Message #4” is sent and the previous message was “Message #3,” then this forms sequence-dependent message interpretation. This is a form of sequence-based encoding of more than four single, unique messages, and would not be permitted. The same would also be true if pressing Button #6 and then Button #7 initiated one action, but pressing Button #6 and then Button #8 initiated a different action. This would be a form of high-level encoding, and is contrary to the intended use of the Signaling Device.

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.

What can be contained in the message(s) sent to the Robot? The message should contain a single command that directs the Robot to do something, or provides a single “snapshot” of information about the state or condition of the field that the Robot can use to determine what action to take.

Examples of single commands might be “turn left,” “turn right,” “stop,” etc. The Robot can then immediately execute these commands. The commands can also initiate the execution of more complex routines, as long as the routines rely only upon input from sensors and systems on-board the robot (i.e. not using information from the RoboCoach and/or Signaling Device other than “start routine xx”). Sending “Message #1” that equates to “start subroutine E” would be perfectly acceptable, presuming “subroutine E” executes every time “Message #1” is received. There is no limit to the complexity of “subroutine E.” It may be as simple as “stop right now and wait,” or as complex as “turn left, drive forward, raise the arm, grab the Trackball, lower the arm, race across the Finish Line, feed the hamster, complete my calculus homework, then stop.”

Note that executing a routine that waits for input from the RoboCoach to step through a sequence of more than four actions would not be allowed. For example, consider a programmed sequence of actions such as “start driving forward,” “stop in place,” “turn left,” “raise arm,” “open gripper,” “close gripper,” etc. Each time Button #8 is pressed, the Robot advances one step through the sequence of actions. This would not be allowed. Even though the message sent by the RoboCoach might be “step to the next command in the routine” it is functionally equivalent to a much larger set of sequence-based commands.

Examples of field states sent by the Signaling Device might include messages that mean “Red trackball in location 1,” “obstacle one robot length ahead,” “Home Stretch currently unoccupied,” etc. The Robot can be programmed to use this information to determine what it should do next (go to the Trackball location, maneuver around the obstacle, head for the Home Stretch, etc.).

Finally, we would like to address the issue of “sharing” the command opportunities between RoboCoaches. Each team has one RoboCoach. With three teams on an Alliance, that means three RoboCoaches per Alliance. It is permissible, presuming that all the teams on the Alliance agree, that a RoboCoach could send messages to more than one Robot in the Alliance. Likewise, a Robot could receive messages from more than one RoboCoach. The requirements that each RoboCoach send no more than four types of messages, and that each Robot respond to no more than four types of messages, all would remain in effect. But the four messages sent by the RoboCoach could be sent to multiple Robots. Each Robot can only respond to four unique message types. But those messages can source from multiple RoboCoaches.

For example, consider the case where two RoboCoaches on the Red Alliance were both using the same type of Signaling Device, and two Robots on the Red Alliance were both programmed to respond in the same way to the same four received messages. In this situation, the two RoboCoaches could send “Message #2” to a Robot and provide information that would help the Robot make its way around the Track. This would be permitted, and might be an excellent partnership opportunity for the teams within the Alliance.

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Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Trackballs

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

Section 7 – The Game, Rev D has been modified to include the following change:

Rule <G20>

After all ROBOTS participating in the MATCH are in their starting positions and TEAM members are standing behind the PLAYERS LINE within their 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.

Section 8 – The Robot

Section 8 – The Robot, Rev C has been modified to include the following change:

Rule <R87>

In addition to the items included in the Kit Of Parts, pneumatic system items specifically permitted on 2008 FRC ROBOTS include:

- One or two additional Clippard air storage tanks (Clippard Part Number AVT-32-16), equivalent to those provided in the kit. This means that up to four, and no more, Clippard air storage tanks can be used on the ROBOT.
- Pneumatic pressure relief valves identical to those provided in the Kit Of Parts (Parker Part Number PV609-2).
- Prior year *FIRST* Kit Of Parts solenoid valves, and pneumatic tubing may be used in addition to those provided in the 2008 Kit Of Parts. Their costs must be accounted for as explained in **Section 8.3.3 Budget Constraints**.
- Additional 0.160" inch inside diameter pneumatic tubing functionally equivalent to that provided in the Kit Of Parts, with the pressure rating clearly factory-printed on the exterior of the tubing (note: alternate tubing colors are acceptable).
- Pressure transducers may be used as long as they are rated to at least 125psi.
- 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).
- For the purposes of the *FIRST* competition, closed-loop pneumatic (gas) shocks are not considered pneumatic devices, and are permitted additions to the ROBOT.

Section 9 – The Tournament

Section 9 – The Tournament, Rev C has been modified to include the following change:

Section 9.3.2

All teams will play the same number of qualifying matches except if the number of team appearances **(number of teams multiplied by number of rounds)** is not divisible by six; in that case the scoring system will randomly select some teams to play an extra match.

Example: 32 teams playing 8 rounds requires 4 surrogates, but 32 teams playing 9 rounds does not require any surrogates.

Section 10 – The Kit of Parts

***FIRST* IR Board**

Schematics for the *FIRST* IR can be found on
<http://www.usfirst.org/community/frc/content.aspx?id=482>

***FIRST* Guidelines, Tips and Good Practices**

January 22, 2008

TEAM UPDATE #4

GENERAL NOTICES

Modifications to rules are highlighted in **yellow**.

Message from intelitek:

We at intelitek are thrilled to hear from all the teams using easyC PRO in 2008! The emails containing your team's free license of easyC PRO were sent on Jan 7th to your team's Main Contact and Alternate Contact. If you did not receive your CD Key, please check your spam folders or have a mentor of the team email support@intelitek.com.

Additional copies are available for \$99 at <http://shop.intelitek.com>. Good luck!

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

Section 6 - The Arena, Rev B, has been modified to include the following change:

Section 6.3

The game pieces, known as “TRACKBALLS,” are large balls made of an inflatable plastic bladder and an outer fabric covering. When inflated, each TRACKBALL is approximately 40 inches in diameter, and weighs approximately 7.3 pounds. Two TRACKBALLS of each alliance color, red and blue, are in the arena during the MATCH. One TRACKBALL of each color will be marked with a set of six-inch diameter white dots so that it may be uniquely identified for tracking purposes during the match.

Section 7 – The Game

No changes.

Section 8 – The Robot

Section 8 - The Robot, Rev D has been modified to include the following changes:

Section 8.3.2

<R17> ROBOTS must use one of the two FLAGS provided at the event queuing location to display their ALLIANCE color (red or blue). The FLAG shall be held in a flag holder mounted on the ROBOT. The only acceptable flag holder is a 12 inch long piece of 1/2” (nominal) Schedule 40 PVC tube. The tube must be a single, contiguous piece, capped with a commercial PVC pipe cap cemented at the bottom end. The tube must not have any “lightening holes” or other modifications other than mounting holes, paint, or other decorative surface finishes. The flag holder must be permanently mounted to the ROBOT such that when the ROBOT is in any PLAYING CONFIGURATION and the FLAG is in the flag holder, the FLAG is approximately vertical and the top of the FLAG is 75 inches above the floor. As the flag pole is approximately 36 inches long, that means the top of the flag holder must be 51 inches above the floor. The region above the flag holder must be kept open and clear of obstructions so that the FLAG can be placed in the holder and displayed during the MATCH and the LAP INDICATOR is visible to the Lap Detectors (see Rule <R18>). The intent of this rule is to insure that the FLAG is as high as possible so that it may be easily seen from any side during the entire MATCH play, while fitting under the OVERPASS as the ROBOT drives around the TRACK.

Section 8.3.8:

<R67> The control system is provided to allow wireless control of the ROBOTS. The Operator Interface, Robot Controller, speed controllers, relay modules,

radio modems, batteries, battery charger, AC adapter, and 9-pin cables shall not be tampered with, modified, or adjusted in any way (tampering includes drilling, cutting, machining, gluing, rewiring, etc.), with the following exceptions:

- Dip switches on the Operator Interface may be set as appropriate.
- User programmable code in the Robot Controller may be customized.
- Speed controllers may be calibrated as described in owner's manuals.
- The fuse on the Spike relay for the air compressor may be replaced with a 20 Amp Snap-Action circuit breaker.
- The alligator clips on the battery charger may be replaced with an Anderson PowerPole quick-disconnect fitting to improve the reliability of the connection to the battery when charging (this is a recommended modification).

Section 9 – The Tournament

MatchMaker Scheduling Algorithm

Details on the algorithm used to generate Alliances are now available under Section 9 on the Competition Manual page:

<http://www.usfirst.org/frc/2008/manual>

Section 9 - The Tournament, Rev D, has been modified to include the following changes:

Section 9.4.2 has been deleted.

Section 9.5.1

Championship Pit Crews

During the elimination matches, extra team members are often needed to move the team ROBOT from the team's pit area to the queuing area and onto the playing field. For this reason, each team is permitted to have three (3) additional "pit crew" members who can also help with needed ROBOT repairs/maintenance. We suggest that all teams assume they may be chosen for an ALLIANCE and think about the logistics of badge distribution and set a plan prior to the pairings. It is each ALLIANCE CAPTAIN'S responsibility to get the team's badges to the team pit crewmembers.

Only team members wearing proper badges are allowed on the arena floor. *FIRST* will distribute these badges to the ALLIANCE CAPTAINS during the ALLIANCE CAPTAIN meeting, which takes place on the division fields. These badges will provide the necessary access to the field for pit crewmembers.

Section 10 – The Kit of Parts

The IR Board Video shown at the 2008 Kickoff is now available here:

<http://www.usfirst.org/community/frc/content.aspx?id=482>

MK Battery Memo

MK Batteries are now available to *FIRST* teams at a reduced cost. Information on how to obtain these batteries is found under Section 10 on the Competition Manual page:

<http://www.usfirst.org/frc/2008/manual>

FIRST Guidelines, Tips and Good Practices

No changes.

January 25, 2008

TEAM UPDATE #5

GENERAL NOTICES

Modifications to rules are highlighted in **yellow**.

Replacement Parts

Replacement parts began shipping this week and will continue through early next week. The parts are shipping FedEx 2-day and are addressed to the team shipping contact. We appreciate your patience.

About "shooters"

Teams are hinting about exciting designs for *FIRST* Overdrive robots. As we hear stories about progress, we would like to emphasize the need for particular caution in designing, developing, and using TrackBall launchers.

A heavy ball to be launched over a high bar almost certainly means quick release of substantial energy. Well-designed machines will be able to do that safely, but seeming small mistakes in the process can produce dangerous situations.

Some suggestions --

- Assign a "Release Safety Officer" to insure that all team members understand the prototypes and experiments and their potential misuses. Establish guidelines for its use, such as: "No one is allowed to prepare the shooter to fire unless the Release Safety Officer is present and has made sure everyone is paying attention and following all the safety rules."
- Never assume that the device will operate as intended. For example, imagine that a surgical tubing spring is to be used to launch the Trackball. If all goes well, the ball is launched and most of the energy stored in the surgical tubing is transferred to the Trackball. If, for example, the small metal clip that was intended to anchor one end of the surgical tubing pulls loose, rather than a heavy ball leaving with a reasonable velocity, one could have a small bullet leaving with a very high velocity. That could be dangerous in the extreme. Always ask "What unexpected can happen?" and plan for that contingency. Because of the inherent dangers, redundant safety systems should be considered in the system design.
- Be aware that a launcher that is accidentally fired "empty" must absorb all the energy that was intended for the ball. An empty launcher can be a very powerful hammer.

- Always be extremely careful when shooting mechanism is armed. Any body parts in the path of the firing mechanism will be subject to tremendous amounts of energy. The firing and release system must be regarded with the amount of respect they deserve.
- Always know the answer to "Where will the energy go?" and protect against even unlikely events.
- Use guards.
- Use shields.
- Keep all high velocity parts within the main structure of the Robot.
- Use safety catches or double safety catches. Mechanical stops that prevent the mechanism from releasing, and are removed only when the Robot is placed on the field for a Match, are very highly recommended.
- Use "armed" flags/indicators. For example, install warning lights on the Robot to indicate when the launching mechanism is "armed."
- Use padding.
- Run a safety wire through the length of the coil of any springs, so the parts of the spring will be restrained if it breaks.
- Design the mechanism so that it does not make any sudden movements when the Robot is powered on or off, or when the pneumatic system (if used) is charged or discharged.
- Design the mechanism so that any stored energy is released in a slow, controlled manner (over several seconds) when the Match concludes and the Robot is powered off.
- Use remote triggers during tests.
- Use critical design reviews by experienced engineers/designers/builders.
- Carefully avoid high velocity pinch points. They can quickly become small guillotines. Any pinch points that cannot be avoided should be brightly colored (using yellow-black safety tape to indicate pinch points is strongly recommended, and would be a permitted use of adhesive tapes under the first bullet of Rule <R38>).
- Publish on *FIRST* Forums creative ways to help insure safety. You can submit your recommendation in the *Team Safety Suggestions* part of the *Submit Your 2008 FRC Question Here!* forum (<http://forums.usfirst.org/forumdisplay.php?f=622>). Once moderated and approved, your input will be posted publicly in the *Safety and Damage Prevention* sub-forum of *The Robot* section of the Q&A (<http://forums.usfirst.org/forumdisplay.php?f=595>).
- Ask experienced teams to review your design.

- Test, test, test, and retest. You must know that your system is capable of handling the intense loads.
- Obviously, the inspectors and referees at events will look carefully to make sure the machine is safe, but you must be responsible for safety while you are building, testing, and competing with your Robot.

PLEASE be extremely cautious with any of these types of devices once at a competition event. While you are developing and testing it in your shop, you will have the opportunity to make sure all your team members are aware of the device and trained to work around it safely. That will not be the case when you are in the pits at the competitions. Your Robot will be in close proximity to other people that do not know the details (and any potential dangers) of your design. It is incumbent upon you to ensure that any high-energy mechanisms are safely secured and incapacitated when others are around.

The *FIRST* experience is one of inspiration. Being safe is part of that experience.

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Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7 – The Game, Rev E, has been modified to include the following change:

Section 7.3.5.2

<G38> Signal To Pass – During the Teleoperated Period, a ROBOT may indicate a desire to pass an IMPEDING ROBOT by approaching the opponent ROBOT and “bumping” the back of the opponent ROBOT (relative to the Direction of Traffic).

- All “bump to pass” signals must be made with or against a STANDARD BUMPER, and inside the BUMPER ZONE, or
- If in POSSESSION of a TRACKBALL, the ROBOT may “bump” the IMPEDING ROBOT with the TRACKBALL outside the BUMPER ZONE, providing the contact is made exclusively with the TRACKBALL, or
- If the IMPEDING ROBOT is in POSSESSION of a TRACKBALL, and positioning the TRACKBALL so that it covers the back of the ROBOT, then the approaching ROBOT may “bump” the held TRACKBALL. In this situation, “bumping” the TRACKBALL will be considered equivalent to “bumping” the STANDARD BUMPER of the IMPEDING ROBOT.

Section 8 – The Robot

Section 8 – The Robot, Rev E, has been modified to include the following change:

Section 8.3.8

<R66> ROBOTS shall use the diagnostic LED flasher provided in the Kit Of Parts. Field personnel will use the LED flasher during the MATCHES for diagnostic purposes. Up to (4) LEDs can be installed on one robot. The diagnostic LED flasher is supplied with a four-wire cable with a length of approximately 6 feet. The cables are hard-wired at the lights and plug into the “Team Color” header pins on the Robot Controller. The Black wire of the ribbon cable must be plugged into the header pin marked BLK on the RC. It must be mounted on the ROBOT such that it is easily visible while standing three feet in front of the ROBOT in the STARTING CONFIGURATION. The excess cabling needs to be secured into a harness and anchored to the chassis. There is no direct method of attachment on the module; the attachment method is at the discretion of the team (usually some industrial-grade adhesive backed Velcro is suitable for this purpose). The Robot Controller directly powers and controls the LED flasher. The team has no direct control over the LED flasher and no programming is required.

Inspection Checklist

The Inspection Checklist, Rev D, has been modified to include the following change: (please note that a Rev C of the checklist was intentionally skipped over)

- Removal of “robot class” concept,
- Change to +/-1” tolerance for flag height,
- Change “similar” to “appropriate crimp-on” for battery terminal’s connections

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

FisherPrice motors

FIRST is currently working with FisherPrice to make additional motors available to teams as spares. They will be available in the *FIRST* Store (<http://www.ifrobotics.com/first-store.shtml>) on the Innovation First, Inc. website once delivered (delivery is expected within one week).

***FIRST* Guidelines, Tips and Good Practices**

No changes.

January 29, 2008

TEAM UPDATE #6

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

Section 3 – At the Events, Rev B, has been modified to include the following changes:

Section 3.8

3.8.1 Consent / Release and Team Roster Forms

You can find the forms here:

<http://www.usfirst.org/community/frc/content.aspx?id=8128>

Teams cannot register without a completed Consent/Release form for each team member and mentor attending the event(s) and a completed Team Roster. This includes adults traveling with the team. The forms for persons under 18 years of age must also have a parent or legal guardian's name and signature.

3.8.1.1 Prepare and Collect the Consent/Release Forms

Assign someone to take care of this project in advance. *Do not leave it for the last minute!* If a person does not attend the first event and did not turn in a form, he/she must complete one and turn it in at the event he/she attends. This includes the Championship.

We do not want, and will not accept school permission forms in lieu of our official form.

3.8.1.2 Bring Required Consent Forms and Team Roster to Registration

By choosing to attend or participate in the 2008 *FIRST* Robotics Competition events, each person grants *FIRST* permission to use all photographs and/or video footage, releases *FIRST* from liability, and provides the opportunity to gather alumni information. Each must use our official consent forms for this purpose. Read below for instructions/requirements:

Team's <u>INITIAL</u> 2008 Regional Event		Subsequent Regional Competitions & Championship
1.	Download the 2007-08 revised <i>FIRST</i> Consent/ Release and Team Roster forms from http://www.usfirst.org/community/frc/content.aspx?id=8128	Supply a completed <i>original</i> Consent form only for anyone who has not provided a form at an FRC Regional competition event during this season.
2.	To make it easy for yourself, fill in your team number on the designated line on the Consent form BEFORE you make copies.	
3.	Make enough copies of the Consent form for all team members, mentors, and accompanying adults.	
4.	Have each person fill one out and sign it.	
5.	Team members under 18 must have a parent or legal guardian sign theirs.	
6.	Collect the <i>original</i> Consent forms with the Team Roster on top, clip them together, and bring them to the event.	
7.	Give all forms to the registration staff at the Pit Administration Station at your initial Regional competition of the season.	

Section 3.9.1

Added following bullet points to bottom of list.

- While your robot is in your team's pit space any hybrid receiver must be disconnected from your robot.
- Teams will not be allowed to activate their shooting mechanisms within the team's pit space. If possible, we will try to provide a designated space within the venue for testing purposes.
- Trackballs must be stored within the confines of the team's pit space.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

Gear Tooth Sensor Boards

We would like to thank the teams that brought the Gear Tooth Sensor board issue to our attention. We are grateful to the industrious teams that discovered the misplaced resistors and tested the solution! You, the *FIRST* community, continue to impress and humble us. Diversified Systems, Inc. the donor and manufacturer of the boards has graciously offered to repair any boards that have this issue. To have your board repaired, please send the boards to Diversified Systems, Inc, Attn: Ben Wrightsman, 3939 West 56th St., Indianapolis, IN, 46254. For questions, you can contact Ben directly at 317-299-9547 x350. The Diversified Systems, Inc. crew will repair the board and return it to you promptly. If you have the resources, skill sets, and are comfortable making the repair yourself, you're more than welcome to do so. Thank you again for your gracious response to this challenge!

Bumpers

Reminder - Bumpers are required for all matches; pre- and post-inspection.

Sensor Strip Schematics

The schematics for the sensor boards are posted here:
<http://www.usfirst.org/community/frc/content.aspx?id=482>

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 1, 2008

TEAM UPDATE #7

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

Section 3 – At the Events, Rev C has been modified to include the following change:

Section 3.6.2.1

Match lists for the second and third day of competition will be available on the afternoon of practice day. The FTA will determine what time these lists will be generated and distributed. The Pit Administration Supervisor will manage the distribution process. This list includes both days of matches and provides information as to when teams will participate, with whom, and against whom. The list is final and the schedule will not be altered.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

ATTENTION *FIRST* TEAMS!

Due to an overwhelming number of requests from *FIRST* teams this season, igus is now only able to supply products included in its standard kit of parts (supplied to *FIRST* teams at kick-off), at no charge. If your *FIRST* team would like to place an order for igus products not included in this year's *FIRST* kit, you must place and pay for the order. You can do this by submitting a Sample Request Form at www.igus.com/yesprogram/FIRST2008_request.asp or by calling 1-800-521-2747 and speaking to a member of igus' customer service team. Thank you for your understanding and igus would like to wish each and every *FIRST* team the best this season!

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 5, 2008

TEAM UPDATE #8

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7 – The Game, Rev F, has been modified to include the following change:

Rule <G20>

TRACKBALL Locations - After all ROBOTS participating in the MATCH are in their starting positions and the TEAM members are behind the Players Line 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 or OPERATOR CONSOLE may be adjusted or repositioned until the MATCH starts.

Section 8 – The Robot

Section 8 – The Robot, Rev F, has been modified to include the following changes:

Rule <R55>

All active circuit breaker / power distribution panel branch circuits shall be protected from overload with an appropriate value auto resetting Snap Action circuit breaker from the Kit Of Parts.

- The Robot Controller power feed must be protected with a 20A circuit breaker. No other electrical load can be connected to this breaker.
- If the compressor is used, the air compressor Spike relay power feed must be protected with a 20A fuse or 20A circuit breaker. No other electrical load can be connected to this breaker.
- Power feeds to custom circuits and additional electronics must be protected with a 20A circuit breaker.
- Speed controllers must be protected by 20A, 30A, or 40A circuit breakers.
- Each relay module must be protected with one and only one 20A circuit breaker.

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

Rule <R110>

Any ROBOT construction technique or element that is not in compliance with the Robot Rules (Rule <R01> through Rule <R116>) must be rectified before a ROBOT will be allowed to compete or continue competing. Any ROBOT used during a MATCH when a Robot Rule violation is detected will automatically be assigned a PENALTY and may receive a Yellow Card, depending on the severity of the infraction (unless otherwise noted).

The 2008 *FIRST* Pneumatics Manual has been updated to include the following change:

Norgren Regulator Section

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, based on the operating conditions for a *FIRST* robot.

The Inspection Checklist, Rev E has been updated to include the following changes:

- Only one motor per Victor
- “Can the robot exceed 80” max size” checkbox
- Safe Ball Handling inspection item

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 8, 2008

TEAM UPDATE #9

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

FRC Q&A Forum

It has come to our attention that many teams do not take advantage of the information provided in the FRC Q&A Forum. The FRC Q&A Forum is an opportunity for teams to not only ask questions about the contents of the FRC Manual, but also learn from the questions of others. We encourage teams to have at least one team member become familiar the contents of the FRC Q&A Forum. In addition, we ask that if you have a question for the Game Design Committee, please search the existing questions. It's likely that your question has already been asked, and answered.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

Section 8 – The Robot, Rev G, has been modified to include the following changes:

Change in Section Heading

The chapter heading for Cost Determination of Additional Parts should be 8.3.3.1 instead of 8.3.5.1.

Section 8.3.6

We apologize for any confusion the last Team Update may have caused. The revision to Rule <R55> that we provided in Team Update #8 was incomplete. The correct revisions to <R55> are below:

<R55> All active circuit breaker / power distribution panel branch circuits shall be protected from overload with an appropriate value auto resetting Snap Action circuit breaker from the Kit Of Parts.

- The Robot Controller power feed must be protected with a 20A circuit breaker. No other electrical load can be connected to this breaker.
- If the compressor is used, the air compressor Spike relay power feed must be protected with a 20A fuse or 20A circuit breaker. No other electrical load can be connected to this breaker.
- Power feeds to custom circuits and additional electronics must be protected with a 20A circuit breaker. For custom circuits and sensors connected to the +5V power pin(s) on the RC, the RC's 20A circuit breaker provides the necessary protection.
- Each speed controller must be protected by one and only one 20A, 30A, or 40A circuit breakers.
- Each relay module must be protected with one and only one 20A circuit breaker.
- No other electrical loads may be connected to a breaker that is protecting a power-regulating device (speed controller or relay module).

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

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

Freelin-Wade Tube Ratings

Freelin-Wade has generously offered a significant discount to *FIRST* teams.

It has come to our attention that the tubing provided by Freelin-Wade through this offer, although manufactured to 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 cannot be verified as rated for the required pressures will be rejected during inspection.

Rockwell Automation Terminal Blocks

We would like to make sure that teams are aware that, as long as <R57> is followed, unused red and black terminal blocks of the power distribution block may be omitted. This means that teams may also cut the yellow jumpers and the DIN rail to fit their terminal block configuration. Additionally, teams may use grey terminal blocks if additional blocks are needed.

Pneumatics Component Order Form

The Pneumatics Component Order Form is found on page 18 of the 2008 Pneumatics Manual found here <http://www.usfirst.org/frc/2008/manual>

FIRST Guidelines, Tips and Good Practices

No changes.

February 15, 2008

TEAM UPDATE #10

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

FIRST IR Board:

A small quantity (<25) of the *FIRST* IR boards have worked well, but then stopped working. These particular boards stopped working because the PIC code was corrupted. The cause of the corrupted code is unconfirmed, however Bob Grieb, the designer, has a hypothesis as to the cause, and suggestions for preventative measures.

Please note, this is breaking information, and we have not had a chance to validate either the hypothesis or solution that is presented. We cannot, at this time, guarantee the efficacy of the solution and merely present it as a suggestion from the board's designer. Teams that alter their designs to accommodate this solution do so at their own risk.

If you have reason to believe that your PIC code has been corrupted, and you have the capability program PICs, you can use the code that Mr. Grieb has graciously provided.

Some teams have experienced a problem with the *FIRST* IR board where it suddenly stopped working, after operating properly for days or weeks. Several boards have been returned to me for repair and it seemed that the program in the PIC MCU was corrupted. I was able to reprogram the PIC chip on these boards and restore proper operation. After trying to figure out how this could possibly happen, I may have come up with an explanation:

Right at the time the robot is shutting off, any filter capacitors in its power supply may take some time to discharge. This could be several seconds or more. During this time, the voltages are gradually decreasing from their "on" level, say 12 volts, to the "off" level, probably 0 volts. During the time that the voltage applied to the *FIRST* IR 5V regulator input is around 3V or less, the regulator output will be too low for the PIC to operate reliably. If this in-between voltage is applied for a long enough time, the PIC could possibly crash and write to internal memory, erasing or corrupting the program itself.

A good way to prevent this from possibly happening is to insure that power is removed from the PIC very quickly, and is applied very quickly as well. A small toggle switch in series with the *FIRST* IR board power leads (pins 1

and 2 of J1) should accomplish this.

Radio Shack carries several small toggle switches that should work fine for this application. Part numbers are 275-663, 275-636, and 275-626. Some may be double-pole switches, as these are more common. You can just use one pole of the switch.

The correct sequence for powering up the *FIRST* IR board would be:
Power up/turn on the robot, and then turn on the new switch to power up the *FIRST* IR board.

To power down the robot,
Always turn off the switch that powers the *FIRST* IR board first, and then power down/turn off the robot.

This sequence should isolate the *FIRST* IR board from any long capacitor discharge times that the robot may have, and will hopefully prevent any more teams from having this problem.

I have been using this same exact code for several years, and have never had any problem, but as Murphy's Law states "If anything can go wrong, it will". Sorry for any inconvenience this may have caused.

- Bob Grieb

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Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

Spares Case Contents:

FIRST recognizes that there may be issues at your event in which you may require replacement parts of which you do not have extras. For this reason, we offer a Spares Case at each event (reference Section 3.9.5 of the Manual). The case is stocked with various items that your team may need in case of an emergency. Some of the items are consumables, but others will not be given out unless you exchange your damaged part for the new part.

Other parts are loaned parts and must be returned after the event (notated in **bold**

text). Teams must have written approval from the event's Innovation First representative in order to borrow Innovation First items. *If these are not returned, FIRST will charge the credit card submitted upon the loan.*

The following components may be available at the Spares Case at your event. Please remember that there are limited quantities, and that they are distributed on a first come first serve basis. While *FIRST* will make every effort to keep the Space Case as fully stocked as possible, we cannot guarantee that every item will always be available. It is incumbent upon each team to obtain and bring any spare/replacement parts that may be critical to the operation of their robot, and only rely upon the Spares Case as a resource of last resort.

Air tank, Clippard

Battery connector

Battery Connector Plug

Battery, backup

Bearings, R8 (wheel)

Chain, #35, (feet)

Circuit Breaker, 120A

Circuit Breakers (20, 30 & 40A)

Compact Fan (large and mini)

Couplers (6, 9, & 12 tooth)

Cylinders, Parker

Fuse Block, gold plated

Fuse Panels (6 & 12 position)

Gearbox, FisherPrice

Lead Screw w/ nut

Microswitch

Motor, CIM

Motor, Denso window

Motor, FisherPrice

Motor, Globe

Motor, Keyang window (-1023, -60, & -61)

Motor, Mabuchi

Operator Interface Units

Pivot/bracket set

Pneumatic fittings, brass, Parker

Pneumatic fittings, SMC

PowerGrip belting

Pressure Gauge, Norgren

Pressure Gauge, WIKA

Pressure Switch, Nason

Radio Modem for Robot Controller

Regulator & bracket, Monnier

Regulator mounting kit, Norgren

Regulator, Norgren

Relay Module (Spike)

Relief Valve, Norgren

Robot Controller Unit

Rod/clevis kit

Rotary limit switch

Serial cable, 9-pin

Solenoid valve, FESTO

Speed Controller (Victor 884)

Sprockets, Gates

Sprocket, output & wheel

Tape, teflon

Terminal Block, black & red

Terminal block, center jumper

Terminal block, end anchors & barriers

Terminal strips

Terminals (Tyco, Delphi, & FCI BURNDY)

Tie wraps (4" & 8")

Transmission kits

Tubing, latex (handful)

Tubing, pneumatic, roll

Vibration isolators, handful

Wheel, grey

Wire, 6AWG, Black & Red

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 19, 2008

TEAM UPDATE #11

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

San Diego Venue Name Change

The name of the San Diego venue has changed *FROM* the ipayOne Center *TO* the San Diego Sports Center.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

Robot Controller Replacement

If the 2008 Robot Controller becomes inoperable, a 2007 Robot Controller may be used as a replacement/spare.

Master Code for IR Board

Master Code for the IR Board is now posted on
<http://www.usfirst.org/community/frc/content.aspx?id=482>

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 26, 2008

TEAM UPDATE #12

GENERAL NOTICES

Modifications to rules are highlighted in **yellow**.

Labeling 120A Main Breakers & Pressure Relief Valves:

In the interest of proliferating good ideas, we would like to invite teams to clearly and obviously label the main 120A circuit breaker and any pressure relief valves on their robot. Clearly labeled main breakers and relief valves result in a safer robot, as it increases the ability for anyone to quickly and safely shut down a robot or exhaust the stored, pneumatic energy. Labeling these items is a recommendation, not a requirement. If these items are not labeled, it is not justification for a failed inspection. Many thanks to Dan Katanski, lead robot inspector, who has taken the time to draft labels that you can use. The files are posted on the *FIRST* website below the Inspection Checklist,

<http://www.usfirst.org/community/frc/content.aspx?id=452>.

Feel free to print the labels and bring them with you to your event!

PIC Programming at the Events:

We (*FIRST* staff) are aware that several *FIRST* IR boards have stopped working due to PIC code corruption. While the cause for the code corruption is unconfirmed (please refer to [Team Update #10](#)), the boards can be fixed by reprogramming the Microchip processor with upgraded PIC code. The upgraded PIC code has been posted to the [Additional Technical Resources](#) page on the *FIRST* website,

FIRST will also make the required resources for PIC reprogramming available at the FRC Regional Competitions. A designated volunteer or *FIRST* staff member at the event will provide the reprogramming service. Teams are not invited to do it themselves. The PIC reprogramming will be effective for *FIRST* IR boards that are otherwise in good shape. Reprogramming the PIC will not be effective if the board has been fried, dropped, drowned, eaten, burned, frosted, or otherwise damaged.

PIC reprogramming will be offered on the practice day of the event from 12pm to 2pm. The location will be determined and announced at the event. PIC reprogramming is only necessary once and is a quick process (less than 1 minute per board).

Having your *FIRST* IR PIC reprogrammed is completely optional, and is not required for use of the *FIRST* IR board in the Competition. Also, reprogramming a PIC on a functioning board is not necessary, but recommended, as the upgraded PIC code

includes added safeguards against PIC code corruption.

It is important to remember that once your PIC has been reprogrammed, you must re-train your *FIRST* IR board for the remote with which it will be used.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

The Inspection Checklist, Rev F, has been modified to include the following changes:

- Added statement to remind inspectors to add labels for robots that can exceed 80"
- Changed the motor per Victor/Spike inspection item to allow only one motor per Victor/Spike

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.

February 28, 2008

TEAM UPDATE #13

GENERAL NOTICES

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Modifications to rules are highlighted in yellow.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7, The Game, Rev G has been modified to include the following changes:

<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. If a TRACKBALL is in unrestrained motion (i.e. not in contact with a Robot) when the clock reaches zero, its contribution to the score will be based on when it comes to rest.

Referee calls:

In reference to the <G14> rule change, referees will make the calls as follows:

- determine the scores contributed by the Robots based on where they are when the clock reaches zero.
- determine the scores contributed by the Trackballs based on where they are when the clock reaches zero – unless they are in unrestrained motion (i.e. not in contact with a Robot) at the time, in which case determine the score based on when they come to rest

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.

March 4, 2008

TEAM UPDATE #14

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

Congratulations to all teams who competed in the Week 1 events! There were many great robots – and many great matches. We’re looking forward to a grand 2008 Competition Season and thank you for your contributions!

Operator Console Security:

During Week 1 events, there were several Operator Consoles that crashed to the ground when their driver’s station was hit by a robot. We’d like to remind all teams that it’s important to secure your Operator Console to the driver’s station. Velcro is provided, as specified in Section 6.4.2 of the Competition Manual. Considering the extent to which the drivers’ stations get rammed (and thus knock the operator consoles onto the floor) in *FIRST* Overdrive, it’s imperative that you take precautions to secure and protect your Operator Consoles.

Mounting your IR receiver:

Please note that IR receivers should not be mounted near the Robot flagpole. The lap counters attached to the flags transmit IR light, which will likely interfere with any IR receiver, regardless of frequency, mounted in close proximity and not shielded properly.

Match Timing Reminder:

We’d like to remind teams that the Hybrid Period ends when the clock reaches zero (which may or may not happen at the same time as the audible signal). Once the Hybrid clock reaches zero, teams are permitted to step forward and engage with their Operator Consoles.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

No changes.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Clarification regarding the deletion of Section 9.4.2:

Section 9.4.2, regarding pit crews during elimination rounds, was deleted because it was inappropriate to mandate such specifics about pit crews (number of people, etc) in the FRC Game Manual. The space available for pit crews and their necessity varies from venue to venue. In an effort to clarify any misunderstandings, elimination round pit crews are both permitted and encouraged at all events. The number of people permitted and other logistical details are determined by an event-to-event basis.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.

March 6, 2008

TEAM UPDATE #15

GENERAL NOTICES

Modifications to rules are highlighted in yellow.

Section 0 – Introduction

No changes.

Section 1 - Communication

No changes.

Section 2 – Team Organization

No changes.

Section 3 – At the Events

No changes.

Section 4 – Robot Transportation

No changes.

Section 5 - The Awards

No changes.

Section 6 – The Arena

No changes.

Section 7 – The Game

Based on questions that have come into the Q&A this week, FRC would like to make the following explanations of the intent behind some rules with the hope of eliminating any confusion that may be occurring.

Blocking in Hybrid

As stated in Section 7.1, the objective of *FIRST* Overdrive is to attain a higher score than your opponent by making counter-clockwise laps with your robot around the TRACK while moving large TRACKBALLS over and/or under the OVERPASS that bisects the TRACK. Certain rules were put into place to allow and encourage this to occur.

<G40> states in its first sentence that “ROBOTS shall not intentionally IMPEDE the

flow of traffic around the TRACK.” That is meant for the entire match. The rest of the rule goes on to define IMPEDING during the Teleoperated Period. Intentionally violating the first sentence of <G40> during the Hybrid Period is against the spirit of the rules.

Robots that come to rest AFTER they have completed some other actions in Hybrid Mode (e.g. crossed one or more lines, attempted to knock down the Trackball, etc.) in a position that might impede other robots will not be penalized. This is consistent with the revised rules, and our intent of the rule. It encourages them to do something during Hybrid Mode, without demanding that they have total field state knowledge. However, robots that intentionally establish a position designed to impede or block traffic WITHOUT doing anything else (e.g. they just drive forward and stop at the corner of the Lane Divider) will be given a yellow card.

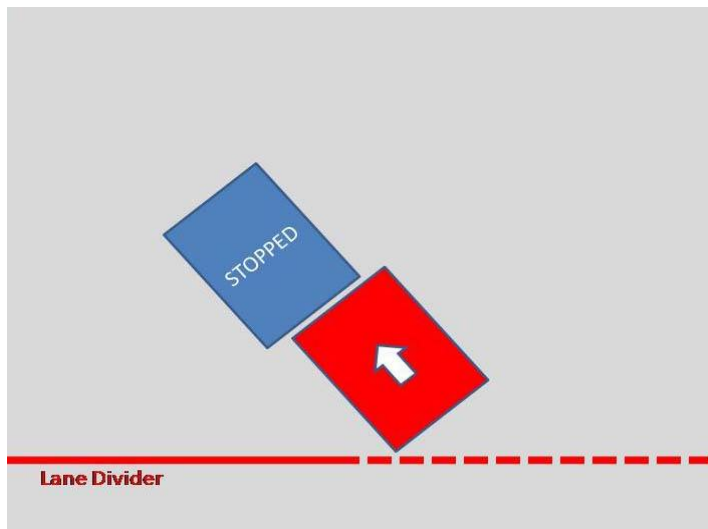
This is consistent with the previous Q&A answer we gave. We think there is enough distinction between the two alternatives that teams will understand the difference.

Please note that this is not a new interpretation, the following was stated in a Q&A answer on 1/24/08:

“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.”

Impeding during a line cross

When a robot gets stuck between a Finish Line or Lane Marker and an opponent Robot, because they would have to incur a <G22> penalty by backing across the line in order to gain access to a free passing lane (see figure), that Robot is to be considered to be IMPEDED and not to have a free passing lane. Therefore <G40> and <G41> apply and a six-second count will be started on the Robot causing it to be stuck there. This will give the stuck Robot an opportunity to begin moving again six seconds later without having to incur a penalty.



Scoring first Finish Line Cross during Teleop

There have been a number of questions asked about why Robots that do not leave their Home Stretch during the Hybrid Period did not score points when they first crossed their Finish Line in the Teleoperated period. It has always been the intent of the GDC that Finish Line scoring in Teleoperated Period does not occur unless a Robot has crossed its opponent's Finish Line since the start of the Match. This is stated in <G07>, and was meant to apply to the Teleoperated period only. We acknowledge that the wording of <G07> can lead to a different interpretation and we apologize for not stating the intent more clearly. We want to assure all teams that our intent was for it to be called the way the scoring system currently scores it. In summary, all line crossings are scored in Hybrid; all own Finish Line crosses are scored in Teleoperated once a Robot has previously crossed its opponent's Finish Line during the Match and after every subsequent cross of its own Finish Line.

Section 8 – The Robot

No changes.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.

***FIRST* Guidelines, Tips and Good Practices**

No changes.