

February 3, 2009

TEAM UPDATE #9

GENERAL NOTICES

General Notes from *FIRST* Headquarters:

Running the control system while recharging the battery:

We do not recommend simultaneously charging the battery while using it to power the control system.

Teams should only power the robot control system components from a battery. Using bench power supplies or a battery charger/battery combination (in an attempt to recharge the battery while running the system) is not recommended, and it may cause damage to components or unsafe conditions.

Section 0 - Introduction through Section 6 – The Arena

No changes.

Section 7 – The Game

Match Sequencing:

During each MATCH, the Field Management System will cycle each Driver Station through the following states:

- * Autonomous - Disabled
- * Autonomous - Enabled (for 15 seconds)
- * Autonomous - Disabled
- * Teleoperated - Disabled
- * Teleoperated - Enabled (for 120 seconds)
- * Teleoperated - Disabled

Please note that while the ROBOT is in the “Autonomous – Disabled” state, robots are "awake" and can monitor their inputs allowing them to perform tasks such as automatic camera calibration, target search (w/out servos or motors), gyro calibration, and perform internal calculations. Outputs, with the exception of the Robot Signal Light, are disabled.

Section 8 – The Robot

Inspection Documents

The *Inspection Checklist* and the *Bill of Materials Template* are now posted under Section 8 at <http://www.usfirst.org/community/frc/content.aspx?id=452>.

Chapter 8 - The Robot Rule Numbering Scheme

Recently, Revisions C - F had rule numbers that became askew. We apologize for this mistake, and have corrected the numbering in Rev H to match the numbering released at Kickoff. To be sure that you are referencing the correct rule number, we suggest you refer to *Chapter 8 - The Robot Rev H*.

Modifications to the Trailer Hitch:

The Game Design Committee has come to realize that assumptions made during the trailer hitch and trailer tongue designs did not take all possible legal robot designs into account. We apologize for this oversight, and have decided to make some changes to ensure all teams can meet our original intent: ultimately, contact between the robot and the trailer must be padded by bumpers, and not be between trailer tongue and trailer hitch. With our original hitch design, some teams would contact the trailer tongue to the trailer hitch before they could possibly have bumper-to-bumper contact.

In order to accommodate various robot shapes and sizes, we have included two acceptable modifications to the Trailer mount bar. They are included in Drawing GE-09040 Rev B which is posted under *Section 8 – The Robot* at

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

Section 8-The Robot, Rev H, has been revised to include the following:

- <R18>** To attach the TRAILER to the ROBOT, TEAMS must use a Trailer Hitch constructed from materials provided in the 2009 Kit Of Parts. Details on the construction of the Trailer Hitch are provided in Drawings “GE-09040”.
- A. The Trailer Hitch is composed of the “Trailer Spacer” (Part 2 in the drawing) and the “Trailer Mount Bar” (Part 3 in the drawing). The Trailer Spacer is a 7-inch length of square steel tubing provided in the Kit Of Parts. The Trailer Mount Bar is a length of robot chassis material (C-channel) to be cut from the provided KOP chassis material, and must match any of the three configurations included in the Drawing.
 - B. The Trailer Hitch must be rigidly attached to a fixed location on the ROBOT, with the long dimension of the Trailer Hitch horizontal and the opening of the C-channel facing away from the ROBOT. The horizontal center line of the Trailer Hitch must be 2-13/16 inches above the floor, +/- 0.25 inches.
 - C. The Trailer Hitch must be positioned so that the TRAILER may be locked in place with a standard 1/4– inch diameter hitch pin (McMaster-Carr part number 98416A009) . During a competition MATCH, this hitch pin will be provided with the TRAILER as part of the ARENA equipment. See Figure 8-5.

Required Modifications to the Drivers Station:

- <R59>** The control system is designed to allow wireless control of the ROBOTS. The Driver Station, cRIO Mobile Device Controller, digital sidecar, breakout boards, power distribution module, speed controllers, relay modules, wireless bridge, batteries, and battery charger shall not be tampered with, modified, or adjusted in any way (tampering includes drilling, cutting, machining, gluing, rewiring, disassembling, etc.), with the following exceptions:
- A. Programmable parameters on the Driver Station may be set as appropriate.
 - B. User programmable code in the Mobile Device Controller may be customized.

- C. Dip switches on the Mobile Device Controller may be set.
- D. Speed controllers may be calibrated as described in owner's manuals.
- E. The supplied fans attached to the Victor speed controllers may be powered from the Victor power input terminals.
- F. The fuse on the Spike relays may be replaced with a 20 Amp Snap-Action circuit breaker.
- G. The alligator clips on the battery charger leads may be replaced with Anderson Power Pole connectors (note: this is a recommended modification).
- H. Wires, cables, and signal lines may be connected via the standard connection points provided on the devices.
- I. Appropriate fasteners may be used to attach the device to the OPERATOR CONSOLE or ROBOT.
- J. The ESD protection modification specified rule <R85.1>

Modifications to the Pneumatics Manual:

The *2009 Pneumatics Manual* has been updated to correctly reflect the number of FESTO valves provided in the 2009 Kit of Parts. The following edits have been made, and the new revision is posted as Rev B.

FESTO has also supplied **one** single solenoid valves. In order to wire the **valve** you must remove the white plastic pin protector that comes over the pins. Instructions in the package explain how to wire the valve. The fittings are the push to connect type so all you have to do is push in the tubing. The blue manual-override switch closes the valve for testing, but is spring-loaded and will not maintain the valve's position when released.

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

Section 10-The Kit of Parts, Rev B, has been revised to include the following:

1/4 -20 x 5/8 SHCS – **Quantity 40**

1/4 -20 Nylock Nut – **Quantity 8**

Motor/Gearbox assembly 12VDC **w/16 tooth** pinion, -9015 motor (Fisher Price)

Helpful Links: