

# THE 2000 FIRST ROBOTICS COMPETITION

## TEAM UPDATE #4

Date: January 21, 2000

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### SMC PNEUMATICS UPDATE

Many teams have contacted FIRST regarding the delivery of the pneumatics bag provided by SMC. We apologize for the delay in getting this material to you. Several issues developed in getting address information from FIRST to SMC and then in shipping all of the product. However, the major source of the delays was the lack of valid shipping information provided to FIRST by many teams. FIRST struggled to get a complete set of 'ship to' addresses and then SMC struggled with many of the addresses that were not valid. Each incorrect or incomplete address slowed the whole process down.

FIRST and SMC are reviewing the entire process to find ways to improve for next year. One major improvement will be the requirement of a shipping address (no PO boxes) as part of the registration form. We ask that all of you remember the problems caused by incorrect addresses as you complete your registration for 2001. Thank you for your patience during the past two weeks.

### DRAYAGE

#### ***Teams competing in multiple competitions***

Machines must be out of team hands by 4 p.m. local time on Tuesday, February 22, 2000 and enroute to the designated drayage company for the FIRST Robotics Competition in which your team will be competing. Teams are required to provide FIRST with documentation showing proof of receipt by the drayage company or shipping vendor. Please fax documentation to your FIRST team coordinator at (603)666-3907 or (603)666-0043 by 5 p.m. local time on February 22, 2000.

If you are driving your crate to a drayage company, drayage must receive it by 4 p.m. local time on Tuesday, February 22. If you are shipping your crate to the drayage company, it must be in the hands of the shipping vendor by 4 p.m. local time on Tuesday, February 22 and received by the drayage company by 12 noon on Monday, February 28.

Any team competing in multiple regionals is required to ship their crate by 5 p.m. on the last day of the regional (Saturday) to the drayage company assigned to the regional in which the team will compete next. Trucks will depart event sites at 6p.m. on Saturday of the scheduled event. The drayage company delivers all crates to competition sites.

On the Saturday of each competition, a drayage company and shipping vendor will be available on site to assist teams with any shipping needs. Teams are responsible for paying all shipping charges. Shipping charges must be paid in full at the time of shipment. COD charges will not be accepted.

***Teams competing in the New England regional or the NASA Ames regional and the National Championship:***

If you are competing in one of the last regional events (CT or CA) and the National Championship (Epcot, FL), you are required to ship your crate on Saturday, April 1 with the designated shipper on site, provided by FIRST. FIRST will have a truck designated specifically to transport all crates from Connecticut and California to Florida for the National Championship. All Teams competing at either of these sites and at the National Championship must have their crate on the designated truck by 5 p.m. on Saturday, April 1.

As usual, teams are responsible for the shipping charges from Connecticut and California to Florida. FIRST will present each team with a bill for the shipping charges at the beginning of the New England and NASA Ames regionals. Teams must be prepared to pay this bill on site by Saturday, April 1. FIRST will let teams know the shipping cost before the event occurs. Since these are bulk shipments, the shipping cost will be a fair and reasonable rate.

**Please respect this time period, trucks must leave with crates at 6P.M. local time to insure they arrive at Disney.**

## **AUTODESK INFORMATION**

Be sure to check out the Autodesk updates page at <http://www.usfirst.org/2000comp/AutodeskUpdates/>. This site contains some tips on how to improve your abilities with 3D Studio Max and a couple of useful tutorials.

***Character Studio grants available for teams by request***

Autodesk is now offering teams competing in the Autodesk Award for Excellence an opportunity to request a grant copy of Character Studio to go along with their copy of 3D Studio MAX\*. To request a copy of Character Studio, send an email to [carolyn.gavriloff@autodesk.com](mailto:carolyn.gavriloff@autodesk.com) with the school contact name, school shipping address, team name, team number and phone number.

***Announcing the Participant Preferred Pricing Program - get 3D Studio MAX & Character Studio for half price!***

Discreet, a division of Autodesk, is delighted to offer all qualifying FIRST team members a 50% savings off the normal price of the 3D Studio MAX and Character Studio student bundle. This offer is available to both students and faculty team members. Offer expires April 8, 2000, at the conclusion of the National Championship at Epcot Center in Orlando, Florida. Download the order form and purchase application on the following URL:

<http://www.usfirst.org/2000comp/AutodeskUpdates/offer.html> , or place orders on-line at <https://www.creationengine.com/html/first2000order.html> .

***On-site tutoring and mentoring available for 2000FIRST Robotics Competition teams***

Discreet Division application engineers have offered to visit FIRST teams at their schools to help them get off the ground with their animation entries. To request a session, FIRST team faculty sponsors may call Discreet at 1-800-869-3504. There is no

cost for the sessions, but mentor availability will be extremely limited, so please allow as much advance notice as possible when requesting a session.

## MENTORS AVAILABLE

If you are in need of a mentor or would like to mentor a team, please contact Theresa Clement (Teams Coordinator) at (800)871-8326 extension 432 or by email at [tclement@usfirst.org](mailto:tclement@usfirst.org).

## SKYWAY RECREATION PRODUCTS

To order additional wheelchair wheels, FIRST Robotics Competition teams should contact Bart Weems in the sales department of Skyway Recreation Products.

Phone: 800-332-3357

Fax: 530-243-5104

Email: [sales@skywheels.com](mailto:sales@skywheels.com)

## CORRECTIONS AND UPDATES TO THE MANUAL

The following parts have been added to the Additional Hardware List as follows:

### Control System

Andersen Power Products Powerpole Modular Connectors	Any amount/size
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### Fasteners

Pipe fittings (tees, reducers, elbows, and angles)	Any amount - to join sections of pipe
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The following rule has been revised:

M20. All fabrication should cease once your robot has been shipped at the end of the six week initial build period. Off-the-shelf materials may be purchased and brought to the event site. Fabrication may resume once you have checked-in at an event site on Thursday. Fabrication of robot parts when a robot is at an event must take place on site.

Teams which compete in multiple events must ship their robot directly from one event site to another, as indicated in the Events section of the manual. However, teams are allowed to fabricate new robot parts for a period of 3 days after each event in which they compete, ending at 5 p.m. local time on the Tuesday after each event. These new parts may be brought to events by the team. The new parts are not required to be identical to the parts on your shipped robot.

This rule is intended to allow teams to fabricate replacements for parts damaged or otherwise not functioning properly at an event. It is our hope that this will allow all teams to keep their robots functioning through a series of events. We will rely upon your gracious professionalism to not continue the fabrication of new parts past the Tuesday deadline.

## RULES QUESTIONS & ANSWERS

- Q89. In regards to the drill motor, what is the pinion angle and gear size?  
A89. The angle is a 20° pressure angle and the gear size is a 0.7 module pitch.
- Q90. Where and how can we obtain extra drill motors?  
A90. At any Bosch parts supplier. The part number is 2610993804.
- Q91. What does the 6p.m. shipping time on the calendar refer to?  
A91. This refers to the time that the truck will depart the event site.
- Q92. May we remove material from the rotating light and colored dome so as to make it smaller?  
A92. No, the light/dome is not to be modified.
- Q93. May we mount a camera and transmitter on our robot and have the receiver in our station so we can assist the driver in locating the balls?  
A93. No, it would be an unfair advantage for your team to use the video signal at the alliance station to help you play the game. If you wish to mount a "robo-cam" on your robot, then send us the transmitter specs and I will clear it with the folks at Innovation First to make sure it won't cause any problems with the radio modems used by the robots (2.4 GHz should be safe). The receiver must be setup in some location other than the alliance station.
- Q94. If we build a machine with a lengthy arm...one that can grab the "chin-up" bar from the floor (so we don't need to be on the ramp to grab on for lifting), and another robot is blocking our access to the ramp, may we grab the bar and begin the retraction/lifting process? Our 130 pound machine would basically end up driving across the side and top of the machine blocking the ramp. This has negative consequences for the blocking machine. Have we committed any violation of the rules that we could be disqualified/penalized for?  
A94. That should be considered okay because your intent to score points by hanging is fairly clear and robot shoving is allowed.
- Q95. Consider the following scenario: We're coming up the ramp from one side, another machine is coming up the ramp from the other side. They get their first...and we push on, toppling them over and off the ramp. Have we committed any violation of the rules that we could be disqualified/penalized for?  
A95. This is just a shoving match, which is okay.
- Q96. Is the human player allowed to stand in the alliance station? The demo at the Kickoff had them kneeling.  
A96. Yes, the human players may stand.

- Q97. May the robot throw balls over the wall to our human player?
- A97. Yes. Keep in mind that your human players are not allowed to leave the Alliance Station in order to collect the thrown balls. Also, be advised that the robot is not allowed to throw balls into the opponent Alliance Station, because that is against the rules.
- Q98. Are we correct in interpreting the GM9 rule and related question Q47 as follows: The robot's orientation at the start of the match can be: "upright" (i.e. a maximum footprint of 30"x36" excluding bumper) or resting on any "side", provided the maximum footprint is within the 48"x48" noted on the playing field drawing as the Robot Starting Location, but cannot be resting on any side with a footprint of either 30"x60" or 36"x60" .
- A98. No, the robot must always start in an "upright" position. See Rule M2. The robot is allowed to "tip over" after the match starts.
- Q99. Your answer to question Q25 seems counter to A15, A43 and discussion at the Kickoff. In what situations can a robot gain 10 points by being raised or lifting itself on an opposing alliance robot?
- A99. Since the Kickoff, many teams have proposed building "ramps" on their robots to permit a partner robot to drive onto them and thus be off the field. Since these ramps are clearly designed to support a robot, we feel that it is acceptable for an opposing robot to also make use of these ramps. Hanging from a robot is a different matter, because the act of pulling on a robot is considered likely to cause damage to the robot, such as by breaking off mechanisms not designed to support the load of another robot. Ultimately, it comes down to push versus pull, and we consider pushing okay.
- Q100. Are we allowed to use pulleys for wheels on the robot?
- A100. Yes, you may use pulleys as wheels. Pulleys are included on the Additional Hardware List and there are no specific usage restrictions on pulleys. However, you should verify that the pulleys do not damage the playing field carpet.
- Q101. I understand there is to be no fabrication of robot parts including spare parts after the robot is shipped. Do all spare parts (assuming they were manufactured before the ship date) have to be shipped with the robot or can they be kept with the team?
- A101. Spare parts that were fabricated within the six week initial build period should be shipped with the robot. (You are permitted to ship more than one crate, although additional crates will be at your expense.) You may bring spare raw materials (motors, aluminum extrusions, off-the-shelf gears, etc.) to events in order to facilitate fabrication of new parts at the events.
- Q102. Is all Aluminum tubing considered Aluminum Extrusion or just seamless tubing?
- A102. You would have to check with the supplier to see how the tubing was manufactured.

Q103. May we use cylinders other than the ones that come in the SMC package?

A103. No, you may not use other types of cylinders. See Rule M15 and updated M14. Refer to Team Update #3 for a complete list of the parts from SMC Pneumatics.

Q104. Are Trantorque couplings from SPI considered “shaft couplings” per the Additional Hardware List?

A104. Yes.

Q105. In the Additional Hardware List, are the casters labeled ‘W.T. Hight Casters’ a specific caster or is any caster allowed?

A105. This is a specific caster, part number 31CD30X8812MM. W.T. Hight is a manufacturer of casters. For manufacturer information refer to the Supplier Contact List in the manual.

Q106. May we cut the housing of the drills motors?

A106. Yes, see Rule M19.

Q107. Rule M3 refers to the ‘energy absorbing bumpers’. Could we use a “crumple zone” design? This would be replaced each time it was crushed.

A107. Yes.