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PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!

THIS IS THE LAST TEAM UPDATE.
SEE YOU AT THE EVENTS! GO TEAMS!

FIRST will provide rules updates and other important information to teams via the FIRST web site at:

http://www.usfirst.org/robotics/2003/docs.htm

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2003 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

QUESTIONS?

MESSAGE BOARD
In order to post questions on our message board at:

http://jive.ilearning.com/index.jsp

- **You <u>must</u> reference the particular section of the manual you are questioning or your question will not be answered. This will help us give you the most accurate answer possible.**
- **Limit each message board submittal to ask only 1 question at a time.   This will allow us to categorize your question and will enhance our ability to respond in a timely manner.**
- **<u>Please state your inquiry as a question. Some submittals have been lengthy and we have had a great deal of trouble trying to find the question buried within.</u>**
- **Do <u>not</u> reply to posted messages. FIRST is the only official source for answers. Your replies to posted questions slow down the moderating of this forum. Replies other than from FIRST will be deleted.**

AUTODESK, INC.
For all inquiries, please e-mail:

first.entries@autodesk.com

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THE GAME

PAGE 9, RULE GM31

Teams should take careful note on this:

FIRST will enforce GM31 thoroughly. Assemblies/appendages, which straddle the midfield barrier, will be thoroughly reviewed and likely disallowed as they clearly are intended to react with the field. Robot devices which are deployed or in a fixed position in order to avoid being pushed under the midfield barrier are designed to react with the field and will likely be disallowed.

Devices, which "lock" onto the platform, ramps, carpet, etc., and are subsequently pushed by another robot so as to cause/potentially cause field damage, must then be disengaged. The potential for damage rests with the deployer of mechanisms.

SCORING EXAMPLES

Referee Scoring Process and Examples:

This example is for the RED alliance. The referees will:

1. Find the multiplier stack height:
   - Go to the tallest stack that is touching the red carpet.
   - Check if any container in that stack is touching a robot for the red alliance, if it is, go to the next tallest stack, etc.
   - If stacked normally, simply count the containers in this stack.
   - If the height of this stack is not immediately clear, due to a pyramid shape, sideways containers, etc., use the measuring stick to find the height of the stack in SHUs.
2. Count the containers:
   - Count the containers in the red zone, including in the multiplier stack and including those touching or on a blue robot in the red zone.
   - Do NOT count containers touching a red robot.
   - Do NOT count any of the containers in a stack if the stack is touching a red robot.
3. Count red robots on the center platform:
   - Count red robots touching only the white HDPE (and one sidewall is OK).
   - If the red robot is touching another red robot that doesn't count as on the center platform, don't count either red robot. (A red robot touching a red robot that does count, or touching any blue robots is OK.)

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- If the red robot is completely on top of any robot that counts as on the center platform, it counts too.
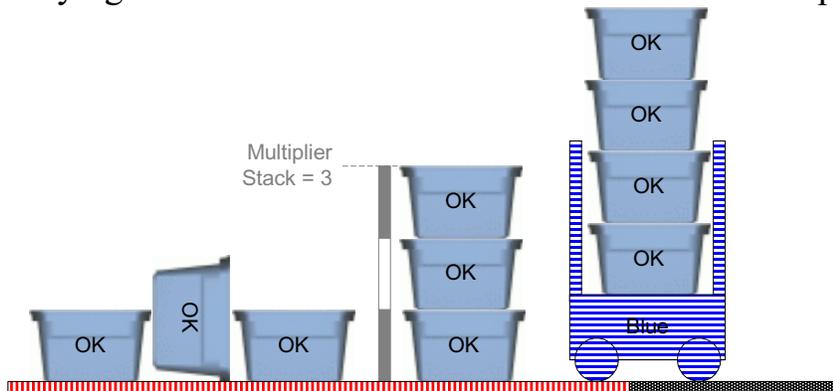
The scoring system then calculates the red score as:

((containers – multiplier stack height) x multiplier stack height)
If the result is less than 0, use 0
Add (robots x 25)

Examples of unusual scoring zone situations:

Example 1: There are 10 containers in the red scoring zone, one in a stack of 4, one in a stack of 3, and 3 scattered about. A blue robot comes over, lifts up the stack of 4 and starts to drive away when time runs out. After movement stops, one wheel of the blue robot is still on the red carpet, and this blue robot is carrying the stack of 4 in the air. No robots are on the platform.

Result: The referees note that the stack of 4 does not have contact with the red carpet, and the stack of 3 becomes the multiplier stack. For container count, the blue robot is in the red scoring zone, and the stack of four is supported by the blue robot, so the container count is 10 total. The score for red is
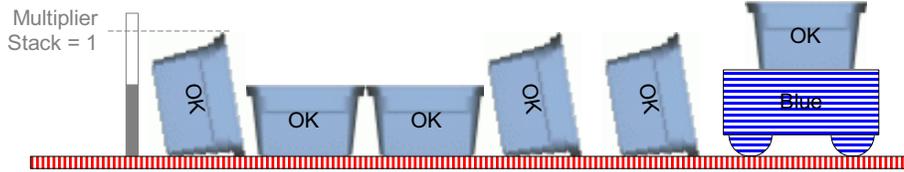$$((10 – 3) \times 3) + (0 \times 25) = 21$$

Example 2: There are 7 containers in the red scoring zone, one in a stack of 4 and 3 scattered about. A blue robot plows through the stack of 4: 1 of the containers lands on the blue robot, 1 is thrown out of the arena, and 2 land on the carpet. The match ends with the blue robot still on the red carpet, 1 container on the blue robot, and 5 containers on the red carpet. No robots are on the platform.

Multiplier
Stack = 1

OK

OK OK OK OK OK

Blue
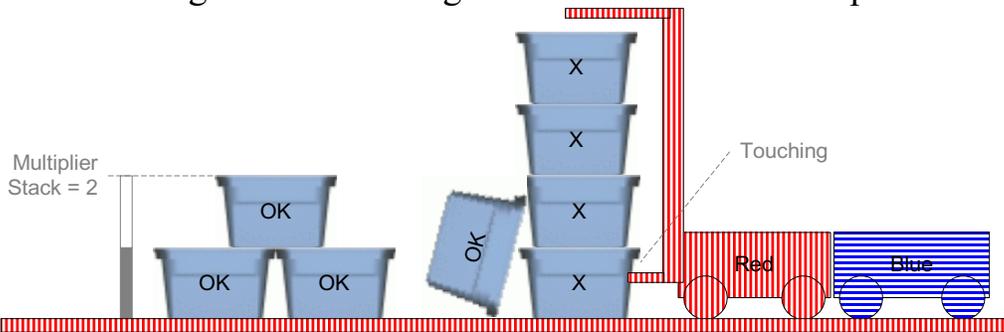
Result: The referees note that the stack of 1 on the blue robot does not have contact with the red carpet, and a single container on the carpet becomes a multiplier stack of 1. For container count, the blue robot is in the red scoring zone and the one container on it counts, so the container count is 6 total. The score for red is $((6 - 1) \times 1) + (0 \times 25) = 5$

Example 3: There are 8 containers in the red scoring zone, one stack of 3 containers in a pyramid, and the remaining 5 scattered about. A red robot begins picking up scattered containers and stacking them. After stacking 4 containers, a blue robot heads towards the red robot at high speed. Time runs out. The red robot's spring loaded stacking mechanism springs away from the stack of 4, so the red robot is no longer touching the stack. The blue robot continues to glide, bumping the red robot slightly so that the red robot is touching the stack of 4 again. No robots are on the platform.

X

X

Touching

Multiplier
Stack = 2

OK

OK

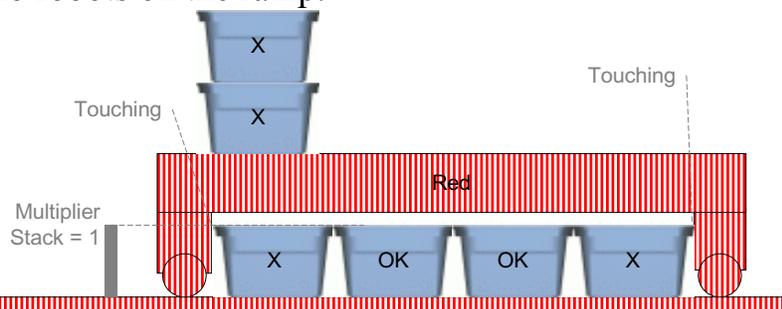X

OK

OK OK X

Red Blue

X

Result: The referees note that the stack of 4 is touching the red robot, and the pyramid becomes the multiplier stack. The referees can clearly see the height of the pyramid is 2 SHU. The stack of 4 is touching the red robot, so none of those containers count. The 3 in the pyramid, and the remaining 1 count, making a total of 4. The score for red is $((4 - 2) \times 2) + (0 \times 25) = 4$

Example 4: There are 10 containers in the red scoring zone, one stack of 3 containers, one stack of 4 containers, one on the red robot, and the remaining 2 scattered about. A red robot ends the match with one on top, touching another container, and one container leaning against it. The container touching the red robot is also touching the stack of 4. No robots are on the platform.

Result: The referees note that the stack of 4 is not directly touching the red robot, and this is the multiplier stack. The container on the red robot and the two touching the red robot do not count, the remaining 7 do. The score for red is $((7 - 4) \times 4) + (0 \times 25) = 12$

Example 5: There are 8 containers in the red scoring zone, in a stack of 3 and a stack of 5 touching each other. At the last second a red robot hits the stack of 5, and part of it piles on top of a red robot. The top containers are partially supported by the red robot, and partly by the red carpet. There are no robots on the ramp.

Result: The referees note that the pile is touching the red robot, so this is not the multiplier stack. The stack of 3 is the multiplier stack. All the containers in the pile are in the same stack, and touching the red robot, so none of these containers count. The score for red is $((0 - 3) \times 3) + (0 \times 25) = 0$ (the first part of the scoring equation cannot go below 0)

Example 6: There are 9 containers in the red scoring zone. There is a stack of 3, a pyramid stack of 4 at a height of 3, and 2 loose containers. A red robot stacks one of the loose containers on the stack of 4, but time runs out with the mechanism still touching the container. There are no robots on the ramp.

Result: The referees note that the pile of 5 is touching the red robot, so this is not the multiplier stack. The stack of 3 is the multiplier stack. The stack of 5 is touching the red robot, so no containers in this stack count. The remaining loose container, leaning against the stack of 4 but not supporting the stack of 4 is OK. The score for red is $((4 - 3) \times 3) + (0 \times 25) = 3$ (scores cannot go below 0)

Example 7: There are 6 containers in the red scoring zone. A red robot grabs and holds onto 4 containers on the carpet, and has 2 resting on top of it. There are no robots on the ramp.

Result: The stack of containers on the red robot is not touching the carpet, so the multiplier stack is a multiplier of one. The referees note that the two end boxes being grabbed are touching the red robot, so those do not count, nor does the one on top. The remaining two are being held, but are not touching the red robot but are touching the carpet and so they count. The score for red is $((2 - 1) \times 1) + (0 \times 25) = 1$

THE ROBOT

FANS
You can add muffin fans to your robot to cool your motors to a total of 5 large fans total. They do not have to be connected to a relay and can all be powered from 1 20A. circuit breaker.

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MODIFIED – INSPECTOR TRAINING ON THURSDAY MORNING, NOT WEDNESDAY NIGHT

FIRST is piloting a new process for the 2003 season whereby we will utilize team people to assist with robot inspections. FIRST feels this has the potential to improve the speed and quality of robot inspections but will only work if we all practice "gracious professionalism." Everyone involved must treat one another with respect.

The time commitment is all day Thursday as this is the big inspection day (from 9:00 AM until 6:00 PM) and occasionally Friday morning from 8:00 AM to 9:00 AM for the 1 or 2 that didn't pass on Thursday. Ideally, we will inspect 3-4 robots (rookie, mid-level experience, and veteran) Thursday morning as part of the inspector training. The robots chosen should represent the range of electrical, mechanical, and pneumatics.

For those team members that are interested in assisting with robot inspections, please read the procedure below and, in particular, item 1 to see if you qualify as an inspector. If you qualify and could help us, we would like to know, in advance, for which events you are available.

Please use the FIRST website to sign up as a **Robot Inspector** by following the link below:

http://www.usfirst.org/volunteer

INSPECTION PROCEDURE

1.   All robot inspections will be done by a four-person team consisting of 2 students with at least two years of competition experience and 2 adult mentors with at least two years of competition experience (you must have competed in at least the **2001 and 2002** seasons). Smaller inspection teams may be necessary depending on the number of people that volunteer to inspect. In no case will teams be comprised of just students.
2.   Members of each inspection team must come from different FRC teams and may not inspect their own team.
3.   Any team failing inspection may challenge the decision of the inspector if they disagree with the interpretation of the rules. A second team will be sent to review the decision.
4.   If the second set of inspectors cannot reach consensus, the final decision will be made by the FIRST engineering staff member on site. This person should review the reason for disagreement with both inspection teams and the on site IFI representative.
5.   Each team must supply an itemized list of purchase components at the time of event registration that will support the following:
     •   Additional robot components $3,500 max / $400 individual component max and

includes the electronics in the next bullet;
- Additional electronics $200 max / $100 individual component.

6. The final decision will rest with Hut Snow and the FIRST advisors via phone call if necessary.

INSPECTION CHALLENGE PROCESS

FIRST realizes that some robots pass inspection when, in fact, maybe they shouldn't have. If a robot passes inspection BUT another team member/team feels the robot is not legal for some reason, FIRST will pilot a new process this year.

A team that is questioning a robot's inspection must note the team number and violation on an index card available at Pit Admin and deposit the card in a box there. The card can be anonymous. The cards will be reviewed periodically during inspection day and resolved.

KIT OF PARTS

PARTS FROM MMH
Ordering from MMH is now done. Any extra parts are packed and will be available on the road.

PARTS FABRICATION AFTER EVENTS
In order to better allow teams to replace robot components that fail or do not work well at competition events, FIRST will adopt the following:

1. At the competition events, teams can build whatever they want:
   - Spare parts;
   - Replacement parts;
   - Extra parts;
   They must be fabricated on-site utilizing available fabrication resources. We are, however, concerned about the potential for teams to over-utilize the competition machine shop in the fabrication of new parts when the shop should be dedicated to repairing parts required to keep robots running and able to participate. Therefore, a machine shop's top priority will be repairing parts with fabrication as time allows

2. After each event in which a team participates, the team has until midnight Wednesday (local time) immediately following their event to repair and/or fabricate new mechanisms and may bring these parts and mechanisms to any subsequent events. As before, we must rely on the gracious professionalism of teams to adhere to the rules of the FIRST Robotics Competition.

3. Teams are allowed to purchase raw materials (wheels, gears, metal stock, etc.) and bring them to event sites in preparation to fabricate custom parts or mechanisms on-

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site at events.

4. Unchanged is the policy that teams may not perform part fabrication or repair of parts off-site when the robot is at an event (i.e., no taking parts back to your hotel), and that teams must ship all robot parts at an event site directly to any subsequent sites.

Example: Team A is attending two regional events. At their first event, their robot breaks a gearbox. Team A must ship their robot and all it's parts directly to the next event site they will be competing at. However, Team A has until midnight Wednesday following the event to fabricate a new gearbox and bring it with them to their next event.

FIELD / CORRECTIONS

There are none for this update.

AUTODESK

There are none for this update.

ADMINISTRATIVE / MATERIAL HANDLING / SHIPPING

There are none for this update.