

January 26, 2010

TEAM UPDATE #5

GENERAL NOTICES

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No changes.

Section 0 – Introduction through Section 6 – The Arena

No changes.

Section 7 – The Game

Section 7 – The Game, Rev E has been updated to include the following edits:

<S03> E-Stop - An Emergency Stop (E-Stop) button is located in each TEAM'S Player Station. Pressing an E-Stop button will cause the TEAM'S ROBOT to be disabled for the remainder of the MATCH. The E-Stop buttons are intended for remote shut down during a MATCH in the event of safety hazards and will not otherwise affect MATCH score or duration. Any TEAM member or referee may press the E-Stop button. **Violation:** *Inappropriate use of the E-Stop button (i.e. not for safety reasons) will result in a Red Card.*

<G27> Disabled ROBOTS and PENALTIES – If a ROBOT becomes **incapacitated unsafe** (e.g. the ROBOT ~~overturns and cannot be righted~~ begins to smoke, the battery falls out, etc.), it may be disabled by pressing the E-Stop Button in the corresponding Player Station, **per Rule <S03>**. *ROBOTS that are disabled in this manner cannot incur further PENALTIES nor may they earn additional points.*

<G45> Active BALL control - ROBOTS may not control BALL direction with active MECHANISMS above the BUMPER. **Violation:** PENALTY.

MECHANISMS are considered “active” if they are in motion relative to the ROBOT while in contact with the BALL. Resetting or moving MECHANISMS while not in contact with a BALL is permitted as the MECHANISMS are not considered “active.”

Note that portions of MECHANISMS that are designed to interact with the BALL below the BUMPER and are in compliance with Rule <G30> may extend above the level of the BUMPER, as long as the point of interaction with the BALL is below the level of the BUMPER.

<G47> BALL RETURN Interference – **Neither ROBOTS nor TEAM members** may not interfere with BALLS in contact with the BALL RETURN **downstream of the BALL RETURN counter**. **Violation:** Two PENALTIES per affected BALL.

It is important to consider this rule when designing mechanisms that interact with the TOWER. Be careful to make sure that your hanging apparatus doesn't dam the BALLS on the BALL RETURN.

Section 8 – The Robot

Section 8 – The Robot, Rev E has been updated to include the following edits:

<R08> ROBOT wheels, tracks, and other parts intended to provide traction on the **FIELD carpet** may be purchased or fabricated (“traction devices” include all parts of the ROBOT that are designed to transmit any propulsive and/or braking forces between the ROBOT and the FIELD). In no case will traction devices that damage the carpet or other playing surfaces be permitted. Traction devices shall not have surface features such as metal, sandpaper, hard plastic studs, cleats, or other attachments. Anchors (i.e. devices that are deployed/used to keep one's ROBOT in one place and prevent it from being moved by another ROBOT) shall not use metal in contact with the carpet to “stay put.” Gaining traction by using adhesives or Velcro-like fastener material is not allowed.

Curved Bumper Thread:

The Game Design Committee (GDC) would like to highlight a new post they've made to the thread in the FRC Game Q&A forum. The original GDC post to the *Curved Bumpers?* thread stated that there are no rules that prohibit curved bumpers, however the more recent GDC post in *Curved Bumpers, Expansion during finale* thread states that curved bumpers are prohibited.

To address the conflict, the GDC has opted to enforce the less restrictive rule as not to unfairly punish teams that have been working to the less restrictive initial answer, thus there are no rules that prohibit curved bumpers. Please note that while curved BUMPERS are not explicitly prohibited, curved BUMPERS must be at least as strong/robust as straight BUMPERS and be at least 6" long per Rule <R07>.

The GDC offers its apologies for the inconsistency and thanks you for your patience.

Pneumatic rules:

The GDC has retracted a response to a question posted at <http://forums.usfirst.org/showthread.php?t=13983> (about shocks and springs) because the answers overlooked the constraint defined in Rule <R76>. Rule <R76> constrains working air pressure to the pneumatic circuit only. The GDC apologizes for the oversight and appreciates your patience!

The GDC cannot accommodate the incorrect answers by adjusting the rules because there is no compromise on safety. The addition of the COTS requirement for shocks in Rule <R72-l> further clarifies what has always been the intent – that devices which may be subject to instant and potentially large dynamic pressures are designed, tested, and approved for such use.

One additional reason for why the forum answer will not be incorporated into the rules is because it is not regarded as a serious constraint that prevents teams from being successful in many other legal ways (i.e. springs, latex tubing, etc).

To make accommodations for solenoid valves rated for lesser pressures than defined in

Rule <R72> (this year's KOP valve as well as former KOP valves), **Section 8 – The Robot, Rev E** has been updated to include the following edit.

<R72> In addition to the items included in the KOP, pneumatic system items specifically permitted on 2010 FRC ROBOTS include the following items. All included items must be “off the shelf” pneumatic devices rated by their manufacturers for pressure of at least 125psi, and used in their original, unaltered condition (except as required for assembly with other components).

- A. 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.
- B. Pneumatic pressure vent plug valves functionally equivalent to those provided in the KOP (Parker Part Number PV609-2).
- C. Solenoid valves. All such valves must have a maximum $\frac{1}{8}$ ” NPT port diameter, and a maximum Cv of 0.32 (if non-KOP valves are used, the team will be required to provide part documentation validating that the valves meet these constraints). Solenoid valves that are rated for a maximum pressure that is less than 125psi rating mandated above are permitted, however if employed, an additional pressure relief valve must be added to the low pressure side of the main regulator. The additional relief valve must be set to a lower pressure than the maximum pressure rating for the solenoid valve.
- D. In addition to the pneumatic cylinders provided in the KOP and the “free” pneumatic cylinders available for order through the Free Pneumatic Components Order Form, additional air cylinders or rotary actuators may be used. Cylinders may be of any configuration, and may be of any size up to a maximum of 24-inch stroke and 2-inch diameter.
- E. Additional 0.160” inch inside diameter pneumatic tubing functionally equivalent to that provided in the KOP, with the pressure rating clearly factory-printed on the exterior of the tubing (note: alternate tubing colors are acceptable).
- F. Pressure transducers, pressure gauges, and connecting fittings.
- G. Pressure regulators with a maximum bypass pressure of no more than 60psi.
- H. For the purposes of the *FIRST* competition, a device that creates a vacuum is not considered to be a pneumatic device and are not subject to the pneumatic rules (although they must still satisfy all other appropriate rules). These include, but are not limited to, venturi-type vacuum generators and off-the-shelf vacuum devices (as long as they are powered by provided or permitted motors).
- I. For the purposes of the *FIRST* competition, closed-loop COTS pneumatic (gas) shocks are not considered pneumatic devices, and are not subject to the pneumatic rules (although they must still satisfy all other appropriate rules).
- J. For the purposes of the *FIRST* competition, air-filled (pneumatic) wheels are not considered pneumatic devices, and are not subject to the pneumatic rules (although they must still satisfy all other appropriate rules).

Section 9 – The Tournament

No changes.

Section 10 – The Kit of Parts

No changes.