From the official FTC Robot forum

Q1: The way my team read the inspection sheets indicates that you can only use LEGO parts that are found in the Lego Education NXT kit (and an unlimited quantity except where specified in R5.a). Is that a correct reading? - In other words, several of the basic structural Lego pieces are not found in that kit (but are normally supplied in the retail NXT kit), so therefore, they cannot be used on the robot (e.g. several basic lift arms (beams), right-angle fasteners, etc.). Thus teams that have other LEGO parts cannot use them, however, teams that have ANY Vex structural part can use those

Q2: Section 9 (Inspections) talks about the robot containing no more than x Polycarbonate, y aluminum, and 12"x12"x12" of plywood... there's no mention of plywood in section 4... can you clarify this?

Q3: Since a Tie Wrap was supplied in the competition Kit (to hold the power switch), the rule definition would indicate that we can use them in the robot. Does the same type of tie wrap have to be used (same specific brand, width and length) or is that open for size adjustment by the team?

Q4: The competition or Tetrix kit came with an additional battery pack (it holds AA batteries). What is the purpose of that pack? It seems to contradict the rules specifying the batteries?

Q5: The additional components list an additional Logitech Gaming Controller. Does that mean that you can have three of them? (the kit came with two)

In the future please ask only one question per post.

A1:The only Lego parts allowed for use on the robot are those parts that come in the competition kit, as well as any Lego sensor that is compatible with the NXT system. See Rule <R5b>.

A2: Thanks for catching this, there is no plywood allowed on the robot. The Inspection sheet will be changed.

A3: Cable ties (Tie Wraps) are sold on the Tetrix website and are available in size from 4" - 8". Therefore according to rule <R5b> you may use as many of these cable ties as you wish. They must be between 4" and 8" but do not have to be the same manufacturer. Parts available for the Tetrix system can be found at the following website. (http://www.legoeducation.com/store/d...D=187&by=9&c=1)

A4: The NXT battery pack (with six (6) AA batteries) may be used to power the NXT controller in place of the Lego rechargeable battery pack. We recommend using the rechargeable battery pack but the final decision is up to the individual teams. There is a second battery pack that holds 8 AA batteries (12v). This may be used at home and for practice but not during official matches. Only the 12 V Ni-MH rechargeable battery may be used to power the 12 V motors and servos. This battery contains an internal 20 amp protection circuit that will prevent damage to your robot.

A5: In this year's field control system each team gets the use of two (2) Logitech gaming controller which are permanently attached to the playing field. Teams will not use their own gaming controllers during match play.

Quote:

> Originally Posted by **2008FTC0168**
> *Q: Just clarifying regarding the LEGO*
> *We are allowed 1 NXT Microcontroller/Brick, Any Hitechnic or official LEGO sensor, 3 LEGO motors, and only the LEGO parts provided in the education base set.*
>
> *My main question is if we are allowed other LEGO structural components such as beams, pegs, hassenpins, etc... The education kit does not come with much and many of the Tetrix robots shown in the small manual show more LEGO then what comes with the kit.*

A: The only Lego parts allowed for use on the robot are those parts that come in the competition kit (#9797), as well as any Lego sensor that is compatible with the NXT system. See Rule <R5b>.

Quote:

> *Q: Can we use the rubber bands that came in the Vex kit?*

A: Yes. Size #32 rubber bands are legal.

Quote:

> Originally Posted by **2008FTC0187**
> *Q: According to section 4, we are allowed to use a HiTechnic sensor prototype board. Are there any restrictions on the electronics we can add to the prototype board. For example, a CCD, GPS, etc?*

A: There are no restrictions to the kinds of electronics that can be added to the prototype board as long as it only connects to the NXT by means of the I2C connection from the prototype board AND it does not violate ANY other rule. /

Quote:

> Originally Posted by **2008FTC0187**
> *Q: Section 4 says that we can use additional Tetrix parts as found on the Pitsco web site. However, it seems that Pitsco isn't selling parts to the general public until January. Is there going to be a way for teams to order parts before January?*

A: At this time, the only source of TETRIX parts are from PITSCO.

Q: Is the quantity of lego parts limited to what is in the competition kit, or just the type?

I.e. can we use more Lego beams than what was provided in the competition kits?

A: The intent of the rule is to limit the type of Lego part not the quantity. You may use additional quantities of any part that comes with the kit except as restricted by rule <R5>.

Q: Please you can confirm if we can used VEX Robotics "Large Omni-Directional Wheel Kit", (http://www.vexrobotics.com/vex-robot...heel-kit.shtml) for constructed ROBOT for FTC FaceOFF.

A: Per rule <R5b> only Vex strutural metal may be used. The Omni wheel is not a legal part.

Q:According to section 4, we're allowed to use the metal pieces and fasteners from the VEX kits. May we use the nylon spacers that are the same size as the white ones that came with the TETRIX kits?

A: Yes, the nylon spacer is considered a fastener.

Q:Based on <R5> is the following a correct statement?

Any part included in the FTC kit may be used in ANY quantity on the robot, except when the quantity is specifically limited by <R5>.

A: That is correct.

Q: Other components of the VEX kit were not addressed in the game manual. More specifically I am inquiring about the long shafts, omni wheels, tank treads, and the intake rollers.

A: Per rule <R5b> only Vex metal and fasteners may be used. The square shaft is legal but the wheels, treads and rollers you described are not legal and may not be used on a robot during competition.

Q: Rule R5b says the polycarbonate sheet can be 12"x24"x1/16", but the inspection checklist says it can be 24"x24"x1/6".

Can you clarify which one is correct?

A: Rule <R5b> is correct. The inspection sheet will be modified to reflect the rules.

Q: Rule R11a requires the battery to be able to be removed without disassembly of the robot.

Does this mean literally *no* disassembly of any part of the robot, or is does it mean disassembly that requires tools?

For example, it seems feasible that a design could require the removal of a few Lego connectors, but not any metal fasteners.

A: The intent of the rule is to limit the amount of disassembly required at the field should a battery change be required. Minimal removal of Lego or Tetrix parts will be allowed but

referees will be instructed not to delay matches for teams that have to swap out batteries. It will be to a team's advantage to design their bot for rapid battery change.

Quote:

> Originally Posted by **2008FTC0168**
> *Q: Does the type of part (i.e. LEGO beam) matter what colour? As in the education kit has the dark gray beams but the retail kit has white beams. If they're the same size and part does the colour matter?*

A: <R5a> limits the robot to the LEGO parts contained in the FTC competition kit. The color of the parts does not matter as long as they are identical in function to those contained in the Official FTC competition kit.

Update: As noted in an earlier Q&A response, quantity of any particular LEGO part does not matter, as long as it comes from the base NXT kit and does not otherwise violate <R5>.

Quote:

> Originally Posted by **2008FTC0179**
> *Q: According to section R5b we are allowed to use a 12" x 24" by 1/16" piece of aluminum. May we cut and weld, solder, or use metal adhesive on this piece to shape it?*

A: No. <R4b> specifically prohibits welding, soldering, brazing, gluing, melting (except for the NXT Prototype BOard)

Quote:

> Originally Posted by **2008FTC0002**
> *Q: In the complete manual rule R5b states that we can use one piece of polycarbonate plastic that is 12" x 24" x not greater than 1/16" thick. In the individual section 4 that can be downloaded it states that this same polycarbonate sheet is not greater than .1". Which is the correct thickness?*

A: Both versions (the complete manual and the invidual section 4 manual) now both reflect the correct size for the polycarbonate sheet; 12" x 24" x .1"

Quote:

> Originally Posted by **2008FTC2803**
> *Q: Can you clarify what is meant by "LEGO approved NXT sensor".*
>
> *Specifically, does a legal sensor have to have a LEGO logo stamped on it (like Hitechnic's sensors) or is it sufficient for it to be specifically designed for use by the Lego NXT system, such as www.mindsensors.com?*

A: As of this date (9/24/08) the LEGO Certified
sensors are:

NAC1040 NXT Accelerometer Sensor
NCO1038 NXT Color Sensor
NEO1048 NXT EOPD Sensor
NGY1044 NXT Gyro Sensor

NIL1046 NXT IRLink Sensor
NMC1034 NXT Magnetic Compass Sensor
NSK1042 NXT IRSeeker

Currently, LEGO Certified Sensors are only available from LEGO or Hitechnic

Quote:

> Originally Posted by **ftcgame4**
> *... as long as they are identical in function ***and total quantity*** to those contained in the Official FTC competition kit.*

(emphasis added)

Quote:

> Originally Posted by **ftcgame3**
> *The intent of the rule is to limit the type of Lego part not the quantity. You may use additional quantities of any part that comes with the kit except as restricted by rule <R5>.*

Q: Can you clarify these two answers they seem to conflict?

A: Good catch. The original Q&A answer was the correct one; the quantity of the parts does not matter, as long as the parts are identical to the parts in the original FTC Competition kit. The conflict has been corrected in the later Q&A message

Quote:

> Originally Posted by **2008FTC0099**
> *For the D shaft used in the FTC (TETRIX) hardware kit, are there longer lengths available? Or, could we use 3/16 round shaft? Also as far as the 12" x 24" x 1/16" aluminum sheet, ca this be cut and formed into custom brackets?*

A: Since round shaft is not part of the original kit nor is it available on the Tetrix website, it is not a legal part. Currently the D shaft is available only in 100 mm lengths.

The aluminum sheet may be cut and formed into any shape desired so long as no other rule is violated, pay particular attention to rule <R9>.

Q: With respect to <R9> and given that the Tetrix Creator's Guide (page 5) describes how to cut aluminum structural pieces that come with the kit, are teams also allowed to drill holes or modify pre-existing holes in the aluminum structural pieces?
QUOTE]

A: Yes, teams may drill or cut the Tetrix and Vex structural material.

Quote:

> Originally Posted by **2008FTC0113**
> *For clarification: which rule permits the use of size #32 rubber bands? Is it the rule on VEX parts, or some other rule? Are #32 rubber bands considered to be a VEX fastener?*

A: The #32 rubber bands are considered a Vex fastener and are allowed per rule <R5b>.

Q:The allowable material states 3 12 volt motors, but there seems to be only 2 wiring positions on the module to power the 12 v motors. How do we accomplish 4 motor wiring?

A: Two motors can be plugged into one wiring position. The ends of the wires may have to be crimped slightly but they will fit.

Q: We are looking at the servo motors that come in the tetrix kit. How do they connect to the NXT?
thx team 658

A: The servos plug into the Servo control module that is supplied in the competition kit.

Quote:

> Originally Posted by **2008FTC2803**
> *Q: Rule R5b specifically allows the use of the Hitechnic NXT Prototyping boards and Rule R9b makes a provision for soldering to these boards.*
>
> *Rule R5d seems to prevent the use of any discrete electrical components, chips, sensors, wiring, connectors, etc that isn't included in the kits (or otherwise allowed by R5b).*
>
> *Can you clarify what components would be legally soldered to one of the prototyping boards without violating rule R9a?*

A: Any component that would normally be solderable to a prototype board can be soldered to the board (and only the board). The prototype board must power it's own components through its connection with the NXT (i.e. no new additional power sources are allowed on the robot). The components or sensors will transmit their values to the NXT through I2C communications established between the NXT and the prototype board.

Quote:

> Originally Posted by **2008FTC0168**
> *Q: Does any other rule include <R5> d.? Technically additional components would be electrical components like resistors, potentiometers, LED's, etc...*
>
> *I think we need further clarification of this section.*

A: Electrical components may not draw power from outside the prototype board, but also see answer elsewhere in this thread.

Quote:

> Originally Posted by **;17664**
> *Q: Is it legal to add a RoboLab add on to the LabView product for competition?*

A: Basically, no, as RoboLab will not work with the new FTC components. However, since RoboLab is built on LabView, if you can convert the add-on to a LabView .vi, and program in LabView, it will be legal.

Quote:

> Originally Posted by **2008FTC0027**
> *Q: Are RCX Sensors allowed? Specifically, the RCX touch sensor, which lets one daisy chain it easily (i.e. we can put many RCX touch sensors on a single port, and if any one of them are triggered, the NXT will get a signal)*
>
> *Product ID: W779911*
>
> *http://www.legoeducation.com/store/d...81&c=0&t=0&l=0*

A: No. You can get the same functionality with Touch Sensor Mux that came with your kit.

Quote:

> Originally Posted by **2008FTC0168**
> *Q: As the rules aren't quite specific enough would this be legal:*
>
> *Connecting a HiTechnic Prototype board to a sensor port on the NXT. Then using a BasicX or similar microcontroller adding 3rd party colour sensors, potentiometers, etc... (non-LEGO sensors). The microcontroller would then read the sensors and transmit their values to the NXT brick though i2c communication.*
>
> *Would that be legal?*

A: Yes, assuming no other power source is used.

Quote:

> Originally Posted by **2008FTC1033**
> *Q: The rules say that 4 12 volt motors may be used, but the electronics (DC motor controller)only support 2 terminations. Please advise how we are supposed to use 4: 12 V motors. Do we have to purchase another DC motor controller?*

A: There are two options; the first, as you correctly identify, is to purchase a second motor controller module, the second is to carefully insert the wires from pairs of motors into the connectors on the one motor controller, paralleling the motors.

Quote:

> The prototype board must power it's own components through its connection with the NXT (i.e. no new additional power sources are allowed on the robot)

also
Quote:

> Electrical components may not draw power from outside the prototype board

We are very clear concerning the statement "no new additional power sources", however, according to the LEGO NXT Hardware Developer Kit there is only 20ma available per NXT port (assuming all ports are being used).

Could you clarify whether it is acceptable to use power from the 12V NiMH battery being

used by the Hitechnic/Tetrix drive system.

A: No. Power to the circuitry for the Hitechnic Prototype Boards (both solderless and solderable) must come only from the power sources provided by the Hitechnic Prototype Board.

Quote:

Q:The microcontroller would then read the sensors and transmit their values to the NXT brick though i2c communication.
A: Yes, assuming no other power source is used.

Quote:

A:The components or sensors will transmit their values to the NXT through I2C communications established between the NXT and the prototype board.

Q: These answers seem to conflict can you clarify?

Specifically, is it legal to use a microcontroller other than the PIC16LF819 already on the prototype boards to communicate directly with the NXT via I2C (as long as all the other rules are being followed).

A: No. All communication through the Hitechnic Prototype Boards must be only through the 16 connections on the "user" side of the board. i.e. A4-A0, B5-B0, 3v, 4v, 5v, 9v and GND. Given these limitations, it would be allowable to utilize an additional microcontroller, but only on the "user" side of the prototype board.

Quote:

Originally Posted by **2008FTC2803**
Q: There doesn't seem to be any restriction with connecting the Hitechnic prototyping boards to motors/servos.

Is this considered a legal use of the board?

Obviously there are significant practical limitations, however, there is a very useful way of connecting a microcontroller to a hobby servo that enables its position to be "sensed" as well as controlled.

This position sensing wouldn't be otherwise possible with just the Hitechnic servo controller (although it would have been really nice if they had included it themselves)

A: No. Motors must be connected only to motor controllers. Servos must be connected only to servo controllers.

Quote:

Originally Posted by **2008FTC0166**
Q: Ok, we are not a new team but we are probably feeling just as frustrated as one. Is there any good documentation anywhere to describe how you use the NXT brick? It looks like there are sample programs but overall there just seems to be a complete lack of quality documentation to help explain how in the world this stuff goes together.

I assume that unlike past years where you received an inventors guide that explained all that, this year we do not have anything letting you know how it all goes together. The brick seems to have sample programs but we cannot find anywhere how to access them or use them. It is very frustrating at this point.

A: There are resources available at www.ftctraining.com. You may also want to take a look at the tutorial exercises that are included with the NXT-G programming environment.

Quote:

Originally Posted by **2008FTC0700**
Can an additional Lego person (figure) be added to the robot just for fun?

A: Yes, per rule <R5c> the Lego figure may be considered a non-functional decoration.

Quote:

Originally Posted by **2008FTC0099**
Can you please clarify. Are longer 12 volt DC motor wires allowed?

A: Yes, you may create longer motor wires providing the wire is an exact match in gauge and color. The wire gauge for the DC drive motors is 20 gauge, stranded.

Quote:

Originally Posted by **2008FTC0700**
Are teams allowed to cut metal parts in order to create specific size pieces for their designs? We're aware of the "no soldering, welding, etc." rule, but can we cut them? There was a mention of a metal tube cutter.

A: Yes, it is legal and expected for teams to cut the Tetrix and Vex metal parts. The tubing cutter is supplied in the kit to allow teams to produce clean cuts of the Tetrix tubes.

Quote:

Originally Posted by **2008FTC2803**
Q1: Since the Hitechnic solderless prototype board is also a legal component. Are we allowed to use a regular breadboard for soldering our components (and the Hitechnic prototype board) to?

Q2: Similarly, are we allowed custom circuit boards? Provided of course that they would only be used in exactly the same function as the breadboard area of the Hitechnic product?

A1: No. Only the Hitechnic prototype board and breadboard that comes with their kit can be used for soldering.

A2: No. You cannot replace the Hitechnic breadboard. You can attach a custom circuit board to that breadboard providing no other rules are violated.

Quote:

Originally Posted by **2008FTC1983**
Q: My question is in regard to extending the 12 volt motor wires.
I see no way to do this with the parts as given. Are we limited to the length of the wires in the kit? There are no extensions for these... Can we add additional wire not in the kit?

This would limit the DC motors to 12" from the motor controller module.

Are we permitted to extend the motor control wires with an appropriate guage of wire?

A: Yes, you may create longer motor wires providing the wire is an exact match in gauge and color. The wire gauge for the DC drive motors is 20 gauge, stranded.

Quote:

Originally Posted by **2008FTC0113**
Q: Since #32 rubber bands are considered legal for use as "VEX fasteners" under rule <R5b>, what about some of the other VEX parts from the VEX fasteners page (http://www.vexrobotics.com/vex-robotics-fasteners.shtml)? For example:

<List below>

Are any of these legal for use as "VEX fasteners" under rule <R5b>?

A: The intent of the robot rules this year was to allow the use of Vex Metal and fasteners as they were at the time of the game. We realize that there will be additional components added to the Vex line as the year goes on, so please be mindful of the committee's intent. Specifically to this question, here are the answers (apologies for the formatting):

276-2215 (VEX Bearing Pop Rivets 50 pack) Yes.
CABLE-TIE-4-PACK-100 (4" Tie Wraps 100-pk) Yes, as TETRIX Tie wraps are 4" to 8" in length.
ZIP-TIE-11 (11" Tie Wraps 100-pk) No. Only 4" to 8" length allowed.
BEARING-FLAT-10PK (Delrin Bearing 10-pk) No. Not considered a fastener.
VEX-FOAM-60 (VEX Foam, 5 ft) No.
VELCRO-ADHESIVE-60 (VEX Adhesive Velcro, 5ft) Yes.
ONE-WRAP-60 (VEX One Wrap Velcro, 5ft) Yes.
VEX-LATEX-TUBING-120 (VEX Latex Tubing, 10 ft) No. Not a fastener.
CINCH-STRAP-5PK (Cinch Strap, 5 pk) Yes.

Quote:

Originally Posted by **2008FTC2803**
Q: Do sensors connecting to the NXT through a prototyping board have to be physically soldered to the board or can they be distributed throughout the robot and connected to the prototype board by wires?

A: They can be distributed throughout the robot.

Quote:

Originally Posted by **2008FTC2803**

Q: Is it legal to reprogram the PIC16LF819 that is on the Hitechnic prototyping boards?

Specifically, can we modify the program in the PIC to allow connecting sensors with a digital interface (like serial, spi or i2c) to the "user" pins of the PIC while still using the provided PIC as the only interface to the NXT.

A: No.

Quote:

Originally Posted by **2008FTC2803**
Q: When we are creating custom motor cables, can we solder the wires to the DC motors or solder extensions onto the existing cables?

We are concerned about the availability of the crimp connections being used on the existing cables (and their reliability as well)

A: No. See Rule <R9>b.

Quote:

Originally Posted by **2008FTC2803**
Q: Is it acceptable to use heat shrink tubing or electrical tape to insulate wire splices and the connections to motors, switches, etc?

A: No. See Rule <R9>.

Quote:

A2: No. You cannot replace the Hitechnic breadboard. You can attach a custom circuit board to that breadboard providing no other rules are violated.

Q: So we **can** make a custom circuit board that the Hitechnic solderless prototyping board plugs into, but we **cannot** use any kind of generic breadboard that the solderless prototyping board plugs into.

Is this a correct statement?

We are trying to make sure we understand this ruling because the hitechnic breadboard product has been out of stock for many weeks. We are trying to understand the restrictions related to using the solderless prototyping board that we have.

A: The above mentioned ruling does not eliminate the ability to use generic breadboards with the solderless prototype board. A custom circuit board (or a generic bread boad) with a connector that allowed the solderless prototype board to be plugged in would be the equivalent of adding a custom board to the solderable prototype board.

Quote:

Originally Posted by **2008FTC2803**

Q: Will there be any burden of proof that teams using the prototyping boards should expect to provide to show they haven't violated any of these new rules.

The two that seem particularly hard to prove/verify are:
1. no other microcontrollers communicate directly with the NXT
2. no reprogramming the onboard PIC.

In the FRC I've seen it both ways. Some inspectors require a lot of convincing that any custom circuit is legal, and others ignore them so much that you're concerned the rules are being enforced enough for the game to be fair.

A: Obvious things will be checked by the inspectors (power cables, other cables connecting to sensors not going to the NXT, etc.). However, Gracious Professionalism dictates that all teams will not violate the intent of this rule.

Quote:

Originally Posted by **2008FTC2847**
Q: Sorry to ask such a rookie question, but several posts refer to the "HiTechnic Prototype board." We do not have anything in our kit with that label or name on it. Does it go by another name or did we not get one in our kit?

A: The HiTechnic Prototype Board is not included in the FTC Kit of Parts. It can be purchased from HiTechnic directly

Quote:

Originally Posted by **2008FTC0187**
Q: Is the 12" x 24" limit on polycarb used on the robot based on actual square inches in use or do all of the pieces need to be plausibly cut from a single 12" x 24" piece.

For example, the demo on Ken's blog has a top piece that is roughly U shaped. The total square inches of the part are fairly small but it was cut out of a pretty big rectangle of material with a lot of wastage.

I assume the answer would apply to the 12x24 aluminum sheet as well.

A: The total area of all the polycarb and/or aluminum may not exceed that of a 12"x24" piece each. And no piece of the polycarb and/or aluminum may exceed 24" in length.

Quote:

Originally Posted by **2008FTC0187**
Q: Hmm. This seems to close more doors than it needs to. I can understand not wanting teams to do their own I2C communication but there are other reasons for using both sides of the prototype board. For example, we were considering adding more NXT sensors by building a splitter on the prototype board with more NXT jacks mounted on the top side. The trick is that they need to be wired in parallel to the original jack on the bottom side of the board. We've found many examples $@#$@#$@#$@#$@#$@# of people successfully running more than one NXT sensor attached to a single port.

When we were involved with the showcase tournament in Atlanta part of the feedback that we provided FIRST was a concern about the lack of sensor ports. We were promised that

HiTechnic was going to have their full featured Sensor Mux ready (not just the Touch Mux) in time for this year's tournament. Given that HiTechnic has not yet delivered, it seems to us that it should be possible to create a low budget version. We don't want to muck with the I2C signals at all, just add a couple jacks in parallel.

A: Teams are constrained to working only with the named signals provided by the prototyping sensor boards. We understand that there is a desire to do more with the sensors and would like to encourage this type of work, but for at least this season, the ruling stands. Be aware that there is no limit on which side of the board is used for attaching components. The "user side" mention is a reference to the output pins of the PIC processor on the prototype board.

Quote:

Originally Posted by **2008FTC2945**
<R9>b says we can't melt any material. However, in Ken Johnson's video on http://www.firsttechchallenge.blogspot.com about using polycarbonate, he uses a heat gun to slightly melt the polycarbonate so that it will retain its curved shape. Is this allowed? Can you explain a little more about exactly what "melting" means?

A: Yes, you may use heat to soften and help reshape the polycarbonate sheet. The intent of the "no remelt" rule is to prevent teams from melting down their metal or plastic parts and casting them into new forms.

Quote:

Originally Posted by **2008FTC0652**
My students and I would like to know if you are allowed to use more than one motor module? On page 28 of the game manual, it states, "one additional FTC controller (servo or DC motor controller)." Does this mean we are allowed to use 2 FTC motor controllers and one FTC servo controller, allowing the four motors to be controlled 2 motors off of each FTC controller?

A: Yes, you may use two motor modules which gives you the ability to independently control the four (4) 12V motors.

Quote:

Originally Posted by **2008FTC2945**
Q: Are we allowed to use the hook-and-loop fastener sold by http://parts.ftcrobots.com?

A: Yes, per rule <R5b> you may use any part from the Tetrix system and this includes the hook and loop fastener.

Quote:

Originally Posted by **2008FTC2803**
Are we allowed to use 6-32 nylon lock nuts?

A: Since 6-32 nylon lock nuts are a legal VEX fastener, per rule <R5b> they are also a legal part for this year's FTC competition.

Quote:

> Originally Posted by **2008FTC0113**
> *The rules do not appear to prohibit modification of the allowed Lego parts. Is it correct that we can modify (non-electrical) Lego parts?*

A: Teams may modify the non-electrical Lego parts (i.e. cutting and drilling), provided they do not violate rule <R9> (i.e. melting or gluing).

Quote:

> Originally Posted by **2008FTC2803**
> *Q: Can you clarify what legal ways we can attach longer motor wires to the existing ones or to the motors without violating rule <R9>?*

A: Start with longer wires. The wire gauge for the DC drive motors is 20 gauge, stranded. We also now know the make and model of the terminal connectors for the end of the wire. The solderless terminals can be purchased from Mouser Electronics (www.mouser.com). The part number is #159-2211. These do not come with insulators on them. Teams can re-use the insulators on the existing DC wire assemblies though by sliding them off and placing them over the new DC lead.

Quote:

> Originally Posted by **2008FTC2803**
> *Q: Is the intent of the no modification to electrical parts rule to prevent modifications that would change how they function (electrically or mechanically) or to disallow any modification at all.*
>
> *Specifically, would it be acceptable to open up the thru hole in the end of an NXT motor so that the Tetrix axels fit?*

A: That would not be legal.

Quote:

> Originally Posted by **2008FTC3049**
> *Q: Can we only use the 2 encoders that came with the kit for the 4 motors or can we buy 2 others for the other 2 motors?*

A: You can purchase 2 other encoders. However, you will also have to purchase another motor controller since a single controller only accepts two encoder inputs.

Quote:

> Originally Posted by **2008FTC3049**
> *Q: For the pivot bearing in the tetrix set, the screw is too small to fit the washer and the nut, what is the solution to this?*

A: Contact PITSCO support for help with part issues from the kit (866-349-5346).

Quote:

Originally Posted by **2008FTC0024**
Q: In the past the FTC had a programming template that was used to allow the field management system to enable/disable robots in autonomous and teleop modes. In addition, I seem to recall templates for Robot C and Labview being provided to the Showcase teams last spring. We may have missed it, but we have not found templates for this year (or in the absence of a template, instructions on how to develop our program to ensure it operates with the field management system).

A: Yes, there will be competition templates for each of the programming environments. They are under development now. There will be an email blast to the teams when the templates are available.

Quote:

Originally Posted by **2008FTC0369**
Q: Regarding post #61

Mouser part no. 159-2211 is not the same contact as supplied in the kit.
This one is insulated with red vinyl and has a different style of crimp.
Based on the dimensions given in the specification it could be a valid substitution.

Is this part a valid alternate to the one supplied in the kit or is the part number specified in the post incorrect?

A: This part is indeed a valid alternate. The color of the insulation on the crimp is not important.

Quote:

Originally Posted by **ftcgame2**
A: Without knowing more details on your wiring and such, we would suggest starting over again with the wiring and seeing if you still have the problem. The other thing to check, since you are using ROBOTC is to make sure you have the correct firmware on your NXT. After all else fails, we suggest you contact PITSCO and see if they can help you or offer a replacement.

We hit the same issue and it turned out that we had the PID checkbox checked next to the drive motors in the Motor and Sensor Setup wizard but we were not using the shaft encoders. The PID control wasn't getting any values from the non-existant shaft encoder so decided that the motors must not be turning and increased the power (over and over until it reached some maximum). Turn off the PID control checkboxes or hook up your shaft encoders and the problem will go away.

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A: Thanks for the helping to identify the cause of the problem. Indeed, the PID control functions REQUIRE the encoders to be installed and connected.

Quote:

Originally Posted by **2008FTC0179**
Q: This is going to sound like a really dumb question, but here it goes. Is the motor encoder

used to program the motor and then the connecting wires are removed or must the wires stay connected to the encoder and motor controller?

A: The encoders sense the motion of the output shaft of the motor. They are required to be connected if you are utilizing the PID control features of the new motor controllers, or are accessing the sensor values directly.

Quote:

Originally Posted by **2008FTC0294**
Q: We have a need for a ~4 ft long connection between the NXT brick and a Lego motor. Is there any way to achieve this within the game rules? HiTechnic provides a 35.4" cable (not quite long enough for our needs); is this part legal? The "real" options we've thought of so far:
- Making our own NXT-style RJ12 cable
- Finding a legal component that allows back-to-back RJ12 cables to build up an extension

Considering PWM extensions are allowed, we were hoping there was a way to do a similar extension for the NXT cables, but it's unclear from the game rules if there's a legal possibility.

A: There is not a way to get around this option. You will have to engineer another way to route your cable to fit within the limitations of the longest NXT cable available to the teams (which is currently 90cm from HiTechnic).

Quote:

Originally Posted by **2008FTC0658**
Q: i saw in sept 19-08 a question was posted about the use of rubber bands, it stated that the 32 rubber bands were ok to use, but I was wondering how many?

A: No limit

Quote:

Originally Posted by **2008FTC0541**
Q: Hi, can we use coveyer belts or chain of that sort? If so, can we order it from FTC or can we use the chains from vex instead??And also, can we use metal sheet as a scope?

A: Currently, there is no option for conveyor belts or chains within the allowed FTC parts. The Vex chain and tank treads are not allowed parts.

Quote:

Originally Posted by **2008FTC2868**
The FTC encoders have come with a plastic cap that is removable. We have taken this cap off and we are using it as a washer in another part of our robot. Is that permitted and will it pass inspection?

A: There is nothing in the current rules that would prohibit this usage of the parts.

Quote:

Originally Posted by **2008FTC2845**
Q: In <R5b>, with respect to rope diameter, is 1/8" the maximum diameter allowed, or the only diameter allowed? Are diameters less than 1/8" acceptable?

A: 1/8" is a maximum diameter. Be sure to consider safety and strength limits when selecting a size of cord/rope.

Quote:

Originally Posted by **2008FTC1261**
When we attach our flag to the robot, does the flag have to be in the 18 cubed footprint?

A: No, the flag is not included in the 18" x 18" x 18" starting size requirement.

Quote:

Originally Posted by **2008FTC1001**
Is sewing allowed; for example, may we sew together the ends of a piece of the non-slip pad?

[color="DarkRed"]A: Yes, you may sew the ends together but only with FTC legal materials per Rule < R5>. (i.e. rubber bands, tie wraps, rope, etc.)[/COLOR]

Quote:

Originally Posted by **2008FTC0541**
Can we use metal sheet as a scoop?

A: Yes

Quote:

Originally Posted by **2008FTC1261**
Is there anyway to order the screws that come with the gear hub spacers without getting the gear hubs...or just ordering the screws?

A: You should be able to purchase the screws at your local hardware store. You should bring the hub with you to insure that you get the proper size screw.

Quote:

Originally Posted by **2008FTC2945**
Q: In <R5>b, with respect to aluminum, is 1/16" just the maximum thickness allowed, or the only thickness allowed?

A: 1/16" is the maximum thickness allowed, you may use thinner material if you wish.

Quote:

Originally Posted by **2008FTC2945**

We bought aluminum plate that was advertised as 12" x 24". However, we found that it was actually 1/8" longer than 24", apparently due to machine variability.

Q: Is this ok, or would we need to cut off the extra 1/8" to use the whole sheet?

A: To insure you have no problems at inspection, you should cut off the extra 1/8".

Quote:

Originally Posted by **2008FTC1033**
Are there any restrictions on the type of 1/8 in. rope that is allowed? We are considering different materials...metal, plastic etc...

A: Rope is considered to be made from non-metallic materials such as nylon, polypropylene, cotton, sisal, etc. Metal "rope" is considered cable and is not allowed.

Quote:

Originally Posted by **2008FTC2945**
We couldn't find any smooth aluminum plate that was 1/16" thick at our hardware stores, but they did have tread aluminum plate (exactly the same except it has those little nibs or treads sticking up slightly on one side) which was the right thickness.

Q: Is this kind of plate allowed? If not, would we still be allowed to use it and count the treads sticking out from the plate as "decorative" materials if they were non-functional and didn't affect the outcome of the match?

A: As long as the "nibs" do not affect the game they will be allowed as decoration. Be very careful, referees and inspectors will be instructed to be strict on allowing materials used for decorative purposes. For instance if the plate were being used to hold pucks and the "nibs" affected the friction of the pucks, this is no longer just decorative.

Quote:

Originally Posted by **2008FTC0796**
Q: We purchased an extra 12V battery so we could simultaneously work on our arm mechanism and vehicle but the cable with the on/off switch and battery connector is on back order. Do you know the manufacturer or source for the mating connector so that I can make a temporary cable to continue with our testing?

A: Not sure where the disconnect happened, but Pitsco claims the item is currently available. Make sure when you are ordering parts that you ONLY use the http://parts.ftcrobots.com URL. The normal LEGO Education/Pitsco site will show all parts as not available until January.

Quote:

Originally Posted by **ftcgame3**
Q:

A: Rope is considered to be made from non-metallic materials such as nylon, polypropylene, cotton, sisal, etc. Metal "rope" is considered cable and is not allowed.

Q: What about rubber?

A: No, rope/cord made from rubber or rubber-like material is not allowed.

Quote:

Originally Posted by **2008FTC1983**
We understand that it is possible to make new longer wires to connect a DC motor to the Hitec motor controller if we use the correct guage. (20 ga stranded in the correct color)
We cannot figure out how to get power to the second HITEC motor controller though.
We could add a wire to the output wires from the battery connector but that would mean that without some type of insulation (electrical tape or shrink tube) it would be a bare wire connection. I don't think this is safe.

How are we supposed to get power to the allowed additional Hitec motor controller?

Adding a jumper from one motor controller to the other is not a good idea as this would place them in series and this would create problems. The best approach would be to place it in parallel and this would require making a Y-connector which would need some type of insulation.

Since you have repeatedly cited the rule that does not allow the use of electrical tape or shrink wrap, How is the team to do this in a safe and efficient manner?

thank you

A: The motor controller & servo controller are designed to be daisy-chained. There are two sets of Battery+ and Battery- connections on the controller to enable this. Figure E1 on page 18 of the Tetrix manual shows an example of this connection scheme.

Quote:

Originally Posted by **2008FTC0499**
Q: With regard to the rope mentioned in <R5B>, does the rope need to be made of a particular type of material? For example, does it have to be cotton based? nylon? Can it be more like twine? What about a cord that would have some kind of rubber like material on it so it "grips" better as long as it is 1/8" or smaller diameter?

A: No, cord/rope coated with rubber or rubber-like material is not allowed.

Quote:

Originally Posted by **2008FTC2971**
Regarding rule 5b, can the aluminum, polycarbonate or non-slip pad be fabricated into any shape for any function as long as the size and other rules are not violated?

A: Yes, these materials may be formed into any shape providing no other rule is violated. Pay particular attention to <R9b>.

Quote:

Originally Posted by **2008FTC1261**
Going off the basis of the design award, are we allowed to paint metal for aesthetic purposes?

A: Yes, you may also paint the plastic, wheels, etc. So long as the paint is used only for decorative purposes.

Quote:

Originally Posted by **2008FTC3037**
Q: The wiring tab on on of our 12 volt DC motors snapped off, are we allowed to solder it back on? If not, how can we fix it?

A: No. The tabs on the motors cannot be repaired once they are broken. This is a mechanical issue, not a rules issue.

Quote:

Originally Posted by **2008FTC0110**
Q: I know we are not allowed to solder wires to the motors, but I have had the connection tabs break off of three motors already. The students need to be a little more careful about bending the tabs, but overall they haven't anything abnormal with them. I would like to solder a wire onto the tabs to avoid this in the future. Do you have any recommendations that would work within the current rules? (At $25/motor, I can't afford to have motors break at this rate.)

A: We're sorry that you are having difficulty with the motors. However, this year we cannot allow you to solder wires on the motors, nor repair the tabs (see another question). To prevent loose connections, we recommend that you crimp the connector tight prior to placing it on the motor tab to prevent bending the tabs while you crimp. Also, protect the motors with the polycarb sheet so they don't disconnect or break if you run over something on the field. Use zip ties to secure the wires to motor as well so they won't come apart during a match.

Quote:

Originally Posted by **2008FTC2945**
Q: Are we allowed to burn the ends of rope that we use to keep them from fraying?

A: We will allow you to mold the ends of the rope to prevent fraying prior to your arrival at a competition. Soldering, heat guns, etc. will NOT be allowed in the pits due to site restrictions and safety issues.

Quote:

Originally Posted by **2008FTC2971**
Q: Can we use lubricant (grease or oil) anywhere on the robot?

A: No, except for Rule <R5>b - last bullet.

Quote:

> Originally Posted by **2008FTC0177**
> *Q: I have a question regarding the servo motors Hi Tec HS-475HB. Several sources on the web offer this motor in configurations other than +/- 90 degrees. I have seen +/- 180 degrees and continuous. Ken Johnson, at the Delware scrimmage, hinted that these are legal. Are these legal? They sure would be useful.*

A: No. <R5> limits the robot to be constructed from parts included in the Official FTC Competition Kit. These modified servos are not included.

Quote:

> Originally Posted by **2008FTC0035**
> *according to <R5> "only one <1> 12VDC NiMH may be used to power the Robot."*
>
> *Q: Can we use a second battery as dead weight as long as it is not powering the Robot?*

A: No, only one 12 VDC NiMH battery may be used on the robot.

Quote:

> Originally Posted by **2008FTC2846**
> *Can we cut the aluminum sheet into several shapes we need?*

A: Yes, you may cut or bend the aluminum sheet into multiple shapes.

Quote:

> Originally Posted by **2008FTC2846**
> *Can we sand the edges of aluminum sheet down?*

A: Yes, you may sand or otherwise deburr the edges of the aluminum sheet. This is highly recommended to prevent sharp edges that could result from cutting or drilling operations.

Quote:

> Originally Posted by **2008FTC1902**
> *Q. Harbor Freight Tools has a non-slip pad item*
> *"16" x 22" SUPER TOOLMATE NONSLIP TOOL BOX LINER",*
> *is this an acceptable non-slip pad?*

A: Yes this material is legal. Remember that only a 12" x 15" pad is allowed.

Quote:

> Originally Posted by **2008FTC2975**
> *In posting #82, you say a scoop can be made from sheet metal. How can that be? It would take rivets, sheet metal screws, or a press to make, attach and bind it somehow to the robot; in some of your earlier replies, you state that only PITSCO parts can be used, and only the LEGO parts sent can be used and no more ordered. And you say parts cannot be welded, brazed, or soldered. That is a big*

discrepancy. How do you reconcile these answers?

A: The rules allow teams to bend or form the plastic and aluminum sheet into a scoop shape. How the scoop is constructed is up to the individual teams. The Tetrix system allows for many legal ways to attach materials including nuts and bolts, tie wraps, elastic bands, etc.

Quote:

Originally Posted by **2008FTC1261**
Would we be allowed to thread the 4 orange circles so that we may screw it in directly?

A: Yes, you may tap the orange circles.

Quote:

Originally Posted by **2008FTC1535**
Question about elastics.

Q1: Are we allowed to use lego elastics other than those supplied in the Tetrix kit of parts?

Q2: Can other elastics be substituted for lego elastics?

A1: No
A2: Only those that are specified in Section R5 including the Vex elastics (rubber bands) which are limited to Size #32. See Q&A #5 in this section.

Quote:

Originally Posted by **2008FTC2803**
Q: Is it safe for us to assume that as long as we can prove we have used less than 288 square inches of material on the entire robot, and that no single dimension exceeds 24" in length that we are legal.

Specifically, if we have a large section of material drilled out with numerous holes, can we use the cumulative area removed by the holes elsewhere in our design?

A: No, you cannot use the cumulative area of the holes. It will be too difficult to inspect. However, parts cut using a hole saw can be used on the robot.

Quote:

Originally Posted by **2008FTC2866**
Q: We've seen it stated that any Lego part which came in the competition kit is legal. Even so, we'd like clarification that it is legal to use the red & blue plastic balls which came with it (http://www.legoeducation.com/sharedi...9797prod16.jpg).
Are these legal parts for the robots?

A: Yes. Like the other pieces of the 9797 LEGO Kit, the Red and Blue balls are legal parts.

Quote:

Originally Posted by **2008FTC0160**
May we use tie wraps for traction on the wheels?

A: Yes, as long as using them this way does not violate any other portion of the game rules. Specifically, you may want to pay attention to possible field damage (i.e. Rule <S1>)

Quote:

Originally Posted by **2008FTC0796**
Would it be legal to add an LED to indicate that 12V power is turned ON

A: No, an LED is not on the list of legal components.

Quote:

Originally Posted by **2008FTC0177**
Q: At the Virginia Tournament this past weekend, some teams claimed that LEGO tank tread came in their kit of parts. I did not see it in ours. Therefore I am checking to see if the LEGO tread is legal. Thanks.

A: The LEGO tank treads are not found in the 9797 LEGO kit and are therefore not legal parts for the FIRST Face Off season.

Quote:

Originally Posted by **team2825**
Q: the rules manual doesnt completely clarify so i would like to know if we could use netting on our robot if so what are the measurements that we are aloud to use. thank you!

A: No, Mesh netting is not allowed under the materials rules.

Quote:

Originally Posted by **2008FTC2975**
Q: In question #122 you state that an LED is not a legal supply and cannot be used; however, inside the kit received is a Lego part with a light and colored tops; can that be used instead of a LED to indicate power on? My team was also thinking of using this part in this manner.

A: An interesting idea. Due to the way the sensor works, it will only show that the NXT is powered. It would not tell you if the Motor Controller and/or Servo Controller are receiving power.

Quote:

Originally Posted by **2008FTC0187**
Q: We understand from previous posts that we can attach custom sensors to the prototype board using long wires so that we can mount them anywhere we want on the robot. We know that we can solder one end of the wires to the prototype board but it isn't clear to us if we are prohibited from soldering the other end to the sensor. Can you clarify this for us?

A: You can solder the other end of the wires to the sensor. You can not solder the sensor package to the robot.

Quote:

Originally Posted by **2008FTC0575**
In <R5> the rules state: ***One piece of polycarbonate plastic, 12" x 24" x not greater than 1/16***

Q: Since 12x24 is 360 square inches, could we use some other shape of Lexan that exceeds 12" in its shortest dimension as long as the total area of Lexan was not greater than 360 square inches? In other words, was the parts description intended to limit a rectilinear piece of Lexan to no more than 12" in its shortest dimension, or was it a simplified statement for "not more than a certain volume of Lexan?" Thank you.

A: First of all, 12x24 is 288 square inches (not 360). But to answer the question, you can not have any piece of the polycarbonate longer than 24" in any one dimension.

Quote:

Originally Posted by **2008FTC0801**
Q: may we use the vex rubber stars?

A: No. The intake rollers are not in the list of allowed Vex parts.

Quote:

Originally Posted by **2008FTC3037**
Q: does the aluminum strictly have to be aluminum? Because we used a piece of sheet metal left over from a previous project, and it isn't aluminum. Will we have to rebuild the part? The metal we used is quite a bit heavier that aluminum, so we wouldn't be gaining any advantage from using a different metal.

A: The current robot construction rules only allow aluminum. It is possible that other materials might be allowed in future seasons, but for FIRST Face Off!, only aluminum is allowed.

Quote:

Originally Posted by **2008FTC2848**
Q: (<R9> "Parts may NOT be modified as follows: a. Motors --snip-- may NOT be altered from their original state in ANY way.")

in Q112, you answered the question

"Would we be allowed to thread the 4 orange circles so that we may screw it in directly?"

with

A: Yes, you may tap the orange circles.

Since the only orange circles that we can think of are the ones on the ends of the NXT motors, can you confirm that with that ruling you are giving this specific exception to

<R9a>?

A: There was a mis-understanding on our side on what the "orange circles" referred to. You have correctly pointed out that <R9a> prohibits modification of motors. Tapping the holes in the LEGO Motors would be a violation of this rule. The original answer was not intended to be an exception.

To any team that has tapped the holes in their LEGO motors: Do not use the tapped holes and your motors will be treated as "unmodified" for the purposes of inspection.

Quote:

Originally Posted by **2008FTC0055**
Q: I have a DC motor mounted on an arm with encoder. The cable will not reach to the controll box. Is there an extension available that is allowed to extend the encoder cable? I can not find anything on legoeducational.

A: We don't know of an extension cable specifically for this encoder, but we believe that any kind of 4 wire PWM extension cable that uses the correct pinouts (1=power; 2=A; 3=Ground; 4=B) should be okay. These would be legal.

Quote:

Originally Posted by **2008FTC2961**
Q: One of the four small wires on the encoder end of one of our motor shaft encoder wires detached from the plastic housing, and we've been unable to repair it. Would it be legal to splice the original wire into a new connector of the same type, as found here?
http://www.shaftencoders.com/product...ca-mic4-w4-nc/

A: Yes. Make sure your splices are shielded and neat. See also previous question.

Quote:

Originally Posted by **2008FTC0801**
Q1.- Are we allowed to use the green vex plastic bands. And are we allowed to use the vex rubber stars.

Q2.- For FTC Face-Off what is considered as structural parts, because for me wheels are structural parts? If not, then what is considered as structural parts?

A1: We are not sure what you mean by the green plastic bands. If you are talking about rubber bands, those are legal (#32 size). If you are talking about the tank treads, gears, or something else, then they are not legal. As for the Intake Rollers (the vex rubber stars), those are not legal.

A2: For this year's game definitions, wheels are not structural parts. We consider the vex metal pieces (bars, channels, plates, angles, etc) to be the structural pieces.

Quote:

Originally Posted by **2008FTC3167**
Q: A previous post has allowed the use of 1" wide Velcro hook and loop (supplied from VEX

store). Can I use similar hook and loop Velcro obtained from my local hardware store (which is 3/4" width)?

A: Yes, you may use Velcro strip that is the same width or narrower than the strip available from Vex providing it is of a similar type and strength.

Quote:

Originally Posted by **2008FTC3078**
My team ran out of 6/32 nuts. Can we use aftermarket 6/32 nuts without a lock washer?

Thanks!

A: Yes, aftermarket nuts provide essentially the same functionality as the supplied nuts and do not give the user an advantage therefore they may be used.

Quote:

Originally Posted by **2008FTC3167**
Q: Is cotton thread allowed (as long as it is under 1/8" diameter)?

A: Yes, cotton thread less than 1/8" is legal.

Quote:

Originally Posted by **2008FTC0055**
Q: My robot measures under the 18 in height but when under power, the servo will rotate the bucket scoop and it will go over 18 in. It will start under the 18 in when i place it on the floor as long as the servo does not start. Will this be a legal starting position? It will fit into the sizing box for inspection because it does not have power on the servo.

A: The robot must fit inside the 18" sizing box until the start of the autonomous portion of the match. If the servo causes the robot to "unfold" prior to receiving the enable command during autonomous, the
robot would violate <R4b>.

Quote:

Originally Posted by **2008FTC3167**
Q: At the local hardware store, I noticed many types of non-slip pads (some with adhesive backs and some without). I assume the adhesive back is illegal, but are the other ones all allowed or is there some finer definition of non-slip pad?

A: Adhesive backed non-slip pads are not allowed. It is not possible for us to rule on every possible non-slip pad product that might be found by teams. Final determination of the legality of a particular material will be determined by the inspectors at your events.

Quote:

Originally Posted by **2008FTC0136**
Q: Are Vex metal hinges an allowable part for the Robot?
http://www.vexrobotics.com/vex-struc...#VEX-HINGE-2PK

They are metal, and on the structure page of Vex products.

A: No. Please see Q&A post #44.

Quote:

Originally Posted by **2008FTC2849**
We were wondering if we can use more than one of the same sensors, Section 4.2 says that we can use Any Lego Approved sensor, so does that mean that there is no limit and we can buy more sensors. The sensor we are talking about buying more is the Ultrasonic Sensor.

A: Yes, you may use more than one type of each of the approved sensors providing no other rules are violated.

Quote:

Originally Posted by **cphoppel**
Q: We are having trouble keeping our wires attached to our dc motor controllers and would like clarification on on if the wires can be modified. Can they be plastically deformed or bent in any way? Can we drill a hole in them?

A: The wires or the metal tabs cannot be "plastically deformed". The metal tabs on the motors should not be bent or you risk breaking them off. You may not drill a hole in them.

Quote:

Originally Posted by **2008FTC0055**
Q: Servos will center up when power is applied. Before a match, when will the power go to the servos? Does it go as soon as you turn on the robot or when the field is activated for autonomus? This will determine my starting position

A: See also answer to #145. Robots are expected to be placed on the field with the TETRIX battery on (powering the DC motors/servos) and the NXT on and running the autonomous program. So, yes power is supplied to the servos and a program is actually running on the NXT.

The current version of the programming templates (that we recommend and may even require) has some a section of the program that idles waiting for the FMS to enable the robot. You should send the appropriate commands to the servos to their correct position so that the robot does not violate the 18x18x18 sizing rule. The current beta version of the programming templates are available at www.ftctraining.com under each of the programming language links.

Quote:

Originally Posted by **2008FTC1261**
Q: Would we be able to use the NXT Extended Connector Cable Set as provided on the HiTechnic website?

A: Yes.

Quote:

Originally Posted by **2008FTC0356**
Q: Where can you buy the non-slip pad that is acceptable?

A: Non-slip pad material can be bought at VexRobotics.com (Part #s: 1USHL-MAT-THIN or 1USHL-MAT-THICK) or McMaster-Carr (Part #s: 69275T54 or 69275T24) or other places that _____ similar material. Remember the toal material used on the robot cannot be larger than 12" x 15". It may be cut smaller.

Quote:

Originally Posted by **2008FTC0356**
Q: Can mesh shelf liner be used? We have shelf liner we bought at Costco that comes in roles. We put this on our tables to prevent the parts from rolling off. It's an open weave plastic.

A: Without seeing that material in person, we cannot answer. However, as long as it is the same type of material as those referred to in answer #155 and is bigger than 12" x 15", then yes, it can be used.

Quote:

Originally Posted by **2008FTC3049**
The wheels from the kit do not have enough traction? What options are there for giving the provided wheels more traction?

A: There are many legal methods that teams employ for increasing traction such as cutting treads, attaching zip ties, etc.. It is up to each individual team to determine what works best for them.

Quote:

Originally Posted by **2008FTC3180**
In section 4.2 of the robot rules, r5b, It says that a 12" x 15" of non-slip pad can be used. What is this?
Also, can we use plastic for the bucket or is this what the non-slip pad is used for?

A: The non-slip pad is a flexible fabric sheet that can be used for many purposes. Yes, you may use this pad to make a bucket providing no other ruels are violated.

Quote:

Originally Posted by **2008FTC2849**
Is it legal to solder two wires together to make it longer? If not, what method of connecting two wires together is legal.

The wires we are attempting to extend are motor encoder wires and power wires to motors.

What is the proper method of insulating wires? None seems to be given.

A: See answers #137 and #138 in this section. We will allow teams to manufacture their own cables prior to the competition to make longer ones or to splice together as long as they are the same gauge as the original ones (e.g. motor cables are AWG 22). These cables

may be soldered in your school or shop and NOT at the competition (please do not bring soldering irons to the event). You must use heat shrink material to shield the wires. You may NOT use electrical or any other kind of tape.

In the future, please only ask your question once.

Quote:

Originally Posted by **2008FTC2849**
Q: Is it ftc legal to put inline fuses between the motor-controller and motor?

A: No.

Quote:

Originally Posted by **2008FTC3167**
Q1: Does the use of the servo and motor controller eliminate one of the sensor inputs? Q2: Can a sensor be attached to end of motor and servo controllers daisy chain?

A1: Yes. A2: No.

Quote:

Originally Posted by **2008FTC3194**
Q: Curious of what non-functional decorations mean. Does that include any type of electrical decoration. Would a small video camera that only records, does not transmit anything be legal?

A: Nonfunctional (adjective): not having or performing a function. Electrical decorations perform a function and would not be legal. Plus they would require power that is external to the 12V battery. A small video camera on the robot would NOT be legal this year as well.

Quote:

Originally Posted by **2008FTC2945**
Q: <R9> states that any method of attaching that is not provided within the TETRIX system will not be allowed.

This rule doesn't disallow tying 1/8" rope to objects, right?

A: There is nothing in <R9> that prevents tying rope to parts of the robot, as long as no other rules are violated in the process.

Quote:

Originally Posted by **2008FTC0199**
Q: It appears that there is nothing in the rules or inspection checklist that requires the chassis or central body of a robot to actually move (or be able to move) across the game arena. Is this correct?

A: Yes, as long as no other rules are violated using this strategy.

Quote:

Originally Posted by **2008FTC2961**
We have a mechanism which holds preloaded pucks such that part of the puck itself (but none of the robot) extends out above the 18" size limit. Is this legal?

A: Robots do not have to have pucks loaded during inspection, so as long as the robot passes the sizing box during inspection, it will be deemed legal. No other rules can be violated through your puck holding mechanism, however.

Quote:

Originally Posted by **2008FTC1261**
In the rules it states that packaging materials are not allowed to be used, but are they allowed to be used for aesthetic purposes?

For example, I have a piece of paper with a picture on it, can I attach the paper to a piece of cardboard, to ensure that it won't rip, and then attach the cardboard to the robot? (assuming the cardboard has no functionality other than simply supporting the paper?)

A: Yes, you may use the cardboard as described providing it is non-functional per rule <R5c>.

Quote:

Originally Posted by **2008FTC2848**
Just a confirmation that what we've done is OK please. (Our FIRST partner recommended that we check with you before we get to a tournament inspection.)

Is it ok to modify the wheels from the Tetrix kit by removing the rubber and machining them down to smooth plastic?

Since the rubber from the wheels can be removed, can it be used for other purposes on the robot?

Thanks

A: There is no rule preventing the modification of wheels in the manner you have described. Yes, the rubber tread may be used elsewhere on the robot.

Quote:

Originally Posted by **2008FTC2967**
Q: How detailed does the Bill of Materials used for the robot have to be? Does every nut and bolt need to be listed?

A: The Bill of Materials (BOM) should be sufficiently detailed to allow a complete reconstruction of the robot. In other words, yes, every nut and bolt should be listed.

Quote:

Originally Posted by **2008FTC1261**

Q:I would like to confirm that what we have done is ok.

We have a bucket for the pucks. Around the bucket we wanted to put on various pictures. To ensure that if a robot ran into the bucket, it wouldn't tear through the pictures, we added cardboard to the back of pictures. Then, we attached the cardboard to the bucket via zip ties. To further ensure that our pictures did not get scratched up, one of the members put tape over the paper and stuck it onto the metal.

I wanted to ensure that everything described above is legal, and is considered an aesthetic detail which does not enhance the functionality of the robot.

Please advise.

A: It is difficult to make a decision without seeing what you have done but providing that the pictures, cardboard, and tape are purely decorative and do not contribute to the functionality of the bucket or robot then what you have described is legal. Remember, you will have to convince the head inspector that what you have done provides no advantage. If you are sure of this, then you should not have any problems.

Quote:

Originally Posted by **2008FTC0731**
Q: <R9> states that mechanical fasteners may be secured with Loctite. Would motor hubs and/or split clamps be considered mechanical fasteners? In other words, it is permissible to place Loctite between the hubs/clamps and the axles that they are attached to?

A: No. Loctite is permissible only for use in preventing screws/nuts from coming unfastened (<R9c> specifically mentions thread-locking). The usage you describe above is essentially using Loctite as glue. Glue is prohibited in <R9b>

Quote:

Originally Posted by **2008FTC2818**
Q: At the recent MD championship it was required that the NXT be removed from the robot prior to each match so that the Bluetooth connection could be made at the control station without the robot being physically present. This approach required that the NXT be attached using velcro rather than using the KOP hard mounts.

Despite our best efforts, the drive team managed to get the NXT cables confused once when re-installing the NXT. They lost that match.

I'm wondering if this requirement will be in force at the World Festival in Atalanta.
We intend to add an additional NXT motor which will bring our cable count up to 4.
That's a lot of cables to be reconnecting each match. It also makes it hard to tie down the cables while still leaving enough slack for brick removal.

An alternative to this approach might be to use a USB cable extender to bring the USB to the robots on the field for FMS registration. We use this method with great success during our own practice matches.

Thanks.
G-FORCE

A: You should not need to remove the NXT from the robot.

You WILL need to remove the battery from the NXT frequenty.
You should make sure that the battery for the NXT is easy to remove. Removing the NXT battery is the ONLY means to guarantee that a prior Bluetooth connection is severed. You should expect to remove the battery to the NXT prior to EVERY match.

You should also make sure that the USB port on the NXT is easy to access.