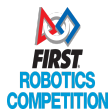




← Back To Search



## 2016 Kit of Parts (KoP)

Aug. 17 2016 | 10 KB

**Content Type:** FIRST Robotics Competition

The Kit of Parts (KoP) is split into 3 parts, available to teams through a variety of sources: the Kickoff Kit, the Virtual Kit, and *FIRST* Choice.

**Tags:** Game/Challenge, Robot Kit



The Kickoff Kit consists of items distributed at Kickoff. 2016 Kickoff Kits will consist of the following items for all teams (sizes and weights are approximate):

1. One set of items, collectively, 27 in. x 17 in. x 13 in., 48 lbs.
2. One set of items, collectively, 2 in. x 2 in. x 48 in., 5 lbs.
3. One item, 8 in. x 3 in. x 7 in., 14 lbs.

Rookie Teams will receive the following additional packages:

1. One set of items, collectively, 27 in. x 17 in. x 13 in., 33 lbs.
2. One item, 8 in. x 3 in. x 7 in., 14 lbs.

Teams who did not opt out of the Drive Base Kit will also receive the following item:

1. One set of items, collectively, 7 in. x 7 in. x 34 in., 28 lbs.

International Teams who opted into receiving an additional Kickoff Kit's worth of game pieces will receive:

## 1. Boulder

Use the Checklists below see Kickoff Kit contents and inventory your Kickoff Kits (right click on link and "save as" to download and save encrypted versions, browsers may vary). We recommend you do this upon receipt and report any missing/damaged items in TIMS before January 15, 2016.

- Gray Tote Checklist (<https://firstfrc.blob.core.windows.net/frc2016manuals/2016-kickoff-kit-checklist-gray-tote.pdf>)
- Yellow Tote Checklist (<https://firstfrc.blob.core.windows.net/frc2016manuals/2016-kickoff-kit-checklist-yellow-tote.pdf>)
- Drive Base Kit Checklist (<https://firstfrc.blob.core.windows.net/frc2016manuals/2016-kickoff-kit-checklist-drive-base-kit.pdf>)
- Separate Items Checklist (<https://firstfrc.blob.core.windows.net/frc2016manuals/2016-kickoff-kit-checklist-separate-items.pdf>)

Leave a message

We have received two reports from teams that the Anderson SB50 battery connectors provided in the Kickoff Kit and available via *FIRST* Choice have had the red and black wires reversed. Please check your connectors to ensure that you do not have an issue. Most of the core control system components have reverse polarity protection however motor controllers do not and could be damaged by this. The red wire should be on the positive side of the connector and the black should be on the negative. If you do have an issue there is a fix which is detailed here (<https://firstfrc.blob.core.windows.net/frc2016manuals/APPConnectorRework.pdf>). We are interested in tracking this and request that you fill out this form (<https://app.smartsheet.com/b/form?EQBCT=121b80b7220644e9bedf4c4b3bd9125a>) if you have issues. Going forward we will be working with our suppliers to reduce the chance of this happening. On behalf of *FIRST* and our suppliers we apologize for an inconveniences this may have caused.

## Virtual Kit

These items are available to Teams directly from the Supplier either via download or custom order.

### Product Donation Vouchers

- 16 Hertz (<http://www.16Hertz.com>) Voucher, One Free Leonardo++ Microcontroller: Click here (<http://www.16Hertz.com/frc2016>) to find your team's promo code. Shipping information coming soon. Expiration Date coming soon. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-16hertz-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-16hertz-flyer.pdf)).
- AndyMark (<http://www.andymark.com>) Voucher, \$450 (USD): Voucher code available in TIMS (only for teams who opted out of the KOP Drive System). (<http://archive.firstinspires.org/roboticsprograms/frc/blog-KOP-Drive-System-Opt-Out>) Shipping not included.
- AutomationDirect.com (<http://automationdirect.com>) Voucher, \$30 (USD): See detailed instructions here (</node/5621>). Shipping not included. Expiration Date: 4/30/16. PDF of Voucher (</sites/default/files/2016-automation-direct-voucher.pdf>).
- Bimba (<http://www.bimba.com/First-Robotics>) Voucher, 2 Free Cylinders: Click here (<http://www.bimba.com/First-Robotics>) to order your free cylinders. Ground Shipping is included. Expiration Date: 4/30/16. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-bimba-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-bimba-flyer.pdf)).
- BishopWisecarver (<http://www2.bwc.com/firstvoucher>) Voucher, 4 Free MadeWell Wheels for Linear Guides: Click here (<http://www2.bwc.com/FIRSTVoucher>) to redeem your team's voucher. Shipping is not included. Expiration Date: 4/30/16. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-bwc-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-bwc-flyer.pdf)).
- CTR Electronics (<http://www.ctr-electronics.com>)/Innovation First International (<http://vexpro.com>) Voucher, 2 Talon SRXes or 3 Victor SPs: Voucher code is available in TIMS and redeemable here (<http://vexpro.com/pdv-2016>). Shipping not included. Expiration Date: 4/30/16.

- DigiKey (<http://digikey.com>) Voucher, \$50 (USD): Click here ([http://www.digikey.com/us/en/mkt/FIRST.html?WT.z\\_vanity=DK\\_First\\_Robotics](http://www.digikey.com/us/en/mkt/FIRST.html?WT.z_vanity=DK_First_Robotics)) to access. Shipping not included. Expiration Date: 4/30/16. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-digikey-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-digikey-flyer.pdf)).
- ECIA (<http://www.ecianow.org>), Team Tool Download: Use the QR Code on the Voucher to download the 3-D printer file for a wire gauge checker. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-ecia-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-ecia-flyer.pdf)). [Leave a message](#)
- Inventables (<https://www.inventables.com/>) Voucher, \$40 (USD): Use your Team's code in TIMS. Shipping not included. Expiration Date: 4/30/16
- Maxbotix (<http://www.maxbotix.com>) Voucher, \$35 (USD): Use the code provided on the flyer to receive \$35 off any order. Shipping not included. Expiration Date: Coming Soon PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-maxbotix-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-maxbotix-flyer.pdf)).
- N (<http://store.nextgenrobots.com/>)ext Gen (<http://store.nextgenrobots.com/>) Robots (<http://store.nextgenrobots.com/>) Voucher, 1 CIM Cooler: Use your team's code in TIMS. Shipping not included. Expiration Date: 6/1/16, but can be extended, if teams need more time.
- TE Connectivity (<http://www.te.com/usa-en/home.html>) Voucher, \$25 (USD) for select products ([http://www.firstinspires.org/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/te-first-catalog-final.pdf](http://www.firstinspires.org/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/te-first-catalog-final.pdf)): To redeem this voucher, use your team's main contact email in TIMS and follow the instructions in the Quick Reference Guide ([http://www.firstinspires.org/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/sample-center-quick-reference-guide-first.pdf](http://www.firstinspires.org/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/sample-center-quick-reference-guide-first.pdf)). Shipping is included. Expiration Date: 4/30/16. PDF of Voucher ([/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/kit-of-parts/2016/2016-tec-flyer.pdf](/sites/default/files/uploads/resource_library/frc/game-and-season-info/kit-of-parts/2016/2016-tec-flyer.pdf)).

## Software

- CAD Software: software suites including CAD, simulation, and modeling plus CAD libraries of the *FIRST* STRONGHOLD field and 2016 Kickoff Kit items available at Kickoff
  - Autodesk (<http://usa.autodesk.com/adsk/servlet/pc/item?siteID=123112&id=17575346>)
  - (<http://usa.autodesk.com/adsk/servlet/pc/item?siteID=123112&id=17575346>)PTC (<http://www.ptc.com/communities/academic-program/k12/students/first>)
  - SolidWorks (<https://www.solidworks.com/sw/education/robot-student-design-contest.htm>)
- Altium's Designer Software (<http://www.altium.com/en/first-robotics-competition>): a PCB design & development tool.
- American Button Machines' Build-a-Button (3-month membership): button design software. Visit [www.AmericanButtonMachines.com/first-robot/](http://www.AmericanButtonMachines.com/first-robot/) (<http://www.americanbuttonmachines.com/first-robot/>) and use your Team's code found in TIMS.
- FRCsim: WPI, with the Open Source Robotics Foundation (<http://osrfoundation.org/>), has developed a free and open-source 3-D simulation environment available to FRC teams using C++ and Java. The FRCsim package is built on top of the Gazebo robotics simulator (<http://gazebo.org/>) that has matured under DARPA funding. Using FRCsim, teams can develop and deploy C++ or Java WPILib robot programs to a set of provided robot models that run in a virtual environment. To run the simulator, teams must have a machine running Ubuntu Linux. Installation instructions are provided by WPI here (<http://wpilib.screenstepslive.com/s/4485/m/23353>). Instructions are also available for importing a 2016 field model and exporting robot models from Solidworks to use with the simulation environment.
- GitHub's Silver Organization Account: software hosting and collaboration tools. Visit the GitHub Education (<https://education.github.com/>) page for details.
- National Instruments' Multisim, Ultiboard, and Statechart Module: integrated circuit simulation, printed circuit board (PCB) prototyping, and a LabVIEW add-on for designing applications using states, transitions, and events. Details are posted here (<https://decibel.ni.com/content/docs/DOC-45560>).

- RoboRealm (<http://www.roborealm.com/index.php>): software for use in computer vision, image analysis, and robotic vision systems. Use your Team's code found in TIMS to register here (<http://www.roborealm.com/FRC2016/index.php>).
- SolidProfessor (<http://www.solidprofessor.com/frc/>): Library of training and resources for SolidWorks, Autodesk, and Onshape. Register on their website (<http://www.solidprofessor.com/frc/>).
- Tableau's (<http://www.tableau.com/first-robotics>) Desktop Professional: data analysis and visualization software. Use the code in the FIRST for five copies per team. Don't forget to check out Tableau's free online resources (<http://www.tableau.com/first-robotics>) created specifically for *FIRST* Robotics Competition students.
- Wolfram Research's Mathematica & SystemModeler: modeling and analysis of physical systems software. Contact Carol Cronin at [carol\\_cronin@wolfram.com](mailto:carol_cronin@wolfram.com) ([mailto:carol\\_cronin@wolfram.com](mailto:carol_cronin@wolfram.com)) to learn more about *FIRST* programs from Wolfram Research.

[Leave a message](#)

## FIRST Choice

Menu of items available for free as part of the KoP.

### Round 1 Ordering

- 11/19/15 Round 1 begins, *FIRST* Choice login information live in TIMS (for registered teams) and credit allotments live at **FIRSTChoiceByAndyMark.com** (<http://firstchoicebyandymark.com/>).
- 12/06/15 Round 1 Team Priority Lists due
- 12/08/15 AndyMark notifies each Team of their Round 1 draft results

### Traditional Ordering

- 12/11/15 *FIRST* Choice opens for traditional live orders
- 01/08/16 *FIRST* Choice closes

### Round 2 Ordering

- 01/09/16 Round 2 begins, additional credits issued (unused credits do carry over).
- 01/16/16 Round 2 Team Priority Lists due
- 01/19/16 AndyMark notifies each Team of their Round 2 draft results

### Traditional Ordering

- 01/22/16 *FIRST* Choice opens for traditional live orders
- 04/14/16 *FIRST* Choice closes for the 2016 season

**Priority Lists are back, and we'll do two rounds (one before Kickoff and one after Kickoff).** The Priority List process, illustrated in more detail **here** ([http://archive.usfirst.org/sites/default/files/2016%20FIRSTChoice%20Process.pdf?\\_\\_hstc=212927755.0081288ae59f95456fef2fb81b0f1284.1450192180159.1473717263727.1473777741354.98&\\_\\_hssc=212927755.2.1473777741354&\\_\\_hsfp=1043](http://archive.usfirst.org/sites/default/files/2016%20FIRSTChoice%20Process.pdf?__hstc=212927755.0081288ae59f95456fef2fb81b0f1284.1450192180159.1473717263727.1473777741354.98&__hssc=212927755.2.1473777741354&__hsfp=1043)).

**Priority Lists are back, and we'll do two rounds (one before Kickoff and one after Kickoff).** The Priority List process, illustrated in more detail **here** ([http://archive.usfirst.org/sites/default/files/2016%20FIRSTChoice%20Process.pdf?\\_\\_hstc=212927755.0081288ae59f95456fef2fb81b0f1284.1450192180159.1473717263727.1473777741354.98&\\_\\_hssc=212927755.2.1473777741354&\\_\\_hsfp=1043](http://archive.usfirst.org/sites/default/files/2016%20FIRSTChoice%20Process.pdf?__hstc=212927755.0081288ae59f95456fef2fb81b0f1284.1450192180159.1473717263727.1473777741354.98&__hssc=212927755.2.1473777741354&__hsfp=1043)).

is a little complex. Based on feedback from last year, we believe that what it lacks in simplicity, it makes up for in user experience and satisfaction. The Priority List is optional, and **the deadline for Round 1 Priority Lists is noon (Eastern Time) on Sunday, December 6, 2015.**

Each Priority List created by the deadline (one per Team), will be assigned a random rank. The order in which individual teams complete their Priority Lists before the deadline does not affect their rank. All teams that add at least one item to their Priority List by the deadline are put in a common pool and then randomly sequenced. This is what we mean by 'random rank.'

Leave a message

Then, in rank order, AndyMark's auto draft system will query the Team's highest priority item and, provided the Team has the credits and *FIRST* Choice has the inventory, issue the item to the Team. This applies to each Priority List line item as ranked. If the team doesn't have enough Credits to cover the entire amount (but at least one) or *FIRST* Choice inventory doesn't have the entire quantity (but at least one), the team will get as many as their credits/*FIRST* Choice inventory allow. If credits or inventory can't cover one, it will move on to the next ranked item so the team is not skipped for that round.

Once it gets to the last ranked Priority List, the draft system will query that last Priority List's next item and work its way back up the ranks (for Teams that know how we've done Alliance Selection in the past, this serpentine process probably seems familiar). This draft continues until inventory's gone or Priority Lists have been exhausted. Inventory will be updated for when *FIRST* Choice opens for traditional "first come, first served" live orders.

A few other notes about the process:

- Login information will be posted to each Team's TIMS account. Only registered FRC Teams will see their login information in TIMS and thus only registered FRC Teams will be able to create a Priority List.
- Priority Lists will be created using the Priority List feature on AndyMark's *FIRST* Choice site.
- Shipping charges will apply (details to be posted on **FIRSTChoiceByAndyMark.com** (<http://firstchoicebyandymark.com/>) before Priority Lists are due), and **unlike last year, a billing address, shipping address, and credit card information must be provided before creating your Priority List.** For international Teams, additional charges may apply, for which the Team is responsible and AndyMark will address on a case by case basis.
- Priority Lists are saved each time the user clicks "Update," letting teams add, subtract, and reprioritize items until the deadline.
- Upon the deadline, any existing Priority Lists will be locked, processed, and no additional changes may be made.
- We will not publicly publish Teams' Priority Lists, the assigned rankings, or final order contents.
- Items will not ship until a Team has secured first event registration payment with *FIRST* (please allow at least one business day for this transaction to be processed and the status to be relayed to AndyMark).



(<https://www.facebook.com/pages/FIRST-For-Inspiration-and-Recognition-of-Science-and-Technology/184063051616518>)



(<http://www.twitter.com/firsttweets>)



(<https://www.youtube.com/user/FIRSTWorldTube>)



([https://instagram.com/first\\_official\\_/](https://instagram.com/first_official_/))

## f FACEBOOK

**FIRST - For Inspiration and Recognition of Science and Technology** ([//facebook.com/profile.php?id=184063051616518](https://facebook.com/profile.php?id=184063051616518)) Wondering what you're going to do with all that STEM stuff you're learning in school? Thinking about becoming an engineer but not exactly sure what they do? Amber Gell explains why

being an engineer rocks, and how she is using what she learned in school as a Spacecraft Systems Engineer for Lockheed Martin.



(<https://www.facebook.com/FIRSTOfficial/videos/1181606848528795/>)

17 hours 11 min ago.

**FIRST - For Inspiration and Recognition of Science and Technology** ([//facebook.com/profile.php?id=184063051616518](https://facebook.com/profile.php?id=184063051616518)) shared FIRST Tech

Challenge's video. What do you think of the new FIRST Tech Challenge game?!



(<https://www.facebook.com/FTCTeams/videos/1504292192929704/>)

## RECENT TWEETS

FIRST

✓ @FIRSTtweets (<https://twitter.com/FIRSTtweets>)

The #FIRSTParody (<https://twitter.com/hashtag/FIRSTParody?src=hash>) contest is open for submissions! Check out last year's "Drive My Bot"



: <http://bit.ly/2cRLjPH> (<https://t.co/tgYWyCSgai>) <https://twitter.com/firstlegoleague/status/773910790357135360> ...

(<https://t.co/kCZ3Tzqe1z>)

Posted 18 hours ago (<https://twitter.com/FIRSTtweets/status/775431273640759297>)

FIRST

✓ @FIRSTtweets (<https://twitter.com/FIRSTtweets>)

How will you make a difference? Share a video telling us how you'll make the world a better place: <http://bit.ly/2caVi0d> (<https://t.co/t1oRn0Sul5>)

#FIRSTinspires (<https://twitter.com/hashtag/FIRSTinspires?src=hash>)

Posted 18 hours ago (<https://twitter.com/FIRSTtweets/status/775429301101408256>)

[About \(/about/vision-and-mission\)](/about/vision-and-mission)

[Contact \(/about/contact-us\)](/about/contact-us)

[FIRST Store \(https://usfirstmarketplace.com/\)](https://usfirstmarketplace.com/)

[Donate \(https://ssl.charityweb.net/usfirst/updates/\)](https://ssl.charityweb.net/usfirst/updates/)

[Privacy & Legal \(/about/privacy-policy\)](/about/privacy-policy)

[Site Map \(/sitemap\)](/sitemap)

[Leave a message](#)

© 2016 FIRST