

## **Tools recommended for a new FIRST Robotics Competition team build site**

Things to avoid in all cases!

- Adjustable wrenches (tends to damage corners of hex fasteners)
- Welding equipment (process is difficult to do well and repairs at an event become difficult)

Basic Minimums – Level 1

- First aid kit
- Safety glasses for everybody
- Hex wrenches (may need SAE and metric sizes) <http://www.homedepot.com/p/TEKTON-In...5282/205539289>
- Screw drivers (flat and cross-recess) <http://www.homedepot.com/p/DEWALT-Sc...513L/202710566>
  - o Large
  - o Small
  - o Mini – for some of the electrical work
- Hand files (coarse and fine) <http://www.homedepot.com/p/Husky-Fil...3HDN/203243960>
- Pliers <http://www.homedepot.com/p/Husky-8-i...8020/203288181>
- Side cutters <http://www.homedepot.com/p/Xcelite-4...S54V/205692245>
- Needle-nose pliers <http://www.homedepot.com/p/KNIPLEX-He...-200/100668989>
- Snap ring pliers <http://www.homedepot.com/p/GearWrenc...715D/205594173>
- Locking pliers (do not use in place of proper wrench) <http://www.homedepot.com/p/Husky-Loc...6850/203429493>
- Electrical pliers and strippers <http://www.homedepot.com/p/Klein-Too...1055/100630708>
- Combination wrenches (open end/box end)– several of each common size will be needed <http://www.homedepot.com/p/Husky-SAE...SAEN/203203983>
- Set of socket wrenches with a ratchet drive (may need SAE and metric sizes) <http://www.homedepot.com/p/Promotion...0002/204505322>
- Hacksaw w/ several different pitch blades <http://www.homedepot.com/p/HDX-10-in...2150/204748830>
- Tape measure, and ruler <http://www.homedepot.com/p/Stanley-P...425D/100019154>
- Combination square <http://www.homedepot.com/p/Johnson-C...20EM/100353836>
- Scissors <http://www.homedepot.com/p/Wiss-8-1-...812S/205034015>
- Set of drill bits <http://www.homedepot.com/p/DEWALT-Ti...1369/202279644>
- Swivel head rivet **tool** (optional if rivets are to be used) <http://www.homedepot.com/p/Arrow-Fas...T300/100135850>
- Bar clamps <http://www.homedepot.com/p/DEWALT-Me...3196/205086878>
- Mallet (prefer dead-blow) <http://www.homedepot.com/p/Estwing-4...CD45/202183856>
- Ball-peen hammer <http://www.homedepot.com/p/Estwing-1...16BP/203075910>
- Staple gun <http://www.homedepot.com/p/Arrow-Fas...-T50/100021099>
- Dustpan and broom <http://www.homedepot.com/p/HDX-Angle...DXRM/204357161>
- Trash can <http://www.homedepot.com/p/Rubbermai...8013/100656030>

Highly Recommended

- Chop saw (consider hearing protection) <http://www.homedepot.com/p/Ryobi-14-...345L/205105634>
  - o Blade for wood
  - o Special blade for non-ferrous metals – works well for aluminum

- Drill press – variable speed <http://www.homedepot.com/p/JET-15-in...4165/203695066>
- Cordless drill w/ extra battery and charger <http://www.homedepot.com/p/DEWALT-20...90D2/204210639>
- Shop vacuum <http://www.homedepot.com/p/RIDGID-6-...0670/205144661>
- Digital caliper <http://www.homedepot.com/p/General-T...-147/100651811>
- Set of Straight, Left & Right tin snips <http://www.homedepot.com/p/BESSEY-Av...-Set/205848745>

Advanced – Level 2 - when budget allows

- Everything in Basic plus any/all of the following (portable equipment is advisable if workspace commitment is unsure)
- Taps and tapping wrench (size depends on need) <http://www.homedepot.com/p/TEKTON-In...7558/205544444>
- Band saw (consider assortment of blades with different tooth pitch and blade size for straight or curved cuts in various thickness of various materials) <http://www.homedepot.com/p/Ryobi-9-i...S904/100593258>
- Dremel-type hobby **tool** with assorted attachments (cutoff discs, grinding wheels, sanding discs, burrs) <http://www.homedepot.com/p/Dremel-30...-25H/203040434>
- Circular saw (consider hearing protection) <http://www.homedepot.com/p/Ryobi-13-...B125/205216317>
- Corded hand drill <http://www.homedepot.com/p/DEWALT-3-...110K/100634626>
- Corded variable speed jig saw <http://www.homedepot.com/p/Bosch-6-A...S260/202691138>
- Table saw with a 10" minimum blade <http://www.homedepot.com/p/Ryobi-10-...S10G/205216309>

Expert – Level 3 – must have solid financial and facilities support (be wary of electrical requirements)

(only consider upgrades if the need supports programming machines and need for multiple parts)

- Manual vertical milling/drilling machine with digital X, Y, Z readouts <http://grizzly.com/products/Mill-Dri...-and-DRO/G0759>
  - o Could upgrade to CNC mill
- Manual lathe <http://grizzly.com/products/8-x-16-V...ed-Lathe/G0768>
  - o Could upgrade to CNC lathe
- Compressor for pneumatic tooling (pop rivets, die grinder/cutoff **tool**, brad nailer, stapler) <http://www.homedepot.com/p/Porter-Ca...2002/203162815>