

SCUTTLE Tools Guide

For Educators, Makers, and Learners

revised 2022.10

Shared Tools (Recommended for Lab)



PowerPole Crimpers

- Easy to use
- Wide availability
- Instructional videos online



DuPont Crimpers



Spade Terminal Crimper



Throughout the design of the SCUTTLE robot, we co-selected tools and connectors to achieve a repeatable fabrication setup in a classroom environment. Achieve industrial quality without industrial tools.

Shared Tools (Recommended for Lab)



- Easy to use
- Wide availability
- Instructional videos online

Flush Cutters



Ferrule Crimper



Scissors



Wire strippers





Lab Recommendation:

- ▶ We recommend that you outfit your lab with 1 set of “shared tools” for every 4 robots in your lab.
- ▶ Also, 5S your labs by printing the previous slides out, laminating, and lining your shelves.



Recommended Tool Brands



- ▶ We tested many brands of tools, including original equipment manufacturer (OEM) and imitation brands. We made comments here about value.

Tool	Brand on Amazon	Satisfied?	Comments
Anderson crimper	Zhushan	yes	Works like the original.
Power Meter	Powerwerx (OEM)	Yes	This company is brilliant. Support OEM.
Electrician's crimper	Gardner Bender (OEM)	yes	Easy tolerances. It's hard to mess this tool up.
DuPont Crimper	IWISS	yes	Never seen a crimper made by duPont but it's probably expensive.
Soldering Iron	UY Chan TS100	Yes	Tested many awful irons in the past. The TS100 is by far our favorite. There seems to be no name brand, but the model is important. If it's less than \$60 it's a fake.
Ferrule Crimper	Preciva	yes	Many screwdrivers don't live up to the name.
Flush Cutters	BOENFU	Mostly	Tons of brands out there. ONLY cut copper, solder, and soft alloys. Still, we never found a flush-cutter to last a long time. Tried Haako brand. Open to suggestions.
Soldering Station	Xytronic (OEM)	Mostly	Can't even find this online, but it has a little more thickness to the cutting teeth, remains flush longer, but also cannot cut in tight spaces.
Wire Strippers	Neiko	Mostly	Nobody on our team agrees on the same "best" option so good luck.

Tools for the Maker



Recommended for all Roboticians!

- ▶ TS100 programmable soldering iron
- ▶ Safety Glasses (for all soldering work)
- ▶ Hot Glue Gun with temp control
- ▶ DC Power supply
 - ▶ (capable of 10A output at 30v)
- ▶ Rosin flux pen
- ▶ Solder
 - ▶ Leaded
 - ▶ 0.8mm diameter



Tools for the Maker



Recommended for all Roboticians!

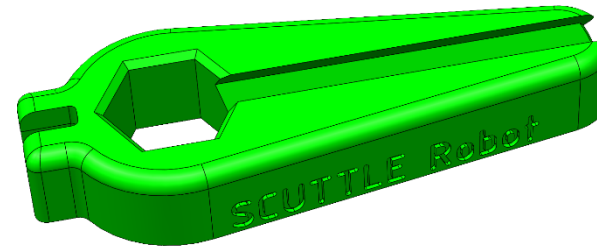
- ▶ Powerwerx (or imitation brand) power meter
 - ▶ Know if your MCU board has an issue
 - ▶ Know how much your custom actuators pull during use
 - ▶ Find out if your battery is charging or finished
- ▶ USB power meter
 - ▶ Verify that your USB source is not limiting the power to your device (raspberry pi, cell phone, etc)
 - ▶ Check the power consumption of added devices (usb camera, LED's, WiFi dongle, etc).
- ▶ Electric Screwdriver
 - ▶ We've bought multiple brands from Amazon and the highest ratings don't have much impact for this product.
 - ▶ The best value (currently) that we found is linked in the image.



Kits (suggested with each robot):



- ▶ Allen Key
 - ▶ 6mm for M8 bolt
- ▶ Philips Screwdrivers
 - ▶ Phillips #2 drive for M6 Screws
 - ▶ Philips #1 drive for M2.5 ~ M3 screws
- ▶ SCUTTLE wrench (13mm hex wrench built in)



These tools make teardown and rebuild of the SCUTTLE robot quick and easy. We recommend that a lab is outfitted with 1 set for each robot.