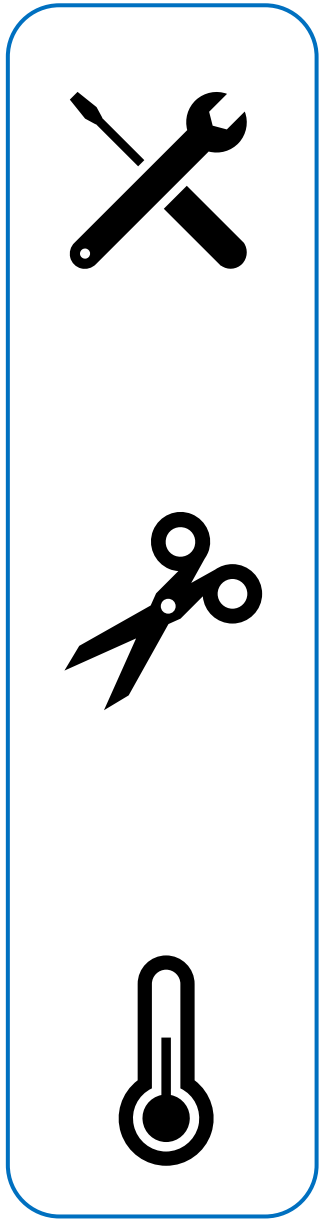

# SCUTTLE Tools Guide

For Educators, Makers, and Learners

revised 2022.04.19

# Shared Tools (Recommended for Lab)

- Easy to use
- Wide availability
- Instructional videos online

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.

## PowerPole Crimpers


## DuPont Crimpers

## Spade Terminal Crimper

# 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 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. |
| | 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. |
| | 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 Roboticists!**

- 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 Roboticists!**

- 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
  - 4mm – for M6 screws
  - 2mm for M3 screws
- SCUTTLE wrench (13mm hex wrench built in)
- Phillips #1 hex-shank bit (for M2 course screws)


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.