

UrbanGlass Neon

Mounting & Wiring Instructions

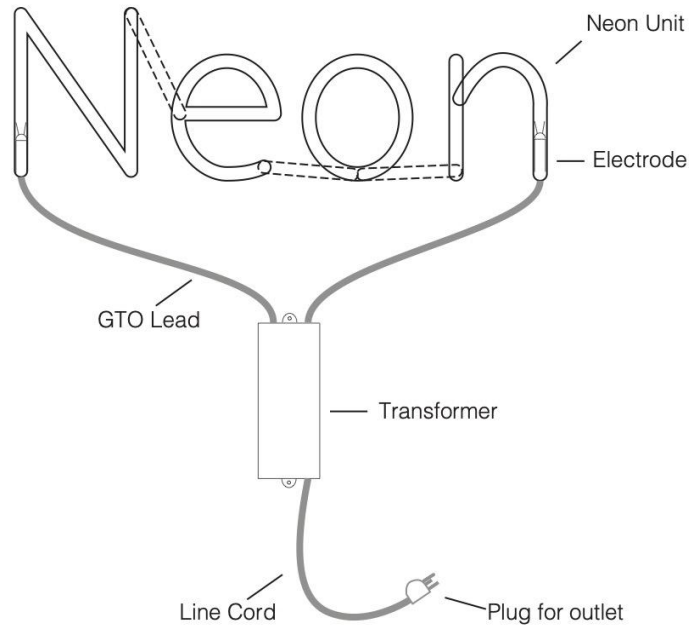


Figure 1: Basic Mounting & Wiring Example

Table of Contents

Vocabulary & Supplies.....	1
Order of Steps.....	2
Calculating Footage.....	3
Mounting Units.....	4
Mounting the Transformer.....	8
Wiring Units.....	8

Vocabulary

- **Boots** Sometimes called end-caps, flame-retardant/silicone cover that protects the sections where the electrodes leads and GTO cables are connected.
- **Electrode** A metal shell insulated by a glass sleeve, connected to two braided wires that are pinched between, but extend beyond the glass sleeve.
- **GTO** “Gas Tubes Only” and shorthand for the specific electrical wire used for neon signs.
- **Transformer** An apparatus for reducing or increasing the voltage of an alternating current. It is the power supply we use for neon signs.
- **Tube Support** Can be made from a range of materials and sizes, used to attach neon tubes to the wall.
- **Unit** A glass tube with one electrode on either end.
- **Sleeve** A flame-retardant cover used to insulate exposed wire on a GTO-to-GTO connection.

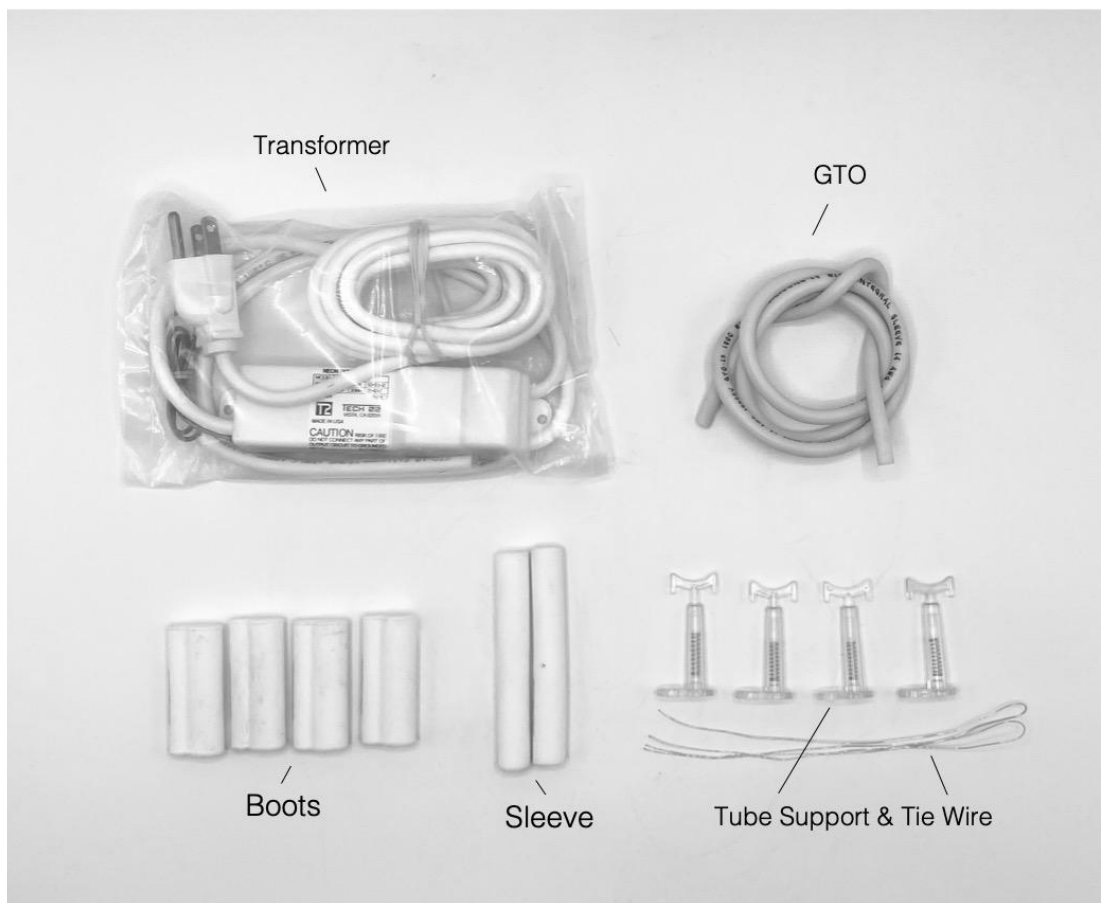


Figure 2: Essential Accessories

Order of Steps

- ☐ Plan how you want the unit mounted
- ☐ Calculate the footage of your unit(s)
- ☐ Gather all the necessary supplies
- ☐ Mark up where the tube supports and transformer will be mounted
- ☐ Attach tube supports to wall/mounting material
- ☐ Attach transformer to wall/mounting material
- ☐ Mount neon to tube supports
- ☐ Wire GTO to electrode leads
- ☐ Make sure everything is appropriately insulated with boots/sleeves
- ☐ Plug in transformer!

Things to Consider Before Making Your Unit

- How do I want my units placed? Mounted to backing, suspended, sitting?
- What material(s) are my units going to be near or touching? Do these materials conduct electricity?
- Where is my transformer going to live? Do I want my transformer leads coming out the bottom or top of the unit?
- Is there an electrical outlet available nearby?
- Are there any areas of my units that need to be secured with silicone glue to provide extra support from stress?

*Ultimately, the installer should mount the transformer as close to the unit as feasibly possible. It is much better to use an extension cord rather than long lengths of GTO cable. Keep the total length of GTO cable under 10 ft.

Calculating Footage

Before you begin wiring, you will need to calculate how much footage of neon tubing you are trying to power with your transformer. This can be done by using a blowhose or some other flexible cord to measure from one end of the unit to the other.

Footage is calculated based on the length of neon tubing, the tube diameter, and the fill gas. If your footage is over the amount allotted by the chart you will need to purchase an additional transformer.

*Each pair of electrodes count as 1 (one) foot of tubing

Footage Chart for Tech22 Gen3-8k20 Transformers

Tube Diameter	8 mm	9 mm	10 mm	12 mm	15 mm
Neon	10 ft	13 ft	15 ft	18 ft	20 ft
Argon	12 ft	15 ft	17 ft	20 ft	20 ft

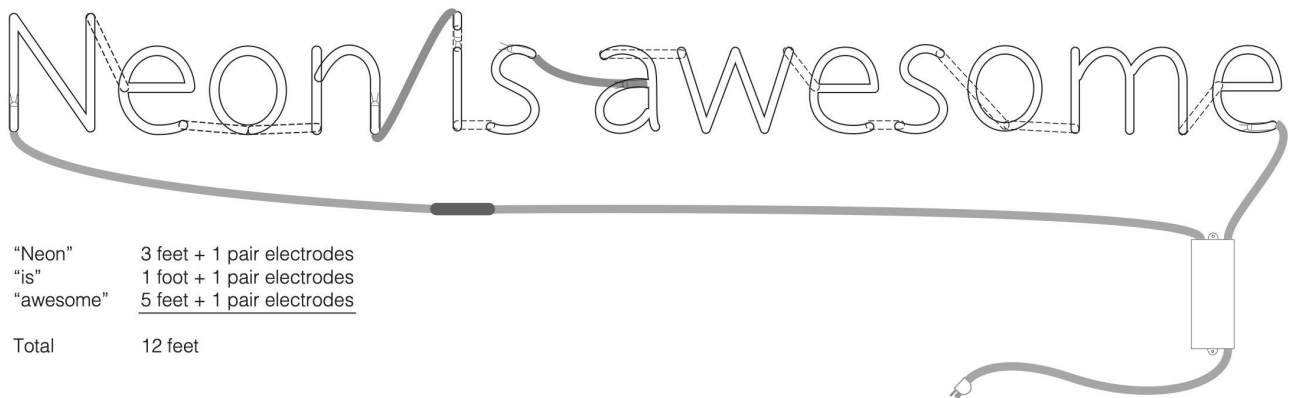
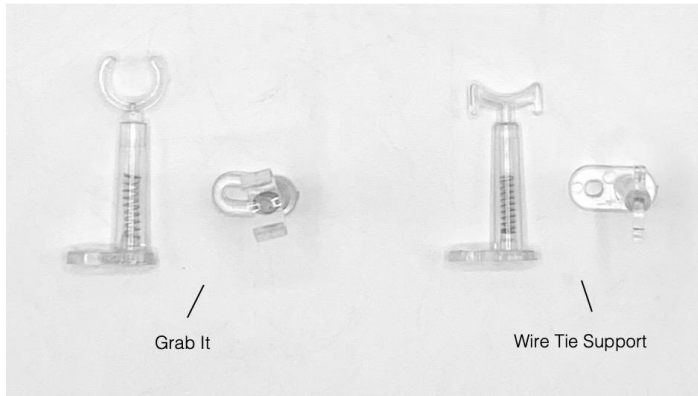


Figure 3: Example of multiple units mounted and wired, including extended GTO lead

Mounting Units



If Using Grab-Its



Step 1:

Map out where you want the unit placed

Attach Grab-It tube supports to rear of sign

Angle the tube support on the tube then bring it upright to snap into place

Each unit should have enough tube supports so that the bends are not being pulled by weight or gravity



Step 2:

Hold unit up to the wall or surface and adjust tube support so that they sit flush to the surface



Step 3:

Using a pencil, make registration marks around the base of the tube supports and where the screw hole sits on the surface

Step 4:

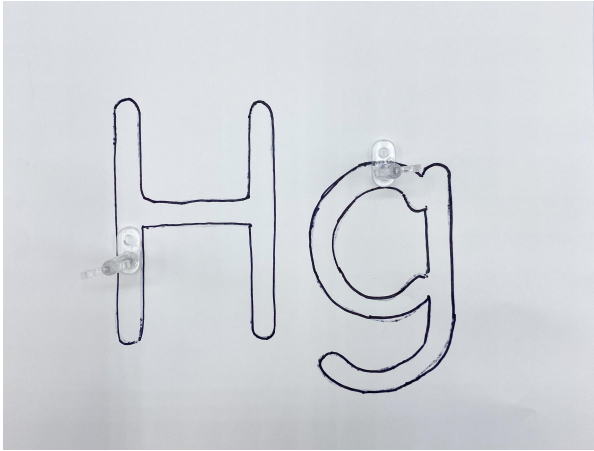
Attach tube supports to wall or surface

- If you are screwing the tube supports into a surface, first remove them from the neon and attach to surface separately
- If mounting to drywall, use anchors
- If using an adhesive (mounting to plexiglass) lay the supports on the surface while still attached to the neon and glue in place, wait until the adhesive has cured before moving on

Step 5:

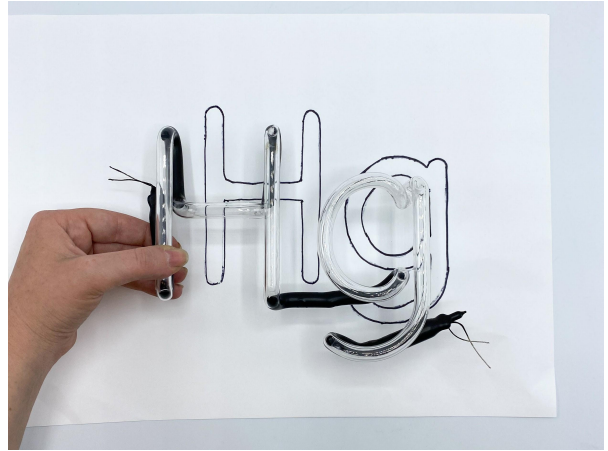
Once supports are secure, carefully snap in your neon.

If using Wire-Tie Supports



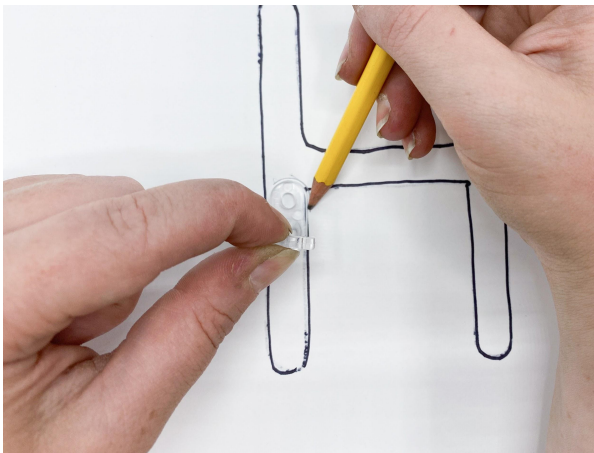
Step 1:

Stand your tube supports on pattern and lay your neon to rest on the tube supports



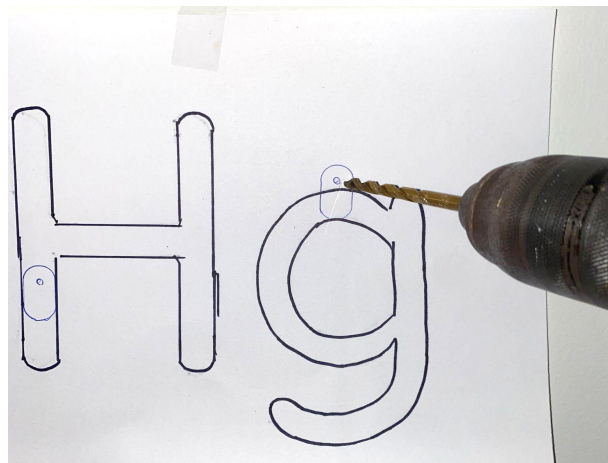
Step 2:

Make adjustments to line up the neon with the pattern



Step 3:

Using a pencil make registration marks around the base of the tube supports and where the screw hole sits on the surface



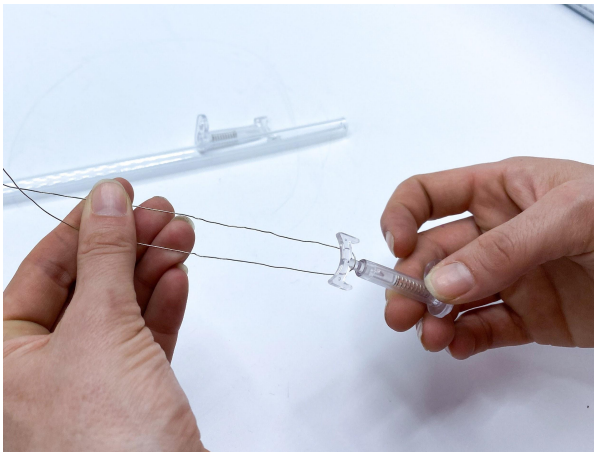
Step 4:

If you are screwing the tube supports into a surface, first attach the mounting pattern to the wall or surface

Drill holes for the tube supports where you previously marked it off on the mounting pattern. If mounting to drywall, use anchors.

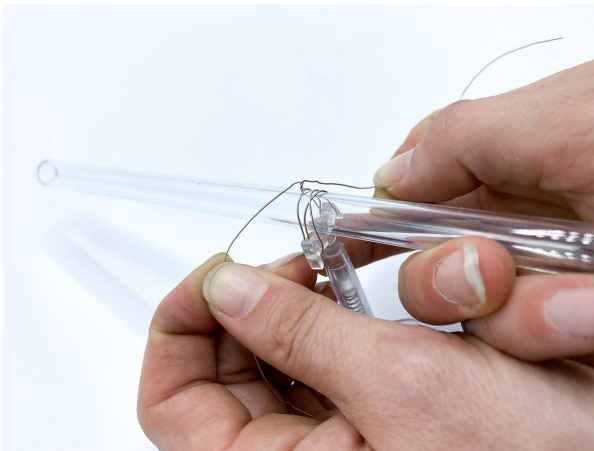
Attach tube supports to surface.

If using an adhesive (mounting to plexiglass) lay the supports on the surface, wait until the adhesive has cured before moving on.



Step 5:

Place neon on tube supports, and taking some tie-wire, loop around one of the hooks and cross over neon, hooking it around the other side



Step 6:

Twist two ends of tie-wire together multiple times until neon is secure, snip extra wire

Suspending Units

1. Suspend units using monofilament, tiger wire, or some other cables from the ceiling
2. While lighter units can tolerate being strung just by the leads attached to the electrodes, it is advised to always have backup support

Mounting the Transformer

The transformer needs to be secured to a surface as close as possible to the units. There are two appendages with holes on each transformer for you to screw or bolt it in place. Use anchors if attaching to a surface like drywall (*reference fig. 1 on title page*).

Wiring Units

DO NOT PLUG IN THE TRANSFORMER UNTIL EVERYTHING IS SECURELY WIRED AND EXPOSED WIRES ARE SAFELY INSULATED

Things to Remember:

- The leads (wires) attached to the electrodes are precious-you don't want to pull them out accidentally
- The tip-off on the tubulated electrodes is one of the most fragile points of the whole unit

Each transformer has two GTO leads (*reference fig. 1 on title page*). To connect one unit to a transformer each GTO cable is connected to each electrode. The GTO leads and electrodes are interchangeable.

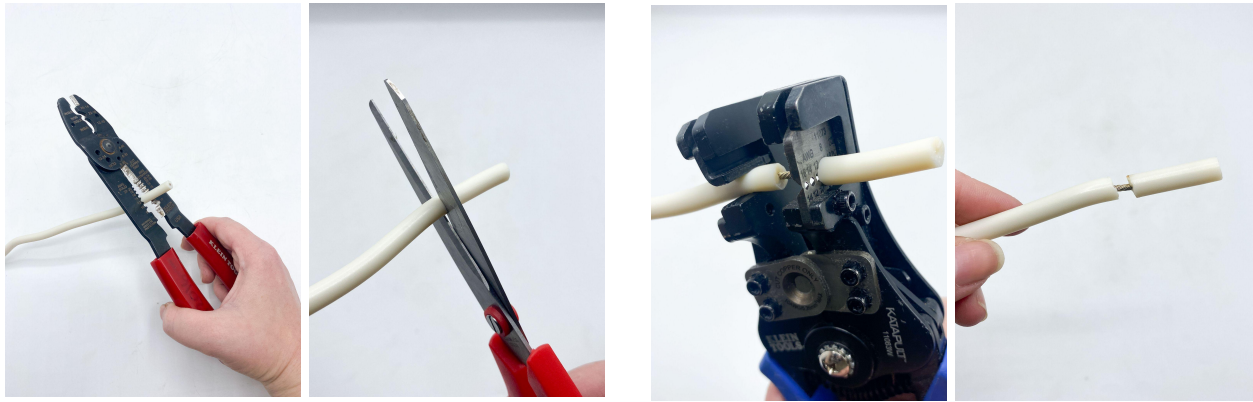
If Wiring Multiple Units

If wiring multiple units to one transformer, start by connecting a GTO lead to an electrode on Unit 1, and an extra piece of GTO to the other electrode on the same unit (*reference fig. 3 on page 3*). Take the other end of the loose GTO and connect it to the closest electrode on Unit 2. Continue daisy-chaining the units together until you are ready to attach the second transformer GTO lead to the last electrode.

Essentially you are making a closed circuit with the GTO starting and ending with the transformer.

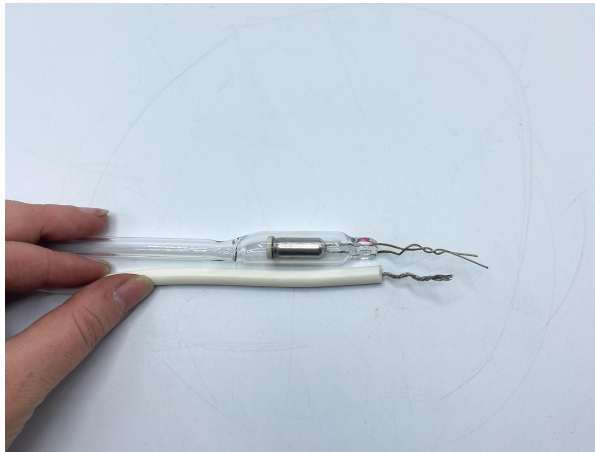
Stripping & Connecting Wires

In order to connect the GTO you will need to strip about 1 inch of insulation; the easiest way to do this is with a wire-stripper but it can be done with scissors or wire cutters as well.



Step 1:

Lightly crimp the casing and slide it off the exposed wires, twisting as you remove it to strengthen the wires.

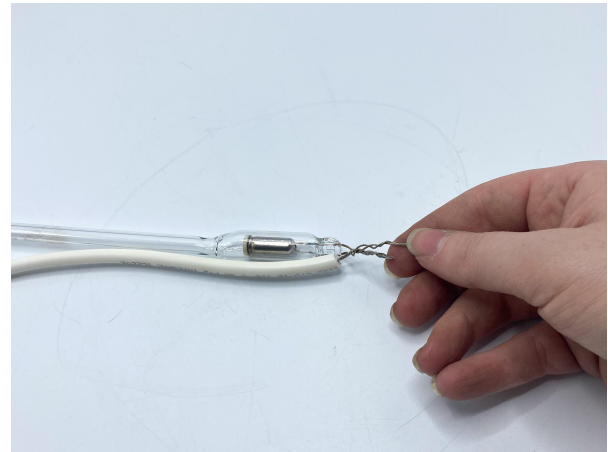


Step 2:

Once the casing is removed twist the wires together again to keep them compact.

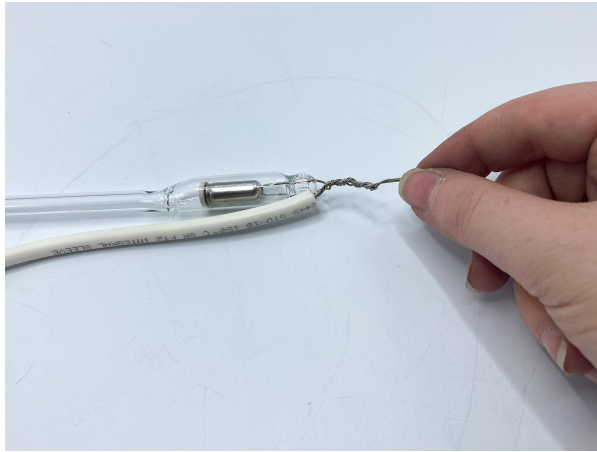
Twist the braided wires on the electrode together.

Hold the GTO and electrode side by side and line up the wires.

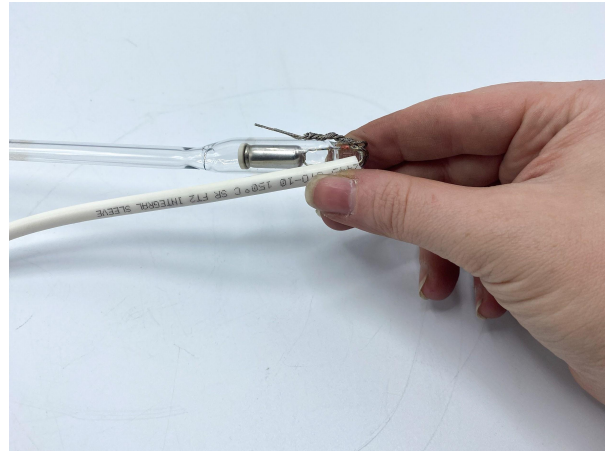


Step 3:

Twist all the wires together without knotting them, in a way that could be undone easily.

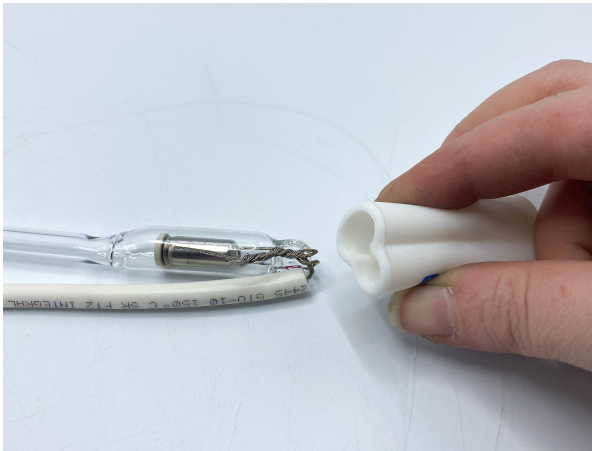


Step 3 continued



Step 4:

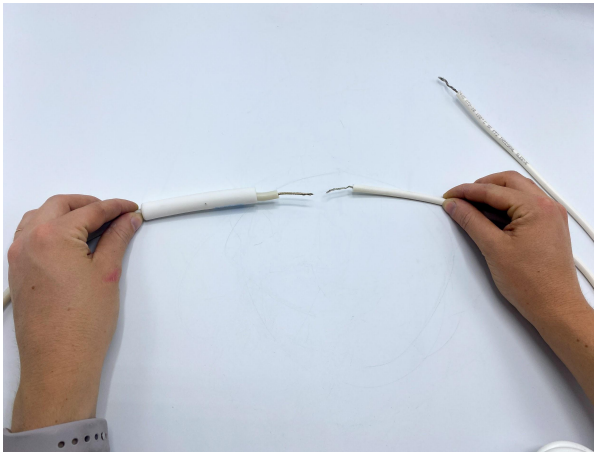
Fold back the connected wires parallel to the electrode so that they will lay nicely on the inside of the endcap.



Step 5:

Squeeze open the endcap and slide the widest part over the electrode and the smaller opening over the GTO.

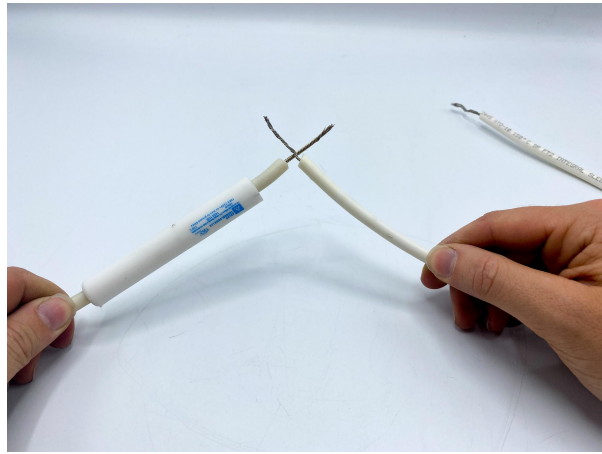
Extending the GTO



Step 1:

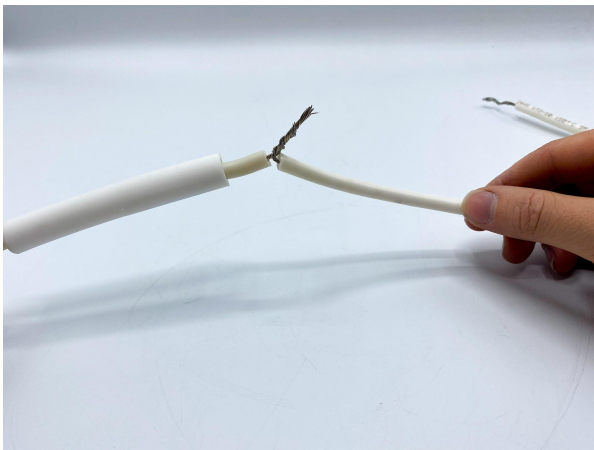
To extend the length of the GTO strip away an inch of casing from the piece you are extending and the new GTO

Slide your sleeve over one of the GTO cables

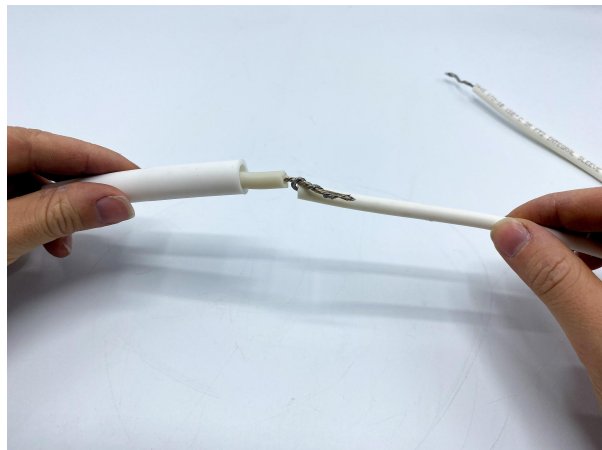


Step 2:

Holding the GTO with the exposed wires facing each other, twist them together

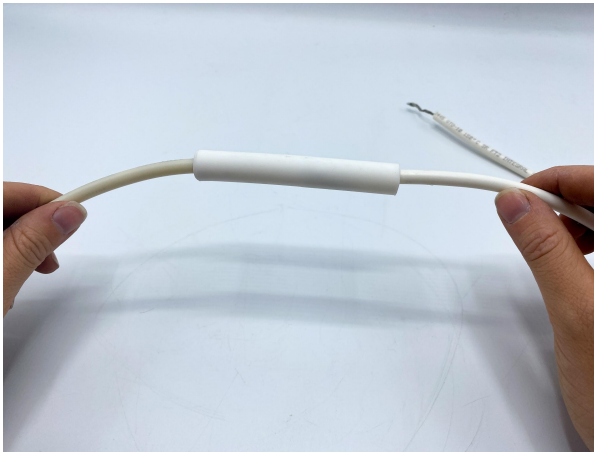


Step 2 continued



Step 3:

Fold the wires over so that the sleeve can easily slide over it



Step 4:

Slide the sleeve over the exposed wires until they are covered

Secure with electrical tape if needed

*Clear glass can be used as an insulating sleeve, be sure to secure with electrical tape

*Unless specifically designed for GTO, heat shrink and electrical tape are not protective enough for this application

Grounding Wire

Your transformer may include a grounding wire, which is green. If you are mounting units to a surface that conducts electricity it is wise to attach the grounding wire to that surface. The wire should be stripped back and wrapped around a screw or bolt that is attached to the conductive surface.

Once the unit and transformer are secured and wired, and insulating caps are covering any exposed wires, you are ready to plug it in!