# Safety Information

-Be sure to work from secure and safe platforms and ladders
-Secure area underneath your work space to make sure nobody gets hurt in case you drop something
-Edges of cut copper are sharp; be sure to wear propper gloves when handling cut gutter
-When cutting copper, be sure to wear approved safety goggles
-Never install or work on damaged roof material or structure
-When you install gutters, make sure the collected water can run off without causing damages
-Never modify parts without consulting a professional or Slate and Copper's technical support team
-Dispose of leftovers and off-cut safely and in accordance with best practices
-Never leave any parts or tools unsecured on your roof, they might fall down causing serious damage or injury
-Never do installation work alone- always work in a team
-Check for power lines
-Never install on icy or slippery roofs or in windy conditions

**-IF YOU DO NOT FEEL YOU CAN COMPLETE THIS WORK SAFELY, CALL A LOCAL CONTRACTOR**

WARNING:
Copper is a sharp metal and will bite you if you let it. Firmly and securely hold all pieces when working with them. Do not slide your hands or fingers along any straight or finished edges. This is partly the reason why we wore gloves in our demonstration. Wearing gloves will also help minimize the fingerprint marks on the gutter system. The best gloves to use especially for grip are ones with the palm and fingers coated with a rubber or latex material.

# Installing Plain Drop Outlet

**Tools Required:**

* Cord or Cordless Drill (3/8” size drill is perfect)
* Large Drill Bit for Drill (at least 1/2” bit)
* Something to trace around the inside of plain drop outlet (sharpie pen works)
* Green and/or Red Tin Snips also Know as Left and Right Handed Tin Snips Respectively
* Soldering Equipment and Flux (do not use the pre-tinning flux)
* Soldering Iron of some sort (many styles to choose from)
* Mapp Gas Tank (yellow tank) with an Adjustable Flame Torch Head Nozzle

step 1

The plain cup style drop outlet is used for water drainage from the gutter. The plain drop outlet is installed directly into the bottom of the gutter with solder. The outlet sticks out of the bottom of the gutter, and is used if the star outlet is not. The plain drop outlet can certainly be used inside of the star outlet, and a true craftsman would most likely do so.

Before we can begin to install the plain cup style drop outlet we must first determine where we want to install our drop outlet on the gutter. For this demonstration we are installing the plain drop outlet near the end of the gutter, since this is where most outlets end up being.

# Part 1, 2 & 3

**First part- Positioning outlet**

Turn the gutter upside down, and position the cup outlet over the center of the bottom of the gutter (see picture Step 2). Now take a metal scribe or sharpie pen and trace on the inside of the cup outlet all the way around the outlet (see pictures Step 3 & Step 4).

step 2

step 3

**Second part- Drill**

Take the drill with the large drill bit and drill a hole in the center of the traced out circle (see picture Step 5).

**Third part- Cutting outlet hole**

Take a pair of tin snips (we used Red Tin Snips) and cut in spiral circles till you cut to the traced out line (see pictures Step 6, Step 7, & Step 8). Remember when cutting the hole, it is easier to cut a little bit off, but it is much harder to add it back on. We want to make as good and as clean of a cut as we possibly can. The drop cup outlet is meant to be as tight fitting as possible.

step 4

step 5

# Part 4

**Fourth part- Take and fit the plain cup style outlet inside of the hole (see pictures Step 9& Step 10).**

We may need to trim a little bit of metal off around the hole to get the drop outlet to fit properly. After fitting the drop cup outlet into the hole if needed; you can take a hammer and tap all the way around the soldering flange on the inside of the gutter to get the soldering flange to fit a little better. Once the hole is cut and the plain drop outlet fit's the way we want it, we are done with this step.

step 8

step 9

step 6

step 10

step 7

step 11

# Part 5

**Fifth part- After the plain cup style drop outlet fits properly we can flux and solder the outlet into place.**

In picture Step 11 we are applying flux with a flux brush all the way around the soldering flange. We must apply flux to our seam, or the solder will not stick to the copper at all. If flux is not applied or gets dried out during soldering, then the solder will bead off like mercury. Simply apply or reapply some flux.

step 12

In pictures Step 12 & Step 13 we are soldering the outlet into place. If you are using a hand held torch to solder, then you will not need as many tack solder points 3 to 4 would do. Since we used a soldering iron as you can see in picture Step 12 we made many tack solder points. This many tack points is going to make our soldering job easier.

step 13

In picture Step 13 the craftsman is filling in-between his tack points with solder. In pictures Step 15& Step 16, the craftsman shows his perfectly completed soldering job.

step 14

# Part 5

step 15

And because he took his time and trimmed and re-trimmed a few times to get the drop outlet to fit perfectly, as you can see in picture Step 14 no solder bleeds down onto the drop outlet.

step 16

But trust me, there are a few areas around that drop outlet where the solder is peaking through, and this is not a bad thing. That little bit of solder is just what we are looking for. This means we did a good job.

step 17