**[What is Conduit](http://www.wikihow.com/Bend-Conduit)?**

Electrical conduit is a tube that is used to protect and route electrical wiring in a structure. It may be made of metal, plastic, fiber, or fired clay. Most conduit is rigid, but flexible conduit is used for some purposes. **We are using EMT, or electrical metallic tubing.** As it comes in long straight sections, the user must bend it to fit the needs of the particular situation.

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**How to Bend Conduit**

**Part 1: Preparing the Conduit for Bending**

1. Each student should get **60 inches** (5 feet) of EMT, or half a length of 10-foot tube. **PLEASE MEASURE BEFORE YOU CUT, so everyone gets the same amount.**
2. **To cut the conduit tube in half, use the EMT cutter.**

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Tighten it around the conduit like this.

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Watch this video to see how to do it. <https://www.youtube.com/watch?v=LqD-DlIcA8Y>

**Part 2: Making a Stub Bend (90o bend)**



1. **Work with a bender, which is an essential part of any conduit bending project.**



1. For this lab, let’s assume that an electrical box is 15 inches off the floor.We want the conduit to run parallel to the floor and then make a 90-degree turn and run up to the electrical box (free end height).



A conduit bender for ½” EMT takes 5” for the bend. Since we want the end 15” off the floor you will mark 10” from the end of the conduit for the start of the bend.



1. **Slide the conduit into the bender leaving 10 inches past the arrow on the bending shoe.** .



1. Set the conduit on a level, firm ground and place your foot firmly on top of the foot of the bender. The top of the pipe should come through the bender, so your foot should be able to steady it as well.



1. **Step on the bender while pulling the handle toward you to create the bend.** Use a firm and steady motion to avoid kinks or crimps in the conduit. Make sure your foot and hand remain securely on the bender; any small slip in the conduit can cause an off-centered bend, and you will need to start over with a new piece of conduit.

* Be aware that when you bend, you may need to over-bend slightly to compensate for any spring back in the conduit. Do this slowly and carefully.

1. **Bend until your bender reaches the 90° mark. Check to make sure your bend is the right angle by holding it up to the wall.** You can also hold it to a surface you know is level to check it.



**Part 3: Making a Saddle Bend (one center 450 bend and two outer 22-1/20 bends)**



1. **From the center point of your 90o bend**, measure 20 inches and mark the conduit. This is the center of your saddle bend. You will make a 45o bend here.
2. From this center mark, measure 10 inches to the right and mark. Then measure 10 inches to the left. These marks are for the 22½o bends that will be on either side of the 45o center bend.
3. **For these saddle bends,** you need to use an airbend to bend your conduit, here's how:

* Put the hilt of the bender on the ground. Secure it in place with both feet. Keep the bender straight and let your body apply the pressure to the conduit. Don't try to use the bender to airbend.
* Make sure the head of the bender stays rigid as the conduit bends into the cradle.



1. **Align the center mark with the rim notch on the bender. (Note this is the little notch or divit on the top of the bender as shown below. It is not the star)** Make the **45o angle at your center mark first**.



(Pointing to rim notch)

1. Bend to 45o. (Bend until the bottom of the conduit reaches the 45o line on the bender.) **Note: You must really think before you bend. Which way should the 90° bend be facing up or down. If you have it the wrong direction the bend will be incorrect. Think before you bend.**



1. Do not remove the conduit from the bender. Slide the bender down to the next mark and line up with the Arrow. Bend to 22½o. **Note: You must really think before you bend. Which way should the 90° bend be facing up or down. If you have it the wrong direction the bend will be incorrect. Your bend mark will be on the inside of the bend as shown. Think before you bend.**



1. Remove and reverse the conduit and locate the other remaining mark at the Arrow. Bend to 22½o. **Note: You must really think before you bend. Which way should the 90° bend be facing up or down. If you have it the wrong direction the bend will be incorrect. Your bend mark will be on the inside of the bend as shown. Think before you bend.**



1. When complete, your conduit should be as follows:

* 15” from top to the bottom of your 90° bend. 
* 10” from the center of your 90° bend to the center of your 22-1/2° bend.
* 20” from the center of your 90° bend to the center of your 45° bend.
* 30” from the center of your 90° bend to the center of your 22-1/2° bend.



* Both 22-1/2ׄ° bend marks should be on the inside of the bend



* The saddle should be uniform. One side should not be longer than the other. The final product should look as shown below.



1. **You are finished! Submit a video showing the following:**

* **Show Face**
* **State Name**
* **State Date**
* **Show your conduit with measurements showing the 15” height, the 10”, 20” and 30” measurements from center of 90° bend to the other 3 bends, show that the 22-1/2° bend marks are on the inside, and show that the saddle bend is uniform.**