



PRECISION EMT BENDING WORKSHOP



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THE PROBLEM



There are times when
we need to turn this:



Into this:



THE PROBLEM



There are numerous ways to accomplish this

- Drawing chalk circles on the ground and trying to bend and follow the chalk arcs
- Trying to craft jigs
- Using a conduit bender as it should be used on the ground.....

No matter what you do, there is a lot of movement in the operation. So how do we keep it consistent to make it as precise as possible?

WHAT YOU WILL NEED



- EMT—Electrical Metallic Tubing
 - 1/2" - 3/4" - 1" (Thin Wall)
 - Determine size for your purpose



- Matching EMT Couplers
- Conduit Bender
 - 2 sizes available
 - 1/2" - 3/4"
 - 3/4" - 1"

- Magnetic Protractor
- Hack Saw
- Screw Driver
- Tape Measure
- Metal File



- Upright Bender Holder (Optional highly recommended)

CALCULATING THE ARC



- Determine "Straight Length"
 - Circumference of our element
 - <http://math.about.com/library/blcirclecalculator.htm>
- Determine bend segments (requires a bit of math)
 - Convert all lengths to inches
 - Then figure out how many 10' sticks of EMT you need
 - Radius x 1.57 / 18
 - This most likely will be for a 90 or 180 degree arc
 - *A 10' EMT stick would be able to make a single 3' /360degree circle.....*
 - Round down to nearest 1/16th of an inch
 - Dividing by 18 gives us our marks for 5 degree segments. This will give you a smoother arc. If needed, you could divide by 9 or just bend every other mark

Area:	19.6349541	Solve Others
Diameter:	5	Solve Others
Circumference:	15.7079631	Solve Others

PREPARE FOR BEND



- Mark the EMT
 - Based on math, these marks represent 5 degree segments
 - 1st mark should be $\frac{1}{2}$ of the segment length, this will be also done on the other end to create a smoother arc
 - Number every other mark with 1-2-3 etc... to represent the 10 degree marks on your EMT



PREPARE FOR BEND



- Mark your bender for 5 degrees , on the appropriate SIDE of the Bender
- Put the bender into your upright holder.
- Insert EMT into Bender



GETTING BENT



- Ensure you have all of your alignments in the right relationship, keep them consistent throughout the entire process



- Pull gradually on the EMT to meet the 5 degree mark on the bender

GETTING BENT



- Remove EMT from the bender and check your angles with a magnetized protractor adjust as needed



- The last few bends will be tough, use a cheater bar as needed. This should be as tight a fit as possible to go into the end of the EMT. You do not want to collapse your EMT, or elongate the EMT opening

CHECK AND FINISH



- Using a tape measure, ensure you have the diameter and radius you expected, tweak slightly as needed
- Attach couplers and assemble
- Stand back and admire your work!

Questions??!

A very detailed [How-To](#) that this presentation was created from, can be obtained from the following link. It is recommended to obtain a copy as a reference

Precision EMT Bending

<http://www.WoodinvilleWonderland.com/howto.htm>

THANK YOU
FOR ATTENDING!
NOW A DEMO!!!



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