PVC Conduit Lab

Program: Electrician Technician

Course: EL130 Flexible Cables/Conduit Bending and Raceways

Objectives: Under the supervision of your instructor, you should be able to do the following:

After completing this lab, you will be able to:

- Describe the process of bending PVC conduit
- Bend PVC conduit using a heating unit

Lab Equipment:

- Electric PVC Bender (Hot Box)

Required Tools:

- Tape measure
- Heat Gun
- Hot Box
- Gloves

Materials:

- 1 – 5' piece of ½" PVC pipe
- 1 - Shop rag soaked with cool water

Safety (PPE):

- Safety glasses/goggles
- Hard Hat
- Gloves

Resources:

- Ugly' s Electrical References Book

Required Time: 120 minutes

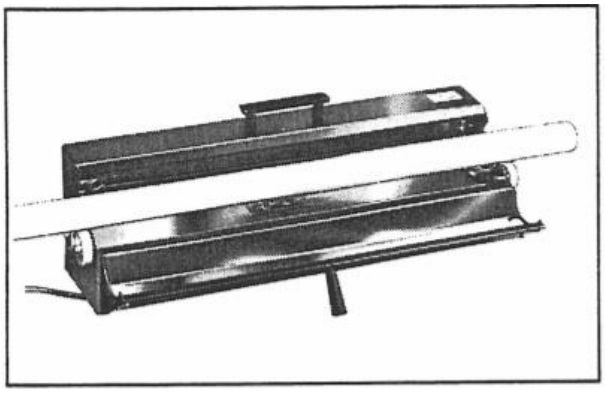
Shop Maintenance:

- All work will cease 20 minutes prior to the end of class.
- All work areas must be cleaned.
- Tools and equipment must be cleaned and returned to the designated areas (cage, tool room, cabinets etc.)
- Any broken or missing tools must be reported immediately.
- Tools and equipment are students' responsibility

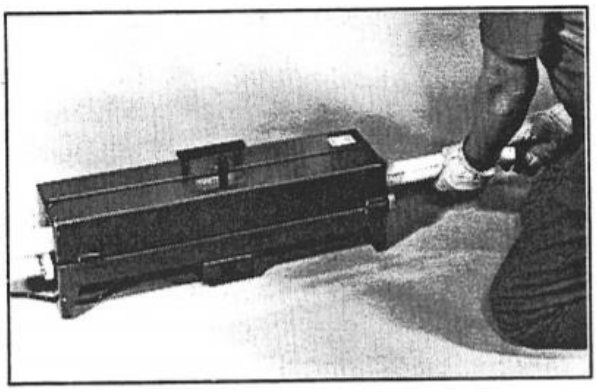
Procedures: (Eye Protection must always be worn)

Hot Box:

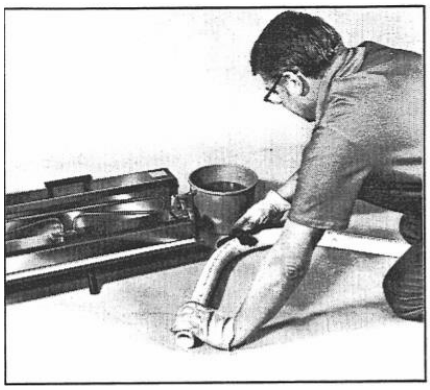
1. Set Up - Connect unit to power source (120 Volts, AC, 60 cycle). Turn switch to on position (built-in pilot light indicates when unit is operating). After a warm-up period of 10 to 15 minutes, the heating and bending of PVC conduit can begin.
2. Heating PVC - For best results, test for the best heating time using a few pieces of scrap PVC. With all materials at hand lower the door of the unit until it is fully open. Lay the first section of PVC between the pairs of guide rollers on either end of the unit as shown in shown in figure below. The section of PVC you wish to bend must be centered within the unit. Keep the door of the Hot Box closed during the heating process.



3. To obtain even heating of the PVC, conduit must be constantly rotated by hand, as shown in the figure below. The PVC should become pliable enough for bending after about one minute. Heating time may vary due to differences in size and thickness of the PVC. An automatic thermostat regulates temperature and prevents overheating of the unit.



4. Bending PVC - When PVC becomes pliable, lift open the door and remove from unit, laying the conduit on a flat, clean surface. Bend can now be shaped by hand. To set the bend, cool the PVC by using a rag or sponge soaked with cool water, as shown in the figure below.



Heat Gun

- Hold the heat gun 3 to 4 inches above the PVC and move it side to side about 12" along the pipe.
- Rotate the pipe after every couple of passes with the heat gun.
- Keep repeating the process until the PVC has softened enough to bend. (The pipe will start to sag when you're close)
- Be careful not to hold the heat gun too close or it will burn the PVC pipe.
- With the gloves still on, grab the pipe on the solid portions of the pipe near the soft portion, and slowly bend the pipe as desired.
- Make sure you do not kink the PVC while bending.
- Once the pipe is in the form you need, make sure the pipe is secure in its position and will hold on its own.
- Take a soaked rag and wipe the pipe down until it cools enough to maintain the desired shape.