



Measure and Compare Current Flow

Program: Electrician Technician

Course: EL150 – Commercial Applications

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

- Classify lighting fixtures by type and application
- Identify the general lighting pattern produced by each type of fixture
- Use manufacturers' lighting fixture catalogs to select the appropriate lighting fixtures for specific lighting applications

Lab Equipment:

- 1 – Project Board
- 1 – Power cord

Required Tools:

- 1 – Digital clamp-on AC ammeter
- 1 – Calculator
- 1 – Utility knife
- 1 – Flathead screwdriver
- 1 – Phillips head screwdriver

Materials:

- 2 - Light bulbs with different wattages
- 2 – Keyless fixtures
- 2 – 4-square metal boxes

Safety (PPE):

- Safety glasses

Resources: N/A

Required Time: 60 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 the student's responsibility

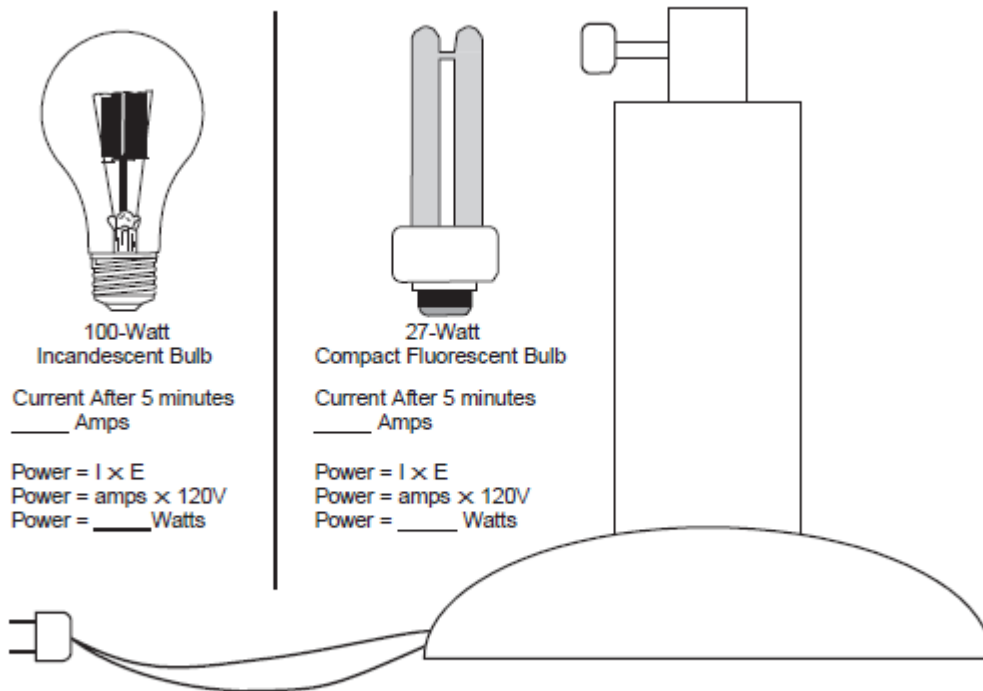


Procedures:

This performance project requires the trainee to measure and compare the current usage between at least two different types of bulbs.

1. Refer to Figure 1.
2. Make sure the lamp cord is unplugged. Install a light bulb in a lamp or lighting fixture.
3. Prepare the lamp cord for measuring current by carefully separating the two conductors, making sure you do not damage the insulation in any way.
4. Clamp the ammeter jaws around one of the lamp cord conductors and set it to measure
 1. AC current.
5. Plug the cord into a 120-volt receptacle.
6. Allow the bulb to operate for exactly five minutes.
7. Read and record the current flowing through the cord.
8. Unplug the lamp cord but leave the ammeter in place.
9. Allow the lamp to cool for five minutes.
10. Remove the bulb and install a different bulb in the fixture.
11. Plug the cord into the same 120-volt receptacle used in Step 5.
12. Allow the bulb to operate for exactly five minutes.
13. Read and record the current flowing through the cord.
14. Unplug the lamp cord.
15. Calculate the power consumption for both bulbs using the formula shown in Figure 1.
16. Have your instructor check your work.

Figure 1



Separate the lamp cord to allow a clamp-on ammeter
to be installed for current measurements