Electrical Troubleshooting Activities Stations & Key

|  |  |
| --- | --- |
| Station | Tester |
| 1 | Multi-meter |
| 2 | Multi-meter |
| 3 | Multi-meter |
| 4 | Multi-meter |
| 5 | Multi-meter |
| 6 | Multi-meter |
| 7 | Multi-meter |
| 8 | Multi-meter |
| 9 | Multi-meter |
| 10 | DR Tester |
| 11 | Induction |
| 12 | Clamp-on |
| 13 | Multi-meter |
| 14 | Multi-meter |

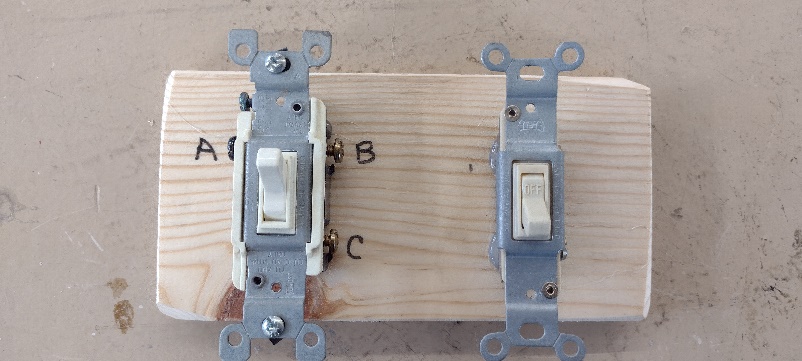
# Station #1 – Resistance Testing of Lamps

|  |  |  |
| --- | --- | --- |
| Lamp | Resistance (ohms) | Good/Bad |
| A | 0 | Bad |
| B | 16 | Good |

# Station #2 – Wiring Testing

|  |  |  |
| --- | --- | --- |
| Cable | Fault (circle) | Which Wire(s) |
| A | a. Shorted  **b. Broken**  c. No Fault | Black |
| B | a. Shorted  **b. Broken**  c. No Fault | White |

# Station #3 – Switch Testing



Toggle Switch: Is the switch working (Yes / No)

## 3 way Switch:

|  |  |
| --- | --- |
| Switch Position | Circle connected terminals |
| 1 (up) | A-B  A-C  **B-C** |
| 2 (down) | A-B  **A-C**  B-C |

C is common terminal

# Station #4 – DC Voltage Testing

A picture containing text, battery

Description automatically generated

|  |  |  |
| --- | --- | --- |
| Battery | Voltage | Good/Bad |
| A | Depends | Good |
| B | Depends | Bad |

# Station #5 – DC Voltage Testing Lead Acid Battery

A black car battery with a red and white label

Description automatically generated with low confidence

Test depends on battery condition.

# Station #6 – Auto/Trailer Testing



Both filaments are good.

# Station #7 – Wiring Testing

|  |  |  |
| --- | --- | --- |
| Cable | Fault (circle) | Which Wire(s) |
| C | a. Shorted  b. Broken  **c. No Fault** |  |
| D | **a. Shorted**  **b. Broken**  c. No Fault | Black Broken, Black shorted to Ground |

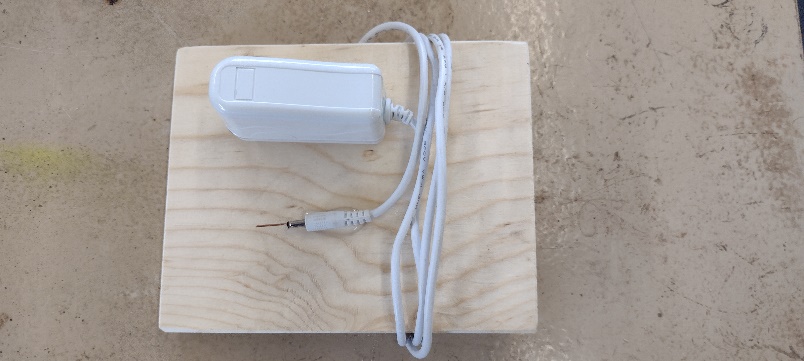
# Station #8 AC Voltage Testing

## 

|  |  |  |
| --- | --- | --- |
| Outlet (DR) | Slot | Voltage Readings |
| A  Hot & Neutral Reversed | Neutral – Ground | 120 |
| Neutral – Hot | 120 |
| Hot - Ground | 0 |
| B  Correct | Neutral – Ground | 0 |
| Neutral – Hot | 120 |
| Hot - Ground | 120 |
| C  No grounding | Neutral – Ground | 0 |
| Neutral – Hot | 120 |
| Hot - Ground | 0 |
| D  No Grounding | Neutral – Ground | 0 |
| Neutral – Hot | 120 |
| Hot - Ground | 0 |

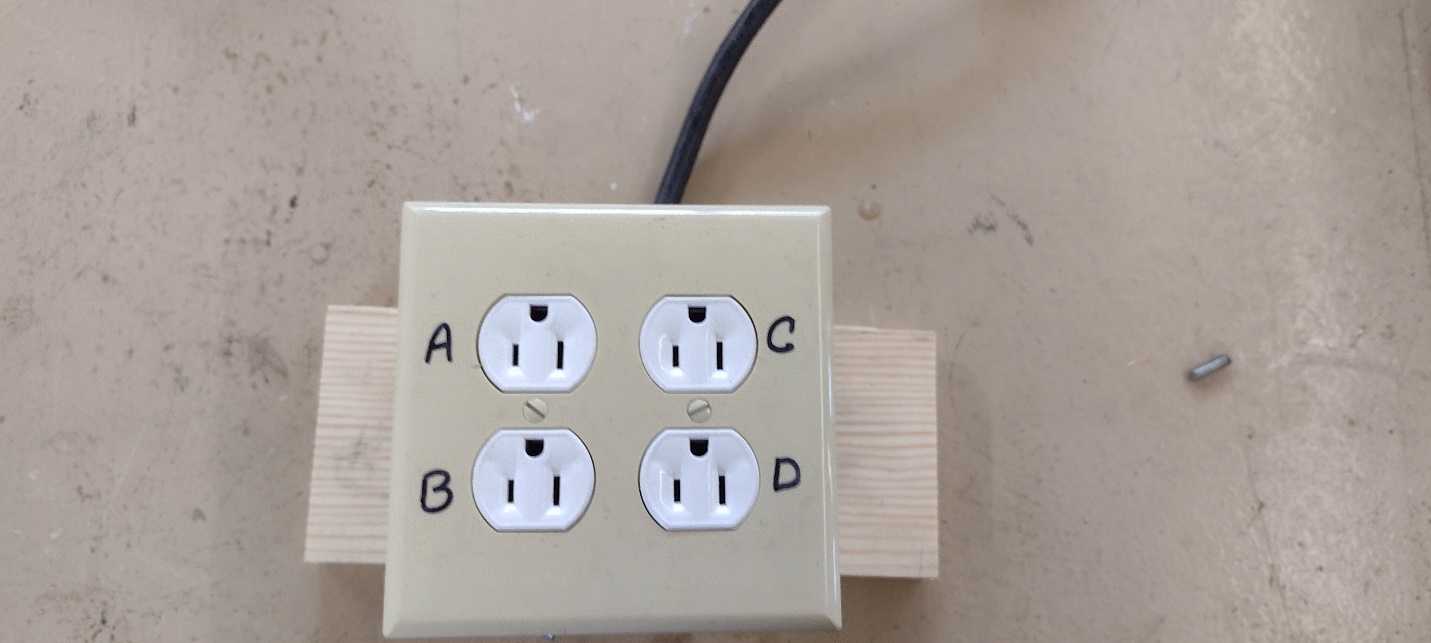
1. Is outlet #A wired correctly? Yes/**No**
2. Is outlet #B wired correctly? **Yes/**No
3. Is outlet #C wired correctly? Yes/**No**
4. Is outlet #D wired correctly? Yes/**No**

# Station #9 – Power Supply (Transformer)



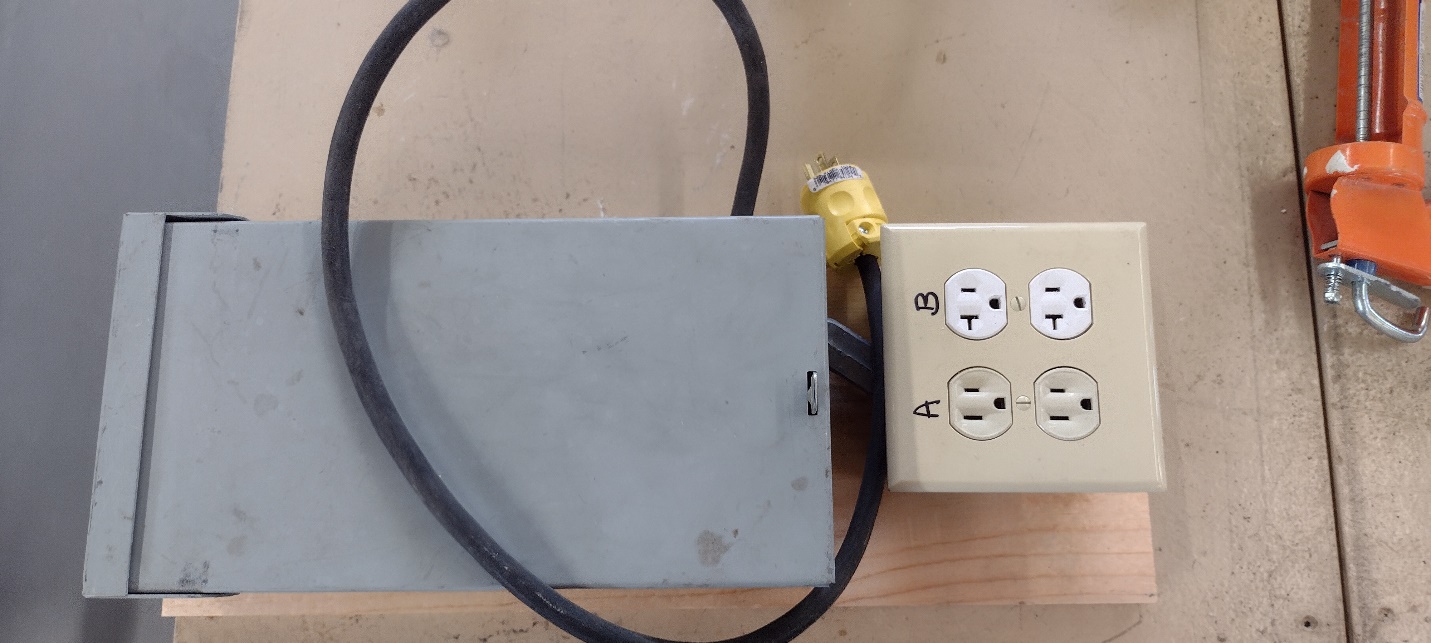
1. Test the primary for resistance. Unplug first! The primary is the side with the plug. Is the primary good? **Yes** /No.
2. Plug in the transformer and test for AC voltage. What is the voltage? \_\_\_\_\_\_\_\_0\_\_\_\_\_\_
3. Plug in the transformer and test for DC voltage. What is the voltage? \_\_\_\_\_\_\_\_5\_\_\_\_\_\_

# Station # 10 – Duplex Receptacle Tester



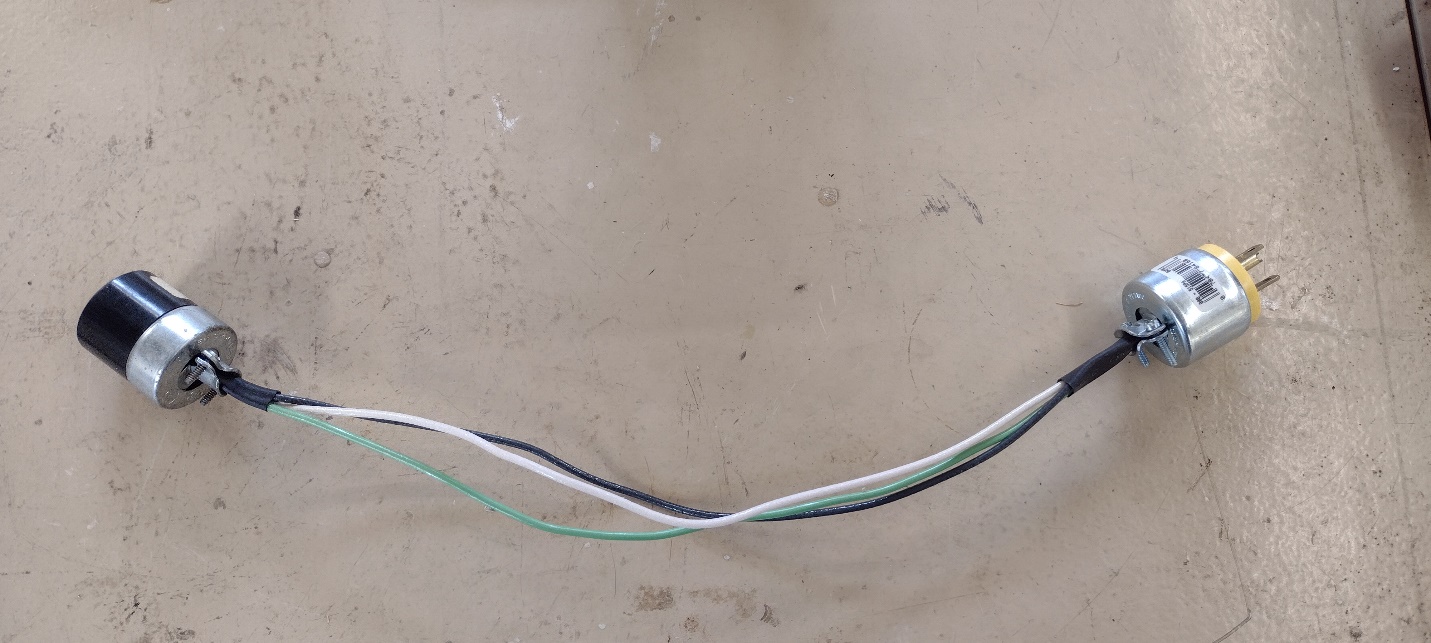
|  |  |
| --- | --- |
| Outlet | Fault |
| A | Open Gnd |
| B | Open Gnd |
| C | Hot/Neutral Reversed |
| D | Correct |

# Station # 11 – Power Present

Identify the two

|  |  |
| --- | --- |
| **Breaker** | **Outlet** |
| 15 A | A |
| 20 A | B |

# Station # 12 – Current draw.



Start with the load off. What does each wire measure?

|  |  |
| --- | --- |
| Wire | Current |
| Black | 0 |
| White | 0 |
| Bare or Green | 0 |

Now clamp the probe over the black wire and turn the load on. Observe the readings. With the load on measure the other two wires.

|  |  |
| --- | --- |
| Wire | Current |
| Black | Depends on load |
| White | Depends on load |
| Bare or Green | 0 |

Can you explain the readings? No current when not on. Ground does not carry current. White/Black should be the same. If load is a motor then starting current is higher.

# Station # 13 – Fuses



Fuse A is OK, Fuse B is blown.

# Station #14 – Resistor



Resistance 220 Ohms.