

~~~~~

/ / / / / / / *Tech Tip* / / / / / / /

### Mr. Relay

A relay is an electrical device that allows you to control a high amperage circuit from a low amperage circuit. Every relay has at least two circuits, a low amperage “control” circuit, and a high amperage “load” circuit. When you energize the control circuit, you energize the relay.

When the relay is energized:

- An electro magnet is energized in the relay.
- The electro magnet either opens or closes a set of points in the relay
- If the points close, (a normally open relay) then the high amperage circuit is established.
- If the points open, (a normally closed relay) then the high amperage circuit is broken.

Some relays have two sets of points that control two different high amperage circuits. When the relay is energized one of the circuits opens (the circuit is broken) and the other closes (the circuit is established). These relays usually have more than four pins.

#### Testing:

If at all possible, the technician should have a wiring diagram to see if the relay is single or double point set and if it is normally opened or closed. Testing should be done with a good *Volt Ohm Meter*.

- Set the Meter to the lowest Ohm setting
- Using the wiring diagram the technician should establish which is the control circuit pins (see diagram #1 pins A & B), and the pins for the Load circuit (see diagram #1 pins D&C).
- The control circuit (pins A & B diagram #1) should show continuity (for actual resistance value refer to O.E. specs) with an ohm meter.

Now it gets tough. In a normally open single point set relay (Fig #1), when the relay is energized a circuit is established in the load side of the relay (pins D & C of Fig #1), and amperage will pass through. Testing the normally open relay:

- To test the load circuit of a relay, that is normally open, check for continuity on the load pins (pins D&C of Fig #1) with the relay control circuit at rest using an ohm meter.
- With the relay in the normal open position it should not allow a circuit to be established and will show an open on the ohm meter.
- Energize the control circuit of the relay (pins A & B of Fig #1) by using fused jumper wires and a power source.
- Recheck the load side of the relay with the ohm meter to see if a circuit can be established. If a circuit can be established, it should have no more than a two-ohm resistance.

Testing the normally closed relay (Fig #2) differs from the normally open relay because:

- Both the control and load circuits will allow a circuit to be established when the relay is in the rest position. This can be confirmed with the ohm meter.
- When the control circuit of the relay is energized, the load portion of the relay will not allow a circuit to be established.

Testing a dual point set relay (Fig #3) will usually have one point set that is normally open, and one that is normally closed. When the relay is energized the normally closed point set will open, and the normally open point set will close.

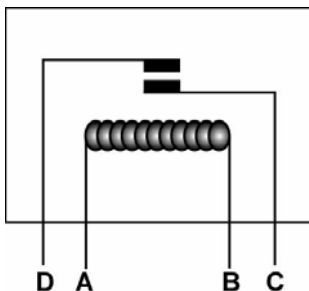


Fig #1

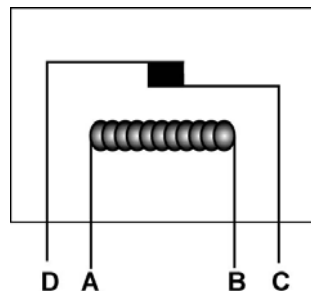


Fig #2

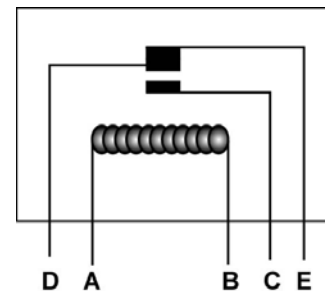


Fig #3