

Basic of Basics #2 – Relays

What is a Relay??

In simple terms a relay is an electromagnetic switch that allows a small capacity circuit to switch a MUCH larger circuit on and off.

Why they are used:

In automotive applications mostly for cosmetics and costs. The designers would much rather have a nice looking, dinky/small switch on the dash or console than a massive clunky thing, and the cost savings of not having to use large gauge wire for long runs. The cost of a relay and socket are MUCH less than the cost of large gauge wire, and are safer to boot!

The most common relay in use today is the little Bosch "ice-cubes". Everybody uses them, and for good reason. They have a 30A capacity, are small, and use standard readily available crimp on connectors. Here's an explanation of what the numbers mean:

#30 = Relay Common

#87 = Normally Open

#85 = Relay Coil

#86 = Relay Coil

#87a = Normally Closed

(2nd #87 = Normally Open (some relay models have two switched contacts)).

Contacts Defined: (using the relay to switch positive or "hot")

#30 – Common

This is the un-switched lug, or "supply". This is where the fused/breakered heavy gage positive feed wire from the battery would connect to.

#87 – Normally Open

This is the switched contact. This is where your load connects to (if you want to turn it "ON" when the relay trips). This terminal will *supply* the positive current/voltage to the load.

#87a – Normally Closed

This is the Un-switched contact. This terminal is connected to #30 when the relay is "at rest" or not tripped. This is where your load connects to (if you want to turn it "OFF" when the relay trips). This terminal will *break* the positive current/voltage to the load.

#85 – Relay Coil

This is ½ of the electromagnet coil that trips the relay. This terminal is connected to ground.

#86 – Relay Coil

This is the other ½ of the electromagnetic coil. This is where your "dinky little toggle switch" sends positive 12 volts to.

Relay Rules:

#1 – Any *REPEAT ANY* wire supplying terminal #30 MUST be protected by a fuse or fusible link. Why?? Fire prevention and safety. With no fuse the circuit will cook until something melts – usually the wire, but after the rest of the car is on fire.....

#2 – Any wire connected to #30 AND #87 OR #87a must be of equal or larger size than the wires that are on the load. Why?? A smaller gage wire has less current capacity, and will overheat (melt) when the load exceeds its capacity.
