

Huh?

Why relay your headlights? well - if you have aftermarket light housings, or are running higher wattage bulbs, then you are exceeding the capacity of the factory wiring in your car. Relaying the headlights makes the path the power has to take much much shorter. In stock form, the power goes from the car battery back to the fuse panel. Then it goes through a relay that turns them off when the key is turned. Then it goes through the fuses, then up to the headlight switch. It goes right through that switch (ever feel that switch get warm?) Then, it goes back into the wiring harness and back up to the front of the car to connect to the headlights. All of this wiring is just the right gauge for stock bulbs (VW does not want to spend even an extra penny per car - this is mass production). All of this wiring is 15-25+ years old.

Long path.

So - relaying does this... The power goes from the battery to the fuse, then a few inches to your relay box. Then it goes to the headlight. MUCH shorter. The advantage here is that since you can use new wiring, you can make it a larger gauge than the stock wires are. And you can happily run 110W bulbs all day long and not fry wires.

Here's a list of parts you may need:

Wire: Get at least 14 Gauge - I used 10 (Way Overkill)
Project box - Radio shack. holds the relays
4 Relays, Bosch 30A, or use VW "53" relays
4 Relay sockets
Terminals, plugs and H4 connector
Inline Fuses - ATO is better because they are easy to find.

tip

Use a Soldering Iron and Heat shrink Wrap for a long-lasting and durable headlight harness.



Lots o Lights

Instructions:

Alright, look at the diagrams on the next page. The way I have it set up, the stock wiring stays the same. When I got my lights, they came with these cheesy H4656 to H4 connectors (which were wrong, BTW), I used one to plug into the low connector on the driver side. I put the project box there in front of the battery, it's close to the power and there's nothing there anyway.

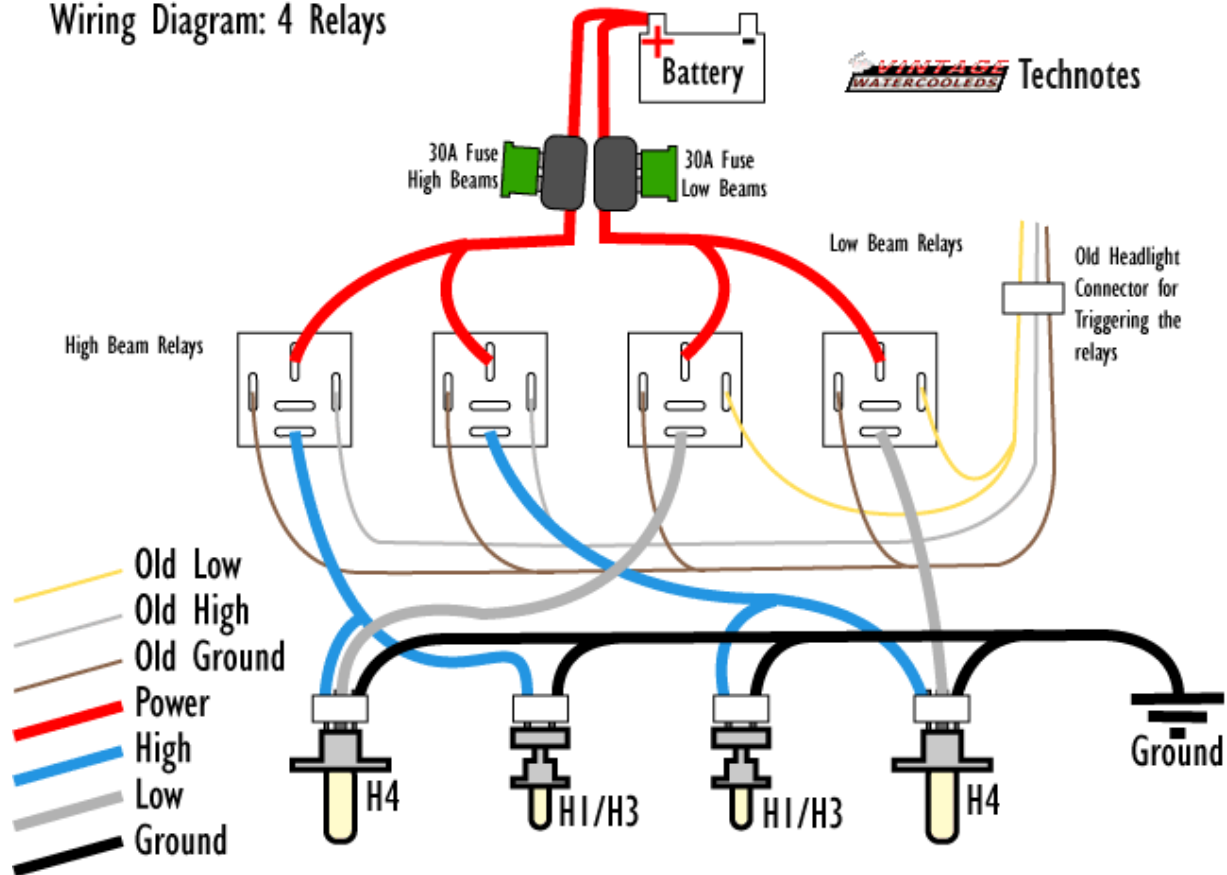
Fuses:

Don't ignore the fuse! It may not seem like a far distance to go, but a short is REALLY bad. Ever seen a car battery explode? It isn't pretty.

How a relay works:

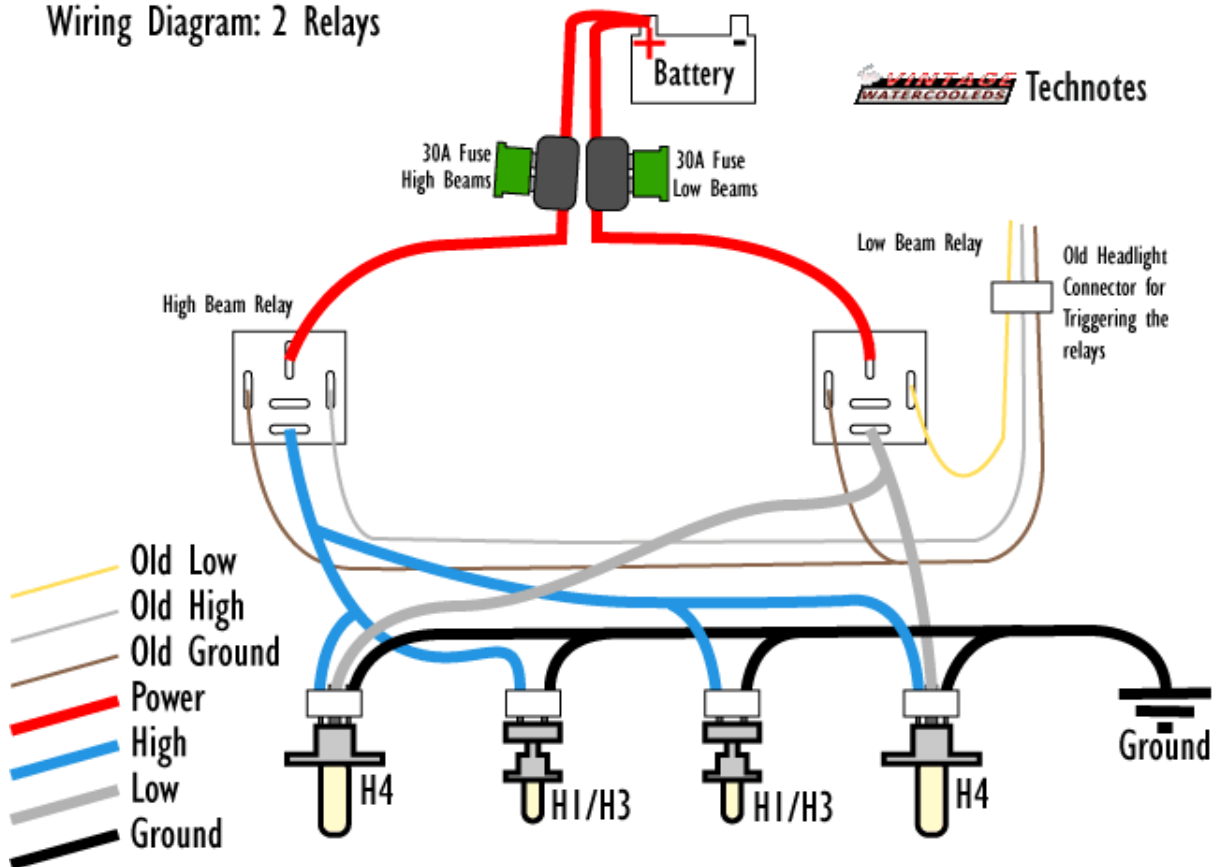
there are 5 pins on the bottom of a relay. A relay is a remote switch that turns something on when it gets a voltage on the trigger pins (86 and 85). It doesn't matter which is ground and which goes to the old low beam. the other terminals are where the new wiring comes in. Connect the battery (through a fuse) to pin 30. When the relay is triggered, that will go on through to pin 87, which you attach to the H4 bulb. 87a is where the power would go when the relay is not triggered, so don't connect that to anything.

Wiring Diagram: 4 Relays



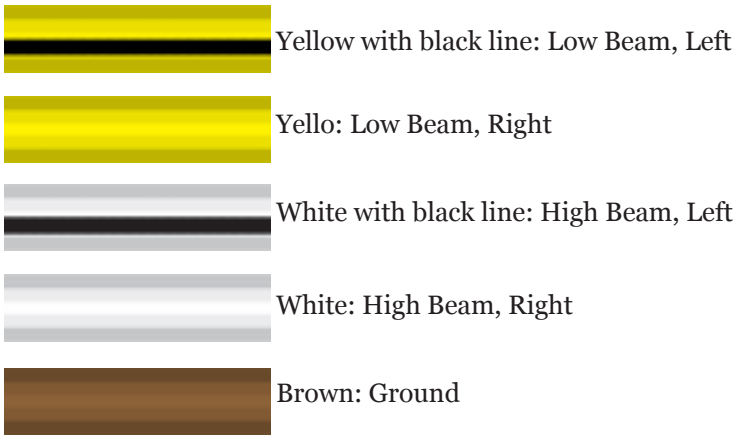
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Wiring Diagram: 2 Relays



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Stock Wiring Colors



tip

Just think of it like this: White is a brighter color than yellow. High beams are brighter than low beams.

Stuff on the Left side has the black line.

Headlight bulb Connections

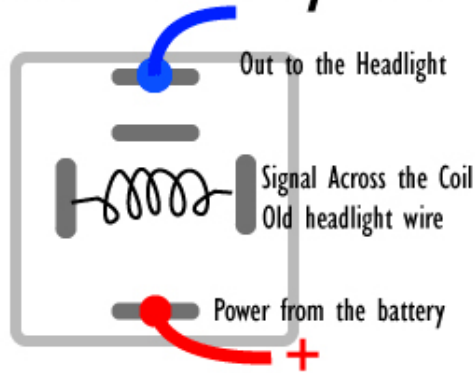
You can use whatever colors you want in your relay system. I used black for grounds, Blue for high beam, and white for the low beam. The following picture will tell you how to configure the wires for your bulbs.



How a Relay Works

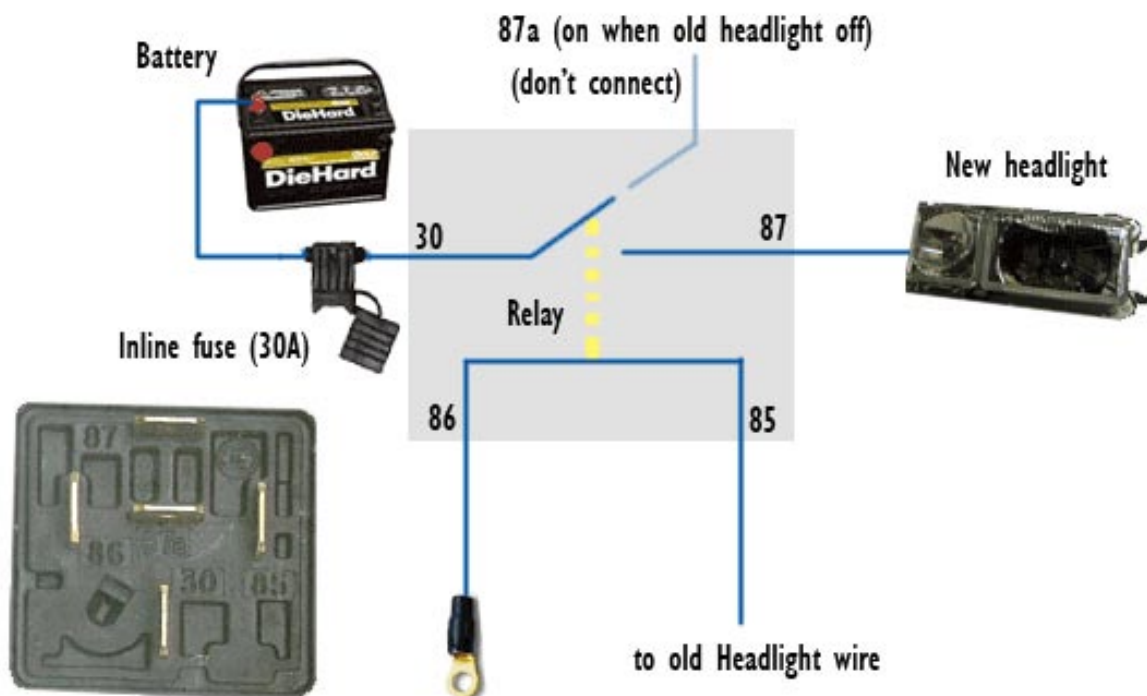
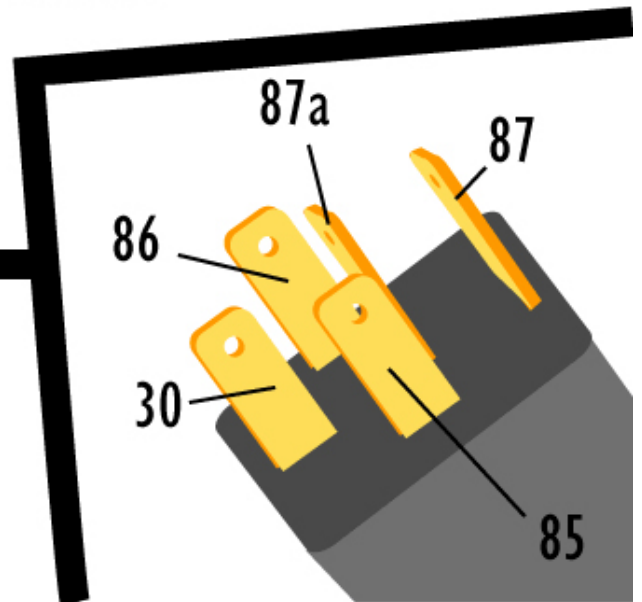
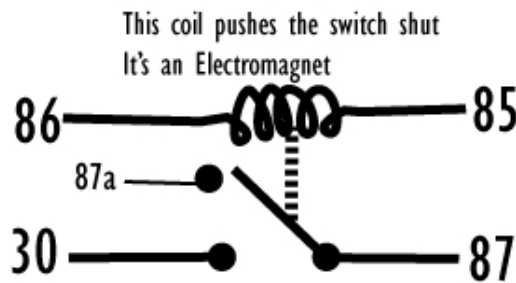
Relays do just what the name implies; they relay power. They are used to enable something with low power to control something with high power. When the low power source is on, it activates an electromagnet inside the relay. This causes the switch to close, because it is attached to the magnet. You can put as many as 40A through a relay

Vintagewatercooleds.com Electrical Mayhem! How A Relay Works



Terminals 86 and 85 are the "Signal" They turn on the switch.

Terminal 30 is where you put the power from your battery. When the "Signal" is on - When there is 12v across it - it connects terminal 30 is connected to terminal 87 When there is no signal - terminal 30 stays connected to terminal 87



This rather over-simplified diagram shows what is actually going on inside the relay in relation to the battery and the lights.