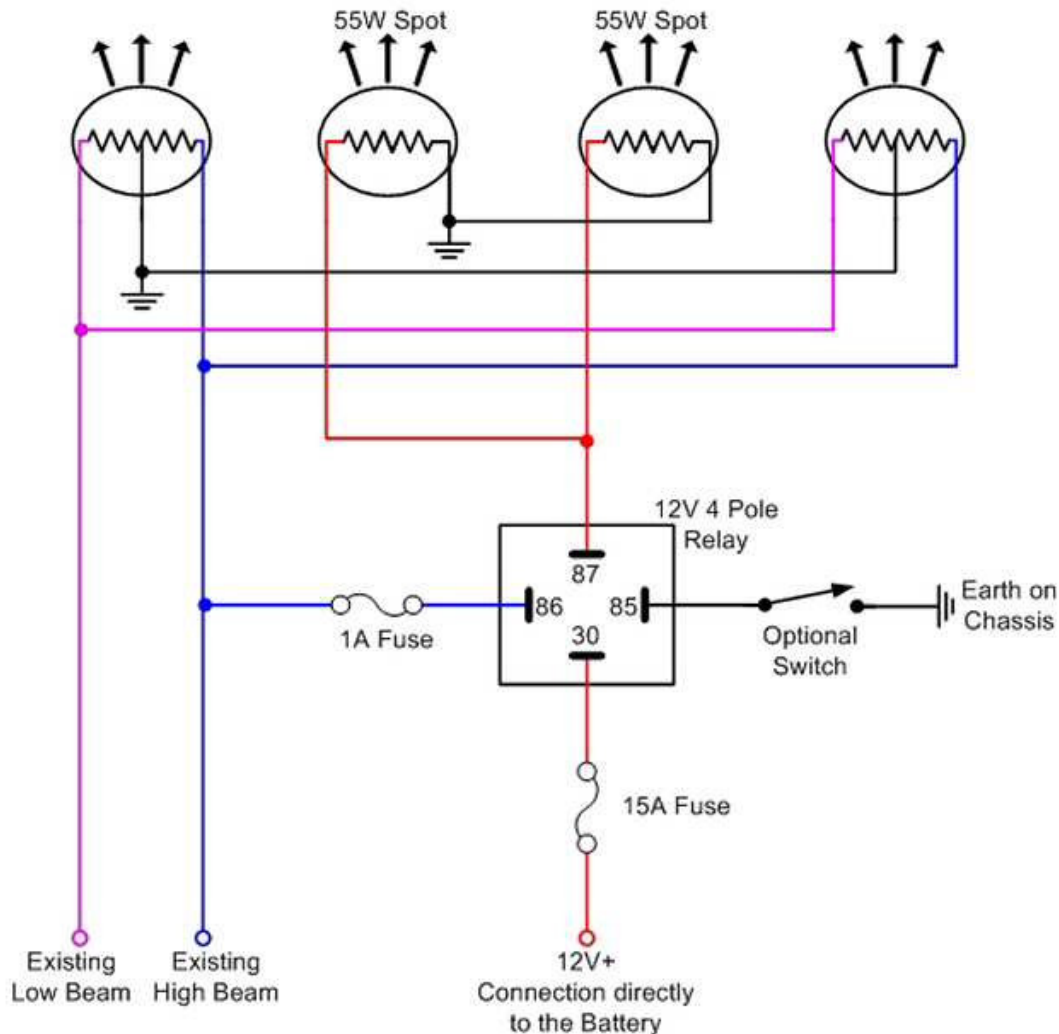




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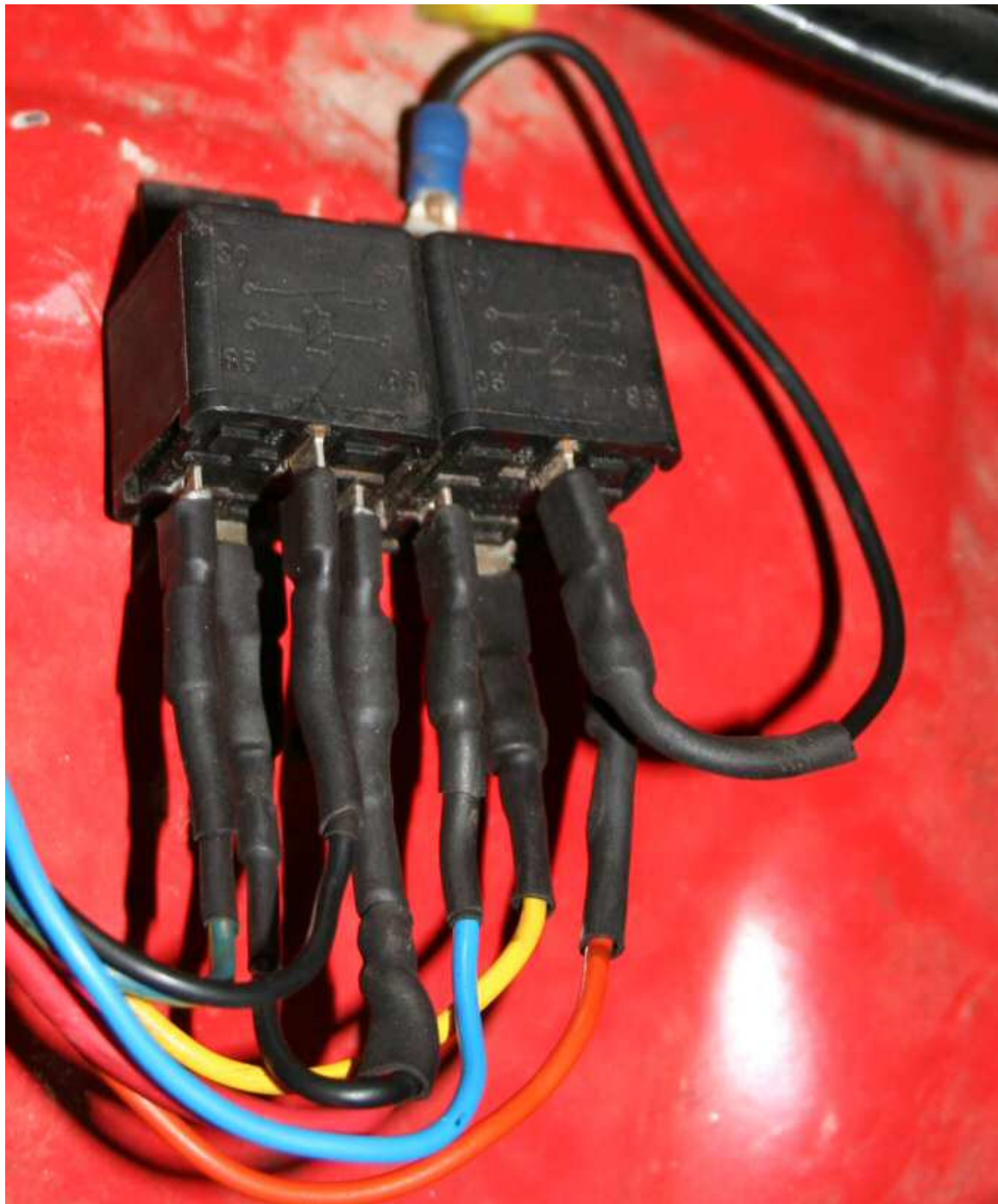
Wiring Of Spotlights - By Bennie Hurter aka Benhur

To wire spotlights to work together with your high beams is not that difficult. The diagram below shows a simple wiring diagram for connecting spotlights to work together with your high beams.



All you need is some wire and lugs, a 12V 4 Pole relay and two fuse holders with the correct fuses. Just make sure that you use decent sized wires and a proper fuse holder for the connection of the power between the battery and the relay as well as the spot lights. If the wires and the fuse holder are too small then you might have the problems with under performance of the spots because of the high resistance of thinner wires and smaller connectors, it inhibits the delivery of enough current to the spotlight. For optimal performance use 2.5 mm or thicker wire and a decent bakelite type (or something similar) fuse holder that can handle the current flow. Do not use the white plastic ones, like the ones at the back of your car radio, as they tend to overheat with the high current that can be drawn by the spotlights.

A good idea is to solder the wires to the wire lugs. What I do in such a case is to use lugs without the plastic sleeves (or remove the plastic) and then isolate the lug afterwards with heat shrink sleeve, which you can buy from most decent electrical or auto spares shops.



The correct fuse size can be determined easily. The formula for power is: $P=V \times I$ with "V" being the voltage and "I" the current. Current flow (amps) is thus the power, i.e. the combined watts rating of the spots, divided by 12V. Thus 2 x 55Watt spots will use $110/12=9.2A$. Thus, you can use a 15 Amp fuse for the main circuit.

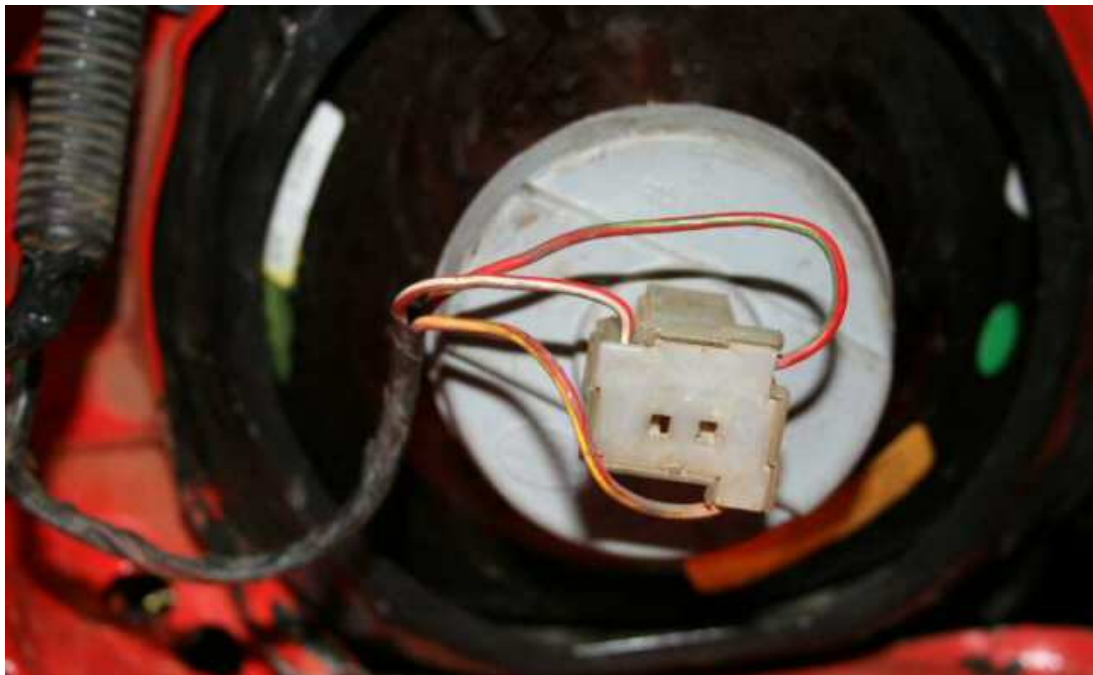
Firstly, connect the earth wire of the spotlights to the chassis of the vehicle at any existing screw using round lugs. Make sure the surface underneath the nut or bolt is not painted and the metal is bare to ensure proper connectivity. A possible idea is to earth the wires onto the negative pole of the battery. Also connect pin 85 of the relay to an earth, possibly using the same screw that secures the relay.

Now connect a wire between the batteries' positive (+ / red) pole and pin 30 of the relay with the bakelite fuse holder in this wire, but do not insert the fuse yet. Pin 87 is connected to the positive wires of the spotlights.



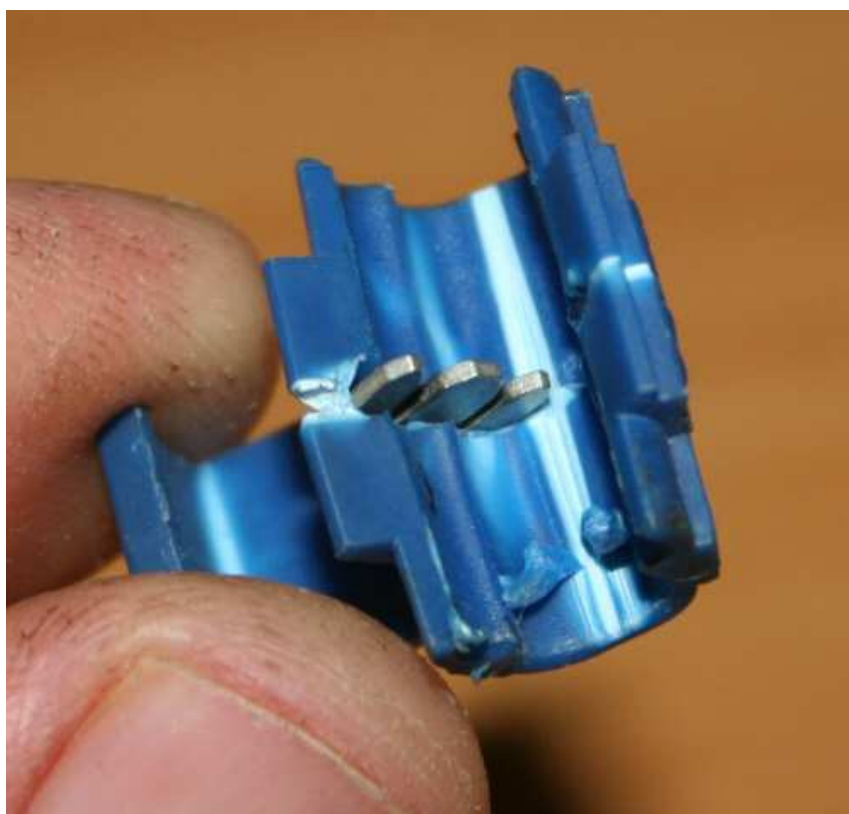
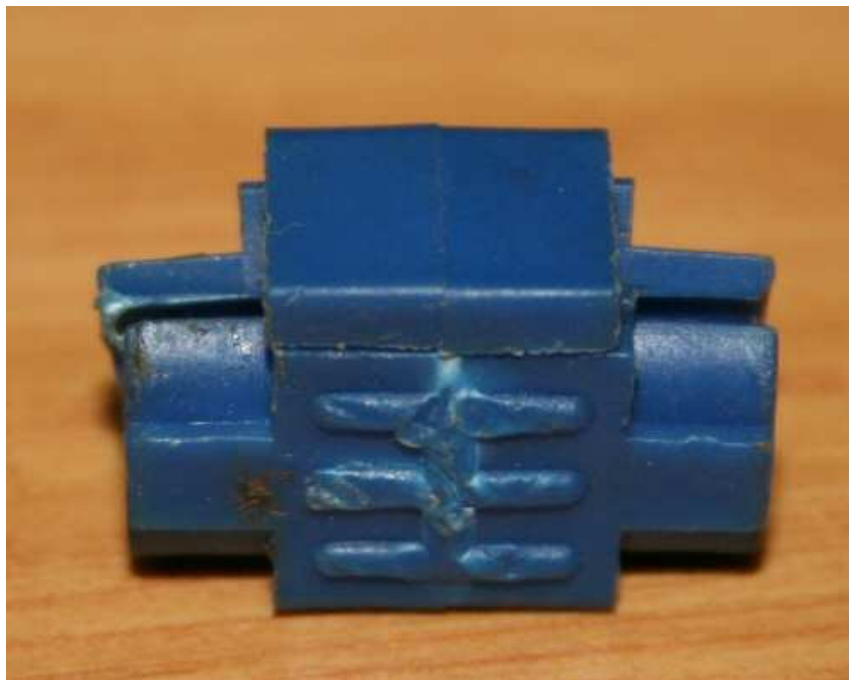
Pin 86 will be connected to the existing wire that feeds your high beam.

If you need to determine which wire on the existing light to connect pin 86 of the relay to, it is very easy to determine. Use a test light/meter. There are 3 wires that feed the existing globe.



One of the wires is the negative or ground wire. The other two are the positive wires, one for the low beam and one for the high beam. The latter is the one you need. Ground your test lamp/meter somewhere on the body or the battery's negative terminal and switch the high beam on. If your test lamp or leads does not have a sharp point, use a needle and stick it into the first wire. If the test lamp goes on then you have the correct wire. If not try the other wires as well. By only 'pricking' the wires, you will not really damage them.

Once you have determined the wire you can skin the wire only for a few millimetres and solder the new wire on and insulate the joint properly afterwards. If your vehicle is still under warranty or you do not like to skin the existing wires you can use one of the clip on connectors that many of the tow-bar fitment guys use to connect the tow-bar's wiring to the existing vehicle wiring. This is a small plastic connector with a metal clip inside and if you clamp it onto a wire the contacts inside cuts through the insulation and makes contact with the wires inside.



Since that wire only powers the relay which draws very little current a 1 amp fuse should be enough. The reason for such a small fuse is that if this wire short circuits it will blow and not affect the use of your headlights or blow their existing fuses.

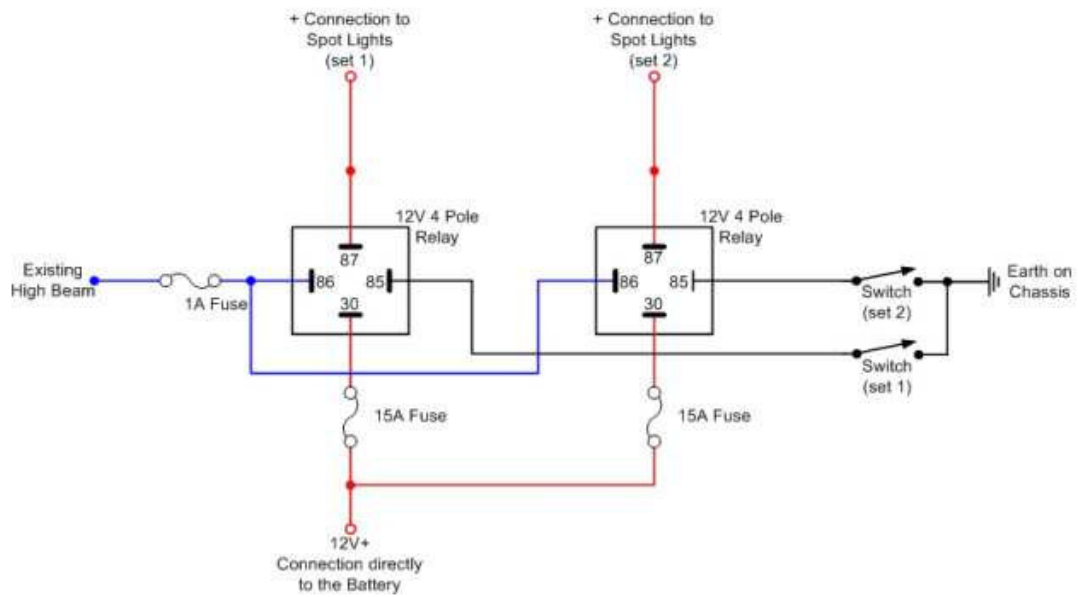
If you want the extra control of switching your spot lights off when the high beams are switched on for instance when the spotlights are covered an extra switch can be connected in the relay's earth wire connected to pin 85

If you want to wire more than one set of spotlights

it is advisable to use an extra relay for every set of spotlights. Lets say you want to wire one set of spots with 2x 100w globes and another with 2x55w globes the total current will be 26A. Most of the relays' that you buy over the counter have a maximum rating of 30 amps, so running a circuit at almost the relay's maximum capacity is not a good idea. In general one never use an electric/electronic component at higher than 60-70% of its maximum rating. Furthermore the lugs might overheat and for 26 amp you would need fairly thick wires as well, so I would suggest rather to wire each set of spots on their own circuit with their own

relay.

You can connect the wires of pin 86 and 85 (the control circuit) back to to the first relay so that all relays switch on simultaneously. Or if you want to take it one step further and make the different sets of spotlights to switch separately you can place individual switches on each relays pin 85 and the connect all switches back to a common earth.



Edited by Eric Skeen