

95 Ford Ranger Headlight and 4x4 Switch LED Mod

This "how-to" describes changing the illuminator bulbs in the 4x4 and headlight switches to LED's. Since there are no color filters in the switch body, you can choose any color LED. I'm not going cover getting to the switches, as this information is available elsewhere.

Remove the bulb carrier:

The bulbs are mounted in plastic housings that are about 1/4" in diameter, with a disc shaped mounting flange at one end and the bulb at the other. The headlight switch bulb carrier unit is typically black, and the 4x4 switch bulb carrier is typically gray. This photo shows the two carriers, 4x4 on the left and headlight on the right.



The bulbs are covered by a colored silicone shell. You'll see the rear disc of the housing on the back of the switch. Turn it 1/4 turn counter-clockwise, then pull it out.

Remove the old bulbs and prepare the carriers:

The wires from the 4x4 switch bulb bend over and tuck under brass contacts. Use a small pointed object (jeweler's screwdriver, hat pin, etc.) to move them out from the brass contact. Bend the wires so they stick straight up.

The headlight switch bulb wires are just wrapped around the disk to make the contacts. Pry the wire up and unwrap it from the base. Below are two views of the carriers with both wires detached and unwrapped.

PHOTO

Carefully grab the bulb and pull/wiggle it out, being careful not to shatter it. They are sometimes lightly glued. The wires will come out with them. As you look down the cylinder, it is recessed about a 1/4" inside. Cut the cylinder back to the base of the recess. The result looks about like this:

PHOTO

Assembly:

Use a 470 ohm 1/4 watt resistor and an ultra-bright T-1.75 LED. The method below doesn't require soldering, but if you are comfortable with the process, soldering makes the 4x4 switch easier since you won't need to bend the hook.

PHOTO

The LED above has been "frosted" by filing its end to diffuse its light. Note that one lead is longer - this is the positive lead. You can identify the negative lead by looking at the base of the LED body to find the tiny flat area molded into one edge of the bottom flange.

Headlight Switch:

Insert an LED into the bulb carrier. Bend the positive lead to the side, through the groove in the flange, then follow the flange around and bend it back up. Trim as needed so it ends up in the groove as shown. Most leads require no trimming. Cut off the minus lead flush with the back of the flange.

PHOTO

Cut one end of the resistor to about 1/2" in length. Insert that end into the hole with the negative LED lead. It's a very tight fit. Wiggle and push gently to avoid bending the resistor lead. After it's in, bend and trim the other end of the resistor just like the positive lead of the LED.

PHOTO

4x4 Switch:

Insert the LED in all the way, then trim the positive lead to 1/4" or so. Bend a tiny hook in it as shown, then push the end of the hook between the brass contact and the plastic base like the original bulbs wire was. The LED will be standing off from the end of the cylinder a little.

PHOTO

Cut one resistor slightly less than 1/2" long. Bend the other lead 90° at 1/8" from the resistor body. Cut the LED's negative lead flush to the mounting disc, then insert the resistor's unbent lead into the negative lead hole. As it goes in, guide the bent lead between the brass contact and the plastic housing.

PHOTO

You can put a small dot of silicone between the LED and the base to secure it to the resistor contacts.

Diffusion:

LED's project a narrow cone of light, but filament bulbs emit light in all directions. You can try several things with the LED to make it spread better:

- 1 File the entire dome rough.
- 2 Use a rotary tool or sandpaper to flatten the dome out completely. Leave the flat roughened for diffusion.
- 3 Use a file, sandpaper or rotary tool to make the end of the dome pyramid shaped with the point of the pyramid where the center of the dome was. The faces of the pyramid should be rough. This seems to spread the light out best.

Polarity and Installation:

LED's are polarized, so they must be installed in your switches correctly. The mounting hole for the carrier is next to one of the mounting tabs. To ensure correct polarity, insert the positive side of the carrier on the mounting tab side of the hole (the resistor should be away from the closest tab).