

# Lighting

## Additional Automotive Lighting

In addition to headlights, your vehicle is equipped with miniature lamps that are used in taillights, brake lights, turn signals, back-up lights and license plate lights.

Access to the front exterior lamps can usually be found in the back of the lamp assembly. Often you can reach under the fender or behind the bumper to get to a lamp socket. If you can't access it there, look under the hood. In some cases, the headlight assembly must be removed to gain access to these bulbs.

Rear lighting can be reached through the trunk. Because the lights may be covered with carpeting or protective covers, they may not be easy to find. Those sockets not accessible through the trunk can usually be reached by removing a lens.



The high-mount brake light found on most late model vehicles can be accessed by removing its cover or the mounting screws and then lifting off the assembly to reach the bulb from the bottom.

Once you gain access to the bulb socket, determine whether it is plastic or metal. If the socket is plastic, rotate it 1/4 to 1/2 turn to disengage the locking tabs. If the socket is metal, simply unsnap it from the housing.

Before removing the failed bulb, determine if it is a bayonet base or a wedge base bulb. Bayonet base bulbs have a round base and are removed by pushing in slightly and turning counter-clockwise 1/3 of a turn. It can then be pulled out of the socket. Wedge base bulbs have a tapered base and can be pulled straight out of the socket.

If the socket cannot be removed, the lens must be removed from the front. After removing the screws, gently pry the lens from the lamp housing and carefully remove the bulb.

Before installing the correct replacement bulb, clean the socket with an aerosol electronic parts cleaner or a wire brush. If you choose to use the wire brush method, make sure the switch controlling the

bulb is switched off. Once the bulb has been replaced, check to see if it is functioning properly before reinserting the socket or replacing the lens.

Checking and maintaining your vehicle's lighting system regularly is easy and doesn't take much time. This maintenance can go a long way toward making your car safer. It can also save you the costs and hassles of an accident or traffic fine!



For more information about Making Sense of Car Care, contact your local AAA club, a AAA Approved Auto Repair facility or visit [AAA.com](http://AAA.com).

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**Important safety information:** Due to the complex nature of today's vehicles, it is essential that you use the utmost care when working on your car or truck. Before attempting any service or repair, consult your owner's manual. Be sure you understand the service procedure completely, have the proper tools, and adhere to all safety precautions, including handling instructions for any chemicals you are using. If you are unsure about any repair, consult a professional technician.



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OF CAR CARE!**



## Understanding Your Vehicle's Lighting

Statistics indicate that nearly twenty percent of all vehicles are operating with one or more external lights not functioning.

Surprising? Not really. Lights are like tires and batteries. They don't give us any warning when they are being neglected. Unlike tires and batteries, they may not cause any trouble when they finally fail. No trouble except your vehicle is harder to see at night, your night driving vision may be impaired, and driving at night with any light out is illegal just about everywhere. Even a burned out license light or side marker light can subject you to a traffic ticket! Headlights are also critical to your safety. The more light on the road, the better you can see obstacles and critical situations in time to avoid them.

## What Bulbs Will I Find in My Vehicle?

Today's headlights are typically halogen bulbs, with standard or focused lenses, placed behind plastic covers for aerodynamics and bulb protection. Upscale vehicles are often equipped with HID headlights with an auto-leveling feature to ensure that the light is directed properly for different vehicle-load conditions. Adaptive headlights turn with the vehicle to aid illumination while cornering. Daytime running lights keep the headlights illuminated during the day for increased vehicle visibility in traffic.

Small incandescent bulbs typically light turn signals, brake lights, and side-marker lights. As costs decrease, LED technology is quickly replacing these bulbs by offering quicker illumination that helps decrease driver reaction times as well as better reliability and longevity. Their tiny size also allows them to fit in smaller spaces, and they weigh less than the traditional bulb.

Dashboard lights and interior illumination are being replaced with color-specific LEDs. They are small and can fit just about anywhere. As a result, LEDs are now used to illuminate switches, foot wells, door handles, and brake lights.

## Performing a Lighting Inspection

Checking your vehicle's lights is a simple process and is ideally a two-person job. With the headlights on, one person – the inspector – should walk around the car and check each light to make sure it is lit. The other person — the driver — should sit behind the wheel with the engine off and the ignition switch on. With the headlights on, make sure you check both the low and high beams. If the vehicle uses four headlamps, low beam is the outside or top lamp unit.

Next, turn off the headlights and turn on your four-way hazard flashers. Check all four corners again. Since most cars use the same bulbs for turn signals and hazard flashers, you have now checked the turn signal bulbs as well.

While you're at it, check the turn signals. If your vehicle is equipped with cornering lights, these should remain lit until the driver cancels the turn signal.

With the ignition on and the engine not running, ask the driver to set the parking brake, depress the brake pedal, and shift the transmission into reverse. Check the reverse lights and brake lights. Finally, have the driver shift the transmission into "Park" and release the brake pedal. Verify all taillights and license plate lights work. You may want to stand away from the car and not directly behind it.

## Headlight Replacement

Replacing the light bulbs on some late model cars can be tricky. A special tool may be required to disassemble a lens or pieces of trim to gain access. Many bulbs can be replaced by locating the rear of the light assembly, removing the socket, and then removing the bulb. Most light bulbs are removed by pulling the bulb straight out of the socket, or by pushing in gently and twisting slightly counter-clockwise.

Sealed beam headlight systems began to be phased out in the late 1980s. By the mid-1990s, most cars were manufactured with halogen capsules. Before replacing a halogen capsule, review your owner's manual. Make sure you have the correct replacement part, as well as the proper tools, to accomplish the job. Also, because a halogen capsule is filled with pressurized halogen gas, which can produce flying fragments if shattered, be sure to wear protective glasses when

changing a halogen capsule. Place the old bulb in the protective carton that comes with the new one and then dispose.



- Start by opening the hood and locating the capsule on the back of the headlight assembly. In some vehicles, it may be necessary to remove the entire headlight assembly.
- Once you've located the socket, carefully remove the electric connector.
- Unscrew the retaining ring or turn the lamp 1/3 of a turn counter-clockwise to release it from its socket.
- Install the new capsule by aligning the notches on the capsule base with the ridges in the socket.
- Push the capsule firmly into the socket until the mounting flange on the base contacts the rear face of the socket.
- Slip the capsule retaining ring over the rearward portion of the plastic base against the mounting flange.
- Lock the ring into the socket by rotating the ring clockwise. A stop will be felt when the retaining ring is fully engaged.
- Finally, push the electric connector back on the capsule's base and check for proper operation.

## Headlight Alignment

When the headlights are replaced, or any time front-end work is performed on your vehicle, the headlights should be accurately aligned and aimed by a reputable repair shop using the proper equipment. Headlights not properly aimed can make it virtually impossible to see and may blind other drivers on the road, possibly causing an accident.