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Technical Information For The Collision Industry

Detecting Water And Air Leaks

Detecting water and air leaks around windows, doors, or other areas on a vehicle can be a challenging task. If an air leak exists, it could be a source of a moisture leak as well.

When a customer has indications of an air leak or moisture collecting inside their vehicle, locating the origin of the leak can be sometimes be a challenge. Other than a simple visual inspection, there are a number of procedures, tools, and products available that can be used to locate the exact spot of a leak.

LEAK DETECTION PROCEDURES USING WATER

Several methods of looking for the source of suspected leaks involve using water. Water can be applied to suspected areas from a hose without a spray nozzle, and a technician can look for water entering the interior. Adding soap to water and looking for soap bubbles is another method that can be used when applying water.

Once water has been applied around the outside of a glass perimeter, running a rubber-gloved hand along the inside can be used as another leak detection method. The glove will drag where dry, and slip where wet.

Another option with water uses a fluorescent dye to help find areas where leaks may be. One product is packaged

in a leak detection kit that includes the parts required to conduct an extensive leak detection test on a vehicle. This product, specifically designed for wind or water leak-detection, is intended to work by spraying a fluorescent dye water mixture on the outside of a vehicle and then shining a high-intensity, 50-watt, ultraviolet/blue light inside the vehicle to see if any of the fluorescent dye seeped into the vehicle (see Figure 1). The dye is designed to not stain interior fabrics or exterior paint, provided the correct dilution is used. The instruction manual for the kit states that diluted dye cleans off with water and will not stain the interior or exterior surfaces of the vehicle. Dye concentrate may stain, therefore there's a recommendation to not detach or fill the dye reservoir over materials that may stain.

There are two spray options available for this procedure, a normal water flow or an air-boost flow (which is achieved when an airline is attached and air is added to the mixture). The air-boost flow can be used to simulate harsh weather conditions (see Figure 2).

If a leak does exist, it should be pinpointed by a bright green glow. This can be seen through the fluorescence-enhancing (yellow-lens) glasses provided, when the ultraviolet/blue inspection light is shined on the dye water mixture that has penetrated the opening. The light can be plugged into the vehicle

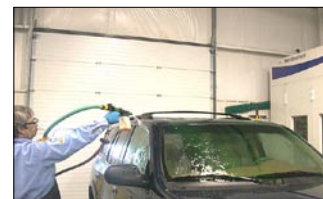


Figure 1—The application of water and fluorescent dye mixture can be used without forced water flow.



Figure 2—An air-boost flow is used to simulate harsh weather conditions.

cigarette lighter or attached to a 12-volt power source (see Figure 3).

It may be easier to see water penetrating a leak when it contains a dye as opposed to clear water, especially if a technician must perform the leak detection alone.

LEAK DETECTION PROCEDURES WITHOUT WATER

Two leak detection procedures that do not involve the use of water are tracing powder or chalk, and ultrasonic sound methods.

There are tracing powders or chinks available that can be used to identify areas where air leaks are suspected. The powder or chalk is applied to the weatherstripping and the panel is closed completely. The panel should not be slammed closed. The panel is opened and the weatherstripping is inspected. Where there is good contact, the chalk will be scuffed. Gaps in the powder or chalk indicate a poor seal.

With the ultrasonic sound procedure, a transmitter is placed inside the vehicle in the region of the suspected leak, and a wand, which is a receiver microphone, is passed over the questionable area on the outside. A headset plugs into the receiver. When the wand is over an area of a leak, the sound waves from the transmitter can be heard in the headset.

CONCLUSION

Technicians have several different methods of leak detection available to them. The use of water (with or without soap or dye), rubber gloves, tracing powder or chalk, and ultrasonic sound are options.

Some leaks may be difficult to locate and could involve using more than one procedure to pinpoint the exact spot of the leak. Before you begin a leak detection procedure, consider all factors involved and resources available to determine which methods will work best for you.

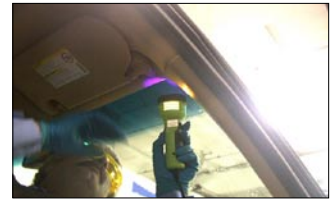


Figure 3—An ultraviolet light, part of one dye-detection kit, can be used to find dye-water penetration.