



## TECHNICAL SERVICE BULLETIN

	<b>Group</b>
	60 - BODY
	<b>Number</b>
	98-60-001
<b>Subject</b>	<b>Date</b>
<b>WATER LEAK DETECTION AND IDENTIFICATION</b>	02-1998
	<b>Model</b>
	All Models 0

This TSB supersedes TSB# 95-60-002

### DESCRIPTION:

This bulletin provides detection methods and repair procedures for interior water leaks.

### DIAGNOSIS PROCEDURE:

First, use the customer's statements to determine the following:

1. Where is it wet? (near the wheel house, in the spare tire well, at the front, at the back, etc.)
2. When does it leak? (while parked level, while parked on a slope, while driving, only during heavy down pours)
3. What color is the moisture? (muddy water from the road surface, clean water from above)
4. How wet? (light dampness after a heavy rain, very wet while/after driving in a drizzle)

Based on the customer's statements, some determinations can be made:

- Location of possible leak points near the damp area.
- Dirty water usually comes from below. Check the wheel house weld seams, floor plugs, lower air vents, etc.
- Clean water usually comes from upper panel surfaces. Check the trunk lid seal, around the windows, sunroof drains, door panel moisture barriers, etc.
- Leaks noted only while the vehicle is parked are usually associated with water leaking in at one point and seeping to another. Damaged seals can also leak the same way but may not show visible damage.

### INSPECTION METHODS:

#### FLASHLIGHT:

Shine a strong light on one side of the suspected leak area and look for light on the other side.

#### WATER SPRAY:

Use a shower head or sprinkler head to spray water along the suspected leak area. DO NOT USE HIGH PRESSURE WATER (25 PSI maximum). Wait until the leaks begin, and mark the leaks. Spray talcum powder on the dry side of the leak area to make the leaks more traceable.

#### WATER FLOW:

This test is useful for pinpointing a leak first detected with the water spray test. Direct a flow of water from an open

hose to the lowest point of the suspected leak area. Slowly move the hose upwards until the leak is detected. DO NOT USE HIGH PRESSURE WATER (25 PSI maximum). Soap bubble test: Mix 1 part liquid dishwashing soap and 3 parts water in a spray bottle. Spray the mixture onto the inside of the suspected leak area. Use a blow gun to blow air along the suspected leak area. Use high pressure air for metal to metal weld seams and low pressure (15-30 psi) for testing rubber seals. The soap will form large bubbles in the leak areas. Along glass runs and door seals, small bubbles will form when too high an air pressure is used, and large bubbles will form at potential leak points.

#### **SOAP BUBBLE TEST WITH A PRESSURIZED CAR:**

Close all of the doors and windows, turn on the ignition key (engine off) and set the blower fan to high in the fresh air mode. This will pressurize the interior of the vehicle. Spray the dish soap and water solution onto the vehicle exterior over the suspected leak areas. The soap will form large bubbles where it leaks out. This test can also be used to locate wind leak locations.

#### **TRACING POWDER:**

To determine if a seal has consistent contact, spray tracing powder (Kent Industries "Tracing Powder" or 3M "Leak Detection Powder") onto the metal panel, then shut the panel. The powder should transfer to the seal where the seal has adequate contact.

#### **ULTRA SOUND LEAK DETECTORS:**

Place the transmitter in the vehicle and follow along the suspected seam with the detector. Follow the equipment manufacturer's instructions.

#### **INSPECTION EXAMPLES:**

##### **SUNROOF AREA LEAKS:**

If the car has a sunroof, carefully pour water into the sunroof tray. Water should leak out onto the ground near each of the vehicle tires if the four sunroof drain tubes are not clogged with leaves or debris, or kinked. Sometimes a kinked drain hose may cause leakage into the passenger compartment if the sunroof tray does not drain fast enough. Sunroof leaks may travel. A leak onto the headliner may dampen the carpet near the 'A' pillar, or drain through the dome lamp screws.

##### **DOOR LEAKS:**

1. If water appears on the floor next to one of the doors, remove the inner door panel.
2. Inspect the door trim seal (or plastic shield) for a complete seal around the edge, and any unusual holes or tears. You can spray the inside (wet side) of the door trim seal with powdered spray, such as Kent Industries "Tracing Powder" or 3M "Leak Detection Powder".
3. Reinstall the door trim seal, but not the inner door trim panel. Drive the car in the conditions which create the leak. Inspect the area for signs of water. If the powdered spray was used, look for a trail of powder.

Another area to inspect is door drains. Insure the drains are free and clear and that water can easily exit the bottom of the doors. If it can't, the water can fill up in the door and spill into the car.

4. Push a wire tie (tie-wrap, zip tie) end up each drain hole, or run water from a low pressure hose into the door, to make sure that the door drain is unobstructed.
5. Use a plastic trim removal tool to create a small gap between the door glass and the beltline moulding at the bottom of the glass.
6. With the door open, pour the water at the glass, letting it drain into the door. The water should drain freely through the drains.

Most blockages can be cleared with a short piece of wire inserted through the drain, but leaves and debris or

excess cavity wax may require removing the inner door trim panel and the door trim seal. Be certain not to scratch the paint inside the door during cleaning, as the scratch may result in corrosion.

#### **FRESH AIR INTAKE PLENUM LEAKS:**

Water leaks through the fresh air intake plenum may drain through the heater blower motor resistor block connector, or in the area around the heater blower. Ask the customer when the condition occurs:

- If the leak occurs regardless of fan speed, the cause may be a leaking seam.
  - If it occurs after the fan has been operated at a high speed, water may be drawn in with the air.
  - If it occurs only during extended rain storms, the leak could be a slow seep.
  - If it occurs during car washes as well as rain storms, look for a larger leak.
7. Prepare by removing the plastic cowl top cover at the base of the windshield. Carefully reach inside the cowl to the right side to find the fresh air intake plenum opening. Make sure that there is no debris around the intake.
  8. Run low pressure water from a garden hose into the cowl area, allowing most of the water to drain towards the right side of the cowl. The water should drain freely through the right fender. If it does not, look for a blockage in the far right side of the cowl area. Use the same procedure to check the drainage towards the left side of the cowl.
  9. Run the water towards the right again. Set the fan to high speed, and select "Fresh" air intake. See if any moisture appears around the heater blower motor area. This may be caused by debris blocking the drainage through the fender. If there are no debris, remove the blower motor and fan assembly. Look up into the plenum area to see if any leaks are visible. Use your hand to feel for moisture. Identify the welded seam that the water leaks through, and apply seam sealer to it. If possible, repair the seam from the outside cowl area.

#### **FRONT WHEEL WELL LEAKS:**

Another source of leakage may be at the mud flap for the front tire. The seam behind the mud flap may get did And sand blown into it, essentially sand blasting the sealer away. As a result, the door sill may fill with water. If necessary, the seam may need to be resealed.

#### **LEAK REPAIR:**

- Repair leaking seals by repositioning misinstalled seals, or replacing damaged seals.
- Use the appropriate seam sealer listed in TSB# 93-00-007 (Information Concerning Sealants) to correct metal to metal seam leaks. ALWAYS APPLY THE SEALANT TO THE OUTSIDE OF THE LEAKING SEAM. Failure to do this may result in a new leak in a nearby area. Cover the under car seam repairs with a spray on undercoating.
- Use 3M Strip Caulk (3M #8578) or equivalent to repair door moisture barrier seals.
- Use 3M Short-Cut Windshield Adhesive Sealant (3M #08600) or equivalent to seal leaks around windshields, backlights, and fixed side glass.

#### **WARRANTY INFORMATION:**

Normal warranty operation codes and times apply. If additional time is needed, use actual straight time (TT). Use of additional straight time may require your DPSM's authorization/approval.