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INTERNATIONAL
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SURFACE VEHICLE STANDARD

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Technician Procedure for Using Electronic Refrigerant Leak Detectors for Service of Mobile Air-Conditioning Systems

Foreword—The purpose of this SAE Recommended Practice is to establish minimum standard practices for service leak detection of motor vehicle passenger compartment air-conditioning systems. After exhaustive review of electronic leak detection methods in use today, the following has been proven a reliable means of detecting refrigerant leaks.

1. Scope—This SAE Recommended Practice applies to the use of generally available electronic leak detection methods to service motor vehicle passenger compartment air-conditioning systems.

2. References

2.1 Related Publication—The following publication is provided for information purposes only and is not a required part of this document.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1627—Rating Criteria for Electronic Refrigerant Leak Detectors

3. Electronic Probe-Type Detector Instructions

3.1 The electronic leak detector shall be operated in accordance with the equipment manufacturer's operating instructions.

3.2 Leak test with the engine not in operation.

3.3 The air conditioning system shall be charged with sufficient refrigerant to have a gauge pressure of at least 340 kPa when not in operation. At temperatures below 15 °C, leaks may not be measurable, since this pressure may not be reached.

3.4 Take care not to contaminate the detector probe tip if the part being tested is contaminated. If the part is particularly dirty, it should be wiped off with a dry shop towel or blown off with shop air. No cleaners or solvents shall be used, since many electronic detectors are sensitive to their ingredients.

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3.5 Visually trace the entire refrigerant system, and look for signs of air-conditioning lubricant leakage, damage, and corrosion on all lines, hoses, and components. Each questionable area shall be carefully checked with the detector probe, as well as all fittings, hose to line couplings, refrigerant controls, service ports with caps in place, brazed or welded areas, and areas around attachment points and hold-downs on lines and components.

3.6 Always follow the refrigerant system around in a continuous path so that no areas of potential leaks are missed. If a leak is found, always continue to test the remainder of the system.

3.7 At each area checked, the probe shall be moved around the location, at a rate no more than 25 to 50 mm/s, and no more than 5 mm from the surface completely around the position. Slower and closer movement of the probe greatly improves the likelihood of finding a leak.

3.8 An apparent leak shall be verified at least once by blowing shop air into the area of the suspected leak, if necessary, and repeating the check of the area. In cases of very large leaks, blowing out the area with shop air often helps locate the exact position of the leak.

3.9 Leak testing of the evaporator core while in the air conditioning module shall be accomplished by turning the air conditioning blower on high for a period of 15 s minimum, shutting it off, then waiting for the refrigerant to accumulate in the case for time specified by 3.9.1, then inserting the leak detector probe into the blower resistor block or condensate drain hole if no water is present, or into the closest opening in the heating/ventilation/air conditioning case to the evaporator, such as the heater duct or a vent duct. If the detector alarms, a leak apparently has been found.

3.9.1 The accumulation time shall be specified by the leak detector manufacturer in the instructions included with the detector.

3.10 Following any service to the refrigerant system of the vehicle, and any other service which disturbs the refrigerant system, a leak test of the repair and of the service ports of the refrigerant system shall be done.

PREPARED BY THE SAE INTERIOR CLIMATE CONTROL STANDARDS COMMITTEE