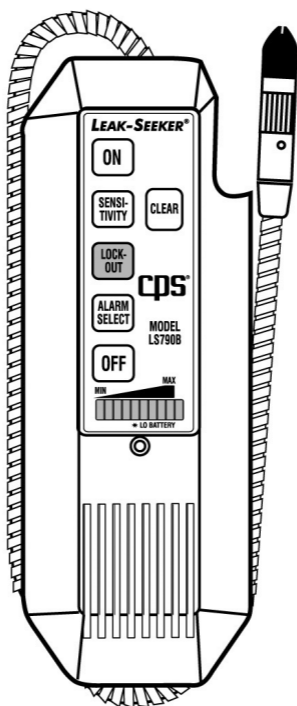


CPS[®]

REFRIGERANT LEAK DETECTOR DETECTOR DE FUGAS REFRIGERANTE

LS790B



OWNER'S MANUAL

U.S. PATENT 4,609,875, 5,264,833 AND 5,371,467

GENERAL SPECIFICATIONS

The LS790B is a perfect combination of advanced microprocessor driven circuitry and field practical features. Developed from over 20 years of engineering experience and sensor research, the LS790B incorporates 3 sophisticated patented technologies to create the world's most advanced, yet easy to use, refrigerant leak detector available today.

The quick and accurate location of a refrigerant leak is critical to the thousands of professionals who rely on MAC for their leak testing needs. Designed to effectively detect all CFC, HFC, HCFC refrigerants and refrigerant blends, the LS790B remains extremely versatile, even with today's rapid introduction of new refrigerants. A range of ten sensitivity settings and patented sensing circuitry virtually guarantees location of any refrigerant leak of any size.

The portability of the LS790B allows the user access to any suspected leak area, no matter how remote or restricted it may be. An ergonomically shaped body provides a sure grip while the 18" flexible probe bends and twists its way into almost any position. A multitude of other time saving and practical features provides the professional with the absolute feedback they need to confidently say, "the leak is here"!

The following pages contain all of the necessary information you will need to properly operate, maintain or leak test using the LS790B A/C DETECTOR. Please take the time to thoroughly read and understand the enclosed points prior to operating the unit.

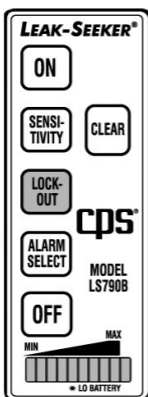
FEATURES

- Patented Microprocessor Controlled Circuitry
- Patented Ion-Pump® Sensor Enhances Sensitivity & Reliability
- Patented Filter Eliminates False Signals Due to Moisture
- Steel Domed Tactile Feedback Keypad
- Three Individually Selectable Alarm Indicators (Audible Only/ Visual Only/or a Combination of Audible and Visual)
- 10 Segment LED Leak Size Indicator
- Detects All Halogenated Refrigerants
- LOCK-OUT™ Mode Eliminates Background Contamination
- 10 Selectable Sensitivity Ranges
- 40 Hour Battery Life
- Automatic Power Saver Feature Conserves Battery Life
- Low Battery Indicator
- Certified to SAE J1627 and CE Approved

ADDITIONAL PARTS INCLUDED

- Spare Ion-Pump® Sensor
- Patented Evaporator Filter Housing
- Carrying Case
- Earphone for Noisy Environments
- 4 AA Alkaline Batteries

INSTRUMENT CONTROLS



SENSITIVITY INCREASES
AS LED MOVES TO RIGHT
USE LEVELS 4-7 FOR R-134a



*Replace Batteries When 5th LED Flashes

1. **ON/OFF Keys:** Turns unit on or off.
2. **ALARM SELECT Key:** An audible alarm sounds when the unit is initially turned on. Press the **ALARM SELECT** key once to turn the visual alarm on. Press the key again for a combination of the audible and visual alarms. Pressing the key a third time will return the unit to its initial audible only setting.
3. **SENSITIVITY Key:** The LS790B offers 10 ranges of sensitivity that may be selected depending on the type of refrigerant you're working with and the size of the leak. The lowest sensitivity range is automatically selected each time the instrument is switched on. Depress and hold the **SENSITIVITY** key to change the sensitivity range. The LED will move left to right (LO to HI) until the key is released.
4. **LOCK-OUT Key:** Use this feature when faced with searching for a leak in a highly contaminated area. This mode of operation measures and records in memory the highest concentration of refrigerant gas detected since the mode was selected or the **CLEAR** button was depressed. Any concentration of gas less than the highest recorded concentration is locked-out or ignored, thereby eliminating the effects of background contamination. A distinct two-tone alarm will sound when the probe is in the area of the highest refrigerant concentration. This will be the leak source.
5. **CLEAR Key:** This key is used to accomplish two tasks. First, it is used to reset the memory locations stored in the micro-processor when the unit is in the **LOCK-OUT** mode of operation. Secondly, it is used to re-calibrate the unit to surrounding ambient conditions.

SAE J1628 INSTRUCTIONS

SAE J1628 Recommended Procedure

NOTE: On automotive A/C systems, test with the engine not in operation.

1. The air conditioning or refrigeration system should be charged with sufficient refrigerant to have a gauge pressure of at least 340kPa/50psi when not in operation. At temperatures below 15°C/59°F, leaks may not be measurable, since this pressure may not be reached.

2. Take care not to contaminate the detector probe tip if the part being tested is contaminated. If the part is particularly dirty or condensate (moisture) is present, it should be wiped off with a dry shop towel or blown off with shop air. No cleaners or solvents should be used, since the detector may be sensitive to their ingredients.
3. 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 should 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-down on lines and components.
4. 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.
5. At each area checked, the probe should be moved around the location, at a rate no more than 25 to 50 mm/second (1-2 in/second), and no more than 5 mm (1/4 in) from the surface, completely around the position. Slower and closer movement of the probe greatly improves the likelihood of finding a leak.
6. 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.
7. 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 seconds minimum, shutting it off, then waiting for the refrigerant to accumulate in the case for ten minutes. Next, insert 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.
8. Following any service to the refrigerant system, and any other service which disturbs the refrigerant system, a leak test of the repair and of the service ports of the refrigerant system should be done.

OPERATING TIPS

- **Windy Conditions:** Do not attempt to find a leak in windy areas. Even very large leaks may be impossible to find as the escaping gas is quickly dissipated into the atmosphere. If necessary, fabricate a gas trap using aluminum foil around joints or fittings or otherwise shield the search area from the wind.
- **Recommended Sensitivity Setting:** MAC recommends beginning the leak test at level five or six. The best range of sensitivity is one that allows the variable output alarm and or visual indicators to operate within the given 10 LED segments without full saturation of the alarm. NOTE: The sensitivity range you have selected is too high when the highest audible tone is continually achieved or all ten visual LEDs are constantly lit. Select a lower sensitivity setting and try again.
- **Selective Filter Housing:** The presence of moisture in a leak test area will cause corona leak detectors to false alarm. When searching for leaks around evaporators or other areas where high moisture content is present, housing with the patented Selective Filter Housing. This filter will eliminate false alarms caused by the presence of moisture.

- **Leak Verification:** If a suspected leak is indicated, verify several times by moving the sensor away from the leak area, allowing the alarm to clear and then back to the suspected leak. If the instrument indicates a leak three consecutive times, you have found a leak.
- **When to use LOCK-OUT:** Very large leaks or areas that have been leaking for a long time can actually form a cloud of refrigerant around the entire leak area. This cloud of refrigerant will tend to mask the actual leak source making it difficult to find. The LS790B and its **LOCK-OUT** mode of operation was designed specifically for this situation. Depress the **LOCK-OUT** key (three short beeps confirms that you are in **LOCK-OUT** mode) and start searching the leak area. As you search the leak area, the LS790B will automatically memorize the detected refrigerant concentration levels, systematically searching for the highest refrigerant concentration level. A distinct two-tone alarm will sound when the sensor is placed in the area of the highest refrigerant concentration detected. This will be your leak source.

NOTE: Do not be confused! It is possible to achieve this two-tone alarm in areas besides the actual leak source. This will occur as the LS790B locates a higher level of refrigerant concentration than it had previously stored in its memory. You will know when the unit has found the actual leak source when the two-tone alarm only sounds at one specific area.

MAINTENANCE

The LS790B A/C DETECTOR is designed to require a minimal amount of field maintenance. Regular cleaning of the sensor housing air vents, replacement of the Ion-Pump® sensor and changing the batteries are the only maintenance needs.

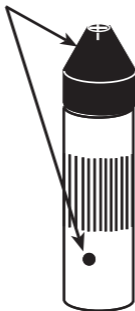
- **Low Battery Condition:** If the center segment of the LED display (located directly above the * symbol) illuminates when the unit is switched on, the batteries are weak. Replace with "AA" alkaline batteries only.

NOTE: DO NOT use rechargeable batteries.

- **Changing the Ion-Pump® sensor:** Eventually, the Ion-Pump® sensor will need to be replaced. This condition is usually indicated by abnormal or erratic performance when the instrument is in the lowest sensitivity range. Install the new sensor as indicated in Figure 1 (turn the unit OFF before attempting to change the sensor). CPS® recommends that you change the Ion-Pump® sensor at the beginning of every AC & R season and always have a spare sensor available for replacement in the field.
- **Patented Selective Housing Filter:** Ensure that the sensor housing inlet and outlet air vents are clean and free of materials that may block the air from circulating through the Ion-Pump® sensor. If the vents become dirty and clogged remove the housing from the probe and remove the Ion-Pump® sensor (turn the unit OFF before removing the housing). Next, attempt to remove any contaminants using LOW-PRESSURE shop air or by hand ONLY. DO NOT attempt to clean this housing by any other means. If the sensor housing remains contaminated, simply replace it.

MAINTENANCE

KEEP AIR VENTS
OPEN AND CLEAN



LSXSF
SELECTIVE FILTER
HOUSING ELIMINATES
FALSE ALARM DUE TO
THE PRESENCE
OF MOISTURE



LSXS
ION-PUMP®
SENSOR



Figure 1