



No. 22791

Infrared Refrigerant

Leak Detector



Operator's Manual

Product Description

The Robinair No. 22791 uses infrared optics to create a refrigerant leak detector that combines sensitivity, speed, battery life, portability, and ease of use. This unit detects leaks as small as 0.15 oz/year, and meets SAE J1627, J2791, and J2913 standards.

No. 22791 comes with a wall charger and a car charger for its compact lithium-ion battery—which can power the leak detector for up to eight hours of continuous operation before needing to recharge. A choice of three sensitivity settings keep false alarms to a minimum while allowing detection of even the smallest leak in a refrigerant contaminated environment. A 30-second, self-calibration test occurs whenever the unit is powered on to ensure optimal performance. A built-in replaceable filter blocks moisture and particulates, preventing damage to the sensor.

Specifications

Sensing element: enhanced infrared photo optics

Refrigerants: HFC, CFC, HCFC, blends, and HFO-1234yf

Sensitivity level (per SAE J2791 and J2913):

HIGH: 0.15 oz/year and higher

MED: 0.25 oz/year and higher

LOW: 0.5 oz/year and higher

Response time: less than one second

Battery life: up to 8 hours continuous use before recharge

Auto OFF: 10 minutes of inactivity

Battery: 3.7V, 1880 mAH rechargeable, lithium-ion (No. 74364)

Low battery LED: illuminates when 1 hour of battery life remains

Charge time: less than 4 hours @ 500 mA

Operating environment: 32°F (0°C) to 122°F (50°C) at <75% RH

Storage environment: <80% RH for detector and battery

For 80% battery recovery:

-4°F (-20°C) to 140°F (60°C) less than 1 month

-4°F (-20°C) to 113°F (45°C) less than 3 months

-4°F (-20°C) to 68°F (20°C) less than 1 year

Accessories included: wall charger, car charger, storage case, battery (installed), and operator's manual.

Safety Precautions



Warning: To prevent personal injury and/or equipment damage,



- Read, understand, and follow all warnings stated in the *Lithium Battery Care* section of this manual.
- DO NOT charge the battery with any charger other than the chargers supplied with the unit.
- DO NOT use No. 22791 without a clean filter correctly installed in the tip.
- DO NOT draw moisture in through the probe.

Lithium Battery Care

No. 22791 operates on a lithium-ion type NP-120 battery. For long battery life and safe operation, observe all warnings.



Warning: To prevent personal injury and/or equipment damage,



- Do not disassemble or attempt to repair the battery or protective circuit.
- Never attempt to charge the battery if it has been removed from the unit.
- Do not expose the battery to temperatures above 140°F (60°C).
- Do not charge the battery near a fire or in a hot vehicle or direct sunlight.



- Do not solder directly on the battery.
- Do not subject the battery to impact.



- Do not expose the battery to moisture or immerse it in fluid.



- Do not deform, pierce, or damage the battery.
- Do not touch a battery that is leaking electrolytes. If battery fluid should get in your eyes, flush with fresh water, do not rub eyes, and see a physician immediately.
- Do not use a battery if it is deformed, smells bad, changes color, or appears abnormal. Send the unit in for a replacement battery immediately.

Charging the Lithium Battery

Two types of chargers are supplied with No. 22791 leak detector. The AC charger plugs into a wall outlet (100–240 VAC, 50/60 Hz); the car charger plugs into a vehicle cigarette lighter DC plug.

1. **BEFORE USING THE UNIT THE FIRST TIME:**

Fully charge the battery. The unit was packaged and shipped from the factory with the battery only partially charged.

2. **WHEN THE BATTERY IS LOW:**

The LOW-BATT LED will illuminate in red.

3. **TO RECHARGE NO. 22791:**

Plug one end of the charger into the top of the unit, and the other end of the charger into the power source. The LOW-BATT LED will blink while charging until the battery is fully charged.

NOTE: Always charge within the charging environment specifications of 32°F (0°C) to 122°F (50°C) at <75% RH.

4. **AVOID DISCHARGING THE BATTERY COMPLETELY.**

Recharging a partially discharged battery more frequently is better for the life of a lithium-ion battery.

Functions and Settings

ON/OFF Protection

Press and hold the ON/OFF button for one second to turn No. 22791 ON or OFF. This one-second delay protects against accidental ON or OFF.

LED Bar Graph Display

The eight-segment LED display indicates the degree of change in refrigerant concentration. As the concentration of refrigerant in the air increases, the number of illuminated bars on the display increases also.

L/M/H Button (Sensitivity Levels)

Set the unit's sensitivity level by pressing the L/M/H button.

Low (L), medium (M), or high (H) sensitivity level is indicated by its respective LED. The higher the background concentration of refrigerant in the air, the lower the sensitivity level should be set. To detect a very small leak in a high refrigerant background, use the Contaminate Mode.

Mute Button

Press the MUTE button to toggle the audio portion of No. 22791 ON or OFF.

Peak Button

The PEAK function stores the highest change in refrigerant concentration achieved while continuing to detect leaks. Press the PEAK button to toggle this function ON and OFF. The PEAK LED illuminates when this function is turned on. Turning the PEAK function off clears the peak information.

Contaminate Mode

To detect even the smallest leak in refrigerant-contaminated environments, press the PEAK button rapidly four times. The green LED will flash rapidly to show contamination mode is on. Press the PEAK button rapidly four times again to turn contamination mode off.

Leak Detection Procedure

1. Press and hold the ON/OFF button for one second. The warm-up and calibration sequence takes approximately 30 seconds. The sensitivity level defaults to HIGH at startup.
2. The most likely place for a refrigerant leak is at soldered joints in refrigerant lines and changes in cross section or direction of these lines. No. 22791 detects changes in concentration of refrigerant, not the absolute concentration of refrigerant. This allows the detection of leaks in locations that may have refrigerant in the air. Use the following “double pass” method to find leaks from the detection of change in refrigerant concentration. Leak test with the engine off.
 - A. Charge the system with sufficient refrigerant to have a gauge pressure of at least 340 kPa (50 psi) with the system off. At ambient temperatures below 15°C, leaks may not be measurable because the pressure may not be reached.
 - B. Visually trace the entire refrigerant system, and look for signs of air conditioning lubricant leakage, damage, and corrosion on all lines, hoses, and components. Check each questionable area with the detector probe, as well as all fittings, hose-to-line couplings, refrigerant controls,

- service valves with caps in place, brazed or welded areas, and areas around attachment points and hold-downs on lines and components. If looking for an apparently larger leak, check first at the 7 g/yr or 14 g/yr position.
- C. Always follow the refrigerant system around in a continuous path so no areas of potential leaks are missed. If a leak is found, continue to test the remainder of the system.
 - D. Recheck service valves with caps removed. Blow shop air over service valve to clear immediate area, and then check with detector on 7 g/yr setting.
 - E. Move the detector at a rate of no more than 75 mm/sec (3 in/sec) and as close as possible to 9.5 mm (3/8 in) from the surface, completely encircling each test position (switch, sensor, refrigerant tubing connection, etc).
 - F. Slower movement and closer approach of the probe normally improve the likelihood of finding a leak. However, detectors made to meet this standard are based on air sampling from the 9.5 mm (3/8 in) distance. Retest is advisable when a leak appears to be found at the most sensitive settings, particularly if the probe was in a static position on a joint, or making physical contact with a joint, as it was moving. Repeat with a moving probe test at that location, taking care to maintain the small gap (9.5 mm or 3/8 in) to confirm the leak is of repairable size. Use of the 7 g/yr (0.25 oz/yr) position of the detector, after finding an apparent leak with the 4 g/yr (0.15 oz/yr) setting, may also be helpful.
 - G. No. 22791 is sensitive and can take up to 30 seconds to clear after detecting a small amount of contaminant. It will typically clear in 2 to 15 seconds.



Caution: Do not use cleaning agents or solvents on or near A/C lines. Wipe away dirt or potential false-trigger chemicals by using a dry towel or shop air.

If the 22791 does false trigger on a chemical listed below, allow the leak detector to clear for a minimum time listed in the table.

SAE J2791 False-Trigger Test Results

Chemical	Detection	Time to Clear (seconds)
Windshield washer solvent	Yes	6
Ford spot and stain remover	No	-
Ford rust penetrant and inhibitor	Yes	5
Ford gasket and trim adhesive	Yes	6
Permatex Natural Blue cleaner and degreaser	No	-
Ford brake parts cleaner	Yes	6
Ford clear silicone rubber	No	-
Motorcraft G-05 antifreeze / coolant	No	-
Gunk Liquid Wrench	Yes	4
Ford pumice / lotion hand cleaner	No	-
Ford Motorcraft DOT-3 brake fluid	No	-
Ford spray carburetor tune-up cleaner	Yes	5
Ford silicone lubricant	No	-
Dexron automatic transmission fluid	No	-
Mineral engine oil	No	-

Accessories and Replacement Parts

Optional Accessories	Order No.
Extension Probe (9 inch)	74367
Rigid Extension Probe.....	74368

Replacement Parts	Order No.
100–240 VAC Charger	74361
Std. Europe Plug Adapter	74115
Great Britain Plug Adapter	74116
12V DC Charger	74362
Filters (5) and O-rings (3)	74363
Lithium-ion Battery	74364
Sensor Tip	74365

Filter Replacement

A filter, located in the tip of the wand, blocks moisture and other contaminants from the sensor. When this filter becomes wet, it restricts the flow of air and must be replaced.

To replace the filter:

1. Unscrew and remove the tip of the sensor to expose the white filter.
2. Remove and discard the filter.
3. Position a new filter in the tip so the round end of the filter is closest to the tip of the wand.

NOTE: Use only Robinair supplied replacement filters.

Storage

The battery should have a 40%-50% charge during prolonged storage of a month or longer. The correct storage environment is critical to battery life.

Storage environment: <80% RH for detector and battery.

For 80% battery recovery:

- 4°F (-20°C) to 140°F (60°C) less than 1 month
- 4°F (-20°C) to 113°F (45°C) less than 3 months
- 4°F (-20°C) to 68°F (20°C) less than 1 year

NOTE: Battery life will be reduced significantly if the battery is stored with a full charge and/or at high temperatures.

Warranty

This product has been produced to provide unlimited service. Should it become inoperable after the user has performed the recommended maintenance, a no-charge repair or replacement will be made to the original purchaser. This applies to all repairable units that have not been damaged or tampered with. The claim must be made within **ONE YEAR** of the date of purchase.