



Mastercool[®]
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OPERATING INSTRUCTIONS

IntellaSense
REFRIGERANT LEAK DETECTOR

MODEL#-55800



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DESIGN CERTIFIED BY ACSI TO MEET SAE J2791, J2913 & EN14624
DETECTS ALL REFRIGERANTS (CFC's, HCFC's, HFC's & HFO's including blends)

55800

REFRIGERANT LEAK DETECTOR INSTRUCTIONS

PRODUCT OVERVIEW

You have purchased an intelligent electronic leak detector, model 55800. At the heart of this advanced leak detector is a new low power metal oxide gas sensor with superior performance properties when compared to other competitive units that are still utilizing older generation sensors. The new sensor is characterized by high sensitivity and fast response upon detecting the presence of extremely small levels of chlorofluorocarbon gases. For this reason, this sensor was selected and integrated into the 55800 Leak Detector.

In addition, we integrated a powerful microprocessor into the design that automatically selects the best operating condition for the sensor to ensure optimum performance throughout the life of the sensor. From the time the unit is initially turned on, an accelerated start-up heating program was incorporated, to prepare the sensor element for readiness in about a minute or less. During this time, a sensor diagnostic check is performed and other critical parameters are checked. Once the proper conditions are sensed, the processor enables the READY legend on the LCD and initiates the audible "beep" on the unit, provided the mute feature is disabled.

From this point on, the processor continues to interact with the user by monitoring the commands received from the keypad and executing them, as well as performing self-diagnostic checks on critical elements multiple times each second, thereby assuring and maintaining the continued operation of the product. Any deviation of the critical parameters from the normally established design limits, such abnormal conditions are annunciated to the attention of the user by audible and visual means, using the advanced colorful user-friendly LCD display.

Additional other beneficial features are detailed and discussed further in this Operating Manual.



WARNING

This symbol is intended to alert the user of the presence of important operating and maintenance or servicing instructions in the literature accompanying this product.

IMPORTANT GUIDELINES

1. The 55800 leak detector shall be operated in accordance to the equipment manufacturer's operating instructions.
2. Leak test with the unit turned OFF.
3. Visually trace the entire refrigerant system and inspect 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 fittings, hose-to-line couplings, and refrigerant controls. Service ports 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 Medium 7 g/yr or Low 14 g/yr sensitivity setting.
4. Always follow the refrigerant system around in a continuous path so that no area of potential leaks is missed. If a leak is found, always continue to test the remainder of the system.
5. Recheck service valves with caps removed. Blow shop air over service valve to clear immediate area and then check with the detector set at 7 g/yr (0.25 oz/yr) Medium sensitivity.
6. Move the detector at a rate of no more than 75 mm/sec (3 in/sec) and as close as possible to 9.3 mm (3/8 in) from the surface, completely encircling each test position (switch, sensor, refrigerant tubing connection etc).
7. Slower movement and closer approach of the probe improves the probability of finding a leak. However, detectors made to meet this standard are required to air sample and detect a leak from a distance of 9.5 mm (3/8 in) distance. Therefore, retest is advised at the most sensitive setting, when a leak appears to be found, 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 a small gap (9.5 mm or 3/8 in) to confirm that the leak is of a repairable size. Using a 7 g/yr (0.25 oz/yr) Medium sensitivity setting on the detector, after finding an apparent leak with the 4 g/yr (0.15 oz/yr) High sensitivity setting, may also be very helpful.

SPECIFICATIONS

Sensing Element:	Heated Tin Oxide Element
Sensor Life:	2000 hours
Refrigerants:	Detects All refrigerants (CFC,HFC, HCFC and blends) Unit has been tested and approved to work with R1234yf as well as R32 and R410a
Sensitivity Levels:	HIGH: 0.05 oz/yr (1.5 g/yr) MEDIUM: 0.25 oz/yr (7 g/yr) LOW: 0.50 oz/yr (14 g/yr)
Response Time:	Less than 1 second
Battery:	2 D Alkaline 1200 mAh batteries
Battery Life:	60 hours
Operating Temperature Range:	-17 to 49°C (0°F to 120°F)
Weight:	1 lb 8 oz (0.68 kg)
Display:	40mm (w) x 30mm (h), progressive color LCD display with 10 vertical bars

FEATURES

"Super Sensitive Function" allows the unit further sensitizing beyond the standard settings for locating small leaks with gases such as R1234yf and R407C

Display Properties:

- Display relative magnitude of the detected leaks
- Visual indication of the selected sensitivity range (high, medium or low).
- Displays the readiness status of the unit (wait, ready or interference).
- Displays the selected mode of the unit (peak, hold or mute).
- Annunciates and displays fault conditions of the unit.
- Displays accumulated sensor hours on request.
- Low battery Indicator

Probe:

- Intelligent tip, with environment sensing element to eliminate the potential of false alarms.
- Flexible 15.5 inch (39.3 cm) probe length for difficult to reach locations.

Keypad Controls:

- ON/OFF button (push-on/push-off)
- Volume/Mute button (high, low or mute)
- Sensitivity button for High, Medium and Low sensitivity level selection
- Hold button to hold the signal bars (push enable/disable)
- Peak button when multiple leaks are suspected (push enable/disable)

Powering the Unit ON:

Momentarily depress the center ON/OFF button on the keypad. Upon receiving the ON command, the following information appears on the LCD screen:

- All the vertical bars become lighted.
- The red WAIT legend begins to blink.
- Either an A or an F appears on the screen, depending on the refrigerant detected.

PLEASE NOTE:

- *When working with most CFCs, HFCs, and HCFCs you will want to be in the A mode*
- *When working with hard to detect gases such as R1234yf, R407C or simply to heighten sensitivity levels beyond normal settings use the F mode. Please note that F mode will be too sensitive in most applications so only use this mode in extreme cases.*
- As the sensor heats up, the vertical bars begin to extinguish one at a time until all bars are extinguished.
- When this occurs, the red WAIT legend disappears and a green READY legend appears.
- The unit begins “beep” unless it is muted, in which case, the legend MUTE will appear on the LCD.
- The unit will start in the low sensitivity range everytime at power up.

Selecting a Different Sensitivity Setting

Press the SENSITIVITY button on the keypad to change the sensitivity setting of the unit.

Selecting a Different Refrigerant

To change the refrigerant from A to F mode or vice versa, press and hold the PEAK keypad button until the refrigerant shown on the LCD changes. Within a few seconds, the unit will shut itself off to store the new refrigerant. When this occurs, depress the ON keypad button to turn the unit back on. The unit will begin its normal power-up sequence. The selected refrigerant will remain in memory when the unit is turned off.

Selecting the Hold Feature

To enable the HOLD feature, momentarily depress the HOLD keypad button. The LCD will display an H legend to indicate that the hold feature is enabled.

The HOLD feature was implemented for the purpose of allowing the user to search for leaks in hard to reach locations. This feature retains the relative magnitude of a detected leak on the LCD for an indefinite period of time or until another leak is detected, in which case, the previous leak display is erased and the new leak is displayed on the LCD. When the HOLD button is depressed again, the unit will exit the hold mode and resume normal operation.

Selecting the Peak Feature

To enable the Peak feature, momentarily depress the PEAK keypad button. The LCD will display the word PEAK and all the vertical bars will be outlined in white

The PEAK feature was implemented for the purpose of identifying the largest leak in a system with multiple leaks. When the first leak is detected, the last vertical bar will remain lighted after the alarm takes place. The next time a leak is detected, if the detected leak was smaller than the first detected leak, the original last vertical bar will remain. If another leak is detected, but this leak exceeded the first leak, the last vertical bar of the larger leak will become lighted. If a detected leak lights up all the bars, this is an indication that the sensitivity of the unit should be decreased. To exit the PEAK mode, momentarily depress the PEAK keypad button.

To Change the Volume

The VOLUME keypad button controls the normal and low volumes of “beep” tones and mutes the tones. Each time the VOLUME keypad is depressed, the LCD communicates to the user the state of the volume control. If the normal volume is selected, the LCD will momentarily display 10 vertical bars. If the low volume has been selected, the LCD will momentarily display 5 vertical bars. When MUTE is selected, the LCD will display the MUTE legend. When the unit is in MUTE, only the “beep” tones are muted, the alarms will continue to annunciate at the normal level whenever a leak is detected.

MAINTENANCE

To Install or Replace the Alkaline Batteries

Remove the battery cover as shown in Figure 1 and remove the existing batteries. It may be beneficial to turn the unit vertically and shake out both batteries. Install two D size alkaline batteries with the polarities shown in Figure 1. Re-install the battery cover and secure with the cover screw.

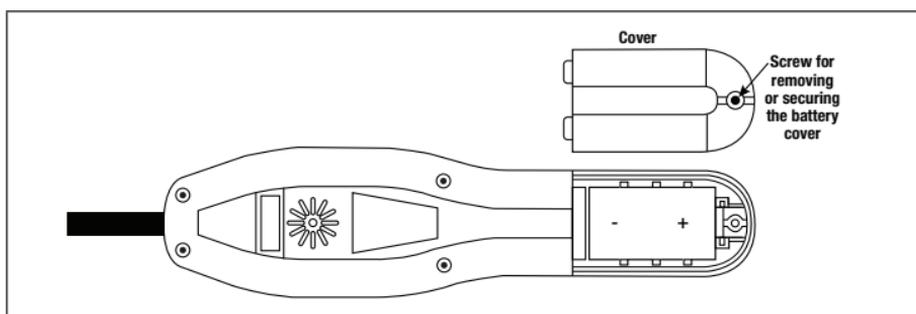


Figure 1

Replacing the Sensor

To replace the sensor, firmly grasp the flexible probe near the end with one hand and use the other hand to unscrew the nozzle portion from the threaded probe tip in a counter-clockwise direction. Next, remove the metal washer, the rubber washer and the sensor in that order. Observe the orientation of the key on the sensor being removed. It would be advisable to replace the filter inside the nozzle at the same time. To remove the microfiltration membrane from inside the nozzle, the assistance of a long thin object such as an o-ring pick or equivalent will be required.

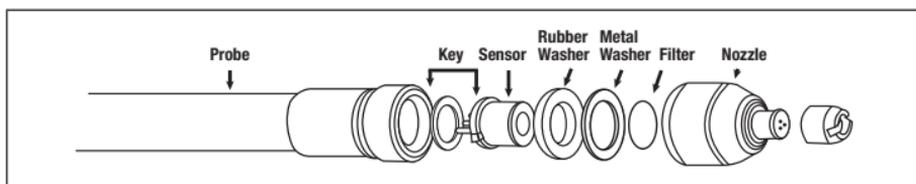


Figure 2

When installing a new sensor, orient the tab key on the sensor with the keys slot on the probe, making certain that the 3 pins of the sensor are inserted into the appropriate pins inside the probe end. Verify that the sensor has been properly inserted into the probe. Next install the rubber washer as shown in Figure 2, followed by the metal washer. Insert new filter and screw on the nozzle while firmly holding the probe end with the other hand. **DO NOT USE ANY TOOLS** in tightening the tip assembly, firmly hand tighten only.

Leak Test Vial

A leak test vial (Figure 3) is provided with each leak detector for the convenience of the user. To use the vial, unscrew the cap and place the sensor near the opening of the vial as shown in Figure 3. Do not remove any material from the Test Vial. At the conclusion of the vial test, replace the cap and tighten firmly.



Figure 3

QUICK START TIPS ON HOW TO FIND LEAKS



A sudden whipping action of the probe or blowing into the sensor may cause the leak detector to false alarm. Electronic sensors are incorporated into the product to detect such activity and to reduce and minimize such false alarm. In the event such interference is detected, the LCD will display a flashing INT (interference) legend momentarily then normal operation can resume after the READY legend appears.

1. When starting the search for leaks, without a general knowledge of the magnitude of the leak, set the instrument sensitivity to LOW. The LOW sensitivity will enable the unit to locate medium as well as large size leaks.
2. Slowly move the probe approximately 3/8 inch (9 mm) above the areas of suspected leaking. Move the probe past the leak to allow the probe to clear if a leak is detected. Do not hold the probe at the site of a leak. Return the probe to the same area where a leak was detected for verification.
3. In the event no leaks were found with a LOW sensitivity setting, increase the sensitivity to MEDIUM and repeat step (2) above.
4. For locating extremely small leaks 0.1 oz/yr (2.8 grams) or less, the HIGH sensitivity scale should be used. Due to the extremely small leak size, the tip of the probe should be moved as close to the surface as possible (without physically touching any object). Physical touching of an object will be detected by the probe sensors resulting in a brief INT (interruption) in the detector.
5. When probing for a leak in a contaminated environment, the sensor will detect the contaminated area and will automatically adjust for the new conditions. The LCD will display CA (contaminated atmosphere) on the screen, after going through the re-calibration process which will take approximately one minute to complete. During the re-calibration process, all vertical bars become lighted and sequence down until all bars are extinguished. At that point, the READY light comes on and the leak detection process can continue.

TROUBLESHOOTING GUIDE

With the exception of batteries and the sensor, the internal parts of the 55800 are not field serviceable. If you experience an issue with the product, refer to the troubleshooting table below.

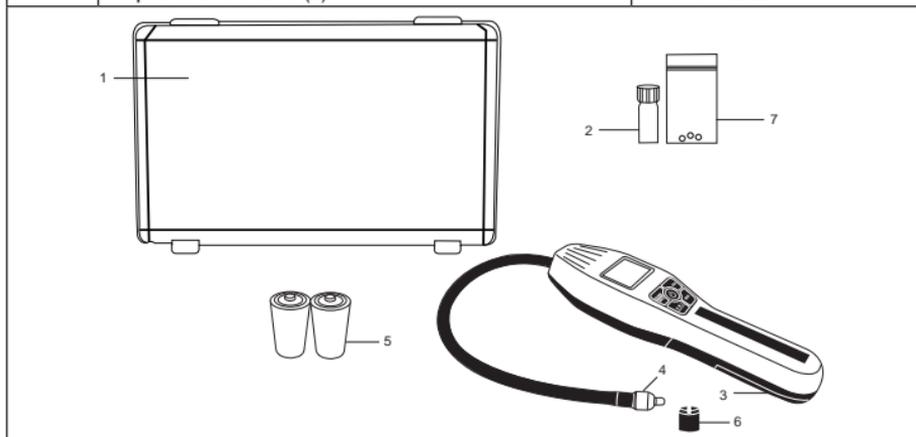
ISSUE	PROBABLE CAUSE	SOLUTION
The unit will not power up	1) Batteries are not installed	Install new batteries. Follow instructions on page 3.
	2) Batteries are installed improperly	Check battery installation polarity on page 3.
The unit powers up briefly then shuts OFF	Batteries are very weak	Install new batteries. Follow instructions on page 3.

The unit alarms continuously without stopping	The area is contaminated or there are contaminants nearby	First reduce the sensitivity of the unit. If the unit still alarms in the lowest sensitivity, turn unit off. Clean the area of contaminants and try again.
E2 Code Appears on LCD	Clogged tip or fan not working	Unscrew probe tip, remove filter from inside with an o-ring pick and blow shop air through the small holes in the tip. Re-assemble probe assy and check unit. If problem continues, return unit to place where purchased.
E8 Code Appears on LCD	Bad Sensor	Replace sensor follow instructions on page 4.*
E9 Code Appears on LCD	Missing Sensor	Replace sensor follow instructions on page 4.*
*Power down the unit and retry power up several times.		

REPLACEMENT PARTS

Replacement parts and accessories for the 55800 Leak Detector are available through the same dealer from whom you purchased the instrument or from Mastercool Inc.

REF. #	DESCRIPTION	MC PART #
1.	Blow Molded Plastic Box	55800-PB
2.	Leak Test Vial	55800-VL
3.	Battery Cover	55800-BATCOV
4.	Sensor	55800-SEN
5.	2 "d" Batteries	55800-BAT2D
6.	Sensor Protector	55100-10042
7.	Replacement Filters (3)	55800-FILTER



WARRANTY AND LIABILITY

Mastercool Inc. warrants your 55800 Refrigerant Leak Detector to be free from defects of material and workmanship for a period of 2 years from the date of purchase. Mastercool Inc. does not warrant items that deteriorate under normal use, including batteries, sensor and filter. In addition, Mastercool Inc. does not warrant this product that shows evidence of misuse. Any evidence of accident, unauthorized repair or alteration shall also void the stated warranty.

Mastercool's liability is limited to the product returned to Mastercool, transportation prepaid, not later than 30 days after the warranty expires and which Mastercool determines to have malfunctioned because of material or workmanship defects. Mastercool's liability is limited as an option to repairing or replacing the defective product or part.

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