

**OPERATION AND SERVICE****TYPE H-10****LEAK DETECTOR****READ BEFORE OPERATING****WARNING****DO NOT USE IN COMBUSTIBLE OR EXPLOSIVE  
ATMOSPHERE**

1. For first use only, remove screw from reference-leak.
2. Plug power cord into any 120-volt, 60-cycle outlet.
3. Warm-up leak detector for one minute.
4. Check air-flow
5. Check sensitivity switch setting.
6. Adjust flashing rate of probe lamp.
7. Check operation of detector at reference leak.
8. Probe for leaks at approximately one inch per second.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

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## SPECIFICATIONS

- Power Supply: GRAY CASE, 110-127 volts, 60Hz, 12 watts.  
BROWN CASE, 220-247 volts, 50/60Hz, 12 watts.
- Sensitivity: 0.5 oz/yr. R-12 on HIGH; 1.0 oz/yr. R-12 on LOW.
- Response Time: Approximately 1 second.
- Reference Leak: R-11 (refillable) approximately 1 yr. life.
- Warm-Up Time: Approximately 1 minute.
- Temperature: Operating range: 0C to 45C; storage 75C maximum.
- Dimensions: 8.5 X 4.50 X 2.60 inches.
- Weight: 2.2 pounds

### **WARNING**

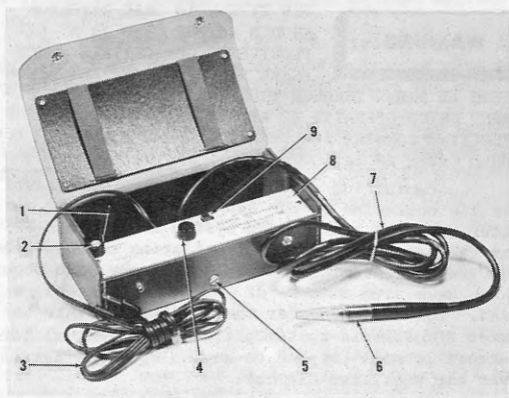
DO NOT USE THIS LEAK DETECTOR IN A COMBUSTIBLE OR EXPLOSIVE ATMOSPHERE.

## DESCRIPTION

The Type H-10 Leak Detector consists of a control unit, probe, 6-foot hose, and a 6-foot power cord housed in a shock resistant vinyl case: gray case for 110-volt unit and brown case for 240-volt unit.

The control unit contains a printed-circuit board amplifier, plug-in sensitive element, air-pump, and power transformer housed beneath a chassis cover. A reference leak, sensitivity switch and a balance control are located on the top of the control chassis. (See Fig. 1.)

The probe, consisting of a nozzle with a transparent tip, air-flow ball, and neon leak-signal lamp is connected to the control chassis by a length of flexible tubing.



1. Refrigerant Liquid-Level Window in Control-Unit Chassis
2. REFERENCE LEAK
3. Power Cord
4. BALANCE Control Knob
5. Chassis Retainer Screw
6. Probe
7. 6-Foot Hose for Probe
8. Control-Unit Chassis
9. SENSITIVITY (LOW-HIGH) Switch

Fig. 1. Leak Detector Components.

The reference leak assembly is a built-in bottle containing a refrigerant gas (R-11) and is calibrated to provide a leak equivalent to approximately 1/2 ounce of refrigerant (R-12) gas per year.

The accessories provided with the leak detector consist of a maintenance kit (filters and airflow balls).

#### APPLICATION

The Type H-10 leak detector was designed primarily for use as a serviceman's tool. Although it can be used for production-line leak checking, it was not designed for this type of service.

Normally the serviceman will use it for leak checking automobile air conditioning, home and/or for commercial air conditioning or refrigeration equipment.

**WARNING**

THE TYPE H-10 LEAK DETECTOR SHOULD NOT BE USED IN AN EXPLOSIVE OR COMBUSTIBLE ATMOSPHERE SINCE THE AMBIENT ATMOSPHERE IS DRAWN THROUGH THE PROBE AND OVER THE ELEMENT WHICH OPERATES AT APPROXIMATELY 1800F. THE RESULTING COMBINATION OF AIR AND GAS MIXTURES COULD CAUSE AN EXPLOSION.

Contamination of the testing area may cause erratic operation of the leak detector. This can occur when the leak in the system is very large and there is little or no ventilation in the testing area. Contamination of an area may also occur where excessive amounts of refrigerant gases are used. The leak detector cannot differentiate between atmospheric contamination and an actual leak, because it will respond to any halogen gas passing over the sensitive element.

A contaminated condition can be greatly reduced by ventilating the area or isolating the leak-check area.

**IMPORTANT:** -- TO PROLONG THE LIFE OF THE SENSITIVE ELEMENT, NEVER PLACE THE PROBE IN A STREAM OF REFRIGERANT AS THIS WILL DRASTICALLY SHORTEN ELEMENT LIFE.

**NOTE:** Variations in the line voltage may cause the same leak detector reactions as mentioned for atmospheric contamination. If this is a problem, a voltage stabilizing device must be used.

**OPERATION**

The condensed operating instructions appear on the front page.

**WARNING**

DO NOT OPERATE IN AN EXPLOSIVE OR COMBUSTIBLE ATMOSPHERE.

To operate the Type H-10 leak detector, proceed as follows:

1. Before using the Type H-10 leak detector for the first time, remove the screw from the cap on the REFERENCE LEAK assembly (2, Fig. 1) and allow 15 minutes for the leak rate to stabilize. This screw is used for shipping only and should not be replaced. Be certain that the leak-reference bottle contains a quantity of refrigerant (R-11). The liquid level can be observed through the window (1, Fig. 1) provided in the chassis. (This bottle

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is filled with enough refrigerant to last approximately 1 year.)

2. Plug the power cord (3, Fig. 1) into a 120-volt, 60-cycle outlet (gray case only); or plug the power cord into a 240-volt, 50/60-cycle outlet (brown case only).

**IMPORTANT:** -- DO NOT ATTEMPT TO OPERATE THE DETECTOR AT VOLTAGES ABOVE OR BELOW THE VALUES GIVEN ON THE RATING PLATE. THE LEAK DETECTOR COULD BE DAMAGED.

3. The leak detector will start to warm up immediately after the power cord is plugged into an outlet.

4. Check for sufficient air-flow by pointing the probe tip toward the floor and observing the air flow ball (in the probe). If the air-flow is correct, the ball will rise and float above the tip of the probe. (See Fig. 2.) The height the ball rises is not important as long as it rises. If the air-flow ball does not rise, tap the probe lightly to make sure the ball isn't sticking. If the ball does not rise at all due to insufficient air-flow, the unit should be forwarded to the nearest General Electric apparatus shop.

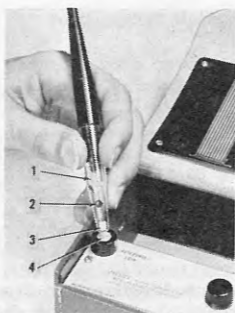
5. Place the SENSITIVITY switch (9, Fig. 1) in either the HIGH or LOW positions.

The LOW range position is used to detect large leaks and is used when the elements are new. The HIGH range position is used to detect small leaks.

After the leak detector has been in use for some time, the response of the element will decrease and it will be necessary to place the SENSITIVITY switch in the HIGH range position for all leak checking. This can be determined by placing the SENSITIVITY switch on the LOW range position and turning the BALANCE control (4, Fig. 1) until the lamp (1, Fig. 2) just ceases to flash; then hold the probe to the REFERENCE LEAK. Observe whether the light can be made to flash. If no flash occurs, or if the flashing rate decreases when the probe is continually held at the REFERENCE LEAK, the SENSITIVITY switch must be placed at the HIGH range position and the unit rebalanced.

NOTE: In a highly contaminated area, the flash rate will not be stable and it will be almost impossible to "balance" the detector. Under these conditions, leak checking would not be possible.

6. The flashing rate of the neon lamp in the probe is adjusted by rotating the BALANCE control



1. Neon Lamp
2. Air-Flow Ball
3. Filter
4. REFERENCE LEAK  
(Screw removed)

Fig. 2. Checking Leak Detector Operation.

(4, Fig. 1) so that the neon lamp just ceases to flash. If adjusted properly, the light will flash and continue to flash when the probe is held at the REFERENCE LEAK. When the probe is removed from the REFERENCE LEAK, the flashing rate will slow down and stop.

NOTE: On some of the Type H-10 leak detectors, the flashing light may not shut off when the sensitivity switch is on the HIGH range position. This is not a defect, but indicates a very sensitive element, in which case the leak detector should be operated in the LOW range position until the element wears in.

7. The REFERENCE LEAK may be used as often as necessary to assure proper operation of the leak detector, or as a comparing means to assist in determining the size of the leak. The response when probing the REFERENCE LEAK is approximately the same as a leak of one-half ounce of refrigerant (R-12) per year. A leak which causes a flashing rate equal to that produced by the REFERENCE LEAK would indicate a leak rate of approximately the same size.

8. Hold the probe as closely as possible to the area being tested and move the tip at one inch per second along seams or joints suspected of leaking. When the probe encounters a leak, the flashing rate of the neon lamp will increase and will continue to flash at the faster rate as long as the probe is held at the leak.

## MAINTENANCE

The Type H-10 leak detector is designed for long life with little or no maintenance. A maintenance kit which contains the necessary replacement parts is supplied with each leak detector.

Instructions for replacing these expendable items are described on the following sections.

### Filter Replacement

To protect the air pump from damage from foreign particles and moisture, replace the filter (3, Fig. 2) often. Once a month with moderate use (15-30) minutes per day) is not too often.

To replace the filter, pick out the old filter with a pin or tweezers. The fine screen will remain in the tip. Insert the new filter in the tip and make sure it is firmly seated against the fine screen.

### Sensitive Element Assembly Replacement

The sensitive-element is a plug-in unit that is to be thrown away when expended. The element will need replacement when the leak detector will no longer respond to the REFERENCE LEAK with the SENSITIVITY switch in the HIGH position. (Make sure the reference-leak assembly contains R-11 refrigerant.)

To replace the plug-in element assembly proceed as follows:

1. Unplug the power cord and remove the screw (5, Fig. 1) holding the chassis to the vinyl case and remove chassis. The element assembly is at the opposite end of the chassis from the REFERENCE LEAK.

2. Make sure the element assembly is cool before attempting its removal.

3. Insert a new element assembly.

4. Replace chassis in vinyl case and secure in place with screw removed in step 1.

### Reference Leak

The refrigerant gas (R-11) contained in the reference leak will last for approximately 1 year under normal operating conditions. To refill the assembly, proceed as follows:

1. Remove the chassis from the vinyl case as described in previous section.

2. Hold the bottle firmly in place and remove cap. (Note: Make sure discs remain in position in the cap.)

3. Remove the bottle and fill with refrigerant (R-11) (approximately 7/8ths full).

NOTE: Refilling the reference leak bottle with (R-11) refrigerant will be easier if done at temperatures below 75F.

4. Replace the bottle in chassis. The rubber O-ring on the bottle holds the bottle assembly in place on the mounting plate. The O-ring should be pulled back on the bottle while the cap is tightened. Tighten cap, making sure discs remain in position in the cap. After the cap has been tightened, push the O-ring up to the mounting plate and seat in the neck of the bottle.

5. Replace chassis into vinyl case and secure in place with screw.

#### TROUBLESHOOTING

If the Type H-10 leak detector performance is not satisfactory, refer to the chart below.

<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>REMEDY</u>
No response to REFERENCE LEAK.	REFERENCE LEAK empty.	Refill REFERENCE LEAK.
	Sensitive element exposed to excessive amounts of refrigerant.	Remove probe to clean atmosphere and allow unit to run several minutes while sensitive element purges itself.
	Water in probe.	Blow clean air into the probe tip for approximately 1 minute (5 psig) or blow (by mouth) as hard as possible into probe tip for one or two minutes.
BALANCE control will not stop probe light from flashing on both sensitivity ranges.	Dirt in element.	Remove sensitive element and blow out with clean air (not over 10 psig) and/or remove dirt with long thin tool.



<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>REMEDY</u>
	Short circuit in the sensitive element.	Remove sensitive element from detector. Using a long thin tool or tweezers, reach through the hole in the cover and center the electrode in the heater coil. If not successful, replace sensitive element assembly.
BALANCE control unit will not stop probe light from flashing on HIGH, but will flash on LOW.	Extra sensitive element.	Use on LOW range until sensitive element ages for a few hours or until balance can be achieved on HIGH range.
Probe lamp can not be made to flash.	Damaged lamp.	Replace probe.

#### SERVICING

Repairs described in the Maintenance section of this Instruction Book should be performed by the user to avoid unnecessary charges. The maintenance can be performed by an Authorized Leak Detector Repair Center, but a charge will be incurred.

When repairs (in or out of warranty) are required, the units should be carried or packed to prevent shipping damage and sent to the nearest Authorized Service Center.

For your convenience, a list of Authorized Service Centers is permanently affixed to the inside flap of the detector case. Overseas users must contact the nearest International General Electric (I.G.E.) office.

All of these centers have an inventory of parts on hand, and all are committed to providing quick and efficient service to you.

Expendable items (sensitive element, air-flow balls, filters, and probe tip) can be obtained from the nearest authorized distributor of General Electric Type H-10 Leak Detectors.

PARTS LIST

The parts listed below are recommended to enable the user of the Type H-10 Leak Detector to make rapid substitution of plug-in, or easily replaced components when troubleshooting.

<u>DESCRIPTION</u>	<u>GE CAT. NO.</u>	<u>REMARKS</u>
Maintenance Kit	4777K45G700	Airflow balls and filters
Plug-in sensitive element	1250K46G700	-----
Reference-leak assembly	1654K42G700	-----
R-11 refill for reference leak	4777K46G700	-----
Probe tip	8511K41G700	Clear plastic

WARRANTY

The Company warrants to the Purchaser that the equipment to be delivered hereunder with the exception of expendable items (sensitive elements, filters, air-flow balls, and probe tip) will be free from defects in material, workmanship and title and will be of the kind and quality designated or described in the contract. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, or implied (including any warranty of merchantability or fitness for purpose). If it appears within one year from the date of shipment by the Company that the equipment delivered hereunder does not meet the warranties specified above and the Purchaser notifies the Company promptly, the Company shall thereupon correct any defect, including non-conformance with the specifications, at its option, either by repairing any defective part or parts or by making available at the Company's plant, a repaired or replacement part. The liability of the Company to the Purchaser (except as to title) arising out of the supplying of the said equipment, or its use, whether on warranty, contract or negligence, shall not in any case exceed the cost of correcting defects in the equipment as herein provided and upon the expiration of said one year, all such liability shall terminate. The foregoing shall constitute the sole remedy of the Purchaser and the sole liability of the Company.

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**INSTRUMENT PRODUCTS DEPARTMENT  
40 FEDERAL STREET  
LYNN, MASS. 01910**