# TIF XP-1A

## Automatic Halogen Leak Detector

## THIS MODEL IS:

## DESIGN CERTIFIED BY MET LABORATORIES, INC. TO MEET SAE J1627 FOR R134a, R12 AND R22.

CLASS 1 DIVISION 2 GROUPS C & D HAZARDOUS LOCATIONS HAND HELD GAS DETECTOR CLASSIFIED BY UNDERWRITERS LABORATORIES, INC.® AS TO FIRE ELECTRICAL SHOCK AND EXPLOSION HAZARDS ONLY. READ OWNERS MANUAL BEFORE OPERATING. CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,DE-ENERGIZE UNIT BEFORE REPLACING SENSING TIP OR SERVICING UNIT, USE ONLY WITH 1.5V ALKALINE BATTERIES, SIZE C.

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## GENERAL INFORMATION

The TIF XP-1A is the culmination of over 30 years of Leak Detector manufacturing experience. TIF is proud to present this tool as the most stable and sensitive negative corona leak detector ever made. We have incorporated all of our experience, and years of customer feedback into this product, in the hope of providing our valued customers with the best of everything; price, performance and reliability.

An advanced microprocessor is the heart of this unit. Its Digital Signal Processing permits better management of the circuitry and sensing tip signal than ever before possible. Additionally, the number of components used in the circuit is reduced nearly 40%, increasing reliability and performance. The microprocessor monitors the sensing tip and battery voltage levels 4000 times per second, compensating for even the most minor fluctuations in signal. This translates into a stable and dependable tool in almost any environment.

Convenience features have been added to enhance the usability of the XP-1A. Seven levels of sensitivity provide an increase of 64 times from level 1 to level 7. Unique Tri-Color LED's show a progressive and wide ranging leak size indication, communicate the sensitivity level, and provide a true voltage indication of battery power level. A tactile keypad controls all functions of operation. A revolutionary new case design gives the user grip and control, and places the visual indicators in direct sight during use.

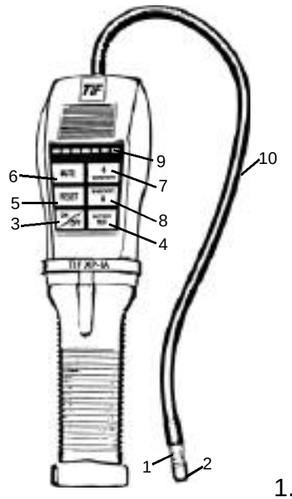
Please take a few moments to read through the following pages, in order to understand and benefit from all the capabilities of your new XP-1A. We trust that you will be 100% satisfied with your new purchase. If you have any questions or comments after reviewing the manual, please feel free to contact us in the USA, toll free at 1 800 327 5060 from 8AM to 5PM EST.

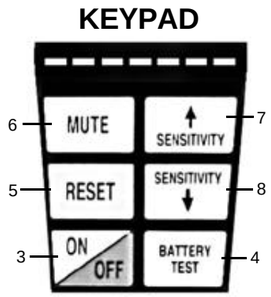
## FEATURES

- Microprocessor control, with Advanced Digital Signal Processing
- Tricolor visual display
- Seven (7) levels of sensitivity provide an increase of up to 64x
- Tactile Keypad controls
- Real time sensitivity adjustment
- Battery Test function
- Battery voltage indication
- Certified to SAE J1627 for R134a, R12, R22
- Detects ALL Halogenated Refrigerants
- True mechanical pumping provides positive airflow through sensing tip
- Mute feature included
- Cordless and Portable, operates on 2 "C"-cell batteries
- Carrying case included
- 14" (35.5cm) flexible, stainless probe
- Optional Carrying Holster
- Optional Reference Leak Source
- Three Year Warranty



## PARTS & CONTROLS




1. Sensing Tip
2. Tip Protector
3. Power On/OFF
4. Battery Test
5. Reset Button
6. Audio Mute
7. Sensitivity Up
8. Sensitivity Down
9. LED Leak Indicators
10. Flexible Probe

Español
1. Punta sensora
2. Protector de la punta
3. Encendido/Apagado
4. Prueba de energía de las baterías
5. Botón de reajuste
6. Audio silencioso
7. Más sensibilidad
8. Menos sensibilidad
9. Indicadores LED de fuga
10. Sonda flexible

Français
1. Tête de détection
2. Protecteur de la tête
3. Interrupteur On/Off (Marche/Arrêt)
4. Épreuve de tension de la pile
5. Bouton de remise à zéro
6. Interrupteur audio
7. Augmentation de la sensibilité
8. Diminution de la sensbilité
9. Indicateurs de fuite DEL
10. Sonde flexible

Deutsch
1. Sondenspitze
2. Schutzkappe
3. Strom Ein / Aus
4. Batteriespannungstest
5. Rücksetztaste
6. Stummtaste
7. Empfindlichkeit größer
8. Empfindlichkeit niedriger
9. LED-Leckanzeigen
10. Flexsonde



## GETTING STARTED

### Installing Batteries

1. Remove the battery compartment door located on the bottom of the instrument by sliding up, as shown below. Install batteries, Positive Polarity outwards (towards battery door). (See figure 2).

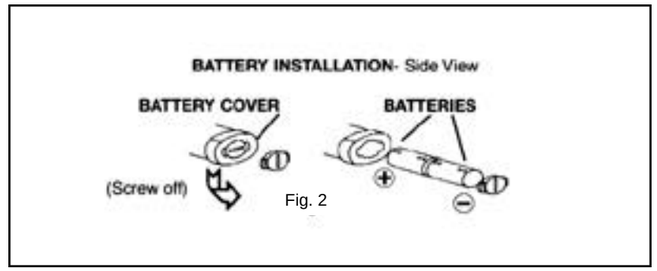



Fig. 2

## OPERATING FEATURES

### Power Indication/Battery Test

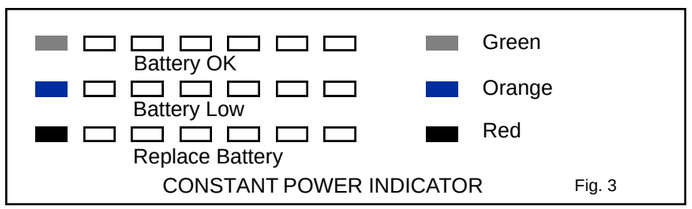
The TIF XP-1A provides two indications of battery voltage status; a Constant Power indicator (leftmost LED) and a Battery Test function.

The Constant Power indicator allows the user to see the battery level at all times. The LED will remain on whenever the unit is powered on. It may appear as one of three colors (See Fig 3):

**GREEN** - Battery voltage is normal, sufficient for proper operation.

**ORANGE** - Battery voltage is approaching the lower threshold for operation, replace as soon as possible.

**RED** - Battery voltage is below acceptable operating level.




CONSTANT POWER INDICATOR Fig. 3

## OPERATING FEATURES

- Battery Test Function. This feature is activated by pressing the Battery Test key. When pressed, the LED's will display a three color bargraph indication of true battery voltage (See Fig. 4). The LED's correspond to voltage as shown in the figure.

  Not all LEDs will always be on; the number of LEDs on, indicate the voltage level.

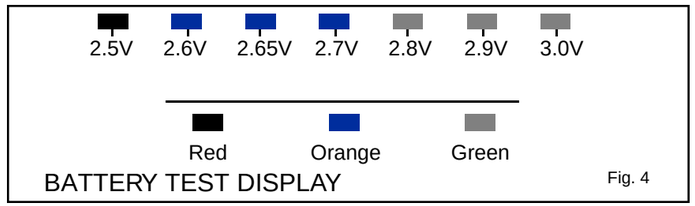



Fig. 4

The battery voltage display will remain as long as the BATTERY TEST key is depressed. Release the BATTERY TEST key to return to normal operation. This function may be activated at any time during operation, and does not interrupt alarm signals.

### Automatic Circuit/Reset Feature

The TIF XP-1A features an Automatic circuit and a Reset function key that set the unit to ignore ambient concentrations of refrigerant.

- AUTOMATIC CIRCUIT - Upon initial power on, the unit automatically sets itself to ignore the level of refrigerant present at the tip. Only a level, or concentration, greater than this will cause an alarm. CAUTION: Be aware that this feature will cause the unit to ignore any refrigerant present at turn on. In other words, with the unit off, if you place the tip up to a known leak and switch the unit on, no leak will be indicated!
- RESET FEATURE - Pressing the RESET key during operation performs a similar function. When the RESET key is pressed it programs the circuit to ignore the level of refrigerant present at the tip. This allows the user to 'home-in' on the source of the leak (higher concentration). Similarly, the unit can be moved to fresh air and reset for maximum sensitivity. Resetting the unit with no refrigerant present (fresh air) causes any level above zero to be detected. Whenever the unit is reset, the LED's (except the leftmost power indicator) will turn Orange for 1 second. This provides a visual confirmation of the reset action.

### Sensitivity Adjustment

The TIF XP-1A provides seven levels of sensitivity. The sensitivity level is indicated on the visual display when either the SENSITIVITY a OR SENSITIVITY b keys are pressed. The base beeping tone is also an indication of sensitivity level.



## OPERATING FEATURES

When the unit is switched on, it is set to sensitivity level 5.

1. To adjust the sensitivity, press the SENSITIVITY a or SENSITIVITY b key. When the key is pressed, the visual display will show the LED's red. The number of LED's lit, indicates the level (See Fig 5). Level one (lowest sensitivity) is shown by the leftmost LED. Counting from left, levels 2 through 7 are indicated by the corresponding number of red LED's; i.e. level 7 is shown by all LED's lit.
2. Pressing the SENSITIVITY a or SENSITIVITY b key will change the sensitivity. The keys can be pressed intermittently to change levels one at a time, or held down to move quickly through the levels.
3. Each time the level is increased (or decreased) the relative sensitivity is doubled (or halved). In other words, level 2 is twice as sensitive as level 1, level 3, 4 times as sensitive, etc… This allows sensitivity to be increased as much as 64 times!

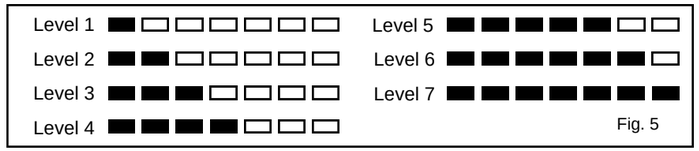



Fig. 5

### Alarm Indications

The XP-1A features 18 alarm levels. This permits a clear indication of relative leak size and strength. The progressive indicators can be used to home-in on a leak; as the increasing alarm levels indicate that the source (highest concentration) is being approached. Each level is indicated by additional LED's in one of three colors, Green, Orange or Red (See Fig 6).

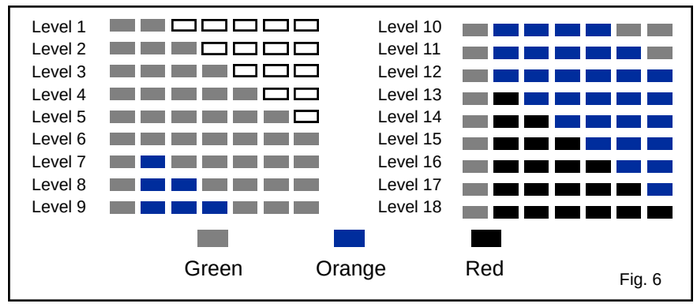



Fig. 6

At first the display will light Green, from left to right. Then, the LED's will light Orange, from left to right, replacing the Green one at a time. Finally, the LED's will light Red, from left to right, replacing the Orange, one at a time.



## OPERATING INSTRUCTIONS

### OPERATION:

1. Switch the unit on by pressing the ON/OFF key. The display will illuminate with the reset indication (Left LED green, all others Orange) for 2 seconds.
2. Verify the battery level by observing the constant power indicator (see above).
3. Upon turn on, the unit is set to sensitivity level 5. A rapid, but steady beep rate will be heard. If desired, the sensitivity can be adjusted by pressing the SENSITIVITY a or SENSITIVITY b key, as described above.
4. Begin searching for leaks. When refrigerant is detected, the audible tone will change to a 'siren' type sound, distinctly different from the base beep rate. Additionally, the visual indicators will light progressively as described in the Alarm Indications section.
5. Sensitivity can be adjusted at any time during operation by using the SENSITIVITY a or SENSITIVITY b key. This adjustment will not interrupt detection.
6. If a full alarm occurs before the leak is pinpointed, press the RESET key to reset the circuit to a zero reference as described above.

## OPERATING TIPS

The following section includes several general operating tips, and the SAE J1628 recommended procedure for leak detection.

1. Adjust the sensitivity up, only when a leak cannot be found. Adjust the sensitivity down only when resetting the unit does not allow you to 'home in' on the leak.
2. In areas that are heavily contaminated with gas, the unit may be reset to block out ambient concentrations of gas. The probe should not be moved while the unit is being reset. The unit can be reset as many times as needed.
3. In windy areas, even a large leak can be difficult ot find. Under these conditions, it is best to shield the potential leak area.
4. Be aware that the detector may alarm if the sensing tip comes in contact with moisture and/or solvents. Therefore, avoid contact with these when leak checking.

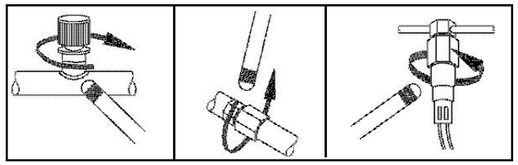
### SAE J1628 Recommended Procedure

NOTE: On Automotive A/C Systems leak 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 340 kPa (50 psi) when not in operation. At temperatures below 15° C (59° F), leaks may not be measurable, since this pressure may not be reached.

## OPERATING TIPS

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-downs 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 (see fig. 7). Any increase in beep rate is indicative of a leak.



6. An apparent leak shall be verified at least once as follows:
   a) Blow shop air into the area of the suspected leak, if necessary, and repeat 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.

   b) First move the probe to fresh air and reset. Then hold the probe tip a close as possible to the indicated leak source and slowly move around it until the leak is confirmed.

Automotive A/C Systems only -

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 10 minutes.

After such time, 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.



## OPERATING TIPS

All Systems -

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.

## APPLICATIONS

The XP-1A Leak Detector may also be used to:

- Detect leaks in other systems and storage/recovery containers. It will respond to ALL halogenated (contains Chlorine or Fluorine) refrigerants. This includes, but is not limited to:
  CFCs e.g. R12,R11,R500,R503 etc...
  HCFCs e.g. R22,R123,R124,R502 etc...
  HFCs e.g. R134a, R404a, R125 etc...
  Blends such as AZ-50, HP62, MP39 etc...
- Detect Ethylene Oxide gas leaks in hospital sterilizing equipment (it will detect the halogenated carrier gas)
- Detect SF-6 in high voltage circuit breakers
- Detect most gases that contain Chlorine, Fluorine and Bromine (halogen gases)
- Detect cleaning agents used in dry cleaning applications such as perchloroethylene
- Detect Halon gases in fire extinguishing systems

## MAINTENANCE

Proper maintenance of your Leak Detector is very important. Carefully following the instructions, outlined below, will reduce performance problems and increase the life expectancy of the unit.

**WARNING:** TURN UNIT OFF BEFORE REPLACING THE SENSING TIP. FAILURE TO DO SO MAY RESULT IN A MILD ELECTRICAL SHOCK!

Keep the sensing tip clean: Prevent dust, moisture and grease build-up by utilizing the provided tip protector. Never use the unit without the protector in place.

Before using the unit always inspect the tip and protector to see that they are free of dirt and/or grease. To clean:

1. Remove protector by grasping and pulling off tip.

2. Clean protector with shop towel and/or compressed air.



## MAINTENANCE

3. If the tip itself is dirty it can be cleaned by immersing in a mild solvent, such as alcohol, for a few seconds, and then using compressed air and/or a shop towel to clean.

**NOTE:** Never use solvents such as gasoline, turpentine, mineral spirits, etc... as these will leave a detectable residue and desensitize your unit.

**Sensing tip replacement:** The tip will eventually wear out and require replacement. It is difficult to predict exactly when this will occur since tip longevity is directly related to the conditions and frequency of use. The tip should be replaced whenever the alarm sounds or becomes erratic, in a clean, pure, air environment.

To replace the tip:

1. Make sure the unit is OFF.

2. Remove the old tip by unscrewing counter-clockwise.

3. Use the supplied replacement tip, located in the carrying case. Replace by screwing on clockwise.

## REPLACEMENT PARTS

**Standard Equipment**

Your Halogen Leak Detector comes equipped with one Carrying Case, one Owner's Manual, 2 "C" cell batteries and one replacement Sensing Tip and Protector.

To purchase replacement parts for your leak detector please contact your local distributor. To ensure that you obtain the correct parts it is best to reference the part number when placing your order.

### Replacement Parts :

| | |
|---|---|
| **TIFXP-2** | Maintenance Kit (3 Sensing Tips & 3 TIp Protectors) |
| **TIFXP-4A** | Blow Molded Carrying Case |
| **TIF5201** | Leak Source |

## SPECIFICATIONS

| | |
|---|---|
| **Power Supply:** | 3V DC; two “C” cell Alkaline batteries |
| **Maximum Sensitivity:** | Per SAE J1627 Rating Criteria; Certified for R12, R22 and R134a @ 0.5 oz/yr. (14gr/yr) |
| **Ultimate sensitivity:** | less than 0.1 oz/yr (3 gr/yr) for all Halogen based refrigerants. |
| **Sensing Tip Life:** | Approx. 20 hours |
| **Operating Temperature:** | 30° to 125° F (0°to 52° C) |
| **Battery Life:** | Approximately 30 hours normal use |
| **Duty Cycle:** | Continuous, no limitation |
| **Response Time**: | Instantaneous |
| **Reset Time:** | One second |
| **Warm-Up Time:** | Approximately 2 Seconds |
| **Unit Weight:** | 1.2 lbs (560 grams) |
| **Unit Dimensions:** | 9" x 2.5" x 2.5" (22.9 cm x 6.5cm x 6.5cm) |
| **Fixed Probe Length:** | 14" (35.5 cm) |

## WARRANTY

This instrument has been designed and manufactured to provide unlimited service. Should the unit be inoperative, after performing the recommended maintenance, a no-charge repair or replacement will be made to the original purchaser if the claim is made within three years from the date of purchase. This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use. This warranty does not cover batteries, sensing tips, tip protectors, or any other materials that wear out during normal operation of the instrument.

Before returning your instrument for repair please make sure that you have carefully reviewed the Unit Maintenance section of this manual to determine if the problem can be easily fixed. Make sure that you have either replaced or cleaned the sensing tip and tip protector and that the batteries are working properly BEFORE returning the unit. If the instrument still fails to work properly send the unit to the repair facility address on the back cover of this manual. Repaired or replaced tools will carry an additional 90 day warranty. For more information please call (800) 327-5060.