

Snap-on.

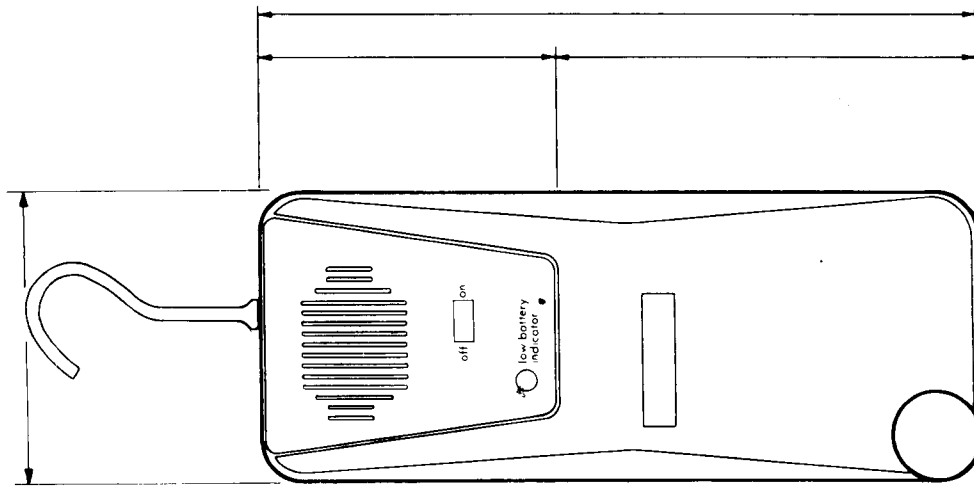
ACT 4000

Electronic Sight Glass

OWNER'S MANUAL

Automobile/Truck

Air Conditioning Applications



Warning:

This instrument should be used by competent personnel who are familiar with, and follow good work and safety practices for air conditioning repair. Serious injury can result to personnel if the high side pressure becomes excessive due to mechanical defect. This instrument is not for use on defective systems.

Description:

The ACT 4000 is a portable battery operated electronic sight glass.

It detects the presence of bubbles in the liquid line. This instrument operates on the **sonar** principle. Two sensors are used, one for transmitting and one for receiving. These sensors are in the form of C-clamps for ready attachment to the outside of any **metallic** refrigeration tubing. No mechanical penetration of the tubing is necessary for the ultrasonic waves to pass through the outer walls of the tubing.

The ACT 4000 can be used on expansion valve, or orifice tube systems. Until now there has never been an accurate method for determining the level of the

charge, or introducing a partial charge to the newer air conditioning systems. Some manufacturers advocate dumping the charge completely and then refilling with the amount of refrigerant specified on the nameplate. However, this method is not only time consuming and expensive, but it unnecessarily contaminates the environment.

Operating Procedure:

The C-clamps should be connected to the liquid line near the expansion valve or orifice tube. The sensors must be on the condenser side of the expansion valve or orifice tube, not on the evaporator side. The clamps should be tight enough to keep from moving, but not so tight that they cause damage to the tube. The C-clamps should be approximately 1 to 3 inches apart. **They Should Not Touch Each Other!!!**

How to test for proper Refrigerant Charge:

1. Attach your Manifold gauge set to the system.
2. Attach the electronic sight glass sensor to the liquid line on the condenser side of the expansion valve or orifice tube and turn on the instrument.
3. Set the idle speed at 900-1000 RPM and turn on the A/C system and wait 5 minutes.
4. Spray the condenser with a mist of water continuously before checking or charging the system. A high volume shop fan can also be used to cool the condenser. See the following **Note On Condenser Cooling**.
5. What the instrument detects is the presence of bubbles in the liquid line. If there are no bubbles, the tester will beep every two seconds. No bubbles means the line is completely full of gas, completely full of liquid, or completely empty. Since the ACT 4000 cannot distinguish between an A/C system that is completely full or completely empty, it is essential that you connect manifold gauges to the car's system. The gauges still require regular monitoring while the system is being charged. The

Electronic Sight Glass is not a substitute for the gauges.

The other type of signal is an erratic beep or ringing. If this signal is received, there are bubbles in the liquid line, which is an indication of a low refrigerant charge.

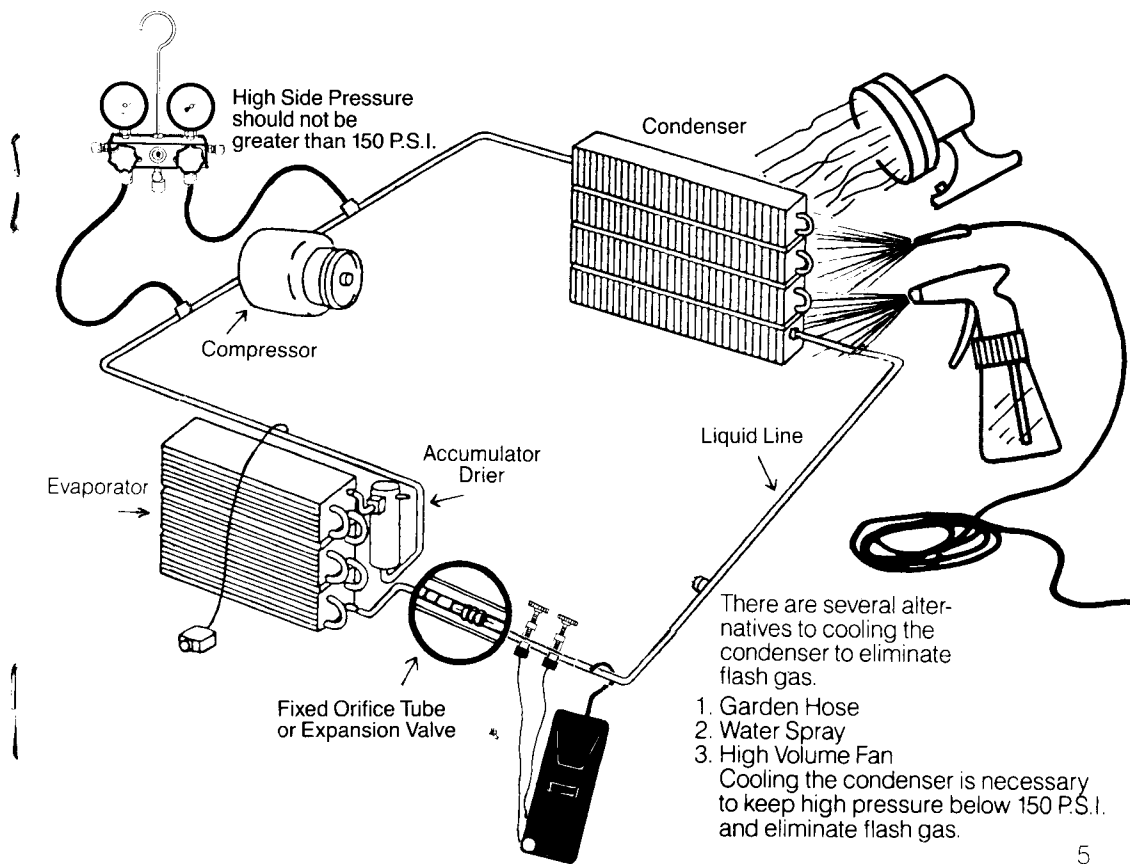
Note On Condenser Cooling: During testing, the car is stationary (at rest). The air conditioning system does not operate efficiently when the car or truck is stationary. In a moving car, the motion of the air over the condenser cools and condenses the hot gas to form a high pressure liquid. In a stationary car, this air movement is missing. This can cause Flash Gas in the system. The ACT 4000 will pick up this Flash Gas and will signal with an erratic beep-ing. This will indicate a system which is in need of charging, when in fact it is at the correct charge. One way to eliminate Flash Gas (especially on GM cars, or any car with an orifice tube system) is to spray the condenser with water, or set up a high volume shop fan in front of the car. This will eliminate flash gas and will help keep the condensing pressure at approximately 150 p.s.i.

How To Add Refrigerant:

1. Attach your Manifold gauge set to the system.
2. Attach the electronic sight glass sensors to the liquid line on the condenser side of the expansion valve or orifice tube and turn on the instrument.
3. Set the idle speed at 900-1000 RPM and turn on the A/C system and wait 5 minutes.
4. Spray the condenser with water continuously before checking or charging the system. (See the previous **Note On Condenser Cooling.**)

5. Add refrigerant slowly (i.e. 1/4 pounds per 5 minutes) until ringing ceases and is replaced by a steady beep every two seconds. Since the ACT 4000 cannot distinguish between an A/C system that is completely full or completely empty, it is essential that you connect manifold gauges to the car's system. The Electronic Sight Glass is not a substitute for the gauges.

If the compressor is cycling rapidly, add refrigerant until the rapid cycling stops, then add refrigerant slowly until ringing ceases and the tester emits a steady beep every two seconds. The system is now properly filled. **Note:** Up to a half of a pound of refrigerant can be added as a reserve.



Repair And Replacement

This instrument is designed and produced to provide unlimited service. Should the unit be inoperative 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 instruments which have not been tampered with or damaged. This claim must be made within one year from the date of purchase. For repair of your instrument, see your supplier. Before sending the ACT 4000 in for service, please check the following.

1. Are the Batteries discharged? If they are, the "Low Battery" indicator light on the front of the tester will be illuminated. Replace if necessary.
2. Are the C-clamps attached to the condenser side of the expansion valve or orifice tube, approximately 1 to 3 inches

apart? **Note:** The C-clamps must be attached to a metal tube. The clamps will not work on rubber or plastic.

3. Are the C-clamps working properly? There is an aluminum bar located on the lower left-hand side of the tester. Connect the clamps to the aluminum bar and turn the tester on. If the unit is working properly, the ACT 4000 will beep once every two seconds. In the event of damage to a cable sensor, please follow the following instructions for removal.
 1. Remove battery cover and observe placement of wires.
 2. Lift cable-strain-relief out of slot in case.
 3. Separate the white connector, (take care not to break any wires).
 4. Ship cables with sensors to your supplier.

When new cables and sensors arrive, replace in the reverse order.

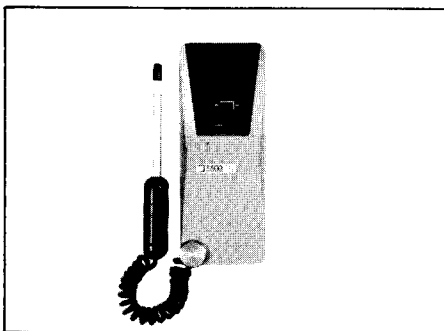
Replacement Parts

Service Hook	4001
Matched Set of "C"	
Shaped Sensors	4004
Carrying Case	4007

Specifications

Weight: 14 ounces
(392 grams) with battery
Dimensions: 8" x 3" x 1.8"
(20.32cm x 7.62cm x 4.6cm)
Sensor cord length: 42 inches
maximum
Warm-up time: Instantaneous
Response time: 4 seconds initially
Power supply: One 9-volt
transistor battery
Battery life: 30 Hours of continuous
operation
Operating temperature:
32°F to 115°F
Patents: #4,138,879
#4,235,095
#2,029,502

Other Snap-On Products

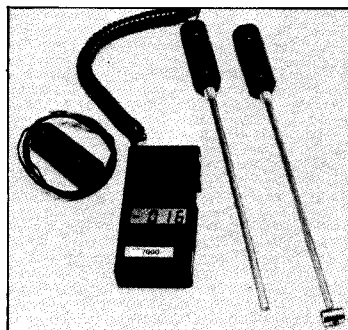


One step ahead of it's time, the ACT 5500 pump-style Automatic Halogen Leak Detector. The magic wand detaches from the instrument while the instrument is strapped to your belt or hand-held. Super, super-sensitivity and the magic wand lets the 5500 detect leaks where other leak detectors simply can't. Our newest leak detector and we're proud of the world's first battery powered pump.

Ask for a ACT 5500

U.S. Patents #3,742,475 4,281,521

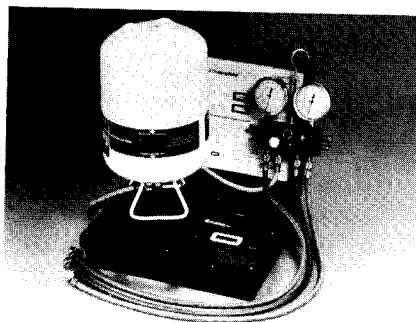
8



Digital/Thermometer/Pyrometer with 3 Super-fast Probes. The

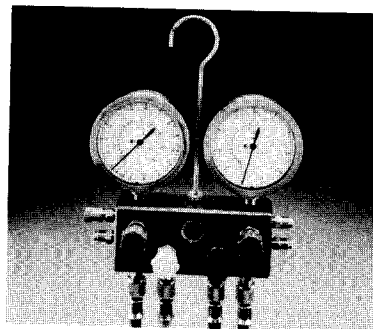
ACT 7000 combines the accurate measurements of a thermometer with the wide range of a pyrometer. Quickly check and compare temperatures of air vents, cylinder blocks/exhaust manifolds, wheel bearings, carburetors, radiators, and more. Comes in plastic case with Air, Surface, and Liquid temperature probes.

Ask for the new ACT 7000



It's the ACT 9000 Electronic Charging Meter. For use when charging AC&R systems, the ACT 9000 reads like a gasoline pump for all refrigerants. The digital readout lets you measure in the correct amount (in lbs. & ounces) for a measured charge. The ACT 9000 is portable, battery operated with a platform capable of holding a 30 lb. refrigerant cylinder.

Ask for the ACT 9000



ACT 9600 Heavy Duty Glycerine-filled 4-Way Manifold Gauge Set. The ACT 9600 is the Cadillac of Manifold Gauges. Simply hook the gauges up and see how easy they are to work with. Accuracy and dependability are what make the ACT 9600 the best available. Glycerine-filled gauges eliminate any vibration while compressor is running. Hermetic Sight Glass for visual charging.

Ask for the new ACT 9600

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