

Air Conditioning Leak Tests

It may not be long until the cost of R-12 is higher than the ozone layer it destroys. So a so-called "slow" leak in an air conditioning system is no longer the insignificant matter it was when refrigerant cost a buck a can, and you weren't afraid to get a suntan.

This **Tools and Techniques** will show you how to improve your odds when testing for a "small" leak. We'll also show you a method for finding a leak in a fully discharged system without recharging the system with a pound or two of precious refrigerant.

Please exercise caution when performing any tests on an A/C system. Wear eye and skin protection. Connect your gauges, and keep a watchful eye on system pressures to avoid a bad case of Big Bang syndrome. This is especially important if you disconnect a condenser fan or block off a condenser during the tests.

Thanks to TIF Instruments for technical support and the use of their test equipment in the preparation of this article.

TIF Instruments Circle No. 200

A/C Leak Tests



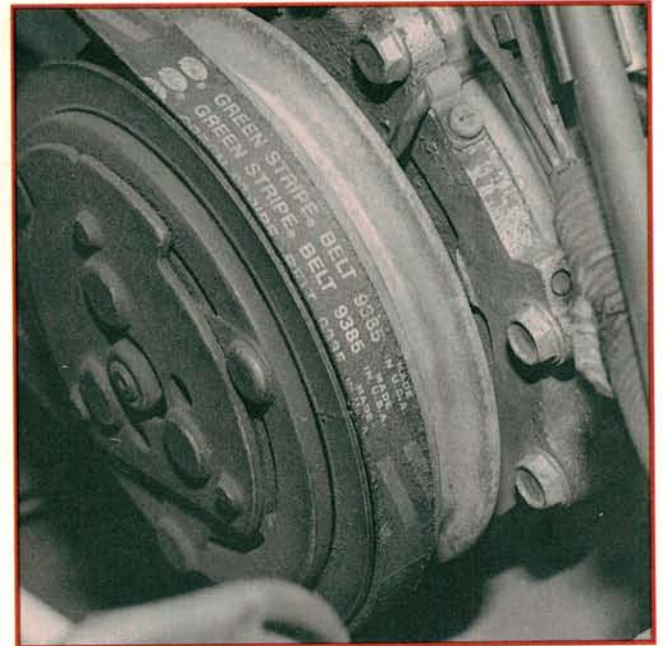
1 Summer sun and a gentle breeze may draw you outdoors at the first possible opportunity. But that friendly breeze can blow away the refrigerant concentration coming from a leak to a point where the tester can't detect it. For best results, test for leaks in a still, draft-free area.



2 Automotive refrigerants are heavier than air, so chasing along the top of a hose with your tester may be a waste of time and energy. Check along the underside of a suspect hose. Use the same approach when testing at seals and fittings. Point your tester's sniffer at the base of any seals or fittings.



3 Leaks in the evaporator can be tough to find. Don't insert your tester into the discharge vents with the A/C running. The rush of air may give you a false reading. Instead, check at the evaporator hose. Remember, the refrigerant settles, and the hose outlet is the lowest point in the system.



4 Compressor shaft seals can be the toughest of all. Some will leak only when the compressor is turning. Others will leak down slowly after the compressor shuts off. If necessary, disconnect the condenser fan during the test to settle the air flowing past the area near the seal.

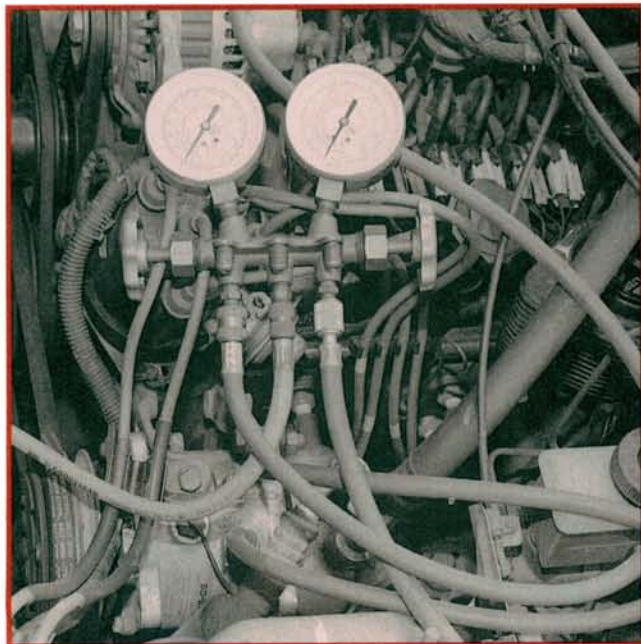
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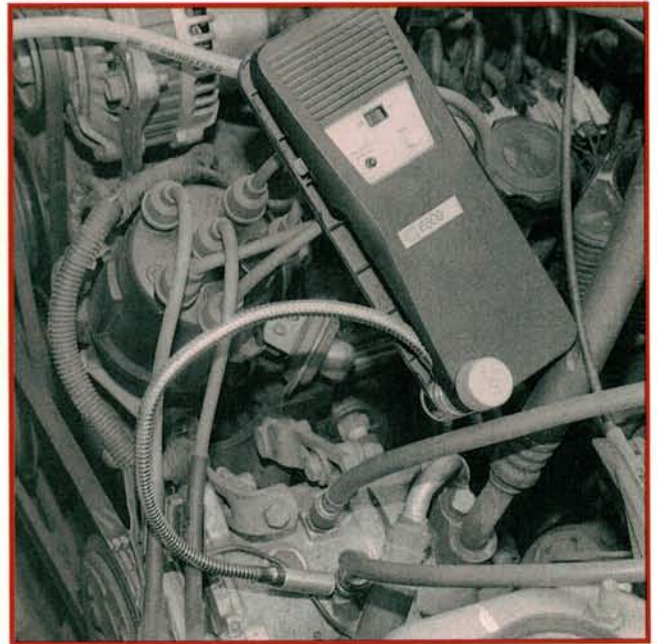
5 If you still can't find the leak, temporarily block the air flow through the condenser. This will cause pressure to rise, increasing the flow of R-12 at the leak. Watch the manifold gauges and the engine temp gauge during this test. Don't let high side pressure go above 300 PSI, or allow the engine to overheat.



6 The plug in this receiver drier is supposed to pop off when high side pressure gets too high. Some plugs leak, even though high side pressure stays within acceptable limits. The refrigerant oil on this drier is a clue that it's leaking. But please check the high side pressure, just to be sure.



7 You hook up your gauges but the needles don't move. The system is empty. In the old days, you just sent a blast of R-12 into the system and listened for a hiss, or charged the system and leak tested. A tank of nitrogen and an ultrasound leak detector are one possible alternative.



8 Pressurize the system with nitrogen (available from a welding supply). Unlike shop air, nitrogen won't add moisture to the system. Use the ultrasound leak detector as you would to find a vacuum leak and "listen" for the escaping nitrogen. (Most of our atmosphere is nitrogen, so it won't hurt the environment.)