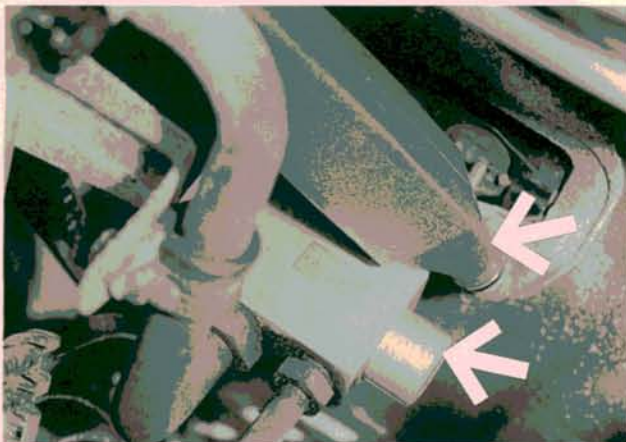


Winning Tech Tip entries have been selected by the editors of *Import Service* as well as the technical staff at NAPA Echlin. Winning entrants will each receive \$100.00 from NAPA Echlin. Each winner's NAPA jobber will also receive a \$100.00 prize.

In addition to the \$100.00 monthly prizes, NAPA Echlin will award an all expense paid trip for two to the 1992 Indy 500 to the Tech Tip winner who submits the best tip for 1991. The runner-up will receive a check for \$2500.00, also courtesy of NAPA Echlin.

So tear out those Tech Tip cards and start mailing us your Tech Tips. We'll print the best ones each month. Everyone will benefit from the shared information, whether you win or not.

VOLKSWAGEN A/C OPERATION



Sticking expansion valves can cause poor A/C cooling on 1985-89 Volkswagen Golf and Jetta models. Use the following procedure to diagnose the operation of the expansion valve:

- Attach your A/C manifold gauges to the A/C system test ports.
- Start the engine, turn on the A/C, and set the fan speed on high. Hold the engine speed at 2000 RPM.
- Place an electric engraving tool (upper arrow) against the top of the expansion valve (lower arrow) while watching the low side pressure gauge reading.
- If the low side pressure fluctuates as the engraver vibrates the expansion valve, the valve is sticking and should be replaced.
- If the pressure gauge reading remains the same, look elsewhere for the source of your problem.

We have used this method on many vehicles with great success. Never use a hammer instead of the engraving tool to tap the expansion valve. This could damage the evaporator core lines and create a leak. Also, the hammer can't duplicate the engraver's vibrating frequency.

Mike Siedlak
Volkswagen of America
Madison Heights, Michigan

HALL EFFECT IGNITION TESTING

An electronic "logic pulser" can be used to diagnose the operation of Bosch Hall Effect ignition systems. The logic pulser is designed for use in electronics repair and can send a continuous or single square wave signal through electronic circuits. Use the following procedure to diagnose a no spark condition on a Hall Effect ignition system using a logic pulser:

- Locate and remove the three terminal connector at the distributor Hall sender.
- Using a wiring diagram and a DVOM, check the circuits leading to the Hall sender connector. There are three terminals to check. The two outer terminals are usually ground and battery positive, respectively. Use the DVOM to check these circuits.
- The center terminal usually carries the signal from the Hall sender to the ignition control unit. Power up the logic pulser, then carefully insert its probe into the center terminal.
- Attach a spark tester to the distributor cap end of the coil wire.
- Turn the ignition on, switch the logic pulser to continuous mode, then press its pulse button. The logic pulser's square wave pulses take the place of the Hall sender signals to the ignition control unit.
- If you now have a steady spark from the spark tester, the distributor Hall sender is defective.
- If there's still no spark, the problem is further upstream. You'll need to test the ignition control unit, ignition coil, wiring, and idle stabilizer (if equipped).

Charles Lupo
Import Service Center
Cleveland, Tennessee

APPRENTICE TRAINING

Looking for a way to train your apprentices and make a few bucks in the process? When we run out of things for our apprentice technicians to do, we put them to work disassembling scrap engines, transmissions, and other discarded components. Then we have them separate the pieces into different types of metal (copper, brass, aluminum, cast iron, etc.).

When we have a few hundred pounds of sorted scrap metal saved up, we take it to the local recycler and turn it in for cash. We don't make a lot of money with our recycling program. The important thing is that it gives the apprentices some valuable hands-on experience. It lets them learn how different components fit together without risking damage to new parts on customers' cars.

D.P. Letteer
Letteer's
Thomson, Georgia

COOLING SYSTEM LEAK TESTER

A portable compressed air storage tank can be modified for use as a cooling system leak tester. To make the leak tester, you'll need the tank, a 0-20 PSI pressure gauge and air regulator, a length of 1/4-inch hose, and an air fitting to fill the tank with compressed air.

After filling the tank with air, attach the free end of the 1/4-inch hose to the overflow fitting on the radiator neck. Make sure the radiator cap is securely installed, then adjust the tank pressure regulator to about 15 PSI and start looking for coolant leaks.

The storage tank works well on very small leaks because it will hold enough compressed air to keep the cooling system pressurized for long periods. There's no need to repressurize the system, as is necessary with hand operated cooling system pressure testers. The cooling system should stay pressurized for as long as necessary to find the source of your coolant leak.

John Critchlow
Coastal Acura
Costa Mesa, California

CYLINDER LEAKAGE TEST

An exhaust gas analyzer can be used to test cylinder block sealing integrity. Here's how:

- Bring the engine to operating temperature and keep it running at curb idle.
- Remove the PCV valve, then install the exhaust gas analyzer's pickup tube in its place.
- The analyzer HC reading will probably go off the scale. Recalibrate the analyzer to obtain a base reading. The actual base number is unimportant, as long as it's within the analyzer's range.
- Disable the ignition to one cylinder at a time, noting the increase in the analyzer's HC reading.
- The HC reading should increase by a nearly equal amount as each cylinder is disabled. For example, if your base HC reading was 400 PPM, the analyzer reading may increase by approximately 50 PPM after the ignition is disabled.
- If the HC increase at one cylinder is much greater than the others, suspect a loose piston, stuck piston rings, or cylinder scoring.
- While the ignition is disabled, unburned fuel slips past these worn parts and into the crankcase. From there it's picked up by the exhaust analyzer probe at the PCV fitting.
- Caution: This test also dumps unburned fuel into the exhaust. To prevent catalytic converter damage, give the converter a chance to cool down by shutting the engine off for a few minutes after testing each cylinder.

Skip Burroughs
Mastercraft
Amarillo, Texas