

TECH TIPS

Winning Tech Tips have been selected by the editors of *Import Service* and the CARQUEST technical staff. Winning entrants will receive \$100 and a special jacket from CARQUEST.

A cash prize of \$2,500 and three months of CARQUEST Tech-Net service will be awarded to the entrant submitting the best 1993 Tech Tip. The first runner-up receives a CARQUEST store credit valued at \$1,000.

So tear out those Tech Tips cards and start mailing your Tech Tips. We'll print the best ones each month. Everyone will benefit from the shared information.

BLOWN HEAD GASKETS

A blown head gasket can easily be misdiagnosed as a thermostat problem, and may go unnoticed until major engine problems develop. I have found a quick and simple way to determine whether the head gasket is damaged or leaking:

- First, clamp off the hose to the coolant overflow tank, at the radiator.
- Remove the radiator cap, then slip a tight-fitting plastic bag or balloon over the open radiator neck.
- Start the engine, then gradually increase the engine speed.
- If the head gasket is leaking, combustion gases will escape into the cooling system and cause the plastic bag to inflate.

Bill Restoff
Dobbs Tire
Fairview Heights, Illinois

ISUZU COOLANT LOSS

Coolant loss on Isuzu Trooper and P'Up models equipped with 2.6 liter gas engines may be caused by a loose head bolt. Due to extreme engine heat, the center head bolt on the exhaust manifold side of the engine may lose its clamping ability.

The loose head bolt allows coolant to ooze up the bolt. Over time, the leaking coolant may further erode the head bolt. The cure: remove the head, install a new head gasket, and replace all head bolts.

While you have the head off, be sure to remove the exhaust valves for a careful inspection. Some of them may be crisp as well.

Do not install the spark plugs before adjusting the valves. With spark plugs out, the engine can be rotated using a 17 mm wrench on the power steering pulley nut. The power steering belt must be tight.

Tom Molnar
Burlington County Institute of Technology
Westampton, New Jersey

ABS DAMAGE

Disconnecting, charging, or jump starting the battery with the ignition key in the ON position may damage the main voltage limiting relay on Bosch ABS systems. If you've done any of these, don't be surprised if the ABS warning light stays on and the ABS quits working.

It will be necessary to replace the damaged main voltage limiting relay to repair the system. The relay can usually be found behind the glove box, attached to the ABS control unit.

John Roth
JR & Associates
Burbank, California



BMW COOLING SYSTEM HOSES

Whenever you have an air conditioned BMW 320i in your shop, be sure to check the lower radiator hose for abrasion damage caused by contact with the top of the air conditioning compressor. To check the hose, run your finger along the bottom of the hose where it passes near the compressor.

You're looking for damage similar to what is shown in the photo on the next page. The hose on the left had not started leaking yet, while the hose on the right would leak for a while after the engine was shut off (just like a failing water pump).

There are a couple of things that you can do to prevent a recurrence of this problem:

- First, replace the hose with an OEM component. Some aftermarket hoses don't seem to fit properly and are even more likely to rub against the compressor, resulting in abrasion.
- Second, cut out a section of the old hose and secure it between the new hose and the compressor with a couple of wire ties.

- Finally, check the motor mounts to make sure they are not allowing excessive engine movement. Weak mounts can also cause hose abrasion.



While you're at it, do yourself and your customer a favor by changing all of the coolant hoses. This includes the two 8 mm I.D. hoses that circulate coolant through the throttle body. Many folks don't change these hoses because they mistake them for fuel injection or vacuum hoses.

Give the cooling system a good flush, check the water pump for excessive play, and check the heater control valve for signs of leakage. On 1977-79 models, the heater control valve is located under the dash on the driver's side. To locate the valve, move the TEMP lever while looking under the dash. The TEMP cable is connected to the heater control valve, and should open and close the valve as you move the lever. On 1980-83 models, the heater control valve is located under the hood. It's spliced into a heater hose, and is located right where you would expect to find it.

Vic Lucariello
Victory Automotive, Inc.
Lebanon, New Jersey

SUBARU TIPS

I have several Subaru tips to pass along. The first three are new to me, while you might already have heard the last two.

Subaru 1.8 liter OHC engines can develop noisy lifters due to low oil pressure. This problem may crop up after the vehicle has as little as 75,000 miles on the clock. My local dealer's parts department

told me that it is possible to successfully cure this problem without a major overhaul or lifter replacement. The fix is to replace the oil pump, which comes in either large or small oil pressure sending switch versions. So far, I have performed this "fix" on two customer cars with miraculous results.

A stubborn lean surge and stumble condition, accompanied by low power at high revs on a carbureted 1.8 liter OHC engine had me stumped. A carburetor overhaul did not fix the problem. This led me to perform tests on every vacuum-operated device on the engine's intake system (EGR, decel valve, purge system, etc.).

What turned out to be the culprit was an intermittent failure of the float bowl vent solenoid. Although you might think that this would only affect the Evaporative Emission System, failure of the bowl vent solenoid effectively prevents the bowl from venting, even into the main air horn vent tube. After replacing the bowl vent solenoid, the vehicle ran beautifully.

After installing a rebuilt engine in a 1990 Loyale Turbo, the customer complained of head gasket symptoms. There was a white cloud of smoke out of the exhaust on start up, and after a hot soak.

Leakdown tests and indicator fluid tests for combustion gases in the water jacket indicated no problem. **The problem turned out to be caused by a cracked cylinder head that was leaking coolant into the exhaust port.** We had to drop the exhaust "Y" pipes while pressure was applied to the cooling system to find the leak. We disassembled the engine and found that the head gaskets were fine.

I suppose by now everyone has already heard about the mysterious clicking/knocking noise in 1.8 liter OHC Subaru engines that sounds like a bad lifter. Just in case you haven't, I'll tell you what it is. **Slack in the left-hand timing belt causes the distributor drive gears to make noise.** My local Subaru dealer reports that their practice is to retension the timing belts after 30,000 miles of use. This is the halfway point between recommended timing belt replacements.

I've tried two different ways of replacing the clutch on these vehicles. It's a matter of personal preference, but I find that the quickest way is to rely on your old VW Beetle experience and pull the engine. Although this may sound like a pain, I have found that I can make better time by not disturbing the front suspension, front driving axles, rear drive-line, and the extra interior disassembly that is necessary to disconnect the shift linkages.

John Wasilausky
John's Worldcars
Shelton, Washington