

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

## STUCK SPARK PLUG BOOTS

I have found that the spark plug boot removers on the market will not remove the spark plug boots on some foreign and domestic vehicles. Engine heat can bake these boots to the plug and make it very difficult to remove them by hand. To remove these spark plug boots without damage:

- Attach a needle-type extension to your blow gun.
- Stick the needle between the top of the spark plug boot and the wire, then apply a little air pressure.
- This will usually blow the wire boot away from the spark plug, allowing for easy removal without damage to the wire ends.

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## TOYOTA FUEL STARVATION

If you have already replaced the fuel pump and filter and cleaned out the fuel tank for an intermittent fuel starvation problem on a carbureted 1986-88 Toyota Truck, the actual cause of the problem may be a clogged fuel tank air vent line. A clogged vent prevents the tank from venting properly and causes the fuel starvation problem.

To check the vent line:

- Remove the section of the vent line that is closest to the fuel tank. This line is the one that runs to the char-

coal canister mounted on the firewall in the engine compartment.

- Look closely for a white band marking on the hose. The band mark indicates the location of a filter screen. If this screen gets clogged, it will cause the fuel starvation problem described above.

- It would be easy to replace this hose with a standard piece of fuel/vapor hose, but for emissions purposes the screen must remain in the line.

The correct hose, which includes a new screen, can be purchased from the dealer for about \$20.

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## MERCEDES DIESEL NO-STARTS

I have found that the most common cause for Mercedes-Benz diesel no-starts in the winter months is improper valve clearance. Mercedes diesel cylinder heads and blocks were cast iron through 1985 and the valve clearances

were adjustable. The camshaft and rockers are also made from ferrous metal, but the camshaft bearings are aluminum. During the winter months, the aluminum bearings seems to shrink at a faster rate than the other parts, and the valve clearances may become too tight.

In some cases, the clearances become so tight that the valves can't close completely. This causes a compression loss and may also cause cold starting problems or a no-start in cold weather.

General valve clearance specifications for most of these engines are 0.10 mm for the intake valves and 0.30 for the exhaust valves when the engine temperature is below 60 degrees C. The hot engine specification (above 60 degrees C) is 0.15 for intakes and 0.35 for exhausts. In extreme winter climates (outside temperatures below -20 degrees C), add an additional 0.05 mm to the cold engine clearance specifications. Remember, on a diesel engine a loose valve is a happy valve.

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## HIGH PRESSURE HOSES

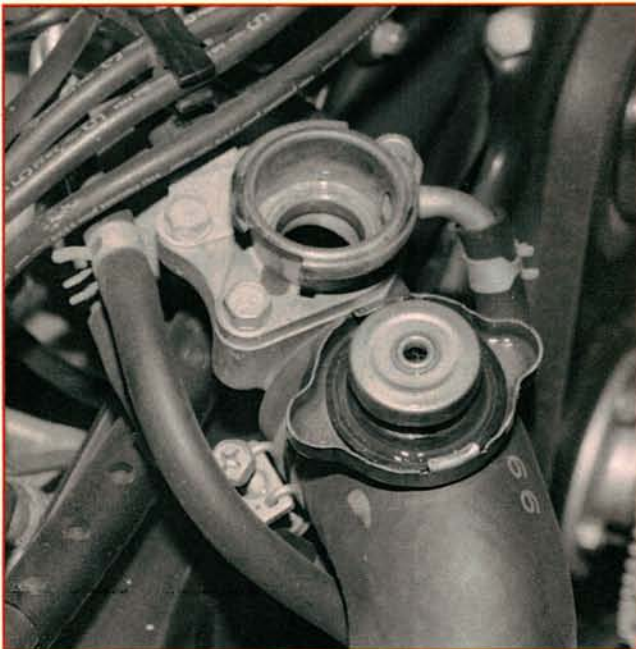
**There's no need to spend big bucks for special order fuel lines or hydraulic lines which handle high pressure fluids. I have found that if you carefully measure the length of the existing line, the local heavy duty truck parts store can make up a flexible hydraulic hose as a replacement.**

In many cases these replacement hoses are actually superior to the part that needs to be replaced and will easily handle 250 to 1000 PSI. The parts store should also have all of the necessary fittings, crimps, and clamps to reproduce the original line at a fraction of the cost of factory parts. We replaced several lines on a Porsche 928 at a considerable savings to the customer.

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## DRAINING COOLING SYSTEM RESERVOIRS

**It can be next to impossible to get all of the coolant out of the overflow reservoir during a cooling system drain and fill. Use the following no-hassle method to completely drain the reservoir, without removing it from the car:**



- Find an old radiator cap that is the same size as the one used on the cooling system you're working on. I only work on Nissans, so I only needed to round up a couple of old radiator caps.
- Turn the radiator cap over and examine its inner and outer seals. The outer seal seals the radiator cap to the top of the radiator neck. The smaller inner seal seals the

cap to the radiator opening at the inner base of the radiator neck. The opening for the overflow hose should be located in the neck between these two seals.

- Remove the smaller inner seal from the old radiator cap.
- Carefully remove the vehicle's radiator cap and replace it with your modified radiator cap.
- Open the radiator petcock. Because the lower radiator cap seal is missing, vacuum will draw coolant out of the overflow reservoir as the radiator drains.
- When the reservoir is empty, coolant will continue to drain out of the radiator. You can speed up the process by removing your modified cap at this point.

The modified cap also works well for refilling cooling systems and should help you bleed the air out of the system without the risk of getting your arm scalded in the process. To refill the cooling system:

- Add as much coolant as possible through the radiator filler neck, then install the modified radiator cap on the radiator.
- Start the engine and continue to fill the cooling system through the overflow bottle. Because the radiator cap's center seal is missing, air can safely escape from the radiator without the risk of dangerous hot coolant belches.
- As the air is purged from the system, coolant will leave the reservoir and continue to fill the radiator.
- When you can't add any more coolant through the reservoir, all of the air should be purged from the system. Carefully remove the modified cap and reinstall the vehicle's radiator cap.
- Top off the reservoir and you're done.

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## ACURA VALVE NOISE

**If you are working on a 1990-91 Acura that has a valve noise that can't be cured by a valve adjustment, the actual cause may be incorrectly or unevenly torqued cylinder head bolts.** This may cause a snapping noise that may be mistaken for a loose valve.

To properly torque the cylinder head bolts:

- Remove the camshafts, then loosen the cylinder head bolts in the sequence described in the repair manual.
- Following the recommended bolt tightening sequence, tighten the head bolts in four separate steps. Begin by torquing all of the bolts to 7 ft-lb, then 22 ft-lb, then 43 ft-lb, and finally to 61 ft-lb.
- Reinstall the camshafts, then set the valve clearances to 0.15 mm for the intake valves and 0.17 mm for the exhaust valves.

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