

# TECH TIPS

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.

## CRANKSHAFT SPROCKET REMOVAL



My tech tip relates to the "Tension Headache" article in the July 1991 issue of *Import Service*. I have found that two pieces of pipe can be used to safely remove the Toyota 5M-GE engine's crankshaft timing sprocket.

You will need a 1 1/2-inch waste flange and a 1 1/2-inch pipe nipple. Both pieces should be available at your local hardware store for less than \$10.00.

The inside diameter of the timing sprocket is threaded. Thread the nipple into the sprocket, then thread the waste flange onto the other end of the nipple. Attach a harmonic balancer puller to the face of the waste flange and you're ready to remove the sprocket.

The nipple and flange can also be used to reinstall a tight fitting sprocket without damage. Tap on the waste flange with a hammer to drive the sprocket into place.

Marc Eson  
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## VACUUM LEAK DIAGNOSIS

When troubleshooting for driveability problems, it's often necessary to check for vacuum leaks around injector seals, cracked vacuum lines, and other areas. Many technicians spray carburetor cleaner or light penetrating oil around suspected vacuum leaks, while watching a tachometer for an increase in engine RPM. Some cleaners can damage oxygen sensors, and none of them is too friendly to paint or plastic parts.

A safer, neater way to check for vacuum leaks is to direct a small amount of propane at suspected leak areas. Propane won't damage the oxygen sensor or your four gas exhaust analyzer.

HC and O<sub>2</sub> readings will fall, and idle speed will increase as the propane is drawn into the vacuum leak. At the same time, CO and CO<sub>2</sub> readings will also increase slightly. Remove the propane source, then watch the four gas readings reverse themselves. This makes pinpointing small vacuum leaks easy.

Joseph Van Syoc  
Amoco Service  
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## DRAINING THE RESERVOIR

The next time you're tempted to top off that brake master cylinder reservoir, check the condition of the front and rear brake linings first. The level in the master cylinder reservoir drops as the brake pads and shoes wear, but how fast does the level drop?

The brake warning light on many Japanese imports also serves as a brake lining wear indicator. When the brake linings are new and the master cylinder reservoir is filled to the "full" mark, the reservoir contains just enough brake fluid to permit the brakes at all four wheels to wear to the rivets before the reservoir runs dry. There's a little bit of extra capacity to spare.

As the level in the reservoir approaches the minimum level, a sensor trips the brake warning light. This is when your customer will probably bring the car in for you to check the brakes. Provided no brake fluid has been added to the reservoir since the last time the brake linings were replaced, a glance at the reservoir level will give you a rough idea of how far the brakes have worn. If the reservoir level is low, it's time to pull the wheels.

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## EXCELERATED MELTDOWN

This tip can be inexpensive or expensive, depending on how long your customer waits to bring you his carbureted Hyundai Excel for normal maintenance. The Excel uses a two catalyst system to clean its exhaust gases. The manifold catalyst's supply air is cleaned by a small filter element mounted on the side of the main air filter housing. If the filter isn't checked frequently, and changed when dirty, the catalyst may be damaged.

The manifold catalyst is mounted below the exhaust manifold, at the front of the engine compartment. The exhaust system's negative pressure pulses are used to draw fresh air into the exhaust system to feed this oxidizing catalyst. A restricted catalyst air filter may overheat the catalyst and melt the honeycomb, causing a loss of engine power. Regular replacement of the catalyst air filter is inexpensive, replacing the catalyst isn't.

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## ACCORD ALTERNATOR REMOVAL

This tip will save you some grief when it comes time to remove and replace an alternator on a fuel injected 1986-89 Honda Accord LXi. For both carbureted and injected Accords, the factory manual recommends disconnecting the left drive axle from the steering knuckle, then lowering the alternator through the gap. There is an easier way to remove the alternator on injected models. After removing the air cleaner housing, the alternator can be reached from above. To remove the air cleaner housing:

- Remove the two bolts at the top of the air cleaner housing that mount the housing to the intake manifold.
- Lift the air cleaner housing up while leaning it away from the engine and toward the firewall to clear the intake manifold.
- With the housing out of the way, the alternator mounting bolts are easier to reach, and the alternator can be removed from above.
- Leaving the drive axle in place also saves on transmission fluid.

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