



Dual Citizenship

If a car is made in Japan, it must be Japanese, right? And if it's made here, then surely it must be an American car. What if it's assembled here, but many of the parts are manufactured in another country, what kind of car is it then? Pretty confusing isn't it?

For the past few years the difference between American and imported cars has been getting harder and harder to determine. We have Japanese made cars sold by American auto companies and American made cars sold at Japanese car dealerships. Each of the Big Three U.S. automakers has at least one manufacturing or distribution partnership going with a Japanese automaker.

One particularly good example of this international cooperation is the Chevrolet Nova/Toyota Corolla.

This car was born during the 1985 model year in a factory in Fremont, California. One of its parents was Japanese, while the other was a General from Detroit.

Rather than declare itself as a Japanese or U.S. car, the Corolla/Nova applied for dual citizenship. When it was in a Toyota dealership, it was a Japanese car. After all, the Corolla name had a long history and was already well established with Toyota buyers. And when it was in a Chevrolet dealership, the Nova was as American as apple pie. The Nova name was also very familiar to Chevrolet buyers.

Just a few years later, the Nova had an identity crisis and decided it really didn't want to be a Chevrolet after all, and became a Geo instead. But that's another story for another time.

Service Tips

What does the Corolla/Nova's dual citizenship mean to you? If you already know how to work on Toyotas but have been steering clear of domestic cars, you can be an overnight expert on Chevrolets (one model at least). Or if you have been put off by imports, the Nova is your opportunity to get familiar with Toyota technology in a Chevrolet package. Either way, there must be at least twice as many places that have parts for these cars when you need them.

The Corolla/Nova continues many of the mechanical characteristics of the earlier Japanese made Corolla with a new body skin. Our research revealed few serious problems on these cars, with the most notable exception being a hesitation on carbureted models. A comprehensive update kit to repair the hesitation is available through Chevrolet and Toyota parts departments. We explained the installation procedure in the January 1991 issue of *Import Service*.

We'll detail the remainder of our findings here and in our photo captions.

Torque Converter Mounting Bolts

Never exchange the torque converter mounting bolts with any other type of bolt on automatic transmission models. Using an incorrect bolt that is too long can dimple the torque converter's lockup clutch friction surface. This damage will cause excessive pressure at the point of the dimple and contribute to premature lockup clutch plate wear.

Stator Shaft Wear

A worn automatic transmission stator shaft support bushing may cause worn stator shaft seal ring

grooves. The worn bushing allows the stator shaft to wobble in its bore, causing the corners of the stator shaft seal ring grooves to bend. New seal rings will not seal properly if they are installed in worn seal ring grooves.

Always inspect the stator shaft seal ring grooves and stator shaft bushing for wear whenever the transaxle is overhauled. Replace the stator shaft if the width of any seal ring groove is less than 2.35 mm.

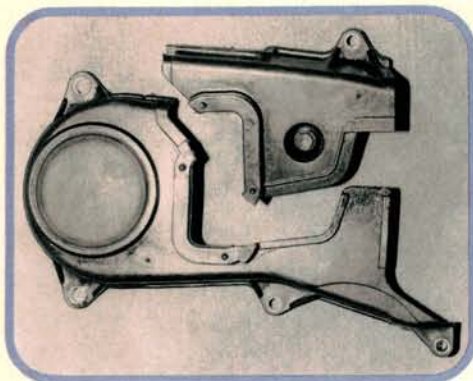
Transaxle Counter Gear Noise

Mismatched counter gears may cause a high pitched whine at highway speeds on automatic transaxle models. Different versions of this transaxle are used in Camry, Celica, and MR2 models. These transaxles may also have similar noises. For a detailed look at this transaxle family, consult the May 1988 and February 1991 issues of *Import Service*.

The factory came out with a two piece speedometer cable for the 1986 Corolla/Nova that was designed to isolate the counter gear noise from the passenger compartment. This cable can also be installed on early models. If cable replacement doesn't successfully isolate the noise, matched sets of replacement counter gears are also available.

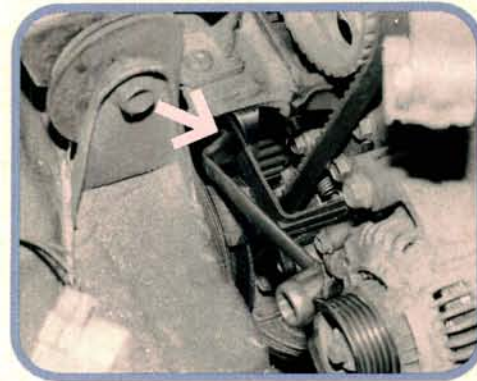
The two piece speedometer cable may cause an entirely different rattling noise in the instrument cluster area if the cable isn't properly installed. To eliminate the noise, tie wrap the speedometer cable to the thick reinforced section of the heater hose, near the brake booster. To properly isolate the rattling noise, the center connection of the two piece cable shouldn't contact the thick section of the heater hose after the tie wrap is tightened.

— By Karl Seyfert



1

Removing and installing the timing belt covers on single overhead cam engines can be a test of your patience. The two upper covers interlock to surround the right motor mount. The motor mount must be removed to install a new timing belt. The lower cover protects the crankshaft pulley.



2

A properly tensioned timing belt is a happy timing belt. Routine belt tension adjustments during major services will prolong timing belt life to 60,000 miles or more. Loosen the tensioner bolt (arrow) near the motor mount. The spring loaded tensioner will automatically adjust for timing belt stretch.

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The single overhead cam timing belt alignment marks can be tricky to see. Align the hole in the cam pulley (right arrow) with the pointer on the cylinder head (left arrow). We rotated the cam slightly to show both marks. When the pulley is in position, use a mirror to sight the pointer.



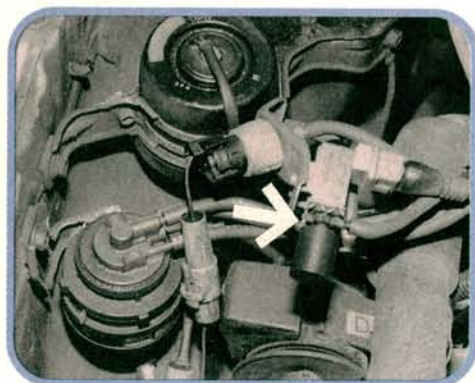
4

The water pump is driven by an accessory belt, not the timing belt. You might think this would make it easier to replace the pump, but it doesn't. The pump is mounted on an extension housing that's wedged into the back corner of the engine compartment. Working from underneath with a lift helps.



5

A factory modification kit is available to correct hesitation problems on carbureted models. The kit modifies the primary and secondary fuel circuits, accelerator pump, altitude compensator, and power circuit. This 1986 Nova has already had the kit components installed.



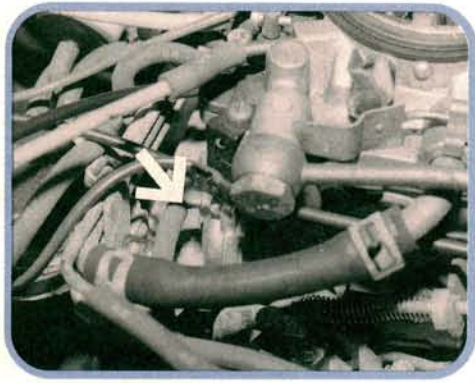
6

Rather than controlling the fuel to adjust the fuel mixture, the ECU adjusts an electronic bleed control valve (EBCV for short) to bleed air into the primary carburetor circuit. The mixture starts out slightly rich and is leaned out as air from the EBCV (arrow) is added during closed loop operation.



7

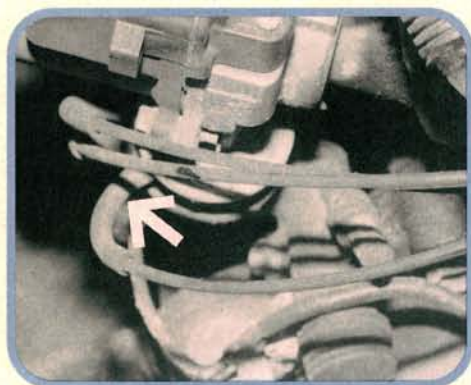
An overactive EGR valve may also cause a hesitation during light acceleration on 1985-86 models. EGR vacuum modulator restrictor kits were offered separately, then as part of the carburetor modification kit. Install the restrictor between the "R" port on the EGR vacuum modulator and the carburetor EGR port.



8

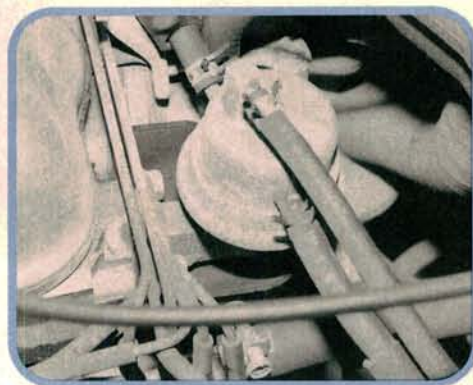
A leaking auxiliary accelerator pump (AAP) diaphragm will cause the engine to run very rich during warmup and may also affect warm operation. Locate the AAP at the rear of the carburetor (arrow), then remove its vacuum hose. If the vacuum hose is wet with fuel, the AAP diaphragm must be replaced.

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Fuel from a leaking AAP can turn up in some pretty out of the way places. Remove the vacuum hoses from the distributor vacuum advance canisters. If you find fuel in the hoses, test the advance mechanisms with a vacuum pump. The leaking AAP fuel may have damaged the vacuum advance diaphragms.



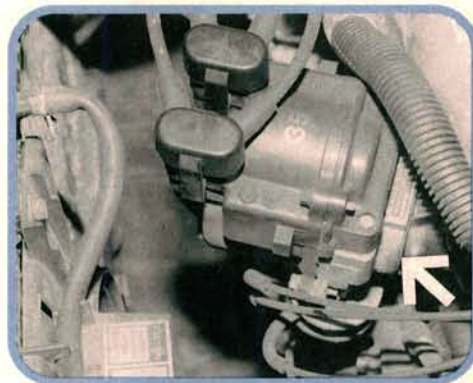
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Look for telltale fuel stains around the underside of the fuel pump if a customer complains of a fuel smell while driving. Heat from the engine may evaporate the small amount of fuel leaking from the fuel pump diaphragm before the fuel has a chance to form a puddle on the ground.



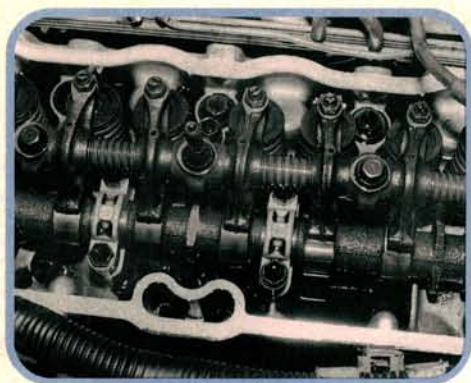
11

The Corolla/Nova's engine is equipped with Toyota's Integrated Ignition Assembly (IIA) distributor. Remove the distributor cap during a major service to check the pickup coil wiring. Vacuum advance movement may cause the wiring to become frayed. Also check the condition of the cap and rotor.



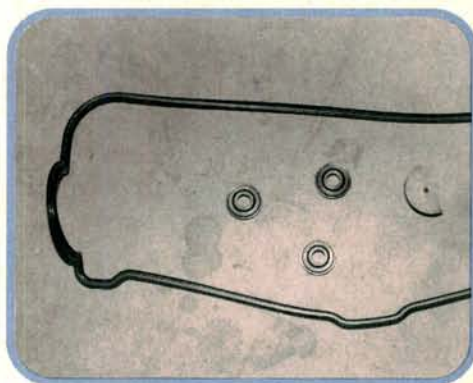
12

Ignition timing seldom requires adjustment. Even though the distributor stays put, the o-ring that seals the distributor to the cylinder head may become brittle over time and cause an oil leak. The oil leaks down the front of the head and block and can easily be misdiagnosed as a leaking head gasket.



13

The valves should be adjusted hot. Rotate the cam until the lobe points away from the rocker arm, then adjust the valve. Mark the rocker arm with a colored grease pencil, then rotate the cam into position for the next valve. It may take longer, but there's less chance of a noisy valve when you're done.



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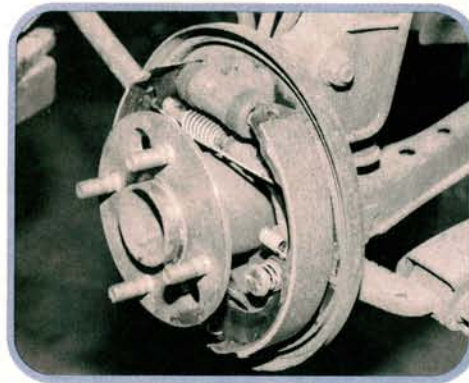
The valve cover is sealed to the head by a one piece formed rubber gasket and grommets. Our valve cover gasket had been reused after the last valve adjustment and had begun leaking at the front corner. Over-tightening the valve cover nuts to compensate for a worn gasket may distort the valve cover.

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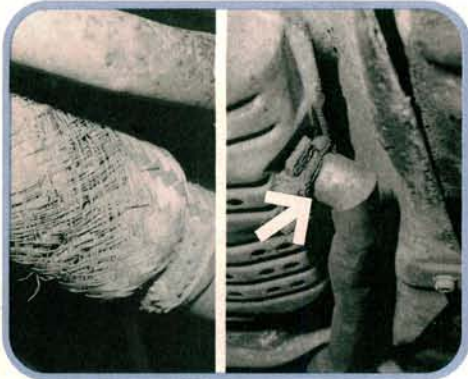
15

Rotor thickness variations may cause brake pulsations on some Corolla/Nova models. Thickness variations shouldn't be confused with rotor runout, although there is a cause and effect relationship. Excessive rotor runout leads to uneven pad contact and rotor wear, resulting in rotor thickness variations.



16

To remove a stuck rear brake drum, soak the hub and drum mating surfaces with penetrant, then thread two 10 X 1.0 mm bolts into the threaded brake drum holes until the drum breaks free. If the brake drum still won't come off, strike the drum with a soft hammer in the area between the wheel stud holes.



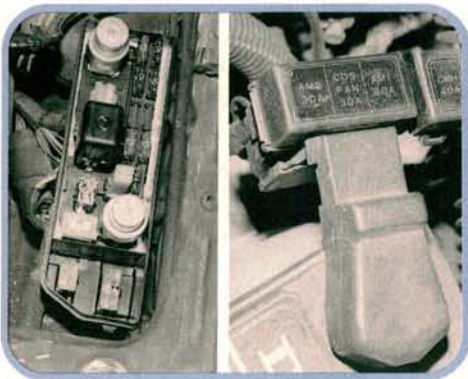
17

Ohio winters have taken their toll on the exhaust system of this low mileage car. The stainless steel webbing has torn away on the front flex pipe, revealing the accordion tubing (left photo). Further back, the small air inlet fitting at the catalytic converter also looks rather shaky (right photo).



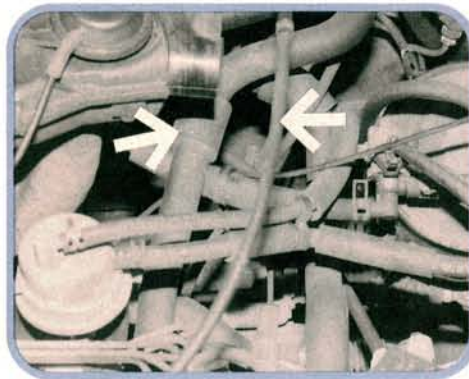
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Hydraulic clutch actuation on manual transmission models means one less adjustment to check during a major service. Extend the service lives of the clutch slave and master cylinders by draining and bleeding the brake fluid during major services.



19

Common fuses and relays are located in the dash fuse box. Additional fuses and relays are housed in a panel next to the battery. The positive battery cable end contains the electrical system heavy hitters, the main fuses. These shouldn't blow unless the electrical problems are really large.



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The transaxle counter gears can cause a high pitched whine at highway speeds or a speedometer cable noise on 1985-88 automatics. A two piece speedo cable is available to correct this problem. Tie wrap the two piece cable to the heater hose. If the noise continues, replacement counter gear sets are available.