Foreign Service



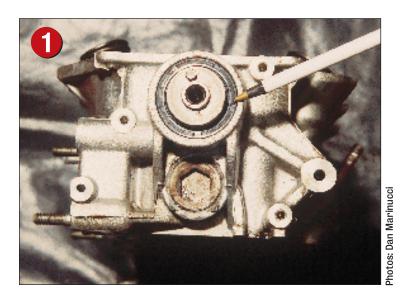
Dan Marinucci

With help from some expert friends, Dan delves into the coolant leakage and timing belt issues that can sometimes plague Nissan's workhorse VG30 V6.

he Nissan engine that MOTOR readers probably see most often is the workhorse VG30, a 3.0-liter, single-overhead cam V6 that was used from 1984 until the mid-1990s. Here, we'll show you how to fix some common, annoying leaks on this engine, then discuss how to give your customers the best value when it comes to timing belt service.

First, watch for a leaking camshaft seal on the front of each cylinder head (see photo 1 below). Sometimes the leak is bad enough that oil drips from the front of the engine and contaminates the timing belt. If you find oil on the belt, be sure to clean the cam and crankshaft sprockets thoroughly before installing a new belt with a solvent that evaporates without leaving a residue.

Usually, though, technicians discover the cam seal leak in its early stages when they pull the front of the engine apart for a routine timing belt R&R. Most techs remove the old cam seal with a slim screwdriver, an awl or a seal pick. Whatever you use, be extremely careful not to scratch or burr up the sealing surface of the camshaft, cautions Philip Dillon at Autotrends, the Z Shop in



Greensboro, North Carolina. More than one unsuspecting technician has had to do this job a second time because he marred the sealing surface of the camshaft.

Some techs wrap a homemade seal protector around the cam before installing the new seal. They fabricate it from a piece of thin plastic pirated from a bubble-sealed product. After liberally lubricating the new seal with petroleum jelly, they use their thumbs to carefully push the new seal over the plastic protector and onto the end of the cam.

Other techs insist that you must carefully start a well-lubed new seal onto one side of the cam first. Once you fully "engage" the seal onto that side, patiently work the seal around the rest of the cam. That way, you should be able to complete the installation without damaging the seal or dislodging its garter spring. Furthermore, some guys gently seat the seal using hand pressure and a 36mm socket (see photo 2 on page 16).

Leaking Thread Plug

Another common headache on the VG30 is a coolant leak at the steel plug threaded into the end of the cylinder head. This plug, which is clearly visible right below the cam seal in photo 1, is located on the passenger-side and firewall-side head on rear-drive and front-drive vehicles, respectively. Some plugs show only minor signs of coolant seepage. But according to Nissan specialist Bill Grafmyre at J & D Auto Repair in Everson, Washington, the plug often leaks so severely that it may be misdiagnosed as a bad water pump or failing head gasket. Imagine a tech's surprise when a new pump or gasket doesn't fix this leak!

Worse yet, removing the plug from the cylinder head can be a real hassle, Grafinyre told us. There's a whopping 17mm hex inside the plug, so the weapon of choice is an internal hex (Allen) wrench. But you'll also need leverage, and lots of it. When you insert the hex wrench, hope it ends up at a clock position that allows you to slide a hefty pipe or box wrench over it to increase leverage. Then hope the plug breaks loose before the **continued on page 16**

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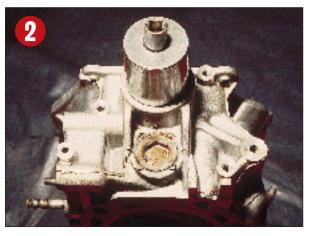
hex wrench begins twisting like a piece of licorice.

Some techs try loosening the plug with industrial-strength penetrating oil; others become so desperate that they heat the aluminum around the plug with a propane torch. *Ouch!*

Grafmyre said the plug in one Maxima he was working on was so tight that he converted it into a bolt to help remove it. First, he patiently drilled progressively larger holes in the center of the plug, then used a high-speed Dremel rotary grinder to clean

up the inside of the plug's hex. When he was done, Grafmyre had a clean, usable hex opening that went clear through the steel plug. Finally, Grafmyre carefully hammered a short bolt with a 17mm head into the hex opening and used a breaker bar and shallow 17mm socket to loosen the plug.

Oddly enough, resealing this thread-



ed plug is no big deal. Some people use Teflon pipe tape, while others use Teflon-based pipe dope or their favorite gasket sealer.

Forewarned is forearmed: Check for coolant seepage at this threaded plug whenever you have the front of the engine torn down for other repairs. You can bet that if you ignore the plug, it *will* leak later on and the customer won't forgive you for overlooking it!

While we're on the subject of coolant leaks, watch out for coolant leaking onto the transmission of a 1989 and newer Maxima. Philip Dillon said badly neglected coolant could corrode the large coolant tube that runs from the back of the thermostat housing through the valley of the engine. The resulting pinholes in this tube create a puddle of coolant in the valley that eventually spills over onto asmission he explained

the transmission, he explained.

Finally, remember the following tips when dealing with VG30 timing belts: First, the slack in a tired, sloppy belt can rock the distributor so violently that it causes an rpm-sensitive knocking sound at the distributor. Usually, you can feel this vibration by placing the back of your hand against the distributor housing or distributor cap when the engine is idling. Remember, the VG30 is an interference engine, and experience shows that crashing valves can cause severe cylinder head damage.

Always listen for noise from the timing belt tensioner bearing, which is on the lower left side of the engine. At the very least, spin the tensioner bearing with your fingers after you remove the old belt. Replace the bearing if you feel any roughness or have any doubts about its longevity.

Adjust the VG30 belt tensioner by turning its 6mm hex bolt. Always note the clock position the hex hole is in before loosening the tensioner to remove the belt. Experienced Nissan specialists report that 99% of the time, the factory's adjustment puts this hex hole exactly in the 5:30 position. For consistent results, they also use a genuine Nissan timing belt and reset the tensioner bolt to its original clock position.

Last but not least, quote a VG30 timing belt job with value and customer satisfaction in mind. Advise the owner that you may encounter unforeseen leaks and/or a worn tensioner. Plus, replacing the thermostat and water pump while the engine is already apart is smart preventive maintenance that ultimately saves the customer money.