



Porsche cars are among the most highly engineered cars on the road. Some of you will say that “highly engineered” really means “complicated.” You may be right. This month’s look at some common repair items on 944 vehicles is a case in point, so we want to offer a few cautions before we start.

- **Many of the repair items shown include upgrades of original equipment parts.** We won’t even try to list all the possible supersessions of original parts. Always check with your parts department for the latest parts application for a given repair.

- **Some of the repair and maintenance procedures are lengthy, complicated, and require the use of special tools.** Timing and balance shaft replacements and front engine reseals are good examples. If you aren’t sure how to tackle these, get some help before you rush in where angels fear to tread.

- **Timing and balance shaft belt adjustments are also critical.** Porsche technicians emphasized this time and time again. The belts are long, and go through a maze of sprockets and pulleys. They must be checked, adjusted, and replaced at the recommended intervals—or else.

We strongly recommend that you beg, borrow, or

purchase the Porsche belt tension gauge. Improper belt tension can cause an immediate failure, noise, and/or accelerated belt wear.

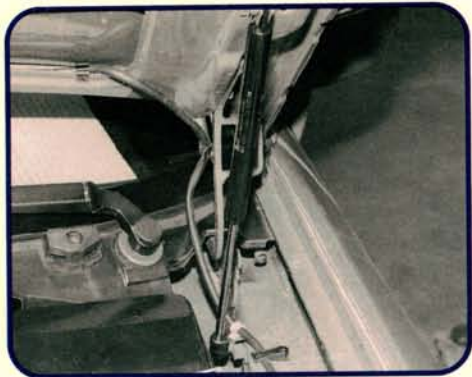
- **Porsche has an extensive library of reference materials available through their parts departments, including repair manuals, bulletins, and service updates.** They aren’t free, but they may be the most important special tools you purchase.

- **Porsche owners didn’t buy these cars to drive in the slow lane.** Many of the problems listed are caused by hard driving.

Partial repairs just won’t get the job done for any period of time when Boy Racer keeps his right foot on the floor all the time. So sell a complete repair, and emphasize the importance of periodic maintenance at the prescribed intervals.

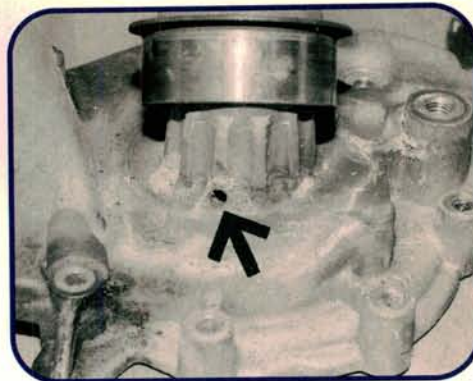
We want to thank two old friends for their help in preparing this article. Eric Steinel of Steinel’s Autowerks in Twinsburg, Ohio, and Andy Demrovsky of Eurocar Foreign Service in Norton, Ohio both offered their facilities and the skills of their fine staffs to help us.

—By Ralph Birnbaum



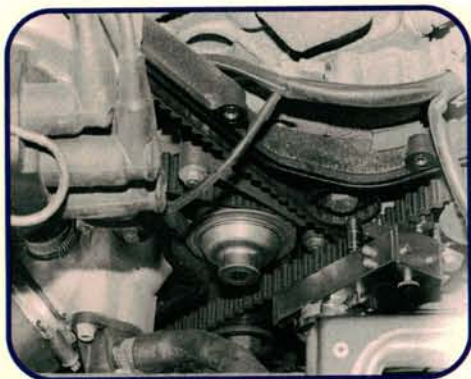
1

Watch out for weak hood supports. You'll raise the hood and start to work. The hood will stay put until you decide to raise the lift. The vibration of the moving lift can cause the hood to drop—suddenly. Any bulky objects you left behind will leave a lasting impression in the sheetmetal.



2

There have been a number of bulletins about water pumps. Many pumps were replaced when a small discoloration appeared around the pump housing weep hole (arrow). This dampness does not necessarily mean the pump is bad. Our photo shows a disassembled pump replaced for a more serious leak.



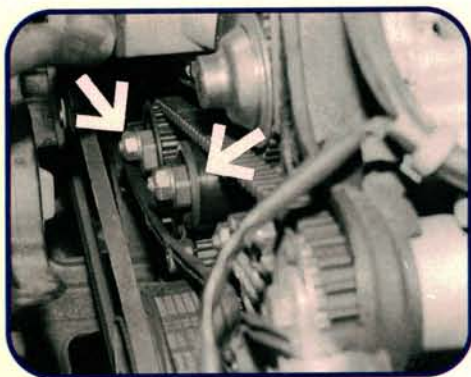
3

Cam, crank, and balance shaft seals may need service as often as every 30,000 miles. Neglected leaks will ruin the cam and balance shaft belts. This is also a good time to replace that suspect water pump, since leaks from a bad pump will run down behind the timing cover and go unnoticed until it's too late.



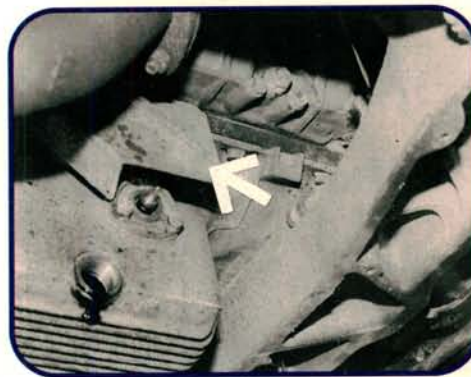
4

This 944 is in for its 15,000 mile cam and balance shaft belt adjustments. The cam belt is adjusted by loosening and then retightening the mounting bolts on the spring tensioner (arrow). Loosening the bolts allows the spring to pull the tensioner toward the belt, removing slack from the belt.



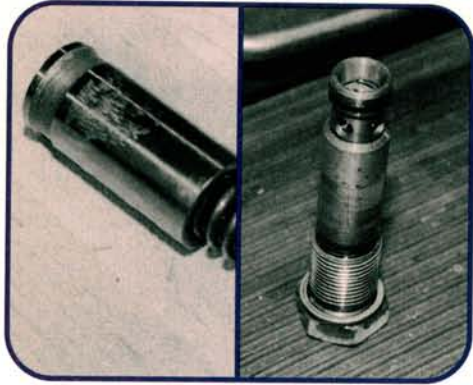
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Adjust balance shaft tension at this eccentric (left arrow). The idler pulley (right arrow) just barely contacts the center section of a freshly adjusted belt. As the belt stretches, the pulley dampens any "wow and flutter" which will develop in the long belt section between the sprockets.



6

Some early engines (up to '86) experienced heavy seepage and overheating caused by leaking head gaskets. There are two other common oil leaks to keep in mind. Rear seals on cam cases should always be checked. Oil pan gaskets on cars without this heat shield (arrow) will crack when over-cooked.



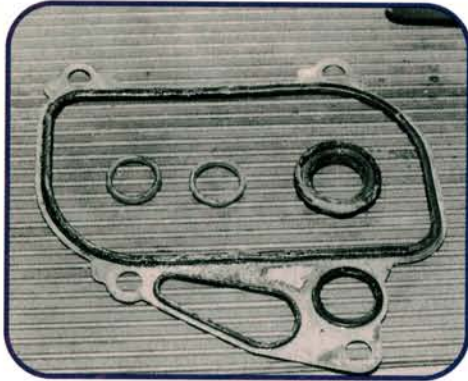
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Low oil pressure in early engines was sometimes caused by sticking pressure relief valves (left). The steel relief piston/spring in the oil cooler would gall and stick. Porsche later introduced a one piece relief valve into production. It is available as a retrofit for the earlier style valve.



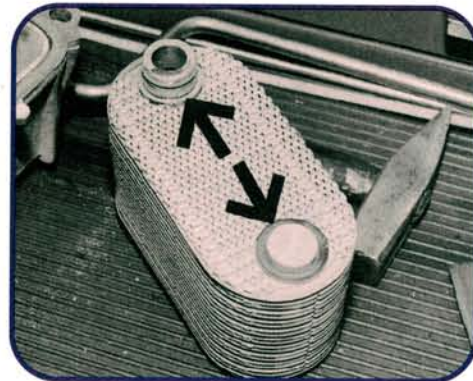
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Engine oil passes through an oil cooler in the oil filter flange assembly. Engine coolant and oil circulate through the cooler. Seals in the cooler which separate the water and oil can deteriorate, allowing oil and coolant to mix. Improved seals were introduced to correct this problem.



9

Oil cooler leaks were common on '85 1/2 to '88 cars. Failing to correct the problem results in engine bearing damage (commonly number two rod bearing). Increased cooling system pressure, starting with the 1985 1/2 car, only made matters worse. Some 944s with low mileage still have the old seals.



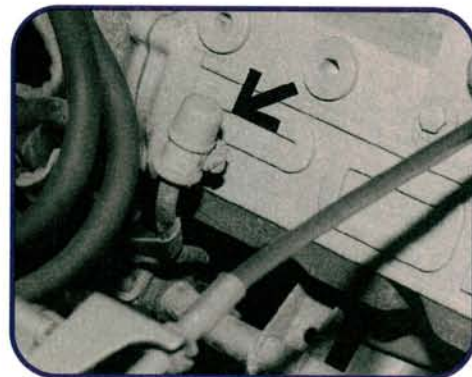
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The cooler is like a small radiator. It sits inside the housing shown in photo 8. Replacement seals are green in color (top arrow). The bosses at the other end (bottom arrow) locate and center the cooler between the engine block and housing. Keep track of any shims on the bosses and reinstall them.



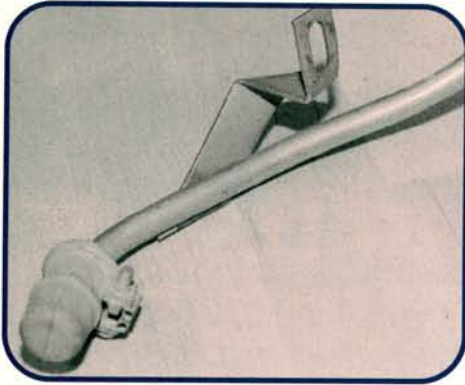
11

Even if the engine hasn't been damaged by the effects of an oil/coolant mix, odds are good that the rubber coolant hoses have been ruined. Hoses will crack on the inside first, even though they may look okay from the outside. Bad hoses will often feel soft and spongy when squeezed.



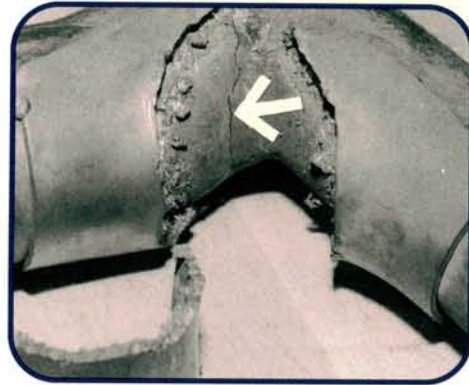
12

The 944 has an upstream test pipe for checking and adjusting CO. Early pipes rusted away, and a retrofit stainless steel pipe was introduced. Make sure you replace a broken pipe. Exhaust pulses will turn the leak into a pulse air system. The extra oxygen sucked into the exhaust will fool the oxygen sensor.



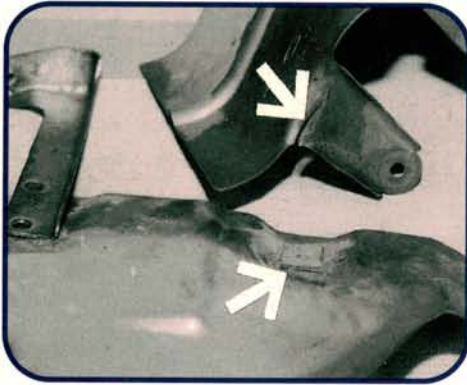
13

Test pipes can break in a number of places. Support brackets (arrow) can vibrate loose, and pipes can crack down low, out of sight—so look sharp. False air and an ignition miss sent some catalysts into melt down. Bang on the cat with a soft mallet to see if the old honeycomb now rattles like a large rock.



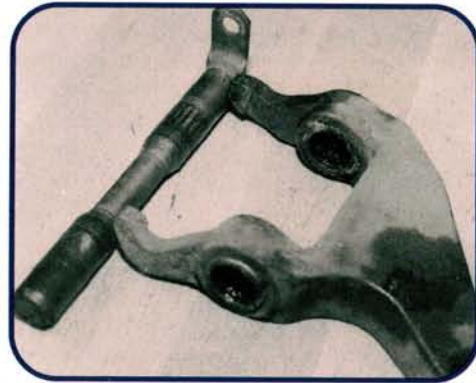
14

False air can also be drawn into a cracked exhaust manifold between cylinders one and four. Early cars had cast iron manifolds. This stamped steel manifold was used starting with the 1985<sup>1/2</sup> models. Expansion and contraction of the pipe leads to a crack in the “crotch” of the pipe (arrow).



15

A number of heat shields were used to protect components from high exhaust temperatures. The shield at right is a starter shield, and it has cracked (arrow), causing a loud buzzing during downshifts at high RPM. The oil filter housing shield to the left has a missing stand-off bracket.



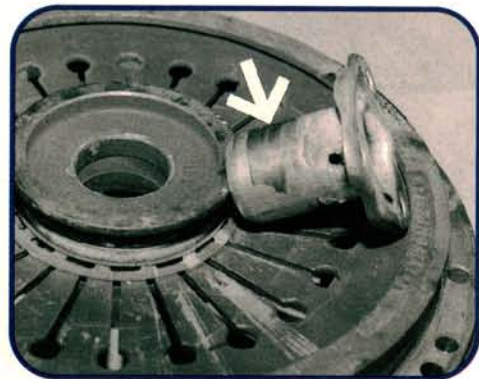
16

Clutch replacements should go beyond a disc and pressure plate. The release bearing is pulled by this release arm. Clutch debris ruins the needle bearings, and the pivot shaft galls like a universal joint on your old Chevy pickup. Failing to correct this will result in notchy clutch application.



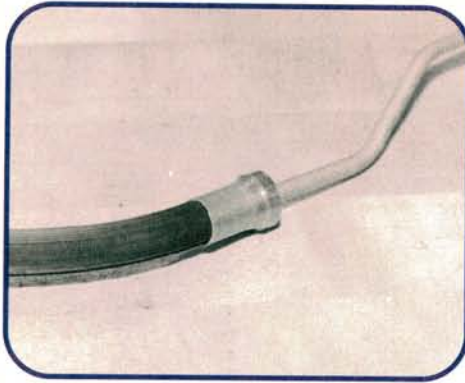
17

Non-turbo cars use a rubber damper hub in the center of the clutch disc which can crack. Then, when you let off the clutch pedal, there's a loud clunk as the center section bangs against its stops. This is the turbo clutch. Its damper springs are so worn, they're spinning (shiny spots, arrows).



18

This snout centers the release bearing. Note the wear pattern highlighted by our arrow. If you don't replace the snout as part of a complete clutch job, the release bearing can cut all the way through before the next clutch job. Our host shop has found the severed ends inside clutch assemblies.



19

Another fairly common clutch related problem has to do with the rubber hose between the clutch master and slave cylinder. The hoses will warn you that they're going bad by leaving a trace of moist brake fluid in the part of the hose right next to the crimped metal ends.



20

Engine mounts are fluid filled to absorb engine vibration. Fatigued or leaking mounts can transmit a nasty vibration through the chassis to the cabin. This vibration may be mistaken for a rough idle, even though the engine may be running just fine. The right side mount seems to be the first to go bad.



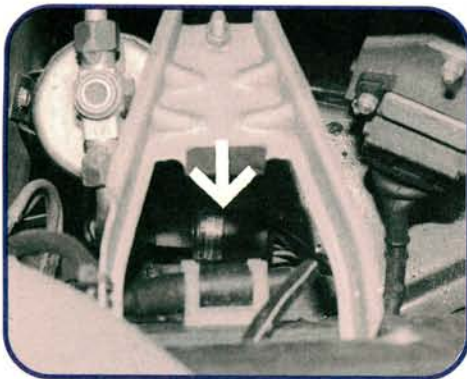
21

Worn constant velocity joints can cause a driveline vibration similar to the shudder caused by a weak center support bearing on car with a two-piece drive-shaft. Lead-footed owners of turbo models may "accelerate" this wear and need replacement joints as soon as 50,000 miles. Play and pay.



22

Distributor caps and plug wires seem to last, but distributor rotors can cause problems. Some rotors have been known to disintegrate. Surprisingly, they may keep working, but cold driveability problems result. When replacing a rotor, make sure you're using the upgraded part number to avoid problems.



23

If the high pressure A/C hose between the condenser and compressor splits open (or just plain bursts) check the high side pressure when the compressor cycles OFF. A replacement switch with a lower high side pressure is available. It shuts off the compressor before high side pressures get too high.



24

Discharged batteries are sometimes caused by an overdose of aftermarket add-on accessories. Bolt in a cellular phone, burglar alarm, 800 giga watt stereo, and a Mr. Coffee, and the battery gets a little stressed out. Parasitic draw should be checked, and ideally stay in the 90 milliamp range.