

Questions & Answers

BY TONY CALLAS AND TOM PRINE

With regards to February 2011's *Tech Forum* on GT1 engine coolant lines, I am curious as to why you didn't mention the most cost-effective measure to avoid a loss of control in your GT1-powered 911: Replacing the anti-freeze/water mix in the coolant system with a WaterWetter/water solution. Removing the engine to weld or tap coolant fittings is an obviously expensive fix. Re-bonding existing coolant fittings is almost as time consuming, not to mention that the agent could still fail (as indicated in the article).

While replacing your coolant solution with WaterWetter will not prevent the bonding agent on a coolant fitting from failing, it would help significantly in preventing a potential accident involving a Mezger-engined 911 and/or following vehicles caused by ultra-slick coolant dumped across the road or track surface. This is the reason that almost all sanctioning bodies disallow anti-freeze to be used in engine cooling systems. In addition, this preventative measure is far less expensive and more doable for the home mechanic, who could also easily add anti-freeze if their 911 will see below-freezing temperatures in the winter months.

The first thing to consider is whether WaterWetter will be enough to prevent a loss of control. Red Line Synthetic Oil Corporation, the maker of WaterWetter, published a white paper — which you can find at redlineoil.com/techinfo.aspx — that includes data relative to the slipperiness of coolants and tire rubber on pavement.

In the paper, a graph is provided where the static and dynamic friction coefficient of tire rubber on dry pavement is compared to the change in surface friction when covered with different coolant combinations. These combinations include plain water, a three-percent WaterWetter-and-water mixture, and four different



One reader asks: Ditch the anti-freeze, or make costly repairs to "GT1" coolant fittings?

anti-freeze combinations. The paper concludes that a surface covered with plain water or a three-percent WaterWetter/water mixture will reduce friction relative to dry pavement by approximately 50 percent. A 50/50 mix of Ethylene Glycol and water — a common anti-freeze mix — would reduce friction by another 5–15 percent (approximately).

If the question is a simple evaluation of which type of coolant mixture provides a *less* slippery surface to a tire when compared to a dry road, we agree that plain water or a mixture of WaterWetter and water will offer a slightly better possibility for tire grip than anti-freeze. However, in saying that, we feel this may create a false sense of security for owners who may not be considering all of the issues.

Most of the coolant-manifold failures are taking place during track events, where the cars are regularly being pushed to the limits of their tires' adhesion. Owners who track their cars generally do so on street tires, D.O.T.-legal street/competition tires, and, in some cases, racing slicks. All of these tires can lose significant traction in the presence of *any* liquid when compared to their traction on a dry road surface. We feel the real issue to be considered relative to car control is how close the tire is to its maximum adhesion when a vital coolant manifold fails and abruptly changes the traction surface from dry to very wet. If a failure takes place at a critical moment, when the tires are heavily to fully loaded in a turn, the type of coolant mixture will likely be

of little consequence — a loss of vehicle control is nearly assured. If the same failure takes place on a straight section of track, vehicle control will likely be retained. The same would hold true out on the road. If the tire's wet-traction limit has been exceeded when a critical coolant manifold fails, a loss of control is likely.

Our primary objective was to identify the increasing frequency of coolant-manifold failures with GT1-type engines and notify the owners of these cars, especially those who might be unaware of this issue. Additionally, we wanted to suggest a number of possible solutions with varying cost implications, including a permanent repair via TIG-welding the extruded aluminum pipes into the coolant manifold(s).

We would not discourage those who track their cars from using a product like WaterWetter as long as the manufacturer's mix-ratio guidelines are followed. We do, however, believe that the better answer is to preemptively make repairs to the coolant manifolds to ensure that no failure takes place. Doing so addresses the root of the problem, and also preserves the advantages of using anti-freeze in your Porsche.

In a road car, the use of coolant/anti-freeze not only serves the obvious purpose of keeping the coolant-system liquid from freezing, it also elevates the boiling point. Further, it has anti-corrosive (Ph-free) additives for the alloys in the system, and the coloring of the anti-freeze will aid in the diagnosis of a coolant leak.

In May 2010's *Tech Forum*, you had an excellent article on ignition locks. About a year ago, I replaced the electrical portion

of the switch on my 1985 Carrera. Since then, the steering wheel lock has not worked. Everything else seems to work fine. I don't believe that anything was broken as the switch was replaced. There are no strange sounds as the key is turned; ditto for the steering wheel. To date, I have not been able to solve the problem, or even find information on how the steering-lock mechanism works. Can you help me to get the lock to work? If I can't fix the problem, is there a chance the lock would suddenly work, and prevent my car from being steered while moving?

Your 911's steering lock/ignition switch assembly only appears to be a fairly simple part; in all actuality, it is a very complicated mechanism. It sounds like the ignition switch/lock assembly might have been removed while your electrical switch was replaced; if the steering lock assembly isn't aligned correctly during reassembly, the locking shaft that engages the steering shaft will not operate properly.

If the ignition key is on, such as while you are driving the car, there shouldn't be a way for the mechanism to release the lock shaft and lock your steering wheel. If the steering wheel lock mechanism in the ignition switch has failed, we would expect it would fail — and be designed to fail — in an unlocked position for obvious safety reasons. That said, and despite the fact that the work took place about a year ago, we recommend having an experienced Porsche technician evaluate your situation to help you determine why the lock is not working, and to confirm that your car is safe to drive.

I appreciated learning about the ramifications of disconnecting the car battery in modern cars (November 2010). I hadn't realized the severity of problems that this could cause. Will extended removal of the battery in my 1985 911 Carrera cause problems, other than for the radio?

As far as a stock 911 Carrera 3.2 is concerned, there should be no issues other than losing the radio presets when disconnecting the battery. The real potential for electrical problems in your 911 — and all other computer-controlled cars — comes if the engine is started via a high-voltage (over 15VDC) or poorly executed jump start due to a low or dead battery. We've seen many Carrera 3.2s with blown DME control units (ECUs), tachometers, and, most commonly, alternators. The damage can be apparent immediately, or it can take months for the damaged part to fail.

I enjoyed your *Tech Forum* on Electrical Systems in the November 2010 issue. It raised a couple of questions about battery removal in my 1990 911 Carrera 2, however: Is it safe to remove my battery during winterization? Will doing so cause problems with the car's electrical system? I have been removing the battery cable connections for the last several years without any noticeable electrical problems. From the article, it seems that the 1990 model year is on the cusp for requiring special attention when removing the battery.

You are correct by stating that the 964s are "on the cusp for requiring special

BELOW, LEFT: If the ignition lock assembly isn't aligned correctly, its locking shaft (seen at far right) may not work properly. **BELOW, RIGHT:** If the TPMS control unit fails to recognize a newly installed wheel sensor, the sensor's serial number must be manually entered using a PIWIS.



attention when removing the battery.” Having said that, if your car has been running properly we would not be as concerned about disconnecting the B+ (battery terminals) power supply, which in turn erases the volatile memory for the engine management system (DME).

Your main concern will be to re-adapt the engine control unit, which is also known as the DME, by driving your car in all load ranges — i.e., momentary full throttle, idling, and various mid-range applications. This can be performed by test-driving your car for approximately 20 minutes after B+ has been reconnected “if it appears to be running okay.”

Don't get us wrong, disconnecting the battery can affect the 964s and, more so, the 993s — but we're mainly directing our battery disconnection warnings towards the owners of 986/987s, 996/997s, and newer models.

I put 20-inch road wheels on a 997 and changed the wheel-mounted electronic tire-pressure sensors. Now I cannot get my tire monitor to “learn” them. I have access to a tester that reads actual values. It reads the battery life (around 40 months) but just shows dashes for the

electronic wheel sensor IDs. Under the sensor ID value, there's a provision for a recode. When you enter the menu, you can type in some numbers. I believe it is probably the part numbers off of the individual sensors that it is requesting. Do you guys know how this is done on the PIWIS? Does the dealer have to write in the part number or sensor ID number of a replaced sensor via PIWIS? I do not want to mess anything up.

On certain occasions, we have had to take the serial number off of the wheel sensor by breaking the tire beads and manually entering these numbers into the tire-pressure monitoring (RDK) control unit in relation to the sensor locations. Once all four are entered, it makes the system learn the sensors and everything should be okay. Having said that, this is only possible when utilizing the factory PIWIS tester. We also prefer to set the tire pressures with the readout in the instrument cluster. On another note, make sure that the old tire-pressure sensors are not in the car or even in the vicinity — because the RDK control unit will pick these up and get confused. However, we honestly don't think you can “mess it up.”

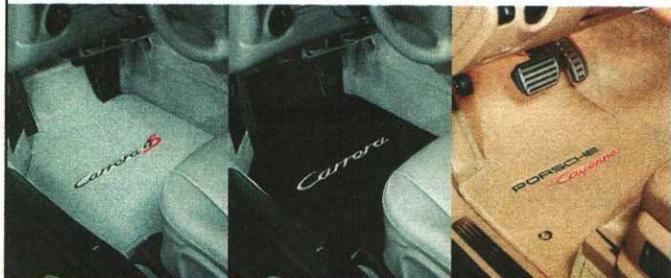
I have owned my Porsche since it was new, and don't drive it much. It only has 21,000 miles and sits in a garage most of the year. It had all of the usual teething problems when new, but everything is stock except for the battery, which was given to me by a good Samaritan when my battery failed in a parking lot in town.

Everything was okay until this year; the airbag light now stays on all the time when the car is running. The battery was new in January 2009 and came with six years of warranty. I took the car back to the dealership and the technicians determined a low voltage had been detected by the car's computer. They reset it and sent me on my merry way. Some 400 yards down the road, the light came back on. The service adviser assures me the airbags will still work, but I'd like to know what's going on. Voltage at the battery after sitting for another month is 12.12V. It's 14.34V after I start the car, but it drops to 14.21V after five to ten minutes. Any ideas as to what is going on here?

There are a few potential problem areas that may be the source of the issues you're experiencing. However, at this point you do not have enough information. You say

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the car sits for long periods of time, but you do not indicate whether you utilize a trickle charger to maintain the battery during periods of non-use. The battery will normally discharge over a period of time; generally, about one percent or more per day can be considered normal.

PST-2 or PIWIS tester, especially focusing on the POSIP (airbag) control unit. Are there any other fault codes — i.e. a seat-belt buckle fault? There are multiple factory Technical Service Bulletins on this subject. After the control unit interrogation, make sure that a complete charging

I have a 2003 Boxster S with the 3.2-liter engine and I live in Arizona. My car has 54,000 miles and I use it as a daily driver. The engine is tight, doesn't use oil, drip oil, or smoke oil. I change out the factory recommended 0W-40 weight motor oil and Porsche oil filter every 3,000 miles. This summer, I've noted what I'd describe as a "lifter bleed down rattle" after the car has been parked for more than six to eight hours. The rattle goes away almost immediately and I can't detect any lifter noise after the initial startup.

We had +110° F temperatures for over 40 days last summer, and I'd like your thoughts on using heavier viscosity oil to eliminate the summertime rattle. I had planned to change over to a different brand at the next oil change and am questioning if either 5W-40 or 10W-40 would be a more appropriate viscosity during the summer months, with a change back to 0W-40 in the winter?

We feel that you servicing your engine oil every 3,000 miles is a good idea considering your use and the type of oil you are currently utilizing. We recommend going to a 5W-40 weight year round, however. We prefer a high-quality, boutique type of synthetic oil. The reason for this recom-

A trickle charger will maintain the battery's charge, which is important to the longevity of a battery...

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We can assume that, when your car was at the dealer, some level of computer interrogation was performed — hence the conclusion of "low voltage." However, we do not know if the dealer was completely thorough in its evaluation of the car; we suspect that it was not.

We recommend a complete computer interrogation with the factory Porsche

system evaluation is performed, including a thorough battery analysis and a battery parasitic drain test.

We also like to check at the battery terminals for stray A/C voltage, and we perform an alternator diode test at the same time. Another quick test is to check the voltage drop between the battery B+ (positive) terminal and the alternator B+ terminal. With all these tests, you should narrow it down to the charging system/battery, the chassis POSIP system, or both.

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mendation is that the Zinc Dialkyl Dithio Phosphates (ZDDP) and Sulphated Ash/Phosphorus/Sulphur (SAPS) — the high-pressure additives in the oil — are being reduced in the mass-marketed oils today. As a result, we are seeing more problems with wear on the internal engine mechanical systems, especially in the area of the valvetrain. Small, boutique-type lubricant

for six or more hours, such as you have described. Just to be sure everything is okay — such as the lifters, intermediate shaft bearing, chain adjusters, etc. — we recommend having the engine oil filter cut open and inspected for any metal or plastic debris. This is best done during an oil change, and especially in the case of any unusual engine noises.

having a service professional perform this task. On rare occasion, we've seen where the lifters will fail at the point of contact with the camshaft, allowing for an extreme amount of wear on the lifter face. We postulate this is due to a lack of maintenance and/or insufficient lubrication from inferior lubricants.

We enjoy and look forward to readers' questions, and regularly work on everything from 356s to Cayennes...

manufacturers are keeping the ZDDP and SAPS levels up above the mass-marketed oils; the boutique oils are harder to find but we feel they are well worth the time and effort required to do so.

We have found that it is actually fairly common for 986/996 M96 engines to rattle slightly and for a very short period of time on startup after they've been sitting

We outlined this procedure in the August 2010 *Tech Forum*. In addition to the oil-filter inspection procedure, lab analysis of your engine oil could be very helpful in confirming that the internal mechanical condition of your engine is okay. If these procedures have not yet been performed or if you feel uncomfortable doing it yourself, we recommend

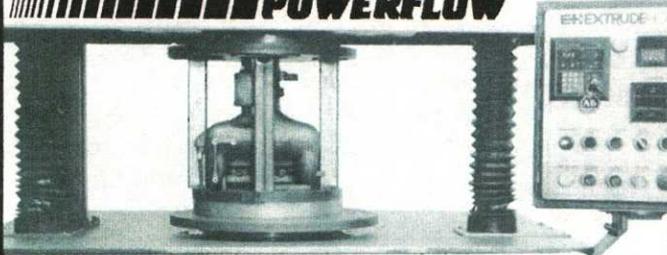
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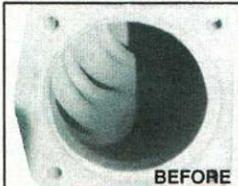
We enjoy and look forward to readers' questions. We regularly work on everything from 356s to Cayennes — and everything in between — so, please, fire away. The more detailed information you can provide relative to specific symptoms or problems, including your maintenance schedule and products used, will better help us in responding to an issue. Like you, we are Porsche enthusiasts and we really love to drive these great cars, which is why we always close our articles with a simple sentence: Enjoy your Porsche. ♥

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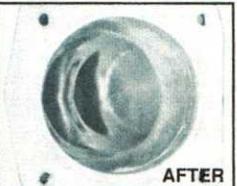
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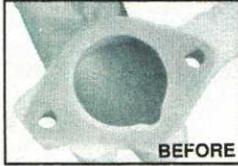




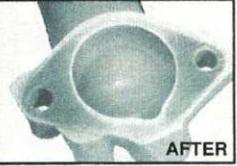
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