Project 911S

Part 17: Going With the flow

By Mitchell Sam Rossi
PHOTOS BY THE AUTHOR

As we learned in Science 101, liquids flow. So too do electricity and air. Water distributes itself similarly, but, as the project car is a true 911, there is no need to discuss that particularly overrated compound. The importance of fuel and electricity are self-evident and are covered here, not to show what has been done to enhance these systems but to reveal what has not and to explain why.

Air flow, as it pertains to the car's aerodynamics, will be addressed later when the S finally moves to the racetrack for testing. A selection of front spoilers and rear wings has been readied for the car so that different combinations can be evaluated to determine which works best with the new suspension and braking systems. A few other wind-cheating devices have also been added to see if there is any way to diminish the drag coefficient of the dated silhouette.

As with every automobile on the road, the most important compound flowing through the 911 is oil. But the viscous fluid is not simply the lubricating medium of the flat six, it is an intrinsic part of keeping the engine cool. It is the machine's lifeblood.

In 1969, the 911S models were equipped with a secondary, radiator-type oil cooler tucked into the forward section of the right front fender. The small horn grille between the hood and blinker was the only opening for fresh air, making this area less than optimal. For the competition RSR, the Weissach engineers relocated the oil cooler to the center of the front air dam.

Following Porsche's example and taking advantage of the RS-style spoiler that was fitted to the S, the original oil cooler was replaced with a larger, front-mounting unit from B&B Performance Exhaust. Designed for the 911, the B&B cooler fills the center opening in both the RS and RSR spoilers. Set low in the nose, the cooler receives an unobstructed air stream.

To further improve the cooler's efficiency, the trunk box was modified by Mark Spraker of Euro-Tek, a fabrication shop in Costa Mesa, California. By reshaping the box, Spraker created a cavity behind the cooler to allow the airflow to pass cleanly through the unit and then emerge under the car, thus eliminating the pressure which would have built up behind the cooler at speed.

Engine oil was transported to the original fender cooler by solid lines snaking through the chassis. I planned to incorporate these lines into the upgrade until concerns were raised that their inside diameter was too small to accommodate the increased oil flow required by the new 2.7-liter motor.

The stock lines were left in place, but the oil was rerouted via a new set of external lines obtained from Performance Products in Van Nuys, Calif. These tubes are replacement parts for the 1974-89 911 and are mounted outside the chassis just below the passenger-side rocker panel. They are the simplest way to add an auxiliary front cooler to any 911 that did not come so equipped from the factory.

Along with the new hard lines, the correct thermostat was also acquired from Performance Products. While the S's thermostat was located inside the engine bay, the position for the new thermostat is in the forward area of the rear fender where the lines begin their run to the front of the car. Connecting the thermostat to the engine and oil tank, flexible steel-braided oil lines with aircraft-quality fittings had to be used, since the S's chassis differed from the later models and would not allow use of standard plumbing.

The next major improvement to the oil system focused on the reservoir tank. When the S was first restored, it was equipped with an oversized oil pressure warning light. As important as oil pressure is to the 911 engine, the red lamp was sized accordingly and, in fact, filled the clock's original dashboard location. If any problems arose, the illuminated lamp would signal the driver to shut down the engine.

At several slalom events, the light immediately revealed that under hard braking the

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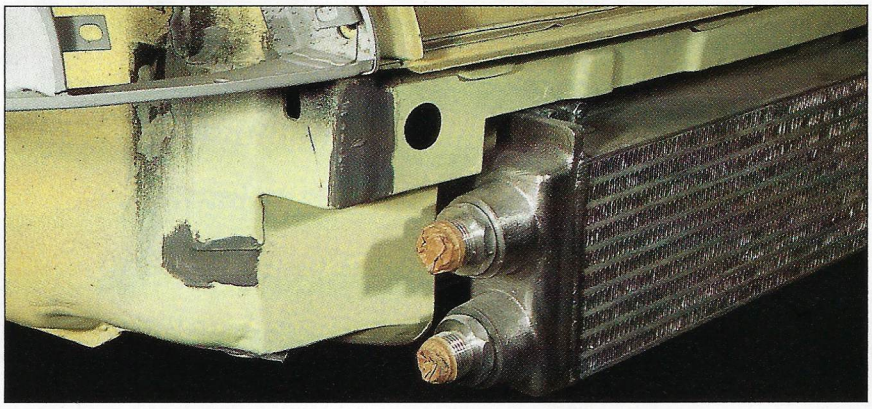
oil was shifting away from the pick-up point in the tank, which dropped the internal oil pressure to dangerous levels. With the S being endowed with more horsepower, a more taut suspension and larger brakes, there was little doubt every corner would induce oil starvation.

To alleviate this potential problem, the original tank was replaced by a stainless-steel unit from a 1983 911SC. This later tank has an increased volume of nearly two quarts and thus reduces the chance that braking or quick cornering will result in a loss of oil pressure.

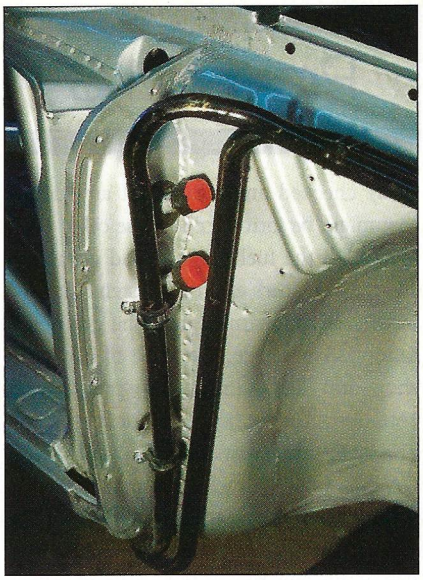
This update, however, is not a simple swap. The 911 oil tank hangs under the right rear fender, but the oil filler neck, breather lines and oil filter are located inside the engine compartment via an opening in the bulkhead. Unfortunately, this opening is not standard across the model years. To use the newer tank, the S's engine bay had to be modified.

Modifications to the trunk box.



Fitting the B&B front-mounted oil cooler.

B&B stainless-steel oil lines attached to external hard lines.



Upgraded hardlines for oil cooler.

A 911SC donor chassis was located and the desired section of sheetmetal removed by means of a reciprocating saw and about an hour's worth of work. Spraker then grafted the piece properly onto the project car.

For the fuel system, the S was fitted with a 100-liter Fuel Safe fuel cell from Hoerr Racing Products. To augment this competition fuel tank, plans were made to replace the S's stock fuel pump with an aftermarket unit repositioned inside the trunk. Because fuel cells are notorious for clogging fuel systems, an auxiliary filter was also going to be placed between the pump and the tank.

Jeff Erickson of Randall Aase Motors, the builder of the S's 2.7-liter engine, however, pointed out that the original Bosch fuel pump was both adequate and dependable. He also saw nothing to gain by moving the pump from its stock location.

I had to admit, during the 24 years I had owned the car, the fuel pump had been replaced only once. Thus, taking Erickson's advice, I left well enough alone. I did, however, insert a System One fuel filter between the tank and pump. Utilizing a high-flow, 35-micron stainless-steel screen, the filter is

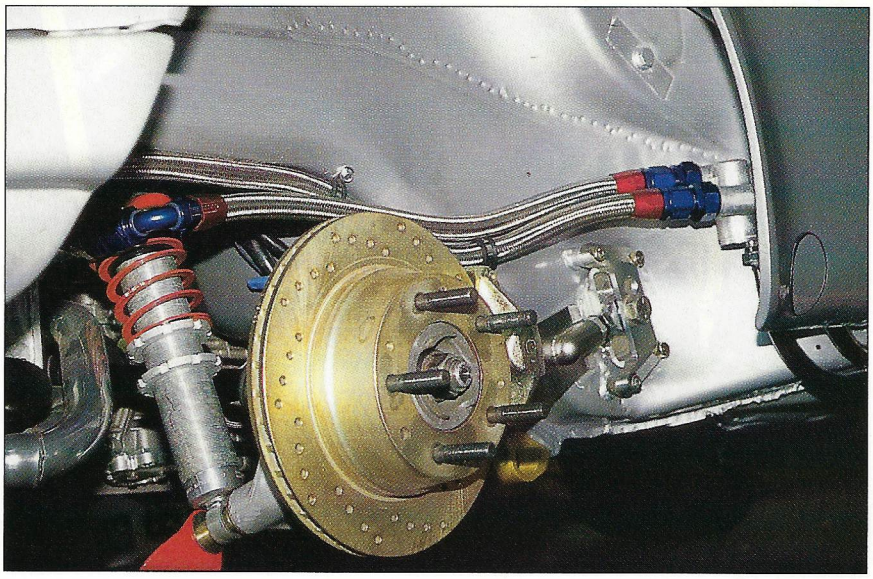
easily checked and cleaned of any debris that might be introduced by the cell.

As with the fuel pump, I had grandiose plans for the car's electrical system. To protect the wiring harness from the grit of the sandblaster's nozzle, the torch of the body shop and the painter's overspray, I had entombed the fuse box, relays and macramé of wire in thick plastic bags and duct tape.

When I finally freed the tangled mass, it was, as I feared, in less than perfect condition. I had carefully labeled each wire so that re-attachment would be a simple affair. Most of these tags, however, had broken loose and collected at the bottom of the bag like flotsam in a seiner's net.

Replacing the entire harness with a slimmed-down, lightweight competition loom was a tempting idea, but the S was not intended to be a dedicated track car. I wanted to retain the blinkers, emergency flashers and license plate lights.

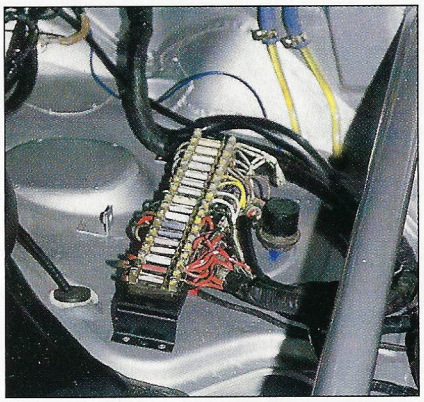
The second idea was to leave the harness complete but change the archaic bullet-like ceramic fuses with the newer bladed type and move the fuse box into the passenger compartment. While the bladed Autofuses look high-tech and orderly in their tightly aligned panels, they do not offer much of an advantage over the original fuses.



Stainless-steel oil lines connect thermostat to the engine and oil tank.

In the end, I decided to keep the harness in its original form for one principal reason. The factory wiring diagrams would remain applicable. If an electrical gremlin payed a fiendish visit to the car, any mechanic with an ohmmeter and a Haynes Manual for the 911 could find the problem.

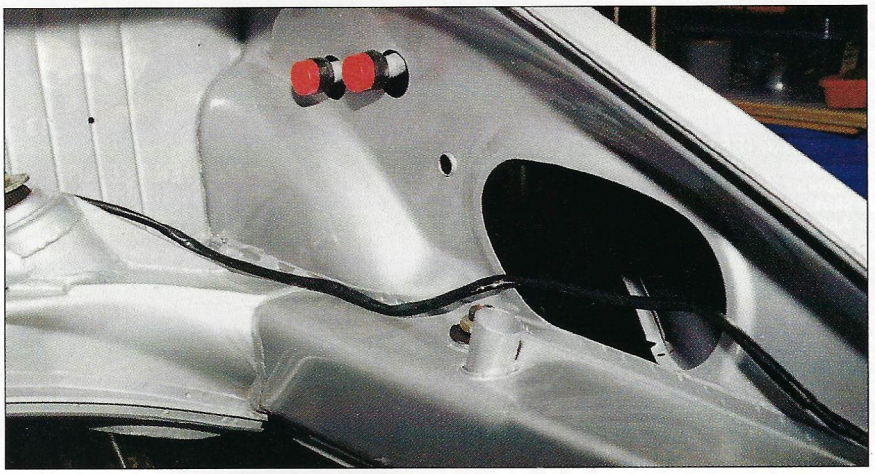
Necessity, however, forced me to move the fuse box from the lower left side of the trunk to the flat area beside the gas heater well. The original location was severely lim-



ited by the front reinforcement bars that linked the forward A-arm suspension point to the strut tower brace.

A maintenance-free Optima battery was set inside the gas heater well, which offered protection as well as better weight distribution. Finally, with the oil, electrical and fuel systems up and running, only a few tasks remained before the old S would be ready for the road and racetrack.

Repositioned fuse box.



Modified engine bay for updated oil tank.

Performance Products
8000 Haskell Ave.
Van Nuys, CA 91406
(800) 423-3173
www.performanceproducts.com

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(888) 228-7435
www.bbexhaust.com

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