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À RESERVOIR OF SOLUTIONS

How to fix low pressure, excess consumption, windage, and other oiling system problems that often arise in race vehicles.

By Drew Hardin



SCHUMANN'S PERFORMANCE WET SUMP OIL PUMPS

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GEAR-TO-GEAR PUMPS

While OE-style gerotor pumps are used in many of today's performance engines, the gear-to-gear pumps found in traditional small block and big block Chevrolet engines, as well as Pontiac and Oldsmobile engines, "are still strong contenders for a percentage of the marketplace," said Verne Schumann of Schumann's Sales and Service, Blue Grass, Iowa. Improving those gear-to-gear pumps has been his focus for years, and his innovations are keeping these older-style pumps—and their host engines—not just alive, but competitive.

His latest design is the Paddle Wheel gear. "Gear-to-gear pumps operate by the curvature of the teeth in the gears rotating against one another," Schumann explained. "They squeeze the oil to move it." The Paddle Wheel gear incorporates cup cavities in the idler gear that "shoot oil at high velocity to the outlet of the pump." While the meshing of the gears remains the primary means of moving the oil, the Paddle Wheel cups provide a secondary oil transfer within the same pump housing. The cups move the oil "about two to three times faster in feet per second" at the same gear rpm. "When you exit a bunch of oil fast like that, it creates a void in the vertical column of oil, which means the gear-to-gear portion is easier and quicker to work." Easier translates to using less horsepower to move the oil, and quicker means the pump's output can better keep up with engine rpm.

ON THE DRAWING BOARD

Schumann has a couple of new products in the works, including new gauges that will more accurately and immediately monitor the efficiency of an engine's oil. The standard oil pressure gauge, he explained, "takes 3 to 4 seconds to react to any changing conditions. That means that part of the story is 3 to 4 seconds behind an event that takes place in the engine." With 8- to 10-second cars "as common as can be these days," a time lapse like that could be catastrophic.

Adding gauges that monitor the oil's flow in gallons per minute or feet per second would give a truer and more immediate picture of what's happening with the oil, Schumann said. Those are the monitors under development in his shop. Of the three, clocking feet per second "may be the most important. It measures the ability of the oil to



The Paddle Wheel gearset from Schumann's Sales and Service makes traditional gear-to-gear oil pumps more effective, with cups designed to provide secondary oil transfer, according to a company source.

instantaneously keep up with the crankshaft's rpm gains when moving parts in an engine go from idle speed to high rpm. It's a whole new parameter that even the best engine builders haven't monitored." Pioneering that technology has made developing the gauge a challenge, but Schumann is working with a manufacturer to produce a gauge that "we can have at least with an engine builder on a dyno, and perhaps be able to measure feet-per-second in a race car."

On the other hand, gallon-per-minute gauges already exist in engine tech labs, "and some NASCAR teams are rumored to have that bolted to the dashboard," Schumann said. "It's basically a linear flow, closed loop going through a monitoring gauge. It operates the same as the gauging here in our R&D shop." That GPM gauge is expensive, though, "a \$300 to \$500 adventure. I'm hoping to cut that in half at least." If he's successful, Schumann said he'd bring it to the upcoming PRI Trade Show.

He also plans to bring what he calls "patented wet sump oil pan technology. I'm not going to build oil pans, but I will sell this technology to oil pan manufacturers." He wouldn't go into detail, pending his patent application, but he did say the new technology "will totally change the complexion of wet sump oil pumps and the pan environment they go into. This technology will move forward our tag line of 'wet sump oil pumps with a dry sump attitude.'" **PRI**