

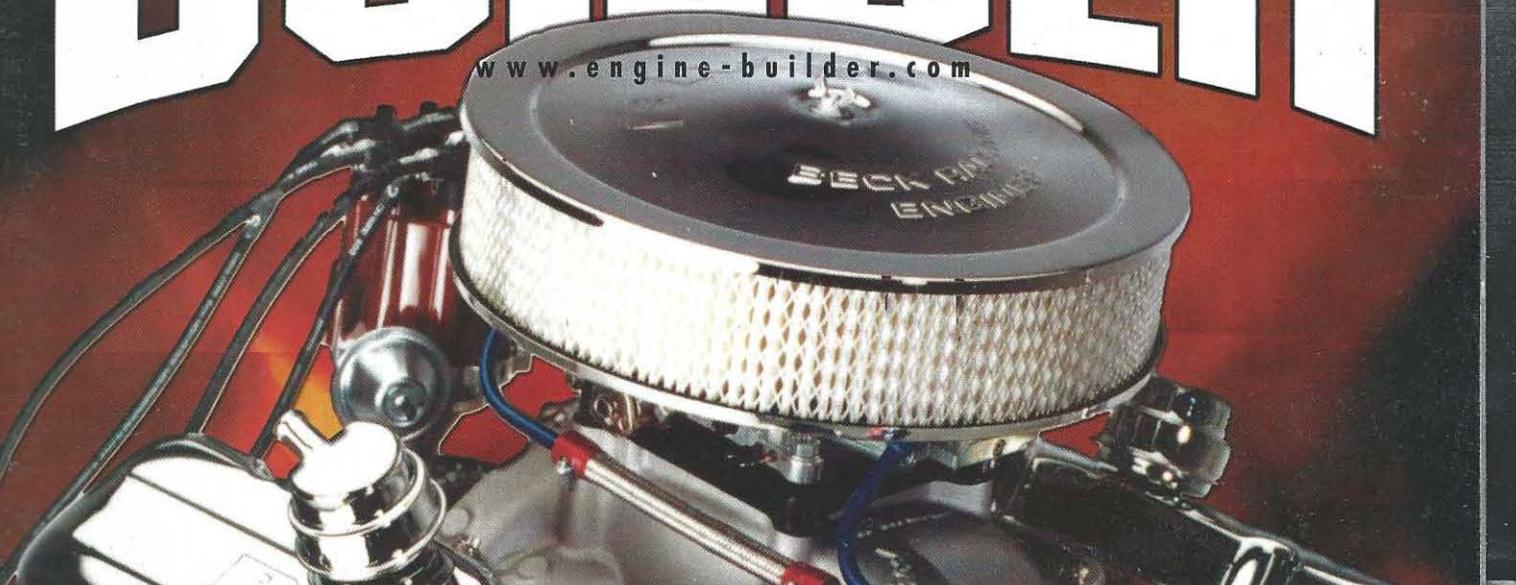
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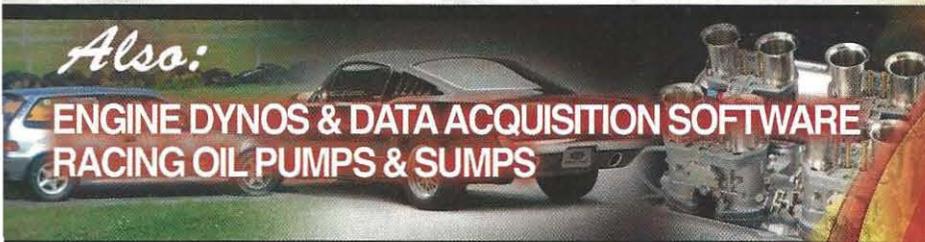
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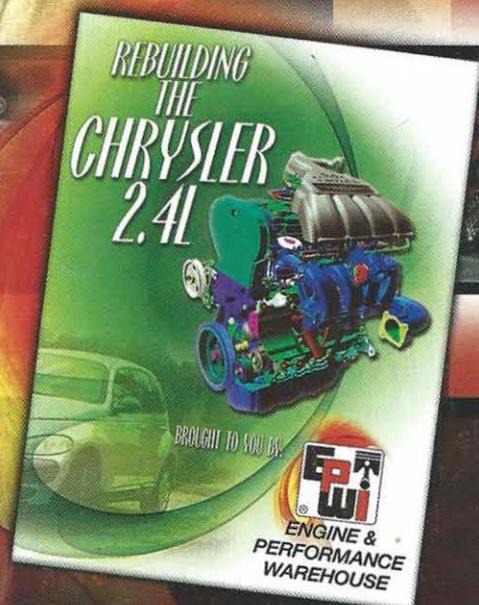
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BY BRENDAN BAKER, Managing Editor | bbaker@babcox.com

PUMPED UP

for Performance Oiling Systems

Determining whether to use a wet-sump or a dry-sump oiling system for your racing/performance customers is a question you may never have the chance to answer – it often depends on what the rules allow and the size of the racer's budget.

Most OE engines use a wet sump system, which can be modified for performance applications to improve oil control and increase horsepower. A dry sump system, on the other hand, has been specifically designed for performance applications and is mainly used at the higher levels of racing where oil control is critical for producing maximum horsepower.

For purposes of this article we will concentrate on the wet sump systems designed for racing and performance applications, as they make up the majority of the grassroots-level market.

Performance Oil Pumps

In the past, enthusiasts believed that high volume and high oil pressure was the way to go in a performance application, but today that is not so much the case. Experts say the trend now is to run a little less oil pressure than in the past. In fact, many believe most pumps may be oversized for their application anyway. The small block Chevy pump, for instance, was designed in the late '50s to run 10 gpm oil flow so that on a hot day at 500 rpm you had sufficient lubrication. But when you take the engine up to 7,500 rpm the pump has more capacity than the engine requires. With many racing applications you're bypassing 50 percent of its capacity to the pump. Repumping that oil just puts unnecessary heat into it, according to some experts.



In addition, the high volume pump for the SBC is the same diameter but a little taller gear, so a lot of engine builders are going back to the standard volume pump, especially in restricted classes where builders are looking for every bit of horsepower. One reason for this is because very few race engines are ever at idle and when they are it's at 1,500 rpm instead of 500-600 rpm. Simply put, the engine doesn't need as much pressure at low rpm because it doesn't run there.

"It used to be that people wanted to see 120 psi of oil pressure, then it dropped down to 80 psi and today most customers are really happy with 60-65 psi," says Verne Schumann of Schumann's Sales & Service.

Baker Engineering's Jack Jerovsek says his company modifies a stock oil pump as the basis for the circle track SBC performance wet sump pump, which eliminates all the oil going through the main cap and brings it into the middle of the gears like a dry sump pump.

"Our whole goal is to reduce the amount of bypass the pump has to make and to reduce the aeration of the oil, which inherently reduces the temperature," says Jerovsek.

Jerovsek and others also say you should consider a high volume pump in high horsepower applications where your bearing loads and volume pressures go up and you need a little bit of extra pressure, and if you're running oilers for the springs and flat tappets, or piston oilers and so on, then the extra demand will require more volume.

Schumann's offers three levels of performance pumps, which are based on the same high-alloy 70,000 psi temper heat treated housing. Schumann's pumps are geared for the grassroots strip/street/track market because he says that's 90 percent of the performance oil pump market.

"Unless it's a top notch, high-end race engine, the ET racers and class racers (stock and super stock) sure don't have dry sumps. Unless they're running

a Nitro Fuel Dragster or Pro Stock engine, your customers are probably running a wet sump system."

Schumann says his company has completed its SBC line and is now working on Windsor and Hemi applications.

Schumann's SBC pumps have nine additional features over the stock pump. "On the driven shaft in the pump, we're taking the time to machine oil retention grooves the length of the housing, which actually gives the oil a place to flow, so you have a higher change over rate of oil," says Schumann. "And believe it or not, the rotation of the oil pump actually hinders the oil from getting in there as it is being thrown to the outside by centrifugal force. We grind a notch in the bottom of the floor of the pump housing that takes the pressure side of the pump and pushes oil underneath the gear. We chamfer the gear and put an oil groove in the oil hole as well, so we know we are getting oil in there."

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pumps is aeration; all oil has air in it by nature; as it splashes around and picks up air, it cavitates to the top of the pump. With that groove in there, it gives the trapped air in the top of the pump an escape hatch. Also, our preset on our OE gas series pump is 50-55 psi, which is 15 percent over OE specifications (40 psi)."

Drag Race Pumps

In a typical OE application, engineers calculate the bearing clearances, journal diameters and so forth throughout the engine. From there they can estimate the volumetric requirements for oil. Then they design an oil pump that is 30 percent larger than the maximum requirements. Today's drag racing engines run tight clearances and very light oil, so many experts say they don't need that extra 30 percent volume because it just costs horsepower to pump all that oil through the engine.

Consequently, some oil pump manufacturers have recognized the need for a smaller volume pump for drag race

applications. "What some Chevy guys are doing right now is taking the standard 55 psi pump and cutting the gears down and making spacer plates and then selling them for a lot of money because the pumps are handcrafted. We are in the process of developing a high quality, low volume drag race pump that will be affordable to the average racer," says Schumann.

Experts say you need to look at your bearing clearances first to help determine what type of oil system to run.

Mike Osterhaus of Melling Engine Parts explains: "If you're running clearances close to stock or even tighter, then you really don't need a high volume pump unless there are other plumbing or accessories that require an oil feed. Some guys might decide they want to run piston coolers and plumb in coolers or if you run a remote oil cooler or filter where there's going to be more pressure drop to fill that system than there was originally, then you need a high volume pump for that applica-

tion to compensate."

Instead of lowering the displacement of the pump some engine builders are using a weaker relief spring so they can bypass the higher pressures. This way the pump goes into bypass sooner and uses less power to drive it up into the engine. This is one of the ways you can reduce the system pressure in the engine and get back some horsepower that was lost driving the pump.

On the drag race side, some builders use an oil accumulator to compensate for lack of oil in the pan during the run. And a lot of racers will run the accumulator just to protect the engine if the oil pressure were to go below a certain pressure setting. The oil may be somewhere else in the engine because of the forces involved and end up exposing the pump pickup, say experts.

Melling's new billet oil pumps are designed to fit particular sizes of oil pans according to Osterhaus. The pickup is integral with the pump assembly; yet, Osterhaus notes, that in doing this

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