Sourced from High Performance Pontiac, July 2013 – Rocky Rotella

I need your opinion on my street/strip 461. I'm going with a Comp Cams solid roller with the company's Endurex lifters. Do I need restrictors with these lifters? The experienced race-engine builder who did the bottom end and spec'd out the cam said restrictors weren't necessary. Butler's catalog says this lifter requires restrictors or restricted pushrods. The bottom end is complete. I hate to take it apart, but I want it right the first time. Your opinion on this would be much appreciated,
Denny Drone

Rocky Rotella responds:

Denny, that's an excellent question that many hobbyists ask. However, I've found the answer is rather complicated, and ultimately application and builder specific. Let me explain why. Generally speaking pressurized oil lubricates an engine's rocker arms while the oil flowing from them carries heat away from the valve springs. In a Pontiac V-8, that oil is commonly delivered to the top end through the lifter and pushrod. The greatest concern when using a mechanical (or solid) lifter in a Pontiac block is the volume of oil that passes through it. Pontiac engineers designed its new V-8 for '55 to deliver a relatively high volume of pressurized oil to the lifter bores for proper hydraulic lifter function. When Pontiac selected a mechanical camshaft for its Super-Duty engines of the early '60s, the solid lifter it developed had a very small feed hole intended to reduce the amount flowing to the top end to just enough to keep the rockers lubricated and the springs cool. When that factory-designed solid lifter disappeared from Pontiac's parts catalog, many companies began creating their own by modifying a typical hydraulic lifter. The internal plunger was replaced with a fixed piece to effectively create a solid unit. The oil feed hole in the lifter body was, however, permanently sized for hydraulic operation. Engine builders and hobbyists quickly found that because oil flow through these modified hydraulic lifters wasn't restricted, the oil pump could deliver oil to the top end quicker than it could flow back to the sump during a full throttle blast, potentially starving the crankshaft of vital lubrication, ultimately ending in fatal bearing damage. Tapping the block's lifter bore holes to accept a ¼-inch diameter set screw with a restriction measuring around .040 inch drilled into it proved an effective solution that remains common even today, but it's also a modification that must be performed with the engine completely disassemble so the block can be properly cleaned of any metal filings associated with the tapping process. Another suitable solution is using special pushrods that have a smaller diameter hole in them, which provides the lifter with a generous amount of oil but limits flow to the top end. Savvy camshaft manufacturers such as Comp and Crower have since developed specific solid flat-tappet and roller lifters for the Pontiac V-8 that reduces oil flow. It lessens but doesn't totally eliminate the need for lifter bore restrictors in the block. The solid roller units are among the best available today and are a popular choice with professional Pontiac builders. These special lifters and restricted pushrods can be combined or used independently depending upon the application. Over the years, I have found that the preferred method of effective oil restriction when running a mechanical cam in a Pontiac V-8 seemingly varies by builder and/or camshaft manufacturer. Some feel no restrictors are required, while others prefer using restricted lifters and/or pushrods. While that may seem contradictory, both answers are absolutely correct because of the wide array of variables involved when building engines. I contacted a couple of knowledgeable and experience Pontiac engine builders and asked their thoughts on installing a solid-roller camshaft into a Pontiac V-8. David Butler from Butler Performance in Leoma, Tennessee, believes there are too many variables to make a blanket statement that fits every application. He tells me the position of the lifter's oil feed hole in relation to the lifter bore hole, the diameter of the lifter's oil feed hole, lifter bore clearance, oil pan capacity, and the intended application are all factors he considers when determining the best method of oil flow restriction for a given engine. Additionally, aftermarket aluminum heads typically do not drain oil back as quickly as original iron castings, so oil pooling can be an issue, and that adds to the consideration. Though Butler has successfully used all types of solid-roller lifters, he most commonly uses Comp Cams equipment in the engines he builds. Since Comp's lifter for Pontiac V-8 generally flows a greater amount of oil than what's required for adequate top end lubrication, Butler tends to prefer limiting oil flow with

restricted pushrods, particularly in high RPM engines and/or those with a very aggressive roller camshaft with high valve spring pressure, where additional lifter oiling can increase the lifespan of the roller wheel. He added that he uses lifter bore restrictors in applications in which bearing wear issues are a concern, and he has found it an effective solution. Dave Bisschop at SD Performance in Chilliwack, British Columbia, commonly uses Crower solid-roller lifters in his engines simply because he's most comfortable with them. He typically doesn't use lifter bore restrictor in the engines he builds because, for him, the Crower lifter adequately restricts oil flow through the lifter body, and the roller wheel's needle bearings rely upon the pressurized oil for effective lubrication. Bisschop feels that less oil flow than what's available from the Crower lifter can potentially lead to rocker arm damage and premature valve spring wear, and if oil control still seems to be an issue, he then uses a restricted pushrod for limitation. As you can tell, there isn't a simple one-size fit- all answer to your question. Each engine builder machines and assembles their engines differently and that can ultimately affect the outcome regardless of what components are used. Without knowing all the details of your particular build, it's difficult for me to make a suggestion, but I'm confident you'll find adequate oil flow control is possible using a quality restricted pushrod, and that will eliminate the need to disassemble your engine to install lifter bore restrictors. Your best bet is to contact your favorite professional Pontiac builder and carefully outline the details of your particular combination, however. He or she can provide you with the best solution for your application based on their experience, and that will certainly keep your Pontiac operating as reliable as possible.

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