Got a question for John? E-mail him at ceeditor@amosautomotive.com

Feeling Groovy

Is your '65-'66 big-block being fed right?

READER'S QUESTION: I'm in the planning stage for a stock rebuild of my 1966 Corvette's original 427/390hp engine (block casting #3869942), and I'm gathering the parts required before I pull the engine. One of the problem parts so far is the camshaft, PN 3883986; it supposedly has a groove in the rear bearing journal, and I haven't been able to locate one yet. My mechanic says the '67 390hp cam, PN 3904359, has exactly the same specs and will work fine, and he has one, still in the GM Parts tube, with the matching bearings. He says he has used several of them in '67 and '68 396 Camaros with no problems. I'm confused about the grooved vs. no-groove rear journal and bearing thing, and don't want to make a mistake. Can you explain what works and what doesn't?

RESPONSE: Oddly enough, this is almost a repeat of the '55-'56 vs. '57-up small-block rear cam journal and bearing change for lifter gallery oiling fiasco; makes you wonder why they'd repeat the same mistake eight years later on the new big-blocks. At any rate, here's the background on your issue:

'65-'66 Big-Block Lifter Gallery Oiling: In order to feed pressurized oil to the galleries that feed the lifters, the '65-'66 big-blocks used a combination of a groove in the rear cam journal and a rear cam bearing with a matching groove on its inside diameter. Oil entered the bearing through a hole at the bottom, traveled around the journal through the groove in the bearing and the journal, and exited the bearing through two holes at the top that aligned with two holes in the block; those two holes fed the oil galleries on each side that fed the lifters. Both the cam journal and the cam bearing MUST have the groove in order to provide adequate oil flow to the lifters, and the bearing must have the two exit holes at the top.

'67-Up Big-Block Lifter Gallery Oiling: Starting in 1967, Chevrolet redesigned the oiling path to the lifter galleries. The groove was removed from both the rear cam journal AND from the I.D. of the rear cam bearing, and an annular groove was machined into the rear cam bearing bore in the block instead. With the smooth rear journal and cam bearing surfaces, oil entered the bearing through the same hole in the bottom, but part of it flowed around the **outside** diameter of the cam bearing, through the groove machined in the bearing bore, and exited through the same two holes in the block at the top that fed the lifter galleries. The cam bearing now had only one hole, at the bottom.

What This Means To You: Your block dictates what you can use. The 1967 non-grooved cam and non-grooved one-hole rear bearing will **NOT** work in a '65-'66 block, period; you need the cam with the grooved rear journal **and** the rear cam bearing with the three holes and the groove on its I.D. The cam isn't a big problem–any competent machine shop can cut the required groove in the rear journal of the 3904359 camshaft, and all you need then is the correct rear cam bearing, which will be included with a '65-'66-only big-block cam bearing set.

The reason the 359 cam and bearings have worked before for your mechanic in '67-'68 396 Camaros is because their blocks were designed for it, with the groove machined in the rear cam bearing bore. If he had tried that combination in a '66 block, he'd have had no oil to the lifters. ■

WAYNE MIDKIFF

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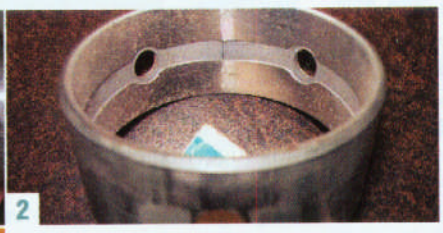

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1 A '65-'66 big-block cam with the grooved rear journal; this design MUST be used in a '65-'66 block to get oil to the lifters.

2 The matching three-hole '65-'66 rear cam bearing with the groove on the I.D. and the oil exit holes at the top to the lifter oil galleries.

3 View from the lifter valley showing the '65-'66 grooved rear cam bearing installed in a 961 block; oil enters through the hole at the bottom of the bearing and exits through the two holes at the top.