

## Working on the Chain, Gang

By Rick Cogbill  
December 2004

**“Well, are you gonna give me a hand, or do I have to unload this myself?”**

Dickie Dickson used his imitation gold lighter to put some life back into his half-chewed cigar. Soon wreaths of smelly smoke surrounded the car salesman’s beefy red face.

Tooner and I just stood there, staring at the grease-covered 2.7 litre engine lying in the back of Dickie’s pickup.



“Gee, we’re kinda busy these days, Dickie...”

He cut me off with a noxious wave of his stogie. “You weren’t too busy when I asked you to pull the engine so I could get it repaired!”

Tooner threw up his hands. “But that was three months ago! In case ya ain’t noticed, we got cars lined up down the street.” He looked at me. “Listen, boss, these second-hand junkers are a waste...”

“Easy, my friend,” said Dickie soothingly. “We prefer to call them *pre-owned transportation units*. Or as we say in our TV ads: ‘Quality cars with the inflation factor removed.’”

Well, whatever they were, our troubles began when Dickie took a 1997 Dodge Intrepid in on trade. Even Dickie couldn’t ignore the rattling coming from the left valve cover, so he had his lot boy take a look. No lubrication was getting to the valve train, so in a moment of weakness (and during a slow stretch on the appointment book) we agreed to pull the engine so Dickie’s “rebuilders” could do their magic. We’d just expected it back sooner than this. I tried to explain that to him.

“Can’t help that, Slim,” puffed Dickie. “My buddy had to fit it in between paying jobs.” He winked at us. “That’s how I get such good deals, you know.”

“We’re stuck with this, Tooner,” I said. “Go get the engine crane.”

Once we had the engine inside, Basil came over for a look. “Has this even been apart?” he asked. “It’s no cleaner than when it left here three months ago.”

“According to Dickie,” I explained, “the rebuilder repaired a plugged internal oil passage. I’m hoping the inside of this engine looks better than the outside.”

“A big waste o’ time,” growled Tooner. “This thing’s gonna come back t’ bite us!”

We dragged out the boxes of dusty parts from under the work bench, and Tooner spent the next two days re-installing the motor. Finally, it was ready to start.

Tooner wiped his hands on a rag. “Well, here goes nothin’,” he muttered, and reached in through the driver’s window to turn the key. We all held our breath, but unfortunately Tooner was right – nothing happened. The car cranked and cranked, but wouldn’t fire. A barrage of newly-minted adjectives hit the air waves, making us all run for cover.

“Wow!” exclaimed Beanie, his ears burning as he burst into the coffee room. “Should we call 911? I think Tooner’s gonna have a heart attack!”

Basil sat down and reached for the deck of cards. “Not to worry, Bean. Once he calms down, he’ll figure it out.” A box of donuts caught his eye. “Well, now, what do we have here...?”

But success proved to be very illusive. A series of tests confirmed that there was no spark and no injector pulse. Tooner began the process of checking connectors, along with doing some voltage and resistance tests. Finally he unplugged the cam sensor. “Beanie!” he hollered. “Do me a favor and crank this thing over while I test for a voltage signal.”

A moment later he yelped in surprise as the car fired up and idled smoothly. “What the...” he exclaimed. “Must be a shorted camshaft sensor!” But when Tooner plugged in a new one, the car again refused to start.

“This is weird!” he muttered. “Disconnect the sensor, and it runs. It’s like the cam signal is cancelling out the crank signal.”

“I wonder...” Basil said thoughtfully. “The car ran before the engine came apart, so it stands to reason that the current problem has something to do with whatever was done internally on the engine.”

Tooner stared at him. “A mechanical problem? That’s nuts! Why, the only thing that remotely connects cam and crankshaft sensors is the...the...” He stopped and smacked his forehead. “The timing chain!”

A couple of hours later, Tooner had the front of the engine dismantled and, by using a picture of the timing chains, discovered that the left camshaft – where the cam sensor is – was off by one tooth. The mistimed engine was confusing the computer, but unhooking the cam sensor allowed it to start using limp mode data. Once the cams

were properly timed with the crankshaft, the car ran perfectly. Now the only thing out of sync was Dickie's facial muscles when I showed him the extra repair bill.

"Outrageous!" he sputtered. "I'll never recover these costs – this old junker isn't worth it!"

"Easy, my friend," I said soothingly. "We prefer to call them *pre-owned transportation units*. Just think of it as a lesson in post-inflationary economics."

"Huh?" Dickie stared at me, his soggy cigar dangling listlessly from his lips.

"Let only pre-qualified technicians work on your pre-owned transportation units," I explained. "Doing the job just once is guaranteed to save you money."