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A 2009 Honda CRF450R is resurrected by Duncan Racing

"It was horrible," said Leonard Duncan. "I could barely ride it without stalling. The bike was jerky, unpredictable and quirky."

It was an extreme case of buyer's remorse. Leonard's son, Danny, had found a 2009 Honda CRF450R that had been used only on a motocross course in its previous life. He wanted a Baja pre-runner, and the Honda seemed like it would fill the prescription. But when they rode it for the first time, it was pretty much the opposite of what they wanted.

That's how all projects begin: when expectations and reality don't match up. The bike was scheduled to pre-run for the 2013 Baja 1000 with Danny's friend, Chaz Konarska. The race was a few months away, and there was a lot of work to do.

TALE OF THE '09

Leonard Duncan is a very familiar figure in the ATV racing world. Duncan Racing has been instrumental not only in building quads for racing in Mexico and the U.S., but in the Dakar Rally too. Leonard has been to the rally twice, acting as crew chief, advisor and sleep-deprived mechanic, so there's nothing about motors that he can't handle. In the case of the 2009 Honda, he probably shouldn't have been too surprised. That bike was somewhat infamous in the dirt bike world. It was all new in '09, and it replaced what was regarded as the best motocross bike of its day. The 2008 CRF450R was the last carbureted 450 motocross bike from Honda, and it was incredibly good in almost every way. That motor was also the basis for the TRX450R ATV, a machine that Duncan knew inside out.



A little road jumping always highlights a good off-road adventure.



Duncan Racing is a company that is primarily involved with ATV racing, but rebuilt this five-year-old Honda for Baja pre-running.

LATE BLOOMER

Unfortunately, the replacement CRF450R was completely different, starting with fuel injection and extending to overall feel and handling. Honda didn't just adapt fuel injection to the existing machine; it was a new bike, a new concept and a new identity. That wasn't received well by the faithful. The Honda was criticized on several fronts: the injection mapping was glitchy, the handling was squirrely, the clutch was weak, and it wasn't enough like the old CRF. On the flip side, it was light and handled like a great big 250.

Between 2010 and now, Honda worked on all the complaints, but there is still a large number of 2009 models floating around. Some have been updated and some haven't. The one that Duncan found had suspension work but not much else.



A set of Talon wheels from Dubya helped make the Honda off-road-worthy. Pirelli Scorpion MX tires were used front and rear.

PART ONE: OFF-ROAD CONVERSION

Before any of those items could be addressed, it had to be made off-road-ready. That's a well-traveled path. When you take a bike designed for 10-lap sprints and head to Baja for days and days of riding, you have to address range, comfort and protection. The range part is easy. IMS makes a 2.7-gallon fuel tank that sells for around \$275. It bolts on quickly and accepts the stock mounting location for the fuel pump, which is inside the tank. Protection items from TM Designworks (chain slider) and Enduro Engineering (hand guards) were used. A set of used Talon wheels turned up for \$600. It's always a good idea to have an extra set of wheels in the truck on a pre-run. The Talon wheels and Excel rims are super strong for off-road riding, and Pirelli Scorpion MX tires are tough.

On the comfort subject, the bike got a set of Flexx bars, which absorb small hits with elastomer cushions. Duncan knew all about these from the ATV world, where they are ubiquitous. The Factory Connection suspension was set up soft, specifically for off-road, and they got a set of SealSavers. The final part of the chassis puzzle was a GPR V4 steering stabilizer, which mounts under the bars and elevates the handlebar mount 3/4 inches. In its most basic configuration, the V4 sells for around \$500, and we consider it one of the essential elements for a 2009 Honda CRF—regardless of where it's ridden. Motocross riders routinely use stabilizers to fix some of the Honda's skittish nature. It doesn't interfere with the CRF's HPSD system, which is a little damper mounted behind the front number plate.

PART TWO: MOTOR MOTIVATION

Right from the start, Duncan was confident that he could fix the Honda. The sorest sore point seemed to be fuel injection, and he knew exactly how to handle that from his work in the ATV world. Duncan has become the coun-

LATE BLOOMER

try's leading authority on ATV injection systems through his association with Richard Muurling at Vortex Ignitions in Australia. Muurling doesn't just alter stock engine-management systems like most others in this field; he makes his own. The Vortex X10 ECU replaces the motorcycle's black box and takes over everything, from spark advance to fuel mixture. The Honda's original system allows access to fuel mixture, but you have to get Honda's PGM FI setting tool kit, bring a laptop computer into the field and reprogram the ECU for every test session. It gives the end user limited access to ignition timing and very little guidance as to what settings might be best for you. Honda's kit sells for about \$320. The Vortex ECU sells for \$700 and lets you adjust fuel mixture and ignition timing independently with a screwdriver. There are four clickers on the black box, which is actually yellow. Three of them adjust different ranges of fuel mixture according to throttle opening, just like the circuits of an old-fashion carburetor. The fourth lets you choose from 10 different spark-advance maps.

Vortex gives you a best-guess setting for ignition position number one. That's the result of dyno and track testing for the CRF on a motocross track with an otherwise stock motor. The other settings are for different conditions, like mud, hard-packed dirt and so on. There's also an enduro setting for a more gradual power delivery. Setting number nine duplicates the stock ignition but gives you a higher rev ceiling. Setting 10 is open for your own program. To alter that, you would need Vortex's own programming tool. One of the best things about the Vortex is that you don't need to make a pit stop for every single change. A handlebar switch lets you test any preselected curve on the fly and compare it to setting number one.

As for the rest of the motor, very little was changed. The stock cam, piston and head are just fine. Only the clutch needs attention. Duncan installed a Hinson six-spring clutch and hooked it up to a Works Connection lever and perch.



The Vortex ignition is the key to the Honda's rebirth. It allows you to make the spark and fuel mixture do backflips—if that's what you want.



A GPR V-4 stabilizer does wonders for the '09 Honda, whether it's used for MX or off-road.

CLICKER MADNESS

We got to ride Duncan's revitalized 450 a few months after it came back from Baja. It might have been purchased as a pre-runner, but it seemed more like a racer. First of all, it was fast. It's hard to believe that an ignition change could have unlocked so much additional horsepower. In the default setting, the bike felt like it had hardware-based engine work, with more power through the middle and better over-rev on top. On top of that, the motor started easier and stalled less often.

When we went off-road riding with that setting still in effect, it was apparent that it was a little bit too much for tight trails. The power came on hard, and we occasionally stalled the motor. So, we went a little clicker crazy. Changing engine curves is so easy that it's a little like being a 6-year-old at Christmas time trying to unwrap too many presents at once. Eventually, the adult in us took over, and we started testing each setting more thoroughly. A little more fuel on the bottom generally helped the stalling issue, and less fuel up high gave it some extra kick. The ignition advance clickers didn't follow any pattern. Higher setting numbers didn't give you more or less of anything; they were just arbitrarily assigned numbers that correspond to testing done in Australia. Between the 10 ignition settings and the three fuel clickers, there are theoretically 10,000 settings to try. We ran out of daylight.

All of the settings that we tried were an improvement over the stock 2009 Honda, and the rest of the bike was well done too. It was a great example of a bike that had to wait a few years to come into its prime. If you want to talk to the guys at Duncan about the bike or about Vortex ignitions, give them a call at (619) 258-6306, or go to www.duncanracing.com. □



There's a 2009 Honda CRF450R under that cool, new look. And it works too.