

HOW WE WON DAYTONA

with the "California Hot Rod"

by Cook Neilson



All right, Duck lovers, gather 'round and we'll tell you how our Ducati 883 "California Hot Rod" happened to win the Superbike Production race at Daytona this year. Loyal readers will remember our feature story on last year's season: the bike's third at Daytona, its DNF at Laguna Seca and its second at Riverside. You will also remember the skein of transmission difficulties we had during the '76 season, and all the effort expended by Bob Gorsuch and Phil Schilling to alleviate the problem.

Nothing worked; the thoroughly-massaged factory close ratio transmission that we used at Riverside was a goner when we disassembled the engine, and Phil and I decided then that we would either have to solve the problem or park the bike, since neither of us was charmed by the idea of continually replacing used lousy gearbox parts with new lousy gearbox parts. We communicated the details of our situation to Tim Witham of S&W, and he put us in touch with the only man he knew who could help: Mr. Marvin Webster.

You probably haven't heard of Marvin Webster. He is a self-made millionaire who lives in Mill Valley, California and who has had more than some success in the electronics business. Like Tim, Web has been involved with Indianapolis race cars for some time as a sponsor, car owner, engine builder and tuner. Not only that; Web builds gears for Indy racers. When Tim told us that, we perked right up. We subsequently discovered that Web builds the gears for the off-road Baja Honda 350s, for off-road Baja Volkswagens, has done some work for Ken Roberts' dirt-track Yamahas, has built gearboxes for Kawasaki's factory-sponsored motocross racers and had some involvement with the six-speed Suzuki TR-750 road racers.

So we called Mr. Webster, explained our problem to him and shipped him the factory close-ratio Riverside transmission for his analysis. He called us as soon as he got it in the mail. "Nothing wrong with the design," Web said. "It's just that the material's no good." Could he duplicate the box for us using American gear steel? "Yes."

The Riverside box was sent up in late October; we had a Webster transmission in our hands early in January, and after a modest amount of development work the transmission was ready to race. Web didn't make a gear here and a shaft there either; he made the whole thing, gears, shafts, splined washers and all.

While Webster was flogging the gearbox, Jerry Branch was working on the Ducati's cylinder heads. Jerry knew that the top end's biggest problem involved the inlet ports and the inlet valves. The valves measure, in a stock Super Sport, 40mm. Last year we ran 42s. This year branch fitted 44mm

inlet valves, again made from Harley-Davidson XR parts. Since there was no room in the combustion chamber for a 44mm inlet and a 38mm exhaust, Jerry simply made room by sinking both valves and then reshaping the combustion chamber to get the flow bench numbers up where he wanted them. After a lot of hours he produced a 7% increase in intake breathing.

As soon as Jerry was done with the heads I made a Lucite casting of the inside of one of the combustion chambers, machined it off right under the spark plug hole and sent it down to Venolia. "We need pistons shaped just like this," we said. "Piece o' cake," said Venolia. Since we've been working with Venolia for two years they already had piston pin location, ring groove dimensions, valve clearance pocket shapes and deck heights worked out.

And while the gears were with Webster and the heads with Branch, our friend Pierre DesRoches went after the chassis. He removed all the business behind and below the engine that accommodates the center stand; welded in reinforcing tubes to stabilize the steering head just in case the bike might need it; re-assembled the Marzocchi front fork; welded up a beautiful little bracket to accept a Volkswagen oil filter mount; and fashioned a pair of exhaust pipes and megaphones which reflected discoveries we had made at the drag strip last summer.

As usual, everything came back at once: the transmission ("This thing is made out of the finest gear steel money can buy," Web told us), the heads, the crankshaft (assembled by Rennsport Werke's Jeff Bratton in Santa Clara, Calif.), the pistons. Once we got it all together, our first stop, naturally, was Irwindale Drag Strip. If you recall, the Duck's best numbers last year were 11.58 sec. @ 118.89 mph with Daytona gearing. This year the ET dropped to 11.30 and trap speed climbed to 121.13 mph. We were especially pleased with the ET, since the bike was penalized by its new, ultra-tall first gear.

After the successful Irwindale outing Phil and I stopped by the dynamometer emporium of C.R. Axtell to find out how those drag strip numbers translated into horsepower numbers. The translation came out like this:

	Torque (Corrected)	Hp. (Corrected)
5500	55.67 lbs/ft	58.3 hp
6500	62.54 lbs/ft	77.4 hp
7500	57.84 lbs/ft	82.6 hp
8000	55.80 lbs/ft	85.0 hp
8300	57.20 lbs/ft	90.4 hp
8500	54.86 lbs/ft	88.8 hp

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