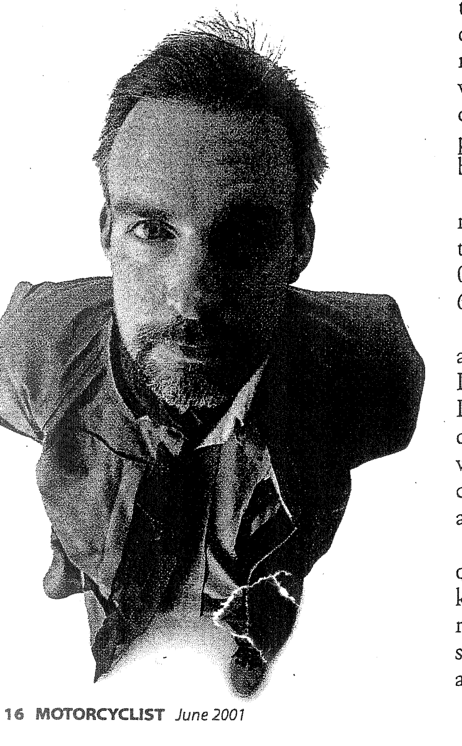
by Marc Cook
Executive Editor

Number Nanny

SUBJECTIVE EVALUATIONS ARE THE HEART AND SOUL OF a magazine road test. We're paid to use our experience and perspective to position and rate the bikes you may buy, but the objective measurements are what help us fortify our position. It's crucial for these numbers to be accurate and repeatable. So on this, the one-year anniversary of our big redesign, we're happy to announce changes in the way we gather and crunch performance data.

Perhaps the most obvious change concerns our acceleration data. For all full-road-test (and comparo-test) motorcycles, we make the trek to Palmdale, California, to the Los Angeles County Raceway (LACR), a purpose-built dragstrip in the low desert outside of L.A. proper. It's a good facility, with a grippy strip and a flexible calendar, but there's one critical flaw: At 2100 feet above sea level, the strip inflicts the expected penalties on horsepower. Ambient temperatures at LACR can range from near-freezing to more than 100 degrees Fahrenheit, so air density (the variable that most affects horsepower) can range from the equivalent of 1200 feet above sea level to a (literally) breathtaking 7000 feet.

Why do we care? Even on the coldest days, the test bikes suffer a 4 percent loss of power (compared with sea level) and on the sunbakingest afternoons in that garden spot we call Palmdale, they're down a whopping 21 percent. That's why, more than a decade ago, this magazine began publishing quarter-mile times that were filtered according to a National Hot Rod Association correction chart. This chart allows you to use the density altitude of the test site and correct the elapsed time and terminal speed of the test bikes. Back when this was instituted, two staffers—who were also private pilots—knew to calculate density altitude from the known elevation, temperature and humidity. Thus, the correction factors varied according to the conditions present during the acceleration tests.



Somewhere in the early 1990s the idea of correcting for density altitude was lost and we mistakenly moved to a fixed correction factor that adjusted only for the strip's basic elevation. As a result, tests done in the winter tended to benefit the bikes (the base scale overcorrects in cold air) and summer tests made the bikes seem slow. Also, until now, we applied the correction factor only to the quarter-mile times and not to the remaining performance numbers, which are generated by our highly accurate Stalker radar gun.

Now, we will apply the appropriate correction factor to the quarter-mile time and trap speed as well as for the 0–60 and 0–100 mph acceleration runs and the 60–80 mph roll-on figure.

But that's not all. For years we've used and put thousands of miles on the Bartels Dynojet dynamometer. As with all Dynojets, it's what's called an inertia dyno—the rear tire contacts a metal drum whose exact mass is known. Horsepower is calculated according to how rapidly the tire accelerates this drum.

In the months ahead, we'll be changing over to a SuperFlow dyno. It's what is known as an eddy-current dyno, and its main strength is the ability to apply a constant load to the rear tire and drivetrain, allowing us to obtain more accurate horsepower and torque indications. What's more, our SuperFlow will be equipped with an exhaust-gas analyzer and lambda (oxygen) sensor to help us determine where in the mixture curve the engine is operating at any given load and rpm. We expect the SuperFlow to be a fabulous tool.

That's all fine, but there is one fly strutting about on the omelet. Because of the way each dyno measures power, there are differences in the raw numbers. In general, the Dynojet serves up figures approximately 12 to 18 percent higher than typical eddy-current dynos. We'll have an overlap period while we switch over to the SuperFlow and will take the opportunity to test some bikes twice to verify the offset. Just don't get cranky if your GSX-R600 is shown to make 85 horsepower at the rear wheel instead of 100; it's not the bike, it's the dyno.

Performance and dyno testing are but two pieces of the puzzle. In the next few months, we'll begin a major program working with suspension specialists Race Tech to begin on-board, real-time data acquisition on most test bikes. In addition, we'll have access to Race Tech's new suspension-test rig. Not only will our testers—with highly calibrated backsides—be able to tell you, for example, that this or that bike's suspension is harsh over small pavement irregularities, we'll also have the graphs to prove it.

And as we have done in the past, we'll be making extensive use of our Drack data-acquisition system for track (and some street) tests. This setup includes a small, on-board computer that's capable of reading several channels of data, including wheel speed, throttle and suspension position, the bike's location on the track, and even incredibly accurate lap times. We plan to expand our use and presentation of the Drack data to help explain why one bike goes around the track faster than another.

As modern motorcycles get ever more competent, these data become increasingly important in drawing a complete and accurate performance picture. It's our aim to give you the best, most comprehensive testing around.