

Taking a Stand on Traction Control

By Warren Johnson



Warren Johnson has always been known to speak his mind and embrace new technology. His stand on Traction Control is no different.

Because I've been known to climb out on a limb sometimes, I might as well climb out to the end of the branch with this topic.

Traction control is a term that strikes fear in the hearts of some members of the motorsports community. It's become commonplace in production vehicles, yet it's banned by many racing organizations.

The safety benefits on the street are obvious. By maintaining grip on slippery surfaces, the driver can avoid potential accidents. As with many GM vehicles, the production version of my Pontiac Grand Am employs electronic controls to maintain traction. The same sensors that provide input for the anti-lock brake system also detect wheel spin under acceleration.

The power train control module monitors traction by comparing the speeds of the driven and un-driven wheels. If wheel spin is present, the system retards ignition timing to reduce power and up - shifts the transmission to reduce torque multiplication. Some production systems also intervene by applying brake pressure to the spinning wheel.

The same principles of traction control apply in racing, albeit at a more sophisticated level. Engine speeds are higher and response times are faster on the track, but the systems are conceptually similar.

Efforts to ban it in racing series' such as Formula 1 have proven futile, because the codes can be embedded so deeply in the engine control software that they are virtually undetectable. The F-1 authorities simply threw in the towel and legalized it. Rumors of clandestine systems with subminiature components hidden inside wires abound in NASCAR, SCCA, NHRA, and other forms of racing that currently prohibit traction control.

One of the problems with policing it is that advanced systems do not require external wheel speed sensors. If the ECM

(Electronic Control Module) senses an increase in the rate of engine acceleration that is greater than a preset value, the inference is that the tires are spinning due to a loss of traction. The system then responds by reducing engine output.

Though the NHRA Rulebook prohibits the use of traction control, all of the components of a traction control system are legal. If you were to marry a digital ignition system with a G-meter and a ground speed sensor to monitor acceleration, you would have the rudiments of a traction control system. Of course, I am certain that no one in the sport would actually employ such a device . Right ?

The obvious point is that none of these devices actually control traction. Traction is only determined by the coefficient of friction between the tires and the track surface. The available grip depends on ambient conditions. The track surface, and the composition and construction of the tires, cannot be affected by the engine, car or driver. Traction control should really be known as “torque control” because that is what is actually regulated.

The goal in drag racing is to apply as much engine torque as possible to the track surface to maximize acceleration up to the point when spin occurs. When a traction-control system is activated, the engine inevitably produces less than its maximum power. Therefore, the belief that traction control will make a car faster is simply wrong. In fact, traction control (or torque control) cannot make a car run quicker than it would on a perfect run. What it can do, however, is salvage a marginal run that might otherwise be aborted due to excessive wheel spin or tire shake.

The potential benefit of traction control in Pro Stock, a category in which the cars have virtually no down force, is to make racing safer. Traction control is not going to make a car quicker, but it will make it more consistent and controllable on a less-than-perfect track surface.

A legal traction control system would be simply another tuning device, just like a carburetor or a clutch. It would be up to the crew chief to program how much variation from the optimum wheel speed the system will tolerate before reducing engine power. If the tuner errs on the side of caution, he will have cut engine power needlessly. If he is too aggressive, he will overpower the track, just as he would without traction control.

A legal traction control system would be another item in the toolbox that racers could use to adjust the car to track conditions. It 's not a magical, all-purpose solution to setting up a race car. I t requires finesse and intelligence to use it to its full potential.

In my view, bans on traction control in racing are much like Prohibition was in the early 1900's. A noble experiment perhaps, but ultimately, unenforceable. Unless our engine technology reverts to bare bones magneto ignition systems with no external wiring, there will always be the potential to employ illegal traction control. Because the introduction of traction control would improve consistency, safety and the quality of the show, why not embrace the technology that is standard equipment on 90 percent of the late model vehicles in the spectator parking lots?



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