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What's the Big Deal with These Little Things?

by Dean Nardi

The following is a test of a popular traction control device. A few months ago, *Dirt Late Model* conducted tests at two East Tennessee dirt tracks (Atomic and Cleveland Speedways) of a controversial black market part, namely the Traction Master 5000-SL traction control system. The item is produced by Davis Technologies in North Carolina and is the most popular on the market today. The company is not hard to find if you are so inclined.

The 5000-SL is not the only unit Davis Technologies manufactures, nor is it the only device available. *Dirt Late Model* invited other manufacturers of traction control devices to participate in the test, but they were not able to arrange their schedules in time. Since we found by speaking with a cross-section of dirt racers that the Davis unit is by far the one in most widespread use, we decided to focus our testing efforts on it, as in: Does it work effectively or not? Or to put it another way: Is it worth the $6,500 investment?

Traction Control... Miracle Cure or Snake Oil?

Around the Dirt Late Model world, we usually have one traction control argument per week, sometimes around lunch. Helps with the digestion.

"Doesn't work worth a damn," someone will say.

What?

"It's just some slick salesman taking the suckers money."

Huh?

"Let's face it. The best drivers don't need it to win. The other guys are just kidding themselves if they think traction control will win races for them."

I've heard the argument a thousand times already. And then there's the one about the ethical nature of running a piece of equipment that is illegal (immoral and fattening). I wondered why who knows how many dirt racers have ponied this kind of cash for something that's little more than a feel-good purchase with no actual benefit.

So I argued, "What do you mean it doesn't work? Doesn't it seem that after a few drivers bought the unit the word would have gotten around if it didn't do what it was intended to do? It's common sense."

"That's just it," was the reply. "No one talked about it. They didn't want to admit to actually having used one. So the word did not spread except in the sense that racers became more curious about it. Believe me, I've talked to several drivers who say it's not worth $65 never mind $6,500."

I wondered if these drivers weren't just coming up with a story to discourage others from tapping into their little advantage. You've got to admit. That's as good a possibility as the other theory.

"Besides, it just ain't right, using one of those devices. It goes against everything we stand for in racing: fair play, a level playing field, and letting the driver's talent settle the outcome."

"Oh, really," I replied. "Then why are those making the rules allowing $3,500 exhaust headers and $10,000 shock-and-spring packages? And isn't the racer's motto something like: 'It's not cheating if you don't get caught?'"

But there was one way to settle the argument as to whether this product worked or not, and that was to give it a track test. The conditions of the test would be set up and monitored by representatives of this magazine. We did not hire J.D. Powers & Associates to verify the results but will attest as to their accuracy.

"You'll see," said some folks. "It won't make a difference."

"I don't know," said some others. "There's got to be a reason drivers buy it."

We didn't know. And that's why we conducted this test. Before we proceed with the results, this magazine would like to thank Dale McDowell and Ray Cook of the McDowell-Cook Driving School and the Atomic Speedway along with Marshall Green, Monte Morrow and the Cleveland Speedway Driving School for their assistance during our experiment. Also, thanks to the drivers who volunteered for testing duty. Trust me, we didn't have to twist anyone's arm.

BOB APPEGET

Davis Technology's most popular traction control unit, the 5000-SL, is about the same size as the average stopwatch. At that size, it's pretty easy to conceal.

Is Traction Control Outrunning You?

by Tim Lee

Crew chief Ronnie Stuckey is a freelancer, which means he works with a lot of different race teams on many levels, from local weekend warriors to full-time professionals.

In that capacity, he's had plenty of experience with traction control units, both in reality and in theory. We talked to Stuckey to get his take on the place of traction control in Late Model racing.

"Everybody's shop that you go into, one of their main topics they want to discuss is traction control," Stuckey said. "It seems that every racer is convinced that the guy that's outrunning him is using traction control. But then, you can go to the other guy's shop and find out that he thinks he's being outrun by traction control too.

"And sometimes, neither one of them is using it."

So is the effectiveness of traction control as much psychological as it is real? Is the perception reality?

"Everybody who thinks they're being outrun by traction control, feels like they have to have it on their car," Stuckey explained. "If you don't run well with it, you can turn around and sell it. But, mentally, you've got to know whether that's what you're being beat by.

"A lot of the good drivers have bought it, and a lot of them have sold it when they've seen that they don't need it. But until you have it and put it on your car, you're going to always feel like you're getting outrun by it.

Traction control has been a hot topic the past few seasons, and at times it seems everybody is using it or, at the least, worrying about it. Still, Stuckey says that "there are a lot of teams that haven't tried [traction control] and don't want to try it, because they think they can race without it."

How widespread is the use of traction control? "As for the number of Late Model guys out there who have it, I'd say it probably approaches half the field," he said. "I'd say that on the series that have spec tires and eight-inch spoilers, it's probably two-thirds of the field.

So what are the advantages of traction control? "In certain conditions, there's no advantage in having one," Stuckey said. "If you're going to race every week on a track that stays a little hooked up, wet, muddy, with traction, a little rough, it's probably not an advantage to have one.

"But if you're going to run on a track that gets any kind of dry-slick, black, with spec tires, then there's no doubt that it has its advantages. And the biggest advantage has got to be tire wear. No wheel-spin equals no heat in the tire. And no heat in the tire helps get you through the last ten or twenty laps of the feature when everybody else's tires are giving up."

According to Stuckey, traction control units are not the "magic ticket" to victory lane that legend has built them up to be. "What we've seen is that, if you've got a guy who's two seconds off the pace, you can put one of these in his car and it might bring him within a second, but it's not going to make him go to the front," he said. "It's not going to be the magic ticket to make him go from eighth to first."

But, he added, "If you're running third, and you leave your car a little too free, you might can run third with it. Without it, you might start third and you're a little too free, you might finish fifth.

"Now, whether the two guys who passed you have it, I don't know. But it's always in the back of your mind that they had it. So you're going to be willing to go out and buy one so you can finish third. And sometimes, if you can finish third a few times instead of falling back to fifth, that money might come back to you pretty quickly."

As for policing traction control, Stuckey feels that the more sanctioning bodies have tried to crack down on its use, the smaller (and thus more expensive) the units have become. "The more they've tried to police it, the smaller the units have gotten and the more expensive they've gotten," he said of the units that generally cost anywhere from $4,000 to $8,000 for something that will fit in the palm of your hand. "I'm not sure that if, a few years ago when they first came out, that if everybody had just gotten one, the price would have stayed low."

Regardless of the seemingly high price, Stuckey says that, when put into perspective, it really might not be as bad as it's made out to be. "The little bit of money you spend on that isn't that much," he explained. "Our tire bills are bigger than that. Our wheel bills are bigger than that. We spend more on transmissions. Our motor prices are way up there.

"The units that fit in an ignition box cost around $4,000. And four grand isn't a bad price to help us go fast. We spend $3,000 on a set of shocks to help us go fast, so $4,000 for a little electronic ignition doesn't seem bad either."

The equipment for the tests was supplied by Shannon Davis, who was on hand at both locations to connect the traction control unit as well as adjust it to suit the individual cars and drivers that participated. Noted crew chief and car builder Ronnie Stuckey attended for technical support and to help interpret the results for this magazine. Ray Cook and several other drivers ran stop watches. The times were verified by a second stopwatch operated by me.

The traction control unit that Davis manufactures is not difficult to install, especially when concealment is not an issue. It does have to be adjusted, however, to suit changing track conditions as well as varying capabilities of drivers and cars. Davis provides direct phone support for his customers, some of whom reportedly rely on the expertise of other racers that they purchased their unit through. It's no secret that many of these units have been sold by well-known racing people, either directly or through referrals.

Anyway, we had people at the tracks that knew what they were doing with this product and could dial it in to their satisfaction. Whether or not it worked was what we intended to find out.

The unit could be turned off or on according to our test objectives without the knowledge of the drivers. In that way, they could just go out and drive the car and not try to turn laps as if they were expecting traction control to be in effect. At Atomic, we used drivers of different skill levels. There was Dale McDowell, an elite national racer, Mark Vineyard, a solid regional driver, and Brent Robinson, an inexperienced driver from Virginia.

With McDowell, you will be reading the results of a seven-lap run. The times improve as the tires build heat in each case (on or off).

Unit on	Unit off
14:17 seconds	14:42 seconds
14:20	13:98
14:02	14:26
14:30	14:50
13:90	13:89
13:91	14:02
13:64	14:03
average (on)	(off)
14:02 seconds	14:16 seconds
difference high/low (on) (off)	
:66	:61

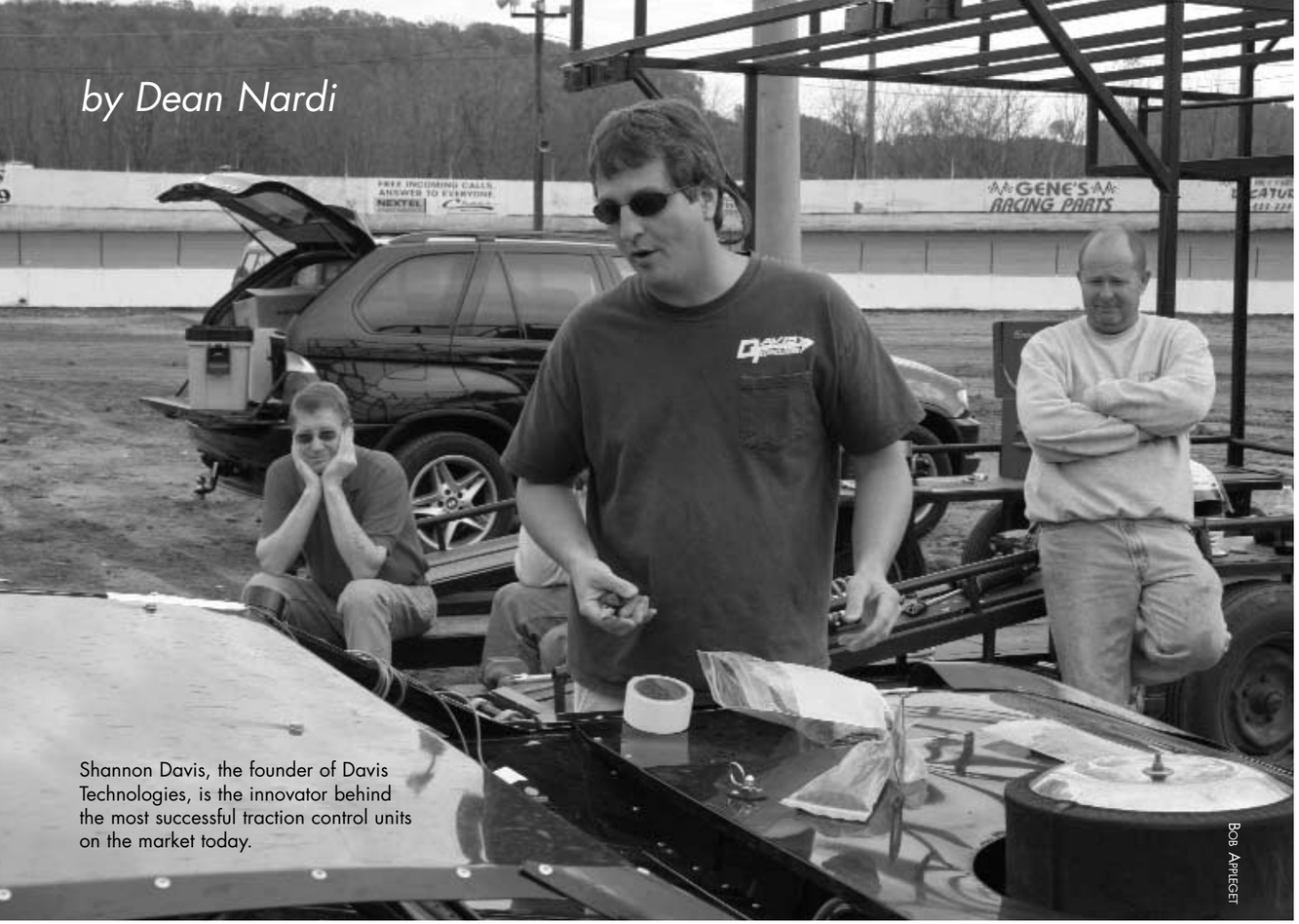
Next we tested Mark Vineyard,

continued on page 118

Bob Arpeget

For our test, the traction control unit was installed behind the dash of the car, near the MSD box. With the smaller units, possible mounting points are limitless.

by Dean Nardi



Shannon Davis, the founder of Davis Technologies, is the innovator behind the most successful traction control units on the market today.

Bob Appleget

Traction Master

Warning: The following article contains graphic descriptions of the activities of racing's own Voldemoort aka He Who Must Not Be Named

This is Traction Control

It is a device like no other device - a marvel of technology, the device by which drivers can actually begin to leave the driving to something else, so that they can perhaps one day in the future just ride along and spot the potential for wrecks and monitor the race car's vital signs. It is a device that urban legend says will allow drivers to outdistance any and all competitors by the flick of a switch or a signal from a transmitter. The microchips send signals in nanoseconds between the synapses, explained in language like dealing with lateral (front-to-back) loss of traction, acceleration slip regulation, and other words from the geek dictionary. Some say it is a wonderful device, an engineering marriage of electronics and mechanics that helps you to put the rubber to the road (or the track).

This is Traction Control

(Reprinted from the Davis Technologies website):

These systems are actually able to detect wheel slip better than most wheel speed sensor-based systems. The reason for that is our systems monitor the rotation of the crankshaft through the distributor signal. The distributor fires every 90 degrees of crank rotation (V8), and with a 1:1 top gear you can measure the rotation with a quarter of a turn. Now, factor in a 5:1 final drive (rear end) ratio and tire rotation can be measured within 1/20 of a turn (that is about four to five inches on most tires). The fact that the engine is turning much faster than the wheels, amplifies the slip at the crankshaft, making our systems very sensitive.

Round track customers report to us lower lap times and cooler tire temps. Just by turning on the system lap times can drop by 1-3 tenths. Consider this if you used it for an entire race and conserved your tires from lap one. By the end of a 100-lap race, lap times can be as much as 5-15 tenths faster per lap than without the system.

This is Traction Control

(Reprinted from the Davis Technologies website):The TM-5000-SL is the most popular Traction Control system on the market today. It is so advanced that it is virtually impossible to detect. In fact, we have never had a customer caught with any of our systems. The unit is 1/3rd the size of a pack of cigarettes and is driver removable after you win the race

This is Traction Control

He was trying to make a living working on a professional road racing team when the idea came to him. His devices can now be found in virtually every type of motor racing. They may be classified as Black Arts material, or considered as contraband, but those are deeper questions for other people to ponder.

This is Shannon Davis.

He remembers a time when he worked on IMSA GTP and other high tech road racing race cars. He remembers not having anything like this on their cars, although he felt other teams that had major factory backing had elaborate sensor-type systems. An idea began to materialize.

"We went to Trans-Am racing, where you'll get factory efforts but a little more low level. Instead of twenty million a year, they only spend two million," he jokes, but not really. "We knew we were racing against something, so went hunting around and found sensor systems and brake pressure systems and throttle actuators, which seemed awfully dangerous to me. None of this stuff was hideable, however, and we underwent pretty strict tech inspections."

A better mousetrap is what Davis came up with, although he hardly could imagine how that mousetrap

could become an elephant trap in the not too distant future.

"We began to realize that the engine in the car is actually the sensor, and every one of them has a distributor in it," he said. "We built the first system for our own use and were amazed at how well it worked right away. We revised it throughout the year, and then built another for one of the crew guys that raced an asphalt Late Model car. It turns out his engine builder also built Winston Cup engines. They went and tried one, and our second sold box wound up with a Winston Cup team. We sold a bunch more over the next couple of years and then a couple of articles came out, word started traveling and more guys started buying them. Then one of the more prominent Dirt Late Model drivers got caught with a component of our stuff in his car. He admitted to having it but just not running it at that time, which I believed. That let everybody know that the big boys are looking at my product."

Within hours of that dirt driver running into trouble with a tech inspector, the phones began ringing and they have not slowed down.

Can you look at the cockpit of a race car and tell if it has a traction control unit installed? No, especially if that car has been prepared by a particularly clever and thoughtful crew chief. There are numerous place the units, which can be as small as a Bic lighter, can be hidden.

Meanwhile, Davis' research and development was coming up ways to make his units smaller and more efficient. The genie, so to speak, was out of the bottle. Everyone was curious.

To understand where Traction Control comes from, we're going to backtrack with the help of Davis. It's pointless almost to build a passenger vehicle these days without Traction Control, and, of course, in German engineering plants is where the technology began. Pretty soon, racing picked up on it.

"Traction control started out primarily with wheel speed sensors," said Davis. "If the rear wheel goes faster than the front wheel is rolling, you are slipping the rear tires. Traction Control calculates the percentage of slippage that is necessary and does something to reduce the power to the rear wheels, be it ignition timing, drop fuel, drop spark, or squeeze the brakes with ABS."

From a racing standpoint, Davis saw two major problems with the wheel speed sensor equipment. One: You have to dial in a percentage of slip that you want between front and rear. The problem here is when stagger changes that number changes also.

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who has a lot of laps under his belt at Atomic. The first run came with the TM-5000SL in Mode 3, an aggressive setting that caused a slight throttle stumble. Note — the track was getting faster as evening approached.

Unit on	Unit off
13:76 seconds	13:68 seconds
13:96	13:46
13:97	13:73
13:69	13:51
13:70	13:57
average (on)	(off)
13:82 seconds	13:59 seconds
difference high/low (on)	(off)
:28	:27

Vineyard's next run came with unit in Mode 2, a setting that eliminated the stumbling in the motor.

Unit on	Unit off
13:18 seconds	13:80 seconds
13:39	13:71
13:36	13:50
13:30	13:80
13:38	13:75
13:26	13:70
13:33	13:69
average (on)	(off)
13:31 seconds	13:71 seconds
difference high/low (on)	(off)
:21	:30

Brent Robinson was attending the McDowell-Cook School. He is a beginning racer who brought his own car from Virginia and had been loose throughout the day during school sessions. He would be the perfect test subject. After a couple trial and adjustment runs, we sent him out at Mode 2 with 3 o'clock timing.

Unit on	Unit off
13:51 seconds	14:06 seconds
13:63	13:83
13:57	13:65
13:37	13:75
13:61	13:65
13:36	
average (on)	(off)
13:51 seconds	13:79 seconds
difference high/low (on)	(off)
:27	:41

Bob Apteget

Bob Apteget

Bob Apteget

This series of shots are from the Cleveland Speedway test. In the first photo, the traction control unit is turned off and you can see the tire spinning badly as the car accelerates off the corner. In the other two shots, the unit is on (different lap) and in the second shot you can see the tire start to spin, kicking up a little dust. Then the unit kicked in (notice it only slipped for about five inches of tire rotation) and the tire stops spinning and the side wall begins to wrinkle as the tire gets traction.

It is quite evident that the use of traction control made a difference for each of our drivers, both in terms of speed and, more importantly, consistency. This was most apparent in the runs by Robinson, the least skilled and experience of the drivers. From Ronnie Stuckey's notes on the test: "With the unit off you can see noticeable wheelspin. The car breaks loose exiting turn four. With the unit on, the car looks way more consistent, coming straight off the corners."

For the second part of our test, we moved away from the high banks of Atomic to the somewhat flatter surface of Cleveland Speedway, giving us a completely different track configuration to work with. The drivers who tried the unit here were Marshall Green, an experienced national level racer, solid regional and local racers Todd Morrow and Riley Hickman, and several school participants (your basic beginners): Larry Hagencamp, Brian Barnett, and Reggie Jackson (not the ex-baseball player).

With Green, it is interesting to follow the progression of adjustments. Marshall has made a gazillion laps around Cleveland as school instructor. You'd expect his car to pretty much know the way around the track by itself.

Unit on (Mode 2, 23 degrees)
14:56 seconds
14:63
14:55
14:12
14:86
average 14:54 seconds
difference hi/low :74

Unit on (Mode 1, 18 degrees)
14:53 seconds
14:38
14:41
14:53
14:51
average 14:47 seconds
difference hi/low :13

Unit on (Mode 1, 16 degrees)
14:43 seconds
14:25
14:18
14:31
14:31
14:40
14:42
14:42

average 14:34 seconds
difference hi/low :24 (Obviously, we're getting closer here)

Unit off
14:37 seconds
14:42
14:39
14:37
14:43
14:34
14:37
14:43
14:50
14:50
average 14:41 seconds
difference hi/low :16

Unit on (Mode 1, 14 degrees)
14:28 seconds
14:31
14:30
14:31
14:32
14:32
14:36
14:43
14:43
14:45
average 14:35 seconds
difference hi/low :17

Next we utilized Todd Morrow. Once again the track is picking up speed as we get closer to evening.

Unit on (Mode 2, 15 degrees)
14:09 seconds
14:16
14:19
14:19
14:37
14:39 (car develops a brake problem)
average 14:23 seconds
difference hi/low :30

Unit on (Mode 2, 18 degrees)
13:96 seconds
14:20
14:06
14:37
14:37
14:37
14:34
average 14:24 seconds
difference hi/low :43

Unit off
14:28 seconds
14:09
14:09
14:15
14:25
14:20
14:28
average 14:19 seconds
difference hi/low :19

Unit on (Mode 1, 16 degrees)
14:22 seconds
14:21
14:22
14:15
14:18
14:12
14:28
average 14:20 seconds
difference hi/low :16

Unit on (Mode 1, 15 degrees)
14:06 seconds
14:18
14:09
14:18
14:14
14:20
14:21
average
14:15 seconds
difference hi/low :15

Riley Hickman, another local driver very familiar with the Cleveland oval, followed Morrow to the track.

Unit off
14:28 seconds
14:31
14:32
14:18
14:31
14:50
14:25
average 14:32 seconds
difference hi/low :32

Unit on (Mode 1, 14 degrees)
14:28 seconds
14:21
14:18
14:43
14:45
14:62
14:55 (tires are shot)
average 14:39 seconds
difference hi/low :44

Unit on (Mode 1, 18 degrees)
13:84 seconds (new rear tires)
13:82
13:96
14:09
14:15
13:97
14:05
average 13:98 seconds
difference hi/low :33

We've worked our way down to the school students. First up is Hagencamp, a Paducah, Kentucky, resident who has never driven before in competition.

Unit off
17:64 seconds
16:93
17:34
17:38
16:98
average 17:25 seconds
difference hi/low :71

Unit on (Mode 3, 18 degrees)
16:80 seconds
16:84
16:55
16:41
16:98
average 16:72 seconds
difference hi/low :57

Our next victim is Brian Barrett, an Ohio resident who raced some about ten years ago at Skyline Speedway, but nothing since. But it's just like picking up the piano again, right?

Unit off
16:15 seconds
16:19
16:09
16:18
16:24
16:56
16:46
average 16:27 seconds
difference hi/low :47

Unit on (Mode 3, 22 degrees)
15:96 seconds
16:15
16:17
16:00
16:00
15:93
16:28
average 16:07 seconds
difference hi/low :35

Our last test subject was Reggie Jackson. He had a little more experience behind the wheel than the first two drivers.

Unit off

Joe Garrison on Traction Control

When asked about traction control, Joe Garrison of GRT Race Cars had this to say:

"Traction control has been around dirt racing for a while. Just in the last couple of years it has become a hot topic. Earlier systems had a lot of equipment you had to hide and were just not practical to use if it was against the rules. The technology that is being used now allows the racer to hide the entire system in his pocket. The fact that it is so easy to hide makes it a lot more popular than it used to be, and a very controversial subject. Nowadays every race won is won with traction control; at least, that is what the losers say.

"A few years ago, a system was available that used wheel sensors and the rear brakes to try and control the wheel spin. We had some customers with these systems who complained they could not get them to work. I decided to get one and see what we could find. The first major hurdle is hiding all of the equipment that was required. After a few months of fooling with the thing, we never really got it to work. We had a lot of trouble keeping the sensors working and the brakes were hard to keep cool. Even when we tried all of the manufacturer recommendations it still didn't work. I later learned that the "Brain Box" was an off-the-shelf industrial controller used on conveyor belts, and was not even designed for racing.

"One day I had a customer come in with a new unit he had gotten from Davis Technologies. I thought he was kidding when he showed it to me. He pulled it out of his pocket and said that this was the whole system. He explained that it worked by monitoring the rate of acceleration of the engine and retarded the timing if it was too high. I was skeptical until he told me that he had already tried it on the track and was a good two-tenths faster. This was a guy that was in the top five in points in the top Late Model series.

"I called Davis and got one on the way. I was very impressed with the size of the unit and how simple it was to hook up. I let a few guys try it and most of them liked it. It isn't for everyone and it will not fix a bad car, but on a good car it can be worth a few tenths and very consistent times. I was surprised with how well it worked for so many different drivers."

— Joe Garrison, GRT Race Cars

15:37 seconds
15:49
15:40
15:51
15:62
15:65
15:49
average 15:50 seconds
difference hi/low :28

Unit on (Mode 3, 21 degrees)
15:28
15:25
15:37
15:39
15:62
15:58
15:57
average 15:44
difference hi/low :37

Finally, I got a chance to go out on the track. It was a tremendous rush. You won't believe the results. And you shouldn't. I was seated to the right of Marshall Green as he tooled around the track on an extended run. Remember this was the two-seater school car, and it does not exactly have tons of horsepower.

Unit on (Mode 1, 15 degrees)
15:25 seconds
15:43
15:43
15:28
15:32
average 15:34 seconds
difference hi/low :18

Unit on (Mode 1, 16 degrees)
15:19 seconds
15:16
15:28
15:16
15:25
15:32
average 15:23 seconds
difference hi/low :16

Unit on (Mode 1, 19 degrees)
15:10 seconds
15:12
15:15
15:10
15:22
average 15:14 seconds
difference hi/low :12

Unit on (Mode 2, 19 degrees)
14:90 seconds
15:26
15:10
15:29
15:12 (too strong a setting)
average 15:13 seconds
difference hi/low :39

Unit off
15:08 seconds
15:19
15:07
15:21
15:21
15:34
15:24
15:23
15:18
15:29
average 15:21 seconds
difference hi/low :22

Unit on (Mode 1, 19 degrees)
15:12 seconds
15:12
15:01
15:08
14:91
15:12
15:12
15:04
15:13
15:08
average 15:07 seconds
difference hi/low :22

One common statement I hear over and over when the subject of the efficacy of traction control is brought up goes something like this: Anyone can win a race when it's in the mud, but put the cars on a dry/slick track and the better drivers will always prevail. Another line of thinking is: The best drivers are so talented with their foot and hand-to-eye coordination that traction control is not any help. The only drivers that would benefit are those with lesser skills.

There is likely some truth in both of those premises. But from what we discovered (assuming our interpretation of the results is accurate), traction control can round off the rough edges on any driver, at least any human driver. When the unit was on, not one driver got into any trouble, and that is something you can't put a price on. There is no question it can work for a young, inexperienced driver like Brent Robinson and put him in the ballpark instead of out if it. It can also save a lot of expensive repairs (and angry fellow racers) by keeping some stability in the car of a racer who is learning the ropes. Traction control works because it is mechanical and reacts to input the same way each and every time.

I think Ray Cook, who monitored the results at Atomic had the most telling comment of all when he said: "This unit can read what the car is doing and react accordingly in ten to twelve pulses per second. I can't imagine my foot being able to work that quickly."

continued from 30 *Shannon Davis*

"When the track changes ten laps into the race, they won't let you call time-out and adjust your traction control," he said. "And they are not easy to adjust."

Problem number two is that it's very difficult to hide all the components of a wheel sensor system. Even the most unenlightened of tech inspectors could probably find them if they knew where to look. "Finally, it dawned on us that tire speed showed up in RPM," Davis said. "For example, a little bit of slip becomes a big spike in RPM because of the gear ratio. So, our idea was to base the device on rate of acceleration of the engine. It quickly became apparent that this was an ideal system for racing. Wheel sensor systems work fine on street cars, in the rain and such, but they are not fast on the corners. Our system is more of an aid that filters out mistakes. If you need to, you can throttle up and drive through it and make the car turn unlike a system that's maybe applying the rear brakes or dropping cylinders.

"The advantage of to an ignition system is that it's instant loss of power. You're not waiting for a brake system to build pressure or actuate the solenoid. It's too late by the time all that happens in a racing scenario."

There are fears that ignition-based Traction Control will hurt the engine. Davis debunks that theory. "Most engine damage from ignition timing is too much advance. Retard will cause it to build cylinder heat, which leads to exhaust port heat and maybe water temperature that could burn the exhaust valves. But it takes a retard cycle of several seconds at a time to see any of that. Ours does it on a cylinder-by-cylinder basis, only pulling out the timing for 1/100ths of a second."

Davis Technologies is not a one-man band operation, but it's not Bosch or MSD or Mallory either. He clearly likes the idea of flying under the radar with as small a staff as he can get away with. "I do the engineering, the software, and most of the actual design of the circuits. Some of the new stuff we are working on, I've farmed out to places that can be a little more efficient. We've got a couple of people in the field and some sub-contractors and that's about it."

The first model built is still in the line. It was fitted right into the ignition box and activated by a pin code. You punched the code in and the device woke up. They offered an alternative unit that was activated by a wire. That one was a little easier to find, though Davis claims no one ever did find one.

When tech inspectors began really looking at ignition boxes, they built the TM-3000. That one was built into an ignition box that supposedly could not be modified and was sealed. Basically, you couldn't take it apart. That got around that little problem of nosy tech inspectors for a while.

Eventually there was a demand for a smaller, removable unit that wasn't in the ignition box. That is the 5000.

"The feedback we got was that the box worked really well for the first tweny to thirty laps, then it seemed to not do enough after that," said Davis. " Some customers started buying two boxes to do the job. The thought then was that we needed to make one box and be able to toggle between two thresholds. During one late night session, we came up with the idea of a self-learning unit. This would actually monitor the rate of acceleration of the engine, compare it to other factors, go through some math and determine what the threshold needs to be. That threshold is updated every tenth of a second.

"That one customization revolutionized traction control. Because now if you've got one corner that's different than the other, a driver switches groove, maybe the track takes on rubber or gets dry/slick, or in asphalt racing the tires are burned up, or you've used up a lot of fuel and changed the weight distribution, it doesn't matter. Our unit comes with four different modes. A driver finds the one that works for him with his engine package, and it's all automatic from there."

The days and nights of struggling to build a business are long gone. Instead, he works on outfoxing those who would attempt to catch him. And he comes up with an idea to bring Traction Control to the masses.

"We've got a new unit and have agreements with four major retailers to market the product," he said. "It will sell for $1,895 and not be self-learning or upgradeable. For guys running twenty to thirty lap features or running a track that doesn't change much, however, this unit will work for them. It's a little bigger, about the size of a pack of cigarettes, but you'll still be able to hide it."

Hide and seek. Show and tell. Ah, the games people play in racing. All in the effort to gain, as they say in the sport, my fair advantage.

"One of my units was found on a racetrack [Bristol] in a major series," Davis says in confidential tones. "They assume a fan didn't throw it out there since it's a $6,500 part. [That would be the alleged Kurt Busch toss out the window.] Another time at a big Late Model asphalt race, they said a guy was seen putting one in his pocket. They got to arguing in the pits, and he got disqualified. But they never proved he had traction control. He wouldn't empty his pockets. And then there was a story about the Dirt Late Model driver that they found a plug in his car while he was leading the points in the big series. Inspectors may have found things they didn't like, or suspected things, but no one has ever caught a driver with one of our units."

What it all boils down to is not being better than the tech guys Davis has simply got more time to spend than they do. It's his full-time job to keep on top of what's changing and what the tech people are doing. About a year or so ago, current World of Outlaws tech inspector Walter Burson told me about what he said to Billy Moyer after the Arkansas driver had finished second in a race and suspected the winner had used Traction Control.

"If you want to stay here until four in the morning, we'll start tearing stuff apart and pay you in two to three weeks when everything comes back as not having been modified. We'll take out the dash, motor, brakes, the gauges, the pumper helmets, ignition

system, pull everything off the car. We'll have to send it all back to the manufacturers, because you can't expect us to be electronics experts."

It's a huge effort for something that will be awfully hard to catch. None of the series have the resources and manpower to inspect thoroughly for Traction Control. And then, as soon as they figure out what's going on, Davis will change things. So now what do they look for?

Gary Nelson of NASCAR stopped by Davis' booth to chat at the recent PRI show. Davis was not intimidated. I happened to be standing there at the time. It was plain that Davis was not fazed. Nelson admitted that NASCAR has tested their product and tried to devise ways to detect it."

"NASCAR is dead against it," he said. "They want to scare the 43 cars that run on Sunday by threatening lifetime bans, yadda-yadda. But I can say that some of those guys are running Traction Control and even NASCAR isn't catching them. The solution causes more problems that it's worth."

Davis already has one unit (TM-9000) that is described as the size of a Bic cigarette lighter. It performs exactly the same as the 5000. It's just easier to palm or hide and costs about $1,000 more. But don't make the mistake of thinking that's the end as far as development goes.

"There is new technology that allows us to remove the components that the unit needs to interface with the device," said Davis. "You start getting rid of the biggest things on these units: the housing, plug-in, buttons, switches, etc., this whole thing could easily be put inside a quarter-inch cube. *Try to find that.* You make your settings on a wireless controller and upload it to an actuator hidden on the car somewhere. You can't realistically expect a tech guy to be proficient enough in digital tachs or gauges to know which chip goes where. And the next step is that ignition systems are becoming digital, which means there's a microprocessor on board controlling the ignition system. The microprocessor in the tach is only operating at about one percent of capacity. So we can easily change it with another one that looks exactly alike. Now it does all the tach functions and performs Traction Control. And there are many other places within an engine where similar substations could occur."

You would think that an outfit as large as NASCAR, with all the resources at their disposal could effectively police just about anything. But they can't. Otherwise, why was a unit found on the track at Bristol? Why are several Cup teams on Davis' customer list? I haven't seen his customer list, so I can't corroborate his story. But I've talked to other people that will affirm his assertions, off the record, of course.

You'd also think someone would have come up with a product that would detect the use of Traction Control, much like radar detectors signal the use of radar guns. Mooney Starr tried one at his big Modified race last year in Bateseville, Arkansas. Talk about causing more problems than they are worth.

"I have two units in my shop like the one that was used at the Batesville race," said Davis. "We can't make either one of them detect our system. Nobody was caught with one of my units at that race, and supposedly there were a lot of motors that mysteriously failed. I can easily see why this detection unit could cause the timing to be inadvertently retarded for a long time and cause headers to turn red and motors to overheat. I mean, eight cars fell out of the race with motor problems, which is an unusually high number for motors that ran fine an hour ago. What's the conclusion?"

MSD is working on a system that supposedly will catch the ignition signal being changed, but it is not yet available. One version would limit the motor to 4,000 RPM should a signal be detected.

"Frankly, I wouldn't want a car almost shutting down right in front of me," said Davis. "There's gonna be one big wreck behind the guy that was cheating. I don't know how they're going to deal with that. And what if it sends a false trigger? Of course, as soon as MSD releases this unit we'll build a product to get around it."

The hot button issue is the ethics. Does Traction Control take us one step closer to having robot drivers who just ride around as the car does all the work for them? It's not an easy question to answer. The cost issue makes no sense, however. What's $6,500 for a part that keeps on working year after year? Shouldn't we be more worried about $3,500 exhaust headers and $10,000 suspension packages?

"Fifteen years ago you couldn't have power steering in a Sprint Car," said Davis. "Now they've all got it. Titanium and carbon fiber parts were once illegal. Now you've got to have it all no matter the cost. Why should a $6,500 part cause such concern? I don't know of many people that go racing to save money. The other thing is, we've got units out there that are seven years old and still doing the job they were built to do."

That's the other question about Traction Control. Does it really work? We tried our best to address that issue in the on-track testing we did. Not surprisingly, Davis has his own answer.

"You remember the guy with the fiberglass brake rotors? No? Well, that's because they didn't work. The reason there's such a stink about Traction Control is because it does work. We've sold an incredible amount of these units. People aren't buying them to hang on their Christmas tree."