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# Tech

Only for techs. And only from Snap-on®

## *Living Dream<sup>the</sup>*

Pro fisherman's  
tournament diary



### INSIDE:

**Confusing Caravan**  
MODIS & tech solve Dodge trouble

**Picture Perfect**  
Hershey's show stoppers

**Stars of Karting**  
Techs crucial to performance

**TIPS:** Make yourself thinner, your 401(k) fatter



Al Biland and Jamie Sieracki (President of Franklin Motorsports, Oak Creek, Wisconsin) discussing how important the Snap-on cordless impact wrench is in the Karting pits. See the Snap-on Stars of Karting article on page 24.

**Another year is off and running and I'm happy to introduce you to the first quarter, 2006, issue of Tech Magazine.** On behalf of your Snap-on dealer, thanks for your business and support. We're glad to be able to share in the growth of the technician community.

If your New Year's resolutions included thinking about planning for your future, we have some 401K tips on page 34. If losing a little weight and working on your health is on your mind, check out page 28.

Personally, I enjoy the action and family involvement in the Snap-on Stars of Karting events. This is an important program for us and you can see why, starting on page 24.

Whether you dream of all-out speed on the Bonneville Salt Flats or fishing in tournaments, this issue has something for you.

And if there's something missing that you'd like to see, drop us a line a [techmagazine@sapon.com](mailto:techmagazine@sapon.com). It's your magazine, after all. Thanks for reading, and thanks for your business.

Al Biland  
Senior VP, Snap-on Incorporated  
President, Snap-on Tools LLC



Jimmy Ward gets paid to catch fish. Sound like a dream job? It might be. But it's also a lot of hard work, particularly when the fish don't cooperate. Jimmy will tell you all about the ups and downs of pro fishing in his diary – the cover story of this issue of *Tech*.

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# Letters, Tech

*Here are just a few of the reader responses to Tech:*

Thank you for a great magazine. I have used Snap-on tools for 35 years on the job with a truck fleet. They are the best and now a great magazine, too.

**Awesome magazine. Would love to see more tips and NASCAR articles.**

I will re-read the magazine many times until I receive the next one. Keep up the good work.

**I really enjoy the "Nuts and Bolts" section. I hope to see some snowmobiling articles in the future. A few articles about Snap-on's newest tools also would be appreciated.**

Good mix of old and new.

**I especially enjoy articles about antique and classic cars and the people who own, collect and work on them.**

I love the fishing and hunting advice. I, for one, love those activities as much as working on cars.

**The magazine is great. I like the tech topics and racing articles. I think some articles about new and upcoming tools would be good. Thanks for a great magazine.**

Great publication and good topics. I look forward to the next issue. My wife enjoyed it as well.

## Share your story

Do you have a story idea for Tech Magazine? If you're willing to share it, we're eager to listen. After all, the best ideas come from those in the field who work as techs every day.

We're looking for all sorts of story ideas – ranging from issues you face on the job to what you and your friends do after hours.

If you have an idea, please drop us a note or send an e-mail.

## We need your help

In the previous issue of *Tech*, we unveiled the S9724RHS "Header" socket. The socket (5/8 x 5/8) grips the spark plug so both can be installed or removed as one, making access to difficult areas easier and less frustrating.

We're seeking input as to what size and application techs would like to see for the next header socket. Please share your opinion.



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# Just for laughs

How do they get the deer to cross at that yellow road sign?

*— George Carlin*

You gotta be careful if you don't know where you're going, because you might not get there.

*— Yogi Berra*

## Laws of auto racing

10. The number of times you get hit in a pileup is directly proportional to the number of times you said, "I think it will go OK today."
9. You only get the lead when you need fuel.
8. If a tire can go on the wrong side, it will.
7. A part will never break during a test session, only during a race.
6. The driver behind you is always the one you punted last week.
5. The part you left at the shop is the one you need.
4. The number of laps remaining is always one more than the amount of fuel left in the fuel cell.
3. Your good car will get wrecked, your bad car will finish the race — two laps down.
2. The concrete wall is harder at the tracks you wreck at.
1. A 10-car pileup will never happen behind you!



## A familiar look

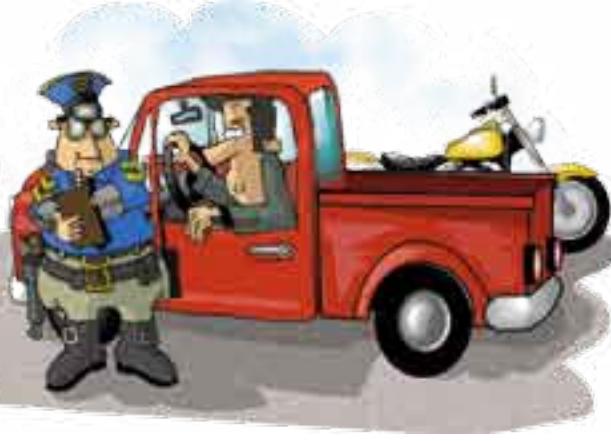
When I went to get my driver's license renewed, our local motor vehicle bureau was packed. The line inched along for almost an hour until the man ahead of me finally got his license. He inspected his photo for a moment and commented to the clerk, "I was standing in line so long, I ended up looking pretty grouchy in this picture."

The woman beside him peered over his shoulder, then reassured him. "It's OK. That's how you're going to look when the cops pull you over anyway."

## Is this clear?

Some examples of why the human race may be in danger. These are actual instruction labels on consumer goods.

- On Sears hair dryer: Do not use while sleeping.
- On a bag of Fritos: You could be a winner! No purchase necessary. Details inside.
- On a bar of Dial soap: Directions: Use like regular soap.
- On some frozen dinners: Serving suggestion: Defrost.
- On Tesco's Tiramisu dessert (printed on bottom of the box): Do not turn upside down.
- On Marks & Spencer Bread Pudding: Product will be hot after heating.
- On packaging for a Rowenta iron: Do not iron clothes on body.
- On Boots Children's cough medicine: Do not drive car or operate machinery.
- On Nytol sleep aid: Warning: may cause drowsiness.
- On a Korean kitchen knife: Warning: keep out of children.
- On a string of Christmas lights: For indoor or outdoor use only.
- On Sainsbury's peanuts: Warning: contains nuts.
- On an American Airlines packet of nuts: Instructions: open packet, eat nuts.
- On a Swedish chainsaw: Do not attempt to stop chain with your hands.
- On a child's Superman costume: Wearing of this garment does not enable you to fly.



## What not to say to a police officer

- I can't reach my license unless you hold my beer.
- Sorry, officer, I didn't realize my radar detector wasn't plugged in.
- Aren't you the guy from the Village People?
- I thought you had to be in relatively good physical condition to be a police officer.
- Bad cop! No doughnut!
- You're not gonna check the trunk, are you?
- Gee, that gut sure doesn't inspire confidence.
- Didn't I see you get your butt kicked on "Cops"?
- So, uh, you on the take or what?
- Gee, Officer! That's terrific! The last officer only gave me a warning, too!
- Do you know why you pulled me over? OK, just so one of us does.
- What do you mean, "Have I been drinking?" You're the trained specialist!

## Pinning down the problem

An auto technician received a repair order that said to check for a clunking noise when going around corners.

He took the car out for a test drive and made two right turns, each time hearing a loud clunk.

Back at the shop, he returned the car to the service manager with this note: "Removed bowling ball from trunk."



# New socket prevents breakage

The new SWR3 socket from Snap-on is giving a break to techs – but not to water sensors on GM's Duramax diesel fuel filters.

The socket was designed to prevent water sensor damage during replacement of fuel filters on GM Duramax diesels. Before the SWR3, the water sensor – attached to the fuel filter – often was damaged during filter replacement.



The new socket allows techs to easily remove and replace the fuel filter without damaging the water sensor.

The SWR3 is a new tool; previously, the work was done with water pump pliers that can damage the usually over-tightened sensor when changing the filter. GM recommends hand-tightening only.

There are plenty of filters to change. The Duramax is featured on Chevy/GMC diesel pickups, vans and medium-duty trucks built from 2001 to the present. In addition, a recent GM bulletin offered a free fuel filter and installation on 2001-2004 Duramax equipped trucks. With the popularity of this engine, there are now many trucks that should have the sensor removed and installed with a professional tool.



## The best in the west

The Buffalo Bill Historical Center might be America's finest western museum. The center – in Cody, Wyo., near Yellowstone National Park – includes a gallery with works from revered artists such as George Catlin, Frederic Remington, Alfred Jacob Miller and many more, including modern artists. The center also houses the Cody Firearms Museum –

perhaps the most comprehensive assemblage of American firearms in the world, including the Winchester Collection; the Buffalo Bill Museum, which examines the personal and public lives of W. F. "Buffalo Bill" Cody (1846-1917); and the Plains Indian Museum. For more information visit [www.bbhc.org](http://www.bbhc.org)

## A blast from the past

This mosaic image is one of the largest ever taken by NASA's Hubble Space Telescope. Pictured is the Crab Nebula, which is the expanding remnant of a star's supernova explosion. The nebula is so big it took 24 individual exposures by the Hubble camera over more than a year to capture the image. The Crab Nebula is 6,500 light-years from earth in the constellation Taurus. The initial blast was seen by Chinese and Japanese scientists, as well as Native Americans, in 1054. [www.nasa.gov](http://www.nasa.gov)



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## GOING FULL CIRCLE

### Couple returning to Arctic for anniversary

San Jose technician Steve Vergano credits his wife, Michelle Fisher, for encouraging him to take on new challenges. But it wasn't until the couple was going to be married in 2000 that Vergano realized just how daunting some of the challenges could be.

For the Verganos, a week at the beach wouldn't do when it came to a honeymoon. Instead, they planned a trek to the Arctic Circle.

A life-long motorcycle enthusiast, Vergano cleaned up his father's 1982 Honda Goldwing for the trip. The pair rode through snowstorms and sub-zero temperatures. They spotted bears and were chased by a coyote.

One of the main problems, Vergano said, was their months of research led them to believe the weather would be mild. They were wrong.

"There were times I thought we would freeze to death," he said. "I really contemplated turning around, but it was my wife's persistence that kept us going."

The '82 Goldwing wasn't in the condition Vergano had expected. The motorcycle had a fuel leak and blew a head gasket. Tire problems delayed the couple for two weeks in the Yukon.

"My work experience really helped us," Vergano said. "Thankfully, I had the knowledge and know-how to fix the bike on the road. Otherwise, we wouldn't have made it back."

Forty-two days and 12,000 miles later, the couple returned home – tired and sore, but with incredible memories.

Since the trip, Vergano and Fisher have had two children, which means vacations have been few and far between. But they are planning a 10-year anniversary trip back to the Arctic Circle.

This time, they'll dress warmer.



# Right on target

## Team makes tech/coach proud

Avid sportsman Tony Farinaro was content running his local gun club. But the recent capture of his peers' admiration has him flying high.

The master technician at Phil Long Ford in Colorado Springs, Colo., took his rookie trap shooting team to the world championship in August, where the group seized top honors.

The young shooters, ranging in age from 9 to 11, walked away with \$1,000 savings bonds and commemorative belt buckles. Farinaro walked away with a feeling of pride.

"We're still about three feet off the ground," he said. "It was a definite high point of my coaching experience. Some of the kids were totally green. To have them shoot as well as they did in a competition like that was unbelievable."

A self-described "old country boy," Farinaro has been an avid trap, skeet and sporting clays shooter for more than two decades.

In 1980, Farinaro and his brother, Frank, joined the local gun club, which was struggling to stay alive. The brothers took charge, joined the Izaak Walton League of America – a national conservation and recreation group – and poured their hearts into building membership.

Today the gun club, now IWL Pike's Peak Chapter 34, is the second largest chapter in the country. "We worked hard," Farinaro said.

It was the gun club that led to Farinaro's involvement in youth shooting when the group embraced the Scholastic Clay Target Program for shooters under age 15.

For Farinaro, coaching seemed like the perfect way to pass on his love of the sport.

"Shooting requires so much concentration and discipline," he said. "It is not like soccer or football, but it is a sport, and I'm going to be doing this until I die."

*Tony Farinaro, back right, took his rookie trap shooting team to the world championship, where the group won top honors.*



## In it for the long run Tech switches to triathlons



His wheels might have gotten smaller, but Martin Milanese's competitive spirit has been on a steep incline for the last year.

After completing a marathon and two mini-triathlons, the Tampa-based tech is training for an Ironman competition and hopes to finish in less than 10 hours to qualify for the world championship in Hawaii.

The Ironman – which consists of a 2.4-mile swim, 112-mile bike ride and 26.2-mile run – will take place next summer in Idaho.

"I was pretty lazy before I started this," said Milanese, 28. "But if you have a goal in mind, it keeps you motivated."

Milanese's drive is contagious. Co-workers at Cal's Lawn Equipment in Clearwater, Fla., have been monitoring his success. And the shop owner's son has even started running alongside Milanese.

When Argentina-born Milanese moved to

Miami in 1999, he became an avid motorcycle racer, making a name for himself on the Miami racing circuit. But when he relocated to Tampa last year with his wife, he lost his sponsorships and was forced to give up the sport.

Without the challenge of racing, Milanese knew he had to find another outlet for his energy. That is when he stumbled into a local shoe store and overheard the owners talking triathlons. Milanese struck up a friendship with the shop owners and started training immediately.

But triathlons aren't enough for the born competitor, which is why completing an Ironman has become his obsession.

"This is more physical and challenging than I had ever imagined," Milanese said. "But besides wanting to finish, other aspects of your life improve. I feel better, I've lost weight, and I'm just really excited about the next step."

# FLAT-OUT FAST

Speed demons head to Bonneville in search of record

## THERE IS NO SHORT CUT TO THE SALT FLATS.

Fly to Salt Lake, rent a car, and drive west until you can see Nevada. Or drive east through the Sierras, west through the Rockies or north through the desert.

## YOU DON'T GET TO BONNEVILLE BY ACCIDENT.

This was once a 1,000-foot-deep, 3,000-square-mile, inland sea.

After 100,000 years of relentless, broiling sun, all that remains is a vast expanse of rock-hard, billiard-table-smooth salt – six feet deep in some places.





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BUREAU OF LAND MANAGEMENT

## BONNEVILLE SALT FLATS

*Recreation Area*

### NOTHING GROWS HERE. THERE IS NOTHING TO SEE.

Except for the few weeks each year when men bring machines, determination and inspiration to challenge conventional wisdom – and the laws of physics – at the bottom of what is now a 13-mile-deep sea of air.

According to the physicists, to move around at the bottom of all this air, you have to push some of it out of the way.

According to the engineers, pushing air is work, and the work required to push it faster goes up with the square of your speed. The power needed to do the pushing goes up with the cube.

*(Continued on page 12)*



Power comes from burning fuel with air to make heat. According to the officials, the amount of heat you can make is determined by the engine.

The trick to going faster than everybody else is to suck more of this sea of air into an engine of a given size while pushing less of it around the outside.

To go very fast, in a straight line, few designs are more appropriate than the motorcycle. In fact, the flats and the motorcycle – including some that are very unconventional – fit so well together that in 2004, motorcycle racers began staging their own annual speed event.

The driving force behind the two-wheels-only speed trials, Denis Manning, began his high performance career turning wrenches in racer Dutch (The Flying Dutchman) Mueller's motorcycle shop.

After a brief British tour with the USA Drag Racing Team, Manning followed childhood idol Mickey Thompson to Bonneville.

Denis bolted together his first streamliner in 1968. Two years later, at the tender age of 24, his second streamliner, ridden by Cal Rayborn, earned the title of fastest motorcycle in the world with a 265.492 mph run.

Denis has been making motorcycles go faster ever since, including building five of the 10 fastest motorcycles in history. Between records, Denis put his mechanical talents to work to create BUB ("Big Ugly Bastard") Industries, which continues to bend some of the most sought after high-performance motorcycle exhaust systems in the business.

Denis began working on 7, his logically named seventh contender for the world's fastest title, in April 2000.

To best the current record of 322 mph, 7 will need to make two runs ... in opposite directions ... within one hour ... averaging at least 1 percent faster – more than 328 mph.

On Sept. 5, 500 of the faithful brought 93 motorcycles to the Salt to join Denis Manning in his annual assault on the record book.

This year's entries included everything from antique Indians to land speed streamliners to factory stock motorcycles to "run what you brung" home-built, hot-rod street bikes to a dual-engine "Whizzer."

Thirty-nine BUB staff members, one Federation Internationale de Motorcycle (FIM) referee, three American Motorcycle Association (AMA) officials, and the Rice Brothers set up shop to organize runs, measure speeds and certify records.

Unfortunately, the rains also came during the previous week, leaving the status of the fastest bikes in limbo.

Motorcycle runs of 300-plus mph need the full 10-mile course to get up to top speed, and back down again, safely. But Monday morning found the ends of the course too wet for racing, and the top speed streamliners stayed on their trailers during Monday afternoon's first-come, first-served, orientation runs.

Even with the most modern computer aids, racing for the record book



## Bonneville Salt Flats International Spee

# RICH HISTORY AT THE FLATS

Motorcycles have been a part of Bonneville history since a young carpenter named David Abbott "Ab" Jenkins rode his Yale motorcycle over the brand new train bed to get to Reno to see a 1910 boxing match.

Bonneville's first world speed record was established four years later when "Terrible Teddy" Tetzlaff drove an ex-Barney Oldfield, 2.5-liter, 300-hp Mercedes Benz through the timed mile at 141.73 mph – 1/5 of a second less than Bob Burns had driven the same car through the same distance at Daytona Beach.

In June of the same year, Ab Jenkins was back, this time on an Excelsior motorcycle "with

much more vinegar in its system," and at 80 mph. Jenkins told the newspapers: "The force of the wind would not let me sit up in the saddle, so I grabbed a firm grip on the two handles and spread my body straight out, as though driving on a child's snow sled, stiffened my legs, and gave her the works ... that was traveling . . . ."

Thirty-four years later, Jenkins would be a member of the party assembled to watch Rollie E. Free set a new record of 150 mph on a Vincent H. R. D. Black Shadow, using the same "superman-in-flight" prone riding position.

Motorcycles have been competing at the annual August "Speed Weeks" since 1950, but

sharing the salt with automobiles poses some problems. After a few days of four-wheeler wheel spin, some of which continued all the way to the shut off area, the course occasionally developed flaws – of the kind that could make a 250 mph, two-wheeled record run more exciting than absolutely necessary.

More important, time on the course is precious. Establishing a new world's speed record is mostly a matter of continuous incremental improvement. The more competitors at any event, the less time each one has to test, adjust, and retest equipment.

remains more a matter of precision, preparation, and incremental improvement than banzai bravery.

Big speed comes in small steps. Run, read the timing slip, adjust the equipment, repeat as necessary ... unless, of course, you break something.

Breaking something is always bad, but it's even worse when the nearest parts counter is more than a hundred miles away.

By 8 a.m. Tuesday morning, the timing stands were up, the safety workers stationed at their mile posts, and the short course competitors began dialing their bikes in on the world's fastest dynamometer.

On Wednesday, the BUB crew managed to run 137 passes through the 5-mile course timing lights — one motorcycle every six minutes, all day long, without accident or incident, establishing a slew of national and 14 new FIM records in the process.

Bonneville racing is primarily a participant sport, but John Noonan's 253.832 mph run through the measured mile on a slightly "modified" Suzuki Hayabusa got some serious attention.

Similarly, Andy Sills' 173.576 mph mile sprint on a factory BMW K1200S put the bike into the record book. When a review of the regulations could find no reason not to do it, Andy's second run — with Erin Hunter riding post — at 169.358 mph got even this hard-core, been-there-done-that group of salt racers smiling.

Vincent's were here first, and remain emotional Salt Flats favorites in part

because they remain very fast. Steve Hamel managed 149.028 mph with equipment that went out of production before many of this year's contestants were born.

Roger Brophy's 60.227 mph on a tiny, twin engine Whizzer, may have won the most grudging admiration. "I'm not sure that thing could be made to go any faster, but I'm very sure I wouldn't want to ride it any faster," Brophy said.

What about Denis Manning's shot at reclaiming the world's fastest motorcycle title? Nature refused to cooperate, the winds wouldn't blow, the water stayed put, and you don't run a 10-mile bike on a five-mile course.

Thursday evening Mr. Manning was philosophical.

Dozens of new national and international records were established. Nobody got hurt. Everybody had fun.

The Bonneville faithful know heroes are as likely to carry wrenches as helmets, and you would have to be an idiot not to learn something useful from spending four days with several hundred of the most talented mechanical craftsmen in the country.

The faithful also know there is no shortcut into the record book. ☺

*Denis Manning*



## BUILT FOR SPEED

Sucking in more air while pushing less around still applies, so Denis Manning's motorcycle, 7, has been constructed around the first-ever, purpose-built land-speed motorcycle engine. The Joe Harrelson-designed, A356-T-6 aluminum power plant uses wet liners and a 90-degree V4 configuration topped by belt-driven DOHC four-valve heads to keep overall width to an absolute

minimum. (7's power plant is only 400 mm wide.)

The aluminum, four-valve (42 mm intake, 35 mm exhaust), 28-degree cylinder heads use bucket-type cam followers operated by dual overhead camshafts turned, at 2:1, by a toothed belt also driving the dry sump lubrication system.

At sea level, with a 13.5:1 compression ratio, the normally aspirated, fuel-injected, 198-pound

3-liter makes 425 hp on methanol. With forced induction, horsepower climbs above 700.

The motorcycle body is a carbon fiber, Kevlar, Unobtanium and honeycomb mono cock, 20 1/2 inches wide, 32 inches tall, 24 feet long, and weighs only 180 lbs.



1



2



3

# Antique Auto Club, America

## National Fall Meet 2005

Organizers call it the Antique Automobile Club of America Eastern Division National Fall Meet. The rest of the world calls it "Hershey," after the Pennsylvania town that hosts the event. Whatever the name, plenty of people attend – and they bring along lots to look at.

Last year's show, held in early October, was no exception. There were high-end cars – Cord, Packard, Porsche, Hudson, Rolls Royce and Mercedes Benz. And there were muscle cars, including the Ford Mustang Shelby, Chevrolet Chevelle Super Sport (SS), Chevrolet Corvette, Dodge Super Bee, Plymouth Barracuda and Pontiac GTO.

The event started as a car show 40 years ago. That show still is held (an award carries plenty of prestige), but many in attendance spend much of their time gawking at, and in some cases dealing for, the vehicles for sale in the flea market and car corral.

The numbers at the show are amazing. In October, there were about 300,000 participants including vendors, exhibitors and visitors; 1,470 show vehicles; and more than 10,000 vehicles in the car corral and flea market.

You don't have to start saving for the admission – it's free. But you might want to start planning for the 2006 show, to be held Oct. 4-7. If you're an antique car enthusiast, it's worth the trip – no matter where you're coming from.

Visit [www.aaca.org](http://www.aaca.org) for more information.

(List of some 2006 events on page 16)



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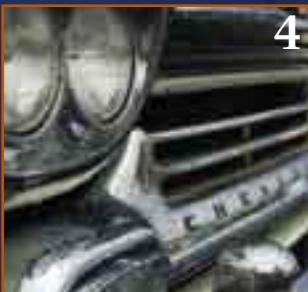


6

**1** A '28 Franklin **2** Buick Roadmaster Woodie **3** Restored Ford F-100 **4** Chevrolet Corvette  
**5** Ultra-rare Buick Skylark **6** Beautiful green Packard Convertible with rumble seat



- 1** Black 1966 Chevelle SS 396
- 2** Volkswagen Beetle convertible. Nicely restored Bugs fetch good money.
- 3** Bel-Airs like this 1960 can be great to collect.
- 4** Chevrolet Apache pick-up truck. Rare and desirable.
- 5** Ultra cool Supercharged Cord.



## Coming up

### 2006 CAR SHOW SCHEDULE

There are hundreds of classic car shows across the U.S. Among the highlights:

- **Spring Carlisle, Carlisle, Pa., April 19-23**  
Plenty to see, sell and buy.  
[www.carsatcarlisle.com/schedule/spring/index.asp](http://www.carsatcarlisle.com/schedule/spring/index.asp)
- **Hot Rod Magazine Power Tour 2006, June 3-10**  
With this show, the cars come to you. Chances are it will be nearby.  
[www.hotrod.com/powertour/](http://www.hotrod.com/powertour/)
- **Iola Old Car Show, Iola, Wis., July 6-9**  
Chevrolet cars and trucks will be featured this year. If you're not a Chevy fan, there are thousands of other vehicles to check out.  
[www.iolaoldcarshow.com](http://www.iolaoldcarshow.com)
- **Hot August Nights, Reno, Nev., July 29-Aug. 6**  
More than 700,000 attend the 1950s-'60s themed show, where cruisin' is the order of the day. [www.hotaugustnights.net](http://www.hotaugustnights.net)
- **Woodward Dream Cruise, Oakland County, Mich., Aug. 19**  
Organizers bill it as the "world's largest one-day celebration of car culture." More than a million visitors and 40,000 muscle, custom and street rods are part of the event. [www.woodwarddreamcruise.com](http://www.woodwarddreamcruise.com)
- **Pebble Beach Concours d'Elegance 2006,  
Pebble Beach, Calif., Aug. 20.**  
Debuting this year is the Pebble Beach Retro Auto, featuring rare collectibles and memorabilia.  
[www.pebblebeachconcours.net/Retro.htm](http://www.pebblebeachconcours.net/Retro.htm)
- **"Hershey," Antique Automobile Club of America  
Eastern Division National Fall Meet,  
Hershey, Pa., Oct. 4-7, 2006.**  
More than 10,000 antique cars for sale.  
[www.aaca.org](http://www.aaca.org)

# SOLE BRO'THER



**If your feet can't work, you can't work. It's as simple as that.**

Those feet of yours take their share of punishment. Walking. Standing. Cold floors. Hot sun. Water. Snow. Whatever it is, you're standing in it or walking through it.

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# Living the Dream

Jimmy Ward catches fish for a living.  
Does he have it made? Read his diary and find out.

## Travel Day

After getting my gear ready for Oneida Lake, N.Y., and rigging 12 different rods for any situation, it's almost time to hit the road. I still have to compile notes from my extensive research on the tournament history of the lake, and get the Jasper Engines & Transmissions wrapped Ranger Z21 washed and ready. I pack my clothes and the truck and spend the rest of the day playing with my daughter, 3, and son, 1. It's hard to leave them, but you just have to block it out of your mind and focus on the task at hand.

I leave at 3 a.m. so I can be at the lake at sunup. It will be a short trip, about three hours – my shortest travel time for the year. (I've already logged over 25,000 miles this year, so a three-hour trip is nothing.)

## Day 1 Practice

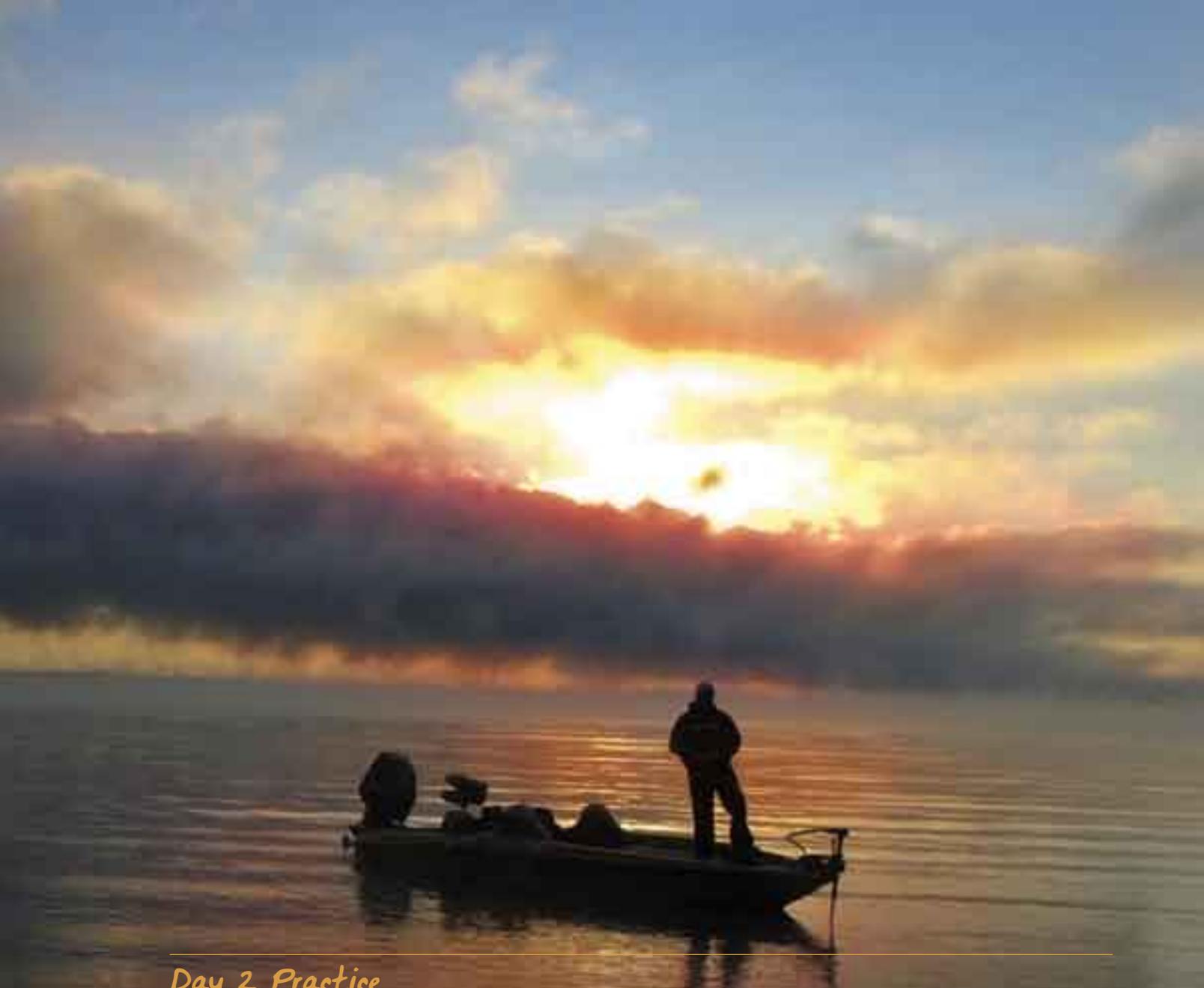
My father came along to help me practice for this final B.A.S.S. event of the year. We start by looking for good smallmouth areas, since this lake is a predominantly smallmouth bass lake, but the morning is very uneventful. The weeds have some strange slimy moss, which I have never seen here at Oneida. The water temperature runs between 70-73 degrees.

The smallmouth aren't biting, so it's time to hunt for largemouth. I find a little cut with some docks that looks like good cover for largemouth. I have good weeds and good depth, so I should get something here.

Sure enough, I quickly land a monster – about 5 pounds. It's a nice fish and hopefully I can catch him again during the tournament.

Later I run to the other side of the lake and hit a rock pile with my motor. Luckily it's nothing major. Just some damage to my skeg and prop, but nothing that can't be fixed at the service trailer.

Later in the day, I catch a nice smallmouth at the mouth of a creek. It's not something I will try to pattern because I don't think there will be enough fish in here to hold up for three days. Maybe, if I need it, I will stop here on the way back to check-in during the tournament. Something to keep in the back of my mind.



## Day 2 Practice

I'm ready to go at 6:30 a.m. Since I still don't have a good pattern for the smallmouth, I am going to try an area where I caught a largemouth two years ago. It's foggy, and I will make a run to the other end of the lake but will take my time to make sure it's safe. I talk to a few friends at the boat ramp while we wait for the heavier fog to lift. One knows this lake better than I do, so I pick his brain about what he found yesterday.

The fog finally lifts and it takes 25 minutes to cross the lake. It's chilly.

I fish a marina that branches off the canal, using a 5" Picasso Scuttle Worm in Green Pumpkin/Black Flake. I always fish this "wacky style," meaning that I hook the bait in the middle, near the egg sack. I always use a Mustad 4/0 hook with a weed guard. I have won more money on this bait than anything else I throw. We should hook some fish this morning on it.

As I fish the docks in the marina, I talk to a couple sitting on their boat having breakfast. Only five minutes into the day, I get a fish on. It was about a 2-pounder but I lose it because I try to keep it in the water so the cameraman can get good shots. The couple cheer me on and say they're rooting for me. The next hour in the marina is a lot of fun. I catch a bunch of good fish and

leave without beating it up anymore. I need to save these fish for the tournament.

At the mouth of the marina I find a weed line that should hold some fish. I switch to a Picasso 3/8 oz. Chartreuse/White Thunder Willow Spinnerbait. The Thunder Willow has a unique blade design that vibrates more than a regular willowleaf blade, but is sleek enough to be reeled in quickly. This is the same blade that helped me take 35th in the Everstart Tournament at the Potomac River.

It pays off again in the next five minutes as I catch a 5- and then a 4-pounder. That's all I need to see. I know I can come here on tournament day and work the whole canal with this spinnerbait, and combine that with fishing the marinas and the docks.

I stop fishing for the morning and start searching with my trolling motor. I don't need to actually fish now because I know I can catch them and what to catch them with. I just need to find more areas to fish.

Later, back in the canal, I find a stretch of weeds exactly like those in Lake Champlain. I fish the spot the same way I fish Champlain: with a Picasso 1/2 oz. Black and Blue Wide Gap Jig and Pig. After about five minutes of flipping the weeds, I catch a 3-pounder.

*(Continued on page 20)*

That's all I need to see with these weeds. I put the rods down for the rest of the day and troll new areas. It's around 5 p.m. when I get off the water, go back to the hotel and re-tie all my stuff, put some oil in the boat and put the battery on charge.

## Day 3 Practice

No practice today because of other work-related commitments. I'm concerned I have to miss practice for the next two days, but am glad to be out of the boat during the arrival of the hot weather, which will approach the middle 90s. The hot weather should break about day one of the tournament. This might help me because I fished the lake when it was cool, and there should be similar conditions during the tournament. Others are practicing when it's hot, and they'll spend most of their time on the main lake. I'm hoping this weather might actually make the fishing in my area turn on even more. We shall see.

I'm not feeling well and fear I might get what my wife and kids had before I left – the flu.

## Day 4 Practice

I got some extra rest yesterday, but it didn't do the trick. I ache from head to toe and have a 103-degree fever. Business took me away from Oneida Lake, and I have to drive back. I'm not on the road until 3 p.m., and I still feel awful. I go to bed at 8 p.m. and in the morning will decide if I should practice or get more rest.

## Day 5 Practice

I feel better, but not well enough to risk getting worse, so I stay in bed. I'm doing better by the time the night registration meeting rolls around. On the way, I pick up a friend who is fishing on the co-angler side of the tournament. All the pros draw an amateur partner for each day of competition. The pros compete against pros and the amateurs compete against amateurs. We fish from the front, they fish from the back – that's how these tournaments work.

I feel better by the time we go to dinner and finish the meeting. My rods are already rigged for tomorrow and I go to the hotel hoping for a good night's sleep because 4 a.m. comes mighty early.

Back in my room, I go over what I will do tomorrow. I am in boat 36 tomorrow so I will be one of the first competitors out. This also means I will be one of the first checking in, so I need to gauge my time wisely.

I hope I don't have too much company tomorrow. Too many boats fishing in this area will hurt my chances. I also need to gauge how long I will spend fishing in my area because, before check-in, I want to hit the little marina that is almost directly across the lake from our launch area. I think I can get a couple of really good fish there.

I talk over my plan with my father, then talk to my wife, then fall asleep.

## Day 1 of Tournament

The weather has given me a great start: The temperature will be in the 70s and it should be cloudy all day. I'm still worried about how much company I'll have.

I make the 25-minute run to my area. The lake is flat this morning and the run easy. I start fishing the marina first thing and land a 4-pounder within the first five minutes. I'm really pumped up now, and have the rest of the day to get four more.

The next few hours are really tough mentally. I lose my next three fish, and have no idea why. Now I have to shake this off. There is one more weed line to fish before I hit that marina on my way back. I get out the Jig and Pig and start flipping the weedline and catch one almost in the exact same spot as in practice. It's a 2-pounder – a little smaller than the one in practice – but I'll take him. I have about 1.5 hours left to catch three fish. I'm counting on the marina.

I catch one as soon as I get there. Now I'm really excited, as I can see a lot of big fish cruising around. All I need is two more bites and I'll be in good shape.

My next fish is another 2-plus pounder. I have 10 minutes left to catch one more. I have good weight now, and if I get one more, I will have about 12 pounds. But I'm running out of time.

On my last cast of the day, from underneath a sailboat, I land a 3-pounder. I scream when I land it. People watching me fish the marina cheer me on. It's a lot of fun to have a little fan club pushing me.

Time is up and I have to get back to check-in. I smile from ear to ear during the ride back to the launch. I know I have good weight and the day turned out really well.

I weigh in at 12.14 for day one and am in 38<sup>th</sup> place. The top 50 make the cut and fish on day three. If I catch another limit I should make it.



I make a promotional appearance for Jasper Engines & Transmissions at the local Gander Mountain, then head to the Jasper regional manager's house for a cookout, then back to the hotel. It's funny how a good day on the water takes away all the sickness, because I feel really good now.

The steak dinner and company were great, and I'm ready for tomorrow. After talking with my father, I decide to start fishing where I left off today – in that marina. I think I can get a couple of quick ones before I head down the lake. The weather is going to get bad tomorrow, so it might be a rough ride.



## Day 2 of Tournament (Cut Day)

I am boat number 76 today, so I won't have to check in until 4 p.m. I pull into the marina and within the first 10 minutes land a 2-pounder. This will be the only one I catch from here today.

I make the run down lake to fish my canal. I'm doing the same thing as yesterday, except my Picasso Scuttle Worm is a Green Pumpkin/Red Flake, not Black Flake. I think the switch will be good and something different than what they saw yesterday.

Today turns out to be a lot better than yesterday in terms of quantity, as I catch about 15 fish. The bigger ones come on the spinnerbait – and I lose my best fish. That's fishing, though I hate

losing fish. It was probably a 5-pounder. That Thunder Willow blade really makes a difference. It gives off so much vibration that the fish just can't resist it.

My weigh-in is 9.14 today, so I stay in 38<sup>th</sup> place and make the cut. With gusty winds all day and rain, I knew the guys fishing the main lake would struggle a little. This probably helped me. The goal for tomorrow is to catch as many as I can. I am really excited about making the cut and about my chances tomorrow. With the help of the weather, I hope to make some kind of move up the leader board.

(Continued on page 22)

## Day 3 of Tournament (Last Day)

The weather is bad this morning; howling winds and rain should make my run down lake interesting.

It takes an hour to get across the lake, versus 25 minutes other days. I'll have to cover my water a little faster today because time is limited. I have to check in at 2:45 p.m.

When I start fishing, my trolling motor stops working. Now I am worried. If I can't get my trolling motor to work, I can't fish my areas. About 30 minutes later I finally get it working.

Because of lost time, I work my areas a little faster than normal, keeping the spinnerbait in hand unless I'm around some docks. I catch five quality fish in the canal and head back a little earlier in order to hit that marina before check-in. I'm hoping to get a better fish in there and get rid of a smaller one in the livewell.

When I finally reach that marina, I know I can get at least one good one. It looks too good not to. Sure enough, just before leaving, a 3-pounder hits.

This is a big deal. If some guys struggled today, I can move up.

I weigh in at 10.01, giving me a total of 32.13 for the tournament – good enough for 31<sup>st</sup> place overall.

I'm very happy with this tournament. It also helps me end the year 43rd overall, which means I earn my tour card for next year. This is my rookie season, and to get my tour card in the first year is a real accomplishment.

I would not have been able to achieve this without all of the support and effort that Jasper Engines & Transmissions put into the fishing program and me. It was a great year, and tournament, and day.

I'm living the dream, and it's a great ride. 



## Ultimate winners' weekend

If you love bass fishing and NASCAR racing, nothing could be better than winning the "Ultimate Fishing/Racing Experience" weekend sponsored by Jasper Engines & Transmissions.

*Steve Jones, Jimmy Ward, Debbie Holloway, Travis Kvapil, Larry Holloway and Jay Smith (l to r)*

Fishing with professional angler Jimmy Ward on his specially outfitted bass boat would be thrill enough for most fisherman. Combining that with

attending the Bass Pro Shops/MBNA 500 NEXTEL Cup race at Atlanta Motor Speedway provided the experience of a lifetime for two lucky contest winners. Meeting Travis Kvapil, driver of the Jasper sponsored #77 NEXTEL Cup Dodge Charger, and also seeing a NASCAR truck race and the season's IROC finale only added to the experience. The ultimate winners were Larry and Debbie Holloway of New Iberia, La., and Jay Smith and his guest Steve Jones of Maysville, N.C.



Jimmy Ward and his Jasper sponsored bass boat were popular attractions throughout the race weekend. "I'd like to thank the thousands of Jasper customers who entered the Ultimate Fishing/Racing Experience and the hundreds who stopped by this weekend," said Jimmy. "Fishing and NASCAR racing are a great fit. There's no better way for Jasper customers to spend some leisure time away from their shops."

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Bob Mehling, the owner of M&M Auto Service in Evansville, Indiana, works hard. Really hard. So when he gets the chance to play, he plays just as hard. And **way** too fast, which, for some reason, Bob finds relaxing!

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# THE DRIVING BEHIND KART RACING

**Mason Chelootz slips into his racing suit and grabs his helmet. It's time for another trial run – time to see if the adjustments made earlier in the morning will pay off.**

"We were fast this morning," says Scott Chelootz, father, technician, coach and pit crew to 9-year-old Mason, "but everyone else is working to get fast, too."

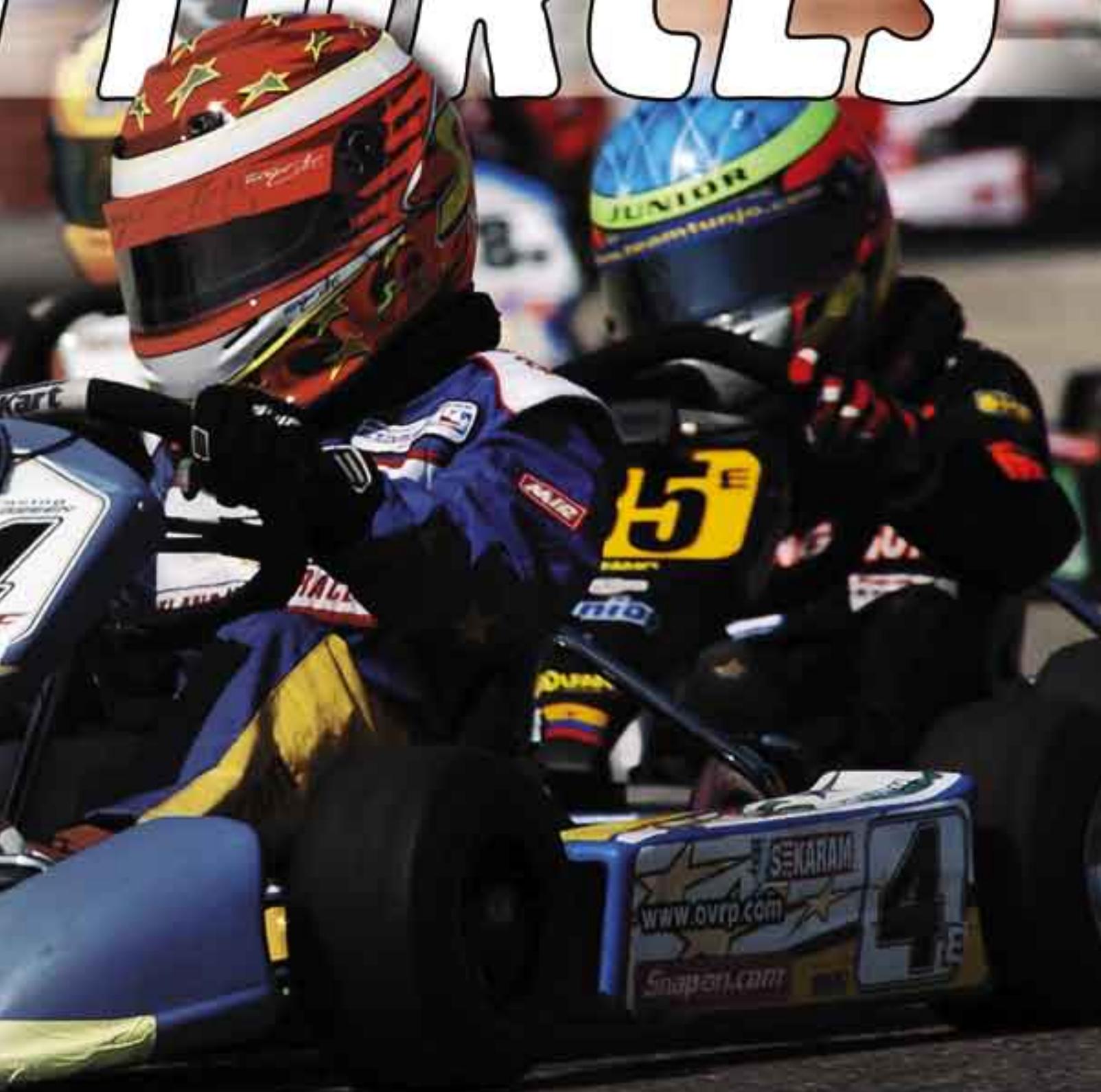
Yes they are. If you think karting is strapping a lawn-mower engine to an axle, think again. The best performers in karting are those who make mechanical adjustments based on track layout and conditions. (Engines, tightly regulated by race officials, are a non-factor.)

**Tech recently visited the Snap-on Stars of Karting Presented by the IRL national event in Austin, Texas, to see how these guys get an edge.**

*(Continued on page 26)*

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# FORCES



Preparations begin at home in Houston, where Scott Chelootz reviews a track diagram. "Every track is different," he says. Some have longer straightaways where speeds can approach 60 mph. Others have more – and tighter – turns. "You have to set the kart up for different grip situations," Scott says.

Axle stiffness is a key variable. The karts have no suspension – "The suspension is the tire and chassis flexing," Scott says – so different axles are used to help grip. "The stiffer the axle, the more grip you get."

Scott owns about 10 axles and will change them between practice runs – it takes about 20 minutes – to help achieve the proper stiffness.

Tire pressure is one of the easiest grip adjustments. Scott set the pressure at 16 pounds before the first run and took it down to 13 pounds shortly after.

The front of the kart can be widened and narrowed as well, which is another grip factor. "The wider you go, the more

grip you get," Scott says. Gearing also is important. Scott wants the kart to run at 12,500 - 13,500 rpms. "We gear out to get in that top range," he says.

Reaching those ranges is done by changing sprockets. This morning, he showed up with an 87-tooth sprocket. The straightaways proved longer than expected, so the team switched to an 89-tooth sprocket before the first practice run and, still not satisfied, a 91-tooth sprocket before the second. (Every two teeth increases rpms by about 200, Scott says.)

After a subsequent trial run, the power seems adequate for the straightaways, but Mason says the kart's back-end is sliding in the turns. Scott widens the back and narrows the front to improve the grip.

Other adjustments can be made. A data system with a digital readout in the kart tells the Chelootzes the temperature of the cylinder head. "It should be in the 420-460 degree range," Scott says. "If it runs too hot, it's too rich. If it's too cold you're 'leaning' it. We use that temperature to adjust the carburetor."

## Snap-on Stars of Karting

**Snap-on Stars of Karting Presented by the Indy Racing League was founded in 2000 by IRL star Bryan Herta and the late Hollis Brown to provide a career starting point that potentially leads to the top levels of motorsports, including the IRL.**

**. Snap-on recently agreed to continue sponsoring the series for the next five years.**

**. The series is now owned by 1986 Indy 500 champion Bobby Rahal, Herta and veteran karting promoter Paul Zalud.**

**. Karts have been the starting point for such world-famous drivers as Danica Patrick, Michael Andretti, Tony Kanaan, Helio Castroneves, Gil de Ferran, Dario Franchitti, Bryan Herta and seven-time Formula 1 World Champion Michael Schumacher.**

**. Many professional drivers utilize karting during the off-season to stay in racing shape and prepare for the upcoming season.**

Scott Chelootz

# Scott Chelootz

**Tech name:**  
Scott Chelootz

**Hometown:**  
Houston

**Driver:**  
Mason Chelootz, 9

**Kart class:**  
Cadet (80cc clutch)

**Snap-on tool I must have:**  
"My cordless impact. It's the most used tool in the box."

**How they finished:**  
Mason finished 21st. He had qualified at 25 and moved all the way to 11 before being involved in a crash with a little more than a lap to go.

Mason Chelootz





Brad Melster

Steve Welk drives a single-cylinder, water-cooled direct drive. He likes that kart because it's more challenging and reminds him of the formula racing he did a few years ago.

Welk is an experienced karter and makes many adjustments himself. But he also brings along technician Brad Melster for additional expertise.

Melster's goal is to tighten the noose after every practice run. Hopefully, the variables have been eliminated, and the kart is ready to excel on race day. "We make more changes early, and fewer as the practice runs go on," Melster says. "On race day, we might switch the hubs if the weather changes, but hopefully all adjustments are minor."

He has had practice runs where everything ran great and no adjustments were made. "I've had them, but not many of them," he says.

Like the Chelootzes, Welk's kart has a data display. But he goes a step further and downloads the information into a laptop. That provides much more detail than the on-board readout, including accelerating Gs, stopping Gs and lateral Gs. "It's incredibly more technical than people think," Melster says.

He makes most adjustments in the gears, front-ends and hubs. Before the fourth (and final) practice, Melster has changed the front width twice, the gear once and is fine-tuning the hubs. Most of the changes are made with input from Welk, who after each run reviews the downloads.

The decision to switch gears was based on the straightaway length. "We're trying to get the RPMs up there," he says. (They were approaching 20,000, which Welk wanted but Melster described as "pushing it.")

**Tech name:**  
Brad Melster

**Hometown:**  
Waukesha, Wis.

**Driver:**  
Steve Welk, 23

**Kart class:**  
Intercontinental A (100cc direct drive)

**Snap-on tools I must have:**  
"You really need hex sets, open-ended box and socket wrenches. And they have to be metric because almost everything is Italian."

**How they finished:**  
The team lost two engines – the second early in qualifying. They rebuilt one engine and Welk was able to run in the final. He was caught in a crash early but finished 12th, which kept him in the top 10 in the national points standings.



Steve Welk



# Brad Melster

Caster is another factor because there is no suspension. "We use longer hubs to stiffen axles," Melster says. The team had three hubs with four to five different wall thicknesses on the axles.

Adjustments can be the opposite of what they appear. "If it's loose on the back, you have to make a front-end alignment, not a rear-end change," Melster says. "You have to get the tire to pick up because you have a solid axle with no differential. You have to pivot, but you have to slide a little, too, because that's the only way to make turns."

Melster talks freely while tooling. He's the first to say he enjoys the camaraderie as much as the competition. Scott Chelootz says the same thing. For him, it's all about spending time with his son.

Whatever the motivation, it's clear that both techs are the driving forces, so to speak, behind the teams.

## Kart Facts

**Races are conducted in classes: The Intercontinental C, with 125cc gearbox engines; the Intercontinental A, with 100cc direct drive; the Intercontinental A Junior, with 100cc clutch; the 80cc Shifter Junior, with 80cc gearbox; the Easykart 125, with 125cc clutch; and Cadet (ages 8-12) with 80cc clutch.**

**The race weekend consists of untimed practices, a timed practice, qualifying, "pre-final" (basically a heat race that determines the starting order for the final) and the final.**

**The approximate price for new karts is between \$5,500 and \$9,000.**

# Weight to go

**Little  
changes  
can  
add up  
to big  
results**

**W**ant to lose weight? Pick up some weights. And eat often.

These tips may sound counterintuitive but they work. It's all in how you execute the plan.

Here are some tips for losing weight without losing your mind.

## Diet

Planning your day can go a long way in helping you establish good eating habits that will help, not hinder, your weight-loss efforts.

"I encourage people to think ahead about their day," said Milton Stokes, a registered dietitian and spokesman for the American Dietetic Association. "It's better to plan than to wait until you're starving and will eat anything you can get your hands on."

Planning goes for meals as well as snacking. No longer a no-no, snacking is good for you.

"Snacking helps spread out your

calories over the day," Stokes said. "It keeps your blood sugar stabilized, which keeps us from 'starving' when we get to mealtime."

A good snack will combine a carbohydrate, a protein source and fat, all of which give us energy and take a while to digest.

(Continued on page 30)

## Fitness MYTHS

More than 1,500 American Council on Exercise professionals outlined the most pervasive myths and misconceptions about exercise. The following were outlined on the ACE web site, [www.acefitness.org](http://www.acefitness.org)

1. Women who lift weights will get bulky muscles.
2. Spot reducing is possible.
3. No pain, no gain.
4. Exercise requires a hefty time commitment.
5. If you exercise, you can eat whatever you want.
6. There's a magic bullet (quick fix) out there somewhere.

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Here are some practical tips for meals and snacks that, when done in moderation, will help in your quest to shed a few pounds.

- Chop up some vegetables and bag them in individual servings. Couple them with a dip like bean dip, hummus, salsa or a light ranch dressing.
- Pack cups of fruit for lunch or snack. Don't rely on vending machines or, worse, skipping food altogether when hunger hits.
- Try nuts. They're heart-healthy because they're a good fat and an excellent source of protein. Moderation is, of course, a must. "Just don't park yourself in front of a jar of nuts and eat," Stokes said.
- Try foods that have a high water content. "They may promote weight-loss because they take longer to digest," Stokes said. Start your meal with tomato soup or a salad, for example – or munch on an apple while you're preparing dinner.
- Slow down when you eat. "Sit at a table for a meal, have a conversation, enjoy food bite for bite," Stokes said. "We eat less that way." Other ways to slow down: eat with chopsticks or use your non-dominant hand when you pick up your fork.
- When all else fails, use psychology. "Our eyes can help us or hurt us," Stokes said. "Use a smaller plate at mealtime; when you do that, you're less likely to pile on lots of food." Remember, when you're eating for weight loss, you can get too much of a good thing – even if you eat healthy food. "Weight loss is all about moderation," Stokes said.

## Exercise

Strength training is a valuable part of the weight-loss equation, according to Gregory Florez of the American Council on Exercise and CEO of FitAdvisor.com.

"The most overlooked part that facilitates weight loss is strength training, because it helps you burn calories, even as you sleep, and builds lean muscle mass," Florez said. "Cardiovascular exercise and diet are very important, and weight-training is just as important."

People who have physical jobs are often squatting, lifting, pushing and pulling. "You do get a modicum of strength training this way," Florez said. "But when you're at work, you'll get more bang for your buck by exercising big muscles – the legs, back and chest."

Even when you're doing nothing – watching TV, perhaps – you can still be working out. Pushups or abdominal crunches (20 or 30, or until your stomach is fatigued) are ideal for idle time.

"Don't be fooled by complex workouts," Florez said. "When you do strength training for 15 to 30 minutes, two to three times a week, and do it with quality, you'll see a difference in strength and tone in three to four weeks, and weight loss in four to six weeks."

"If you put strength-training, cardiovascular training and diet together, you can see results quickly," he continued. "Remember it takes 21 days for you to form a habit."

Patience, it seems, will pay off as little changes produce big results.

# Walking: A great workout

When it comes to cardiovascular workouts, the more intense the workout the more reward for time spent, according to Gregory Florez, spokesman for the American Council on Exercise and CEO of FitAdvisor.com

But walking – done briskly – may be as good an exercise as you can get.

"Intensity is the key," Florez said. "You should be able to talk while you're walking but still breathing quickly."

The beauty of walking is that it's also a weight-bearing exercise, since you're carrying your whole body weight while doing it.

Florez recommends starting off with a five-minute walk every day, and gradually building up to walking 40 minutes a day. You can even break up that time by taking two 20-minute walks.

"Give yourself small, reachable goals," Florez said. "A little bit really can turn into a lot."

The following tips about walking correctly come from the Weight-control Information Network (WIN), a service of the National Institute of Diabetes and Digestive and Kidney Diseases.

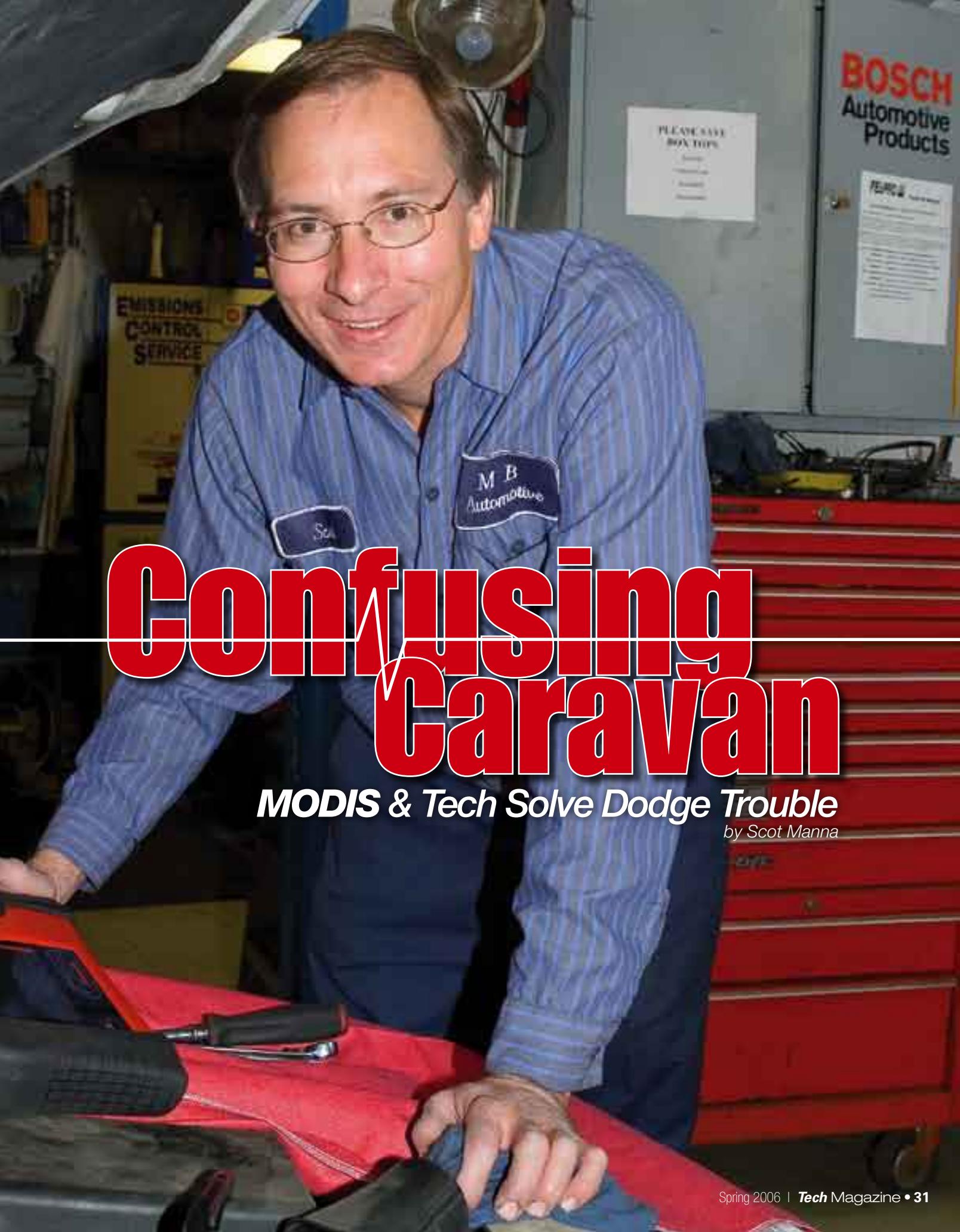
- Walk with your chin up and your shoulders held slightly back.
- Walk so that the heel of your foot touches the ground first. Roll your weight forward.
- Walk with your toes pointed forward.
- Swing your arms as you walk.

## Calculate your BMI

**Your Body Mass Index (BMI) is a measure of body fat based on your height and weight, applicable to adult men and women.**

**To calculate your BMI, check out the following web site:**

**[www.nhlbisupport.com/bmi/bmicalc.htm](http://www.nhlbisupport.com/bmi/bmicalc.htm)**



# Confusing Caravan

**MODIS & Tech Solve Dodge Trouble**

by Scot Manna

The 1997 Dodge Caravan was brought to my shop from another independent. There was a strange complaint about the vehicle: The engine would stall and not restart unless the key was turned to the off position.

Re-starting the engine would make it spin and fire the ignition coils, but the injectors would not pulse. If the key was turned off for only a second and the engine cranked again, it would re-start and run until the stall occurred again. This Caravan was equipped with the 3.3 Vin R V\6 and had 77,000 miles. The van was clean and well maintained. The first shop installed a remanufactured PCM, but the problem persisted.

I was sure it would take some investigative work to diagnose this problem because no DTCs were stored and scan data seemed normal when initially checked. I connected the MODIS and graphed serial data while the engine idled to see if anything abnormal showed up. The graph in figure 1 shows a few strange items that surfaced when the engine stumbled, but did not stall, while idling. The RPM and MAP PIDs show the stumble and the PCM switched to open loop.

Even though the crank and cam sensor graphs remained normal, the current synch graph showed a glitch. I was sure I would need to switch to scope mode and do some signal analysis. The MODIS was switched to 4 channel scope mode and a low amps current probe was connected to channel 1. The remaining three channels were connected to the ground side of the three ignition coils. The scope pattern in figure 2 shows normal operation for comparison.

While idling, the engine stumbled and the scope pattern in figure 3 was captured. As can be seen in the low amps, waveform ignition primary control was lost, and the ignition coil was held on way too long. The zoomed out scope pattern in figure 4 shows just how long the coil was left on by the PCM.



Figure 1



Figure 2

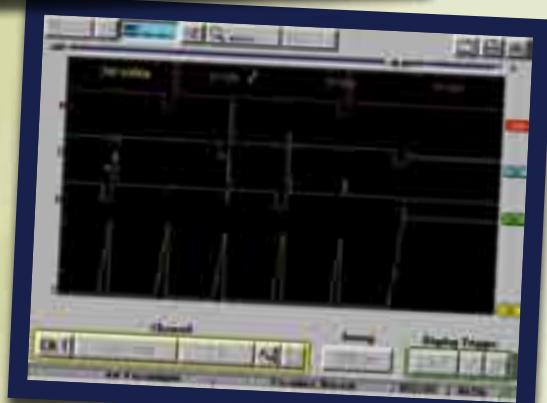


Figure 3

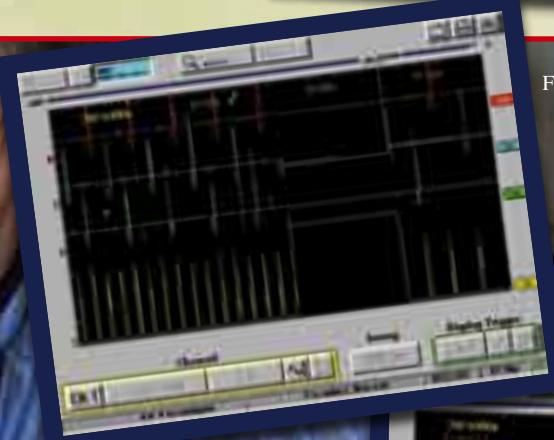


Figure 4

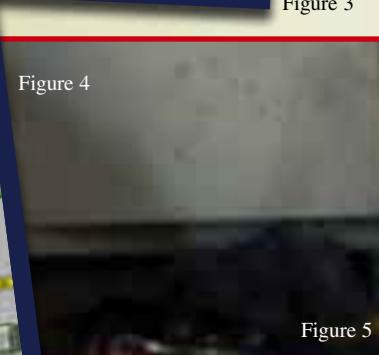


Figure 5



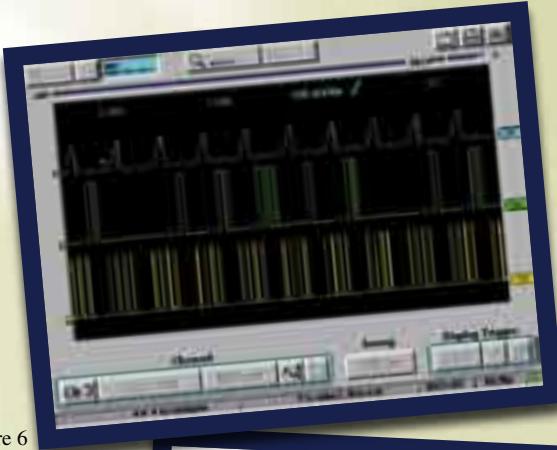


Figure 6

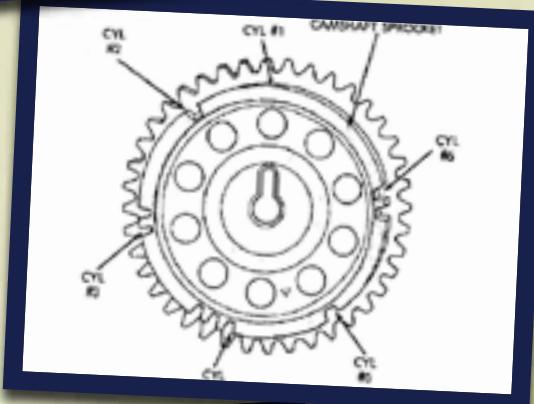


Figure 7



Figure 8



Figure 9

I was unable to determine what was wrong with the van from these waveforms, so more testing was necessary. I moved the scope leads so I could see the CKP and CMP signals while the problem occurred and captured the waveform seen in figure 5. Neither the CKP nor CMP signals appeared to drop out, so I was really wondering about the PCM. There have been problems with the PCMs in these vans grounding the ignition coil drivers intermittently, and by the way the waveforms looked, I was thinking the just-installed remanufactured PCM might be bad.

A second remanufactured PCM was installed and, unfortunately, the same problem occurred. I was now getting frustrated and began thinking something was spiking the PCM and causing it to lose sync or control of the ignition firing. I was told by the first shop that, prior to replacing the first PCM, the CKP and CMP sensors were changed. I continued with scope-testing a number of different signals, looking for the problem. I checked both power and ground circuits to the PCM when the unusual coil firing occurred and saw nothing strange. I also looked at the data communication lines, hoping to see a drop or spike. Nothing was evident.

I finally decided to move the scope-leads back to the CKP and CMP signals to take a close look at the signals when the problem occurred. I thought maybe one of the signals was dropping slightly on the signal high portion of the waveform, or maybe not pulling all the way to ground so the PCM would ignore the signal and loose sync. While watching the waveform during normal engine idle, I verified that the CMP signal was centered in the CKP signal windows and that the CMP signature consisted of a series of pulses in the following pattern, 1-2-3-1-2-blank. This repeating pattern can be seen in figure 6 on channel 2 and is created by slots in the reluctor of the camshaft sprocket shown in figure 7.

When the engine stalled again, the MODIS waveform buffer was carefully reviewed to see if there was a problem in the CMP or CKP signals

when the ignition coil primary control was affected. As seen in figure 8, the CMP signal has two single pulses in a row. This confuses the PCM, and the ignition coil is not turned off for the 6-3 coil pack. The CMP sensor was replaced with a MOPAR part from the dealer and the van ran perfectly, with no missing CMP pulses (figures 9 and 10). There was no way to know for sure what was wrong with this van without a labscope. This diagnosis would also be made more difficult with a scope that cannot record screens in a buffer for playback once the scope display is frozen. The MODIS really came through in helping nail down this tough problem. 



Figure 10

# Free Money

## *Top reasons to participate in a 401(k)*

While the letter/number combo 401(k) sounds as appealing as a math pop quiz, these company-sponsored plans are nearly genius in the way they help employees build a nest egg for retirement.

So here are the top 5 reasons (most important first) to participate in your employer's 401(k) plan.

**Reason number 1:** Free money. You read that right. When a company chooses to match employee contributions in a 401(k) plan, you're essentially getting free money.

"Where else can you get an instant return on your money but a 401(k) plan?" said Rick Meigs, president of 401khelcenter.com, a Portland, Ore.-based company.

"You don't want to pass this up."

How it works depends upon your employer's

plan. (See sidebar for an example of how free money is yours for the taking.)

**Reason number 2:** It's painless. 401(k) funds are automatically deducted from an employee's paycheck, much like federal taxes or health plan premiums. That means you, as the employee, don't have to cut a check. "It's extremely easy," Meigs said. "It's like clockwork and takes no effort on your part to remember to save."

**Reason number 3:** Tax breaks. And they're completely legal. Honestly.

The tax breaks are twofold. First, your contributions to a 401(k) plan are tax deductible, which means there are *no taxes taken out of that money before it goes into your 401(k) allocation*. This reduces your tax burden. (See sidebar for an example of how this works.)

Second, your earnings in the plan are tax-deferred, which means they won't be taxed until you start withdrawing money down the road.

"Every dollar you earn is reinvested instead of being taxed," Meigs said. "The earnings in a tax-deferred account are higher than earnings from a taxable account, because taxable accounts mandate that every year at tax time you owe Uncle Sam money."

**Reason number 4:** Professional help. "Most people don't spend every day managing money," Meigs said. With 401(k) plans "you can access a professionally managed account, and the funds offered in the plan have gone through significant reviews and are constantly monitored," Meigs said.

In addition, many plans offer advice to participants who are unsure what to do with their investments. "The advice is often very specific and actionable," Meigs said. "And you can access the professionals as often as you'd like."

## Free money? There *is* such a thing

Employer contributions are one of the many attractions of 401(k) plans. Here is an example of how they may work.

A popular option among many companies is to contribute 50 cents for every \$1 the employee contributes to the plan, up to 6 percent of the employee's pay.

An employee who works for this company and contributes 6 percent of his pay – for a total of \$2,200 a year, for example – to the 401(k) plan will see that company kick in \$1,100 a year to the plan.

"Most companies feel they have an obligation to help," said Rick Meigs, president of 401khelcenter.com. "And for employees, a 401(k) plan with a match is a significant motivator."

# Here's how to reduce your tax burden

**Reason number 5:** Options to suit your needs. Target-date or lifestyle funds, relatively new developments in the 401(k) arena, are set up to provide options attractive to your lifestyle or how much time you have until retirement. Then, the funds automatically adjust as time goes on and your needs change. "You put all your money into one highly diversified fund, then don't pay any more attention to it as it adjusts for you," Meigs said. "You just make a single decision, making these types of funds very popular."

Still, there are doubters about the wisdom of these plans. "If you ask people why they don't participate, most say, 'I can't afford it,'" Meigs said. "But everyone can do it. Everyone can come up with something."

A tech in Florida, where there is no state income tax, has gross pay of \$40,000. He is paid bi-weekly. He is married and has four federal exemptions. He contributes 6 percent of his pay to his company's 401(k) plan. (Note: This chart does *not* show company contributions.)

## PAYCHECK RESULTS WITHOUT 401(k)

Biweekly Gross Pay	\$1,538.46
Federal Withholding	\$82.69
Social Security	\$95.38
Medicare	\$22.31
<b>Net Pay</b>	<b>\$1,338.08</b>

## PAYCHECK RESULTS WITH 401(k)

Biweekly Gross Pay	\$1,538.46
Federal Withholding	\$68.85
Social Security	\$95.38
Medicare	\$22.31
<b>401(k) Plan</b>	<b>\$92.31</b>
<b>Net Pay</b>	<b>\$1,259.61</b>

Comparing these charts, you'll notice the federal withholding (read: money paid to the government) dropped \$13.84 a paycheck – that's nearly \$360 a year – when this employee decided to participate in the 401(k) plan. His net pay went down only \$78.47 a paycheck, which isn't bad considering he is contributing more than \$92 each paycheck to a 401(k) fund.

*Source: [www.paycheckcity.com](http://www.paycheckcity.com)*

## Start working Magic

Much like a snowball grows as it rolls down a hill, picking up more snow along the way, so too does a savings vehicle grow. It grows because your initial investment earns interest. Then that interest earns interest, and so on and so on. Even a little bit of money can grow quickly when the magic of compounding happens.

From the U.S. Department of Labor's Employee Benefits Security

Administration, consider the following example:

**Starting at 20:** If you put \$1,000 a year into an IRA every year from age 20 through age 30 (for 11 years) and stop – and the account earns 7 percent annually – your savings will equal \$168,514 at age 65. That's from an initial investment of \$11,000.

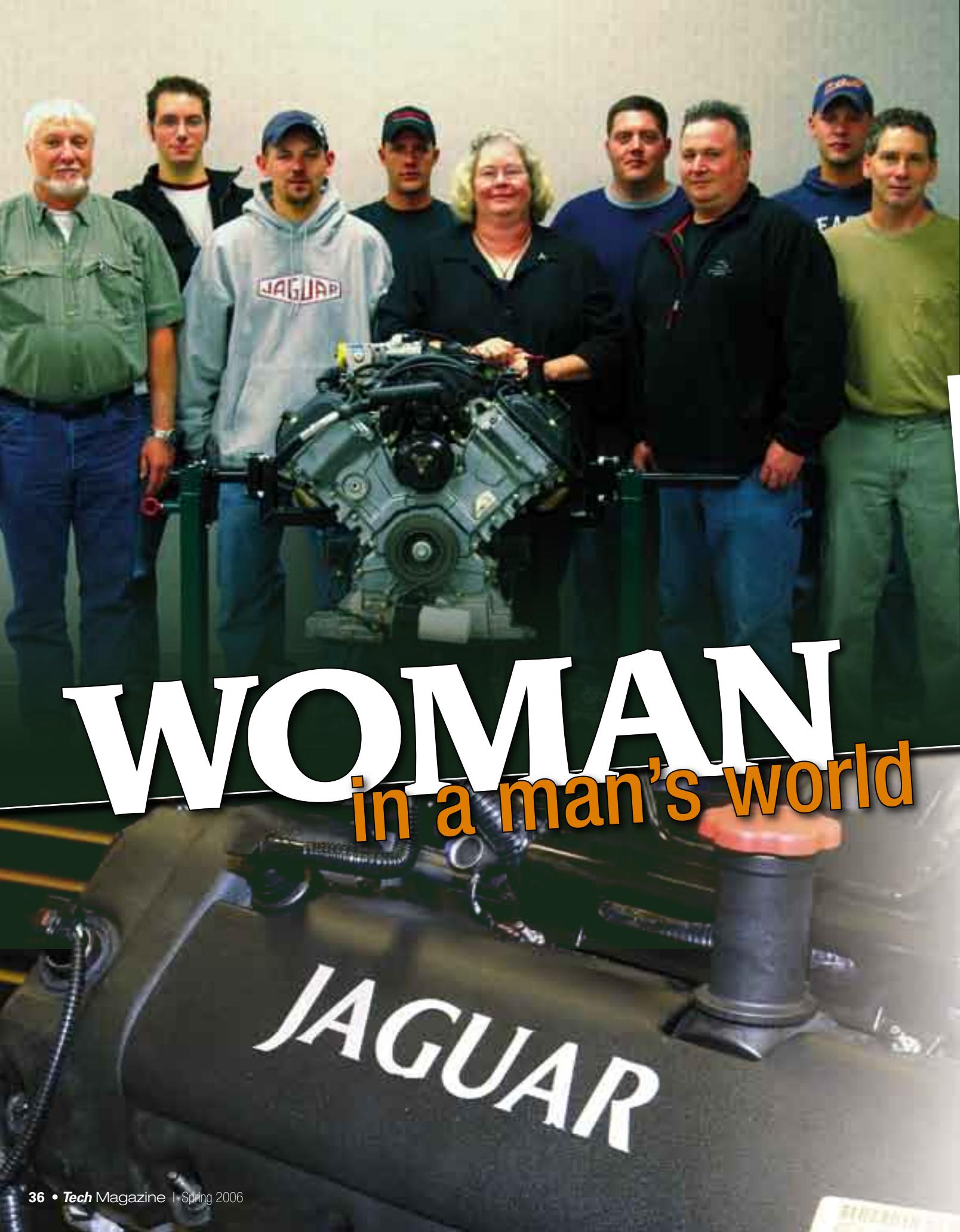
**Starting at 30:** If you don't start until age 30, but save the same

\$1,000 amount annually for 35 years straight, at the same 7 percent rate of return, you will have saved three times as much money (\$35,000, as opposed to \$11,000) but your account will grow to only \$147,913 at age 65.

Magic? Sort of. The kind to believe in. So start saving or saving more if you can. 

*Source: [www.dol.gov/ebsa](http://www.dol.gov/ebsa)*

In the next issue of *Tech*: Funding IRAs for those who don't have 401(k)s



# WOMAN in a man's world

JAGUAR

# Carroll Bailey forged new ground as female ASE Master



**C**arroll Bailey remembers well the customer who wasn't too pleased when he learned that the person under his car's hood was – gasp! – a woman.

"I had worked on the car, did everything I was supposed to do, then cleaned myself up," Bailey said. "As I was walking through the station, I took my hat off and my hair, which had been piled up on top of my head, fell down my shoulders. The customer realized I was a woman and he wasn't too happy."

This was early in Bailey's career. When she became ASE certified 30 years ago, she was only the second woman to receive the group's master automotive technician designation. She has maintained that certification consistently over the past 30 years. (She also was a certified heavy-duty truck technician at one point.)

Her career path was, and remains, a very different one for a woman. The road was never smooth but Bailey made the best of it. "Sometimes (attitudes) would make me angry, but I learned you have to get used to it or get over it," she said. "It's a matter of proving to people that you have the knowledge. You have to develop a sense of humor."

## DAD INFLUENCED CAREER CHOICE

Carroll Bailey isn't the first Carroll Bailey to work with cars.

"I'm named for my father, who was an automotive technician," she said. "I'm the oldest daughter. I got into the car business to get Dad's respect." While studying for an automotive associate's degree at Southern Illinois University at Carbondale, she was one of only two women in the class.

She forged ahead to break ground in a number of areas. Bailey spent 12 years with General Motors, working in field service and at the training center before answering questions on the company's technology hotline, the first of its kind in the world. Bailey was part of the transmission group, guiding technicians who had questions about an automobile – "anywhere from the engine on back," Bailey said.

Again, being a woman on the hotline, Bailey caught people off-guard. "Once someone called asking to talk with someone in transmissions, and I said that I was," she recalled. "They said they'd rather speak to a man. So I put someone else on the line. He helped as much as he could, but when he got stuck he told the caller, 'Let me get our transmission specialist.' That's when I got back on the phone."

(Continued on page 38)



Over time, callers began to understand the depth and breadth of Bailey's knowledge. One even dubbed her the "Tranny Granny" – though she was in her early 30s at the time.

## JAGUAR CAME CALLING

After her 12 years with GM, Bailey took a position with Jaguar. She has been with the company for 16 years, helping set up its training schools all over the country. She now trains other trainers.

"I try to make the classes less terrifying and more relaxing for people," she said. "It really is a lot of fun."

Bailey established the Schaumburg, Ill., Jaguar training school in 2001, then took over the school permanently in June when the previous instructor moved on.

"I never wanted the corporate track," Bailey said. "The nuts-and-bolts technical stuff is more appealing, more straight-forward."

Of all aspects of cars, Bailey especially loves teaching electronics.

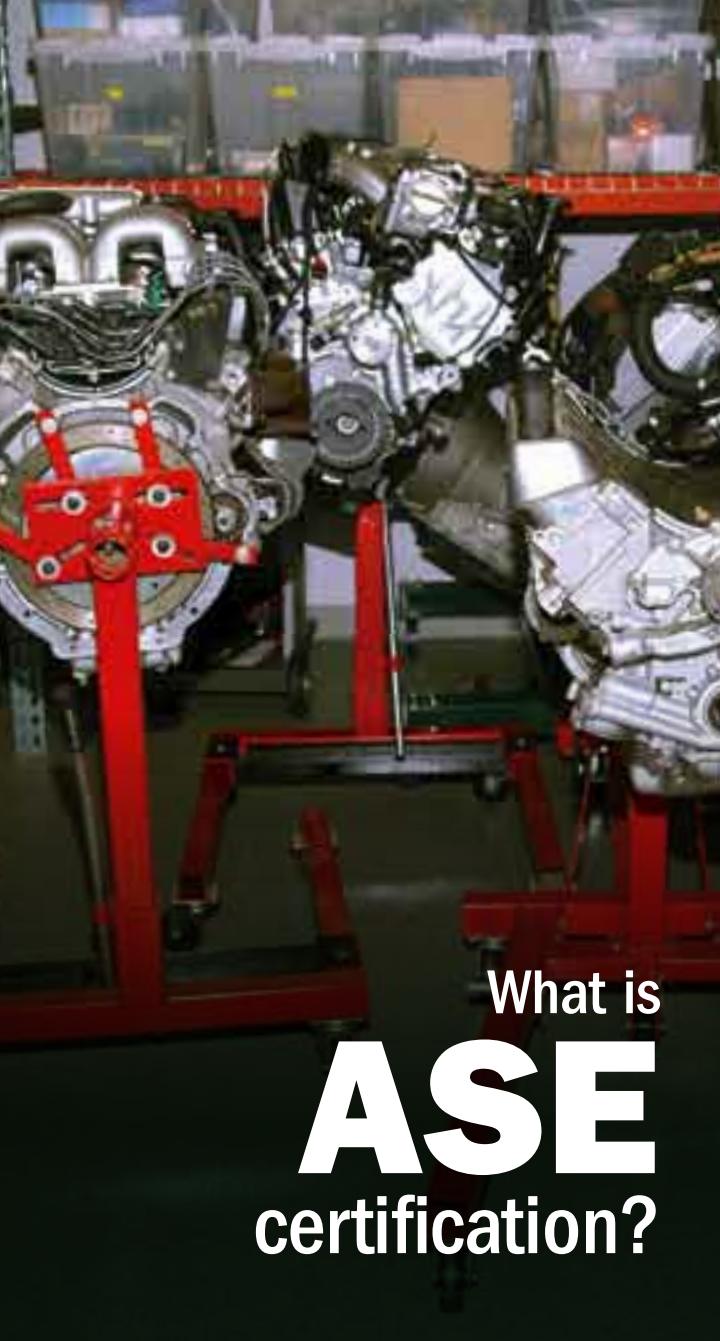
"With the knowledge she provides, I can troubleshoot a lot," said Pat Maison, a Jaguar technician in Troy, Mich., who has taken many of Bailey's classes. "She has opened my eyes."

That education extends beyond the classroom. "If I'm struggling with an electrical problem, she'll fax me electrical schematics, and we'll go back and forth," Maison said. "The instructors know so many more technicians than I ever would, and she has the knowledge, plus the resources, to help."

Now entering her fourth decade in automotive maintenance, Bailey encourages anyone, man or woman, to consider the field.

"You need a love of complex machines," she said. "And you can't be afraid of getting dirty." 





## What is **ASE** certification?

The National Institute for Automotive Service Excellence's (ASE) certification program offers automotive professionals who pass its tests professional credentials in their field.

Technicians may become ASE certified in any of the following areas:

- Electrical and Electronics Systems
- Engine Performance
- Engine Rebuilding and Repair
- Brake Systems
- Suspension and Steering Systems
- Heating and Air Conditioning
- Manual Transmission and Drive Axles
- Automatic Transmissions and Transaxles

Those certified in all eight areas earn the designation of Master Certified.

The nonprofit ASE was established in 1972 to help consumers recognize competent automotive technicians. Its tests are nationally recognized. Today, about 420,000 professionals hold current certifications.

To learn more about ASE certification or how to test (via computer-based training or with paper and pencil), visit [www.ase.com](http://www.ase.com). Registration for computer-based training is only done by phone. (800) 525-6929.

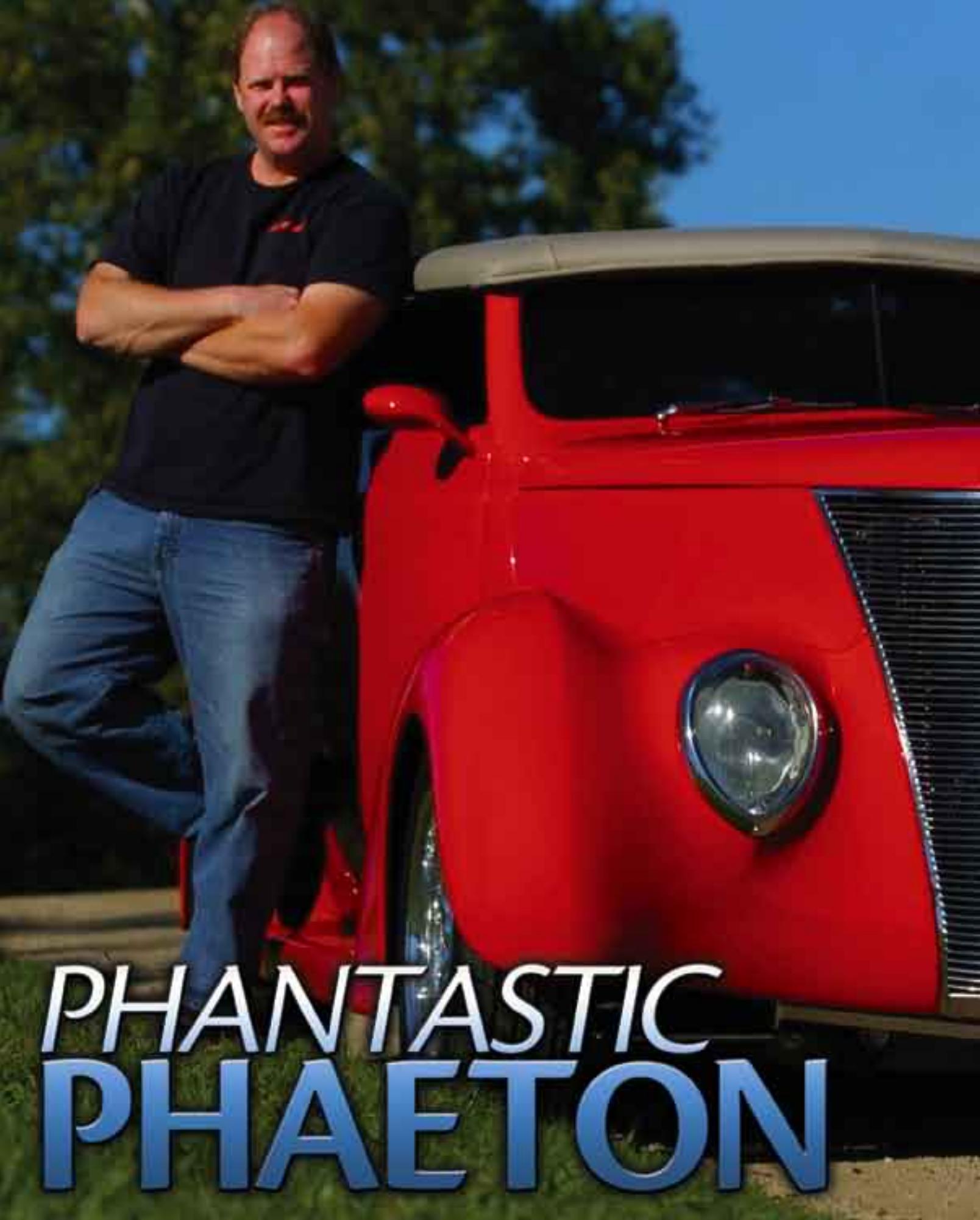


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# PHANTASTIC PHAETON



## Andy Dobson brings home best-in-class trophy first time out at Charlotte Auto Fair

Two and a half years into a one-year restoration project, Andy Dobson – with help from daughter Kyndall and wife Rhonda – completed one fantastic '37 Ford Phaeton. Although the project took much longer than expected, the results speak for themselves. Bottom to top, inside and out, you'll be hard pressed to find a more meticulous first-time street rod project.

Things didn't exactly add up to a show winner in the making when Andy located the floundering project car in Michigan. Although a portion of the original steel body remains, Downs fiberglass fenders, side panels, running boards and hood were needed acquisitions. A roll cage and other safety enhancements were planned during the design stage and concealed during construction.

Andy's unique vision is capped by a chopped top and special phaeton roofline of his own making. Rather than folding down, the top lifts off for more fun under the sun. The shaved doors open electronically, and the hood tilts forward. Andy takes special pride in the hinged-on-the-left deck lid that also opens electronically. The grill and headlights are stock. Flush-mount, acrylic LED tail lamps were specially designed and required two weeks of bodywork to install.

*(Continued on page 42)*

# PHANTASTIC PHAETON



## Clean and chrome

The 350 cu. in. small block fits comfortably under the hood. Many of the speed parts and add-ons were purchased from Doug Herbert Performance. A clean firewall and sanitary engine installation add to the eye appeal. The battery box is tucked away under the right front fender, while the power brake booster mounts cleanly under the car. Plenty of chrome, including custom monogrammed valve covers, catches the eye.

The underside is suspended, plumbed and piped as cleanly as anything you'll ever see, and everything is detailed to show-ready condition. Chris Brown designed the billet wheels, and Barry Wright cast and machined them. Most of the work during the 2-1/2-year project was completed in a 4-stall backyard garage that's comparable to many professional shops. A Honda Prelude base red and six coats of hand-blocked clear top urethane primer, all from DuPont.

## Comfy inside

The Leon Brown interior was designed with Andy's family in mind. The dash is styled after a '37 Ford. For Kyndall's movie watching, a unique center console houses a DVD/CD player and Pioneer speakers. The heat and A/C are piped to the rear passengers. Cup holders provide additional convenience. The attention to detail and clean, functional look are consistent with the Phaeton's overall appearance. It's no wonder that Andy's show-stopping street rod walked away with the top honors at Lowe's Motor Speedway, home to the Carolinas' largest car show and swap meet.

## CAN WE FEATURE YOUR RESTORATION?

If you own a car, truck or motorcycle that you restored, have some "before" photos and are a Snap-on tool user, let us know the vehicle specifics, your contact information, place of employment and the name of your Snap-on Dealer. Mail any details and a photo that will not be returned, or send an e-mail with a hi-res digital photo attached to:



## Tech Magazine

Snap-on Tools  
PO Box 1410  
Kenosha, WI 53141-1410  
TechMagazine@snapon.com

## Destined to be a tech

When he was 7 or 8 years old, Andy started helping his dad, who maintained heavy equipment for a major quarry operator. Young Andy was also the guy who fixed the neighborhood bicycles and helped his dad with backyard projects. The high school auto mechanics curriculum came naturally. After short stints in motorcycle repair and tractor/trailer setup work, he settled into a 22-year career with an auto dealer near his Concord, N.C., home.

Andy saw his father rely on the quality and durability of Snap-on tools. Not surprisingly, Andy does too. "They last," is how he describes his relationship with Snap-on tools.

In addition to some early hand-me-downs from his dad, Andy has a set of heavy-duty black sockets that have served him well since 1984. "I'm well pleased with the Snap-on program," says Andy. "I use a wide variety of hand tools, power tools and diagnostic equipment every day. I've done things with some heavy-duty impact sockets that you just shouldn't, but they've taken the abuse. Another example is Snap-on screwdrivers. They're hard, but not brittle and always hold their posture."

The Phantastic Phaeton is just the latest example of Andy's handiwork. He also owns a beautifully restored '69 Chevelle that Rhonda frequently drives, and for occasional weekend forays, a Corvette drag car. In his spare time, Andy also builds a variety of street machines and drag cars for others. 

## FAST FACTS:

- 350 cu. in. Chevy
- Edelbrock intake
- Edelbrock 750 cfm carb
- Comp cam and roller rockers
- RW Speed Pro pistons
- MSD ignition
- Custom valve covers
- JBA headers
- Stainless exhaust
- Walker rad/condenser
- Turbo 350 lockup
- Ford 9" posi w/3.50 gears
- Lokar shifter
- Ford power steering
- Camaro steering column
- Vintage Air A/C
- Kuhmo Ecsta 205/50 ZR16 (front)
- Kuhmo Ecsta 255/45 ZR17 (rear)



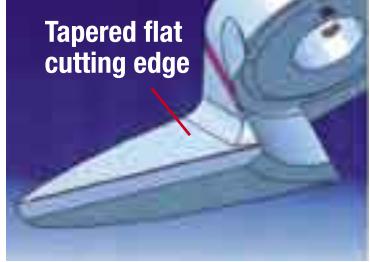
# Critical Details Lead to Innovation

## New Snap-on® Diagonal Cutters Add Leverage and Last Longer Than Ever

Real product innovation is the result of paying attention to the details – and sometimes the results are subtle, but important, and sometimes there is a major breakthrough. At Snap-on Tools, the major breakthroughs get a lot of attention. MODIS revolutionizes handheld diagnostic equipment; the 5-position ratcheting screwdriver handle changes the screwdriver landscape. And while major products get a lot of attention, there is a constant probing to look closely at existing products to see how they can be improved.

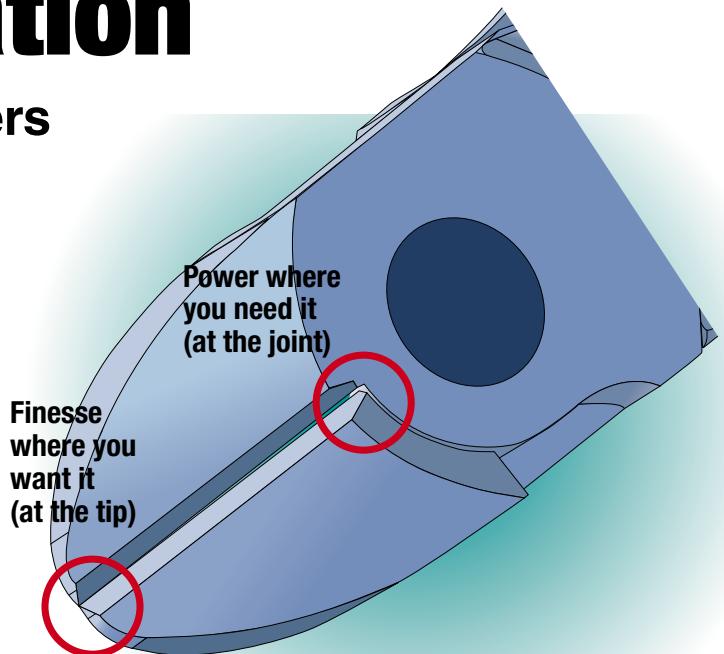
It seems like diagonal cutters have been around forever – they are an essential part of anyone's tool kit. The Snap-on 86 model was always one of the standard bearers. The 6-1/4" long diagonal cutter is used for more things than you can think about. Most people would consider it done, but Snap-on's Eric Gustafson is an engineer who is never completely satisfied. If the 86 was good, how could it be better?

"With any tool, our obligation is to maintain our leadership, to make sure that our products are easier to use and longer lasting than any other choice," Eric said. "In the case of a diagonal cutter, there were two critical areas to consider – the cutting edges and handle leverage. Almost all manufacturers make the basic product, and then hand finish the edges to make them sharp. The problem with that is if you have to hand edge, you add variability. Precise CNC machining is a better choice, and it allows you to consider different design alternatives."



Hand-finished edges come to a sharp point, and Eric knew that sharp points tend to wear down over time. Snap-on engineers had a better idea, using a flat, top edge

on the cutting surface that would distribute the load and last longer. "We had been looking at flattened cutting surfaces since the 1980's and experimenting with concepts. The advantage is distributing the load across a larger surface. The problem was consistency in manufacturing – and the new CNC technology was able to deliver what we were asking for," said Eric.



The (cold-formed) Snap-on 86CF is a new take on an old concept. The cutting edges are flat on top, and actually tapered from being wide at the back near the joint, to very narrow at the tip. "At the tips, the edges are about as wide as a hair, but even at that width, they are stronger with the flat design than they would be if they came to a sharp point," Eric explained. Snap-on calls the new edge design the PowerEdge because it is stronger and lasts longer.

"Another key revision we made was to relocate the joint to increase the leverage in the jaws," said Eric. "That meant we had to look at the handle shape and revise it to support the palm better. We surveyed lots of users with different hand sizes to make sure that these ideas worked." People are bigger and stronger than they were back when these tools were first developed, the wire they are cutting is made of stronger alloys, and even the plastics that they are cutting are stronger than ever – for example the clips holding body trim parts in place. The new 86CF does an exceptional job cutting fine wire, but also can cut hardened wire like music wire without getting dull or damaged like a conventional cutter would.

*The new PowerEdge design is now available on the 86CF and will also be incorporated into the rest of the Snap-on cutter line.*

**It offers an advantage you can feel immediately, and an advantage you will appreciate over time.**

# Old Friend. Better than Ever.



**The Snap-on 86CF  
High Leverage  
Diagonal Cutter.**

New PowerEdge Design -  
You'll Feel the Difference.

**Snap-on**

# LET IT SNOW

**Crossfire Sno Pro** brings powder,  
trail riding together



A new hybrid model, the Crossfire Sno Pro, is available from Arctic Cat this year. The machine is built to help snowmobile enthusiasts thrive in the powder of the mountains and on the trails.

Central to the machine are lessons learned in racing. But Arctic Cat hasn't forgotten what they learned in the mountains, either.

The result is a more aggressive, and smoother, ride.

There is plenty of power as well. The Crossfire Sno Pro is available with a 700cc or 600cc engine. Combine that with the overhauled, racing-driven shock package and you're ready to blaze a new trail.

The sleds come in green, orange or black.

## SPECS

Engine:	Suzuki
Displacement:	698cc (7)/599cc (6)
Bore x stroke:	79.7 mm x 70 mm (7)/73.8 mm x 70 mm (6)
Cylinders:	2
Lubrication:	oil injection
Cooling:	liquid
Ignition:	3D
Carburetor:	46 mm throttle body batteryless EFI
Alternator (watts):	190 @ 3500 rpm
Drive clutch:	Arctic (rpm sensing)
Driven clutch:	Arctic (roller cam) ACT drive system
Front chassis:	aluminum
Rear chassis:	aluminum with Mountain taper & ETT
Ski stance:	42"-44" (adjustable)
Ski material:	UHMW plastic
Ski carbides:	dual offset runners
Front suspension:	AWS VI double-wishbone A-arms with FOX Float shocks and sway bar
Rear suspension:	FasTrack Long-Travel System slide-rail, adjustable torsion springs, lightweight aluminum FOX (IFP) shocks, Torque-sensing Link rear arm and coupling blocks

## Cool Stuff

### Better than before

One critic calls the new iMac® G5 the “best consumer desktop around.” The G5 offers some old standbys as well as a few quirky updates that make it an improvement. It features Apple’s new Front Row media experience, which allows users to play music and enjoy slideshows – as well as watch DVDs, iMovies, music videos and television shows purchased from iTunes® Music Store. In addition, the G5 features the new Photo Booth application, which allows users to take snapshots with the video camera and add entertaining visual effects. The G5 comes in 17-inch (\$1,299) and 20-inch (\$1,999) models. [www.apple.com](http://www.apple.com)



### Ready to move

The Nokia 770 Internet Tablet (5.5x3.1 inches) allows you to browse your favorite sites and catch up on your e-mail from anywhere with WI-FI broadband access. The tablet allows you to surf the web, stream files, tune into internet radio or play your favorite videos or music. The battery has browse time of three hours, and the high-resolution display is easy on the eyes. Price is \$360. The 770 is only available online from Nokia. [www.nokia.com](http://www.nokia.com)

### Play it again

The Sportster Replay Radio by SIRIUS has become the company’s best seller. SIRIUS says it changes the way you listen to sports, music, talk and entertainment by pausing, rewinding or fast-forwarding up to 44 minutes of content. Specifically, the radio features 30 channel presets; a rewind and fast-forward by song or time; quick access to live programming; and Game Zone, which lists your favorite teams’ scores on the screen. Price is \$149.99, with a \$50 rebate available. [www.sirius.com](http://www.sirius.com)



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## Cool Stuff

### Location, location, location

Garmin International Inc. has introduced the Rino 520 and Rino 530 to its line of two-way radios integrated with GPS technology. The radios boast up to a 12-mile communication range, large color display, mini-USB interface, and built-in auto-routing basemap. The Rino 530 has the same features as the 520, plus a seven-channel weather receiver, electronic compass and barometric altimeter. Garmin bills the Rino as invaluable "whether being used for an outdoor emergency or for rounding up the family at an amusement park." The patented location-reporting feature enables users to "beam" their location to other Rino users. Estimated retail prices are \$450 for the Rino 520, \$500 for the 530. [www.garmin.com](http://www.garmin.com)



### No wires attached

Logitech's® Wireless Headphones for MP3® allow you to listen to your music in style – no wires attached.

The headphones use advanced Bluetooth® frequency-hopping technology for interference-free, crystal clear audio. Digital wireless technology provides over 30 feet of range, and rechargeable batteries can play up to eight hours per charge. These headphones include a wireless adapter that snaps onto your MP3 player, plus integrated controls so you can adjust the volume or mute tracks without ever touching your player. Cost: \$129.99. [www.logitech.com](http://www.logitech.com)

### Prop protection

The SecureProp™ lock is designed to protect against the theft of expensive boat propellers. SecureProp, with ABUS padlock, features a patented design that utilizes a locking cover. The cover is machined-fit to encompass the entire hub, which sets it apart from other systems by denying any access to the propeller's locking nut. Retail price: \$99-\$179, depending on prop size. [www.secureprop.com](http://www.secureprop.com)



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Some work boots put in an honest day's work. Others confidently ask for overtime. This boot offers the ultimate combination of technologies and features for maximum comfort and durability. You won't find them in any other boot.

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# NO ORDINARY HACK

1923 Ford Model T

**A**s the maintenance supervisor for the buildings at Wildwood Golf Club in Allison Park, Pa., Harry McBride has observed his share of "hackers" in action. His '23 Ford Model T is no ordinary hack; it's one of Henry's famed Depot Hacks used to shuttle passengers and luggage from the train station to their hotels.

This beautiful restoration has a new radiator shell, hood and fenders. Original patterns were used for the replacement wood. Since purchasing from a Model T collector, Harry has replaced a bent front axle, installed new wheels and tires, upgraded the lighting and added the side-mount spare and authentic tire pump.

Ford Motor Company invited Harry to show his T at a recent 100th anniversary celebration in Pittsburgh. He has turned a 1926 schoolhouse into an open-by-chance museum in nearby Renfrew for his 12 collector cars. Harry uses a broad range of Snap-on tools in his daily responsibilities including his very first - a 1/4" ratchet acquired 34 years ago. ☺



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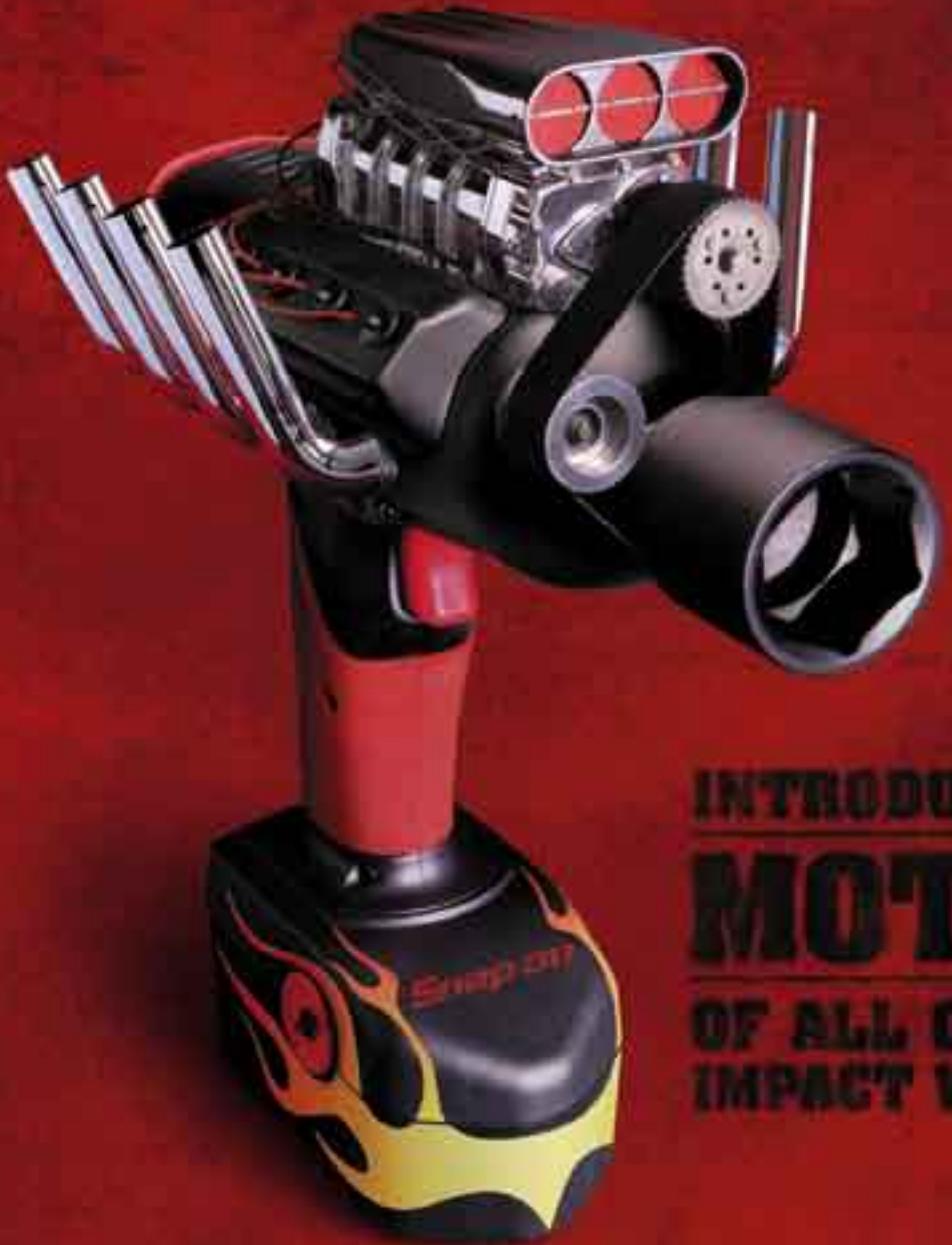
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