

Compliments of your Snap-on Dealer

Tech

Only for techs. And only from Snap-on®



A Classic
GONE WILD

The '57 Glo-mad project is finished!

The
PERFECT
Steak

Tips for grillin'

Bentleys in a barn

Driverless Vehicles take to the streets

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The big bad Glo-mad is complete!

Read the story on page 12.



THERE IS A DIFFERENCE™

Welcome to the spring issue of *Tech Magazine*.

Among the many great topics in this issue of *Tech* magazine is one we are particularly proud of at Snap-on®. The "Space Age Diagnostics Training Facility" article on pages 38 and 39 highlights the new Horizon Center for Technology in Kenosha, Wisconsin. Snap-on is honored to partner with Gateway Technical College to provide our support to this revolutionary facility. It is designed to set the standard for instructor and technician training in the vehicle service industry.



The center provides the technology and the curriculum to help train students to work on the highly complex vehicles of today. It is also a place where instructors can learn using the latest in diagnostics systems, so they can pass their knowledge on to students. After all, dedicated and passionate instructors are the backbone of the education system in our country.

As was stated at the opening ceremony earlier this year, skilled, trained technicians are crucial to the businesses they work for and to the vehicle service industry in general. It's important to note that entire regional economies are realizing that their successes are directly related to their ability to produce and maintain talented and skilled workers. At Snap-on we are proud to be a part of that effort.

Thanks for your continued support of Snap-on, and thanks for reading. I look forward to sharing some thoughts with you in future issues of *Tech*.

Tom Ward
President, Snap-on Tools Company LLC

Share Your Story

Drop a note or send an e-mail. Include your story idea about you or a fellow technician, your contact information, place of employment and the name of your Snap-on Franchisee.

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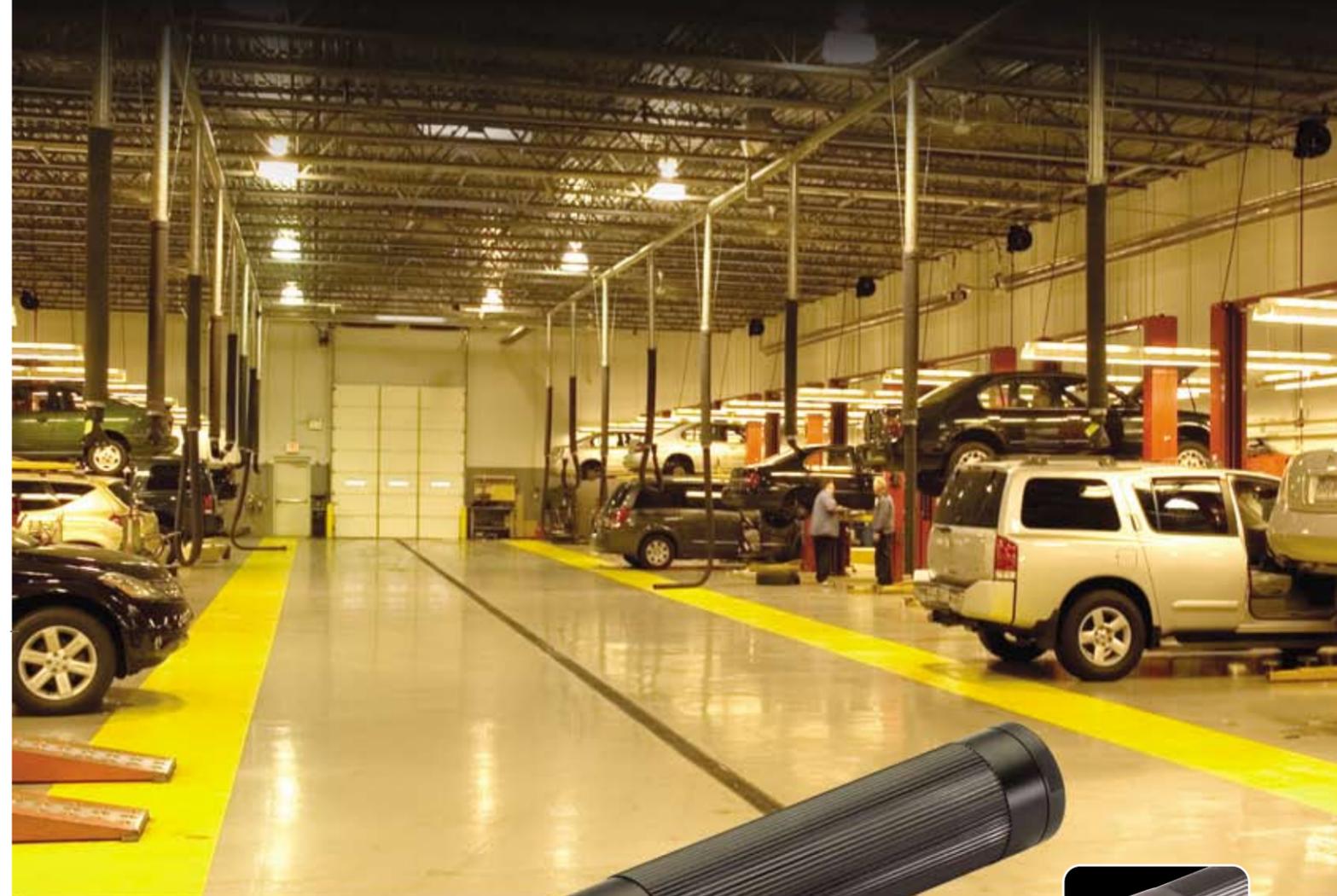
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'Weird Duck' does land and water

One of the quirkiest vehicles ever made, the Amphicar, was the brainchild of German Hans Trippel. Built between 1961-67, this water-worthy automobile was advertised as "the car that swims." Only 3,000 cars were sold. The only model, the 770, supposedly got named because it travels at seven knots in the water and 70 mph on land. Powered by a 1,147cc, 43-hp Triumph Herald four-cylinder engine, the Amphicar's special Hermes-built transaxle gearbox provides four forward gears for the road, and a forward and reverse gear to turn the propellers when in water. While "swimming" the front wheels function as the rudder and tiller steering system. The Amphicar came in four colors: regatta red, lagoon blue, beach sand white and fjord green.

On the Web:
amphicar.com

Ship shape

Innovative architects have given the term "box home" a new meaning. The architectural firms, including New York-based Lot-ek, are helping turn discarded shipping containers—the kind that fill ocean freighters—into homes.

The containers arrive from overseas loaded with goods. But that can be the end of the line because the U.S. isn't reloading and returning the containers (there is the matter of that trade deficit). Returning empty containers, meanwhile, is more expensive than building new ones.

But the firms, and now consumers, are giving the containers new life. Kits, which typically cost about \$120,000, are available to make the conversion from container to home an easy one. (Do-it-yourselfers, as usual, can likely do the job for less.)



On the Web:
lot-ek.com



Help your customers breathe easy

Compared to outside air, the air inside vehicle compartments has significantly higher concentrations of pollutants such as soot, dirt and pollen, which can cause a variety of problems, ranging from odors, to headaches and allergic reactions. When you're servicing customers' vehicles, be sure to check their cabin air filters. New WIX Cabin Air Filters with BioShield 75 provide an invisible layer of protection against odor-causing bacteria, fungi and algae. Vehicle recommendations vary, but the general guideline for replacing cabin air filters is every 12,000 to 15,000 miles—or at least once a year.

On the Web:
wixfilters.com

Not the same old DRILL



Photo taken by Tom Beckwith

At age 87, Ruth Renegar still loves building birdhouses.

"I build 15 or 20 a year and give them to friends and neighbors," she said. Unfortunately, Ruth's tools regularly got in the way. "All the drills I had, they were too heavy and hard to hold," said Ruth, of Shelbyville, Tenn.

Her son Ottie, a heavy construction technician, saw her struggle with the ineffective tools. "They were heavy, and the batteries didn't last long," he said. So Ottie took a look in the van when Snap-on Franchisee Tom Beckwith made his regular call.



"I wanted something light that could drill effectively and had a long battery life," Ottie said. He found it in the CTS561 Series Cordless Screwdriver.

It wasn't long before the tool was in Ruth's hands, and she's been busy since.

Ruth takes scrap wood, cuts it down to size, turns a few screws and before you know it, a birdhouse is assembled. After a custom paint job, the house is ready for donation.

Ruth has done plenty of building in her day. In 1992, Ruth handled much of the carpentry on her own house – "I've always used a hammer and nails" – so she is no stranger to the difference a good tool can make. And that Snap-on cordless screwdriver, well, Ruth will be the first to tell you it's a good tool.

"It's easy to hold and I can handle it real well," Ruth said. "It's just wonderful. I enjoy using that tool."

Says Ottie: "She's happy with it. That's what counts."

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A very demanding hobby

Gunnar Kirchner calls firefighting his "hobby." Maybe, but the volunteer position requires a lot of commitment for a pastime.

Kirchner, of Cetronia, Pa., turns wrenches on heavy equipment for a Caterpillar Dealer during the day. At night, he is almost always on call.

"It started out because I wanted to help my community," says Kirchner, 33, who has three girls—a 6-year-old and 5-year-old twins—with his wife, Wendi. "God forbid, if my house went up, I'd want someone to help."

Help he does, whether it's fighting a fire—"That doesn't happen all that often around here, but when it does we're ready"—or taking on another traditional role.

"I've had a call where a cat was stuck in a tree, and the cat actually bit me," Kirchner said.

The volunteers typically get the appreciation they deserve. "Most people are just grateful for your help, whether it's a full-blown fire or just burned food in the oven," Kirchner said.



Smoking tools

Franks and Johnny West can barbecue with the best of them. Now they have new cooking tools at their disposal in the form of Snap-on wrenches, ratchets, sockets and screwdrivers.

The two millwrights—along with buddy Jim Rich, who works with them in Georgetown, Ky.—put together the ultimate grilling machine a year ago. The grill is on a trailer, so it can be hauled to catering events or competitions the three regularly enter (and regularly win, too). The handles and other accessories are made of Snap-on tools.

The tool grill is the result of the Snap-on loyalists wanting to "do something a little extra." One evening, as Frank and Johnny worked on the grill, they were hit with the inspiration to see if a Snap-on wrench could be used as a handle.

"We both said, 'That's it right there. Let's use Snap-on tools on it.'"

Snap-on Franchisee Craig Broering was all for it. "He said he'd help any way he could, and he sure did," Frank said.

The grill gets plenty of attention. "The people at the compe-

titions, and the events we cater, go crazy over the tools," Frank said. "They're particularly interested in the details," such as the needle-nosed pliers that controls the damper—a key component of the crew's specialty: pulled-pork barbecue.

"We use lots of Snap-on tools on the job every day," Frank said. "But the ones on the grill, we have the most fun with."



NEW 2009 TECH TOYS CALENDAR

If you have photos, send 'em in now

Do you own or have you restored any of the following vehicles that might be described as wild, rare, unusual, radical, strange, weird, fun, outrageous?

Aircraft of All Types
ATVs / Utility Vehicles
Boats / Watercraft
Construction Machines
Drag Cars
Hopped-Up Riding Mowers
Mean Motor Scooters
Medium or Heavy Trucks
Monster Trucks
Motorized Bar Stools
Off-road Vehicles

Race Cars / Trucks of All Types
Race Chasin' Buses
Rock Climbers
Steam Powered Rigs
Tractor Pullers
Trains / Rail Cars
Trikes
Vintage Farm Tractors
Wild Snowmobiles
Motorized Anything Else

If yes, you'll want your creation considered for inclusion in the first-ever 2009 Tech Toys Calendar from Snap-on®. Exclusively from your Snap-on Franchisee during the fall of 2008, this new calendar will feature interesting and unusual personally owned toys built or restored by professional technicians like you.

Enter by March 31—Receive a Cap

Anyone who submits photos of his or her personal vehicle for consideration as described above will receive an officially licensed Snap-on cap. If your creation is chosen for the 2009 Tech Toys Calendar, you'll also receive a specially embroidered, limited-edition Snap-on Tech magazine jacket.

Your photos are needed by March 31, 2008. Include background information describing your vehicle. To be considered, your entry must include your complete contact information plus the name and phone number of your Snap-on Franchisee. All entries will be verified. You can submit your entries or ask any questions as follows:

2009 Tech Toys Calendar
High Velocity Communications
2444 North Grandview Blvd.
Waukesha, WI 53188-1695

Tech@HighVelocityCommunications.com - E-Mail

NOTES: Entries will not be returned. You must be an active Snap-on customer. Snap-on employees, franchisees, and/or representatives are not eligible.



Interested?

These photo tips will help:

- Send various views and angles.
- Action shots are encouraged.
- Show complete vehicle.
- Include close-up shots highlighting vehicle details.
- Include photos of yourself (separate from vehicle).
- Hi-res, digital photos preferred; prints or slides accepted. Set digital cameras at the largest file size and highest-resolution setting (3.0 megapixel minimum).
- Avoid having people in or near the vehicle.
- Keep the background natural, simple and attractive.
- Watch out for the mirror effect. A polished, smooth surface can reflect tree limbs—or the photographer.
- Pick a sunny day. Shoot sunny—not shady—side. Early-morning or late-afternoon natural lighting works best to capture color and detail. Avoid shooting between 10:00 a.m. and 2 p.m.
- Turn vehicle off before shooting photos.
- Keep hoods, trunks, doors, windows, etc. closed.





The techs of Neptune Aviation work under fire—and over it, too.

“It’s not the type of job where, when 5 o’clock comes around, you put the tools down, punch out and walk away,” said Greg Jones, vice president of operations at the Missoula, Mont.-based operation.

No, you’re just as likely to put the tools away and, with less than 15 minutes notice, take off and fight wild fires virtually anywhere in the U.S.

Neptune Aviation is in the business of fighting hellacious fires, and key to its strategy is its fleet of Navy P2V bombers. And key to the bombers are the 40 Neptune Aviation technicians.

“We have a first-class, state-of-the-art maintenance department,” Jones said. “We’re tougher than the airline industry

HIGH MAINTENANCE

Extensive maintenance part of aerial firefighting plan

when it comes to maintenance—and we should be, because these planes work harder.”

When crews aren’t fighting fires, they’re working on the planes. That can mean an entire day of maintenance when business is slow (which is a good thing); or working late into the evening, after a day of dropping the retardant. The crews don’t fly at night, but technicians still have inspections and repairs to make after the flying is done for the day. Jones mandates a stop time of 11 p.m. “Otherwise, they’ll be at it all night, and we need them fresh in the morning.”

Maintenance demands

The planes are high-maintenance because they’re all at least 40 years old. In addition, the fire retardant they drop weighs 24,000 pounds. “The P2Vs can carry as much as a 737, which helps put their size in perspective for most people,” Jones said. “But there are heavy loads coming on and off our planes. A commercial airplane isn’t losing 24,000 pounds in two seconds. Doing that puts a lot of additional stress on an airframe.”

The unique application means Federal Aviation Administration maintenance training and guidelines are just a starting point for Neptune Aviation.

“Who else can train us?” Jones asked. “We’re doing something that no one else is really doing.”

And they’re doing a lot of it. Maintenance that commercial airlines conduct once every 18 months is completed five times during the same period by Neptune Aviation techs.

“For every hour we fly, two techs spend three and a half to four hours maintaining the plane,” Jones said.

The planes aren’t actually extinguishing fires, Jones said, but dropping a retardant that helps prevent the fires from spreading—which keeps firefighters on the ground safe.

The P2Vs—Neptune owns 10, with number 11 coming onboard shortly—are time consumers from the second they’re acquired and converted to firefighting aircraft. “The planes are completely rewired, with new instruments, new panels, new flight controls,” Jones said. “Bolts and bearings are replaced, and anything you can possibly imagine, and more, is inspected.”

It takes a crew of 12 between 18 months and two years to complete a conversion.

Daily grind

When the planes are added to the fleet, the goal is 99 percent availability. The techs come in every morning and start their regular inspections.

Next comes a morning briefing on fire activity. If it looks promising, the techs continue with maintenance. If trouble is brewing, they’ll probably be in the air—on the way to the scene of a fire—within a few hours.

“They can never be more than 15 minutes away,” Jones said. “It’s just like traditional firefighting in those terms.”

If a request for help comes in, a chief technician—who doubles as a crew chief—flies to the site with two flight crewmembers. They begin their firefighting efforts immediately. An apprentice technician, meanwhile, drives to the fire scene. He or she brings everything the two-person maintenance team might need. The crew could be at that location for as long as six months.

“When you’re assigned as a crew chief ... or helping those guys in the field, you have to be qualified to resolve whatever issues arise in the field,” Jones said.

When the sun sets, the technicians’ day is far from over.

“Our employees are dedicated,” Jones said. “They care about doing their jobs right, because they know what’s at stake.”

On the Web:
NeptuneAviation.com



NEPTUNE Aviation

Business: Fighting wildfires across the U.S.

Aircraft: Converted Navy P2V bomber. The planes are relatively inexpensive to purchase, easy on fuel, have the necessary capacity and can handle the stresses that result from dropping 24,000 pounds in two seconds. (The U.S. Forest Service uses a total of 19 large tankers, and 10 are owned by Neptune Aviation.)

Fire season: Starts in February on the East Coast, moves to the Southwest from April to mid July, and to the Northwest from July to October. And then there are the Santa Ana winds that can kick up trouble for California in the fall, as they did last October.

What they do: The planes drop a fire retardant—a high-phosphate fertilizer with iron oxide added for visibility, so the next plane can tell where the previous crew was and properly place its drop. The goal is to create a firewall of sorts and contain the blaze.

Why Snap-on? “Snap-on is a part of what we do every day,” said Greg Jones, vice president. “The tools are first-class quality. We’re all about quality—from our commitment to maintenance to the tools. We use open-end wrenches, torque wrenches, sockets and screwdrivers every day. Sometimes, we drive them crazy looking for some really oddball stuff.”

A Classic
GONE WILD

If you just turned 50 last year, perhaps you can remember 1957 or at least recall others talking about this remarkable year in our history. Even if you're a professional technician with less than 25 years on life's odometer, you're in the minority—perhaps the only one in a million Tech readers—if you can't identify a '57 Chevy on sight.

With its fins and hood bullets punctuating the classic look, the '57 Chevy earned its place in history as an icon of automotive design. Car aficionados are quick to agree that this third and final edition of the 2-door Bel Air Nomad® station wagon was a true classic. What better way to mark this 50th anniversary than to bring one of the 6,103 produced back to life?

That's exactly what Snap-on has done with the Glo-mad, a classic gone wild that made its debut at—where else?—the SEMA Show

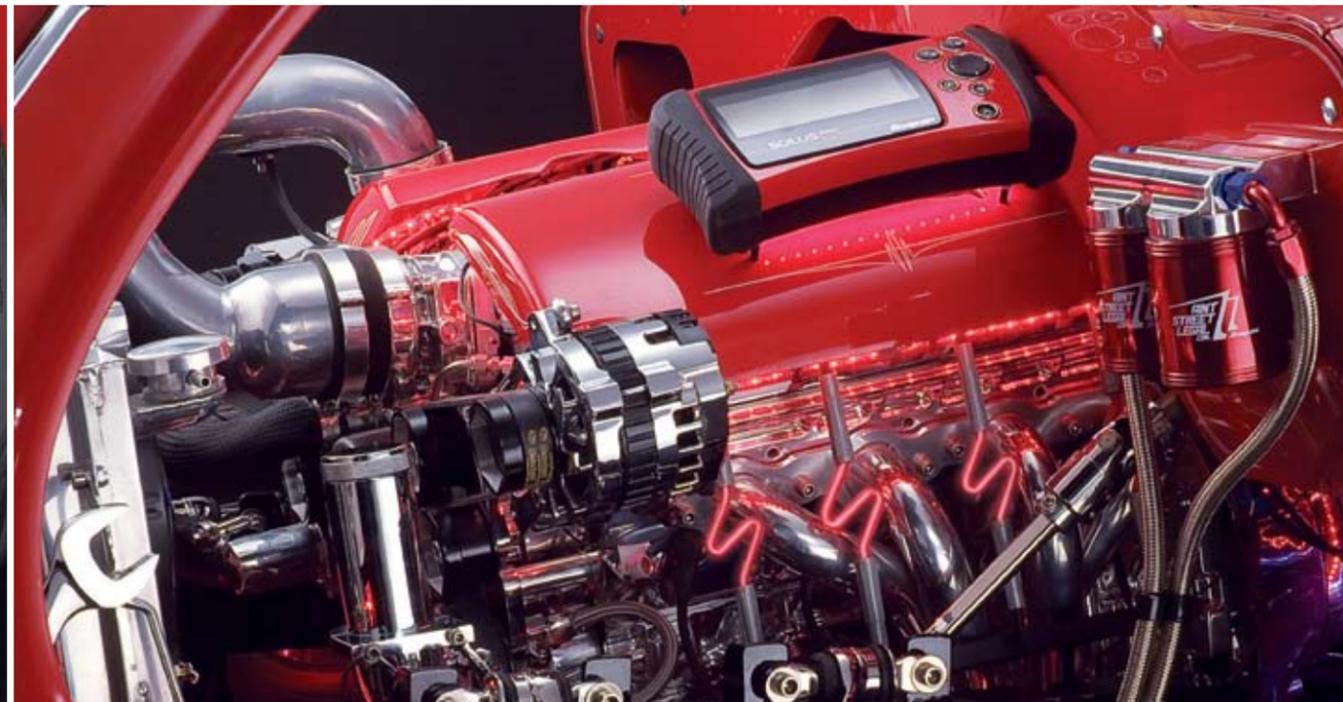
in Las Vegas. Almost everywhere attendees looked—under the car, under the hood, inside and bumper-to-bumper—they saw Snap-on wrenches, other tools and logos integrated into the design. The more they looked, the more they found—even suspension arms, radiator mounts, the crankshaft pulley and more. And underneath the massive amounts of glitz, glamour and chrome, it's clear—the classic Chevy lines still loom large.

Open & Shut Case

The tilt-open, hood-and-front-fender combo reveals an eye-poppin' Corvette LS7 engine with enough chrome and polished metals to blind any low-flyin' birds on a sunny day. Snap-on diagnostic tools found homes on top of the engine and the dash. Electronic

Continued on page 14





Test Your '57 Memory

Can You Recall?

- January 5 - Jackie Robinson announced his retirement from baseball
- January 18 - 3 B-52's set record for around-the-world flight, 45 hr 19 min
- May 1 - Larry King's first radio broadcast
- May 6 - Pulitzer Prize awarded to John F. Kennedy for "Profiles in Courage"
- May 25 - Buddy Holly & Crickets record "That'll Be the Day"
- June 3 - Howard Cosell's first TV show
- July 29 - Jack Paar's "Tonight Show" premieres
- September 4 - Ford Motor Co. introduces Edsel
- September 21 - "Perry Mason" with Raymond Burr premieres on CBS
- October 4 - "Leave It to Beaver," debuts on CBS
- November 1 - World's longest suspension bridge opens (Mackinac Straits, Mich.)

Who Checked In?

- January 26 - Eddie Van Halen, rock guitarist ("Jump," Van Halen)
- February 16 - LeVar Burton, ("Roots," "Star Trek Next Generation")
- February 18 - Vanna White, TV game show hostess ("Wheel of Fortune")
- March 20 - Spike Lee, movie director ("Jungle Fever," "Malcolm X")
- March 26 - Leeza Gibbons, TV host ("Entertainment Tonight")
- July 21 - Jon Lovitz, comedian ("SNL," "League of Their Own")
- August 9 - Melanie Griffith, actress ("Something Wild," "Working Girls")
- September 1 - Gloria Estefan, singer ("Conga," "1-2-3," Miami Sound Machine)
- November 27 - Caroline Kennedy Schlossberg (JFK's daughter)
- December 9 - Donny Osmond, singer (Osmond Brothers, Donnie & Marie)

Who Checked Out?

- January 14 - Humphrey Bogart, actor ("Casablanca," "Caine Mutiny"), age 57
- February 4 - Joseph Hardaway, creator of Bugs Bunny, age 66
- July 8 - William Cadbury, chocolate maker, age 89
- August 7 - Oliver Hardy, comedian ("Laurel & Hardy"), age 65
- February 10 - Laura Ingalls Wilder, author ("Little House on the Prairie"), age 90



suicide doors swing wide to reveal custom seats sporting the Glomad logo. The classic simplicity of the Dakota digital gauges complements the adjustable, chrome steering column by ididit. A sure-grip Snap-on screwdriver handle and a curved box wrench were naturals for the unique shifter.

More than 350 Snap-on wrenches tastefully decorate the exterior. From the 31 curved specialty wrenches that form the grill to the wrenches trimming the sides, the tailgate and even the V on the hood, you'll have trouble counting them all. The bright red and contrasting white exterior creates the ideal billboard for the special lighting effects evident in the Snap-on

logos. Neon lighting illuminates the underside and underhood. Etched logos appear on the wheel spokes, and sockets—of course—serve as the ideal lug nuts.

Ready to Showoff

Although it's not possible to hit every state during 2008, Glomad may be making an appearance near you. Your Snap-on Franchisee will know if any auto shows, tool shows or special events are scheduled in your area. At the least, you'll be able to learn more and keep up with this classic gone wild by logging onto AintStreetLegal.com.

STEAK *your claim*



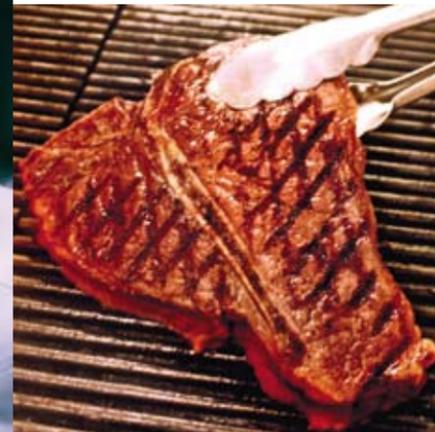
Tips to help you grill to perfection

The perfect steak? It's just another day at the office for Klaus Fritsch. Fritsch is a professional chef, the co-founder of Morton's Steakhouse (considered the finest such establishment by many) and author of "Morton's Steak Bible." The book offers tips that are guaranteed to make your next steak an improvement over previous efforts. Here are a few:

THE PURCHASE

- Buy beef and other meat from a butcher you know. "He will cut stocks and chops to your specifications, and he can steer you in the direction of what is best in his meat case," Fritsch says.

- Ask the butcher to cut steaks, and specifically request center cuts. "These tend to be the most tender and are less apt to have any tough veins," Fritsch says.
- Check out the marbling – the fat running through the muscle. A beef's grade is determined by its marbling. "The finer, more even and more generous the marbling, the higher the grade of the beef."



- Most beef available to consumers is USDA choice. USDA prime (less than 2 percent of the beef supply earns this distinction) typically ends up at a steakhouse like Morton's. If you see prime, feel free to try it – but don't worry if you can't find it. "High-end choice beef is nearly as good," Fritsch says.

- If you don't have a butcher nearby, Fritsch recommends ordering from a reputable catalog or online service. If you end up at the grocery store, ask the butcher to cut the meat for you rather than buying the pre-packaged.
- Avoid beef that is bright red, browning, or two-toned; has yellowish fat; or is either unmarbled or overly fatty. "Beef should be capped with a thick coat of ivory fat," Fritsch says.

THE PREP

- Remove meat from the fridge 30 to 60 minutes before grilling. "I can't emphasize to *Tech* readers how important this is," Fritsch says. The meat cooks far more evenly when this is done. If it's a hot day, keep it closer to 30 minutes. Never leave it out for more than an hour.

COOKING

- Err on the side of undercooking. "You can always toss the meat back on the grill if it's undercooked," Fritsch says.
- The temperature should be hot enough to sear the



meat when it hits the grill. Gas grills should be turned to high. Coals, meanwhile, should reach medium-hot. Fritsch defines that as between 375°-425° F. "You won't be able to hold your palm over the heat for longer than three seconds, and the coals will have a slightly thicker coating of gray ash covering the deep red glow."

- The goal is a "nice, crispy, lightly charred crust," Fritsch says.

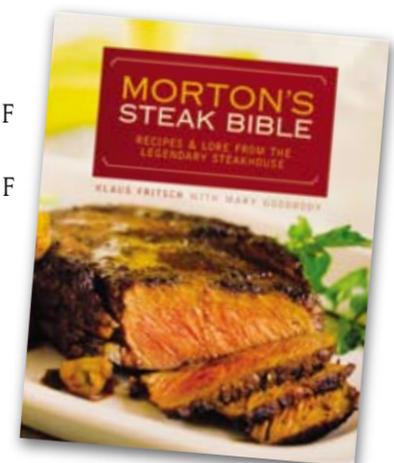
IS IT DONE?

- Hold your hand out, palm up. Poke the pad at the base of your thumb. "This is how rare meat feels when it's ready to come off the grill or out from under the broiler," Fritsch says. "The area of your hand between the thumb pad and the center of the palm feels how medium-rare meat feels; the middle of the palm is how medium meat feels; and the base of the pinkie is how well-done meat feels."
- Another test: A bone-in steak is medium-rare when the meat is still firmly attached to the bone. "When the meat on a porterhouse or T-bone starts to pull away from the bone, it is past medium-rare and on its way to medium," Fritsch says.
- "The steak won't release much juice when the meat in the middle is still red, but when it starts to turn pink inside, it will," Fritsch says. "If you notice small pockets of juice collecting on the meat and they look a little white, you can be sure the meat inside is medium."
- Fritsch doesn't like the use of instant-read thermometers because they puncture steaks. But he says *Tech* readers might want to try one until you master other methods. If you go that route, here are the temperatures for doneness:

Extra rare, 115°-120° F
Rare, 125°-130° F
Medium-rare, 135°-140° F
Medium, 145°-150° F
Medium-well, 155°-160° F
Well done, 165° F

On the Web:

Mortons.com
Crownpublishing.com
Clarksonpotter.com





CLASSICS UNCOVERED



Two 8-liter Bentleys among collector's finds

With almost two decades of seeing top-line collector cars, and a lifetime of personal car collecting, Mark Hyman is rarely surprised by automotive discoveries. But when recently visiting an eccentric acquaintance and fellow collector on a whim in Ohio, Hyman was shocked to uncover 15 rare classics—including two legendary 8-liter Bentley models tightly packed in a turn of the century barn.

Beginning as a casual visit, the experience became a once-in-a-lifetime opportunity that ended with Hyman, president of St. Louis-based Hyman Ltd. Classic Cars, offering to buy all 15 collector cars within hours after arriving. In addition to the two 8-liter Bentleys, the collection also included a '31 Cadillac Dual Cowl Phaeton, '41 Cadillac Coupe, '38 Lagonda Drophead, '27 Rolls Royce Phantom I, '56 Cadillac Limousine, '67 Corvette Roadster and seven other classics.

"When arriving on the gentleman's property, I didn't know what to expect," Hyman said. "Then he opened the doors for me

and I could feel the adrenaline. My mouth dropped when I saw all of those magnificent classics side by side. It was one of the most exciting days of my life."

Hyman says collectors have more exciting days ahead of them. "Because of aging collectors becoming passive in the hobby, discoveries like this barn find will increase over the next decade," he said.

The first 8-liter (YR5086) includes a standard 13-foot wheelbase and its original engine. Like many 8-liter Bentleys, the car was equipped as a limousine with coachwork by Thrupp & Maberly. The YR5086 was shipped to the U.S. in 1966. The other Bentley, YX5112, was one of the very last 8-liter models to be manufactured and features a short 12-foot wheelbase and dual-windshield touring coachwork by Gerney Nutting.

Hyman plans to sell one Bentley and keep the other. "I look forward to driving this amazing vehicle around town and in rallies across the country," he said. 🚗

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MODIS proves invaluable for time-strapped tech

By Edwin Hazzard
ASE Master Automotive Technician



Edwin Hazzard is:

- ✓ **An ASE Master Automotive Technician**
- ✓ **ASE certified in medium- and heavy-duty trucks**
- ✓ **NAPA certified in air brakes**
- ✓ **A New York state-certified motor vehicle inspector**

When I'm called to a shop to tackle a diagnostic job, I have to diagnose the vehicle accurately in one hour or less. That's a tough challenge day in and day out.

My weapon of choice for this challenge is the Snap-on® MODIS™. I like this tool because it's versatile, easy to use and it solves problems quickly. An hour can go by fast when attempting to find the root cause of a challenging problem.

A shop owner called me recently to diagnose a 2002 Ford Expedition equipped with a 4.6L engine. The check engine light (MIL) was illuminated. The vehicle, however, was running just fine. But the MIL had to be repaired so that the vehicle would pass the state emissions inspection.

First, I used MODIS to retrieve the diagnostic trouble code (DTC). The engine computer (PCM) had stored a P0402 code. A P0402 sets when the "Delta Pressure Feedback of EGR" (DPFE) sensor reports to the PCM that excessive exhaust gas circulation (EGR) flow is occurring.

Figure 1

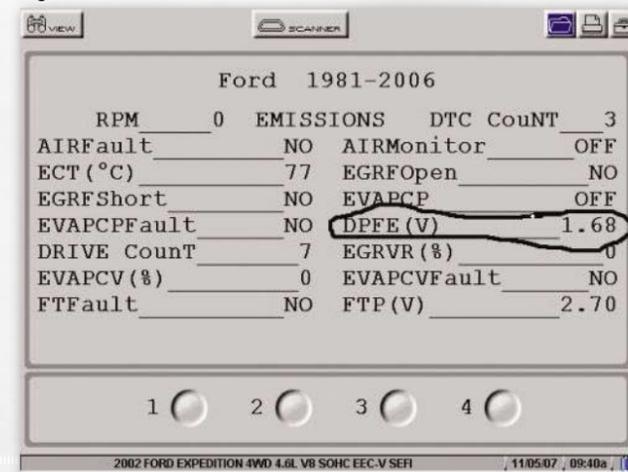


Figure 2

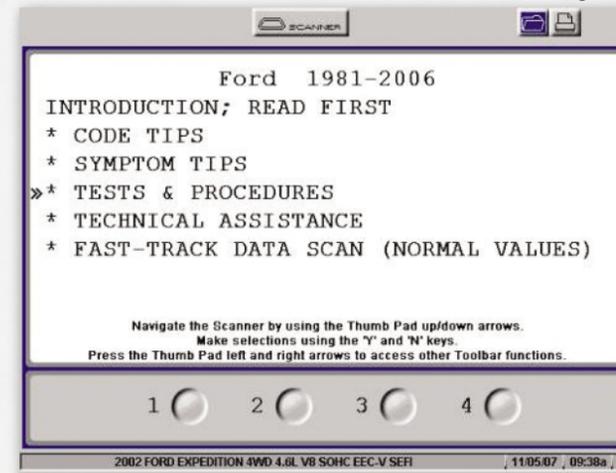


Figure 3

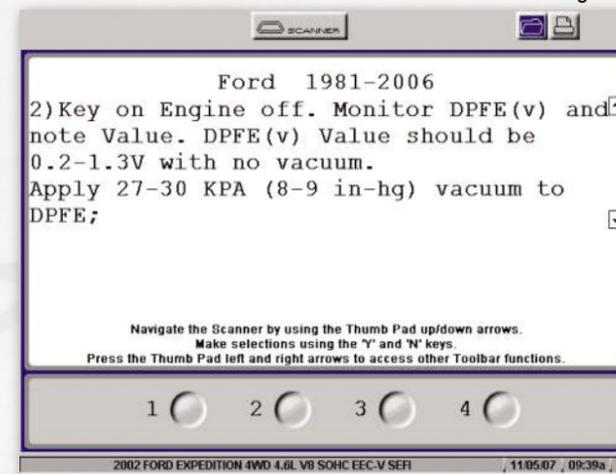


Figure 4



I used MODIS to analyze the data that the PCM was seeing from the DPFE. My reading was 1.68 volts key-on, engine-off (figure 1). "Okay," I asked myself, "is that the correct reading?" Navigating to the Fast-Track® Troubleshooter section of MODIS was one quick way for me to verify it.

I opened Troubleshooter in MODIS, and under "Tests and Procedures" (figure 2) accessed the DPFE sensor test (figure 3). Troubleshooter walked me through the steps needed to arrive at a conclusive test result. The correct specification was below what the PCM was reporting to MODIS.

This is where I consider my MODIS to be invaluable. Knowing the correct specifications and having noted what the PCM was seeing, I backed out of Troubleshooter and went into the Component Test Meter on the main menu. I connected my MODIS test leads to the DPFE connector, just as MODIS instructed, and tested the voltage signal at the component itself (figure 4). The voltage reading matched the data the PCM reported earlier. The DPFE sensor was reporting erroneous readings to the PCM. The DPFE sensor was indeed the root cause of the MIL.

After replacing the DPFE sensor, I took a screen shot using the Snap-on ShopStream™ Connect software. Notice that after replacing the DPFE, the reading is right where it should be.

This whole process of retrieving the code, analyzing the scan data, and testing the component itself took approximately 10 minutes with MODIS. Considering that I estimated an hour of diagnostic time, I would say that my time was spent wisely. Thanks to Troubleshooter, I did not have to leave the vehicle and seek out another information source. I was able to check for a code, scan the data, check the correct specifications, replace the sensor and then test and verify the defective component—all in 10 minutes.

MODIS gave me time for a cup of coffee before heading to my next job. ☕

Show Stoppers



Thomas Flyer, Edsel Ford's 'favorite' make appearances



The Thomas Flyer automobile that won the historic New York-to-Paris "Great Race" in 1908 will be on display at the Amelia Island Concours d'Elegance on March 7-9. In addition, a rare Ford Model 40 Special Speedster custom built for Edsel Ford in 1934 will be auctioned at the event.

Thomas Flyer



The "Great Race," contested 100 years ago, covered the width of the United States and stopped in Alaska, Japan, Siberia, and Berlin before ending in Paris. It has never been run again.

With the automobile barely a decade old, the New York-to-Paris race was tempting to the adventurers of the day.

The event was more than a race; it was about national pride. Teams from France (Motobloc, DeDion, Sizaire-Naudin), Italy (Zust), Germany (Protos), and the U.S. (Thomas) were entered. Nearly 250,000 people were on hand Feb. 12, 1908, to cheer the cars as they started from Times Square. The winning Thomas Flyer covered 22,000 miles in 169 days, a record that still stands today.

"All will be amazed at the primitive nature of the car and what it went through," says Bill Warner, founder and co-chairman of the Amelia Island Concours d'Elegance.

Famed collector William Harrah found the Thomas Flyer in the early '60s and, with the help of George Schuster, the only member of the U.S. team to drive the entire 22,000-mile race, he painstakingly brought the vehicle back

to its original trim. Weighing in at 4,000 pounds fully loaded, the Thomas Flyer's four-cylinder power plant could propel it to 60 mph. The car finished 26 days ahead of the second-place Protos.

Edsel's favorite



Often referred to as the Continental Series II Speedster, this exquisite automobile was the personal vehicle and alleged favorite of Mr. Edsel Ford from 1934 up until his death in 1943. In many ways it was a "concept" car, inspired by a trip to Europe and a desire to produce a car with a "Continental look."

The finished product reflected Edsel Ford's personal affinity for sporty cars and had the overall effect of a pure racing car—it was a low-riding, aluminum-bodied speedster, with twin-windshields, no doors, and headlights mounted at axle height. Originally, the car had a 1934 type nose, but in 1940 Ford had this element redesigned to increase airflow to the radiator as the car was inclined to overheat. At the same time, the engine was upgraded to a 1940 Mercury engine. 🚗

The Amelia Island Concours d'Elegance

- Features more than 250 rare classics from seldom-seen private collections nationwide.
- The show is held annually during the second weekend of March at Amelia Island, Fla.
- For more information, visit www.amelialconcours.org or contact them at 904-636-0027.

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THAT'LL COST YA



5 mistakes that let the fish off the hook

By Jerry Gibbs

Write down ways to lose fish and you'll end up with more lines than a grocery list for deer camp. But there are common factors in many stories about the one that got away. In fact, five of those errors haunt even expert anglers. If you don't keep them in mind, it could cost you that fish of a lifetime.

1. SLACKERS ARE LOSERS

From the end of a cast to that critical moment when you have a fish boatside, eliminating line slack may be the most important rule to follow. So how do you avoid it? As soon as the lure hits the water following the cast (assuming you're using a spinning reel), touch your forefinger to the spool—thus stopping the line outflow. Close the bail and slightly raise the rod tip to kill any additional slack. These moves are made smoothly and consecutively, with no pauses.

Once the fish is hooked, avoid any slack line no matter which way the critter heads. If the fish makes a run toward the boat,



you may need to pull some fancy moves—like whipping your rod overhead, or even standing on the boat seat (unless you're in a canoe). Pro bass anglers even try to keep fish from jumping, horsing them down by thrusting the rod tip into the water.

2. HARD LESSONS FOR SOFTIES

Slab-sided crappie are notorious for their soft mouths. Countless anglers have lost fine eating-size "papermouths" by yanking on them like salt water gamesters, or trying to swing them up from the water into the boat like tournament bass busters swing in their catch. That swinging business can work (sometimes), but your score will go up if you either net or thumb these fish. They have big maws, so it's not a problem—especially since they aren't hard fighters by the time they're boatside.



3. WIMPY RODS LOSE FISH

Too many anglers analyze fishing rods by waving them around to check for something I call "store action." No good. Fast tips are needed, of course, for casting light lures. Still, even with the finesse stuff, what you want is a rod that locks up fast from the tip section, transitioning into a muscle mid section and a beefy butt.

And when you start tossing and working those big swimbaits—both the hard crankers and lead-head plastic tails—you want a rod that's powerful right from the start. Without it, casting itself is tough and inaccurate. Plus you won't be able to work the lure as it should go, nor set the hooks and power-control the killer fish these big baits will catch. That you should use heavier line with such rods and lures is a given.



4. MISSING THE BIG GRAB

Sure, it's cool if you're not using a net to simply thumb a feisty game fish (like largemouth bass) and then hoist him into the boat. But this also is where a lot of fish are lost. That's especially true with smaller-mouthed fish that are still wild and thrashing. (Smallmouth bass and trout come to mind.) Try sliding your hand around the back of the fish, then turning it over, upside down. That calms down the fish. Now scoop up the inverted fish horizontally before jamming your thumb in its mouth to show off for a classic hero picture.



5. WIRE WOES

In ultra-clear water you may be tempted to use heavy mono or fluorocarbon leaders when fishing for muskies or big northern. Don't, because eventually you'll get bit off. Of course a wire bite tippet or leader is the answer, and if you want the ultimate in hook-setting and fighting ability, you'll want to use one of the superlines (braid) along with the wire. The tricky improved Albright knot makes it possible to tie monofilament directly to wire. But the knot might slip if you Albright braid to the wire, resulting in a lost fish (and the end of an expensive lure).

Cheap wire leaders are easy to find, but they are too heavy, the hardware clunky and the wire usually too long. Your best bet is to use one of the unbelievably tiny Spro Power Swivels (size 8 or 10). If you're using single strand wire, try this: First, haywire twist it to one ring of the swivel. Then use your Palomar knot to tie the braid to the swivel's other ring, only make it a double Palomar (two overhands). For even more lure action, instead of single strand wire, try one of the knottable wires like American Wire's Micron or Tyger wire. Use any of your favorite knots with that stuff.

You're not going to have any more slipped wire and lost toothy fish after that. 





FAST FACTS

NAME:	Daniel L. Hansen
FROM:	Yuba City, Calif.
CAR:	1981 Mercury Capri
MOTOR:	2.3L Ford
YEARS RACING:	3

Do you use Snap-on tools at work? My box is a Snap-on American Eagle Special Edition. I own many Snap-on torque wrenches, and BluePoint wrenches.

How about at the track? I leave my trustworthy Snap-on tools at work. I don't want to take the risk of losing them at the track.

Are friends or family part of your racing life? Absolutely!

What would surprise people about the kind of racing you do? The relatively low cost of having more fun than a human being should be allowed.

In conclusion ... I'd like to give a shout-out to Jim Guilbault, my local Snap-on Franchisee, who I have known for almost 10 years. He has been a great help to me, even before I started purchasing Snap-on tools. Jim always goes that extra mile to make sure his customers are well taken care of. That type of customer service is hard to come by.

WEEKEND WARRIOR

Tech takes to the tracks for the love of it

Some guys have fun racing when the conditions are right. For techs like Daniel Hansen ... if you're racing, the conditions are right.

How long is your racing season? From April through October

How often do you race? Three or four weekends per month

What is your "day job"? I am the night foreman at Sacramento Truck Center, a Freightliner dealership in Sacramento, Calif.

What kind of racing are you involved in? Quarter-mile oval dirt track

What is the name of the track? Marysville Raceway Park in Marysville, Calif.

What is the sanctioning body, if any? The track is privately owned and operated.

What type of vehicle do you race? Mini-stock, 4-cylinder class (1981 Mercury Capri)

What is the value of your race vehicle? \$100 for the car, \$150 for the paint, and \$200 in tubing and sheet metal; engine of unspecified value.

What are the details? 2.3 liter Ford, bored out .030 over, Esslinger crank cam. 5.7-liter, Camaro pistons

What type of fuel do you burn? The cheapest I can find, with a lead substitute added.

Why did you choose that vehicle, and that type of racing? Used parts are easy to find, and it's a relatively inexpensive class to start racing in.

How long have you been racing? Three years

How did you get started? Neighbors

What are your racing career highlights/accomplishments? My top finish was third place.

Your career lowpoint? There simply is no low point. It's all good!

What is the strangest thing that ever happened to you at the track? Well, my steering wheel fell off in my hands after a wreck. I thought that was pretty funny at the time.

What are some of the things you like the most about racing? Really, it's more about the time spent with friends than about how fast I can go out on the track.

Are there any examples of mechanical adjustments you made during a race that paid off? Well, one time I lost my water pump during hot laps. I missed my heat while installing a new pump, started the main event in 19th—and finished 13th.

BUT SERIOUSLY, FOLKS

Racing more than a hobby for this tech



Lee Cannon likes the weekends at the track as much as any recreational driver. But, since he got "that look" in his eyes at age 12, he has had bigger ambitions in mind.

How long is your season? From February to November

How often do you race? Two or three times a month

What is your "day job"? Digital Camera service technician at Digital Witness, Dallas

What kind of racing are you involved in? Oval asphalt—stock car

What size tracks do you run on? 3/8-mile & 1/2-mile ovals; 3-mile road course. My home track is Thunder Hill Raceway near Kyle, Texas.

What is the sanctioning body, if any? Allison Legacy Series

What type of vehicle do you race? Chevy Monte Carlo

What is the value of your race vehicle? \$15,000

What are the powertrain details? Mazda B2200 engine, 5-speed transmission, Quick Change rear end

What type of fuel do you burn? 93 octane pump gas

Why that vehicle, and that type of racing? It's a cost-efficient class, and is NASCAR-type racing as far as the vehicle.

Continued on page 28

FAST FACTS

NAME: Lee Cannon
FROM: Dallas, Tex.
CAR: Chevy Monte Carlo
MOTOR: Mazda B2200
YEARS RACING: 11



How long have you been racing? 11 years

How did you get started? My father took me to a go-kart race when I was 12 years old. He could see the look in my eye—I was captivated by the sport. I knew then that racing is what I wanted to do.

What are your racing career highlights/accomplishments? 1996 Top Dawg Champion—Denton Texas; 1999 Louisiana and Texas State Champion I.K.F series; over 75 career wins

Career lowpoint? My lowest point up to this point was in 2005 when I had insufficient funds to race.

What is the funniest or strangest thing that ever happened to you at the track? I was coming off turn 4 into the straightaway and I hit an oil patch and did a 360. I was able to recover and maintain my position and went on to win the race.

What are some of the things you like the most about racing? I love the adrenaline rush; every lap you never know what to expect.

Do you work on the car yourself? My team and I work on the car.

Are there any examples of mechanical adjustments you made during a race that paid off? Yes, we make adjustments to the cross weight, and adjust tire air pressure, and brake bias.

Do you use Snap-on tools at work? I use Snap-on screwdrivers, wrenches and sockets; and Snap-on drills and drill bits.

What about at the track? We use a Snap-on aluminum jack for tire changes and working on the car and a Snap-on battery-operated impact wrench to change tires. Snap-on hand tools—ratchets, socket sets, wrenches, tire gauges—are used for miscellaneous repair and adjustments to the car. (For example, camber adjustments, toe-in and caster adjustments and car setups).

Has a Snap-on tool ever “saved the day”? During one practice the clutch linkage broke. I made it back to the pits and my team jacked up the car with the Snap-on aluminum jack and we used a Snap-on impact wrench to repair the clutch linkage. My team got me back for qualifications in time. I qualified third and won first place in the race that night.

Are friends or family part of your racing life? Most definitely. Racing has brought my family and friends closer. All family and friends support me on and off the track and try to help out wherever they can so I can continue to move forward in my goal to drive professionally.

What would surprise people about the kind of racing you do? Handling the car at the speed the car goes; the business side in racing, including securing sponsors; the difficulty of budgeting money to maintain and complete a season; how much it costs just to participate and race in this series.

In closing ... I would like to thank my sponsors for all they do—Kimball Hill Homes, David Chicken, Underground Custom Body, XS Energy Drinks, Mesquite Chiropractic Health Center, All Pro Pest Control and my entire Fan Support Teams. 🍕

CONVENIENCE AT NO COST

Cheap alternatives to fast food

Courtesy of The Bargainist

Fast food—just about everyone eats it, even knowing that it's not healthy for them. The main reason is convenience. You can get much cheaper food by cooking for yourself, but you're not always home to do the cooking, or you don't always feel like cooking. Instead, try some of these alternatives to fast food — convenience at a lower cost.

1. Plan ahead. Many times we get fast food because we're hungry and we have no alternatives. But if you plan your day each morning (or the night before), you can figure out better alternatives. Make sure you're home during mealtimes, for example, or pack a lunch or dinner to take on the road. With a few minutes of planning, you can save some money and eat healthier.
2. Cook in bulk. Along those lines, you could take an afternoon and cook a few different foods in bulk. A big pot of soup or chili, for example, is easy to make, and you can put single-serving containers in the freezer to grab when you head out the door.
3. Appetizers. If you're on the go and want something cheap but good, you could call your favorite restaurant and order appetizers. Appetizers are often just about the right size, and cost way less.
4. Keep a cheap list. There are always a few restaurants in every area that serve good dishes for under \$10. Keep a running list of those restaurants, with phone numbers, so you can order to-go while on the go. Your local paper or an Internet search are good places to start.
5. Good salads. Most restaurants serve hearty salads these days that are cheap, fast, portable and filling. They're good alternatives to less healthy fast food. Just be sure to use a low-fat dressing, as the dressing can take away the health benefits of a salad.
6. Breakfasts. In many sit-down restaurants, you can order breakfast any time of day. And that's often way less expensive than dinner, and comparable to fast-food prices. And filling as well.
7. Lunch specials. The same goes with lunch: many restaurants have specials that are light on the wallet but good for the palate. Keep these on your cheap list (see #4 above).
8. Always pack snacks. Keep a bag full of snacks to take with you on the road, as they can keep hunger at bay and thus keep the need for fast food to a minimum. Fruit, cut-up veggies, nuts, trail mix, blue corn chips and salsa, dried fruit ... the possibilities are endless. If you pack snacks that need refrigeration, toss an ice pack in the bag.
9. Bring bottled water. Often what we think is hunger is actually dehydration. If you drink water, you feel less hungry. Always have a bottle of water with you on the road, along with your snacks, and keep yourself hydrated (and less hungry) all day long.
10. Grocery stores. Another great alternative to fast food, they contain all kinds of food that doesn't cost much but is healthier than fast food. Often grocery stores have hot or prepared food as well. Just run in, grab some fruit and a prepared sandwich with bottled water, and you're good to go. 🍕

On the Web:
Bargainist.com



The drive to succeed ... without drivers

Robotic vehicles take to the streets

Story and photos by Jim Rue

The grandstands were full of people, but the vehicles weren't. That was by design, as the DARPA (Defense Advanced Research Projects Agency) Urban Challenge features driverless vehicles racing—"racing" is a relative term because the speeds never exceed 25 mph—over a 60-mile course.

Eleven teams competed in the DARPA final, held at an abandoned U.S. Air Force base in Victorville, Calif., in early November. (The original field had 36 participants.) Those who made the final competed for trophies and the admiration of their peers. Oh—the \$3.5 million prize money was on a few minds as well.

The teams squared off in the dawn's early light. Each autonomously controlled vehicle was to complete the course while obeying traffic laws and avoiding fellow competitors and the 50 "traffic vehicles" that had been added to the closed course to make things interesting.

The audience watched from behind concrete traffic barriers. No one worried about a blazing "Formula 1" style crash because of the speed cap. Still, vehicles without drivers are to be watched warily. The Ford Taurus chase cars and traffic vehicles contained NASCAR roll-bars and professional drivers in protective gear. Each chase car had a "kill" switch for the robot vehicle being followed. (In the semifinals, the "kill" switch came in very handy when one of the entries couldn't stop accelerating.)

Also, the Network Operations Center could put the entire race on pause at the push of a button—which they did on several occasions. (The "pause" and "kill" switches were the only remote controls, both included for safety's sake.)

It was fun

If the "pause" and "kill" ability added comfort, it ended when the largest entry, a 12-ton military transport with a 425-hp Caterpillar diesel engine, made

its appearance. It became readily apparent that the computer-controlled TerraMax from Oshkosh, Wis., could easily overrun the barriers and lurch into the grandstands. (Later, while parking in a less-populated area, it did jump the curb. The behemoth apparently planned to wipe out the building that once housed the base PX. The chase car killed the engine a few feet short of the PX, and the crowd favorite was disqualified.)

Dr. Norman Whitaker, DARPA Challenge program manager, opened the event. He emphasized that the vehicles are fully "self-contained."

"There is no remote control, no animal or midget inside," he said. "They are totally controlled by the sensors and the computers on-board the vehicles." The goal, he said, is that the intelligent vehicles obey California driving laws and that they exhibit the driving skill of a typical 15-year-old.

The goldmine of equipment installed—a plethora of radars and lidars, vision systems, GPS systems and artificial intelligence software—was, of course, the key. But when all was said and done, only six of the 11 finalists proved to be as capable as a teen, even with that sophisticated equipment. So yes, there were a few problems along the way.

The course consisted of a four-way



stop, a traffic circle, a parking lot, and connecting roadways. Cars started three at a time. (In a practice heat beforehand, organizers had tried to start all vehicles at once, and chaos ensued. The race was paused and the beginning rethought.)

"No autonomous vehicles have ever had to cope with one another in traffic before," Whitaker said. "That is why this is an historic event. We don't know for sure what is going to happen."

Anything that could, did

The F-250 pickup sponsored by Honeywell, Delphi and Ford emerged from the starting chute, took one look at the crowd in the stands and comically tried to turn around and leave through an adjacent chute. The adolescent was stopped and repositioned for another run.

Continued on page 32



Later, after running over a curb and changing lanes for no reason, the F-250 stopped at a corner and refused to budge. Competitors are allowed only 10 seconds to “stop and stare” without reason, so the Ford was out too.

MIT called their Talos the most expensive Land Rover ever. Mounted in or on the car were 40 CPUs, 13 lidars, 14 radars, six vision systems, and an external AC unit to keep the hardware cool.

Things started well for Talos. But then it passed Team Cornell’s “Skynet,” stopped in the slow lane. As Talos cut back to the right, Skynet started to move. Two more kill switches. The vehicles collided slightly with no damage. They were allowed to finish the course.

There were plenty of successes. Cheers erupted the first time two autonomous vehicles passed one another on the street without stopping (or hitting). Another cheer came when three vehicles successfully negotiated a four-way stop.

But survival was tough. Of 11 finalists, five were booted.

The race ended with a whimper. The six remaining vehicles trickled across the finish line for an hour. Most of the spectators left before the last competitor arrived.

The winners were announced late the next morning. “The Boss” from Carnegie-Mellon skipped away with the \$2 million grand prize. “Junior,” from Stanford University, took home \$1 million. And “Victor Tango,” out of Virginia Tech, earned the \$500,000 third-place money.

What about the rest? They got nothing more than experience and a chance to come back again next year for trophies, admiration and, of course, another shot at a few million bucks. 🚗

On the Web:
DARPA.mil/grandchallenge

Getting better all the time

The 2007 DARPA Urban Challenge was not the group’s first automotive robot race. In 2004, 15 teams drove (OK, tried to drive) 132 miles off-road from Barstow, Calif., to Primm, Nevada, in pursuit of a \$1 million prize. No one collected or even came close. (The best performance was a Hummer from Pitt that went seven miles before a wheel caught fire.)

The goal of the first challenge was to build a community of engineers and academics interested in autonomous vehicles, and it worked. The next year, 195 teams applied for the 2005 Challenge—and the technology advanced. (In particular, the lidar transformed topographical mapping.) Five out of 23 finalists finished in 2005. The fastest, a Volkswagen Touareg from Stanford, averaged 19 mph to win the top prize.

Some teams want to increase the speed of future races. The weather that day in Victorville, Calif., was sunny, the course flat and mostly paved. Upcoming races might involve increasingly rugged environs—including darkness, fog, snow, potholes, mud, other obstacles, or several of these variables at once.

The challenge will be to move ahead—and, if some have their way, at a higher speed, and under fire.

What’s in it for you?



Though DARPA is a military research agency, the knowledge gained from the robot races will be reflected in commerce.

- Military convoys may become partly robotic.
- Street sweepers or snow removal equipment for runways may become autonomous.
- Automatic-braking and collision-avoidance systems will improve.



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hadn't noticed the old bowhunter, but I was already making my move. Surely there is no more environmentally positive activity than killing raccoons, and I was ready to do my duty.

Working my way behind the little egg-eating, barn-wrecking, rabies-spreading, felon-of-the-wild rascal, I moved carefully only when he moved. The little bandit would halt abruptly and raise his head and I would freeze midstep, knowing that these persecuted woodland devils were uncanny in their survival instincts and evasive skills. When the coon disappeared momentarily behind a deadfall, I scooted a little quicker to cover 20 or 30 steps, closing the distance to about 30 yards when he showed himself on the other side. I whipped the broadhead-tipped arrow back into the corner of my mouth, picked a tiny spot atop his foreleg and let 'er rip.

In a single flurry of fur and white feathers, the arrow was in and out of the fur-bearing varmint and he spun wildly in a spinning blur, let out a weird squawking sound and tried to run as fast as his little legs would take him. But his death dash lasted only a few yards before he tumbled ass over tea kettle, flopped one time, then lay still. Beautiful!

I was in heaven. I'm sure I have killed thousands of raccoons in my long outdoor lifetime, but it is always a thrill—especially with the bow and arrow during a woods-walking, stump-shooting stroll. He

was a big daddy coon with a raggedy tattered fur coat. I don't think he was mangy, but certainly not a prime pelt specimen. Nonetheless, I sure admired him for the bow-hunting trophy that he was.

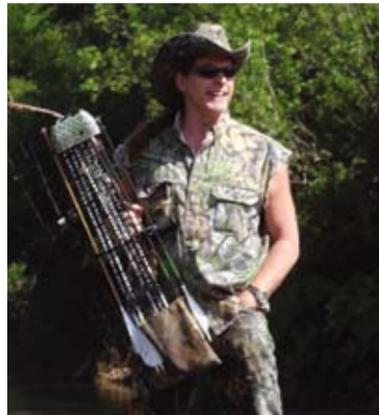
I cannot count the times I have enjoyed arrowing squirrels, rabbits, coons, possums, skunks, fox, coyote, crows, groundhogs, river rats, chipmunks, gophers, prairie dogs, snakes, turtles, the occasional dove, quail and grouse, and in my youth, many pigeons, sparrows and starlings. It is all good, clean fun. And like my hero Sitting Bull, I am a hunter. If there were no more deer or buffalo to hunt, I would hunt mice, for I am a hunter, and it is what I do.

Disciplining our archery on such small evasive targets will go a long way in perfecting our capability of making good arrows on larger game. We all know that pinpoint accuracy is everything when that moment of truth arrives after much dedi-

cation, sacrifice and a good load of luck. If we can train ourselves to zero in on a tiny spot to put our arrow on a raccoon-sized critter, we can surely be more accurate on deer and elk. Often when I am about to take a shot at a deer, I actually talk myself into hitting the squirrel's vitals that I envision behind the shoulder of the deer. For when I miss a squirrel with my bow, it is rarely by more than an inch or two, which translates into a smackdown on a heart/lung size target on a deer or other big game.

Try to get out as much as possible in between big game seasons. Sponge up the great spiritwild. Shootemup! Enjoy the little things in life, like squirrels, coons, possums, gophers and woodchucks. It is grand fun and the ultimate bow-hunting practice.

For even more Nugent writings, visit tednugent.com or call 800-343-4868.



ENJOY THE LITTLE THINGS

Small bow-hunting targets sharpen skills

By Ted Nugent

I was stump shooting. You know, roving haphazardly through my beloved forest, ever-present bow and arrows in hand, flinging judo tipped arrows at anything and everything I felt like. Stumps, bushes, leaves, clots of turf, a dead branch, a clod of dirt. Everything here and there.

The easy going, carefree pace of such casual archery will teach us much about just how accurate we and our hunting bows can be. Without a trace of "buck fever" to superpump a nerve-wracking adrenalin overload, I seem to be able to drill the smallest of targets at longer

ranges with ridiculous consistency. Teaching our eyes and brain through trial and error to better guestimate varying yardages in real field conditions is something that must be accomplished out here in the wild. I get a real kick out of it and try to force myself to remember just exactly how I do it—for when the big game season kicks in.

Even though stump shooting is pressure-less, I nonetheless remain in full stealth mode just to keep my predator radar tuned in since I am on hunting grounds. I simply crave all that is wild and cherish

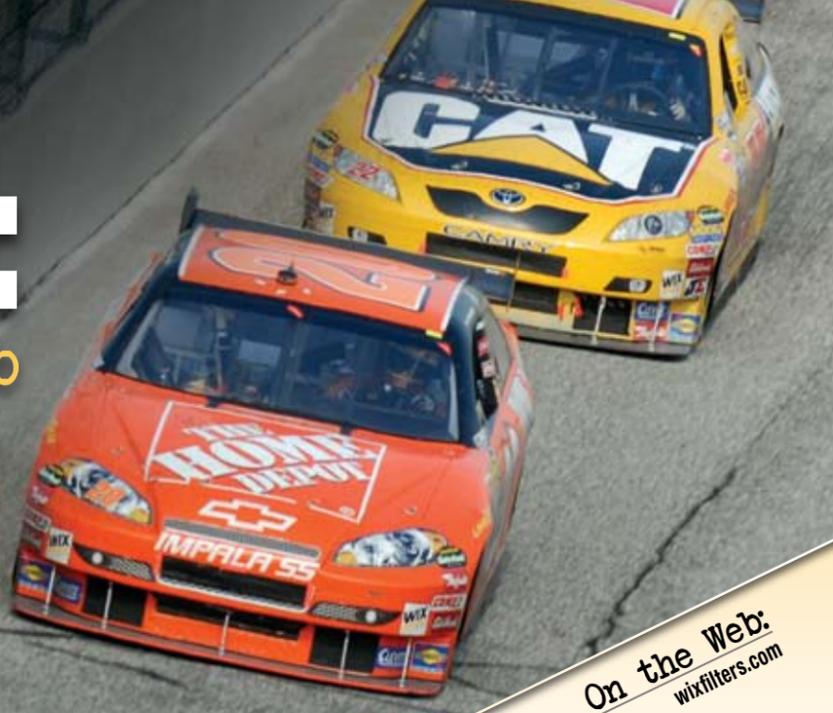
all my beloved time afield. Like hand-eye coordination and all that is the hunt, that higher level of awareness needs constant training as well. I remain cocked, locked and ready to rock, doc. Slow, attentive, on full alert. Stealth turns me on.

As I yanked an arrow from a rotting oak stump, a flicker of movement in the shadows grabbed my eye. As I slowly slid my arrow back into my bowquiver, I could see the masked marauder sneaking through a long, thick row of multiflora rose tangles where some large boulders rimmed the ridgeline. The big raccoon



NASCAR RACING:

Ultimate Research Lab



On the Web:
wixfilters.com

For avid fans, NASCAR racing provides a great opportunity to cheer on their favorite drivers as they compete for the checkered flag. For engineers at WIX Filters, racing provides one of the world's best research facilities for the design of filters and filter components used in regular cars and trucks.

WIX Filters, which became an industrial member of the National Association for Stock Car Auto Racing during 1968 and is celebrating 40 years in NASCAR throughout 2008, earned the title of #1 Filter in NASCAR because more teams use its filters than any other brand. With a broad depth of resources at the track, WIX takes a multi-faceted approach to its research with motorsports teams.

Racing and Learning

On-track testing is ideal for focusing on scenarios such as high temperatures, fluctuations in pressure and rapid breakdown of engine oil. With everyday drivers frequently facing similar problems, experience at the track has led to the development of products that can take the toughest punishment racing, and cars in general, can dish out.

Product component design benefits in several areas:

- Sealing gaskets for oil filters that withstand sudden exposure to high pressures, high temperatures, synthetic oils.
- Synthetic filtration media that holds up better under high pressures and when impacted by high-flow contaminants.
- The development of premium coatings for metal components that resist corrosion in severe environments.

- Wire-backed, synthetic filtration media that are more durable under high pressure when impacted by high-flow contaminants.
- Unique filter component designs that are lightweight, yet very strong.

These product components are not only used by NASCAR teams, but have been incorporated into light- and heavy-duty filtration products for consumers.

WIX has been tapping into this fast-track research lab for four decades. In 1967, Richard Petty began using WIX filters. The King won his second NASCAR championship that season, and WIX filtration technology helped him win five more. Today WIX filters are under the hoods of more than 20 Sprint Cup cars, from two-time champion Tony Stewart to 2007 Raybestos Rookie of the Year Juan Pablo Montoya. In fact, nine of the twelve 2007 Chase participants utilized WIX filters.

Special Partnerships

WIX maintains a 15-year relationship as an associate sponsor of Joe Gibbs Racing, as well as a partnership with Toyota Racing Development (TRD) that began when Toyota entered NASCAR racing. The partnership with TRD includes the design and supply of WIX filters for all Toyota vehicles racing in every NASCAR series. These two partnerships drew even closer with the news that Joe Gibbs Racing had switched to the Toyota Camry for 2008. The brand's exclusive relationship with TRD is further validation of the technical superiority of WIX's filtration offerings and its extensive coverage for foreign nameplates.



Your engine's noble protector.

By capturing 45 percent more dirt than the leading brand, WIX® filters have earned the admiration of engines everywhere. And since WIX offers a complete domestic and foreign nameplate line for passenger cars, light-duty trucks and off-highway vehicles, we really mean engines everywhere. **WIX. WHERE IT COUNTS.®**

For more about the #1 filter in NASCAR®, check out www.wixfilters.com.



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'SPACE AGE'

DIAGNOSTICS TRAINING FACILITY

Snap-on, technical college address skilled technician shortage

Many service providers and corporate executives in the automotive industry are talking about the shortage of skilled technicians. Snap-on Incorporated is doing something about it.

The company is partnering with a technical college to create a training hub for the transportation industry in the Midwest, helping to deliver highly proficient and much-needed skilled technicians to aftermarket employers across the region.

Snap-on will support the Horizon Center for Transportation Technology in the form of instructor scholarships and technology. The Horizon Center will be part of Gateway Technical College in Kenosha, Wis.—the location of Snap-on headquarters.

Snap-on representative have trained Gateway instructors to deliver the necessary courses to help prepare for Snap-on Diagnostics Certification. It will be the first nationally certified Snap-on Incorporated diagnostic training center.



Snap-on MODIST™
Modular Diagnostic Information System

"Snap-on will continue to lend its support and brand name as we move forward in our efforts to expand to other schools and improve the quality of training for students, instructors and current technicians in the vehicle service industry," said Jack Michaels, chairman and CEO of Snap-on. "I stress students and instructors. Dedicated and passionate instructors are the backbone of the education system in our country."



Technology in many different forms drives the center to help train students to work on the highly complex vehicles of today.

"The word 'space-age' is used quite liberally these days," said Snap-on President and COO Nick Pinchuk. "When the lunar exploration module landed on the moon, it had less computing power than is standard on the average car today. So, in a real sense, the repair of an automobile today is a space-age endeavor."

"Snap-on Diagnostics Certification center is part of that," Pinchuk continued. "The technicians who leave this center will be truly equipped with space-age technology."

The link between education, business and workforce preparation is so strong they are nearly synonymous—and is why the Horizon Center and the training offered there strengthen the economy of today and the future, said U.S. Assistant Secretary of Labor for Employment and Training Emily Stover DeRocco.

"Companies no longer have the

luxury of extended training programs for their new employees," DeRocco said at the Horizon Center ribbon-cutting ceremony. "It falls to our education system at all levels to respond and create the programs that meet these market demands."

"It is not just individuals and workers and companies that depend on these new programs. Entire regional economies are realizing that their successes are directly related to their ability to produce talented and skilled workers. In years past, education and human capital would have been an afterthought giving way to taxes, incentives and infrastructure development. Today, talent development is right along side those other factors and is a major pillar to economic development for this region."

Ray Pedersen, Foundation of the Wisconsin Automobile & Truck Dealers Association executive director, said at one point the Horizon Center was only a dream—but that dream led to meeting with Snap-on Incorporated executives "and then one thing led to another."

THE HORIZON CENTER

- It will be the first nationally certified Snap-on Incorporated diagnostic training center.
- The center houses two National Automotive Technicians Education Foundation (NATEF) certification programs and Snap-on diagnostics certification capability.
- Students will be trained in critical thinking. Teaching a mix of equipment know-how and critical thinking gives students the foundation to learn—and excel—with any vehicle or equipment type no matter where they go.
- The automotive programs, faculty, and facility are NATEF/ASE certified. Students are trained for all eight of the ASE certification exams.
- The center's partnership with Snap-on Incorporated, high quality instruction and its focus on helping students to pass national certification standards cause it to be more than a local educational facility—it will become a hub for the transportation industry in the Midwest.
- The center will be a portal site for the national online automotive instructor NATEF/ASE certification program. upgrade2cert.org and gtc.edu

An EGG with a buzz

The Big Green Egg is making it big these days. There are clubs, cookbooks, and God knows what else buzzing around this product—billed to provide the juiciest food you've ever eaten. It was introduced in 1974 on a limited scale, and has undergone many changes since—including the use of "space-age" ceramics. The EGG is a smoker, grill and an oven and can be utilized year-round. The walls retain the heat, so there are no hotspots. In addition, the enclosed cooking eliminates grease flare-ups. Sizes vary, but prices for a smaller version run about \$600.

Biggreeneegg.com

Fast enough for ya?

All right, the Koenigsegg CCXR Special Edition isn't exactly cheap. (It'll cost you \$2.3 million.) But it is environmentally friendly, running on E85 ethanol fuel. It's driver friendly, too, with a twin-supercharged 4.7L V8 that translates into 1018 hp. Combine that power with a carbon fiber body and you have a car that goes from 0-62 in 2.9 seconds and tops out at more than 250 mph.

\$2.3 million koenigsegg.com



Choose your fuel

Looking for a mileage booster—and an increase in acceleration and performance? You might want to consider the Flex-Box Smart Kit™, the first-of-its-kind after-market bolt-on fuel conversion system that allows fleet operators and drivers to fill up on E85 (a blend of 85 percent ethanol and 15 percent gasoline) E20, E10 or pure gasoline. The product was developed by Flex Fuel U.S., which has partnered with Jack Roush to unveil kits for Mustangs, F150 pickups, and Chrysler Hemi vehicles. Users can find cheaper fuel, and are said to improve mileage, reduce emissions by 85 percent and boost power by over 15 percent. The kit is a compact conversion unit that easily mounts in the engine compartment. The product is new, and the retail price not yet set.

Flexfuelus.com



Night lights

Visualeyes has developed auxiliary lights, called Rayzer, that it says increase night visibility by a factor of 300 percent. The lights are discreetly mounted inside the passenger compartment—on the windshield behind the rearview mirror, protecting them from dirt, damage and theft. Officials say Rayzer takes 15 minutes to install. The lights turn off when power is cut to the high beams, or when a sensor detects oncoming traffic. The product was unveiled at SEMA, and no price is yet available.

Visualeyes.se



Warm gun

The Gun Mug allows you to kill time with a cup of coffee. We could talk about all sorts of stuff—the porcelain body, the fact that it holds 7.6 ounces—but what it basically comes down to is a coffee mug with a trigger.

\$16 shopmodi.com



1961 CHEVY PANEL BIG AND BLUE

Destry Jacobs didn't have any trouble finding this 1961 Chevy panel delivery truck. But finding it was a far cry from owning it.

"It took me two years to get the owner to sell it," said Jacobs, a technician at A&D Auto Body in Bozeman, Mont.

That was about 10 years ago. Since taking ownership, Jacobs has made some big changes. Among them: incorporating a different frame and switching from two-wheel to four-wheel drive.

Jacobs couldn't find a replacement passenger-side quarter panel, so he took a pickup boxside and fabricated that into the piece. "That alone took about 100 hours," he said.

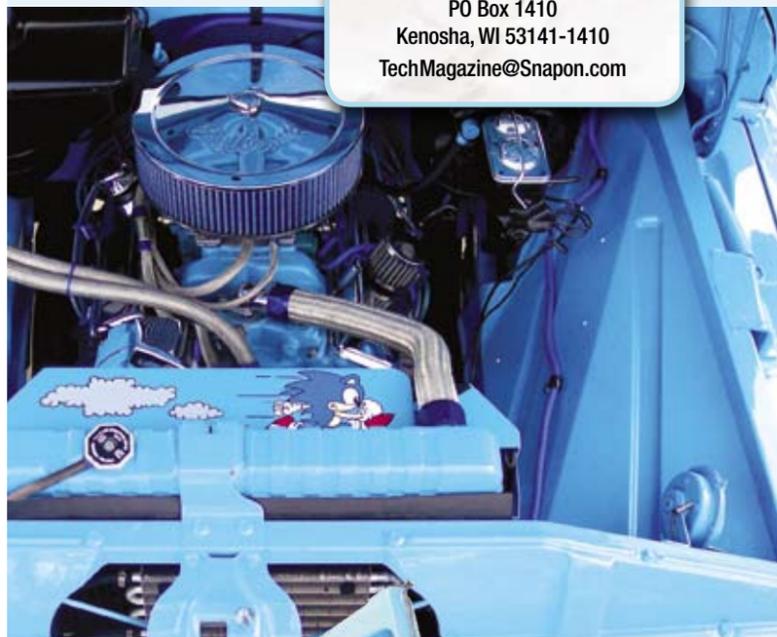
But it's the attention to details that set this vehicle apart. "The paint scheme is original, with white trim and the blue color," said Jacobs. "It's so big, I have probably over three gallons of blue paint on this thing. It's a lot of blue." (Jacobs is the third owner; the first was, ironically, a painter.)

The '61 Chevy now features a 327 Chevy small-block and a turbo 350 automatic transmission. It delivers exactly what Jacobs hoped when he made the purchase. "It still looks old, but goes down the road new."

TELL US ABOUT YOUR RIDE

Share your ride with your fellow *Tech* readers. Just mail a brief description and a photo or send an e-mail with a high-res digital photo to:

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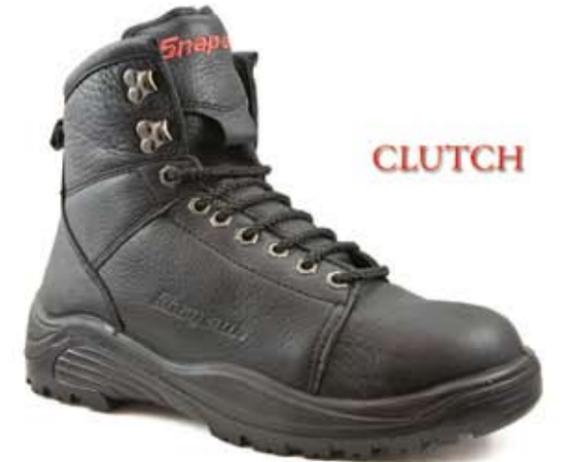
ABOVE: Motivation to move the Panel comes from a fully rebuilt Chevy 327, custom painted to match the truck's exterior.

LEFT: The Panel's interior has been redone and customized as well with digital gauges, power seats, a tilt column and modern audio equipment.

ANY MORE COMFORTABLE WE'D HAVE TO CALL THEM SLIPPERS



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