

**NEW SECTION! TOP 10 TOOLS**  
California-based CV Automotive shares its list of the top tools used in the shop [page 8](#)

**TOOL Q&A**  
How to handle hybrid repairs [page 16](#)

**PRODUCT SPOTLIGHT**  
Specialty Tools [page 24](#)

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Volume 24, Number 2

THE INDEPENDENT TOOL AUTHORITY

# Professional **TOOL & EQUIPMENT** News

**TOOL BRIEFING** The right tools will diagnose and repair seizing calipers. [page 10](#)

## Catch intermittently seized calipers



Check live wiring



Mobile tool storage

## TOOLS of the MONTH

[page 22](#)



Strip wire insulation



Speed up air flow



Run multiple applications simultaneously

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## COVER STORY

### 10 Tool Briefing: How to Diagnose Intermittently Seizing Honda Calipers

The right tools and equipment help diagnose and repair an intermittently seizing brake system.

## COVER TOOLS

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New tools from DeWALT, Dent Fix, Extreme Tools, Klein Tools and Matco Tools.

## FEATURES

### 8 NEW! Top 10 Tools

In this brand new section, find out what other shops list as their top tools and equipment in the shop. CV Automotive in Thousand Palms, CA, shares its list which includes tools from Snap-on, Redline, Hunter and more.

### 38 Tool Reviews

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- OTC Automotive Inspection Camera

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# Refrigerant issues reinforce need for long-range business planning

**M**any shop owners express only a passing interest in the new HFO-1234yf refrigerant that will be used by some vehicle manufacturers. By the time carmakers are using HFO-1234yf, shop owners assume there will be recover-  
 recycle-refrigerant (RRR) equipment available to handle the new refrigerant. In addition, the conventional thinking goes, aftermarket shops have a two-year "warranty window."

The conventional thinking is reasonable. But managing

the business has gotten more difficult as of late, and shop owners will find it worth their while to think more strategically in their business planning. Many aspects of automotive technology, not just air conditioning, have become more complex. Tools have become more capable but also more expensive. And as technology and tools improve, more training is needed.

Shop owners should think about big purchases well into the future, including RRR machines.

So, should you consider a machine capable of handling more than one refrigerant?

The Mobile Air Conditioning Society (MACS) trade show and training event in Orlando last month was abuzz with questions about refrigerant issues.

There was a lot of talk about why certain German carmakers have decided not to use the new refrigerant. But regardless which cars do and don't use it, more cars will have it over time, and in the not-too-distant future, the nation's vehicle fleet will be a mix of both R-134a and the new HFO-1234yf.

Refrigerants. The RRR equipment manufacturers have varying views about whether dual or multiple refrigerant machines should be developed to begin with, given questions about cost and/or potential for cross contamination of refrigerants. In the meantime, convertible machines that are designed to recover both types of refrigerants have already been introduced to the U.S. market.

The SAE is considering standards for dual refrigerant handling, which is not the same as convertible refrigerant handling.

## A host of concerns

Once HFO-1234yf refrigerant is in circulation, shops must also take into account proper ventilation, safety and storage issues associated with it.

But that's not all. Because different refrigerants will be in use, shops will most likely have more need for refrigerant identifiers. Some argue that shops should have these already, given the growing problem of rogue refrigerants. Offshore refrigerant manufacturers have gotten into the refrigerant market in a big way in recent years, and regulating these products has proven a challenge for our government.

## Think long-term

Shops buy RRR machines for long-term use. They have to consider their needs extending several years out when buying new equipment. For many shop owners, it takes a full year before an RRR machine pays for itself.

During the MACS show, the SAE interior climate control standards committee discussed testing standards for machines that recover, recycle and recharge different refrigerants. There are current SAE standards and certification requirements covering service equipment for both R-134a and HFO-1234yf

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**Do you plan to tool up for HFO-1234yf in the next:**

A. 1 to 3 months	C. 7 to 9 months
B. 4 to 6 months	D. 10 to 12 months

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TOP TEN

10

PTEN

TOOLS

# Tools to help run a successful business

**SHOP:** CV Automotive

**LOCATION:** Thousand Palms, CA

**OWNER:** Scott Bradshaw

CV Automotive is a general repair facility that works on all makes and models, but specializes in trucks and vehicle restorations. Bradshaw believes that the tools in his arsenal allow him to fix practically any problem any vehicle can throw at him.

*By Craig Truglia, Assistant Editor*

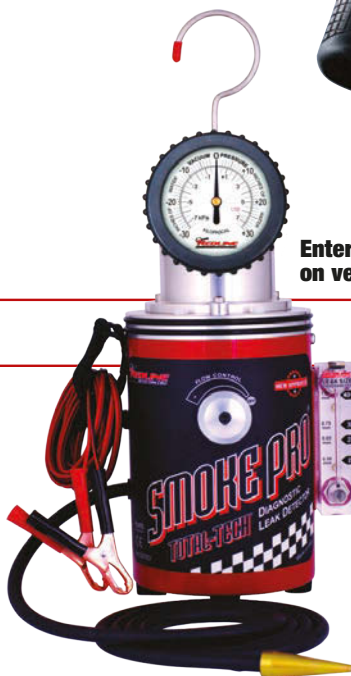
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**1** Snap-on Modis scan tool with both European and Heavy Duty software packages

*"This one makes me the most money. I do a lot of Ford F350s, F450s and F550s. I diagnose a lot of their transmission and driveability problems with this."*

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**2**

**Redline Smokepro smoke machine**

*"Every single vehicle that comes in here gets smoked. This is California, EVAP leaks appear every couple of years."*

**4**



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**Snap-on chain wrench**

*"It's great for holding power steering pulleys, you can put them on in about two seconds." (Snap-on CW12A pictured)*

**3**

**Power Probe II**

*"It's a real quick way to diagnose vehicles. I can induce power and ground and make components function."*

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**5**

**Mayhew radiator hose/spring clamp pliers**

*"This will make your day 'incredible.' It quickly pulls open a heater hose clamp so you can slide it off quickly and it doesn't snap back." (Mayhew No. 28650 pictured)*



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Scott Bradshaw of CV Automotive



## 6 OTC Ford Cam Tool Assortment

*"Worth every bit of money. I must have done 50 tensioners and guides, and three cam phasers with this."*

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## 7

### Cornwell/OTC Ball Joint Assortment

*"I use this on a lot of Ford trucks. They work using pressure, my father years back taught me, 'Pressure is your best friend.'"*

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## 8 Hunter P411 Alignment Machine

*"I do all the alignments for a tire shop and they do all my tires at cost. This tool has certainly given me good ROI."*

This product is no longer manufactured by the company. To view a similar product from Hunter go to [VehicleServicePros.com/10253801](http://VehicleServicePros.com/10253801).

## 9 Robinair A/C machine

*"I can't live without this tool. It's my best friend in the world. We do A/C all year, here."*

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## Carolina Industrial Equipment Bearing Press

## 10

*"I press everything. Not only wheel bearings, but we rebuild differentials as well."*

This product is no longer manufactured by the company. To view a similar product from Carolina Industrial go to [VehicleServicePros.com/10886723](http://VehicleServicePros.com/10886723).

Tool Briefing offers real-world tips and advice for using specific tools to accomplish specific tasks. The Customer Concern is shown below, along with a brief list of factory bulletins addressing the same problem. Remember, the tool information might apply to many other vehicles too.

## Hot spots: Intermittently seizing Honda calipers

The right tools help diagnose and repair any intermittently seizing brake system.

### VEHICLE APPLICATION:

▪ Honda 2003 Element 2.4L

### AVG. REPORTED MILEAGE:

▪ 51,000 miles

### CUSTOMER CONCERN:

The rear brake calipers are not releasing.

### TOOLS USED:

- Brake pressure gauges
- Power bleeder (brake system bleeder)
- Scan tool
- ABS controller and/or electronic parking brake controller (for newer vehicles)

**A** 2003 Honda Element 2.4L rolls in because the customers complain of a “burning smell” coming from the back and a brake pulsation. When you get the car, the brakes work fine, but you feel a pulsation in the seat when you apply the brakes at over 40 MPH. You do a visual inspection and you see hot spots on the rear rotors, particularly on the rear left one, much worse than that of a typical Honda.

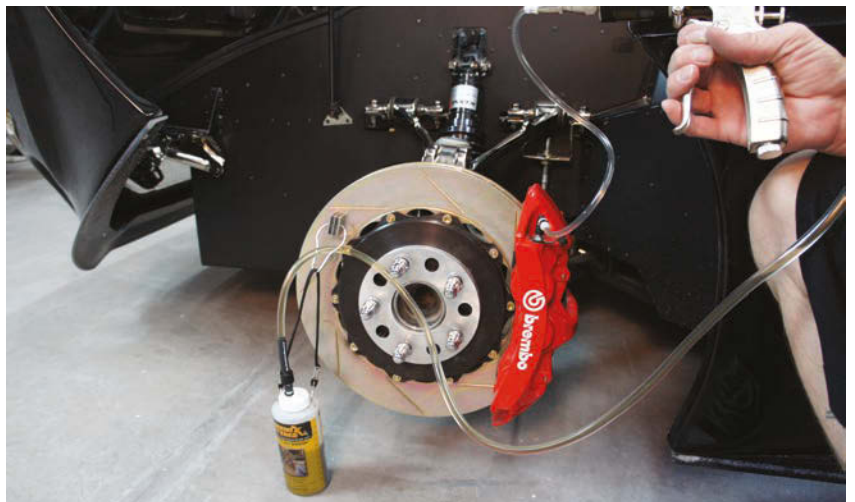
## STEPS

### TESTS/PROCEDURES:

- 1** First, verify there is no brake pressure to the rear calipers. If there is, loosen the master cylinder and open the lines at the master cylinder.
- 2** If there is no pressure holding pressure to the rear calipers, then verify the park brake is not dragging.
- 3** If there is no pressure in the brake system and the park brake is not holding, then check the caliper slides, and rotor and the pads.

STEPS PROVIDED BY:

**IDENTIFIX**  
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SHORT-CUT DIAGNOSTICS



Phoenix Systems' MaxPro Brake Bleeder, with the help of different adapters, can pressure, vacuum and reverse bleed a vehicle. For information on this product, go to [www.VehicleServicePros.com/10721444](http://www.VehicleServicePros.com/10721444).

Your diagnosis? Something is making the brakes lock up.

Possible causes? A failing master cylinder, the slides are hanging up, the parking brake is too tight, or the caliper piston is failing to return.

The latter, the caliper piston that fails to return, is the most obvious cause. This can be checked easily by removing the caliper from the vehicle and trying to push in the piston.

Let's assume the piston pushes in fine and the slides themselves are lubricated and not rusty (the obvious stuff). Then there are only three possible causes: a problem with the master cylinder, a hanging up parking

brake and a brake caliper equalization issue. Cracking open a line at the master cylinder and testing the parking brake for proper operation is simple enough.

You find nothing, so just change the rear calipers, right? You may be right, but you won't be sure. So, let's focus on what to do when we have a hard-to-spot intermittent brake caliper problem that we want to diagnose the right way.

### STEP 1: TEST FOR CALIPER EQUALIZATION

The first step is to test the brake calipers and hoses using a brake pres-

CONTINUED PAGE 12

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sure gauge. The gauge will indicate how much pressure is on the caliper. When no pressure is applied to the pedal, the gauge indicates zero. As pressure is applied, the needles on the gauge indicate the pressure in psi.

Hickok/Waekon's pressure gauge has a red needle and a black needle that together indicate the amount of residual pressure in the brake lines.

The red needle indicates when maximum pressure has been applied to the pedal; the black needle indicates the pressure when the pedal is released. This way, the tech can tell if there is residual pressure in the lines.

Other testers simply fit where the brake pads go, making testing as time-consuming as doing a brake job. The Hickok/Waekon kit has a bleeder screw adapter that the gauge connects to, allowing the tech to read the hydraulic pressures without taking everything apart. However, if the bleeder screw is seized, a traditional tester (such as IPA's Disc Brake Analyzer System, No. 7884) is the only type that will work.

Using any brake pressure gauge, simply check the pressure for each caliper and compare opposite sides. If there is uneven brake pressure, this confirms that a brake equalization issue is being caused by a faulty caliper and/or brake hose. At this point, it's fair to start replacing calipers.

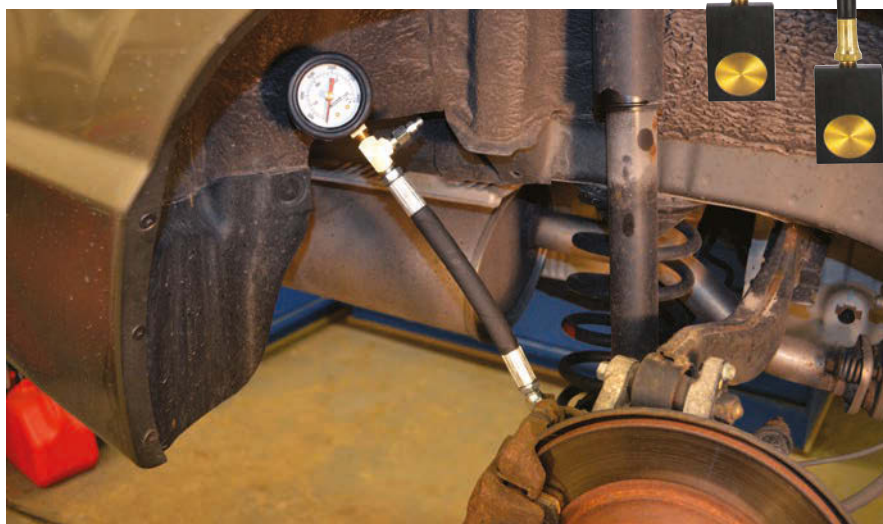
After replacing the calipers, bleed the vehicle and do the test again just to verify that it was just a caliper. If you still show equalization issues, then the brake hose on the suspect side needs to be replaced. There is nothing else that can be causing this problem. A bad brake hose often compromises the caliper, so don't feel bad if you changed them. To be more exact with your diagnosis, consult the chart on page 14.

## STEP 2: PROPERLY BLEED THE BRAKE SYSTEM

Now that you have "condemned" the brake calipers or maybe the brake hoses too, it's time to bleed the vehicle. The old school "pumping the brakes" method of bleeding vehicles is good after a pad slap, but often does not get all the air out when changing vital brake components that introduce air in the system (i.e. brake calipers or brake hoses.)

When changing these parts, in order to avoid a spongy pedal, it is preferable to use a tool that assists in bleeding the brakes. There are a few differ-

*A tester such as IPA's Disc Brake Analyzer System, No. 7884, will read hydraulic pressures. For information on this product, go to [www.VehicleServicePros.com/10098157](http://www.VehicleServicePros.com/10098157).*



*The Hickok/Waekon gauge from the Hydraulic Pressure Test Kit connects to the rear calipers of a 2006 Honda Civic. For information about this product, go to [www.VehicleServicePros.com/10772314](http://www.VehicleServicePros.com/10772314).*



*RTI's BFX-2 Brake Fluid Exchange System pushes fluid through the master cylinder, while simultaneously applying vacuum to the appropriate bleeder. For information on this product, go to [www.VehicleServicePros.com/10099737](http://www.VehicleServicePros.com/10099737).*

ent types out there that use different methods of bleeding.

Reverse bleeding is injecting fluid at the caliper to force all air up the brake lines and out through the master cylinder. This allows air not to be injected accidentally into the caliper. The level of fluid in the master cylinder must be monitored so it doesn't overflow.

Vacuum bleeding involves pulling air bubbles through the system and out the calipers. We do this by stepping on and off the brakes or by using a machine that applies pressure and fluid via an adapter at the master cylinder.

Finally, there is bench bleeding, which involves a bleeding component not installed on the car, like a new master cylinder. Different tools can bleed vehicles in different ways.

You can do any of these with a vacuum/pressure pump (such as a Matco Tools No. MVP 5000) as long as you have the right adapters. However, some companies make more specialized tools for this task.

Some tools "reverse bleed" the vehicle. One such example of this is Phoenix Systems' MaxPro Brake Bleeder. Instead of pumping the air out through the lines out of the brake bleeder, this tool pushes the air up and out the master cylinder.

The tool is a pump that directly handles the brake fluid, not a vacuum pump that forces the air out the top of

CONTINUED PAGE 14

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## Disc Brake System Troubleshooting Guide

(Provided by Innovative Products of America)

INDICATION	POSSIBLE CAUSE	ACTION
Uneven pressure reading on gauges	<ol style="list-style-type: none"> <li>1. Rear brake adjustment</li> <li>2. Stuck proportioning valve</li> <li>3. Frozen caliper piston or slide</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust rear drum brakes</li> <li>2. Replace proportioning valve</li> <li>3. Replace brake caliper</li> </ol>
Needle drops slowly	<ol style="list-style-type: none"> <li>1. Imploded brake hose</li> <li>2. Frozen brake caliper</li> </ol>	If the gauge needle drops, slowly open the bleeder valve; if the needle then drops quickly, the brake hose is imploded and should be replaced. If the needle still hangs when the bleeder is open, replace the caliper.
Pressure readings are low but even	<ol style="list-style-type: none"> <li>1. Both rear drum brakes are badly out of adjustment</li> <li>2. Bad master cylinder</li> <li>3. Bad power booster</li> <li>4. ABS system in need of repair</li> </ol>	<ol style="list-style-type: none"> <li>1. Rear brake adjustment</li> <li>2. Stuck proportioning valve</li> <li>3. Frozen caliper piston or slide</li> </ol>

the master cylinder reservoir. In just a few minutes, the pedal is firm. This will work on any hydraulic system. It allows pressure, vacuum and reverse bleeding.

With the MaxPro, in order to bleed a master cylinder, a universal port adapter screws onto the front of the bleeder in place of the outlet hose. Push the port adapter into the ports of the master cylinder inlet, and squeeze the handle to bleed air bubbles out.

You can reverse bleed the piece by going in the master cylinder outlets. Pressure bleeding is similar but done on the vehicle. It forces fluid in at the master cylinder and out through the caliper bleed screws.

When the pedal refuses to lose its sponginess, the best technique is to use a combination of bleeding techniques, such as pressure and reverse bleeding or reverse and vacuum bleeding.




*The BrakeMate Jr. from Flo-Dynamics eliminates suction lines and includes a catch bottle giving the tech the freedom to follow the bleeding sequence himself. For information on this product, go to [www.VehicleServicePros.com/10106064](http://www.VehicleServicePros.com/10106064).*

An example of a brake fluid exchange tool that vacuum bleeds is RTI's BFX-2 Brake Fluid Exchange System. This tool works by pushing fluid through the master cylinder, while simultaneously applying vacuum to the appropriate brake bleed screw. Fluid is moved from the master cylinder through the lines and out of the calipers, taking any air out with it. In order to pressurize fluid through the master cylinder without creating a mess, the tool comes with a variety of adapters designed to fit the master cylinders of many makes and models.

Other pressure bleeding tools such as the BrakeMate Brake Flush Machine from Flo-Dynamics address the issue of bleeding sequence. The BrakeMate has a "select sequence" feature that allows the tech to select the desired sequence for flushing as specified by the manufacturer.

The BrakeMate Jr. eliminates suction lines and includes a catch bottle giving the tech the freedom to follow the bleeding sequence. It also has an adjustable regulator to increase supply pressure which is required to bleed hybrids and some high end sport cars.

Brakes may be a profitable part of this business and not too difficult to diagnose. However, intermittent problems and spongy pedals can turn customers off, as brakes are one of the most important items on a vehicle. To maintain a good reputation and have no comebacks, the right tools are necessary. 



*The vacuum/pressure pump kit, No. MVP 5000, from Matco Tools can be used to bleed vehicles by sucking fluid out. For information on this product, go to [www.VehicleServicePros.com/10877963](http://www.VehicleServicePros.com/10877963).*

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- Checks Remote Keyless Entry (Key FOB) for transmissions
- When coupled with the **Autel MaxiDAS DS708**, it perform all the same great functions as the TS601

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- All the same extensive capabilities as the TS401 plus...
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- Read & clear TPMS trouble codes
- Key FOB (Remote Keyless Entry) analysis for data transmission
- High resolution color screen
- Extensive help button provides OE part number and relearn procedures

#### Applications:

Buick, Cadillac, Chevrolet, Chrysler, Dodge, Ford, GMC, Hummer, Jeep, Lincoln, Mercury, Pontiac, Saab, Saturn, Volvo, Audi, BMW, Bentley, Mercedes-Benz, Ferrari, Fiat, Jaguar, Land Rover, Lotus, Maseratti, Maybach, MINI, Plymouth, Porsche, Smart, Tesla, VW, Acura, Honda, Honda Motorcycles, Hyundai, Infiniti, Isuzu, Kia, Lexus, Mazda, Mitsubishi, Nissan, Scion, Subaru, Suzuki, and Toyota

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### ENHANCED ALL-IN-ONE TPMS DECODER, ACTIVATION, AND PROGRAMMING TOOL WITH COMPLETE TPMS DIAGNOSTICS

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- Provides live data stream from TPMS module
- OE-level complete TPMS diagnostics with special function test procedures
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#### Applications:

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# Want to do hybrid repairs?

Tools and know-how for getting started with hybrid repairs to rebuilding HV batteries.

The HYB-1000 from Midtronics can give you shortcuts in diagnosing Hybrid HV batteries and the "regular" 12V glassmat battery. For more information on this product visit [VehicleServicePros.com/10107085](http://VehicleServicePros.com/10107085).



**Q:** What common tools do I need to get started?

**A:** Being that hybrids and electric vehicles (i.e., the Chevy Volt and Nissan Leaf) are made by mainstream companies, you will already have most of the tools you need. For example, hybrids generally have aluminum oil pans, so you will need a torque wrench when tightening the drain plug. Even though the right scan tool with the appropriate OEM-enhanced software is useful for any vehicle, it is absolutely necessary that the scan tool can communicate to the modules on a hybrid. The list of tools to work on hybrids that you don't have is probably small, but you should consider purchasing them if you intend to work on these vehicles. Safety equipment, first! You will need high-voltage "lineman's" gloves capable of withstanding 1,000V of shock. The serious hybrid shop should have a pull-hook that looks like, but is fundamentally different from, the hooks they have near pools to save drowning people. It is the only safe means of saving someone from electric shock.

You will also need to upgrade your electric meter. To work on hybrids, you need to be able to diagnose HV leaks in cables and in internal windings inside the transmission and inverter. Only a Category III certified meter capable of doing an insulation test can get the job done.

**Q:** What am I commonly looking at when using my scan tool for hybrid repairs?

**A:** With the right scan tool (either factory or an aftermarket tool with strong OEM-enhanced software -- believe it or not, good aftermarket scan tools appear to communicate better with some hybrids), there are not that many PIDs (Parameters Identifications) in datastream you need to look for. Usually, we communicate with the HV Battery Module, which name changes depending upon the manufacturer. You will be looking at a few PIDs that

concern battery state of charge and other relevant parameters. For example, the Toyota Prius with a bad HV battery often has a dozen good battery cells at 14.5V or so and only a few low ones, causing the module to throw a code. PIDs help us see this.

Don't forget to check out battery temperature and the state-of-charge PIDs as well. If the HV battery is too hot (i.e., over 100 degrees F on a Prius) because of a broken cooling fan or something of the sort, this can cause HV deterioration. Furthermore, we are going to want to look at the state of charge of the HV battery to see if the motor generator is charging the battery pack as a whole. For example, it might be shown as a percentage on a

Prius, so we would be looking for percentage to increase during charging conditions, such as rolling the car. This is different on a Civic hybrid, where we'd want to see the battery module output to be at least 144V and increasing during charging conditions.

Always be sure when diagnosing these vehicles that the HV computer has the latest software. For example, Honda Civic hybrids with a good HV battery state-of-charge and an out-of-date calibration ID need a software update as per a TSB. If you cannot read the PID, you cannot diagnose the IMA (Integrate Motor Assist) light problem on that vehicle and might be replacing an expensive battery instead of updating software.

**CONTINUED PAGE 18**

## FASTER THAN YOU CAN SAY INSTANT WORK LIGHT

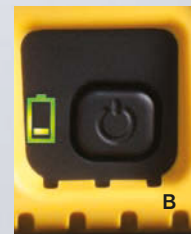
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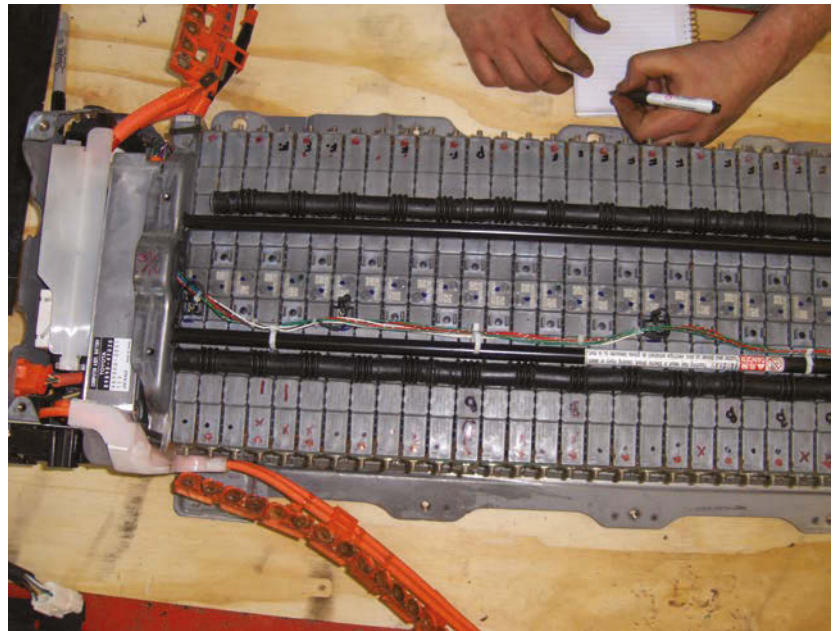
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## Q & A PTEN



**Fig. 1:** When rebuilding a hybrid battery, it is important to make notes on which cells pass and fail load testing.

**Q:** How can you rebuild a Toyota Prius' hybrid battery?

**A:** You can rebuild a hybrid battery by diagnosing which cells are bad. This can be done by load testing individual cells. Then you can replace a bad cell with a known good cell. With the Prius, simply replace a Gen 1 cell with another Gen 1 cell, or a Gen 2 with another Gen 2 cell.

Luckily, not all the batteries go bad at once, just a few do, so with a load tester and a multimeter, you can compare the batteries to one another.

Here's how you test HV battery cells step-by-step:

- Check the voltage on each cell and make a notation on each cell that is below 6.9V to 7V. (See **Fig. 1**)
- Put a normal battery charger on any of the low voltage cells at the lowest setting possible for about 20 seconds. The moment that HV battery cell feels a little warm (not hot, warmer than room temperature), stop charging. (Note: The battery cells' ground and power sides will flip flop, so be sure to connect your charger properly.)
- Load test each HV battery cell with a simple load tester. They should hold the load for about five seconds before the voltage dips down. Simply compare the cells to one another. The bad ones really stick out. (See **Fig. 2**)
- Replace the bad battery cells with known good cells (from a junkyard HV battery, for example).

Gen 2 battery cells can be used in place of Gen 1 cells on a Gen 1 Toyota Prius. If you don't want a comeback on a Gen 1 battery, it is best to change over every single battery cell with a Gen 2 battery cell. Believe it or not, this works like a charm; it's the HV battery rebuilder's secret.



Fig. 2: Here a simple load tester is all the tooling you need to diagnose individual HV battery cells on a Prius.

**Q:** Is it worth tooling up for hybrid service?

**A:** This is a tough one. A hybrid customer is not exactly a big-spending customer. After all, he spent money on a car purely so he can save money on gas, so who says he wants to spend a lot on repairs? Furthermore, hybrids do not need frequent brake or transmission service either. They are not a huge money-maker unless you can corner the market on HV battery and transmission rebuilding. However, it is always good business not to send work back to the dealer. Also, more importantly, most tools you use for hybrid service cross over to other vehicles.

CONTINUED PAGE 20

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**Q:** What common tests can I do with my meter?

**A:** Hybrids require the same sort of voltage drop testing as a regular car. For example, a Toyota Prius HV battery often just has an issue with the copper bus bars corroding, causing internal voltage drops in the HV battery. (See Fig. 3) As you can see in the picture, ultrasonically cleaning this in the Launch X-SonicClean did the trick.



Fig. 3: The Launch X SonicClean tests and cleans fuel injector bar. We left half of it corroded so you can see the difference. [www.com/10225061](http://www.com/10225061).

For demonstrative purposes, we cleaned half the corrosion off the copper bus bar so you can see before and after. The one special test you will need to know is an "insulation test," which requires a MegOhm meter capable of sending a +1,000V pulse. This is how it works: Connect one meter lead on the ground for the HV cable/motor generator/etcetera and the other on the power side. Then, conduct the insulation test.

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**Q:** Do I really need training for handling hybrid repairs?

**A:** At minimum, you will need safety training. You don't let an employee who is brand new in the industry set a lift or do a brake job until you properly train him first, correct? In the same way, you need to have a thorough understanding of electricity and model-specific safety precautions

before you do any serious work on these vehicles.

Even to do an oil change on a Prius you need to disable the smart key so the vehicle will not start itself up in the air (which can happen if the HV battery is low on power, because the vehicle automatically starts up to charge itself back up). If you don't get at least

a day of hands-on training on hybrids, you probably should not work on them. It's not worth the risk.

Have questions? Need answers?  
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s, but here it comes in handy cleaning the corrosion off a bus  
For more information on this product visit [VehicleServicePros.com](http://VehicleServicePros.com).

Your reading should be about 2.2 gigohms on a Honda. If you have anything less, such as 5.4 million ohms, then you have an HV leak somewhere such as shorted windings in the motor generator. This requires a transmission rebuild to repair. The insulation test might be the only means you have to prove to the customer that their HV DTC can be repaired by a big money repair.



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# TOOLS of the MONTH




## 1 CHECK LIVE WIRING

Dewalt's existing 12V MAX Lithium Ion system now benefits from the addition of the **Hand-Held Radar Scanner, No. DCT418**. The tool detects and identifies wood, ferrous metal, non-ferrous metal, live electric wires and PVC behind multiple types of wall surfaces making it ideal for remodelers, installers, service technicians and maintenance personnel. This tool can scan through wall surfaces including vehicle interiors, drywall, plywood, concrete, marble and ceramic tile at a sensing depth of up to 3". It includes a 3.5" LCD color screen and a pre-scan mapping mode that eliminates the need for the user to calibrate or choose between settings.

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## 2 STRIP WIRE INSULATION



Klein Tools' **Wire Stripper/Cutters, Nos. 11063W and 11061**, can grip and strip several wires in a single motion. The Katapult, No. 11063W, conveniently strips and cuts 8-22 AWG wire and can remove up to 1" of insulation in a single step. The tension loaded wire-grip gently holds the cable while retaining cable geometry. The Self-Adjusting Wire Stripper/Cutter, No. 11061, features a stripping head that adjusts to strip 10-20 AWG solid, 12-22 AWG stranded, and 12/2 and 14/2 Romex wire. The tensioning knob adjusts to apply the correct amount of force on the wire and an adjustable stopper controls the length of the core strip.

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## 3 STORE TOOLS EASIER

The **Extreme Tools 70" Pit Box, No. TXPIT7009**, has seven drawers and two side compartments. This tool cart allows the user to take it just about anywhere he needs his tools to go. With seven big drawers and two large side compartments, the technician can hit the

road with everything he needs. The heavy duty wheels and disc brake make traveling with tools easy.

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## 4 SPEEDS UP AIR FLOW

Dent Fix's **Venturi Blow Guns, Nos. DF-BG600 and DF-BG601**, meet the safety standards of OSHA and provide the user with the most thrust possible. The two models present the user with a safer and more powerful air tool compared to standard tipped air guns. The venturi tip speeds up the main air flow by drawing ambient air from the side ports, boosting the available thrust up to 250 percent. The No. DF-BG600 comes with a pistol-like grip and large trigger for comfortable operation. The No. DF-BG601 can be carried in a pocket or hook onto a belt loop for immediate use.

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## 5 RUN MULTIPLE APPLICATIONS SIMULTANEOUSLY

The **Matco Tools Maximus** scan tool features a 9.7" touchscreen and runs on Windows 7, allowing the user to utilize multiple applications simultaneously. Use Bluetooth to connect to vehicle diagnostics, view graphs and record PID data, all while using a wireless connection to gather repair information from the web. Maximus is compatible with optional enhancements, including a four-channel lab scope, sensor simulator, J2534 pass-thru device and battery tester. This diagnostic tablet also includes a free, 30-day trial of Indentifix Direct-Hit, which notifies the technician of vehicle-specific repair information and known fixes automatically, right on the screen.

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### For bushings, wheel bearings and ball joints

**SP Tools** offers the **11000A Mobile Hydraulic Press Tool with Air Powered Hydraulic Pump**. This tool saves time by not removing components and using a press. The 11000A allows quick R&R of suspension bushings, wheel bearings and ball joints. The 18-ton hydraulic ram will rotate into any position needed and comes with a hydraulic pump and adjustable height jack. The pump mount has 12 pegs for frequently used cups and comes with 44 cups and receivers for hundreds of size combinations.

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### Crimp and release Deutsch terminals

**S & G Tool Aid's Deutsch Terminals Service Kit**, No. 18650, comes as a complete six-piece kit to crimp and release the Deutsch terminals found throughout the industry on trucks, construction equipment, heavy duty vehicles and other vehicles and equipment subject to excessive vibration and that have environmentally sealed connections. It includes crimping tools for both open and closed barrel terminals. Tools have stainless steel shafts and knurled aluminum color coded handles for 14-16, 16-18 and 20-22 gauge wire applications. All pieces come in a durable, plastic-molded storage case with a callout label having application information and instructions.

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### Repair quarter panels, fenders and wheel wells

**Porter-Ferguson's straightwell tool system** helps body repair techs repair damaged areas in a fraction of the time that conventional techniques would require. Designed primarily for wheel well, quarter panel and fender repair, this system includes pulling tools both curved and flat in either single or double channel models. It works on curved wheel wells, flat and wide pulling surfaces. Tools can be tightened or loosened with a hammer to ensure conformity to the work area. In addition to wheel wells and quarter panels, it can also be used to pull minor damage on bumpers, headlight housings, or anywhere else there is a pinch weld. Made in the U.S.A.

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### Roll vehicles without drive axles

The **JE Tools ABR 2000 Axle Bearing Retaining Tool** is designed to retain the clamping force on the wheel bearing during a repair requiring the vehicle to be moved with the axle/drive shaft removed. It allows the vehicle to roll on its wheels without drive axles, eliminating costly wheel bearing or hub assembly damage by maintaining the clamping force on the bearing halves to simulate an installed axle. This tool offers a universal fit, fitting all makes and models. It also fits some rear independent hub bearings and some four-wheel-drive trucks. It eliminates the need to use bolts and washers that will bend after one use.

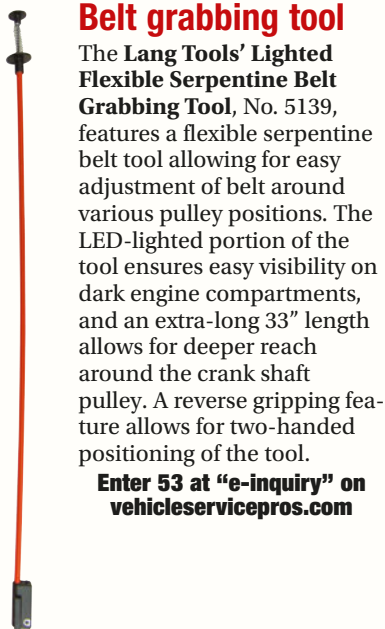
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### In-line design

The **In-Line Flaring Tool** from **Cal-Van Tools** allows users to flare copper or soft steel tubing in tight spaces with its low-profile design for use on or off the vehicle. Designed to be used with a ratchet to make flares easier, the in-line design makes a more accurate flare. The double clamp and hex screw design keeps tubing locked tightly in position. It is available in SAE (No. 164), metric (No. 154) and Auto-Specific Set (No. 161).

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### Belt grabbing tool

The **Lang Tools' Lighted Flexible Serpentine Belt Grabbing Tool**, No. 5139, features a flexible serpentine belt tool allowing for easy adjustment of belt around various pulley positions. The LED-lighted portion of the tool ensures easy visibility on dark engine compartments, and an extra-long 33" length allows for deeper reach around the crank shaft pulley. A reverse gripping feature allows for two-handed positioning of the tool.

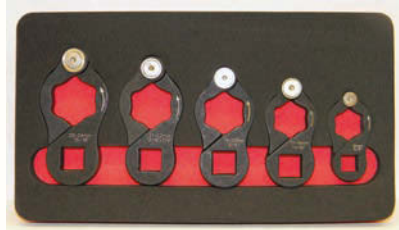
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Lock Technology's LT465 12mm and 14mm Wheel Hanger Guides slide into wheel lugnut holes without using threads, saving the technician time, because they involve no turning of the wheel guide to install and remove. Wheel hanger guides support the wheel/tire so the technician can easily thread lugnut bolts into the brake rotor and avoid dropping the tire or having the outside section of the rim hit the floor and scratch. It is made of durable, bulletproof polycarbonate plastic. It works on Mercedes, Audi, BMW, Mini Cooper, SAAB and Volvo vehicles. Each kit includes one 12mm and one 14mm wheel hanger guide.

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**Wrap-around wrench set**

The AGS Co. HFK-2 5-pc Hexforce Wrap-Around Wrench Set features a unique pivot/hinge/clamp action for 360-degree contact. This tool will not slip off even the most damaged hex surface. With socket-like gripping on captive fittings, these tools attach to standard 1/2" or 3/8" ratchet drive. This set contains the following wrench sizes: 15/16" (23-24mm), 13/16"-7/8" (21-22mm), 3/4" (19-20mm), 11/16" (17-18mm) and 5/8" (16mm). It is perfect for the professional installer working on chassis, suspension, alignment, front-end, air conditioning and tube nut applications.

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**Service alternator decoupler pulleys**

Lisle's Alternator Decoupler Pulley Tool Kit, No. 57650, removes and installs many alternator decoupler pulleys found on the most popular vehicles in North America. Consider replacing alternator pulleys whenever selling a belt. The kit works on both OAD (Overrunning Alternator Decoupler) and OWC (One-Way Clutch) pulleys. The kit includes: 33T spline pulley socket, 17mm hex pulley socket, 10mm triple square shaft bit, T-50 shaft bit and 10mm female hex shaft bit. It works with the wrenches and sockets technicians already own.

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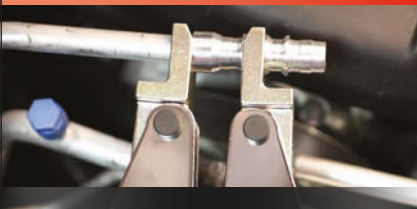
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## Product SPOTLIGHT



### Heavy duty king pin press

The **Tiger King Pin Press** generates 46,000 lbs of force and weighs only 30 lbs, up to 75 percent lighter than what is presently available, according to the company. The tool is intended to be user-friendly and require only one technician to operate. It does this by incorporating the use of a single 1-1/4" forcing screw and anti-torque arms that prevent twisting of the main body while applying extreme forces via an impact wrench. The tool works on both straight and tapered King Pins with sizes from 7/8" to 2-5/32".

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### Scrape off tough residues and debris



Mayhew Tools' **Dominator heavy duty scraper set**, No. 60026, includes a 17" scraper with a 3" blade made from 5/8" square steel and a 14-1/2" scraper with a 2" blade made from 1/2" steel.

It is designed for heavy duty applications with wider blade widths that will not bend under extreme loads. It is assembled with the patented Dominator handle which includes metal end cap for striking and two composite material for superior comfort and control.

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### Snap ring tool kit

The **Just Clips Snap Ring Tool Kit**, No. JCP135, features an all-inclusive snap ring pliers with replaceable tips and deburring pads, a 3/8" and 1/2" Clipad, an O-ring removal hook and replacement snap rings and O-rings for 3/8" and 1/2" tools. It comes with a built-in business card holder. This kit helps extend the life of impact wrenches with proper care and maintenance. It is designed and patented to work with all major brands of pneumatic and cordless impact wrenches. It is a conveniently packaged all-in-one tool kit. Made in the U.S.A.

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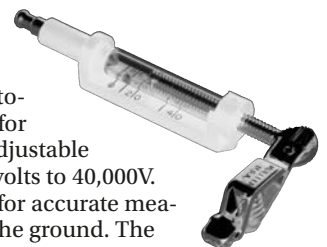
### Break free hard-to-reach bolts

**Blue-Point's XL Air Hammer Drift Set**, No. PHGL37KT, can break free hard-to-reach bolts and pins that have seized due to rust and time. It is designed for suspension work where rusted shock and strut bolts cannot be accessed with conventional length punches and tapered drifts. The drifts provide extra driving force of an air hammer where needed and its 5" long parallel shaft design does not get stuck in deep holes. The set includes the three most commonly used sizes (8mm to 5/16", 10mm to 3/8" and 12mm to 1/2") and a canvas pouch for storing.

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### Ignition spark tester

The **Thexton Manufacturing THX404 Adjustable Ignition Spark Tester** works on ignition systems from high energy electronic automotive systems to small engines. This tool tests for no-start conditions and for spark strength. An adjustable gap allows for spark gap requirements from no volts to 40,000V. Gauge background makes the spark easy to see for accurate measurement. The alligator clip securely fastens to the ground. The screw assembly adjusts the spark gap quickly and easily.



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### Easily remove and install studs

OTC's Wheel Stud Service Kit, No. 4295, removes and installs wheel studs without removing the hub from the vehicle. It does this by applying pressure directly to the head of the stud, eliminating the need for threaded adapters. This method not only reduces the number of adapters required, but also minimizes the risk of damage to wheel studs, hubs and bearings. The tool can remove and install up to 10 studs in only 10 to 15 minutes, almost half the time of other higher priced products. Use an air wrench — a hydraulic power source is not required.

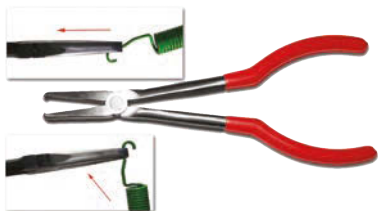
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### Reach where torches won't

Induction Innovations introduces the Long Coil Kit, No. MD99-675, for use with the Mini-Ductor II and Inductor U-555. Both tools release seized hardware and components from corrosion and thread lock compounds by using high-frequency magnetic fields without the danger and collateral damage of an open flame. The Mini-Ductor Long Coil Kit enables the user to gain greater access on hard-to-reach areas where torches can't go. This kit offers popular sizes with extra-long 13" leads, enabling the user to reach and heat hardware and components buried deeper and gain better access around other components. The kit comes in a transparent case with eight pre-formed coils, with an I.D. ranging from 3/4" to 1-3/4", giving the tools a larger array of applications.

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### Brake spring pliers

V8 Tools introduces the V8-989 Brake Spring Pliers. In addition to including a pair of end cutters, V8 improved the tool by making it longer with wider and stronger tips that can hold the spring better, without leaving deep cut marks. This tool makes a normally frustrating job quick and easy.

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**PERFORM TRANSMISSION SERVICES QUICKER**

BG Products' PXT touch screen transmission flush machine comes with a full-color display that makes it easier and quicker to perform necessary transmission fluid services. It includes software that walks the user through the procedure, calibrated scales that prevent the wrong distribution of fluid, dual gear-driven pumps that prevent the intermixing of old and new fluid along with a 5-minute run time, and two 7-gal tanks to hold new and used fluids. For use with BG or any brand transmission fluid.

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**SCAN CODES AND MONITOR QUICKLY**

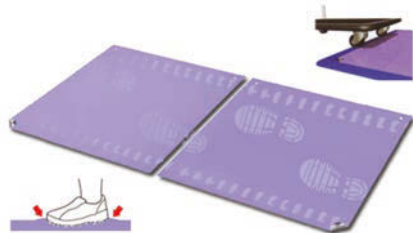
The Snap-on Blue-Point Microscan III Scanner, No. EESC720, comes as a pocket-size scan tool that reads and clears OBD-II codes, displays live data and resets the malfunction indicator lamp (MIL) in less than 30 seconds. Powering up automatically when connected to the vehicle, the tool can be especially handy for those who interface with customers at the service desk. It covers all 10 modes of OBD-II, checks readiness monitors for emissions testing, and covers enhanced engine codes for diagnostic depth on most GM, Ford and Chrysler vehicles, as well as reads and clears ABS codes on select GM, Ford and Chrysler vehicles.

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**FIND LEAKS EASIER**

Cliplight's 450Plus Blue LED Inspection Light, No. 450DCPLUS, offers a powerful blue LED that finds leaks in any environment, day or night. It features the capability to do long distance leak detection; daylight-effective brightness; a rechargeable 1,400 mAh lithium ion battery for four hours continuous use; robust aluminum construction; focused, wide and strobing beam capabilities; can be charged using both AC and DC power; and UV enhancing glasses for use with dyes.

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**REUSABLE ADHESIVE MAT**

JDV Products' Clean Walker "reusable" sticky mat, No. CW-900EZ, can be used in the entrances of clean rooms and shower booths. This product, when compared to conventional "peel-off" or disposable tacky mats, can pick up more dirt in hard-to-reach areas and benefits from reusability, according to the manufacturer. This can keep costs down and be more beneficial to the environment. The gel-like stick material retains its adhesive nature for up to three years and can be cleaned simply with water. Both sides of the mat are adhesive, so it can be flipped over when one side gets dirty.

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**USE TABLET PC ANYWHERE**

Panasonic's Toughpad FZ-G1 with its Windows 8 Pro operating system combines ruggedness, functionality of a PC, and all the benefits of being a tablet. It features a third generation Intel processor, 128 to 256 GB of SSD and 4 to 8 GB of RAM memory, 10.1" sunlight-viewable touch screen display, and 8-hour battery life. It can survive a 4' drop, extreme temperatures and weighs only 2.43 lbs. It includes full size USB 3.0, HDMI, optional micro SDXC, full size USB 2.0, wired LAN, true serial port or dedicated GPS, and Bluetooth.

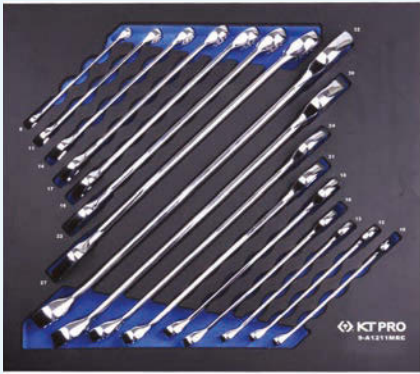
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**INCREASE LIFT EASE OF USE**

BendPak's PCL-18 portable column lift system combines heavy duty capability with ease of use that reduces operator fatigue in the placement of the lift columns. Its 6" diameter Cush-Ride front wheels feature an adjustable active leaf spring design that provides variable, up-front ground clearance for smooth traveling over uneven floors, deteriorating asphalt, expansion seams and thresholds. Intuitive touchpad controls allow the user to operate, view and change operation parameters directly from each individual touch-sensitive display.

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### STORE TOOLS MORE EFFICIENTLY

King Tony America's KT Pro EVA wave foam storage tray organizes tools in a new way. EVA (ethylene vinyl acetate) comes chemical-, oil- and water-resistant. The tray has a unique wave pattern mold in order to hold tools securely in place. It is made to fit standard toolbox drawers. This tray has wrench sizes marked on the outside. It comes in 9-, 13- and 16-piece (metric) and 9-, 13- and 14-piece (SAE) varieties.

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### REMOVE AXLE NUTS

Lisle's axle nut sockets, Nos. 22090, 40010 and 40020, work on common foreign and domestic vehicles. It is made of durable impact-grade material and extra-deep design to fit over various axle lengths. The No. 22090 fits many European vehicles with 36mm, 12-point applications. Many Ford and GM vehicles' with 29mm, 6-point axle nut applications can be serviced with the No. 40010. The No. 40020 fits many Mazda and Subaru 35mm, 6-point applications.

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### ILLUMINATE THE WORKSPACE

Streamlight's High Lumen (HL) flashlight models use state-of-the-art C4 LED technology to provide law enforcement, tactical, outdoor and other users with extreme brightness, delivering up to 640 lumens. The models include the rechargeable Stinger LED HL, Stinger DS LED HL and Strion LED HL, as well as two gun-mounted models, the TLR-1 HL, and the TLR-2 HL. These models provide similar or slightly higher lumens (with at least 500 lumens) than those in the traditional line but deliver superior long-range lighting because of the increased candela.

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## Coil on Plug Ignition Tester

**GTC** General Technologies Corp.



### TA500 SmarTach+COP

Easy and quick to use, it measures:

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## New PRODUCTS PTEN



### DIGITAL VIDEO BOROSCOPE

Autel's MaxiVideo, No. MV208, digital videoscope helps examine difficult-to-reach areas normally hidden from sight. It features the ability to record digital still images and MPEG2 or MPEG1 video either on its internal flash memory or on the removable SD cards (optional). The ergonomic tool not only features a 2.4" full-color LCD screen, auto-focus and viewing capacity as close as 1" with crystal clear output, but also offers the capability to stream digital video directly to a PC. The multi-purpose video scope is a solution designed to inspect machinery, facilities and infrastructure in a safe, cost-effective manner.

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### PULL OFF HARD TO REACH PARTS

Mayhew Tools' 4-piece PC Dominator X-Long Hook Set, No. 60027, includes a 20-1/2" long C-Hook, Complex Hook, 90-Degree Hook and Cotter Pin Puller. The length of the tools gives the user access to previously unreachable areas. The hooks come formed to fit into tight areas, allowing access over, around and behind wiring, hoses and other obstacles. It includes a lifetime warranty.

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### KEEP HANDS WARM

**Mechanix Wear Winter Armor Pro gloves** come specially designed for technicians that have to work outdoors in the cold. The gloves include high-abrasion "Material 4X" on the thumb and fingertips and an internal, anatomically placed palm padding, allowing the use to complete tasks that require the dexterity of bare hands without being exposed to the elements. The gloves are fleece-lined with 3M Thinsulate and encased in a water-repellent nylon shell, providing warmth and wind resistance. Additional features include an embossed neoprene thumb panel for flexibility and full length thermal plastic rubber on the fingers.

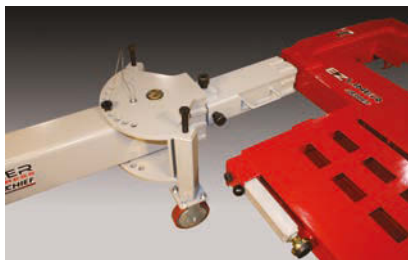
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### LUBRICATE LOCKS AND HINGES

Radiator Specialty Co.'s **Liquid Wrench Lubricating Oil**, Nos. L206 and L212, stop squeaks and eases sticking parts. This oil can be used on metals to resist water and protect against rust, and also decreases metal noises on hinges. It is intended for light to medium lubrication on exterior locks, car doors and trunks, electric appliances and small hinges. It leaves a thin, wet film. It comes in a 5.5 oz or 11 oz aerosol can.

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### ADD CLEARANCE FOR BETTER PULLING ANGLES

Chief's EZ Liner Express Tower Extension adds another 18" of clearance between the frame rack's tower and the vehicle being repaired. The additional space creates better pulling angles and allows the rack to be used to repair larger vehicles. It removes obstructions and makes working on all vehicles easier for technicians. This helps create extra clearance for tough side and corner pulls. The unit can attach to the deck in 10 different locations, creating a true 360-degree repair system. When not in use, the extension can be removed from the tower assembly for better storage.

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### SEAT TIRE BEADS WITHOUT THE NOISE

Ken-Tool's T131 Utility Tire Pneumatic Bead Expander, No. 31431, makes it easier for 10" to 22" diameter utility tires to seat on the rim. The tool weighs only 2 lbs and uses an internal heavy duty neoprene rubber tube featuring an internal, over-pressure relief valve that protects the expander from accidental over inflation. It also features an external pressure, quick-release valve and is covered by a tough, abrasion-resistant nylon sock. It is resistant to oil, grease, solvents, acids and other chemicals found in tire and tractor shops. It is designed for shop air pressures up to 150 psi.

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## SP AIR CORPORATION

1/4" & 3/8" SUPER FAST MINI IMPACT RATCHET

SP-1764 (1/4")

SP-1765 (3/8")



High Speed



High Torque

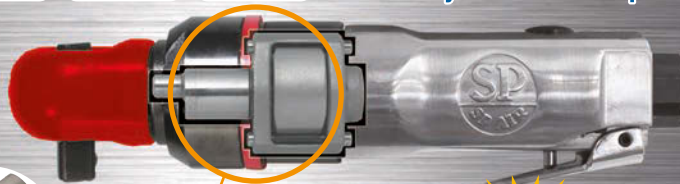


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Single Dog Clutch



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- New CIP coding and programming capabilities for BMW.
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**New**  
**PRODUCTS** PTEN



**REPROGRAM AND SCAN VEHICLES**

**Bosch's Flasher Pro bundles**, Nos. F00E900374, F00E901007 and F00E901008, come in a good/better/best series, cover different end-user needs while addressing key reprogramming aspects, including protecting the vehicle's ECU while being reprogrammed. The No. F00E900374 includes a Bosch Flasher Pro, battery maintainer and instructive DVD. The No. F00E901007 has a battery tester in addition to the preceding tools. The No. F00E901008 includes the M-VCI scan tool and the tools available in the other bundles. Each package can address OEM reprogramming and scanning needs on all J2534-2 compliant vehicles.

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**HOLD WORK PIECES SECURELY**

**Lexair's Genius 5-axis vise** features a unique design that maximizes clamp force at the top of the jaws by pulling them closed at the top with a collapsing lead screw, while holding the bottom of the jaws in place with an opposing force screw. The dual-screw, pull-to-close vise eliminates the tendency of traditional vise jaws to splay apart at the top, which requires machine operators to hammer a workpiece down against the stops as the jaws close and clamp force increases. It comes in two sizes, capable of holding parts up to 8", with maximum clamp force of 9,000 lbs.

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**AVOID SCRATCHING RIMS**

**Snap-on's John Bean AC400 Touchless Alignment Wheel Clamp** provides secure clamping without touching the rim. It employs clutch limited-clamping force ensuring secure attachment. It has a self-centering design allowing measurement of cross-diagonal and tire-rolling radius that helps to reveal collision damage and mismatched tire sizes. It is made of durable, drop-tested, lightweight cast magnesium construction. It features a large, comfortable handle which is simple to operate and accommodates gloved hands.

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**TMX-589 TECH METER KIT**



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**NEW PRODUCTS**



**18650 DEUTSCH TERMINALS SERVICE KIT**

A complete six piece kit to crimp and release the Deutsch terminals found throughout the industry. Crimps both open & closed barrel terminals. The Release Tools have stainless steel shafts & knurled, color coded, anodized aluminum handles for 14-16, 16-18 & 20-22 gage wire applications.

**18600 OPEN BARREL CRIMPING TOOL**



Crimps most open barrel terminals with wire sizes 14-24 gage.

**19100 WIRE STRIPPER FOR RECESSED AREAS**



Narrow profile accesses limited and hard to reach areas. Strips 22-12 gage wire. Automatically adjusts to wire size.



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### FIND A/C LEAKS

Tracer Products' PRO-Alert 2791 SAE J2791-certified refrigerant leak detector can sniff out A/C leaks by utilizing an infrared sensor to accurately detect refrigerant leaks down to 0.1 oz/year (3 g/year). The unit is sensitive to R-12, R-134a, R-1234yf and all other HFC refrigerants. The tool cannot be

contaminated by exposure to large amounts of refrigerant and has a 1,000+ hour sensor life. It comes with a rubber-coated, flexible metal probe that slithers easily into tight places and holds its position. An audible alarm and multiple LEDs help locate leaks fast. It is powered by a rechargeable NiMH battery, which provides over six hours of use between charges.

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### PRODUCE HIGH PRESSURE SHOP AIR

Campbell Hausfeld's rotary screw air compressor, No. CS1104, comes rated for 100 percent duty cycle and it delivers 36 scfm at 150 psi operating air pressure. The compressor features an oil-injected compact air module with integrated air end, oil reservoir and air filter as well as an easily accessible separator and oil filter for quick service and maintenance. This helps reduce power consumption. The pre-wired electrical controls come mounted in a single enclosure and include a pressure gauge, temperature gauge, high-temperature indicator light, hour meter, illuminated on/off switch and emergency stop button.

The compressor features an oil-injected compact air module with integrated air end, oil reservoir and air filter as well as an easily accessible separator and oil filter for quick service and maintenance. This helps reduce power consumption. The pre-wired electrical controls come mounted in a single enclosure and include a pressure gauge, temperature gauge, high-temperature indicator light, hour meter, illuminated on/off switch and emergency stop button.

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### SERVICE BMW PARKING BRAKES

The Durston/VIM Tools Torx Driver, No. XZN9BMW, can be used to remove the 12-point Torx bolt on late model BMWs where a regular Torx with an extension does not fit easily when servicing their emergency brake cables. It uses a XZN9 special size spline and has a 12-point triple square head. It is made of heat-treated S2 steel, has a 3/8" square drive holder and has a 4" overall length.

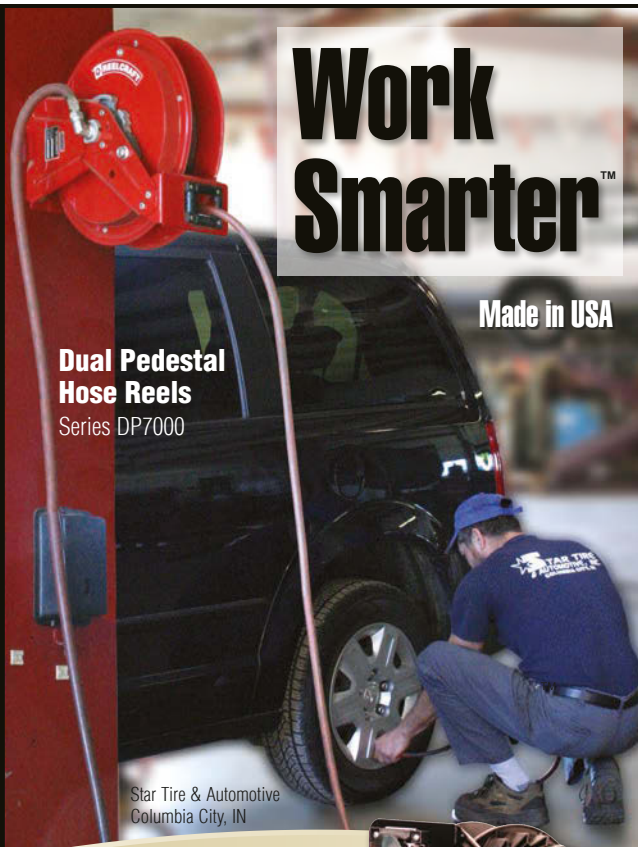
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# Work Smarter™

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### Dual Pedestal Hose Reels

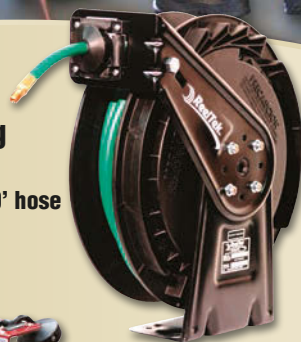
Series DP7000



Star Tire & Automotive  
Columbia City, IN

### Medium Duty > Nitrogen Dispensing Hose Reels

Spring driven for 3/8" x 50' hose  
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New!



### LED Light Cord Reel

Multiple power and light cord options available

L 4050 163 10

The power pod delivers portable power to electric tools.

### Heavy Duty > Welding Hose Reels

Spring driven for hose lengths up to 60'

Series 7000

\*DEF dispensing hose reel models also available.



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### USE A COMPUTER ANYWHERE

The **GammaTech Durabook TA10** features a 10.4" multi-touch panel with tempered glass and ultra-high brightness LCD, an Intel Ivy Bridge processor and two 6-cell battery packs. The unit meets Military Standard 810G for drop and shock resistance, and IP65 for dust and water resistance. Security features include TPM 1.2 data security technology, a Kensington Lock connector, and Intel anti-theft technology (AT) or Computrace asset management and data protection. Optional features include a UHF RFID

reader, barcode scanner, fingerprint scanner, smart card reader, internal GPS and more.

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### LOAD TEST BATTERIES

**Clore Automotive** offers the **SOLAR 125 Amp Digital Fixed Load Battery Tester**, No. 1850, benefits from being portable and being capable of testing both battery condition and charging/starting system performance. It features an ergonomic design for comfortable use and improved safety. It delivers a true 125 Amp load and is calibrated to test batteries up to 1000 CCA. This unit features an easy-to-read analog color coded meter and a graduated scale for battery condition assessment. It can be used to test most 12 Volt batteries, starting and charging systems.

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### CLEAN DIRTY HANDS

**STOKO Skin Care's Kresto Cherry heavy duty hand cleaner** comes in a cherry fragrant formula and offers users high performance hand cleaning. The fragrance helps eliminate odors left by industrial chemicals and petroleum products, leaving hands both clean and fresh. The soap can quickly clean heavy dirt, grease, grime and oil, yet keep skin healthy. It is formulated with skin conditioners and skin compatible syndets (synthetic detergents), in addition to natural and renewable biodegradable walnut shell scrubbers tested and proven not to clog drains. It is available in 2000ml Softbottle and 1/2-gal pump bottles, as well as in toolbox-sized, 400ml squeeze bottles.

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### MAXIMIZE PULLING CAPACITY

**Porter-Ferguson's hydraulic rams** can generate instant power in any position. Built for maximum flexibility and trouble-free operation, the product group comprises three lines: Speed-Midget Standard Duty Rams, Pull Rams and Hydro Chief Heavy Duty Rams. All products feature quick disconnect couplings to get them into service faster. All have special U-cup packings for longer life, better sealing and easy, speedy repair. It is made from tool steel to stand up to tough usage. The SM0100 spreader jack can be used with all Speed Midget jacks to open up confined areas for easy finishing. It includes a lifetime warranty.

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### REACH HONDA ENGINE COMPARTMENTS

The **SP Tools' Honda/Acura Serpentine Belt Tensioner Tool**, No. 10950, was designed to reach down through the engine compartment in areas not easily accessed with conventional tools. This tool has a specific "clock" angle of the 6-point 19mm end with carefully calculated handle geometry enabling access to the hydraulic dampener tensioner. These hydraulic tensioners can be found on the 2006 and later Civic and many other Honda cars and trucks. This tool won't strip the hex on these hydraulic tensioners.

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## WEIGH VEHICLES MORE ACCURATELY

Mohawk Lifts has updated its 4" weight gauge, featuring increased accuracy in weighing vehicles within 3 percent of total vehicle weight. Available for all Mohawk two-post lifts as a diagnostic tool, the weight gauge can assist shops in upselling brakes, tires, suspension and more by informing customers how heavy their vehicles really are. It can be used to verify that the lift has been lowered onto the mechanical safety locks (as the gauge will then read 0 lbs). Made in the U.S.A.

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## FIT REEL IN TIGHT SPOTS

Reelcraft's 5650 Series Reel features all-steel construction and a compact design for a wide range of applications with critical space requirements. It uses a cam and disc latching mechanism that latches at two different points every 180 degrees. The quiet speed latch requires that the hose be pulled out and then let back slowly for the latch to fall into the disc detent. It also features a more traditional ratchet and latch pawl design that produces the easily recognizable clicking sound when retracting.

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## GREASE FRONT ENDS

Milwaukee's M18 Cordless 2-Speed Grease Gun delivers up to 10,000 psi operating pressure and features a pre-set grease counter to dispense exact amounts of grease. Other unique features include an on-board LED, a lock-on/lock-off trigger, and a plunger rod with markings to gauge how much grease is left in the barrel. The tool's stand-up design and shoulder strap capability offer user convenience, while limiting fatigue, and the 48" flexible hose offers greater accessibility when greasing hard-to-reach fittings. It is also compatible with a clear barrel accessory if preferred by the user.

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**PATENTED OE SENSOR ID-CLONING**

ATEQ's VT55 OBD TPMS tool can program all OE and several aftermarket TPMS sensors. The aftermarket sensors it can program include **Alligator Sens.it** and Orange Electronics. The Sense.it TPMS offers a solution to the corrosion issues that plague many metal sensors by including a patented ball-joint valve that has superior performance characteristics. Furthermore, using the VT55 Orange OE replacement sensors can be programmed with OE ID numbers and bypass the typical relearn procedure required when replacing TPMS.

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**TRANSFER FLUIDS AND AIR**

Coxreels' Pure Flow Series reels can be used for breathing air and clean fluid transfer applications. These reels supply non-corrosive air and fluid paths using a stainless-steel, full-flow swivel and nitrile non-toxic food-grade seals ensuring clean, non-contaminated, safe and reliable transfer of breathing air, potable water or other clean fluids. It is conveniently offered in spring rewind, hand crank and motorized retraction options. It can be used in fields of application such as fire rescue, pharmaceutical manufacturing, food and chemical processing plants, hazardous site clean-ups, and medical and hospital air services.

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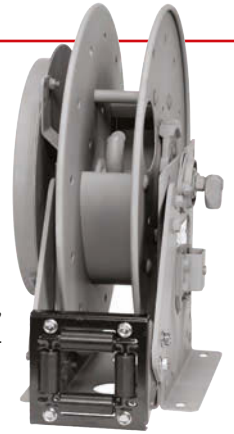


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**CENTER VEHICLES QUICKLY AND EASILY**

Rotary Lift's Spotline laser vehicle spotting guide can be used with the company's Shockwave-equipped lift and other brand lifts. Different brand lifts can be accommodated with a retrofit kit that makes the laser spotting guide compatible with most in-ground and surface lifts. Installed on the top of the lift or elsewhere above the work area, the laser projects a green line directly in the center of the bay. The technician simply centers the line on the vehicle hood and dash while pulling in for perfect positioning.

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**Phoenix System's BrakeStrip CU+ID**

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**REMOVE HARD-TO-REACH FASTENERS**

Snap-on's 10-piece ratcheting open end box wrench set, No. SRXRM710, features an open end design and speed wrenching configuration that delivers more speed and accessibility while also providing comfort and balance. It assists in removing hard-to-reach fasteners that cannot be accessed using a standard wrench or ratchet and socket. The unique open end speed wrenching configuration of the SRX wrenches provides a quick ratcheting-like action as well as easy access to hard-to-reach fasteners.

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Cal-Van Tools' GM Thermostat Wrench, No. 751, can work on GM 3.1 and 3.4L V6 engines. Thermostat replacement forces the technician to remove the thermostat housing. In these applications, the bottom housing bolt is almost inaccessible without removing other parts. But the wrench, with its unique shape and design, allows users to remove and install the housings in a fraction of the time it currently takes. The wrench is a 13mm, 12-point with special bends specifically for GM V6 thermostat housings.

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## MULTI-PIECE SOCKET SET

The SK Hand Tools 49-Piece 3/8" Drive 6-Point Standard and Deep, Fractional and Metric Socket Set with Universal Joint, No. 94549, is

made in the U.S.A. High polish SuperKrome plating results in a jewelry-like finish, providing long life and maximum corrosion resistance. It is packaged in a molded plastic case. The set contains: 7-1/2" ratchet; 1-1/2" thumbwheel ratchet; 3" and 6" extensions; universal joint; multiple SAE standard and deep sockets; multiple metric standard and deep sockets.

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OTC offers comprehensive bundled software update kits (Nos. 3421-141, 3421-145 and 3825-55BDL) for both the Genisys and Pegisys. The Genisys (No. 3421-141) provides a System 5.0 memory card, 2012 domestic/Asian and 2011 European software; the (No. 3421-145) software kit works for units with System 4.0 and newer tools (no new memory card required). Both versions make updating simple, reduce cost and include full coverage for domestic, Asian and European vehicles. The Pegisys (No. 3825-55BDL) comes with a 12-month subscription that includes domestic/Asian and European coverage, with all updates for a year.

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## GammaTech Durabook with GPS and Barcode Scanner

Tablet PC combines ruggedness with long battery life and shop-focused functionality.

**G**ammaTech's Durabook Tablet PC, No. T7Q, meets Military Standard 810G for drop, shock, spill, salt, fog and freeze/thaw resistance; and meets IP-65 for protection against dust and water. The unit weighs only 3 lbs and comes with ergonomic hand straps. It offers users the choice of two processors: the Intel Atom processor N2600 (1.6GHz), or the Intel Atom processor N2800 (1.86GHz), both of which are made specifically for ultra-mobile devices. It comes with Intel NM10 and GMA 3650 graphics chipsets, a DDR3 slot that offers 2GB of system memory and an m-SATA SSD drive.

### The review

Lou Fort, lead technician at Huntingburg, IN-based K.A.R.S. Inc., was sent a Durabook from GammaTech and was at first not quite sure what to do with it. He uses computers for email and looking up information in repair databases - the Durabook has GPS and a bar code scanner. Suffice it to say, this is not his every day automotive tooling.

Nonetheless, Fort was able to make use of the computer and some of the things such as the barcode scanner: "I can't say that I thought that having a Durabook in my arsenal, as a tech in my own right, over a laptop is much of a time saver at all. However, a shop on the other hand, set up with the right software, could potentially save lots of time putting the barcode scanner, camera and GPS to use."

Set up was typical of any other computer, but all the drivers needed for the barcode unit camera and GPS were already installed on the unit. All Fort had to do was simply turn it on.

The more Fort grew accustomed to the unit, the more things he found about it that he liked. "The one feature I enjoyed the most was its impressive battery life. With the two batteries, the unit will stay powered up for close to 10 hours," he says.

"I also made use of the 'barcode' scanner, once I figured out how to use it without dedicated software, to quickly grab VIN



*The reviewer found the barcode scanner helpful for scanning small-font VIN numbers on vehicles.*

numbers off doorjamb stickers. For some reason, it seems like the older I get, the more automakers are using smaller and smaller fonts, making it harder and harder to read the VIN off the sticker. So having the 'barcode' reader grab the VIN and displaying it in a larger font was nice."

Fort said he was also impressed with the GPS feature, because it was able to get a signal and pinpoint his location even while inside the shop.

Fort found there was a learning curve to some of the features on the device. "Figuring out how to use the barcode scanner, without dedicated software and the GPS module, was a bit of a challenge," Fort admitted.

Fort also made some suggestions on how to improve the tool. "First, I would have the corner pad strap attachment rings come with a strap," he said, counting out a list. "Next, I would add a holder for the stylus. Then I would put a raised section around the buttons on the front; they are way too easy to push just picking the unit up."

The verdict? "Due to its ruggedness, I give the Durabook a 9. Not having a place to store the stylus and those pesky strap clips keep it from a 10," explained Fort. "The long battery life and ease of use with a docking station add to its usefulness." ■

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## OTC Automotive Inspection Camera

Tool allows users to view tight and hard-to-reach areas.

**O**TC's Automotive Inspection Camera, No. 3880X, comes as a portable, handheld video scope ergonomically designed for the internal inspection of engines without their costly demolition or disassembly. The 5.5mm camera transmits images and video to the large 3.5" high-resolution color screen for optimal viewing of hard-to-reach areas. The camera head includes four built-in, adjustable LEDs for optimal viewing from light to dark areas. It also features the ability to record digital still images and MPEG video on the removable SD memory card, and can be viewed on the removable camera display or transferred to a computer.



Record digital images and video using the unit's SD memory card.

### The Review

Eric Moore, a technician at DeMary Truck in Columbus, OH, works in a medium-duty shop and is used to doing tough, grueling work such as engine tear downs. Moore hates nothing more than when a diagnosis requires a teardown, only to find

that the problem is in fact elsewhere. When he received a video scope from OTC to review, he was looking forward to what a modern video scope can do.

Years ago video scopes did not always cut it. Their video was in black and white, they did not sufficiently light up the viewing area, they were hard to view in the right area, they did not record video files and the image resolution often was insufficient. Their most critical Achilles heel was often the diameter of the actual video probe. With the Automotive Inspection Camera, No. 3880X, Moore was pleasantly surprised.

Moore put the tool to work on a job where he had to determine whether or not to remove the cylinder head. "The smaller size allowed us to access right through the glow plug hole," he noted.

Another job required Moore to check the part number on the back of an instrument cluster to aid with a diagnosis. "The video scope was able to easily view the printed circuit board on the back of instruments without removal of the gauge cluster," he said.

Moore had ideas for a few improvements for the tool. "The addition of a mirrored attachment to view 45 to 90 degrees from the angle of the camera face would help tremendously," he said.

The tool's ability to access spots that were otherwise inaccessible was its key strength, according to the reviewer. "We currently own a similar handheld camera, but the diameter of that camera head prevents us from using it in the manner in which we used this camera," Moore said. "Personally, I would rate this tool a solid 9.5. The ease of use, smaller size for better access where previous products were restricted due the size of the camera head, really puts this tool ahead of the others on the market."

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### Using a video scope to help sell work

By Craig Truglia, Assistant Editor

The video scope is an essential shop tool because it can see in places where techs can otherwise not easily access. This OTC inspection camera, unlike many others, allows the user to take photos and save them onto an SD memory card. This is a very important feature if techs want to be able to actually show the customer what they've found.

After all, seeing is believing. Would you let your dentist do a root canal unless he showed you an X-ray of what is wrong? Of course not. Your customer is equally impressed by the professionalism of a technician that documents his work.

Thorough documentation not only helps give the technician credibility, it helps sell big jobs. Want to prove to the customer that their Volkswagen needs a \$1,400 catalytic converter? Remove an oxygen sensor, snake in the video scope, and get a snapshot of the catalytic substrate.

My all time favorite? Some other shop dropped a washer down the spark plug hole so we couldn't easily remove the spark plug. What better way to prove to the customer why he has to wait longer and pay more than showing him the actual washer?

The potential uses are endless. If you are in the market for a video scope, you need to get one with an SD memory card, like that in OTC's Automotive Inspection Camera.



Here, the degraded condition of the catalytic substrate is obvious. The time stamp at the bottom of the image offers proof that the image is really from the customer's car.



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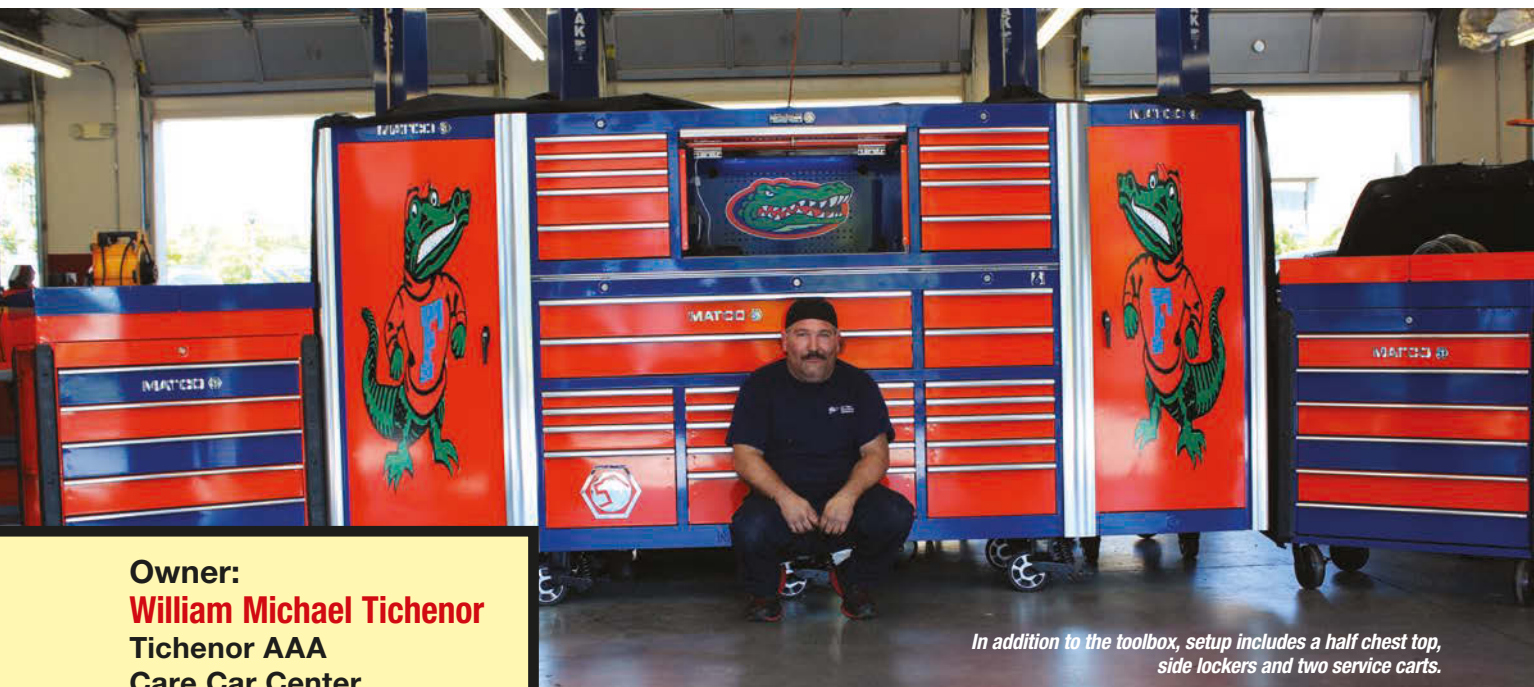
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*In addition to the toolbox, setup includes a half chest top, side lockers and two service carts.*

## A Florida Gators fan's dream toolbox

**S**ome technicians are pragmatists. Their box doesn't need to be pretty, just big enough to hold and lock away what they need. And there are other technicians that view their toolbox as an extension of themselves. William Tichenor is one of those technicians.

Tichenor's bold blue and orange Matco 6328RX toolbox with the 6328HC half chest top and 6028SL side lockers is 5-1/2' tall and 10' 10" long. But it gets even bigger. Coupled with the box are two JSC500 service carts with slide top and all-draw add-ons.



*The Matco box rocks high-tech gadgets such as a PlayStation 3, desktop computer and LEDs.*

Being this is not an ordinary toolbox, Tichenor had to special order it from his Matco dealer, Mark Bienkiewitz, in February 2012. As a matter of policy, Matco has the option of having the 6 series, two-tone boxes custom-colored. However, this service is not offered for smaller items, such as service carts. Tichenor kept the color scheme going simply by ordering two solid colored service carts in Gators blue and orange and swapping the cabinets between the boxes.

Matco also does not make custom sports logos for toolboxes, so Tichenor added a few that his mother found at a Bradenton, FL Red Barn flea market. The classic mascot is found on the side lockers while the workspace sports the modern incarnation of the team's insignia.

"The best thing about the box is that I designed it and they built it the way I wanted," Tichenor says. "They were the only company so far to do so. Thank you, Matco."

This Florida-themed box

also has a lot of Sunshine-state real estate available on the inside. He presently only fills the box with about \$30,000 of tools, but estimates that by the time he retires it will hold somewhere in the hundreds of thousands of dollars when inflation is taken into account. "Everyone tells me I have my own 'condo' now when I retire," says Tichenor.

With the tools he has presently, the ones that he finds the most helpful are his Matco cordless series impact tools. Tichenor's Power Probe III has also got him out of quite a few jams, and he has the "most fun" with it compared to any other tool he owns.

Apparently, fun trumps practicality in Tichenor's world. He recently added a 22" LED flat screen, PlayStation 3, Bose surround sound and LED lighting in the lockers. When asked for a final comment on the box, Tichenor simply cheered, "GO GATORS GO!" PTEN

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