

PTEN

The Independent Tool Authority



TRITON-D8

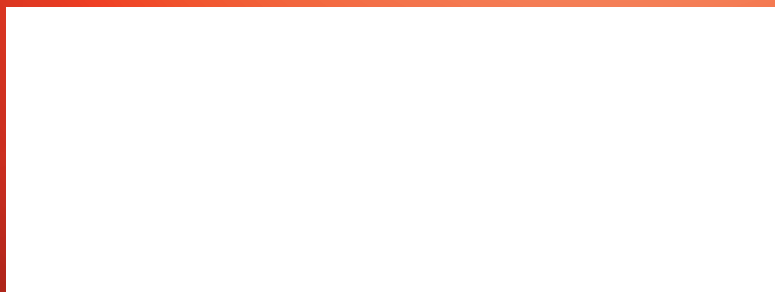
by Snap-on

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and other new tools **Page 12**



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**Category
Spotlight:**
Hand Tools &
Specialty Tools
Page 50



Tech Routing List ☐ ☐ ☐ ☐ ☐ ☐



▲ Features
interchangeable
3/8" and
1/4" anvils



▲ Includes power
tool charging
and storage



▲ Engineered to
address broken
exhaust manifold
mounting bolts

**KNIPEX**

WE TOOK A NEW ANGLE ON THE PLIERS WRENCH

Part Number
86 43 250 US

KNIPEX – Tools Designed With Your Hand in Mind

Now, a new angle on the original KNIPEX Angled Pliers. 15° angled handles allow for better accessibility and finger *and* knuckle space!

Like the original, parallel jaws evenly distribute force to the work-piece at 10x your hand strength! Reliable and precise adjustments by the touch of a button and the smooth jaws will not round off nuts and bolts or mar surfaces. Reliable hinge bolt catching avoids unintentional shifting. Variable inch and metric size adjustments up to 1-3/4" (46mm).

Don't get bent out of shape when faced with tight fits—get the Angled Pliers Wrench with the bent handles.

See a video of this tool: <https://goo.gl/ZaTSVs>

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KNIPEX Quality – Made in Germany

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X-431 THROTTLE

The **X-431 Throttle** is a full comprehensive diagnostic tool, which includes a charging base. It is based on the Android™ 7.1 System, which supports dual band WiFi (2.4 Ghz & 5Ghz) Communication. It has wide Coverage on most models, strong diagnostic capabilities, accurate detection data, IP 65 Rated.



NEW 2 HOUR QUICK CHARGE TECHNOLOGY



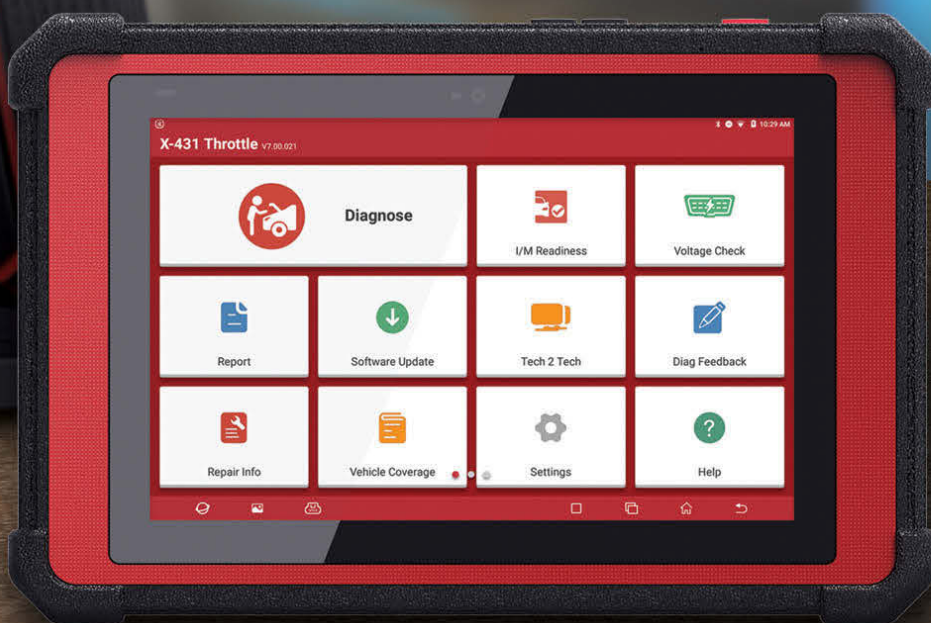
WILL SUPPORT LAUNCH'S NEW ADAS



13 MP REAR CAMERA



NEW HIGHER RESOLUTION AND BRIGHTER DISPLAY



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SEPTEMBER CONTENTS

FEATURES

12 FEATURED NEW PRODUCTS

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Diagnosing NVH

42 TOOL REVIEWS

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- Legacy Manufacturing Flexzilla Air Compressor
- Prevost Flexair Hybrid Hose
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Owner: Ben Corda
Shop: Tom's Auto Center
Location: McFarland, Wisconsin

ON OUR COVER

The Snap-on TRITON-D8



IN THE NEXT ISSUE

2019 PTEN People's Choice winners.



Put your amazing tool storage system on display! We'd love to hear your story and see how you keep your tools organized. Send an image and brief description of your "Big-Time Box" to editor@vehicleservicepros.com.



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AUTEL MAXISYS

WORK SMARTER NOT HARDER



DIAGNOSTIC INTELLIGENCE

AUTEL UPDATES PROVIDE LATEST OE-LEVEL COVERAGE FOR US/ASIAN/EUROPEAN VEHICLES (1996+) INCLUDING SUPERCARS



COLLISION
AFFORDABLE DIAGNOSTICS
+ COMPLETE TPMS + SERVICE

ADAS
CALIBRATION + DIAGNOSTICS
+ MAINTENANCE SERVICE

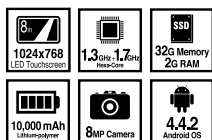
ADVANCED ANALYSIS
DIAGNOSTICS + PROGRAMMING
+ MAINTENANCE SERVICE

KEY PROGRAM
IMMO + KEY PROGRAMMING
+ SERVICE

HEAVY DUTY
BI-DIRECTIONAL DIAGNOSTICS
+ PROGRAMMING + SERVICE

MAXISYS MS906TS

- Bi-Directional Control
- **Most Affordable Pre/PostSCAN**
- **Complete TPMS Service**
- 1YR FREE Software/1YR Warranty



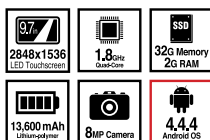
MAXISYS MS908S

- Bi-Directional Control
- Advanced Coding & Adaptations
- **ADAS Application Upgrade Ready**
- 1YR FREE Software/1YR Warranty



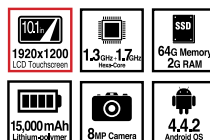
MAXISYS ELITE

- Bi-Directional Control
- Advanced Coding & Adaptations
- **ADAS Application Upgrade Ready**
- **2YR FREE Software/2YR Warranty**
- **Docking/Charging Station / 2 VCI's**



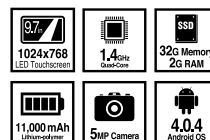
MAXIIM IM608

- Bi-Directional Control
- Advanced Coding/ECU Coding
- **MaxiFlash JVC/ECU Programmer**
- 1YR FREE Software/1YR Warranty
- **XP400 Key Programmer**



MAXISYS MS908CV

- Bi-Directional Control
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- **Heavy Duty Class 1 - Class 9**
- 1YR FREE Software/1YR Warranty
- **New Deutsch 6-Pin & 9-Pin Probe Set**



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TOOL REVIEW



Eppco Tiger Grip Gloves
The durability and built-in grip of these gloves impressed the reviewer. To read more, visit:
VehicleServicePros.com/21086275

ASK THE EXPERT



Why is analyzing the oil in your air compressor important? By analyzing a sample of used machine oil, you can determine the amount of contamination, the wear rates, and overall condition of your machine. To read more, visit:
VehicleServicePros.com/21094445

TECH TIP



Three key things to look at to get the right piping for a compressed air system are quality, energy efficiency, and ease of installation. To read more, visit:
VehicleServicePros.com/21094332

VIDEO



The Milton Industries Brake Releaser is designed to quickly and easily de-ice air brake-lines and systems. To watch the video demonstration, visit:
VehicleServicePros.com/21094302

FEATURED PRODUCTS



Texas Twister Air Hammer Pulling Kit
Lock Technology
VehicleServicePros.com/21093669



3/8" Super-Fast Mini Impact Ratchet
SP Air Corporation
VehicleServicePros.com/21094514



Clear and Tinted Safety Glasses
Milwaukee Electric Tool Corp.
VehicleServicePros.com/21094235



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The Independent Tool Authority

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Growling, howling, whistles, and wind

A vehicle's sound story starts at production and continues well into the bay.

By Sara Scullin, Editor
Sara@VehicleServicePros.com

Shh. Our vehicles are becoming quieter ... and drivers want to keep it that way.

Emerging electric and autonomous systems are leading the charge (as well as presenting unique challenges) when it comes to new noise, vibration, harshness (NVH) standards in new-to-market automobiles. The idea is to make them quiet and keep them quiet for the duration of the vehicle's lifetime.

SAE International recently covered the topic of NVH at the design level in their June issue of Automotive Engineering. Here, I learned NVH detection is not just an after-market crusade; it really begins early on in vehicle development and starts with design.

Getting vehicles to an ideal noise level is no easy feat. Engineers are tasked with creating a quality sound and feel for drivers, which might include keeping the thrill of an engine growl to some extent while also tamping down nonessential sounds.

To achieve the desired level of noise, automotive engineers strip a vehicle down to its most basic components. They employ semi-anechoic and anechoic chambers to help understand OEMs' systems and improve performance in NVH. These 'quiet chambers' dampen sounds and help identify NVH band-aids present on vehicles' structures. The engineers may further research and use solutions to minimize NVH in today's vehicles, such as integrating what the company Material Sciences Corp. (MSC) calls Quiet Aluminum and Quiet Steel, both of which are expanding from use in body components to other applications, including powertrain pans to replace castings and composites.

"The autonomous vehicle sector is creating a ... new environment of noise and

vibration solutions," says Bruel & Kjaer Automotive - Americas Director, Gary Newton. "As OEMs continue their vehicle-lightweighting crusade, vibration will increasingly have an impact on vehicle design and materials selection."

Acura now uses high-performance structural adhesives and sound-absorbing acoustic spray foam in 12 body cavities, which Automotive Engineering reports is a 15 percent increase (by surface area) in sound deadening material. Other sound 'helps' in use are triple door seals and acoustic-laminated glass.

Software-based toolsets and simulation tools for vehicle development and design come into play, too. Software may be paired with a steering wheel and pedals so drivers can experience sound and vibration data.

This month in Tool Briefing, contributing editor Barry Hoyland talks about NVH from the aftermarket perspective, specifically diagnosing NVH issues that present themselves in the repair bay (pg. 38). For shops, these types of NVH problems can be time-consuming to diagnose and can have a myriad of causes, including worn system components or wind passing over or through the vehicle. While today's diagnostic procedures and tools can help to isolate and locate noise, it's also essential to simply test and re-test these vehicles on the road, sometimes with another technician in the passenger seat.

Vehicles are becoming smarter, lighter, and quieter. This doesn't mean you won't still be working to isolate and fix the symphony of sounds that are driving your customers nuts well into the foreseeable future. **PTEN**



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PROMOTION

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PRESENTS



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[SEPT. 1 - OCT. 31, 2019]

VehicleServicePros.com, the official website of *Fleet Maintenance* and *PTEN*, in partnership with the vendors that supply the vehicle service market with the latest products to improve your business, are pleased to introduce the eighth annual Great Prize Giveaway! Who doesn't love to win something? Better yet, you don't have to pay to play!

Vendors have partnered with VehicleServicePros.com to offer you a chance to win prizes. Vote for up to five products each day, increasing your chances for those particular prizes. Visit **VehicleServicePros.com/GPG** to view all prizes and enter to win Sept. 1 - Oct. 31, 2019. Winners will be notified by Nov. 15th. *Good luck!*

How to enter:

Visit **VehicleServicePros.com/GPG** to view all prize details and enter to win.

To enter, check boxes on the entry page for your top five products. Be sure to stop back daily to improve your chances of winning.

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Bartec TPMS Prize Pack
Prize value: \$5,759



Beta Tools Collapsible Mobile Tool Cart
Prize value: \$599



Coats HTS Inflation Tool
Prize value: \$1,395



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CPS Products Smoke Wizard GLD-40
Prize value: \$900



E-Z Red Worklight and Tool Prize Pack
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KT PRO Hand Tool and Storage Prize Pack
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Launch X-431 Torque Scan Tool
Prize value: \$2,396



Legacy Flexzilla Air Compressor with Silencer
Prize value: \$4,262



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Prize value: \$711



Milwaukee Tool Power Tool, Ratchet, and Radio Prize Pack
Prize value: \$1,020



Monster Mobile 55" Tool Box and Tools Prize Pack
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OEMTools 156-Piece Tool Set and Service Cart Prize Pack
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SP Air Air Tools and Air Hose Prize Pack
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Streamlight Worklight Prize Pack
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TEXA USA eTruck Remote Diagnostics
Prize value: \$1,900

Contest rules

Entrants in the Great Prize Giveaway promotion must be a professional owner, manager or technician responsible for repairing and/or maintaining vehicles. Each entrant must be an employee of a fleet facility or vehicle service center as of August 31, 2019. Each entrant can register for up to five (5) products per day. Product registration entries may be submitted from 12:00 a.m. C.S.T. on September 1, 2019 through 11:59 p.m. C.S.T. on October 31, 2019 ("Entry Period") at VehicleServicePros.com. No other method of entry will be accepted. Endeavor Business Media, LLC's computer is the official time keeping device. Winners will be selected at random from all eligible entries received during the Entry Period. Odds of winning depend on the actual number of entries received for each product during the Entry Period. There is no limit on the number of products an entrant may win. Employees of Endeavor, Inc. or any Product Sponsor(s), their immediate family members (spouses and siblings, children and parents and their spouses, regardless of where they live), and members of their households (whether related or not) are not eligible to participate. Endeavor Business Media, LLC reserves the right to disqualify any entry. No purchase or subscription is necessary to win. Prize values may be rounded to the nearest dollar, or \$100. Purchase of or subscription to any Endeavor Business Media, LLC-related publications does not increase chances of winning. The Great Prize Giveaway promotion shall be governed exclusively by the laws of the State of Tennessee. Void in Florida and where prohibited or restricted by law. The full list of rules and regulations can be found at VehicleServicePros.com/GPG.

FEATURED NEW PRODUCTS

Engineered to address broken exhaust manifold mounting bolts

The **ProMAXX Bullit ProKit** is designed to address broken exhaust manifold mounting bolts in heavy duty diesel engines with just one device. It takes out any repair risk and eliminates the guess work of what has always been an extremely time-consuming repair, the company says. The tool is built to service Caterpillar, Cummins, Detroit Diesel, International, John Deere, Kubota, Volvo, and more.

Circle 20 on card, or enter at "e-inquiry" on VehicleServicePros.com



Features interchangeable 3/8" and 1/4" anvils

The **Makita 12V Max CXT Lithium-Ion 3/8" and 1/4" Square Drive Ratchet Kit**, No. RW01R1, is designed to loosen nuts and take the nut off the bolt. The ratchet features interchangeable 3/8" and 1/4" anvils for versatility, and has a variable speed (0-800 rpm) for a wide range of fastening applications. The motor delivers 35 ft.-lbs of max torque and when not engaged the ratchet can be used manually. The low-profile, lightweight design provides improved handling in tight spaces and overhead applications. The kit includes the ratchet, 12V Max CXT Li-ion 2.0Ah battery, charger, two anvils, and a tool bag.

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Includes power tool charging and storage

Harbor Freight ICON Storage is a line of tool cabinets and accessories designed for automotive professionals. Each cabinet is built with modern features including integrated



power, power tool charging and storage, double-wall construction, and multiple expansion options. They are available in four colors and three sizes: 36", 56", and 73". The cabinets include free delivery and a lifetime warranty.

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Kicking off the New Products section each month, our Featured New Products page includes brand new products showcased on the cover that are available to the automotive market.



Features sophisticated and intuitive software

The **Snap-on Diagnostics Triton-Dg** features Snap-on's intuitive Intelligent Diagnostics software. It includes advanced features to save time, boost productivity, and help technicians by guiding them straight through the diagnostic workflow, from pinpointing the problem to finding the fix, while filtering out unnecessary steps. Only information that is relevant to the specific vehicle and fault code is displayed on one scrolling, easy-to-navigate screen. The Triton-Dg also broadens technicians coverage and capabilities by allowing them to verify component failures.

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MONSTER MOBILESM

7 DRAWER, FULLY ASSEMBLED TOOL CARTS

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The huge locking top storage compartment has gas struts so the lid won't slam on your hands, and the protective corner bumpers protect that car's shiny new paint job.

At **30" WIDE, 22" DEEP and 42" TALL**, it's the perfect size to wheel around any shop!

These high quality carts are covered by a 1 year warranty on material and workmanship.

MST3507XG22 Green

MST3507XTG22 Textured Gray
Also available in Black: MST3507XMB22



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Item No. 199



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Offers three pocketclip positions

The **Kershaw Misdirect Knife** features style and performance in part of the value-priced Starter Series. The blade is 2.9" and offers a reverse tanto style that ensures the tip is positioned for piercing cuts and enables the Misdirect to slice through tough packaging. The blade is coated with black-oxide and finished in BlackWash, a combination that can hide scratches. The knife opens with SpeedSafe assisted opening or manually using the flipper.

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Delivers communication advantages

The **BOLT ON TECHNOLOGY Pro Pack** delivers efficiency and communication advantages to auto repair shops looking to solve the challenges of low car count, modernized professionalism, and ineffective processes. By using advanced appointment scheduling, text messaging, modernized repair orders, and in-depth business reporting, your shop can now book an appointment for all routine maintenance, send automated reminders, and better monitor the performance of your shop and customers.

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146-pc general maintenance tool kit

The **Beta Easy 2056E/E Tool Kit** from **Beta Tools** organizes 146 tools with its foam tray and removable tool panel. The durable plastic general maintenance tool kit includes: 1/4" and 1/2" drive reversible ratchets, 1/4" drive sockets (4mm, 4.5mm, 5mm, 5.5mm, and 6mm-14mm), 1/2" drive sockets (10mm-19mm, 21mm, 22mm, and 24mm), combination wrenches (8mm-19mm), a 10" adjustable wrench and slip joint pliers, an engineer's hammer, an electrician's scissors, four slotted and two Phillips screwdrivers, a 31-pc bit set, a mini hacksaw, a utility knife, a 5M measuring tape, a mains testing screwdriver, hex key wrenches (1.5mm, 2mm, 2.5mm, 3-6mm, 8mm, and 10mm), a 36-pc micro screwdriver set in a case, and construction pincers, along with diagonal, combination, and needle-nose pliers.

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Supports up to 10 lbs

The **Hansen Global Magnetic Screwdriver Organizer**, No. 8210, holds 11 screwdrivers and the industrial strength rubber coated magnets supports up to 10 lbs. The organizer features twist and locking technology to secure tools and hangers to the ToolHANGER board. The organizer is made in the U.S.A. and backed by a lifetime guarantee against workmanship and defects.

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Limit 1 - coupon per customer per day. Save 10% off on any 1 item purchased. Cannot be used with other discount, coupon or any of the following items: Inside Track Club membership, Extended Service Plan, gift card, open box item, or 3 Day Parking Lot Sale item. Not valid on prior purchases. Non-transferable. Original coupon must be presented. Valid now thru 11/27/19.

NEW PRODUCTS

Available in four different profiles

The **Prevost PrevoS1 Quick Safety Coupling** combines technology and reliability that is safe and easy to use. To quickly change tools, simply press the button one time to disconnect with no risk of dangerous hose whip. When paired with a Prevost plug, it is guaranteed leak free for three years. The non-scratch composite body is available in four different profiles, is ergonomic, and is constructed of static-free material. The company says this coupling is ideal for any shop application.



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Features a low profile design

The **E-Z Red Collapsible Magnetic Parts Tray**, No. EZTRAY, allows for low profile storage, coupled with versatility to expand and securely hold parts. Using a high-tensile silica material, the EZTRAY will hold up to the harshest conditions and is impervious to most automotive fluids. The inside base plate of the EZTRAY is made of polypropylene plastic which integrates five strong neodymium magnets. These magnets secure ferrous metal parts to the inside of the tray. The base plate will also stick to most metal surfaces. The expanded depth is 2" deep and the width is 4.25". The EZTRAY is available as a tri-color three pack and includes red, orange, and green.

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Portable toolbox with drawers

The **Beta Tools Tool Trolley + 108-pc Tool Set**, No. C27S-5927VU/M, is designed to keep mechanics' tools organized and easy to haul. The tool trolley collapses for easy transportation or storage. The pull-out drawers contain foam trays organizing combination wrenches, screwdrivers, pliers, hex keys, a 31-pc bit set, a hammer, a center punch, a chisel, a 13-pc 1/4" drive metric socket set, a 1/4" universal joint, a 1/4" drive handle, a 1/4" swivel T-handle, a 16-pc 1/2" drive socket set, a 1/2" universal joint, a 1/2" wobble extension bar, and a 1/2" swivel T-handle.

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TOO HOT TOO COOL!



HOT ROD RED/BLACK

Price: \$64.95 + S.H.
(Sugg. Retail)

Sizes: 5 - 13, Whole sizes only.

*Not for shop use or to be worn as work footwear.



OCTANE COOL GRAY

Price: \$105.00 + S.H.
(Sugg. Retail)

Sizes: 7 - 10.5, 11, 12 & 13

*Not for shop use or to be worn as work footwear.

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✓ Now Bundled with Mega-CAN

Harness the capabilities of **wiTECH 2.0** with this FCA-verified add-on module!

✓ Includes J2534 Toolbox

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Features 64" test leads

The **Electronic Specialties Automotive Test Probe Kit**, No. 805, features test leads with an extended length of 64". The kit also includes extra sharp test probes, and a set of large jaw crocodile clips designed to clip to battery posts for solid ground testing. The test leads fit almost all digital multimeters and can be used with hand-held scopes. The kit comes in a hard storage case.

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Reads thousands of infrared temperature spots over a surface area

The **Launch Tech USA Thermal Imager** reads thousands of infrared temperature spots over a surface area and combines those colored heat signals with an image of the object to make a thermal image. The Thermal Imager shows high temp, low temp, central temp, and a heat color code. It measures temperatures from -4 to 842 degrees F with a +/- two percent accuracy. The unit can store up to 20,000 pictures and offers auto shut down.

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Features a magnetic base

The **Cliplight Spotlight Mini**, No. 111111, features a magnetic base and adjustable joint for different angles. The 5W COB light emits 600 lm for one and a half hours or 300 lm for three hours. It is IP65 water-resistant and includes a micro USB charger cable.

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FROZEN/DAMAGED LUG NUT PROBLEMS?

LT1350 LUG RIPPER II

- Don't torch frozen/damaged lug nuts off just drill out the lug nut/stud threads only in 11 minutes or less
- **Available from your local mobile tool dealer**
- 16mm Tungsten steel drill bit with 4 carbide cutters allow for speed & durability
- Includes 4 drill guides - 17mm - 11/16" 21mm - 13/16" 19mm - 3/4" 23mm - 7/8"



Tungsten drill bit w/4 carbide cutters up-close



Drills out female/male threads on lug nut/stud only!



PATENT PENDING

GOT A FROZEN HUB?

LT830A HUB SHOCKER

- Safely remove all frozen hubs instantly without damaging axle
- Universal fit mounts to all axle bolted hubs - 5, 6 & 8 lug hubs
- Mounts to two studs using supplied flanged nuts in seconds
- Use w/5 lb. hammer to knock frozen hubs out of axles
- Flanged nuts included for improved safety & performance
- **Ideal for Dodge and other HD trucks**
- Two mounting holes in 3/4" steel back plate
- 1/4" steel square tubing and striking plate



IN USE



Included flanged nut sizes - 2 each
12mm - 1.50
14mm - 1.50
7/16" - 20
1/2" - 20
9/16" - 18
5/8" - 18

See it work on YouTube



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Triplies the capacity of parking areas

The **BendPak HD-973P Four-Post Parking Lift** offers a cost-effective way to triple the capacity of typical parking areas. This parking design can be used indoors or outdoors, and the lift allows the storage of three vehicles in a single parking space. The upper platform accommodates vehicles weighing up to 7,000 lbs, and the lower deck handles up to 9,000 lbs. The HD-973P is ideal for sedans, SUVs, and full-size trucks.

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Built for efficiency and durability

The **OEMTOOLS 36" 8-Drawer Tool Cart**, No. 24565, features welded dual-wall construction with 19 gauge steel for durability. The tool cart also features heavy duty 5" by 2" casters, four corner bumpers on the edges to prevent dents or dings, and full extension ball bearing drawers to slide in and out easily. The drawers each have a 100-lb capacity, and the lock system automatically locks the drawers when the cart is in motion.

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Engineered for extreme conditions

The **Durabook Z141 Fully Rugged Laptop** is engineered for indoor and outdoor conditions, including the most extreme environments. The sleek design features a range of built-in customization possibilities, proprietary DynaVue technology, 14" full HD sunlight readable multi-touch display, and hot-swappable battery technology for non-stop power. The 10-point capacitive multi-touch panel has four touch modes: glove, stylus, water, and finger. The aluminum-magnesium alloy chassis has a 6' drop survivability.

Circle 44 on card, or enter at "e-inquiry" on VehicleServicePros.com

Converts shop air into nitrogen

The Dent Fix EZ Nitro Plastic Repair Station

- Extended, No.

DF-EZN1G/DXE,

converts shop

air into nitrogen

to eliminate the

need to refill

nitrogen bot-

tles by utilizing

the company's

Nitrogen Plastic

Welder with a Dual

Chamber Nitrogen Generator. The propi-

etary Flow Adjust Switch Technology (FAST)

system simplifies nitrogen welding and

eliminates flow adjustments by the user,

reducing set up time and project comple-

tion. The kit includes a thermoplastic hot

stapler kit complete with seven varieties of

staples, three mini die grinders with three

different bits, hand seamer, heat gun, ring

hammer, multi-clip pliers, shaping tools,

trim removal tools, and plastic welding

rods (ABS, polypropylene, polycarbonate,

polyethylene, and polyurethane). It also has

a high pressure N2 outlet to allow the user

to attach air-powered tools to the side of

the unit and run on nitrogen.

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VehicleServicePros.com



Helps organize large hand tools and other supplies

The **Klein Tools Canvas Zipper Bags** enable convenient storage for larger hand tools and materials. The zipper bags measure 18" long by 8" high and 3.5" wide, and are constructed with No. 8 canvas for added durability. The bags are available in four distinct colors, as well as a three-pack. There is also a brass grommet in the top corner for hanging and storage.

Circle 43 on card, or enter at "e-inquiry" on VehicleServicePros.com



Removes locking lug bolts quickly, safely, and without damage to the wheel or rim

The **CTA Manufacturing Corp. Lug Driller Kit**, No. 1775, removes locking lug bolts quickly, safely, and without damage to the wheel or rim. Great for European vehicles with lost or damaged locking lug bolt keys. The Lug Driller keeps operation time at approximately eight minutes per wheel, according to the company. The Lug Driller Kit comes with all the necessary components needed to remove the damaged lug bolt. The kit includes: four nylon internal centering guides, three metal external centering guides, a metal centering guide for free turning lugs, two hard drills with tungsten carbide tips, four extractors, an impact extractor holder, and an impact extractor remover.

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Features an overall length of 13.8"

The **SP Air 4" Extended Reach Cut Off Tool**, No. SP-7234, has an overall length of 13.8" and weighs 3.3 lbs. The SP-7234 uses a disc size of 4", can reach a free speed of 14,000 rpm, and has an air consumption rate of 0.85m3 per minute. Features include a rear exhaust, a wheel cover, and a safety lever on the handle. Accessories included are one wheel wrench, one hex wrench, and one No. SP-7234-100 cutting wheel.

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NEW PRODUCTS

Provides access to updates through the TPMSconnect Portal

The **Snap-on TPMS4 Software License** gives technicians access to continuous updates through the TPMSconnect Portal. The software keeps the TPMS4 tool current by updating sensor brands, adding vehicle models and new protocols, along with enhanced programmable sensor coverage. Using a registration code, technicians can download the update through the TPMSconnect portal. The software license is valid for 12 months after purchase.

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Offers fast setup

The **Atlas Automotive Equipment Compact Wheel Aligner**, No. ATEWA40, features the latest CCD technology to carry out precise wheel alignment and is designed for those who may not have offered computerized wheel alignment before. Using a 'hang-on' clamp design, setup is fast. A comprehensive vehicle database provides the necessary data and readings, and adjustments can be seen live on screen as they happen. All necessary accessories are included such as PC, printer, turn plates, and calibration kit.

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Your Go-To Tools... **NOW ON THE GO**



Unlike traditional portable tool storage carts that can be bulky and cluttered, the C27S Collapsible Mobile Tool Cart features two easy-to-organize center drawers with ball bearing slides that move side-to-side for two-way opening and easy access to the large lower compartment, saving you time and energy.

Designed for effortless transportation within your shop, the Collapsible Mobile Tool Cart is big enough to carry all your essential tools, yet compact enough to place next to a vehicle or under a workbench.



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Beta
Italian Design since 1939

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Designed to remove hard-to-reach glow plugs

The **CTA Manufacturing Corp. Glow Plug Puller Kit**, No. 7804, removes glow plugs even when the compartment is not easily accessible. It is useful in narrow engine bays with glow plugs nearest the fire-wall, and allows technicians to remove broken glow plugs from the top of the cylinder head without damage. The Glow Plug Puller Kit includes an electrode puller, an electrode reinforced drill with two guides, two specially centered mills with one mill support preventing damage to the head, a tap, and a slide hammer extractor to pull out broken glow plugs. Three refreshing tap sizes are offered: M8, M10x100, and M10x125 with hex drive.

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24447
16 Piece
Locking Lug
Master Key Set



25245
Infrared
Thermometer



24543
Wide Mouth
Tool Bag with
Rigid Base
[Tools Not Included]



24418
1/2 Inch Drive
Compact Air
Impact Wrench



87032
9 Gallon Upright
Portable Oil Drain



24934
29 Inch Portable
Tear Down Tray



24864
Tire Transport Dolly



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NEW PRODUCTS

Designed to handle all powersport vehicles

The **AMGO MC-1200 Lift** is a professional motorcycle and ATV lift with a 1,200-lb capacity that can handle all powersport vehicle needs. From tire changes and preventive maintenance to motor work, the MC-1200 can help technicians do it quickly, safely, and efficiently, the company says.

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Cools spaces up to 1,291 sq. ft.

The **OEMTOOLS 23975 Variable Speed Evaporative Cooler** is designed for quick and efficient cooling. The 0.33hp fan pushes the cooled air at 8,246 CFM into the surrounding area—cooling spaces up to 1,291 sq. ft. This unit is outfitted with a durable, high performance cooling pad and air swing function to efficiently circulate airflow. The unit connects directly to a water source and will hold up to 15.8 gallons of water.

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Boosts performance and seals leaks

Bar's Leaks Hydraulic Manual Clutch Fluid with Stop Leak, No. 1350, is formulated to seal leaks while improving performance and increasing clutch life. This product reconditions seals and O-rings to stop the leaks and prevent new ones. Its full synthetic formula provides trouble-free, smooth shifting in any hydraulic clutch application, and can be used in place of regular clutch fluid, the company says.

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High-End Functionality with World-Class Support

ArtiPad is a revolutionary smart solution for passenger car diagnosis based on the multitask-capable Android operating system.



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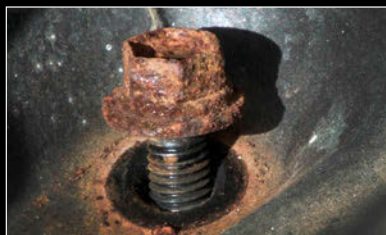
A revolution in extraction sockets.



BOLTBITER™

Extraction Sockets

Bolt Biter reinvents extraction with a bi-directional design that tightens and loosens damaged fasteners using tapered gripping flutes instead of cutting blades. Bolt Biter grips rusted and rounded fasteners instead of cutting into them for a 10x longer life than the competition under impact power, all backed by our Lifetime Warranty. Master sets include "minus-sized" sockets designed to fit fasteners rounded well beneath their original size. Forge Ahead with GEARWRENCH.



Bi-directional design lets you re-use those hard-to-replace specialty fasteners



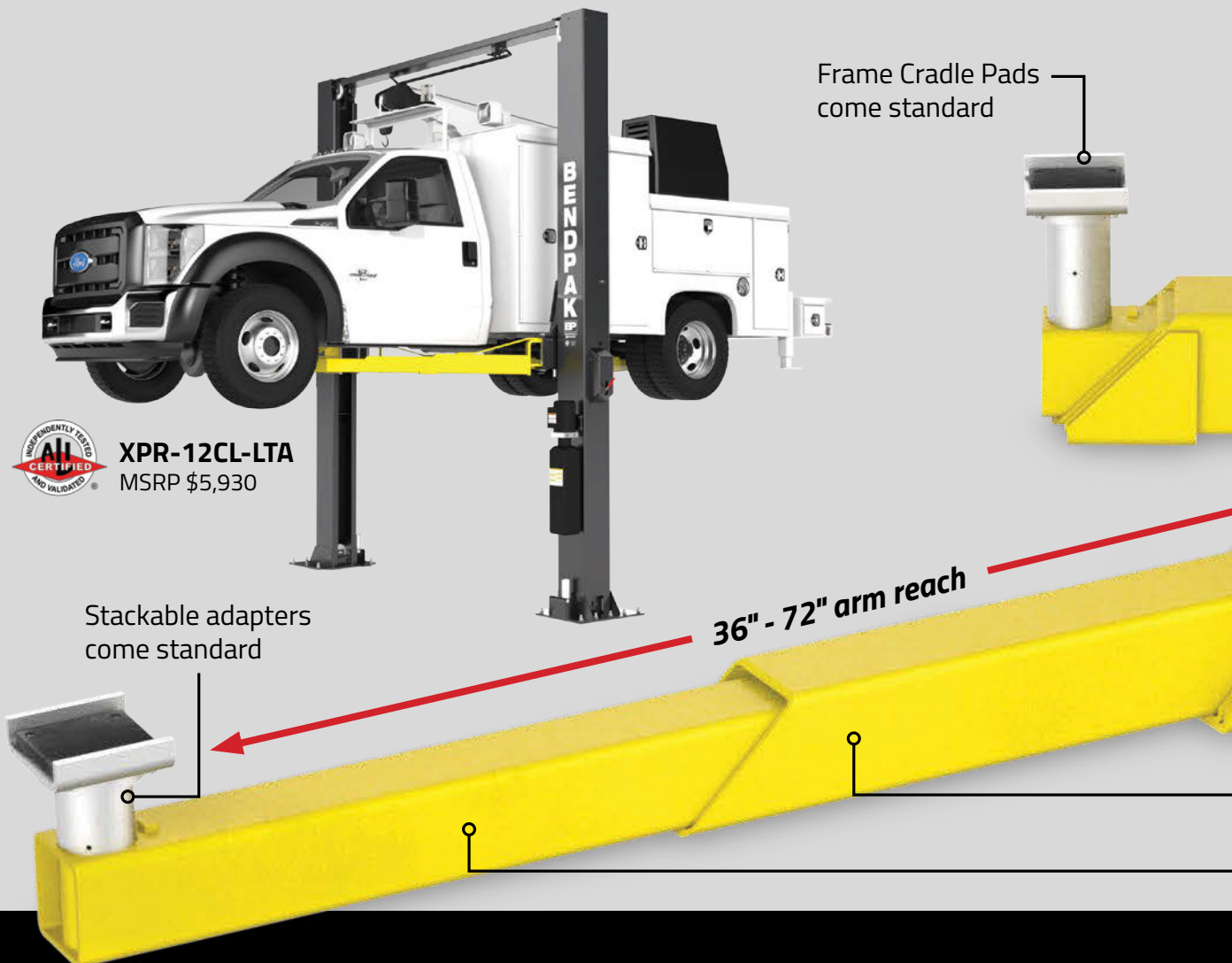
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WHEN BALANCING SAFETY AND BENDPAK GOES THE

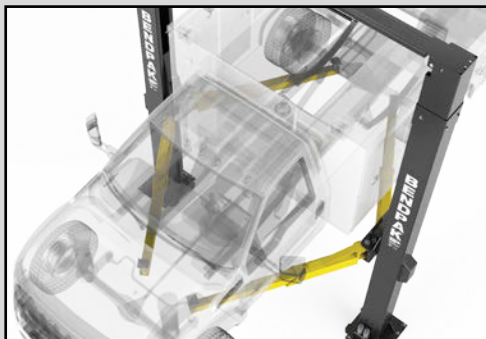
LONG-REACH ARMS PROVIDE BETTER CENTER-OF-GRAVITY LOADING

When servicing trucks and vans with extremely long wheelbases, longer-reach arms deliver a more stable lifting solution. The lengthy triple-telescoping arms on BendPak's new **ALI Certified XPR-12CL-LTA** extend to 72" long – that's six feet in length and over one foot longer than almost any other lift or brand in its class. And with rugged BendPak dependability combined with a 16-piece adapter set, you'll realize that balancing safety* and worker productivity has never been so perfectly matched. For more information visit www.bendpak.com/LTA or call **1-800-253-2363**.



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ND PRODUCTIVITY, DISTANCE.



- 12,000-lb. lifting capacity
- Dual direct-drive hydraulic cylinders
- Oversized 53" tall carriage for superior strength and durability



3-stage long-reach telescoping arms

Zinc-plated arm restraints and connecting pins

Oversized A36 steel base plates

*Always read and follow all safety warnings that accompanied your lifting equipment at the time of purchase. More information regarding vehicle lift safety is available directly from BendPak or from the Automotive Lift Institute.



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BP BendPak®

NEW PRODUCTS

Features a load capacity of 187 lbs

The **Martins Industries Power Lifter** is designed to change the tires on a passenger vehicle, SUV, or light truck without injuring the technician's back, neck, or shoulders. It has a load capacity of 187 lbs and features a safety strap to hold wheels in place, three automatic lift speeds, and a hardware tray and impact wrench holder to keep tools in place. The ergonomic handle and pivoting casters make it easy to handle and move around. The Power Lifter comes with two 12V rechargeable batteries and a charger.



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Designed with simple plug and play features

The **Matco Tools MaximusFlash+** is an easy-to-use remote diagnostics tool, enabling flashing and reprogramming in the shop. The MaximusFlash+ is designed with simple plug and play features. Simply connect the device to the vehicle, connect the battery support and internet, and submit a diagnostic service request online. Within 30 minutes, a Matco factory-certified diagnostic technician will call the shop and complete the flashing service. For diagnostics needs, technicians can also request a diagnostic scan service and have a Matco diagnostic expert talk them through the OE scan tool results.

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Provides up to 1,200 lm in any work area

The **Schumacher Electric 15W COB LED Floor Lamp**, No. SL879U, is designed to provide up to 1,200 lm to light up any work area. The floor lamp features two settings, a high (1,200 lm) and low (450 lm). It has an operating time of two hours on high and five and a half hours on low. The floor lamp also has a 180 degree adjustable stand, stepless dimmer mode, aluminum body, and rechargeable 7.4V 4Ah Li-ion battery. It comes with a car charger and an AC wall charger.

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MAKE YOUR MARK WITH THE ULLMAN DEVICES METAL MARKER



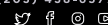
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Features a 5 to 125 ft-lb working range

The **Snap-on 3/8" Drive TechAngle Flex-Head Torque Wrench**, No. ATECH2FR125B, features a 5 to 125 ft-lb working range allowing technicians to use the torque wrench for a wider array of applications including passenger tires, engines, and suspensions. The heavy duty yoke provides a smooth indexing movement of the ratchet head up to 15 degrees, and the smaller yoke-to-ratchet gap reduces potential pinch points for increased safety. The tool also features six scales for precise measurements in both metric/SI and imperial units, plus angle. The wrench operates on AA batteries and comes with a two-year warranty.

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For both import and domestic vehicles

The **CTA 26-pc Terminal Tool Kit**, No. 9812, is designed using high quality steel with tips that will not bend or change position over time. The set includes an application chart with a cross reference for terminal brands such as Bosch, Delphi, Deutsch, and Sumitomo, as well as universal designs. The terminal tools are for import and domestic vehicles, plus special tools for coolant sensors, wiring harnesses, and terminal blocks on most modern vehicles.

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Allows bidirectional access to grip under the clips

The **Steck Manufacturing Extended Clip Release Tool**, No. 21710, is designed to access door panel clips that are not easily accessible, saving technicians time and the possibility of breaking the clip. The tool is 18" long which allows bidirectional access to grip under the clips that sit deep in the door panel. The tool is laser cut from 1/8" hot rolled steel and has a beveled end. Using the beveled end with the large 6" handle allows technicians to twist and raise the interior door panel clips. It is made in the U.S.A.

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STREAMLIGHT®

CHARGE

LIGHTS THAT

THE RIGHT TOOLS TO SEE THE JOB THROUGH. STREAMLIGHT'S USB PRODUCTS ADD THE CHARGE-ANYWHERE CONVENIENCE AND COST SAVINGS OF USB CHARGING TO THE DURABILITY, DEPENDABILITY AND INDUSTRY-LEADING RUNTIMES THAT HAVE KEPT STREAMLIGHT AND OUR CUSTOMERS RUNNING FOR OVER 45 YEARS.




MicroStream®
USB Pocket Light




Stylus Pro® COB
Worklight/Penlight



Bandit® Pro
USB Headlamp



Twin-Task®
USB Headlamp



18650
USB Battery



ProTac® HL-X
USB Flashlight

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NEW PRODUCTS

Designed to help reduce and manage heat stress

The **Klein Tools Cooling Towel** is designed to help reduce and manage heat stress. The towel features advanced PVA cooling technology to retain moisture and stay cooler than the surrounding air. It activates in under a minute and stays cool for hours. To activate or re-use, wet the towel and gently wring out the excess water. The Cooling Towel is available in two colors: blue (No. 60090) and gray (No. 60093).

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New coverage, codes, special functions, and tests added

The **Bosch 3.8 Software Version for ADS 325 and 625** diagnostic scan tools adds new coverage, including codes, live data, special functions, and tests to ensure the ADS series tools offer comprehensive diagnostic coverage for technicians. Software Version 3.8 adds coverage to a wide variety of Asian, domestic, and European manufacturers and vehicles through the 2019 model year. In addition, new ADAS dynamic camera calibrations have been added to select manufacturers, as well as pre- and post-scan coverage for numerous models.

Circle 67 on card, or enter at "e-inquiry" on VehicleServicePros.com

Durable glass-reinforced nylon handle

The **CRKT Twist and Fix Knife Repair Tool**, No. 9903, is a stainless steel multi-tool used for everyday repair jobs. The tool is held together with a low-profile frame, and each element snaps in and out with ease. Instead of being housed in fixed, eternal bearings, each element in the toolset revolves around a central axle, lengthening the tool you need and keeping the others out of the way. The Knife Repair Tool comes with torx sizes T5-T10. Additionally, the tool features a durable glass-reinforced nylon handle.

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WINNERS OF THE MAYHEW SPONSORED NASCAR WHELEN MODIFIED TOUR CREW CHIEF POLE AWARD

Congratulations!

Doug Coby



Justin Bonsignore



Tommy Catalano



All Winning Crew Chiefs During the First Half of the Season Were
Awarded a Mayhew Tools Dominator Big Stick to Celebrate their Big Win!



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Designed to detect a 5 percent hydrogen/95 percent nitrogen tracer gas mixture

The **Robinair LD9-TG Tracer Gas Leak Detector** is designed to locate the source of a system leak using UV wavelength technology along with tracer gas instead of common liquid refrigerant. The tool can detect an A/C system leak as small as 0.5 oz. per year for R-134a refrigerant and .015 oz. per year for R-1234yf refrigerant. Once a leak is detected, the leak size indicator bar graph will display on the full color detector screen. The tool is compatible with most hydrogen-based tracer gases and can be used in both light and heavy duty applications.

Circle 70 on card, or enter at "e-inquiry" on VehicleServicePros.com

Features a spring-loaded friction ball retainer

The **Grey Pneumatic 3/4" Drive Impact Extension Set**, No. 3304E, contains four extensions in 3", 7", 10", and 13" lengths. These extensions feature a spring-loaded friction ball retainer for positive socket retention. Extensions come packaged in a compact blow molded case for easy transport to job sites or for tool organization within a tool box.

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A panel of Snap-on judges will review each entry and choose the winners. Prize winners will be asked to provide video clips about their new tool, such as receiving and unboxing, first impression, using the tool and how it is helping their productivity. We also have an additional prize of one \$250 Snap-on gift certificate for photo entries.

For more details go to snapon.com/winazeus

Good luck!

For competition rules please visit snapon.com/winazeus

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NEW PRODUCTS

Works on most GM LS-type engines

The **Lisle valve spring compressor**, No. 16560, works on most GM LS-type engines. It allows for removal of the valve spring without removing the rocker stand or other rockers and can be used on or off the vehicle. Dimensions are 4.25" width by 7.25" length by 0.5" depth.

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Grinds aluminum with minimal clogging

The **Lawson Products Blue-Kote Soft Material Application Flap Disc** is designed to grind aluminum and all non-ferrous metals at high speed with minimal clogging or loading, while keeping the work surface temperature low for quality finishing. The Type 27 abrasive disc can also be used with composite materials such as carbon fiber and plastics. The flap disc grinds and finishes simultaneously to save process time and eliminates the need for product change-over. The 4.5" diameter disc is available in 40 and 60 grit.

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GREAT PRIZE GIVEAWAY 2019



Magnetic base tilts and rotates

The **Alert Stamping Rechargeable COB Flood Light**, No. LZR10C, offers a dual output of 1200 and 600 lm, and has a magnetic base that tilts and rotates toward where light is needed. The flood light has an on/off push button, USB-C charger, and indicator lights to show charging status. It is also rain tight and can be used as a USB power bank to charge your device.

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Adjusts between 17" and 22" on a comfortable, square-seat design

The **Adjustable-Height Swivel Seat Creeper**, No. 42304A, from Williams allows technicians to sit at heights between 17" and 22" on a comfortable, square-seat design. The creeper features four 2-1/2" diameter hooded casters that shield technicians' clothing from dirt and grease. In addition, the steel-tube frame supports the seat's cylinder for strength, and a bottom pan can be used for storage of tools and small parts.

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Remove plastic oil pan drain plugs

The **Cal-Van Tools 4-pc Oil Pan Plug Remover**, No. 38200, contains tools and adapters to remove plastic oil pan drain plugs found on many late model Ford, Volkswagen, Audi, and BMW vehicles, the company says. The tool is also applicable to the Ford/Lincoln plastic oil pan drain plugs of these engines: 2.7L, 2.7L (2018), 3.0L, 3.3L, 3.5L Turbo, and 5.0L (2018). The adapters will not damage drain plugs and are designed to slot in and easily release these plugs. The set comes in a hard case for easy storage.

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NEW PRODUCTS

For ADS 325 and ADS 625 diagnostic tools

The **Bosch BAT 120 Wireless Battery and Starter/Charger System Tester** is designed to wirelessly transmit data via Bluetooth connectivity to a pre-installed app on the Bosch ADS 325 and ADS 625 diagnostic tools. It is also compatible with OTC Encore and Evolve diagnostic tools running software version 2.10 or higher. The BAT 120 works on 6V and 12V automotive batteries, including regular flooded, enhanced flooded, absorbent glass mat (AGM), EV, and start-stop, as well as batteries with as little as 1.5V. It also conducts 12V and 24V charger/starter systems tests and can test a vehicle's battery charging system to gauge alternator health and troubleshoot charging issues.

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Convenient, pocket-sized design

The **Klein Tools Portable Rechargeable Battery**, No. KTB1, features a compact, pocket-sized design ideal for everyday use. The KTB1 offers the convenience to charge everyday essentials such as phones, headlamps, speakers, fans, and other jobsite accessories. The battery has a rugged exterior for added durability and illuminated ports for easy identification in low-lit environments. It features a 10050 mAh capacity battery with up to 18W of total power.

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Uses shock absorption for increased durability

The **Vessel Tool Impact Ball Screwdriver Bit** is a high durability bit designed to be used with power tools and provide longer durability. The bit can be used two ways, directly in the tool or in a bit holder of a power tool. These bits may also be used with hand tools. The Impact Ball Screwdriver Bit uses a VoHA alloy in its steel, as well as shock absorption at the ball torsion part of the bit for increased durability.

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Features a 2,500-lb capacity

The **Norco Powertrain Lift Table**, No. 72850A, handles powertrain components like engines and their transmissions, engines with transaxle assemblies, rear ends, and large electric vehicle batteries. It also serves as a work table where components can be lowered to a convenient work height for repairs. The scissor lift design provides 360 degree access to any component and uses a hydraulic foot pump. A 5' extension hose is included and can extend the foot pump to provide handsfree operation around the lift's perimeter.

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VehicleServicePros.com

Built for long, tough jobs

The **Channellock 8" XLT Long Nose Pliers**, No. 318I, are designed to reduce hand fatigue with their Xtreme Leverage Technology (XLT). The long nose pliers are made of high carbon U.S. steel and offer a crosshatch pattern on the jaws for a tighter grip to pull objects in any direction. The insulated grip has a 1000V rating to ensure optimal safety during the most dangerous jobs. The pliers are made in the U.S.A.

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Extracts self-piercing, flow form, and solid rivets

The **Wurth Speedpress 8T PushPull**, No. 920055859, is an automatic air-powered riveter that extracts self-piercing, flow form, and solid rivets in aluminum, steel, and combination/hybrid body vehicles. The Speedpress 8T PushPull installs quickly and easily, is maintenance-free, and has a two-year manufacturer's defect warranty.

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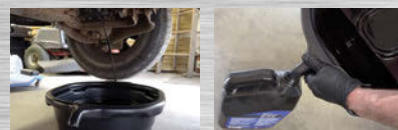
Quickly removes difficult glass

The **Equalizer Blackhawk 20-Volt Battery Powered Auto Glass Cut-Out Knife**, No. BH2019, has a heavy duty, 20A brushless motor to provide ample power for quickly removing the most difficult glass. Its compact and lightweight design allows for maneuvering in tight areas and features a bright LED light to provide visibility in dark work areas.

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Lisle

NEW TOOLS



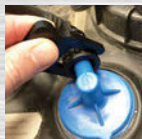
17972 4.5 GALLON OVAL DRAIN PAN - BLACK
17982 4.5 GALLON OVAL DRAIN PAN - GREEN

new drain pan design provides 60% larger catch area for easier fluid draining. Smooth pan design is easy to wipe out and clean. 6.25" pan height to fit tight spaces. 1.125" outer diameter spout for quick and easy pouring of used fluids into most jugs. The anti-splash lip helps prevent spilling when carrying or pouring. Multiple hand positions for carrying. Made of high-density polyethylene material that is resistant to chemicals and solvents.



37450 DEF DISCONNECT SET

Compact design allows easy access to hard-to-reach DEF fill and breather lines on 2012 and newer Ford Power Stroke and Dodge Diesel. The disconnects are used to depress the locks that retain the DEF lines allowing removal. Three sizes for many applications.

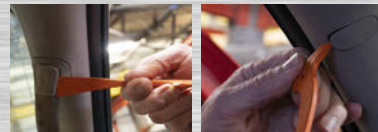


14150 WHEEL STUD PILOT PIN MASTER SET

Easily remove and install wheels on vehicles with lug bolts. Four pairs of Metric threaded wheel stud pilot pins allow you to hang the wheel without having to balance the wheel on the small lip of the hub. This helps prevent the wheel from falling and causing damage or injury. Set includes 2 each of 12mm x 1.25, 12mm x 1.5, 14mm x 1.25 and 14mm x 1.5 threaded pins.



71650 MANIFOLD DRILL TEMPLATE FOR GM ECOTEC 3.5L & 6.2L
Helps remove exhaust studs without damaging the cylinder head. Tapered bolts center the base plate over bolt holes and slip fit bushing allows you to move from hole-to-hole without moving base plate. Includes bushing to drill to tap size when extractor cannot be used. Drill depth gauge makes sure water jacket is not pierced.



68240 UNIVERSAL TRIM HOOK TOOL

Double-ended trim hook works on door moldings, dash trim and door seals. Designed to safely pry small bezel components from interiors without damage. Made of durable plastic.



39220 TRANSMISSION OIL COOLER DISCONNECT SET FOR FORD

Two sizes, 3/8" and 1/2". Use 3/8" size for 2003 and later Ford V8 Explorer, 2004 and later Ford F150 and Cadillac CS. Use 1/2" size for Ford Super Duty trucks, F250, F350 and F450.



63080 14MM SPARK PLUG SOCKET, 12 PT.

Thin wall, 14mm, 12 pt. Socket with swivel to remove and replace spark plugs from narrow tubes. Rubber insert holds the spark plug in the socket during removal and installation. Use with 3/8" square drive.



37350 TIMING TOOL FOR FORD 3.5L TURBO

For use when servicing the timing chain on 2017 and newer Ford V6 3.5L turbo engines. The tool helps ensure camshaft alignment during the removal and installation of the timing chain. The size is slightly larger than the 37100 / 37200.



42050 42060 42070 PUSH PIN PLIERS WITH SPRING

For easy removal of plastic push pin type panel fasteners with center pins. Angled pliers tips will not damage the pin or anchor. Spring action makes tool easier to use. Plier tips are angled 30° - 42060 / 80° - 42050 for use in tight spaces such as wheel wells. Designed to prevent damage to the pin or anchor. Dual durometer grips for comfort.

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NEW PRODUCTS

Removes and replaces spark plugs from narrow tubes

The **Lisle 14mm, 12-point Spark Plug Socket**, No. 63080, removes and replaces spark plugs from narrow tubes. The socket features a rubber insert to hold the spark plug in the socket during removal and installation. Use with 3/8" square drive.

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Reading accuracy of 0.1 psi

The **PCL Air Technology Accura MK4 Tire Inflator** combines the ruggedness of a metal analog inflator with the accuracy and ease of use of a digital gauge. The hand-held tire inflator offers a large LCD, backlit display, and selectable units of pressure. With a reading accuracy of 0.1 psi, each unit is individually tested and includes a calibration certificate.

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Isolates sound with no unwanted noise

The **JS Products Steelman EngineEAR Stethoscope**, No. 65001, consists of an ultra-sensitive microphone and amplifier providing a full range of sound with no missing frequencies. The professional noise-canceling headphones isolate sound with no unwanted sounds bleeding in. Using the flexible shaft with the metal probe for picking up sounds and vibrations, users are able to pinpoint noises and locate worn bearings and bushings, noisy valves and lifters, broken or worn gear teeth, faulty fuel injectors, wind or air leaks, and annoying squeaks and rattles. The stethoscope comes with one 9V battery.

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Coupler and blow gun combo

The **Coilhose CoBlo** is a combination quick coupling and blow gun in one. The unit is convenient for metalworking or wood-working operations, which often produce shavings or sawdust making it difficult to view the work surface. A quick burst or two from the CoBlo allows the operator to get back to work quickly without having to disconnect the tool, connect a dedicated blowgun, and then reconnect the tool. The CoBlo can be used with an air tool connected or disconnected and is currently available in 1/4" industrial, automotive, and ARO interchanges.

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Features an ASME-certified 40-gal tank

The **Puma Two-Stage, Vertical-Tank Air Compressor**, No. TE-6540V, is designed for efficiency, power, and lower total cost of ownership. The compact-sized compressor features an ASME-certified 40-gal vertical tank, 6.5 hp 208-230V single phase induction motor with built-in overload protector, an industrial duty combination pressure switch starter, and a cast iron two-stage three cylinder radial pump. The compressor has a maximum of 175 psi and delivers 17 cfm at 90 psi and 16 cfm at 175 psi.



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Features spring-activated casters

The **QSP Heavy Duty Alignment Stands**, No. DB-20K, feature four spring-activated casters and four adjustable feet per stand. Each stand includes two wheel stops and has a 20,000-lb capacity. The casters allow technicians to move the stands around the shop easily and to disengage when minimum weight is applied. A minimum of 750 lbs is needed to compress the springs on the casters to ensure the stand is stable. The stands incorporate turnplates and are sold in pairs.

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Diagnosing NVH

Understanding the different types of noises, what can cause them, and the appropriate methods to find the source are essential in diagnosing noise, vibration, harshness issues.

By Barry Hoyland, Contributing Editor

Noise, vibration, harshness (NVH) issues can be time-consuming to diagnose. This is mainly because noise and vibrations can use the vehicle's structure (chassis) as an antenna to transmit the noise throughout the vehicle, making it difficult to pinpoint the exact cause of a noise.

Additionally, noises can be caused by worn components in just about any system or by wind passing over or through the vehicle. Let's start off by explaining different types of noises and their possible causes, then we will discuss the best tools to use to find the source of a noise.

As always, use your vehicle information source to determine if there are any technical service bulletins (TSBs) related to the issue the vehicle is having. You should also be aware that there are some excellent diagnostic procedures available for isolating and locating noise or vibration issues on a vehicle in ALLDATA's information database.

GROWLING OR HOWLING NOISES

Typically, a growling noise is caused by a worn bearing. If the noise occurs when the engine is running and the vehicle is stationary, it is due to an engine-driven component. The noise level may be constant or change with engine speed. Engine-driven components include water and power steering pumps, belt idlers and tensioners (including timing belt components), alternators, and air conditioning compressors. Some of these parts can be isolated by turning them off or removing a belt to determine if the noise is eliminated. In other cases, an electronic stethoscope, such as the Steelman EngineEAR, can be used to locate the source of the noise.

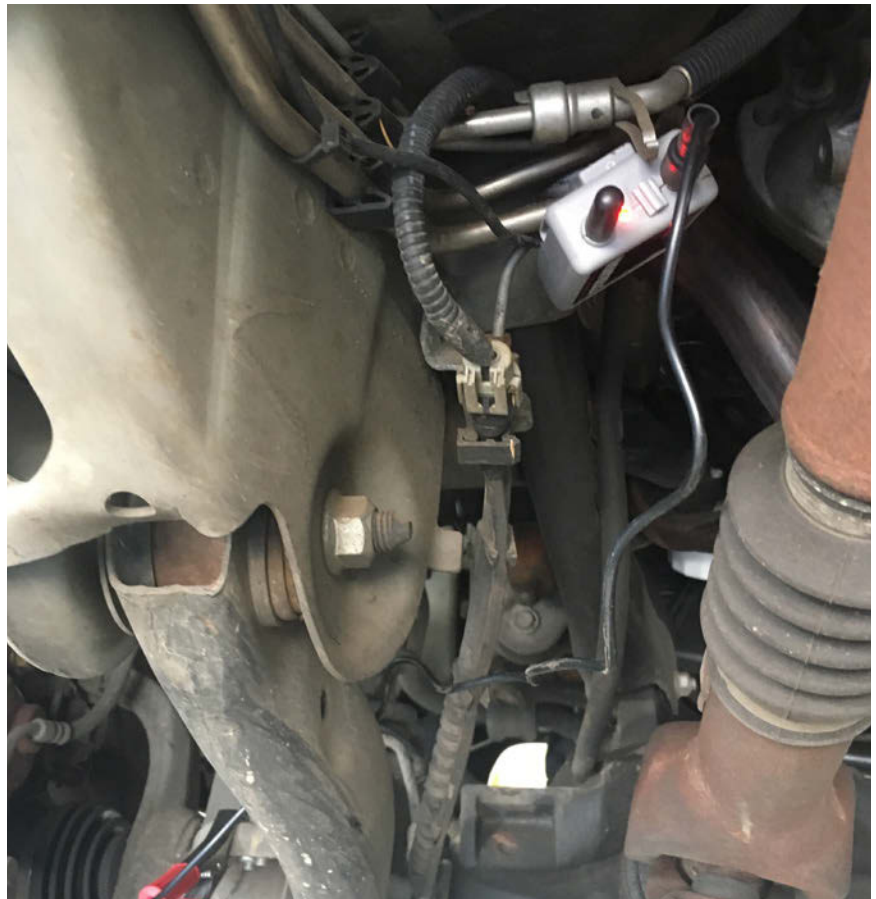
Use the stethoscope to listen to individual components in order to isolate the noise. The EngineEAR has the capability of adjusting the volume of the microphone. This feature, coupled with its

noise reduction headphones and superb microphone, makes it much easier to identify specific noises.

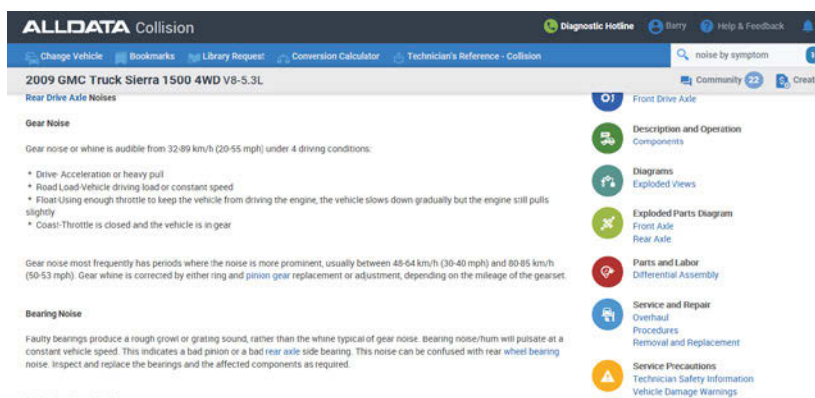
If the growling noise is not present with the vehicle stationary, then the noise can become a little more difficult to locate. Rotational noises that are present with vehicle movement can be caused by bearings in the transmission, axles, hubs, or differential. These noises can also be caused by worn gears in the transmission

TOOLS USED:

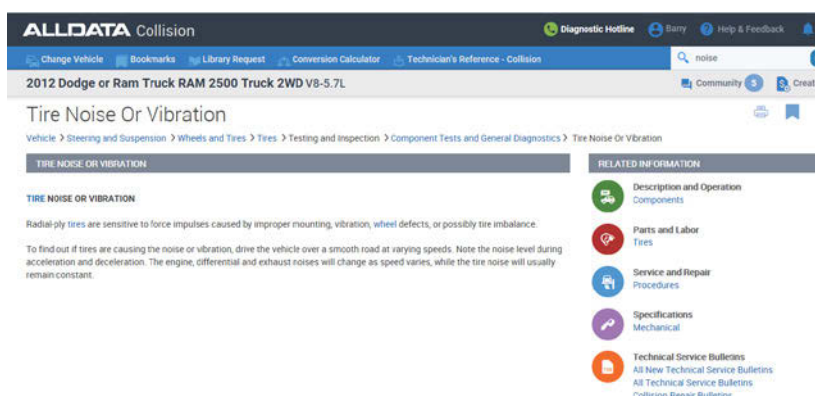
- Vehicle Information
- Scan Tool
- JS Products Steelman EngineEAR Stethoscope
- JS Products Steelman Wireless ChassisEAR Diagnostic Device Kit
- Ultrasonic Leak Detector
- Diagnostic Smoke Tester



▲ Place each ChassisEAR microphone near the suspected noise, keeping each microphone/transmitter approximately the same distance from the suspect parts.



▲ This screenshot from ALLDATA Collision shows information regarding gear noise.



▲ This screenshot from ALLDATA Collision shows information on tire noise.

or differential, worn or mismatched tires, or even wheel or axle alignment problems. Isolating these noises can be difficult because noises can carry through to other components and many noises sound the same.

One thing that causes a technician to spend a lot of time with diagnosing noises is the time it takes to road test the vehicle in certain conditions to duplicate the noise. In many cases, a technician will need to drive the vehicle at a specific speed in order for the noise to be present. If a change is made to the vehicle, such as rotating the tires, in order to see if the noise changes, the road test must be performed again. Noises can also be difficult to locate because they may sound like they are coming from the rear of the vehicle when you sit in the front and the front of the vehicle when you sit in the rear.

At this point, I should remind you

when driving a vehicle, in order to diagnose anything, including noises, safety should be your number one concern. Utilizing a helper to drive the vehicle enables the technician to both listen for the noise and to operate any tools or equipment safely.

The best way to help limit the number of road tests is to detect the specific location of the noise. Our go-to tool to isolate the cause of noises is the Steelman ChassisEAR. We use the wireless model which utilizes a series of wireless microphone/transmitters that connect to the vehicle. These transmitters then allow the technician to listen to each signal either collectively or individually to determine the location of the noise. By understanding the location of the noise, it is much easier to determine the cause, thereby reducing the number of road tests to find the source of a noise.

Transmitters can be placed on each

corner of the vehicle allowing the technician to narrow down the area of the noise. For instance, place a transmitter on each front and rear strut or shock mount. If the noise is only detected by the rear transmitters, place a transmitter on each side of the rear axle housing, the transmission output housing, and the center of the differential. You are now able to determine by the location of the noise if it is caused by the transmission, differential, or by which axle bearing. If the noise is the same from each transmitter, it could be caused by a tire that is mismatched, worn, or has an aggressive tread design.

WHISTLE OR WIND NOISES

Wind noises may be caused by many factors, including window or door seal leaks, body seam leaks, or even external components such as roof racks or windshield wiper arms deflecting air across the body.

The first step in locating a wind noise is to obtain specific information from your customer about when the noise occurs. Many wind-related noises only occur at specific road speeds or conditions and may include factors such as whether the A/C is on or off. Second, perform a complete visual inspection of the vehicle. Look for loose or misaligned body or door panels, loose window seals, or obvious body damage. If nothing is noted with a visual inspection check your vehicle information source to see if there are any TSBs related to the noise complaint.

A road test will need to be performed to duplicate the noise. You must pay particular attention to even the smallest details and be prepared to make changes to the vehicle as you drive. Once you hear the noise, try making changes to the vehicle and listen for changes to the noise. Changes that can be made that may affect noise include blower fan speed, vehicle speed, opening a window, or taping off openings in the body or firewall.

If the noise does not change when either the fan speed changes or the window is opened, the cause of the

noise is most likely due to a misaligned or deformed body panel or even a roof rack crossbar that is causing air to create turbulence when passing by. Using the ChassisEAR may assist you in locating the source of the noise. It may also be useful to remove roof rack crossbars and observe components like wiper arms to see if there is movement while driving.

If the noise changes when air pressure within the vehicle changes, as with higher or lower fan speed or opening a window, then the noise is most likely caused by an air leak within the vehicle. One method to determine the source of an air leak is to install an ultrasonic leak detector transmitter inside the vehicle. Then, walk around the vehicle with the receiver, which will beep or flash a light when it detects a signal from the transmitter, allowing you to pinpoint the air leak.

Another method to locate air leaks is to use a diagnostic smoke machine. Place the vehicle in a bay with very little air movement. Roll up all the windows and close all the doors. Set the vehicle's blower fan to high, then walk around the vehicle with your smoke machine, blowing smoke at door and window seals. If you pass an area where the smoke is pushed away, there is air leaking at that point. This is caused by the positive air pressure in the vehicle (fan on and doors sealed) escaping to lower pressure outside the vehicle.

Over the years we have found many different noises - most of them caused by normal items such as tires, worn bearings in the engine, or drivetrain components. Some of the more difficult ones to detect only occurred during very specific conditions. Here are a few that come to mind.

- A 1980's era full-size Chevrolet that made a scraping noise only when pulling into the customer's driveway. We found that their driveway was on a steep slope and you needed to make a fairly sharp turn to get into it. When the customer accelerated the vehicle to get up the slope, the motor mounts were worn just enough for the fan to scrape the fan shroud.



▲ JS Products' Steelman Wireless ChassisEAR Diagnostic Device Kit includes four transmitters, one receiver unit, one set of mini earphones, four cable-leads/microphone clamps, 12 nylon straps, 12 hook-and-loop straps, six AA batteries, 16 AAA batteries, an organizer pouch, location identifier note pad, instruction manual, and a blow molded storage case.



▲ Be sure to place the transmitter and microphone wire in a location away from moving parts and hot exhaust components.

- Many vehicles that had motor mounts worn enough to cause exhaust components to rest on the body, which then would transmit engine noise throughout the cabin.
- A vehicle that had some air conditioning work performed, and then started making a humming noise off and on only when the defroster or A/C was on. We found the high side pressure hose was bent enough that

the aluminum tubing was resting on the evaporator housing. When the compressor cycled, the pressure in the hose moved it further into the case, which caused the noise.

- A vehicle that made a sound like water rushing through a tunnel. We found that someone had removed the thermostat, which caused the water flowing through the heater core to move faster, making the noise.

- Numerous vehicles that have had noises or vibrations at idle caused by poor idle quality or speed. These were corrected by cleaning the throttle body and resetting idle adaptive strategies.

Some noises may be frustrating to isolate, and they can have some very interesting causes. But, with the right tools, they can also be very profitable to tackle. **PTEN**

RELATED TOOLS FOR THIS REPAIR



The **NVH Kit from Pico Technology** works with PicoScopes to quickly identify the source of noise and vibration concerns.

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The **JS Products Steelman EngineEAR Stethoscope**, No. 65001, consists of an ultra-sensitive microphone and amplifier providing a full range of sound with no missing frequencies.

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OTC Heavy Duty Extendable Indexing Pry Bar

This master technician praises the tool's versatility and design.

by Tyler Fussner, Assistant Editor

PRODUCT DESCRIPTION:

The OTC Heavy Duty Extendable Indexing Pry Bar, No. 7177, is designed for heavy duty uses such as positioning/re-positioning engines or equipment, aligning heavy steel plates or panels, and prying large heavy objects. The combination extendable reach and 180-degree indexing head permit access to many areas where traditional pry bars may be limited. The prying head is 13/16" wide and can be extended from 34" to 53" using 31 preset positions set in 5/8" increments. The design of the 7177 can provide 1,500 lbs to 2,200 lbs of "persuasion" for many service and maintenance needs.

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THE REVIEW:

Finding just the right pry bar for a specific job can be a dilemma in any shop, leading to wasted time and increased expenses due to stocking multiple bars, and the trial and error methods used when attempting to complete a task with a range of bars to choose from. Jeff Buckley, owner and master technician at My Father's Shop in Midlothian, Texas, provided a review of the OTC Heavy Duty Extendable Indexing Pry Bar, No. 7177, and said the tool solved this dilemma, eliminating the need for multiple bars.

"The biggest advantage is that because it is indexable, you can change the angle on the head; you don't have to dig through all your different pry bars to find the one that has the right angle for the job," Buckley says. "And because it's extendable, you can adjust it out to the length that you need. It's twice the length of normal pry bars ... and because it extends and is longer, it gives you more leverage. Most of the time with other pry bars, we grab a piece of pipe and stick it on the end of the bar, trying to make it longer. This tool gives you the leverage without having to use a bunch of force.

You're not pushing as hard and you're not straining as much."

There is no setup required; the 7177 is ready to go to work right out of the box. There was no accompanying manual needed either, as Buckley attested to the tool's ease of use.

"It's not just a matter of how easy it is to use, but how useful that tool is," Buckley says. "It's extremely useful."

The tool's extendibility utilizes a push-button system. Buckley mentions there was no concern that the push button would hang in the way or that the tool would become crooked when extended. The indexable head on the 7177 was one of Buckley's favorite features.

"Most [pry bars] have a set angle," Buckley says. "I've seen a couple smaller ones that are adjustable, but they have plastic gears and teeth. [The 7177] has metal gears and teeth, so I'm not really worried about prying with it and that angle breaking loose."

"It's a really well-made tool; they thought about it," Buckley adds. "It's well manufactured."

The master technician says that the tool's weight is exactly what it needs to be, noting that it shouldn't be any lighter because it would begin to flex when prying. He says that there is no flex or give in

the bar, even when fully extended.

"When you extend it out and you grab it in the middle, it's not like you're trying to lift a heavy tool, even though it is a heavy pry bar," Buckley says. "You're not struggling to control or balance it."

My Father's Shop used the 7177 for a myriad of jobs, such as checking ball joints, moving lower A-Frames, and suspension and alignment work.

"There's another tool I have that will do lower A-Frames; it's just a long bar with hooks that will grab the frame," Buckley says. "But then that tool has to go over in the corner because it won't go in the toolbox. And it is designed for one thing, whereas [the OTC Heavy Duty Extendable Indexing Pry Bar] is a versatile tool that can be used in many different instances and it collapses down, so it fits right in the toolbox."

"[There is] really nothing I didn't like about it," Buckley says. "It's just extremely useful and handy."

This shop owner gave the OTC Extendable Pry Bar a high rating due to its versatility, design, and construction. Buckley affirmed the review, stating, "This one's going in my toolbox." **PTEN**

To view Buckley's video review of this product, visit: VehicleServicePros.com/21088016.

Legacy Manufacturing Flexzilla Air Compressor

"This is by far the quietest compressor that we've ever owned," the reviewer says.

by Emily Markham, Assistant Editor

THE REVIEW:

Things in the automotive business may be ever-changing, but the need for shops to have pneumatic tools will never change. "It's definitely a must-have tool," says Dennis Gregory about Legacy Manufacturing's Flexzilla Air Compressor with Silencer, 1-Phase, 2-Stage, No. FS05V0811. Gregory is the owner of Xtreme Unlimited, a repair shop in Prescott, Arizona.

"The biggest thing is the fact that it's very quiet ... I've owned probably ten compressors over the years, and this is by far the quietest compressor that we've ever owned," Gregory says, noting that whether the air compressor is in an enclosed space or not, the noise is never obtrusive.

When it came to setting up the air compressor in his shop, Gregory notes the process was actually quite simple. All he and his technicians had to do was place the compressor and perform a simple hook-up to tie it into the air system in the shop. The last part of the set-up was the electrical connection, which Gregory said most electricians can handle.

Not only was set-up easy, using the machine is a "no-brainer," Gregory says. "You turn on a switch." The manual the air compressor came with was also easy to understand with its well-written directions.



The compressor itself doesn't come with any accessories, but after purchasing it, Gregory did add a few things.

"As far as the unit itself, it comes ready to go. There's nothing you need to add. Here in our shop – just the way it's plumbed – [we needed to add] plumbing stuff. We [also] added a dryer to eliminate any water that gets into [the] air system," he says.

Another feature of the air compressor Gregory likes is how the machine is set up for servicing.

PRODUCT DESCRIPTION:

The Legacy Manufacturing Flexzilla Air Compressor with Silencer, 1-Phase, 2-Stage, No. FS05V08011, is designed to operate quietly in the workspace. This compressor features the company's Quiet Technology with Silencer noise suppression and operates at noise levels no louder than a normal conversation. The compressor features a large, low rpm pump and motor, single-phase power with 5hp motor, 80-gal tank, and an exclusive four-year parts warranty. This compressor has a max psi of 175.

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"Compressors are pretty simple things, there's not a lot to them, but down the road ... we will [have to] change the belts that drive the system, and it looks to me like it's going to be very simple compared to some of the other units I've had," he says.

Since receiving the air compressor, Gregory guesses his shop has already put a couple hundred hours on it. The compressor has been used for custom Jeep modifications, custom fabrications, and a lot of early street rod manufacturing.

Overall, Gregory is very happy with the Flexzilla Air Compressor. The only concern he had before purchasing the machine was needing to know the size of the fitting that comes out of the side that would tie into the shop's air system. With one call to Legacy, Gregory says he was quickly provided with the information he was looking for.

"I wasn't on the phone a minute and had the question answered," he says.

Although Gregory hasn't had the air compressor long, it has served him well thus far.

"[This air compressor] has been as good or better than advertised," he says. "The quality ... is perfect." **PTEN**

Prevost Flexair Hybrid Hose

This basic tool is much loved at the reviewer's shop.

by David Brierley, Managing Editor

PRODUCT DESCRIPTION:

The **Prevost Flexair Hybrid Hose Assembly** comes equipped with an ultra-flexible and tough hose, non-scratch sheath to protect equipment, high quality plug, and prevoS1 safety coupler that is available in various profiles and sizes. The lightweight, easy-to-handle hose comes fitted with a hose restrictor to help prevent kinking and bending near the connectors. Prevost guarantees the hose for one year under normal wear and tear when used with a Prevost plug. The hose is available in 1/4", 3/8", and 1/2" ID sizes, with 25', 35', 50', and 100' lengths.

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THE REVIEW:

Some tools are so basic most technicians don't give a second thought to how well they function. Take the air hose, for example. Most air hoses today take the same basic form that has been used in shops since pneumatic tools first came on the scene. And, most of them work ... well enough. Matt Fanslow of Riverside Automotive in Red Wing, Minnesota, never paid much attention to his shop's air hoses. Then he tried the Prevost Flexair Hybrid Hose, and that all changed.

Fanslow says the Flexair pneumatic hose caught his attention by exceeding expectations he didn't even know he had, in several ways.

"We've [always] used the conventional hoses you would most often buy from parts stores and thought little of it," he says. "Over a year or so they'd crack, break, bulge, get very dirty, et cetera. We've had the Prevost [hoses] for a few months now. No signs of cracking or bulging; very easy to clean; they also lay

nicely ... they don't kink or loop up while dragging around a vehicle."

Fanslow says he appreciates that the hoses are soft, meaning they lay flat on the floor without creating a tripping hazard. He also notes that being easy to clean is a very important factor; he is often frustrated with older air hoses that collect dirt, grease and grime, and leave marks on clients' vehicles when used in the interior.

An additional feature that Fanslow likes is the "extremely nice" fittings.

"They don't leak," he says. "They have push buttons on the side instead of the conventional collar you pull down to remove a pneumatic tool."

The technicians at Riverside

Automotive use the Flexair hoses for a wide variety of tasks and come away impressed with each use.

"[We use the hoses for] any task requiring the use of pneumatic tools or the ability to use directed air under high pressure," Fanslow says. "Adjusting air pressures in tires, removing rusted bolts that our cordless tools didn't have the torque to remove on their own, [using] air nozzles to clear off intake plenums prior to removal, et cetera."

The hoses came coiled in neat rolls with plastic straps and cardboard packaging. A manual was not included but is not really necessary for an air hose. Fanslow notes that some OSHA approved prevoS1 blow guns were included, and that the technicians at Riverside Automotive use them "all the time."

Fanslow says the hoses are so well liked by his technicians that they will actually walk past a nearby older hose just to go pick up a Flexair hose without even realizing it.

This makes him wonder, "Is it weird to love ... air hoses?" **PTEN**



Channellock 7" Diagonal Cutter and 8" XLT Long Nose Pliers

The reviewer couldn't find anything not to like about both these tools.

by Kayla Oschmann, Assistant Editor

THE REVIEW:

Channelock continues to provide top shelf, high quality tools with both their new 7" Diagonal Cutter, No. 437I and 8" XLT Long Nose Pliers, No. 318I, says Lou Fort, lead technician at K.A.R.S Inc. in Huntingburg, Indiana. Fort was impressed when he used both types of pliers at his shop when performing repairs and maintenance work on cars and trucks.

Fort noted that the tools were very easy to use and said he couldn't find anything not to like about them.

Both tools, designed primarily for electrical work, are insulated for high voltage protection.

Although Fort didn't have an opportunity to use the tools on any hybrid or electric vehicles during the time he reviewed them, he has full confidence that both pliers would work well in that application.

Upon receiving the tools, Fort said they came in a clear, plastic clam shell that displayed product information such as part number, tool length, and their 1,000V protection rating on the front. On the back, additional features for each tool can be found such as laser heat-treated

cutting edges and pipe grip design.

"One doesn't have to look hard to see that Channellock makes 'Made in the U.S.A.' with pride and meaning," Fort says.

Some key features Fort liked about the diagonal cutter and long nose pliers are that they are OSHA compliant for high voltage protection. He also appreciated the crosshatch pattern on the jaws of the long nose pliers, as well as the Xtreme Leverage Technology (XLT), a new feature that requires less force to cut than traditional high leverage.

Fort also enjoyed the different colored handles on both of the new tools. They are not the traditional Channellock blue, but instead are high visibility yellow and red, the universal standard for tools used in electrical work. The handles also have a hand stop built in, which the company says will keep users' hands a safe distance from the work.

Overall, Fort found both the Channellock 7" Diagonal Cutter and 8" XLT Long Nose Pliers are easy to use, high quality tools to have in the shop. **PTEN**

PRODUCT DESCRIPTION:

The **Channellock 7" Diagonal Cutter**, No. 437I, is designed to withstand the harshest conditions with its high carbon U.S. steel. The Diagonal Cutter features laser heat-treated cutting edges to last longer, and lap joint construction for strength and durability. The insulated grip is rated for 1000V when working on live parts. The cutter is made in the U.S.A.

The **Channellock 8" XLT Long Nose Pliers**, No. 318I, are designed to reduce hand fatigue with their Xtreme Leverage Technology (XLT). The long nose pliers are made of high carbon U.S. steel and offer a crosshatch pattern on the jaws for a tighter grip to pull objects in any direction. The insulated grip has a 1000V rating to ensure optimal safety during the most dangerous jobs. The pliers are made in the U.S.A.

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Automotive intel

Translating repair information to the diagnostic tools available.

By **Scott Weaver** and **PTEN staff**,
Contributing Editor gonzosae@aol.com

Photo courtesy of Autologic.

Information is a key topic of discussion at just about any roundtable regarding automotive repair. Sure, there is always the usual “can’t find enough qualified technicians,” but all in all, what makes a qualified technician qualified? It’s the ability to utilize important information.

As with many different skilled trades, becoming good at your profession requires dedication and training in every aspect of the job, as well as a lot of practice, refresher courses, an abundance of reference materials, good observational skills, and the right tools.

When it comes to tools in our industry, there seems to be some disconnect between reference materials and the tools we use every day. Don’t get me wrong, when it comes to good vehicle repair information, there are many sources available. For the most part, with very little practice most technicians are good at obtaining the correct information to diagnose and repair vehicles properly and efficiently.

However, when it comes to operating instructions on our tools, information seems to be somewhat thin, especially on one of our most used pieces of equipment, our scan tools. If you utilize factory (OE) scan tools, most manufacturers have built the tools for the dealership network where technicians that use them have been trained specifically on their use.

If you are an independent aftermarket shop or a technician that does not have a dealership background, you may find there are limited reference manuals for the operation of those scan tools. This lack of information can sometimes make it difficult to diagnose and repair



vehicles efficiently. In some cases, it may be worth considering an OE scan tool in addition to the more universal aftermarket ones, if for example, a specific vehicle make comprises 20 percent or more of the vehicles that come to your shop. Of course, you still need to evaluate the cost of the tool, training, and annual updates associated with an OE scan tool in order to calculate the ROI, especially considering it will only be used for one vehicle make, whereas an aftermarket scan tool can often be used for many.

Many of us probably have more than one manufacturer that reaches the 20 percent threshold and will require more than one OE tool, anyway. We also have a lot of other vehicles that would require a good aftermarket scan tool. Now we

have another issue: some technicians are familiar and very proficient with a particular scan tool, but not as comfortable nor as effective with another. Some of this is easily overcome by training on the tool, while some of it is a little more difficult to cure due to differences in how aftermarket tools are programmed and supported.

In order to understand some of the issues, you need to appreciate the challenges scan tool manufacturers face. Almost every vehicle manufacturer has specific names for PIDS, modules, and bidirectional processes that are unique to their vehicles. When using an OE tool, the PID names and functions are consistent with the OE repair information – even more so if you have been trained

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on the information and use of the tool.

Because every vehicle manufacturer has their own “language,” it can be difficult for aftermarket scan tool manufacturers to integrate some tasks and information into an easy-to-use format for the technician. Additional challenges arise when the technician is forced to acquire repair information from an aftermarket source and use a scan tool, neither of which may be using terminology that is consistent with each other or the vehicle manufacturer.

Many aftermarket scan tools have renamed the OE specific module/PID/bidirectional terms into a more generic terminology that they use for every vehicle their scan tool supports. This makes it much easier for technicians to use the tool and learn to become efficient with it.

Aftermarket vehicle information sources do much the same thing, make information more usable by naming procedures and tests similarly across vehicle lines to make it easier for technicians to find necessary information quickly, rather than to trying to find manufacturer-specific terminology.

When testing a vehicle with a scan tool, these challenges can cause diagnostic errors. Even though your scan tool is showing a perfectly good test result for a particular component or system, the readings may be in a different form, or in a lot of instances, not even close to what the repair information shows.

You might have to discern whether your scan tool’s software doesn’t align with the repair information or if you are misinterpreting the information. Some tool manufacturers are aware of this concern. I asked Danijela Haskin, product manager for diagnostics at Bosch, about this discrepancy.

“Bosch licenses data directly from the OEMs and develops other coverage to compliment OE service procedures,” she says. “As an example, this is why you’ll find Bosch diagnostic tools use the same module system names, rather than putting them in generic terms. This helps when referencing OE information.”

Information and test results allow a technician to pinpoint the problems

faster and easier than they could without such data. Having that information is the key to a successful diagnosis.

“The features available on our tools are those specific to that electronic control module for that particular manufacturer you’re working with and are not necessarily relatable to a similar engine from a different manufacturer,” says Bruno Gattamorta, vice president of diagnostic sales for Cojali USA. “Our tool is developed based on OEM standards, meaning that if the OEM proceeds in a certain way to achieve its tests and results, we will provide the same.”

“We match the OE service procedure found in most repair information sources,” says Michael Flink, commercial sales manager and trainer, North America, at Autel. “The intent is both to give better overall coverage and to make it easier for the technician to follow an OE service procedure. Autel also updates throughout the year, allowing it to keep up with those changes from the OEs.”

THE GOOD TECHNICIAN

This is where the ingenuity of a good technician shines best: That is, taking the raw data offered in the repair manual or scan tool and somehow converting it into useable data that conforms to the tools available. A lot of times, it’s a simple matter of converting newton



First and foremost, a scan tool needs to have coverage for the type of vehicle a shop works on most frequently; good coverage for other manufacturers' vehicles on the same scan tool is an added bonus.

meters to pounds per square inch or Celsius to Fahrenheit. Other times, it’s a game of wits between the technician and the repair information. But, adapting the scan tool and repair data into useable information combined with solid diagnostic procedures is the key to successful repairs.

A long time ago, I adopted a policy in my shop where any type of diagnosis had to be verified by performing the diagnostics using two entirely different methods and cross-checking the results between the two procedures. One method could be a scan tool, while the second method could be a multimeter. If the test results were verified by the results of the previous test, the job was a go.

This not only ensured a more accurate diagnosis but also gave the technicians a chance to explore new and innovative testing methods they may not have been as familiar with. For the most part, it avoided the dreaded comebacks and the ever-annoying (and present) technician dilemma of the “well, that isn’t it” scenario.

SCAN TOOLS: WHAT IS THE TECHNICIAN LOOKING FOR IN A TOOL?

The number one thing I look for in a scan tool is coverage. First, a scan tool needs to have the coverage for the type of vehicle I'm most typically going to be working on, with access to as many forms of the tests and bidirectional controls similar to the factory tool, if not better. Good coverage for a few other manufacturers' vehicles on the same scan tool is a plus. This avoids having to relearn different terminology and computer pages that are likely to differ from one manufacturer to another.

Graphing and pinpointing sensor data is a great feature, too, especially when it is easy to use and understand. Whether using a factory or aftermarket tool, it comes down to cost, updates, and the number of years covered by that manufacturer.

Things like data speed and touch-screen resolution come to mind as additional concerns, as technicians don't always work in ideal lighting conditions. Autel's Flink had this to say on features and functionality:

"Because Autel does not make an OE tool, our primary customer is the independent technician and shop. We engineer and test our tools to provide functionality beyond the standard releases. This does require extra work and cost in engineering to accomplish. Since Autel only makes diagnostic equipment, our vast engineering teams are focused on developing just that."

Also consider adequate test leads, a sturdy hanger for the scan tool, and an adjustable volume level. Cord connections can be a problem, too. The weak point is often where the connection and the wire bundle meet. Although, cords are getting to be a thing of the past with the advent of the wireless dongle between the scan tool and the assembly line diagnostic link (ALDL). Now the only problem is not forgetting to remove the dongle before the car drives off.

UPDATES

Updates, updates, updates. This may be the biggest consideration of all. It's the downtime that is the real issue. The fact that some scan tools will display a message such as "Erasing old data" before they begin downloading the new data is a bit unnerving as well.

Some manufacturers, such as Ford, will provide the dates of the next projected updates for their scan tools so you have the option to schedule scan tool downtime. I don't believe there is ever a good time for downtime in a busy shop, but it's essential to update these tools on time, nonetheless.

FINAL THOUGHTS

With all this going on, there is still one aspect of the topic that needs a closer look. That is how to hook up the tool leads, the locations of the sensor, and the pin locations for the component you are trying to obtain the information about. Some manufacturers do a great job of providing drawings and directions for tool connections, but it is still one of the most frequently asked questions.

The novice or new apprentice/technician might not have paid attention to the initial process of hooking up the scope or scan tool, as they were far more interested in the results. When it's time to try it for themselves, they are left standing there holding the test leads and wondering what to do next.

The key is to keep honing your skills every day. This business of car repair is based on ever changing and advancing technologies. All this automotive intel can only increase a technician's knowledge base as well as their ability to adapt to the latest technologies coming from various manufacturers.

The vehicles are better and so are the technicians. It would be great if every time you picked up a scan tool or looked up repair information, the answers would pour out with no effort at all. Well, you know that'll never happen. This job isn't that simple, it never was, and it still takes a dedicated technician to answer the call of the next problem and the next solution. Happy scanning! **PTEN**

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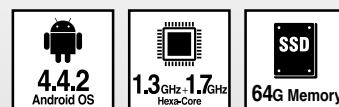


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The **Monster Mobile 12-pc Flexible and Reversible Ratchet Metric Wrench Set**, No. MST77500, features an open end metric wrench with anti-slip on one end and a box end with 72-teeth and stop ring that prevents the wrench from slipping past the nut or bolt head. The set is made of chrome vanadium steel and has a continuous tension design that controls the 180 degree flex magnetic heads. The set includes: 8mm, 9mm, 10mm, 11mm, 12mm, 13mm, 14mm, 15mm, 16mm, 17mm, 18mm, and 19mm. The set has a lifetime warranty.

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DRUM PLUG WRENCH, NO. 5841

In this video, Lincoln Industrial displays the features of the Drum Plug Wrench, No. 5841.

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The **SK LP90 Ratchet Series** offers a slim profile to fit into tight spaces and features a 90-teeth count, a four degree arc swing, and comes in 1/4", 3/8", and 1/2" drive sizes. The quick-change lever allows technicians to effortlessly change drive direction and is easier to change than flush mounted levers, says the company. The sealed head design reduces potential for internal contaminants. The ratchets are made in the U.S.A. and feature a lifetime warranty.

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DESIGNED TO PROVIDE PROTECTION IN HAZARDOUS ELECTRICAL WORK ENVIRONMENTS

The **Cementex Double-Insulated Torque Wrenches** feature two separate layers of insulation for twice the protection. The wrenches are made of materials calibrated according to ASME B107 standards (traceable to NIST), and manufactured according to ISO standards. The impact-resistant, flame-retardant insulation provides protection against flashover, shock, burns, and dropped tool shorts. Available options include standard, low profile, clockwise only, and short drive models, as well as a fixed head style. Three additional sizes have been added to the line, which now includes seven sizes.

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DELIVERS SUPERIOR CUTTING POWER

The **KNIPEX Tools CoBolt S Compact Bolt Cutter** features a 6-1/4" length and provides high cutting power to easily cut bolts, nails, and rivets up to 11/64" in diameter. In addition to its compact design, the cutter has a slim head designed for better access to confined areas. The CoBolt S has a strong lever action mechanism that allows the user to exert less effort when using the cutter. Below the joint is a gripping surface for pulling wires with a diameter from 3/64". It also features laser-cut edges on the blades, which prevent material being cut from slipping. The CoBolt S is forged and multi-staged oil-hardened from German and chrome vanadium heavy-duty steel, and has induction-hardened cutting edges with a hardness of approximately 64 HRC for cutting thin hard wire, screws, and springs.

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FOR REMOVING DOOR TRIMS, COVERS AND PANELS

The **Mueller-Kueps Removal Wedge**, No. 277 003, is suitable for removing door covers, trims, panels and more. This tool can be used anywhere the user needs a little extra reach to remove a panel. The plastic head does not damage the parts or scratch plastic and paint. The tool gives users easy access without damaging other parts. The solid metal is designed to be easy for users to hold on to while reaching, and it slides in without catching to reduce the risk of damage to the vehicle.

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SAE WRENCH SIZES FROM 3/8" TO 1"

The **SK 11-pc Flare Nut Ratcheting Wrenches Set** feature SAE sizes from 3/8" to 1". The ratcheting jaw allows the tool to advance the flare nut without removing the wrench from the fastener. Opening the pivoting head allows the wrench to reach around connected pipes to access the fastener. The versatile design can be used on six and 12 point tube fittings, hydraulic lines, fasteners, valves, and compression fittings. The wrenches are made in the U.S.A. and feature a lifetime warranty.

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TOUGH AND VERSATILE

The **Carlyle Tools Wire Stripping, Cutting, Crimping Pliers** are tough, versatile, and feature a 6-3/4" frame with PVC dipped non-slip grips. The pliers are manufactured from Chrome Vanadium Steel (CR-V) and engineered with the professional tradesman in mind. The plier jaws include induction hardened cutting surfaces and have the capability to strip and crimp both insulated and non-insulated wires between 10-20 AWG. The tool is also available in a 3-pc. set with storage tray, which includes an 8-1/2" long nose and 7-1/4" pistol grip.

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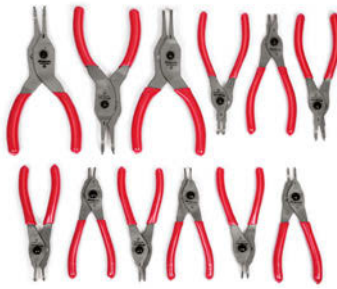
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EASILY SWITCH BETWEEN INTERNAL AND EXTERNAL RINGS

The **Snap-on SRPCR Series Snap Ring Pliers** feature a patent-pending, push-button convertible design to easily switch between internal and external rings. The series has longer 45 degree and 90 degree jaws to allow for easy access to hard-to-reach retaining rings. The wide cushion grip of the tool offers comfort and control, while its cold-forged steel contains a higher alloy content that makes the pliers strong and durable. The tools also feature a natural steel finish with a protective clear coating to defend against corrosion.

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DESIGNED TO KNOCK OUT PINS AND RIVETS

The **Lang Tools 3-pc Extra Long Pin Punch Set**, No.856-3ST, is designed to place or knock out pins and rivets. The set includes pin punches with diameters of 1/4", 5/16", and 3/8". Each pin punch is forged from hardened, high carbon molybdenum tool steel for extra strength and runs through to the strike cap. The ergonomic hard plastic handle allows for a secure grip while striking. Each punch measures 16" in length allowing increased access for hard-to-reach areas. The set is manufactured in the U.S.A.

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The **KT Pro 90 Teeth Ratchet Series** is designed to provide a smooth ratcheting action, with a 4 degree arc swing and a streamlined teardrop ratchet head for easy fastener removal in confined spaces. Both ratchets, C4364-08P and C4464-10P, are made from high grade steel with a mirror polished finish for corrosion resistance that exceeds ANSI standards by 30 percent. Both drive sized ratchets, 3/8" and 1/2", come with a patented rubber grip strip and backed by a life time warranty.

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EASY-TO-READ LASER ETCHED DUAL SCALE

The **Martin Sprocket & Gear Click-Type Micrometer Adjustable Torque Wrenches** are designed to offer an accuracy of +/- 3 percent CW and +/- 5 percent CCW. The torque wrenches feature an aluminum knurled handle and an easy-to-read laser etched dual scale (ft-lb and Nm). Available sizes include 1/2" drive (30-250 ft-lbs), 3/4" drive (100-600 ft-lbs), and 1" drive (200-1,000 ft-lbs).

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FEATURES PATENT-PENDING CROSSHATCH TEETH

The **Channellock SpeedGrip Pliers** offer a fast-adjusting feature and patent-pending crosshatch teeth. The pliers are designed to stay in place until the adjustment button is engaged, preventing the need for constant re-adjustments. The no-slip grips allow for control, comfort, and ease hand fatigue. The pliers are available in three sizes (8", 10", and 12") and a combo pack. They are 100 percent made in the U.S.A and have a limited lifetime warranty.

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ALLOWS ACCESS IN HARD-TO-REACH SPACES

The **Monster Mobile 12-pc Extra Long Double Box Flexible and Reversible Ratchet Wrench with Bits**, No. MST73501, features a 72-teeth ratcheting wrench with flex heads, reverse, and stop ring. The stop ring ensures the box end doesn't slip off the nut or bolt head and the extra-long handle design provides leverage for removing fasteners. Bit sizes include: 14mm by S8, vs10, H12, H14, T40, and TT45; 17mm by M16, H17, M18, H19, and TT70. The ratchet wrench has a lifetime warranty.

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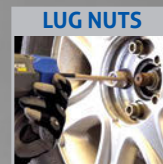
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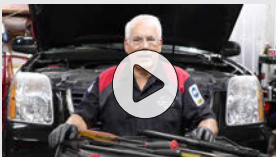


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From the show to the shop

A toolbox fit for a master technician.

by Emily Markham, Assistant Editor

Ben Corda is not your typical automotive technician. As he explains it, he did things a bit “backwards.” After having a career selling cars for many years, Corda decided it was time for a change.

“I think I got to a certain age where the money [wasn’t] the driving factor,” he says. “It [was more about] going to a place you want to go to every day.”

Since he was about 15 years old, Corda has been working on cars, so he decided he wanted to make a career out of that. Now, he has been working at Tom’s Auto Center for a little over a year and has already obtained his master technician ASE certification. Corda enjoys the challenges that come with working as a technician at an independent shop that services domestic, European, and Asian vehicles.

Before he could start his new career, though, he had to go back to school. While being back in the classroom was a bit strange for Corda, he utilized the benefits that came with being a student – namely the discounts.

Corda was able to purchase his first toolbox and many of the tools he has now at a significantly discounted price. With all the tools he was adding to his collection, his first toolbox quickly ran out of

OWNER:

Ben Corda

Tom’s Auto Center
McFarland, Wisconsin

space. But, while at a Matco Tools show in Las Vegas, Corda was able to find a new toolbox and got a good deal trading in his old one for the demo toolbox at the show.

Corda’s new toolbox is a Matco RevelX, which consists of a hutch, a side cabinet, and the box itself. What’s most special about this box, however, are the serial numbers.

“Because it was made specifically for the show, the hutch, the actual box, and the side cabinet all have [sequential] serial numbers,” Corda says.

The toolbox is approximately 7’ tall with the hutch on top, and around 8-9’ long. It stands out nicely with its white surface, blue trim, and stainless-steel tops. Additionally, the box comes with LED lighting.

“It’s got more bells and whistles than I probably need, [but with] the deal and what I was looking for, I couldn’t really pass it up,” he says.

Corda’s favorite part of the toolbox is the side cabinet.

“[It’s] because it gets all of the specialty

▲ Corda keeps all similar tools grouped together so he can easily find what he needs.

tools out of the other drawers and I can basically store everything in there,” he says.

When it comes to organization, Corda likes things to be laid out for maximum efficiency. Each tool has a home and is grouped together with like tools.

“There [are] three big drawers on the top,” he says. “It’s basically sockets and ratchets in one, then the next one down is pretty much all my wrenches, and then screwdrivers and everything is below that.”

Corda keeps the hutch and side cabinet just as organized. In the hutch, it’s set up for any of the aerosol products necessary for the job – spray lubes, greases, and cleaners. Then, he’s got all of his specialty tools in the side cabinet.

For further organization, Corda uses organizer trays for almost everything.

“All the sockets are laid where if it’s a 1/4” or 1/2”, they’re all on trays, so it’s pretty easy to find,” he says.

Though Corda has only owned this toolbox for six months now, he’s already thinking of purchasing another. **PTEN**

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