

PTEN

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ENDEAVOR
BUSINESS MEDIA

PROFESSIONAL TOOL & EQUIPMENT NEWS



ET9200 SERIES SCAN TOOLS

by Mac Tools



EXCLUSIVE:
2021 PTEN INNOVATION
AWARDS WINNERS
PAGE 20

DIAGNOSTIC TECH
OEM AND AFTERMARKET
SCAN TOOLS
PAGE 16

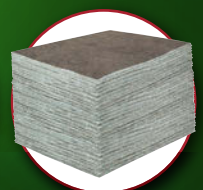
DETAILS ON THE COVER PRODUCTS
AND OTHER NEW TOOLS **PAGE 10**



▲ Features
interchangeable
lenses



▲ Cuts through
stainless steel



▲ Made from recycled
shop towel fibers

OEM TOOLS[®]
FAST IN CLASS

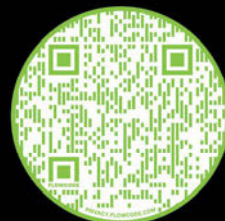
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- F. 24487 - 20V Max* Li-ion 1/4" Brushless Impact Driver
- G. 24485 - 20V Max* Li-ion 1/2" Brushless Hammer Drill

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It's Like An Arctic Storm For Your Shop

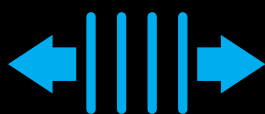


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ET9200 Series Scan Tools

by Mac Tools

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EXCLUSIVE

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2 Wheel Clamps for ADAS Calibration
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SURVEY



Find out how battery and hybrid electric vehicle service is impacting independent repair shops, according to a survey of 1,000 shops.

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PODCAST



In a recent episode of the Remarkable Results podcast, diagnostic tech/shop manager Matt Fanslow talks about the repercussions of a shop fire.

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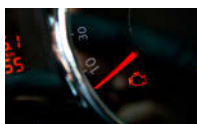
VIDEO



Mario Rojas, also known as Super Mario Diagnostics, takes a look at a 2008 Porsche Cayenne S with a concern of the shifter unable to come out of park.

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RESEARCH



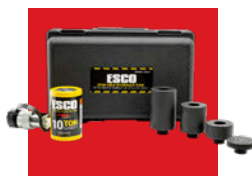
CarMD's 2021 Vehicle Health Index breaks down the five most common check engine light-related repairs in 2020, along with the average repair costs.

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Keep holding on

Why can't we just let go of certain items, whether it be our cars, a tool, or a Slap-Chop?

By Amanda Silliker, Editor
ASilliker@EndeavorB2B.com

I recently walked into a small local automotive repair shop and felt like I took a step back in time. Some of the tools around the shop looked like they were out of a museum, the signs on the wall could have been on a '60s movie set, and the cars in the bays were both at least 15 years old. Now, I'm a sucker for nostalgia, especially anything to do with cars, and a lot of the stuff in this shop was actually pretty cool. But it did get me thinking: Why do people hold on to their stuff for so long?

Having recently spent the weekend unpacking into my new home, I came across many items that I have been holding on to for too long, but I just can't let go. Some things hold sentimental value and I can't imagine getting rid of, such as my late grandfather's favorite baseball cap, but other items are a head-scratcher as to why I keep them, such as a Slap-Chop I got at a Christmas gift exchange. What have you been holding on to for too long? Is it a particular tool that's not quite up to snuff anymore but that you just can't part with? Is it a random item that is just collecting dust in your closet but you can't seem to

let it go? Or is it your own vehicle that you have spent countless hours repairing, but really is nearing the end of its lifespan?

If it's the latter, you're not alone. We know people are holding on to their vehicles longer nowadays, but why? Of course there's the argument that it's because of the pandemic and people are not driving as much, so why would they need a new car? But is there something more to it? Are we holding on to our vehicles because they are filled with great memories from road trips with friends and family and they provide some much-needed familiarity in these uncertain times?

While we might all have different reasons for holding on too long, or not ever really know ourselves why we can't part with something, I say it's a great trend for technicians and shop owners — older cars simply need more repairs. And doesn't that mean you likely need a new tool (or two) to get these jobs done? Take a look at the new products on page 10 and see if something sparks your interest.

On page 52, we are highlighting the power tools and air tools that have come across our desks this year. It's hard to say no to a new power tool!

Also in this issue, we are announcing the winners of our annual Innovation

Awards whose stand-out products increase a technician's productivity on the job. Congratulations to all the winners! (See page 20.)

In his Diagnostic Tech column on page 16, Scott Brown explores the pros and cons of both OEM and aftermarket scan tools. A scan tool is a big purchase, so take the time to make the right decision. If you haven't already, download our Scan Tool Spec Guide (www.VehicleServicePros.com/21223134) to help you compare and contrast the features offered by many scan tools on the market today. ❌

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MADE FROM RECYCLED SHOP TOWEL FIBERS

The **Sellars Absorbent Materials DuraSoak General Purpose Medium-Duty Absorbent Pads**, No.23200, are made with 60 percent recycled shop towel fibers. The pads absorb both oil and water as well as diesel fuel, grease, transmission fluid, hydraulic fluid, coolants, and many other fluids. Meltblown-spunbond coverstock on both sides of the absorbent core provides durable sorbent pads. The pads are class A fire retardant when dry, made in the U.S.A., and measure 15" by 19". **»19**

FEATURES INTERCHANGEABLE LENSES

The **SPG300 Safety Glasses** from **Coast Products** are equipped with anti-fog and anti-scratch clear lenses. They're ANSI-tested for impact resistance and come with replaceable lenses as well as a set of gray-colored lenses to enable safer work in bright environments. Padding on the nose and temple pieces ensures comfort for long days and a snug, secure fit so that the glasses stay on even during high-intensity activities. The included soft pouch provides an easy solution for protecting the glasses and lenses while not in use. **»20**



CUTS THROUGH STAINLESS STEEL

The **Century Drill & Tool 29-pc Cobalt Drill Pod Set**, No. 26929, are made from M35 steel with 5 percent cobalt. They are designed to cut through hard metals, including stainless steel. The cobalt drill bits are extremely heat resistant and must be used and operated in power units that have an rpm speed of 1,500 or more for maximum efficiency. Set includes 1/16" to 1/2" by 64ths drills. **»21**

CUSTOMER REVIEW:

“These drill bits seem to hold up very well. I have used them to drill into hard metal without trouble. Much better than lower cost, non-cobalt drill bits.”



FOR MORE INFORMATION ON THESE PRODUCTS, CLICK ON "PTEN E-INQUIRY" at VehicleServicePros.com OR CIRCLE THE NUMBER ON THE CARD.

Having the right tool for the job is essential when conducting automotive repairs. But sometimes the right tool isn't enough — you need the best tool to maximize productivity and improve your hours per RO. The editors at *PTEN* are constantly keeping up to date with the latest tools and equipment, and in this New Products section, we've hand selected the latest products that we hope will make your jobs easier.



FEATURES BUILT-IN VOLTAGE MONITORING

The **ET9200 Series Scan Tools** from **Mac Tools** feature three wireless tools to fit virtually any job and skill level. The ET9200PRO, ADVANCED, and ELITE scan tools are designed by technicians, for technicians. Asian, domestic and European diagnostic coverage is standard on all three models, in addition to AutoID, Wi-Fi access, Bluetooth connectivity, built-in voltage monitoring, front and rear cameras, and a limited lifetime warranty. The tools are optimized with a lightweight design, extended battery life, and enhanced processor. The quick-connect VCI provides a complete wireless experience, utilizing the new "hot" button navigation for quick access to critical functions. The Google Play store is also available, where users can add accessories such as the Bluetooth battery tester, video scope, and chassis ear. **»22**

SPONSORED BY MAC TOOLS

ELIMINATES THE NEED TO FIND EXACT FITTING

The **AirSept Dual Recycle Guard with Quick Connect Hose Fittings** is designed to connect to any commercial A/C refrigerant recovery equipment, saving technicians time by allowing them to connect the high and low side quickly without the need to search and find the exact ACME or flare fittings to start the job. The Dual Recycle Guard is engineered to safely and effectively capture debris, sealant, dye, excess lubricant, and other contaminants to protect A/C recovery equipment. The hose assembly kit includes a 48" high-side and a low-side charging hose with Quick Connect couplers and high and low-side Quick Connect service adapters. **>>23**



EACH UNIT FEATURES AN ENERGY-EFFICIENT MOTOR

The **Bendpak Patriot Series Air Compressors** are made in the U.S.A. and offer quiet efficiency and durability for any commercial shop or home garage. Each unit features an energy-efficient motor and large reciprocating cylinder heads running at slower speeds to provide powerful, cool, and energy-efficient compressed air. A rugged half-inch anti-vibration pad keeps noise to a reasonable 75 dB. The air compressors keep their cool through the use of body cooling fins, a built-in intercooler, and a precision-balanced flywheel with fan blades providing additional forced air cooling for durability and long life. The Patriot air compressors also have rugged, high-quality Manchester tanks that are ASME certified, and cast-iron pump and heads with splash lubrication. **>>24**

CUSTOMER REVIEW:
 “Scanner is easy to use. I simply plugged it in and was able to scan very quickly. It is nice looking, sturdy and well-made, and a good price. Highly recommend for anyone to use.”

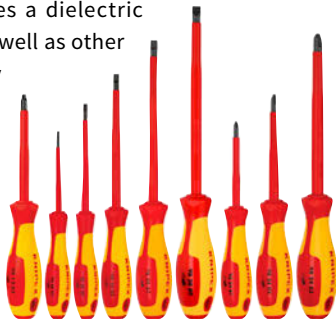


FEATURES SERVICE RESETS

The **TOPDON ArtiDiag600 Diagnostic Tool** is an Android-based scan tool featuring service resets. According to the company, the ArtiDiag600 expands upon the capabilities of its ArtiDiag500 and allows the user to perform service functions such as oil, SAS, EPB, TPMS resets, and throttle body relearns. It comes with free software updates and a one-year hardware warranty. It offers multi-lingual support. **>>25**

FEATURES ANTI-ROLL AWAY HANDLES

The **KNIPEX Tools Insulated Screwdrivers** (98 series) are 1,000V VDE tested and available in slotted, Phillips, and square tips. The line of 13 insulated screwdrivers feature an anti-roll away handle design and a two-component handle material to provide ideal gripping performance. Each insulated screwdriver has a hang hole for easier storage and are made of chrome vanadium molybdenum steel. Each one of KNIPEX's insulated tools undergoes a dielectric strength at 10,000V AC as well as other tests to check the reliability of the insulation towards heat, cold, tensile, and impact force. **>>26**



UNIVERSAL FIT FOR MOST HIGH AND LOW-LIFT TRANSMISSION JACKS

The **OTC Heavy Duty Clutch Adapter**, No. 1797, is designed to help technicians easily handle heavy duty clutch assemblies during service. The adapter has universal mounting slots in the base for a universal fit of most high and low-lift transmission jacks. These versatile mounting slots allow technicians to use just one adapter for a variety of repair jobs. The adapter also includes a built-in splined adapter mount that easily rotates to help align the clutch spline and the flywheel. Safety straps hold the clutch securely to the jack when working, keeping technicians safe. The clutch handler adapter is designed to be used with 10 and 14-splined adapters. **>>27**



PAD STARTS AT 1,000 GRITS

The **Insta Finish Softback Sanding Sponge - Fine, Grits 1,000-1,200 and 1,500** features a foam disc that provides an even surface pressure to the abrasive fabric regardless of the form variations of the sanded material. This prevents the abrasive fabric from cutting through the lacquer layer, for example at sharp edges and rounding. The pad starts at 1,000 grits then diminishes to 1,200 and lastly 1,500, no need to change sandpaper. **>>28**



ABLE TO MANAGE UP TO 22 WHEELS

The **HD TPMS** from **CanDo** is an activation tool with functionalities designed for the maintenance of trucks and buses. The unit reads sensors for psi, temperature, sensor ID, and battery status. It works for twin wheels and is able to manage up to 22 wheels. The tool is compatible with today's leading truck and bus TPMS sensors and can be updated with new heavy transport vehicles as soon as they are introduced, the company says. **>>31**



FOR FORD GAS 4.6L, 5.4L, AND 6.8L ENGINES

The **ProMAXX Rocky ProKit** is designed to assist technicians in reducing cost, risk, and liability in the repair and replacement of broken exhaust manifold mounting studs for Ford gas 4.6L, 5.4L, and 6.8L engines. It's for Crown Victoria, Mercury Grand Marquis, Mountaineer, Ford Explorer, SportTrac, F-series, Super Duty Ford trucks, Ford Econoline Vans, and Ford drive chassis. Rocky offers speed, efficiency, and accuracy in drilling and subsequent assistance in the removal of the remaining portion of a damaged exhaust manifold mounting stud. There's no need to use a center punch to mark the damaged stud, the company says. It can be mounted in any of eight orientations, accessing every stud. **>>29**

FOR USE ON MOST FORD, CHRYSLER, GM, AND VW POWER STEERING PULLEYS

The **OEMTOOLS Power Steering Pulley Remover/Installer**, No. 37031, fits pulleys with hub diameters measuring 1-1/8", 1-1/4", 1-5/16", and 1-3/8". It includes two screws for use on most Ford, Chrysler, GM, and VW power steering pulleys with Saginaw, Thompson, and Ford C111 and C2 pumps. It also pulls pulleys on GM belt driven vacuum pumps and the pressed-on water pump pulleys of GM V6 engines. It includes a molded storage carrying case to keep tools organized and secure. **>>32**

DOUBLE-STITCHED IN HIGH-WEAR AREAS

The **Brass Knuckle SmartShell Safety Gloves**, No. BKCR4499, are engineered to provide impact protection, cut protection, ideal grip in wet conditions, high visibility, and comfort. The gloves have machine knit, ultra-high-molecular-weight polyethylene (UHMWPE) with ANSI cut level A5 protection on the palms. The thermoplastic rubber padding is sonically welded to the back of the gloves for protection from impact hazards and the gritty black nitrile palm coating offers ideal wet grip. The gloves naturally shape to the contours of the hand and flex points, helping to ensure maximum comfort and increased compliance. For extra durability, SmartShell is double-stitched in high-wear areas including fingertips, index finger, and palm. **>>30**



HOW TO REMOVE A PULLEY:

- Lubricate the pressure screw before using.
- Place the collar halves around the pulley so it fits up against the lip.
- Insert the pressure flange assembly into the collar halves.
- Slide the collar retaining ring over the collar halves.
- Insert the pressure screw into the pump and turn.
- While using a wrench to hold the pressure flange use a second wrench to turn the pressure screw to remove the pulley. Do not use air tools or power tools.

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Don't settle for less when it comes to getting your BendPak lift inspected. Ask your ALI Certified Lift Inspector for a Check360 Certified Lift Inspection for every lift in your shop, every year. Knowing your lifts have been thoroughly checked from top to bottom will give you peace of mind from inside and out.

BendPak Model
XPR-18CL
Two-Post Lift

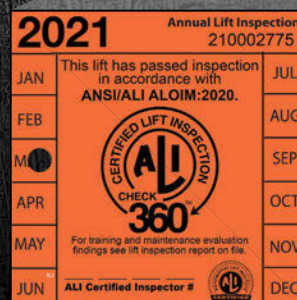


*Certified to meet the standards of ANSI/ALI ALCTV: 2017



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U.S.A. AND CANADIAN FLAG AVAILABILITY

The **Matco Tools Special Edition Patriotic 4S Double Bay 25" Toolboxes**, Nos. 4225RP-USA21 and 4225RP-CA21, are available in two wraps: U.S.A. and Canadian. The 2021 Canadian Edition Toolbox features a Canadian flag and an iconic quote. The 2021 USA Edition Toolbox features an American flag. Both toolboxes are outlaw black with black trim and measure 25" in depth by 42.09" in height by 55.81" in width. They offer power on the front of the box with 110V, USB power, a power drawer, 140 lb roller bearing slides, and a fully welded T-shaped center shelf. **>>>33**



FEATURES 28 MAINTENANCE RESETS

The **Thinkcar Platinum S20** features a large 13.3" screen, OEM full system diagnostics, 28 maintenance resets, and bi-directional functionality. Upgrades from the Platinum S10 include passenger car plus heavy duty coverage, quad-core processor, 256GB memory, magnesium alloy exterior, web browser, email, and square point of sale app. The included oscilloscope, TPMS communicator, videoscope, and EZ Battery tester combined with ADAS support make the S20 a versatile tool. **>>>36**

IDEAL FOR RETRIEVING FERROUS METAL PARTS

The **Mueller-Kueps Flexible Magnets**, Nos. 702 030, 702 018, and 702 500, measure 15.5" in length to provide extra reach and a flexible shaft to ensure fit into any tight space necessary. The magnets come in three weight categories. The 702 500 is able to lift up to 1 lb, the 702 018 can lift up to 4 lbs, and the 702 030 is the largest with the ability to lift up to 6.6 lbs. They are ideal for retrieving any dropped ferrous metal parts. An ergonomic grip makes them easy to hold while the neon green and black handle make them easy to see. **>>>34**



REDUCES FRICTION DURING INSTALLATION

The **Ascot Supply Auto and Truck Wheel Stud Installers**, Nos. 492-14916 and 492-02278, are designed to prevent harm to lug nuts or new studs by reducing the friction during installation. They work with hubs, rotors, and axles. There are two sizes, the truck stud installer, No. 494-02278, which fits studs up to 7/8" (22mm) and the automotive wheel stud installer, No. 492-14916, which fits studs up to 9/16" (14mm). **>>>35**



PAIRS WITH A JB VACUUM PUMP

The **JB Industries Accelerator VL-200 Rapid Evacuation Kit** is designed to pair with a JB vacuum pump, allowing technicians to remove restrictive valve cores and perform fast HVAC/R system evacuations. The kit includes a Valve Core Removal Tool with Slide Valve Side Port (No. A32525SV), vacuum-rated Valve Core Removal Tool (No. A32525N), two 48" long, 1/2" diameter evacuation hoses with 3/8" x 1/4" SAE female swivel hose connections, two Y-FORCE dual, high-speed coupler connectors for 3/8" and 1/2" connections, and a JB branded drawstring bag. The hoses are vacuum certified and won't collapse and/or permeate. Additionally, the JB valve core tools are rated to 20 microns. **>>>37**



SERVICES DOMESTIC, EURO, AND ASIAN VEHICLES

The **CTA 18-pc Brake Caliper Socket Set**, No. 7394, features commonly used caliper sockets for most makes and models, servicing domestic, Euro, and Asian vehicles. The set includes the following sockets: 7 pt. x 14mm, 7 pt. x 22mm, 10 pt. x 11.5mm, 10 pt. x 15mm, 10 pt. x 20mm, 5 pt. x 10mm, 5 pt. x 12.5mm, 5 pt. x 14mm, 5 pt. x 19mm, 5 pt. x 10mm (male), 6 pt. x 7mm (stubby), 6 pt. x 7mm (deep), 6 pt. x 8mm (stubby), 6 pt. x 9mm (stubby), 6 pt. x 9mm (deep), 6 pt. x 11mm (deep), and 12 pt. x 14mm tamper-proof impact sockets. Drive sizes include: 1/4", 3/8", and 1/2". **>>39**



ABLE TO STORE UP TO 12-CYLINDER COMPRESSION READINGS

The **Snap-on 500 PSI Wireless Pressure Tester Set**, No. EEPV700-MSTR, includes a digital display transducer unit and all the necessary adapters in the EEPV700-KIT and EEPV700-ADD as well as a free app. It's ideal for compression, vacuum, fuel, engine oil, and transmission fluid pressure up to 500 psi. The set's tray features compartments and moveable dividers to keep technicians organized while the digital display unit comes in an individual, protective carry case. The system stores results for viewing on the tool or transmits them wirelessly via Bluetooth. The minimum/maximum readings are graphed to help in diagnosing the issue and up to 12-cylinder compression readings can be stored. **>>42**

FITS IN HARD-TO-REACH AREAS

The **Lisle Corporation 45 Degree Disconnect Pliers**, No. 37140, feature a low-profile design with a 45 degree bend to disconnect fuel lines, EVAP line fittings, and DEF fittings in hard-to-reach areas. The tool is able to fit between the top of the fuel tank and vehicle. It's ideal to work on Delphi two tab connectors and some import vehicles. It can also be used on some electrical connectors. **>>40**



FORMS A COATING AROUND MOVING PARTS

The **Lube-It All White Grease** from **FedPro** is a high solid, non-staining white lithium grease. It clings to vertical surfaces, forms a complete coating around moving parts, and protects metal surfaces against rust and wear. Use it on chains, gears, drives, hinges, and other overhead surfaces. Safe on most plastics and painted surfaces. Made in the U.S.A. **>>41**



COMPATIBLE WITH MANY LAUNCH SCAN TOOLS

The **Launch Tech X-PROG 3 Immobilizer and Key Programmer Tool** is a chip reading device capable of EEPROM reading and writing as well as offers IMMO functionality, key programming, and other advanced features for North American, Asian, and European vehicles. Additionally, the X-PROG 3 is compatible to work with Launch scan tools to perform key and chip programming, such as the X-431 Throttle III, X-431 Torque III, X-431 Throttle, and more models. **>>44**



SUPPORTS J2534 INTERFACE STANDARDS

The **iSCAN SF Scan Tool** from **Autoland Sciencetech** is designed to bring big power to a shop in a small format (SF). The iSCAN SF comes in two different configurations. The iSCAN SF Euro kit's integrated diagnostic software covers European and supercar while the iSCAN SF Full kit's integrated diagnostic software covers domestic, Asian, European, supercar, and medium duty truck. The iSCAN SF offers advanced bidirectional controls, coding, programming, integrated J2534, and Support On Demand (SOD). **>>43**



Check out this video for step-by-step instructions on how to use this tool for programming and coding BMWs:

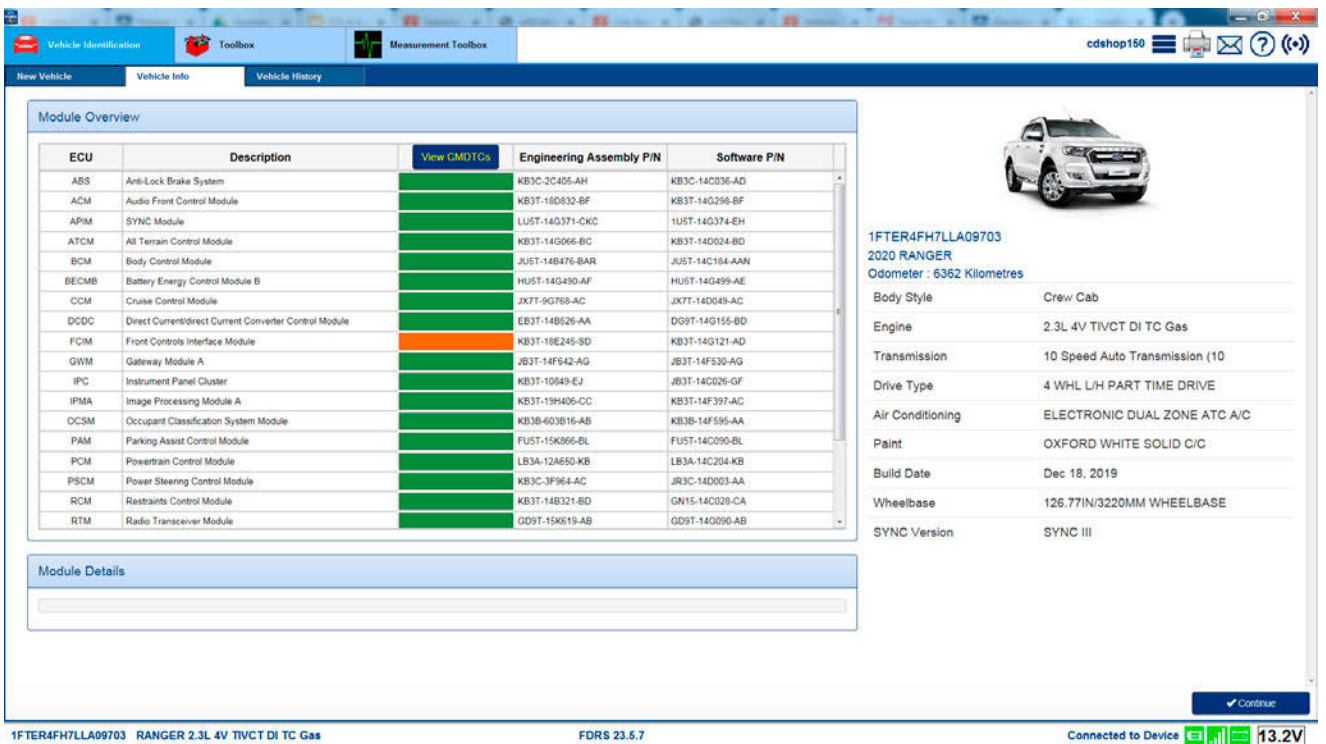
 [VehicleServicePros.com/21229344](https://www.vehicleservicepros.com/21229344)

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OEM and aftermarket scan tools – increasing your situational awareness

The different tools on the market all have their strengths and weaknesses, and technicians need to be aware of each tool's capabilities.

By **Scott Brown**, Technical Editor



▲ **Figure 1 - Ford diagnostic and repair software.**

remember one of the very first times I used a scan tool. It was on a 1982 GM vehicle equipped with the Computer Command Control system. At the time, these new layers of technology presented the dawn of a new era and interesting challenges. I began to imagine how this was going to change the way the technician would be addressing certain vehicle anomalies and what the future of automobile service was going to look like. Although the data stream was very cool, I had no idea as to how this information was being transmitted and displayed.

I remember trying to connect the same tool to another manufacturer and discovering that this operation required different adapters and software cartridges. Once I connected, I was disappointed to find that the live data stream found on the GM vehicle was not available on another domestic

OEM. My disappointment, however, was primarily my own fault for not having the proper service training on that vehicle system. At that point in time, I realized that I needed to acquire and consume as much training as I possibly could, and to this day, that hasn't stopped. Reflecting on

this I can honestly say that we have come a long, long way.

SERVICE TECHNICIANS

Service technicians need to have a good foundational knowledge base around how a particular scan tool works and what the limitations are. For example, some tools may be very quick to connect to a vehicle and access the specific data the technician is laser-focused on. However, that specific tool may not be good at performing other functions, such as running a full vehicle scan or health check and produc-

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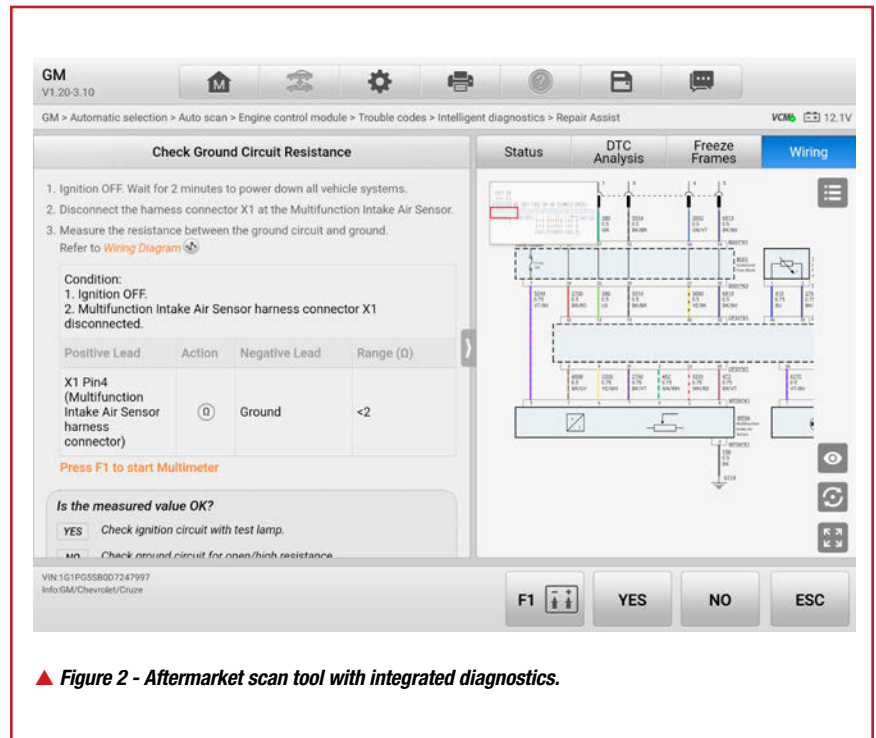
ing a comprehensive report. Some tools are excellent at logging every action performed on the vehicle, which can be used to document how much time went into the analysis on the vehicle, in addition to providing module part numbers and software version levels (Figure 1).

The different tools on the market all have their strengths and weaknesses, and technicians need to be aware of each tool's capabilities in order to get to the bottom of a problem. Some tools can only read generic OBD-II standardized information, which might be fine, however, there could be more generic data the tool can't display. The same goes for tools possessing the ability to display OEM proprietary data: Some are more capable than others and your mileage may vary (more on that later).

CONTROLLER AREA NETWORK (CAN)

Beginning with 2008 models, the CAN protocol was mandated for all passenger vehicles and light trucks sold in the United States. This standard was implemented to help unify data communications between the various modules or nodes populating the vehicle. At the time, most vehicles only had a handful of modules sharing data across this network. Back then, many of the legacy scan tools were unable to communicate with the new CAN standard unless hardware and software changes were implemented. Today, however, vehicles coming off the assembly line possess dozens of modules which may not all be on the same network or communicating using the same protocols. In order for communication between them to take place, specialized modules are equipped with the hardware and software that allow them to act as a gateway device. These gateway devices are often tasked with translating data communicating on one protocol and servicing it up on another. This is where the service technician's knowledge of the various network topologies provides an advantage during troubleshooting events.

Also, due to the Right to Repair legislation passed in Massachusetts several years ago, vehicles built since 2018 are



▲ Figure 2 - Aftermarket scan tool with integrated diagnostics.

more accessible than ever. All a service technician needs are a compliant J2534 interface, such as those offered by Drew Technologies (now Opus IVS), and a computer meeting the specifications outlined by the OEM. Armed with those items they will be able to purchase a subscription to access the vehicle using OEM software. Additionally, many of the operations such as reprogramming and advanced driver assistance systems (ADAS) calibrations are readily available as well. Furthermore, access to secure areas of the vehicle may require additional credentials, such as a Vehicle Security Professional (VSP) license issued through the National Automotive Service Task Force (NASTF).

EVOLUTION OF OBD-II

Since its introduction back in 1996, the OBD-II standard has evolved. Some of the features we typically rely on, including Mode\$06, Mode\$09, and Mode\$0A, were not always around or implemented in the same way. Take Mode\$06, for example. This mode is useful for examining how the onboard monitoring system is grading performance of the various onboard diagnostic routines, but it has its limitations. This information can only be fully

leveraged if the technician is equipped to master using it.

SECURITY

Even prior to the implementation of CAN, the ranking of security was not remarkably high for many OEMs. Today, we are witnessing huge movements by many of the OEMs focused on adding layers of protection barriers to these networked systems, which is understandably necessary. Given the federal mandate driving OBD-II, access to the generic operations cannot be blocked by these security measures. For the rest of the vehicle, however, we are starting to see more driver assistance systems that can support semi-automated driving support operations with the eventual goal of moving the vehicle to a fully autonomous Level 5, according to the SAE J-3016 standard. The hardening of these systems is extremely important. Today, most of us have probably witnessed the decision by FCA (now Stellantis) to include a secure gateway on 2018+ MY vehicles. One of the primary drivers of this stemmed from the work of two "white-hat" hackers by the name of Chris Valasek and Charlie Miller. (For more information on this, refer to my column in the May 2021 issue.)

FCA worked with the folks behind AutoAuth to enable a trust factor solution. According to their website, "AutoAuth provides a service for independent operators to unlock vehicles to securely provide service to their customers. New vehicles will come enabled with the latest cyber security features to protect vehicle owners from cyber-attack. AutoAuth works with independent tool vendors to ensure the tools independent operators use to do their jobs are AutoAuth certified tools. This will allow independent operators to continue to service cyber enabled vehicles. AutoAuth provides the registration service and 'unlock codes' to Independent Operator's service tools to unlock vehicle gateways to perform day to day service."

SOFTWARE

While the generic OBD-II standard mandates access to emissions related information and operations, each OEM can implement additional layers of data tooling that they deem necessary for supporting their service operations. Most of these OEMs offer scan tool manufacturers the opportunity to license access to these layers so that they can be implemented accurately within their tools. However, some may choose to go the route of reverse engineering during the development of their tools. Service personnel must be aware that the OEM does not always produce error-free applications. In fact, I have personally witnessed events where the OEM tool failed to accomplish a task where an aftermarket tool had to be used to realize success. And of course, the inverse has been experienced as well. As vehicles become more and more software defined, unfortunately, these errors are to be expected.

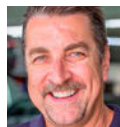
DATA

Given the number of nodes on the vehicle and the vast amounts of data available, the diagnostic technician's knowledge and skill set must be at the highest levels. The modern technician must be able to interpret service information and engineering data when addressing vehicle faults.

Additionally, having some computer science knowledge can be highly beneficial. Some OEMs have incorporated service information right within their diagnostic scan tools through guided fault-finding operations. Some aftermarket tools are also offering similar operations as well (Figure 2). Nevertheless, technicians can benefit tremendously by staying tuned in to emerging trends and best practices through networking opportunities via communities, such as the Diagnostic Network.

In general terms, one diagnostic scan tool is likely not going to be enough unless you are only working on one vehicle carline. All tools have their strengths and weaknesses, and one must be able to recognize them in order to succeed. With the emergence of PC-based applications, multiple scan tool applications installed on a single machine may not be ideal and for some, may be impossible. With the growing focus on security at all levels, safe computing assessments should be implemented. An auxiliary vehicle power supply should be available and used especially when performing any programming/software updates.

The modern automobile is one of the most complicated devices most humans will ever interact with, and as the vehicle evolves into a software defined machine, the skill set demands of the technician will continue to evolve. In my opinion, next generation technicians possessing these unique skill-sets will be in high demand well into the future. ✘



SCOTT BROWN is an ASE Master Certified L1 Technician and has over 37 years of professional service industry experience. He is an independent shop owner in Southern California and is engaged at various levels within the industry. He has a deep understanding of the challenges technicians experience at the service level and is continuously striving to move the industry forward through education and networking. Brown founded Diagnostic Network (diag.net) after 22 years of service at iATN, where he retired as company president in 2018.

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PTEN INNOVATION 2021 AWARDS

Every year since 1999, the *PTEN* Innovation Awards feature the newest and most innovative products introduced to the automotive aftermarket. For 2021, *PTEN* received 137 submitted product entries in 23 categories. Throughout the next several pages, you'll find product details for the winner in each of those categories. For more information on the complete list of 2021 nominees, with full product details, visit: [VehicleServicePros.com/2021IANominees](https://www.vehicle-service-pros.com/2021IANominees). To view a full list of winners online, visit: [VehicleServicePros.com/2021IAWinners](https://www.vehicle-service-pros.com/2021IAWinners).

WINNERS

Rotary Lift ARO22 Alignment Lift

The **Rotary Lift ARO22 Alignment Lift** is a high-capacity, open-front alignment lift engineered for passenger vehicles to large work trucks. The lift has a 26" wide platform runway as well as air-operated rolling jacks, including a 9,000-lb capacity front jack and a low-profile, 15,000-lb capacity rear jack. The ARO22 can service everything from low-profile Class 1 passenger vehicles to Class 5 vehicles weighing up to 22,000 lbs. The ARO22 is designed to accommodate the widest range of vehicles, enhance technician productivity, and help boost profitability, the company says. The ARO22 is also compatible with other alignment systems on the market. **»50**

CATEGORY: Lifts, Jacks, & Stands



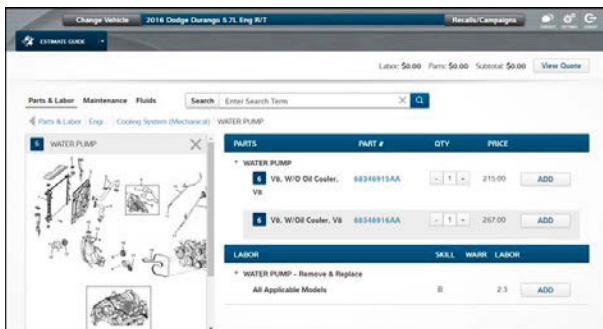
Innovative Products of America

3-pc Specialty Blow Gun Assortment

The Innovative Products of America 3-pc Specialty Blow Gun Assortment,

No. 8055, includes a blow-back model, air-bender model, and an air-scraper model. The BlowBack Gun dislodges and evacuates debris from the bottom of a bolt hole and out of all the threads. The Air Bender Blow Gun reaches hard-to-access areas with a focused, high-pressure, 90-degree angle output. The Air Scraper Blow Gun is used to remove gasket materials hardened to a surface. The stainless-steel shaft and hardened scraper tip combine air pressure and scouring action to remove and blow away stuck-on debris quickly. The blow gun tubes are 3/8" in diameter, 7" in length, and made from anodized aluminum and stainless steel. **»51**

CATEGORY: Air Tools



Mitchell 1

ProDemand Estimate Guide

The **ProDemand Estimate Guide** from **Mitchell 1** is designed to save time for auto repair shops by simplifying the task of writing an estimate. Labor times, OEM parts pricing, and parts diagrams are consolidated on a single page, improving on the previous version where information was delivered in separate tabs. The new streamlined navigation speeds up the process of estimating by reducing the clicks needed to access items and provides a trail to quickly return to previous categories. Other enhancements include automated calculations and the ability to add or subtract parts in the quote with a single click. **»52**

CATEGORY: Automotive Software



Robinair

Premium R-134a ACS Machine, No. 34988NI-SL

The Robinair Premium R-134a ACS Machine, No. 34988NI-SL, is fully automatic and features an integrated scale lock. It is designed for mobile service, used to recover, recycle, evacuate, leak test, and recharge R-134a vehicle systems. The mechanical scale lock eliminates the need to recalibrate the refrigerant scale after transporting the machine long distances, saving time. Accessible from outside the machine, the lock secures the scale, preventing damage or inaccurate refrigerant measurement. The internal tank stays on the scale during transport. A safe startup feature prevents the machine from powering on if the lock is engaged. >>53

CATEGORY: Air Conditioning Service



TEXA USA

AXONE NEMO 2 Truck

The **TEXA AXONE NEMO 2 Truck** features a 12" capacitive screen protected by Gorilla Glass, making it visible in bright sunlight. Its Windows 10 Enterprise operating system is powered by an Intel Pentium quad-core N5000 processor with 8GB DDR4 RAM and 250GB SSD storage. It's Wi-Fi and Bluetooth enabled and has two cameras, useful to create detailed customer reports or take pictures. The AXONE NEMO 2 is engineered to military standards, making it resistant to impacts and falls. It offers coverage including: live data, DTC codes with descriptions, troubleshooting, wiring diagrams and repair procedures, interactive bidirectional, advanced resets, injector coding, ADAS calibrations, and more. Users are able to update the software and add licenses. >>54

CATEGORY: Heavy Duty Scan Tools

Redline Detection

EasyConnect

EasyConnect from **Redline Detection** is compatible with any smoke machine and allows technicians to quickly hook up a smoke machine into an EVAP system for fast, accurate diagnostics and leak detecting on vehicles with no EVAP port connectivity. With EasyConnect, technicians can snap the T-shaped adapters into an easily accessible line, like a line near the purge valve, then connect their smoke machine to the EVAP system. The test kit comes with four different sized adapters with four add-on components for quick connection to most late model automobiles and light duty trucks. EasyConnect comes in a compact and durable storage case. >>55

CATEGORY: Diagnostic Equipment



ESAB

Rogue ES 180i PRO

The **ESAB Rogue ES 180i PRO** inverter for stick/TIG welding features next-level control technology that produces a smooth welding arc with all types of stick electrodes, including E70818 and E6010, the company says. The Lift TIG function provides positive arc starts without the use of high frequency. Rogue delivers a stable TIG arc down to 10A, giving welders the control needed to work on thin metal or delicate components. The unit weighs 18.2 lbs., delivers a maximum output of 180A at 25 percent duty cycle, and uses 115V - 230V primary power. >>56

CATEGORY: Welding

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CATEGORY: AUTOMOTIVE SCAN TOOLS

Hottest New Revenue Stream for Auto Shops

A multi-billion-dollar industry is hiding in plain sight within the automotive service world, and one company has created a dead-simple platform to help you claim your stake! Every single year, thousands of vehicles are either sold or resold with only a single, functional car key. Thanks to XToolUSA, adding a key-making service for your auto shop is now easier than ever!

Identifying, cutting, and programming keys has remained a mystery for most auto shops for far too long. With XToolUSA's automated, interactive interfaces and organized key bundles, any shop can offer additional or replacement highly-profitable car key services for their clientele.

XToolUSA offers a comprehensive **KEY MAKING SYSTEM** with all of the tools and materials required, including access to an easy-to-use website that identifies the correct keys or remotes for your customers' vehicles.

The **NITROUS KEYS** bundle covers a majority of cars on the road, with a special focus on the most popular models, so that you'll maximize the return on your investment.

The **TRITON** is a fully automatic, computerized key cutting machine that will easily cut 100% of the keys offered by XToolUSA. An integrated touchscreen allows the technician or service writer to make the key selection, displays instructions on how to properly load the key, then proceeds to complete the cuts automatically. The Triton will also duplicate existing keys with simplified on-screen instructions.

The **NITRO XT** scan tool will quickly program every single key offered by XToolUSA, to any of its supported vehicles. As a bonus, the NITRO XT is a comprehensive, bi-directional scan tool, ideal for daily shop use. The user interface was designed by ASE Certified Master Technicians who understand the needs of American mechanics.



Through rigorous research and development, this system was designed to support vehicles that have been identified as being profitable and time-efficient. Difficult or problematic vehicles are best left to local automotive locksmiths, with which every shop should have a healthy relationship.

Why is it important to be full service?

As post-pandemic car sales are shifting towards used cars and the industry-wide chip shortage is forcing manufacturers to sell new cars with only one key, there has never been a more compelling time to add key-making services to your product offerings. Many vehicle owners do not realize that they can easily have a spare key made at their local auto shop. A quick question upon intake, "would you like another key for your car?" can increase revenue for a shop by as much as \$100,000 per year! Averaging one key per day and 10 minutes per transaction can make a tremendous difference for any auto shop.

For more information, visit the XToolUSA booth at AAPEX 2021 or go to XToolUSA.com. ■

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Once the key has been identified you will either build the key from scratch with the MFK set or find the remote key you need in the complete bundle set.

CUT



TRITON

Once you have identified and acquired the key you need, it will have to be cut. The Triton is one of the top key cutters on the market, and will cut 99% of all keys in use.

It has the ability to duplicate keys by touching off on an existing key or once the cutting code for the key is known it can be entered into the Triton's UI and it will cut the key.

PROGRAM



After you have identified and cut the key it will have to be programmed to the car. The Nitro scan tool makes programming the key easy and fast.

Most keys can be programmed to the car by the Nitro in less than 16 minutes and in most cases under 5 minutes.

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TO LEARN MORE VISIT XTOOLUSA.COM



CATEGORY: MISCELLANEOUS

Award-Winning Content Highlights The Group Training Academy's Expanded Training Resources

Following the recent merger of National Pronto Association and the Automotive Distribution Network to form The Pronto Network, The Group Training Academy (TGTA) has added the training offerings from The Network Academy to its popular web portal. The new and improved award-winning TheGroupTrainingAcademy.com now provides more online training courses and resources than any other training option in the aftermarket.

"During the service provider panel at our national meeting earlier this year, the number one request cited by the service professionals was the need for more training," said Larry Pavey, CEO, Automotive Parts Services Group (The Group). "By combining The Group Training Academy and The Network Academy and consistently adding new content, The Group continues to lead the way in providing quality training to shops and their professional service technicians."

All banner shops under The Group umbrella, including Federated Car Care, Pronto Smart Choice, Parts Plus Car Care Centers and national account customers, will have free access to TGTA offerings. Shops may upgrade to access premium courses and other expanded training options.

Among the updated training resources now available are over 1,000 hours of content from Automotive Video Innovations (AVI), hundreds of hours of vendor training, customizable learning paths, virtual coaching and mentor programs, and live interactive training workshops.

The Group has also made the development of educational content about alternative fuels a priority. The "Electric and Hybrid Electric Vehicle Technician Training" course offering is designed to educate experienced automotive professionals on proper and safe procedures for diagnosing and repairing electric vehicles. It is also flexible enough to train those in secondary and post-secondary education programs.

To accompany the course, The Group has also introduced a classroom visual training tool that assists in the education of students. A modified Toyota Prius, which won a Professional Tool & Equipment News (PTEN) 2021 Innovation Award, was developed to offer students a chance to interact with non-energized, high voltage components and learn the proper techniques and personal protective equipment needed for a safe environment.

The Group Training Academy is also offering access to monthly high definition (HD) broadcasts covering current and emerging topics and trends in the auto care industry. These pre-recorded productions are aired at a specific date and time to allow the audience to participate in live question and answer sessions with the instructor.

Available 24-hours-a-day, seven days a week, the training is presented in a video format designed especially for automotive professionals.

To learn more, visit www.thegroupapsg.com.

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CATEGORY: TOOL ORGANIZATION

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AVAILABLE COLORS

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- Neon Green
- Orange
- Matte Black
- Matte Red
- Matte Silver Gray

WIDTH	DEPTH	HEIGHT	DRAWER COUNT	SQUARE CAPACITY	CUBIC CAPACITY	UNIT WEIGHT	LOAD CAPACITY
47"	21.5"	44.25"	6	4,060 sq.-in.	28,960 cu.-in.	307 lbs.	700 lbs.

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Introduced in December 2020, the Model ESS6100 integrates Associated Equipment's experience in battery charging and battery and electrical systems testing to create an exciting new unit designed to both vehicle manufacturer and vehicle battery manufacturer requirements. This next-generation charger uses inverter technology to charge all 12V battery types, allowing the technician to keep 12V lead acid, enhanced flooded or lithium-ion batteries at a perfectly stabilized voltage during diagnostic phases pairing well with the technician's favorite diagnostic tools.

The Model ESS6100 Smart Battery Charger and Diagnostic Support Unit supports up to 100 Amps of re-flash power with adjustable voltage to accommodate any special, changing, or new voltage requirements from battery or OEM vehicle manufacturers. The digital backlit display is easily readable and features on-screen English, French and Spanish instructions. The ESS6100 is polarity protected and has an adjustable charging voltage to accommodate many different battery charging voltages and is field programmable with USB connectivity making it 100% customizable for any shop.



The ESS6100 has four operating modes: Charging, Diagnostics, Showroom and Tester and will automatically deliver the best charging cycle recommended for maintenance of the most advanced vehicles on the

market. The Showroom mode powers up vehicle dash or electronics in show rooms or show events and can even operate without a battery in the vehicle. USB-connectivity makes it 100% customizable, extremely versatile and low profile at 5.1"H, Associated Equipment's ESS6100 is suitable for any shop or shop environment. It requires a standard 15 Amp 120VAC receptacle – no need for dedicated AC outlet, is CE approved, RoHS compliant and meets the US Department of Energy Consumer Battery Charger Efficiency Requirements. ■

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"Very versatile small charger."



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Now let's talk TIG, with the Rogue ET 200iP PRO being the cream of the crop. It has HF arc starts and a pulsed DC TIG output up to 500 Hz pulses per second. Pulsing provides more control heat input and narrows the weld bead profile, helping with thin metals, delicate components or heat-sensitive applications like stainless.

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IA800 Intelligent ADAS Optical Positioning System

The **Autel IA800 Intelligent ADAS Optical Positioning System** is for use with Autel's Standard ADAS Calibration frame and is designed to reduce setup time involved in frame to vehicle positioning prior to ADAS component calibration. It includes six high-resolution cameras and ADAS positioning software as well as four-wheel clamps with camera targets, standing targeting component, and optical positioning software update for the user's existing MaxiSYS tablet. The system recognizes the positioning targets and calculates the current angle, distance, and offset position of the frame to the vehicle. The technician simply follows the onscreen instructions to move the frame or adjust the angle of it until the current values match the required values. **>>67**

CATEGORY: ADAS



Automotive Video Innovations (AVI)

EV Training Tool

The **EV Training Tool** from **Automotive Video Innovations (AVI)** is a cut-away Prius that is designed and created by the company's instructor teaching electric vehicle classes. The vehicle is a full functioning vehicle but has several unique features to allow technicians to master high voltage theory and diagnostics. Not only is the vehicle a cutaway so items can be seen and accessed easily during classes but also has another full set of dead high voltage electronics, which allow the students to master testing safely before moving to the live circuits. It also has an aftermarket scan tool as well as the Toyota tech stream tool to master PID data. **>>68**

CATEGORY: Miscellaneous

MAHLE Service Solutions

OzonePRO Professional Sanitation System

The **MAHLE Service Solutions OzonePRO Professional Sanitation System** is a portable Ozone Generator for vehicle sanitation and odor elimination. A MAHLE exclusive multifunction sensor within the unit controls every step of the sanitizing process based on the vehicle's environmental and internal parameters. It continuously measures and controls the ozone concentrations produced in the environment and keeps levels constant while simultaneously avoiding excessive ozone volumes. The OzonePRO weighs just under 7 lbs and can easily be used and powered inside a vehicle's cabin thanks to its 12V cigarette lighter socket. Its app, O3 Easy, allows technicians to manage the device and remotely monitor its processes. **>>69**

CATEGORY: Shop Equipment



Plymovent

FumeCaddie

The **FumeCaddie** from **Plymovent** is designed to capture exhaust fumes at the source, emitted by any vehicle or apparatus running indoors. The portable exhaust fan removes the fumes through a suction hose and delivers the fumes to the outside of the structure through the exhaust hose. It's directly connected to the vehicle or apparatus tailpipe with an easy-to-use nozzle. The extractor consists of a 3/4hp 115V fan assembly, 33' of extraction hose on the standard FumeCaddie, and 41' of hose on the two hose with "y" adapter FumeCaddie, an easy-to-use nozzle, and a 9' power cord. It's all assembled on an easy-to-manuever, ergonomic cart. **>>70**

CATEGORY: Safety & Personal Gear



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Associated Equipment High Power Smart Charger

The **Associated Equipment High Power Smart Charger**, No. ESS6100, charges all 12V battery types allowing users to keep a 12V lead acid or lithium battery at a stabilized voltage during diagnostic phases. With four operating modes — charging, diagnostics, showroom, and tester — it will deliver the charging cycle recommended for the maintenance of the vehicle. With USB-connectivity, the charger is fully customizable. The ESS6100 is OE vehicle manufacturer approved, versatile, and has a low profile of 5.1" in height. It supports up to 100A for 12V batteries in the diagnostic phase, requiring a standard 120VAC receptacle for use in all shop environments (optional 120A/240VAC available). **»71**

CATEGORY: Battery Starting & Charging



Pacific Automotive Industries Hydraulic Ball Joint Popper

The **Pacific Automotive Industries Hydraulic Ball Joint Popper** is designed to dismount ball joints and tie rods quickly without damaging any suspension components, including aluminum suspension systems. European designed and precision engineered, the tool uses 4.5 tons of force to dismount conic bolts on passenger cars and light trucks. The tool steel is made from proprietary alloys forged in Finland. Its hydraulic cylinder is made with an adaptive inner sleeve fitted with specialized seals that maintain their elasticity for thousands of cycles, the company says. The tool is powered by a 10,000 ft-lb air/hydraulic foot pump. **»73**

CATEGORY: Specialty Tools



H&S Autoshot Self-Piercing Riveter

The **H&S Autoshot Self-Piercing Riveter**, No. UNI-6700, is ideal for self-piercing, hole punching, flattening, and rivet removal applications. The cordless and portable system produces 6 tons of power through Makita Li-ion rechargeable batteries. The cold-forming process requires no heat or pre-drilled holes to join aluminum or steel panels. The 360-degree arm allows access to various rivet locations. Package includes storage case, starter rivets, die set (3mm SPR, 5mm SPR, extracting, 6mm hole punch, flattening), two Makita 18V Li-ion batteries, rapid charger, and 5.25" throat depth arm. **»72**

CATEGORY: Body Shop



Milwaukee Tool M12 ROVER Service and Repair Flood Light w/USB Charging

The **Milwaukee Tool M12 ROVER Service and Repair Flood Light w/USB Charging**, No. 2367-20, provides users with a flexible source of light designed for service and repair applications. Delivering 700 lm of TRUEVIEW high definition output, it can easily light a workspace for up to 24 hours. The light features a light head that pivots 110-degrees, and a strong rear-facing magnet to easily attach it to jobsite surfaces such as steel studs, I-Beams, and job boxes. Additionally, the light's streamlined design is optimized for handheld use and stationary task lighting. **»74**

CATEGORY: Lighting



Ullman Devices

Digital Diagnostic Mirror

The **Ullman Devices Digital Diagnostic Mirror**, No. E-DM-1MB, is designed to help technicians see into those tight spots, even handsfree. The digital camera is attached to a dual point 360-degree rotational knuckle and connects to smartphones and tablets through the Ullman DM App, available in Android and iOS app stores. The 720p camera has LED illumination and captures live footage, images, and videos, helping increase credibility with customers. The product includes both a telescoping stainless steel handle, reaching over 4' long, and a magnetic base option for handsfree use. The device is IP54 dust and water resistant. **»75**

CATEGORY: Inspection Tools & Lab Scopes

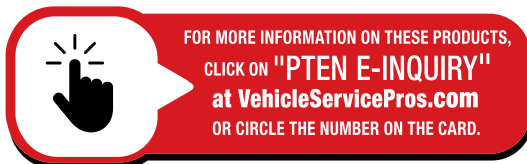


Cornwell Quality Tools

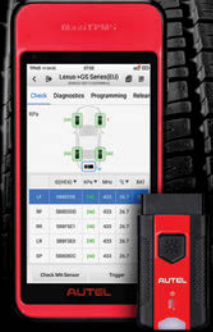
6-Drawer Flip Top Cart with Power Drawer

The **6-Drawer Flip Top Cart with Power Drawer** from **Cornwell Quality Tools** measures 47" wide and features a vertical power drawer with organization designed for air tools, cordless tools, and chargers. The extra-deep till measures 9" and offers a charging shelf for smaller devices like tablets and phones. Available in six colors, the cart includes black drawer pulls, corner bumpers, casters, and lock. Its overall capacity is 4,060 sq. in./28,960 cu. in. **»76**

CATEGORY: Tool Organization



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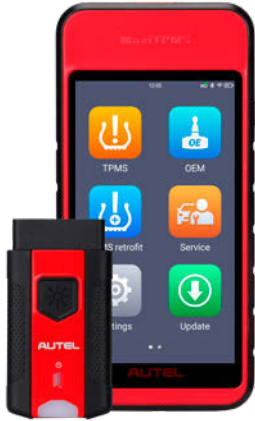


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Autel MaxiTPMS ITS600 Intelligent Tire Service and Diagnostic Tablet

The **Autel MaxiTPMS ITS600 Intelligent Tire Service and Diagnostic Tablet** is a wireless, touch-screen Android-based tablet that offers complete TPMS diagnostics and service functions. The tablet features a 5.5" color display and Bluetooth VCI. Compatible with U.S., Asian, and European TPMS-equipped vehicles, the

ITS600 offers an enhanced TPMS status screen, VINscan for rapid vehicle identification, four MX-Sensor programming options, OBD-II relearn functionality, and onscreen relearn instructions for all vehicles. The ITS600 can activate, read, and relearn all known sensors, and perform TPMS system diagnostics and four common maintenance services. The ITS600 is compatible with TBE200/TBE100 Tire Tread and Brake Disc Wear Analysis tool (sold separately). **>>78**

CATEGORY: Tire & Wheel Service



Pro-Cut International B17 Bench Lathe

The **Pro-Cut International B17 Bench Lathe** is designed to quickly change over brake discs to drums due to its P2 cutting head that has a disc twin cutter and drum cutter on one tool holder that pivots. The drum or rotor feed is automatically controlled by head position. The B17 offers clean and smooth direct current power for quiet operation and ideal surface finishes. Users have full control of arbor speed, meaning there is no need to change belts between low and high speed. The B17 also features a heavy duty mobile tool cabinet with three drawers, a shadow-less arbor ring light and gooseneck LED lamp, and a command module that tracks usage and ROI. **>>79**


CATEGORY: Brake Service

Mechanic's Time Savers

M527 52" 7-Drawer Heavy Duty Toolbox and Workstation

The **M527 52" 7-Drawer Heavy Duty Toolbox and Workstation** from **Mechanic's Time Savers** is sold exclusively through Medco. It features a heavy duty work surface with a vice mount that can be mounted in four locations. The toolbox includes a locking pry bar box and 8" heavy duty casters. It offers lots of storage space and also includes a can holder tray and large parts tray that can hold gallon jugs. The tough toolbox provides the ideal spot for technicians to work on and store their tools all in one place, the company says. **>>80**

CATEGORY: Tool Storage



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**XToolUSA
Key Making System**

The **XToolUSA Key Making System** contains the hardware necessary to cut and program vehicle keys as well as keys and remotes for common vehicle types. The system includes the NITRO bidirectional scan tool, Triton key cutting machine, and Nitrous Keys. The NITRO features key programming functionality, while the Triton key cutting machine is able to originate and duplicate most key types including coupes, sedans, motorcycles, SUVs, pickups, vans, RVs, heavy duty trucks, construction equipment, and more. It can also duplicate house keys.

»81

CATEGORY: Automotive Scan Tools



**ProMAXX
PowerDrive**

The **ProMAXX PowerDrive** is designed to convert any 1/4" ratchet into a limited space drill. It gives technicians increased access to tight areas such as exhaust manifold repairs that fall behind the shock tower in Ford Trucks and under the firewall of GM. Additionally, the PowerDrive accessory pack includes seven bits in multiple sizes and lengths and a countersink. The accessory kit also includes an adapter which allows for the threaded-shank tooling to be used in a traditional drill chuck. The PowerDrive also offers precise tolerances, giving more accurate drilling than a three-jaw configured handheld drill and chuck, the company says.

»82

CATEGORY: Hand Tools



Milwaukee Tool

M12 FUEL Right Angle Impact Wrenches

The **Milwaukee Tool M12 FUEL Right Angle Impact Wrenches** are equipped with a long body profile to provide more access and control in hard-to-reach applications. The low-profile head of 2.8" in length fits into tight spaces, allowing increased productivity. The Powerstate brushless motor delivers up to 220 ft-lbs of nut-busting torque, removing stubborn bolts and fasteners. The impact wrenches are available in 3/8" and 1/2" sizes.

»83

CATEGORY: Power Tools

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Servicing hydraulic braking systems

Addressing squeaky brakes, pressure loss, and other braking issues requires the right tools and equipment.

By Roy Ripple, Contributing Editor

Brakes are kind of like offensive linemen — they don't get noticed until they do something wrong. All it usually takes is a strange noise or an unfamiliar feel in the brake pedal to bring a responsible driver straight to your shop for a diagnosis.

VERIFY THE CONCERN, THEN CHECK THE CAR OVER

When diagnosing a brake concern, the critical first steps are the road test and the visual inspection, as with all diagnoses. The visual inspection is the most valuable diagnostic tool in your toolbox. Looking over the entire car, not just the system you're diagnosing, allows you to get a feel for the vehicle. You're never just repairing a system, you're repairing a vehicle.

You should always record the thickness of the brake linings first. OTC makes a real nice brake pad thickness gauge that allows you to get an accurate reading of the inboard and outboard pads without removing the caliper, and in some cases, the wheel. Press the tip of the pen-size tool against the brake rotor and pull the gauge finger against the brake pad backing (Figure 1). The results are easy to read and displayed in plain view.

PINPOINT THE CAUSE OF SQUEAKY BRAKES

When diagnosing a brake squeak, pay close attention to the surface of the rotors. Look for a sign that the pads might be hitting the ridges on the outer edges of the rotor. As a brake pad wears, sometimes the friction material will mushroom out from the sides of the pad and contact the ridge.

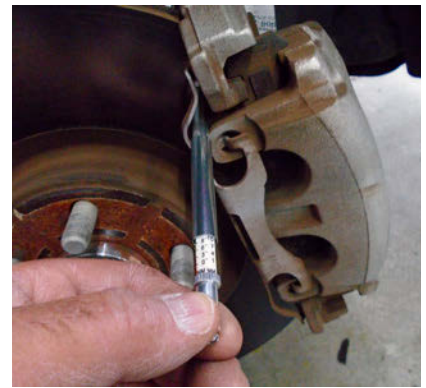
A shiny ridge is a sign that this could be happening. Examine the contact surface of the rotors. Any grooves that you see on the rotor that have transferred to the brake pads will cause a squeal. If the brake linings pass, you can resurface the rotor and clean up the brake pads with some 100 grit sandpaper; this should stop this type of brake noise.

I highly recommend using an on-car brake lathe when resurfacing rotors. Spinning the rotor on its axle or hub bearing makes for a much tighter cut. We use the Pro-Cut PFM 9.2 DRO. It's simple to hook-up, easy to move around the shop, and always produces a nice cut. On-car brake lathes save the time of having to remove frozen or labor-intensive rotors. They also allow the technician to stay in his bay rather than carry rotors across the shop to the brake lathe.

APPLY THE CORRECT PRODUCTS TO PREVENT BRAKE NOISE

High-quality silicone-based caliper slide grease should be applied to every place on a brake caliper where metal touches metal. This means caliper slide pins, anti-rattle clips, and the edges of the brake pad backings. Wheel bearing grease is too thick, and white grease is too thin. Using the correct lubricant will prevent a high percentage of brake noise complaints. Permatex Silicone Ceramic Extreme brake parts lubricant applies evenly without running or wadding up. This makes it possible to apply the grease only where you need it to be without it migrating onto the friction material.

Most quality brake pads come with a noise suppressing material adhered to the back of the pads. This is to prevent movement between the brake pads and the cali-



▲ Figure 1 - Technician using OTC's brake pad thickness gauge.

per, dampen vibration, and absorb noise during braking. This small amount of friction can create a loud brake noise. Products are available that can be applied to the back of the pads if they don't come with the pre-applied sticky stuff. Aftermarket noise dampening products are available as an aerosol spray or as a paste in a bottle or a tube. CRC Disc Brake Quiet aerosol spray works well because it sprays on evenly and dries quickly. It's crucial that the spray dries completely before installing the pads. Whichever product you choose to use, it's important not to install a brake pad with a bare metal back.

Alternatively, if you're diagnosing a low or drifting brake pedal, first check for an external leak. Not all brake fluid leaks present themselves as puddles in the driveway. Sometimes wetness around a caliper piston or brake fluid behind the master cylinder is enough to cause an issue at the pedal. Don't forget to pull back wheel cylinder boots and check for fluid that has bypassed the cup seals.

After determining there are no leaks, watch the calipers operate while an assis-

»» TOOLS USED:

- OTC BRAKE PAD THICKNESS GAUGE
- PRO-CUT PFM 9.2 DRO ON-CAR BRAKE LATHE
- PERMATEX SILICONE CERAMIC EXTREME BRAKE PARTS LUBRICANT
- CRC DISC BRAKE QUIET AEROSOL SPRAY
- THEXTON BRAKE LINE BLOCKERS
- SUNEX 9710M FLARE NUT CROWFOOT SOCKET SET
- MITYVAC MV6840 HAND-PUMPED PRESSURE BLEEDER
- THEXTON MASTER CYLINDER BENCH BLEEDING KIT

tant activates the brake pedal. Look for a piston that might be traveling too far before it contacts the inboard brake pad and the rotor. This is a common problem on rear calipers with an integral parking brake.

Check for excessive movement in the brake pedal before the pushrod contacts the master cylinder. I recently serviced a vehicle that was missing the nose that screws into the end of the master cylinder pushrod. This caused over two inches of excessive movement at the pedal.

USE BLOCKERS TO DIAGNOSE A PRESSURE LOSS

If your preliminary inspection shows no external leaks or mechanical failures, you're most likely facing an internal pressure loss in a component. The best way to diagnose this issue is by using blockers to isolate hydraulic components (Figure 2).

Start by removing both outlet lines at the master cylinder and replacing them with blockers. You must use a set of good-quality blockers. The smallest leak at a blocker will cause an erroneous result that could lead to the replacement of the wrong parts. I've been using a set of Thexton blockers for years. They stand up well to the brake fluid without

corrosion, and they seal perfectly. The brake pedal should be rock hard with both master cylinder ports blocked. If the pedal moves, the master cylinder is either losing pressure internally or is harboring trapped air.

If the master cylinder passes, block off the outlet ports at the hydraulic control unit (HCU). The pedal should be hard

with the ports blocked. If an outlet valve is stuck open, you'll know it by how far the pedal travels. A hard pedal during this step means that the master cylinder and the HCU are not the cause of the low brake pedal, which means that the problem is at one of the wheels.

Remove one blocker at a time, reinstalling the line on the HCU. Whichever ➔



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circuit causes the pedal to sink is the bad guy.

We had a Ford Escape in the shop with a low brake pedal concern. The pedal was up high and hard when blocking off the ports on the master cylinder and the HCU. We removed the HCU blockers one at a time and discovered that the pressure loss was in the circuit feeding the left rear wheel. We then removed the rubber brake line from the caliper and blocked it. The pedal was still mushy. We removed the steel line from the rubber hose and blocked it. The pedal came right up to solid. The causal part was the rubber brake hose. Under close examination, we found a soft spot in the hose that was ballooning under the pressure of brake activation. Maybe we should have found this during the visual inspection, but using the blockers took us straight to the problem.

The outlet lines on a HCU are usually very close together and hard to get a wrench on. Consider using a flare nut crowfoot set to remove the lines. A crowfoot enables the removal of a single line without having to remove others to gain access. The Sunex 9710M is a nice affordable 3/8 drive crowfoot set. They're small enough to fit between the lines, leaving enough room to get a good turn on the fitting.

USE A PRESSURE BLEEDER AS A DIAGNOSTIC TOOL

A stuck open outlet valve isn't the only way that a HCU can affect brake pedal feel. A stuck closed inlet valve will produce a brake pressure differential concern causing a hard pedal and a possible brake pull. The best piece of equipment to diagnose a brake pressure differential concern is a good brake pressure bleeder. A brake pressure bleeder keeps consistent, adjustable pressure on the brake system. This enables you to check pressures at the wheels, knowing that pressure at the master cylinder is persistent. A pressure bleeder allows you to open a bleeder valve and just let it flow. This is great when replacing brake lines. You can

push all the air out of a line with just one turn of the bleeder valve.

There's no need to purchase an expensive electric or pneumatic pressure bleeder. I've been using the Mityvac MV6840 hand-pumped pressure bleeder. The unit keeps a constant 30 psi on the system. It comes with adapters for most master cylinders, including a universal adapter that easily attaches with a chain. Leaky adapters can hinder your diagnosis and make a mess on your shop floor. I haven't had any issues with these adapters leaking.

You'll have no pressure at the wheel most of the time when an inlet valve is stuck in the closed position. I have seen fluid sneak past a stuck valve. So reduced pressure at the wheel could also be due to a stuck closed inlet valve in the HCU.

USE THE RIGHT EQUIPMENT TO BENCH BLEED A MASTER CYLINDER

Since we're talking about bleeding brakes, I'd like to emphasize the importance of using the correct equipment to bench bleed a master cylinder. One-way check valves are the gadgets that separate a good master cylinder bleeder kit from a bad one. We all know the basic master cylinder bench bleeding drill. Hoses are attached to the outlet ports with a threaded fitting, and the opposite ends of the hoses are submerged in brake fluid. As the piston is applied, fluid and air exit the master cylinder, fluid is sucked back in when the piston is slowly released. The problem is that air is also pulled back into the master cylinder bore during the backstroke.

The one-way check valves are placed in line between the threaded fittings and the hoses. They allow fluid and air to exit through the hoses while stopping anything from returning. The clear hoses allow you to see when the air bubbles stop, and only fluid is leaving the master cylinder. Thexton makes a variety of good master cylinder bleeding kits. The right kit for you depends on which adapters you need for the models you service. They all come with check



▲ Figure 2 - Image of blockers being used to diagnose an HCU.



▲ Figure 3 - Bleeding a master cylinder using a bleeding kit with one-way check valves.

valves and tough clear hoses. Be careful that you don't run the reservoir dry when using check valves. Keep in mind that no fluid is getting pulled in to replace what you pushed out.

BUY EQUIPMENT YOU CAN TRUST

The steadfast rule in all automotive diagnoses is if you can't trust the equipment, you can't trust the results. Take the extra time and spend the extra money to get the tools you know you can count on. You'll surely see a high return on investment. ❌



ROY RIPPLE is a Ford Senior Master Technician and an ASE Master Technician with over 30 years experience in the automotive industry. He works

full-time as the shop foreman at a Ford dealer in New Jersey.

ripkrypton@gmail.com



MaxiSYS IA800 Intelligent ADAS: Process is Precision

When it comes to the calibration of Advanced Driver Assistance Systems (ADAS) components, there are two essential servicing concepts, follow the prescribed vehicle manufacturer instructions and document everything from pre-calibration setup to post-calibration validation.

The Autel Standard Frame ADAS Calibration System, the MaxiSYS IA800 Intelligent ADAS optical positioning system adaption package combined with the Autel calibration software enable technicians to perform these procedures via the most efficient and affordable calibration solution in the industry.

The IA800 employs six high-resolution cameras and ADAS positioning software to transform Autel's Standard Calibration frame into a rapid yet precise frame centering and vehicle distancing unit, enabling technicians to accomplish target to vehicle placement in minutes.

Wheel clamps with camera targets are attached to the rear wheels, and a standing target component is placed in the front or to the side of the vehicle, depending on the vehicle make, model and year. The MaxiSYS tablet, now placed securing on the frame, is paired with the cameras.

The system recognizes the positioning targets and calculates the current angle, distance, and offset position of the frame to the vehicle. The technician follows the onscreen instructions to move the frame or adjust its angle until the current values match the required values. Checkmarks display for each parameter once the required position values are met, and that's it, the vehicle is ready for calibration. Compare that setup with one using mechanical tools such as plumb bobs and measuring tape that takes 40 minutes on average.

Added value to the system is its alignment Pre-Check capability that uses the IA800's camera system and targeted wheel clamps attached to all four wheels to determine the vehicle's current alignment specifications and compare them with the vehicle manufacturer's allowed tolerances. Ensuring a vehicle is correctly aligned is essential to ensuring a correct ADAS component calibration. If within OE-specified tolerances, the technician can proceed to optical positioning of the frame to the vehicle. A 4-wheel alignment should be performed if the vehicle is out of the OE's tolerance range. The IA800 system is incredibly user-friendly, with the tablet displaying vehicle-specific, step-by-step instructions for the technician.

This complete solution of software, frame, and targets, and now with the IA800 optical system enables technicians to realize a verifiable component calibration workflow of Pre-Check (alignment), Position (OE-specified target to vehicle positioning), Perform (camera, radar, Lidar, and Night Vision component calibration with any MaxiSYS tablet with ADAS calibration software) and Provide (detailed documentation of complete process). ■



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TEXA ADAS Solutions and the New AIR2 SAN Ozone Generator



The TEXA RCCS2 (Radar Camera Calibration System (RCCS2)) offers a complete range of calibrations for all ADAS systems in the market. TEXA has developed a range of modular tools that satisfy the needs of glass replacement specialists, body shops, multi-brand centers and tire centers.

RCCS 2 is a complete, professional solution for all kinds of radar and camera calibration. The system comprises a robust main support with electrically powered height adjustment and a practical knob at the rear to tilt the unit on respect to the vehicle. The adjustment bar is equipped with two distance meters and a sliding reflector plate with a central laser for front radar pointing. An additional laser level at the top of the structure locates the center of the vehicle simply by pointing at its front badge. This advanced technology allows the system to be aligned easily and precisely with respect to the vehicle and the floor.



When it comes to ADAS calibrations there are several factors that a technician must consider to complete the job successfully, TEXA works hard to mitigate and master those factors. Precision is probably the most important element when it comes to ADAS calibration, that is the reason why the RCCS2 uses as much technology as possible when adjusting the unit and setting distances. The detailed step-by-step procedures with explanations, pictures and clear references are meant to assist the operator during the whole calibration leaving little to no room for mistakes. It is also important to mention that on both static and dynamic calibrations TEXA works according to the vehicle manufacturers' standards.



TEXA has also developed a highly professional solution to eliminate viruses and bacteria from cars and trucks and buses, AIR2 SAN is an advanced Ozone generator that professionally sanitizes vehicles. The operator can benefit from a completely automatic operation, not having to do anything other than starting the AIR2 SAN using the APP or the remote control and waiting for the sanitation to complete. Thanks to its sensors, AIR2 SAN identifies the correct amount of ozone to distribute instead of releasing an unprecise amount of gas that might be insufficient or on the opposite side might be too much and ruin the vehicle's interiors. The reconversion of the ozone into oxygen at the end of the procedure is essential to avoid having an irritant or bad smelling environment. The TEXA Air2 San gives the operator the green light to access the vehicle once the ozone concentration has dropped significantly and it is safe to breathe. At the end of the process, AIR2 SAN generates a useful and printable report that can be handed to the customer. ■



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ADAS CALIBRATIONS MADE EASY

TEXA has proudly introduced to North America its famous Radar Camera Calibration System (RCCS2) offering a complete range of functionalities for all ADAS systems. Also "2" identifies the second generation of this powerful tool that was engineered and launched by TEXA back in 2016. After 4 years of ADAS experience all over the world the company has introduced its professional system also in the US. TEXA has mastered all aspects of ADAS calibrations offering technical solutions and technologies that simplify the vehicle positioning and its calibration.

Working on ADAS systems has never been this easy thanks to an intuitive software, detailed step-by-step procedures, targets sized according to OE specifications, US based tech support and innovative solutions like laser meters and levels.



Reflector for blind spot radar calibrations



Mobile and easy "all around" system for Volkswagen 360° camera calibrations



Contact us for more information about our diagnostic solutions.

AIR2 SAN
OZONE
GENERATOR



NEW

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+1 855.200.8392





FAST-TRACK® INTELLIGENT DIAGNOSTICS



Snap-on has a Fast-Track Intelligent Diagnostics solution for every Technician

Fast-Track® Intelligent Diagnostics from Snap-on® is revolutionizing the business of diagnostics. When a vehicle pulls into the bay, technicians are likely to encounter interdependent fault codes, live data points, graphs, flow charts and diagrams. With so much information available, the biggest challenge is to find and follow the right clues to a solution. Fast-Track Intelligent Diagnostics, exclusively from Snap-on makes it possible for technicians to be more efficient by bringing tests and information related specifically to a diagnostic trouble code (DTC) to one place.

Intelligent Diagnostics provide pre-filtered information:

- **Technician service bulletins (TSB), recalls and campaigns**
- **Scanner data, custom data lists and smart data automatically configures the display to show PIDS relevant to the fault code**
- **Functional tests**
- **Guided component tests***
- **SureTrack® real fixes, tips and top repair charts**

With Intelligent Diagnostics and a step-by-step diagnostic process, technicians can power through their workload.

STEP 1: Check for codes. DTCs are still the best source to narrow the search. Once it's known if there's a code, go to step two and use the code or symptom to determine a likely cause. Identifying a code opens up the possibilities of putting the Fast-Track Intelligent Diagnostics software to best use.

STEP 2: Search factory TSBs. Intelligent Diagnostics narrows them down to only those for that code. They are a great companion to fault codes and SureTrack. Most technicians use a repair information system like ShopKey® Pro or ProDemand® for all-makes TSB access. Intelligent Diagnostics takes users directly to the TSBs related to the DTC they're investigating.

STEP 3: Intelligent Diagnostics smart data filters unrelated PIDs so technicians only need to look at what is relevant to the code. It automatically sets PID triggers which flag PID red or blue, out of limits or within limits.

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STEP 4: Check SureTrack for real world answers. SureTrack take the clues: vehicle, code, symptom and shows the most common parts used to repair similar vehicles and problems. It's based on experience from millions of successful repair orders, so it provides the actual parts used to complete the repair.

STEP 5: Use functional tests or component tests to pinpoint and verify the problem. Guided Component Tests take technicians to the specific information they need, showing what to test, how to connect and what results to look for. Directly testing the suspected component can verify a component before replacement.

The diagnostic process may vary depending on personal workflow and the job at hand, but with the power of Fast-Track® Intelligent Diagnostics, technicians save time and receive a confident solution.



NEW – the TRITON-D10™
Find out more at snapon.com/TD10-review

*Available on ZEUS® and TRITON® platforms only

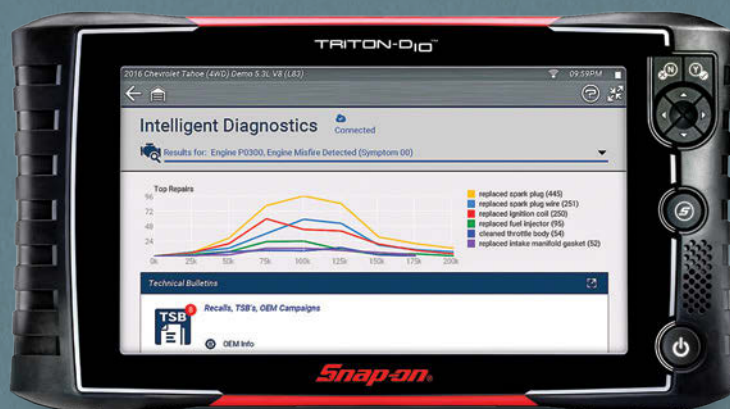
FASTER THAN ANY OTHER TOOL IN ITS CLASS.

Driven by Fast-Track® Intelligent Diagnostics from Snap-on®, the **TRITON-D10™** features the quickest path from boot-up to full system code scan of any tool in its class.

Dig deep into the systems of a vehicle and evaluate performance with comparative data, systematically eliminating the unnecessary to help you make repair decisions on *that* exact vehicle under *those* exact circumstances.

Always-on, always-reliable access to dynamic repair information. Sophisticated, intuitive diagnostic testing and component verification. All from a single source.

Everything you need, and nothing you don't. For complete confidence in your ability to make fast, accurate decisions on every complex repair.



SAY 'HELLO' TO THE **NEW** TRITON-D10.



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Shockit Sockets Are Great Because they Work!

Shockit Sockets utilize air hammer power to loosen and remove frozen nuts and bolts. They provide access where impact hammers, breaker bars, and crows feet won't. Long extensions to access buried fasteners rob the tech of badly needed torque power to loosen frozen nuts and bolts.

Many techs fear using an air hammer to remove a frozen fastener to avoid the danger of breaking a fastener resulting in a bigger problem. During development of our custom offset design 8mm radius tip Shockit Punches, we realized the weight and thickness of the shaft diameter prevented air hammers from over powering the fastener.

IT'S ALL ABOUT THE VIBRATION

The magic of Shockit Sockets is due to the hypersonic vibration of the air hammer passed through to the fastener. Vibration over torque gets the job done.

Our custom Shockit Punches are designed to provide maximum performance for Shockit Sockets without damaging fasteners. Shockit Punches are available in standard 11", short 5.5" and maximum 22" lengths to access the most difficult to reach fasteners.

Shockit Sockets are available in our LT994 O2 Sensor Removal Kit, LT1900 series crows foot and line wrench sets and LT1940 series Kentucky Kicker driver nut and bolt removal kits.

LT1900 series crows foot and line wrenches are available in SAE sizes from 1/4" to 1-5/16" and metric sizes from 6mm to 24mm. LT1940 series Kentucky Kicker sizes are available from 3/8" drive to 3/4" drive.

See your mobile tool distributor and get your fasteners loose today. ■



▲ **LT1900 10 Piece SAE Shockit Crows Foot Set**



▲ **LT1930 12 Piece Metric Shockit Line Wrench Set**



▲ **LT1940-1/2 1/2" Kentucky Kicker Shockit Driver Kit**



▲ **LT994 Shockit Socket O2 Sensor Removal Kit**



▲ **LT1910PK Shockit Punch Kit**



▲ **LT1900-3/4 in use with LT1910P**



▲ **LT1930-17 in use with LT1910PS**



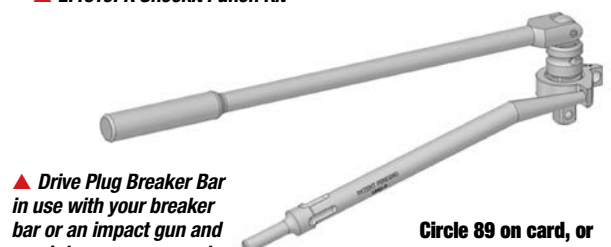
▲ **LT994 in use**



▲ **LT1910PS up close**



ltitools.com



▲ **Drive Plug Breaker Bar in use with your breaker bar and an air hammer powered Shockit Punch**

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NO SPACE. NO ACCESS. NO PROBLEM. LTI HAS THE TOOLS!

AIR HAMMER POWERED SHOCKIT CROWS FOOT & LINE WRENCH SETS FOR EASY ACCESS

- Must be used with Shockit Punches for maximum performance & warranty coverage
- Uses the force and vibration of an air hammer
- Air hammer powered angled punch allows for use in tight places
- Indexed holes designed to keep Shockit Punches from slipping off crows foot & line wrench
- 30% more steel, 30% stronger
- Built to precise ISO 1174-2 DIN tolerances
- Patent #7,677,143 and other patents pending
- Punches sold separately - see below

AIR HAMMER POWERED

LT1900-1-1/4 up close



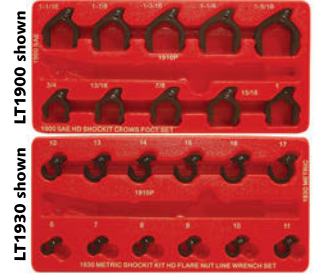
Scan QR code or search LT1900 on YouTube to see tool work!



LT1930-17 IN USE WITH LT1910PS



LT1900-3/4 IN USE WITH LT1910P



LT1900 shown

LT1930 shown

INDUSTRIAL/HYDRAULIC SHOCKIT CROWS FOOT SETS

LT1900 10 Piece SAE Shockit Crows Foot Set

LT1910 10 Piece Metric Shockit Crows Foot Set

- Must be used with Shockit Punches for maximum performance & warranty coverage
- Loosens hydraulic fittings on tractors, forklifts and heavy equipment
- Fits into small spaces between hydraulic lines

NEW PRODUCT

AUTOMOTIVE/HYDRAULIC SHOCKIT LINE WRENCH SETS

LT1920 13 Piece SAE Shockit Line Wrench Set

LT1930 12 Piece Metric Shockit Line Wrench Set

- Must be used with Shockit Punches for maximum performance & warranty coverage
- Loosens fittings on steering, brake, AC & fuel systems
- Loosens the most difficult steering neck fittings

NEW PRODUCT

LT1940 Series Kentucky Kicker Shockit Driver Kits

- Must be used with Shockit Punches for maximum performance & warranty coverage
- Apply air hammer vibration and torque to any impact socket
- Utilize air hammer and punch to access inaccessible fasteners
- Remove most stubborn nuts and bolts by repetitive hammering
- Hyper sonic vibration eliminates thread galling
- Square Drive Plug Breaker Bar allows breaker bar and air hammer simultaneous operation
- Low profile Drive Plug allows for use in tight spaces with an air hammer
- Indexed holes designed to keep Shockit Punches from slipping off driver
- Patent #7,677,143 and other patents pending
- Punches sold separately - see below

AIR HAMMER POWERED



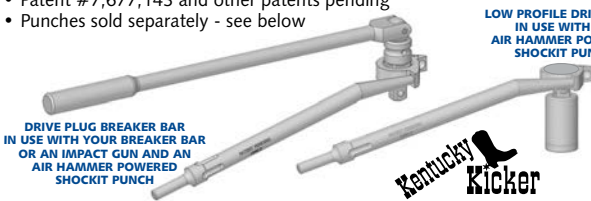
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LT1940-1/2-L up close

LOW PROFILE DRIVE PLUG IN USE WITH AN AIR HAMMER POWERED SHOCKIT PUNCH

DRIVE PLUG BREAKER BAR IN USE WITH YOUR BREAKER BAR OR AN IMPACT GUN AND AN AIR HAMMER POWERED SHOCKIT PUNCH



Kentucky Kicker



LT1940-3/8 includes -
3/8" Short Throw Shockit Driver
3/8" Long Throw Shockit Driver
3/8" Low Profile Drive Plug
3/8" Drive Plug Breaker Bar



LT1940-1/2 includes -
1/2" Short Throw Shockit Driver
1/2" Long Throw Shockit Driver
1/2" Low Profile Drive Plug
1/2" Drive Plug Breaker Bar



LT1940-3/4 includes -
3/4" Short Throw Shockit Driver
3/4" Long Throw Shockit Driver
3/4" Low Profile Drive Plug
3/4" Drive Plug Breaker Bar

LT1910PK Shockit Punch Kit

Kit includes:

- LT1910PS - 5.5" Short Punch
- LT1910P - 11" Standard Punch
- LT1910PL - 22" Long Punch

PATENT PENDING



AIR HAMMER POWERED

- 8mm radius Shockit Punch tips are designed to fit precisely into indexed holes on all Shockit tools for maximum performance & warranty coverage
- Offset design for greater access
- Non-turning slots
- Individual punches also sold separately

NEW PRODUCT

LT994 Shockit Socket O2 Sensor Removal Kit - NO MORE CATALYTIC CONVERTER REMOVAL OR DROPPING MOTOR MOUNTS TO ACCESS O2 SENSORS!

- Must be used with Shockit Punches for maximum performance & warranty coverage
- Air hammer powered Shockit Sockets to easily access, loosen, and remove frozen and obstructed O2 sensors & diesel NOx sensors
- Works when ratchets, wrenches and regular sockets don't fit
- Includes low profile design for limited access and long profile design for deep recessed Ford®, Toyota® and Lexus® applications
- Non-slip self centering air hammer offset 11" Shockit Punch for limited access applications
- 18mm dual sided tap/bottoming die for O2 sensor and mounting hole threads
- Dual ear socket design for 90° rotation without repositioning socket
- Additional Punch sizes available - see above
- Patent #7,677,143 and other patents pending

AIR HAMMER POWERED

NEW PRODUCT

Scan QR code or search LT994 on YouTube to see tool work!



IN USE

LT886 Radiator Rocket Coil & Line Cleaner - IDEAL FOR TRANSPORT, MUNICIPAL, AGRICULTURE, INDUSTRIAL & HD TRUCKS

- Clean cooling coils for radiators, transmission lines, oil and fuel lines
- Clean air to air aftercoolers, condensers, evaporators, fluid coolers and much more
- Ideal for trailer truck, dump truck, earth moving tractors, agriculture, municipal, construction and fleets
- Use the Radiator Rocket and you will be surprised how dirty your "clean" radiator is
- Can be configured in 3 foot; 2 foot; or 1 foot lengths
- Eliminates need for vehicle jacks or lifts to access buried coils
- Able to access gaps of 1" with brush, .7" without brush
- Use close-up without fear of air pressure bending fins
- Designed for shop or field use
- Includes 1/8" NPT air control valve

NEW PRODUCT

THIS ROCKET RUNS ON AIR POWER!

RADIATOR ROCKET

REMOVABLE BRUSH BAR

BRUSH HEAD UP CLOSE



4" AIR SLOT



Scan QR code or search LT886 on YouTube to see tool work!



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Rislone® CAT Complete™ Fuel, Exhaust and Emissions System Cleaner Clears Check Engine Lights

When a customer wants to clear a Check Engine Light as cost effectively as possible, Rislone's new CAT Complete™ Fuel, Exhaust and Emissions System Cleaner could be the solution. This unique formula cleans the entire emissions and exhaust system to clear the P0420 and other OBD codes that indicate catalytic converter efficiency issues, and goes a step further to also clean the fuel system to increase power, performance and fuel economy.

Rislone's CAT Complete Fuel, Exhaust and Emissions System Cleaner is formulated with advanced high-performing detergents and heavy-duty cleaning solvents that effectively scrub contaminants, carbon build-up, and residue from engine and exhaust components. Other active chemical ingredients remove remaining inorganic deposits, restoring system function and, with regular use, maintaining efficiency.

CAT Complete can be used as a pre-treatment before emissions tests or as an alternative to replacing catalytic converters. Recommend regular use every 5,000 miles to "tune-up" the fuel, emissions and exhaust system to keep it clean and prevent the Check Engine Light

from returning. Installation is easy for all gas tanks, including standard, obstructed and capless (no fuel cap) systems. It will not void manufacturers' vehicle warranties.

Rislone is so confident in the effectiveness of CAT Complete that it's offering a money-back guarantee, so your customers can try it risk-free. For more information on Rislone® CAT Complete™ Fuel, Exhaust and Emissions System Cleaner, visit cel-reset.com. ■



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SPECIAL ADVERTISING SECTION



HEAVY DUTY FORMULA HYDRAULIC SEAL™ Hydraulic Stop Leak & Conditioner

Bar's Leaks Hydraulic Seal is specially designed to repair hydraulic fluid leaks, reduce friction/wear and renew seals and O-rings in hydraulic systems. This product is engineered to be professional-grade and is safe to use for consumer applications as well as commercial use cases. Bar's Leaks Hydraulic Seal works with all petroleum and synthetic fluids, pump seals, control valve seals, actuators, rams, cylinders, O-ring boss fittings and hydrostatic transmissions. In addition, Bar's Leaks Hydraulic Seal:

- Keeps hydraulic seals soft and pliable
- Reduces friction and wear in hydraulic systems
- Cleans and prevents formation of sludge and varnish
- Helps hydraulic systems run cool and last longer
- Mixes with all factory-approved hydraulic fluids and synthetics



Part# H60-1

barsleaks.com

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Jenny's G5A-60V Single-Stage Air Compressor

Jenny Products offers its G5A-60V single-stage air compressor, featuring a 60-gallon vertical air tank and an industrial-grade 5-horsepower motor. Designed for long-lasting, reliable performance, the compressor is ideal for use in a variety of shops.

The G5A-60V provides 27.8 CFM at 125 psi through an American-made cast-iron compressor pump. The pump offers a splash lubrication system using Jenny "Ultimate Blue" synthetic compressor oil. An oversized flywheel and a directional air shroud further assist in pump cooling.

For maximum durability, the G5A-60V offers a heavy-duty, totally enclosed belt guard, as well as protectively mounted grease fittings, a large canister intake filter with replaceable filter elements, and thermal overload motor protection. Other standard features include a manual tank drain, pressure relief safety valve, powder-coated tank finish, magnetic starter and special unloader valves for easier motor startup.

Options include constant run control, dual control, a low-oil switch, oil sight glass, air lubricator, aftercooler and dryer. In addition to the G5A-60V, Jenny Products offers a full line of stationary air compressors with a wide variety of tank sizes, CFM outputs and pressure ratings.

All Jenny electric compressors are UL Listed, meaning the compressors have been tested and determined to meet UL's strict, nationally recognized Standards for Safety. The approval elevates Jenny compressors to a safety standard not found with most compressor manufacturers. ■



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SPECIAL ADVERTISING SECTION

Jenny

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JENNY. HIDDEN IN PLAIN SIGHT SINCE 1927.

The only time people notice an air compressor is when it's not working. That's why Jenny has basically gone unnoticed since 1927. It's the hazard of offering the most reliable compressors on the market, but we wouldn't have it any other way...nor would our customers.

» *Isn't it time a Jenny was hiding in your shop?*

Jenny



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The Future of Sockets: Bold and Long-Lasting

Time and time again users find their socket markings wearing off, becoming difficult to read, or breaking. Milwaukee's® new line of sockets feature the boldest, longest-lasting markings and extreme impact durability to withstand high torque applications.

The SHOCKWAVE™ IMPACT DUTY™ Sockets provide maximum wear resistance with stamped and ink-filled size markings, making it easier for users to select the right socket for their application throughout the entire life of the socket. Constructed with high-strength forged steel, these sockets deliver optimized performance in heavy-duty applications and a non-slip hex geometry prevents socket and fastener rounding. For easy socket attachment and removal, the sockets are complete with a dual-hole design and ring groove.

The 6 Point Socket Lineup is available in SAE and Metric gauges, with 1/4", 3/8", 1/2", 3/4", and 1" drives to fit every user's needs. Providing a

complete solution, Milwaukee® offers impact socket accessories including socket extensions, universal joints, adapters, and reducers.

The SHOCKWAVE™ IMPACT DUTY™ Sockets and socket accessories meet ASME industry standards* to ensure proper fit to the fastener and both the impact sockets and impact socket extensions are backed by Milwaukee's Lifetime Guarantee.**

Milwaukee Tool is committed to providing users with accessory solutions that save time and increase productivity on the jobsite. Through investment in enhancing socket design and overall functionality, Milwaukee® continues to lead and drive innovation in the fastening category by delivering the longest-lasting and most versatile accessories available. ■

*In compliance with both ASME B107.110-2012 and ASME B107.110-2019 standards.



**Milwaukee® SHOCKWAVE™ IMPACT DUTY™ Sockets are covered by our Lifetime Guarantee. Visit <https://www.milwaukeetool.com/Support/Registration-and-Warranty> for more information.



[milwaukeetool.com](https://www.milwaukeetool.com)

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SHOCKWAVE Impact Duty™
3/8" Drive Metric 6 Point
Standard Socket Set



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3/8" Drive Metric 6 Point
Deep Socket Set



49-66-7014
14 Pc
SHOCKWAVE Impact Duty™
1/2" Drive Metric 6 Point
Deep Socket Set



49-66-7015
29 Pc
SHOCKWAVE Impact Duty™
1/2" Drive Metric 6 Point Deep
Socket Set

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2021 GREAT PRIZE ★ GIVEAWAY ★



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Bar's Leaks Oil Seal OS-1

Reviewed by Lou Fort, lead tech at K.A.R.S. Inc. in Huntingburg, Indiana.

THE REVIEW:

Q: What kind of setup was involved before using the product?

A: The setup is to turn the engine off, shake the OS-1 well, remove the oil fill cover and pour the OS-1 in per dosage chart. On the next drive, let the engine run for 15 minutes to get a good mix of oil and OS-1.

Q: How was its packaging? Did it come with any accessories?

A: The product is in a plastic bottle and it came in a box, which really was not needed. The box is covered with information including a safety notice, warranty, and instructions for getting a \$5 rebate. The QR code found on the lid pulls up a link to Bar's website for the OS-1. The bottle has much of the same information along with usage and a dosage chart. No accessories are included.

Q: Was there a manual included?

A: There wasn't a manual but usage and dosage charts are on both the box and the bottle. I didn't have any trouble understanding any of it.

Q: What features did you like?

A: Bar's Leaks promises it will fix your leak or oil burning problem or your money back. The product is compatible with all types and brands of oil.

Q: Is there any way you could think to improve or add to this tool?

A: I am not a fan of the dosage recommendation. I rarely see a vehicle that



takes just 4.5 quarts at service — this is requiring two bottles to be purchased for most applications. That being said, the bottle should have a measured viewing window on the side so you can see just how much product has been used.

Q: What types of jobs/repairs did you use this tool for?

A: My first patient was a 2002 Sienna with leaking seals all over. This one was extremely high mileage, north of 300,000 and had been obviously neglected. It came in for engine noise, not leaks. It was determined that VVT [variable valve timing] noise was present, but the owner declined any further inspection or repairs, so we serviced the engine and added Bar's Leaks OS-1. By the end of the test drive, the VVT noise had been greatly reduced and the

PRODUCT DESCRIPTION:

Bar's Leaks Oil Seal Engine Oil Burning & Leak Repair (OS-1) is a unique combination of synthetic polymers combined with premium seal-restoring additives to create a long-lasting repair. This professional-grade formula is a single-solution fix guaranteed to permanently stop all engine oil loss caused by leaks, over-consumption, and burning. Its no-hassle formula can be added when the oil is low or during an oil change and starts to work within 15 minutes of driving or idling the vehicle. In most cases, the oil leak will be repaired with a single dose. An on-package \$5 rebate is available with purchase. **»97**

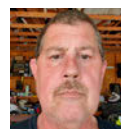
valve cover leaks had stopped — amazing in my opinion.

Q: Have you used a previous version of this tool?

A: We have used different brands of magic elixir mixes to help out with all the different issues Bar's Leaks claims to remedy. We are currently a BG Products shop. I am not much of a chemist so I can't speak much to the differences in formulation between them all. I do know we get good results from the BG Products and don't see why we wouldn't get similar results from the Bar's Leaks. Like most, Bar's Leaks recommends usage at every service to continue to see results.

Q: On a scale of 1 to 10, how would you rate this tool overall? Why?

A: In all my years in the industry, I have used many Bar's Leaks products. This newest reformulated one shows how hard Bar's Leaks is working to improve and keep up with the times. I have read a lot of independent user feedback all of which were high ratings. I would easily give the OS-1 a rating of 10. **⊗**



LOU FORT has worked in the automotive industry for 47 years and is the lead technician at K.A.R.S. Inc. in Huntingburg, Indiana.

Throughout his career, he has worked for Ford, GM, and Chrysler dealerships, but the majority of his time has been spent on the independent side.



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Lincoln Industrial 2-Speed 20V Li-ion PowerLuber Grease Gun

Reviewed by Phil Fournier, owner of Phil's Auto Clinic in Hemet, California.

PRODUCT DESCRIPTION:

The **Lincoln Industrial 2-Speed 20V Li-ion PowerLuber Grease Gun** is engineered for maximum reliability. Its two-speed transmission delivers 3.5 oz. per minute in the low-output position and 10 oz. per minute in the high-output position. It features a redesigned, high-torque powerhead driven by an efficient, 20V, Li-ion battery. The two-speed motor delivers grease at up to 10,000 psi (690 bar) in both high- and low-output settings. The gun's three-point base keeps the tool upright and stable for easy handling without being bulky, reducing operator fatigue when lubricating simple-to-reach fittings. **»98**

THE REVIEW:

Q: How did the tool function as far as saving you time?

A: Very few late-model vehicles have grease fittings, so I took this tool to my son-in-law's farm where I used it on a 12-row sugar beet digger. The machine has 24 stainless hardened steel disks each with two grease fittings for a total of 48 grease fitting just on the front of the machine. The belts have multiple pillow-block style bearings each with its own grease fitting. Air-powered guns are nice, but out in the field, compressed air is not necessarily handy to the location of the machine. This grease gun is the answer! Additionally, with a hand grease gun, it takes two hands to pump. With this gun, one hand can be used to squeeze the trigger and the other hand to guide the grease tip onto the grease fitting.

Q: What kind of setup was involved before using the product?

A: Not much. The grease gun came fully assembled. The instructions said to charge the batteries for 12 hours before using it, which I did.

Q: How easy was it to use?

A: It's a simple device. With two speeds to shoot the grease, simply hold the trigger in until you're done pushing grease in.



Q: How was its packaging? Did it come with any accessories?

A: It came with two batteries, which was nice, and the 20V Li-ion battery was strong enough to grease the entire machine with one battery on a single charge. Very impressive! It also came with two spare grease tips and those are high-wear parts. When they wear, the grease goes everywhere except into the bearing where you want it.

Q: What features did you like?

A: The tool is reasonably lightweight and well-balanced for its size. I'm not very strong anymore but holding the gun with one hand while guiding the grease tip didn't strain my arm. It was far easier to use than a hand pump gun.

Q: Is there any way the tool could be improved?

A: Like every new grease gun, there is some trouble purging the air out of it. Since I didn't go through an entire tube of grease, I don't know if that trouble would reoccur each time a tube is replaced. I am hopeful that it won't. Also, the carrying case is very nice but no one is going to tuck that hose back into the holder. I'd recommend just a clamp to hold the gun and let the hose hang inside the case. **⊗**



PHIL FOURNIER has been the owner/technician at Phil's Auto Clinic for 32 years and a working auto technician for 45 years. Fournier received his

ASE Master Certification in 1982 and his AAM from the Automotive Management Institute in 1994. Currently, he works as a consultant doing diagnosis, reprogramming, and virtual instruction. Fournier currently holds 17 ASE certifications including ASE Master Auto and Master truck plus L1, L2, and L3.

Tekmetric Shop Management System

Reviewed by Michael Williams, partner at Tuffy Tire & Auto Service Center in Charlotte, North Carolina.

PRODUCT DESCRIPTION:

The **Tekmetric Shop Management System** is a cloud-based platform that provides an easy-to-navigate workflow for the auto repair process and analyzes data in real-time to promote business growth. Owners, service advisors, and technicians can use Tekmetric to build repair orders, manage inventory, send status messages to customers' smartphones, perform digital inspections, and analyze key performance metrics. The system's built-in reporting tools offer insight into numerous KPI metrics, such as gross profit percentage, car count, labor efficiency, and year-over-year growth. **»»99**

THE REVIEW:

Q: What kind of setup was involved before using the product?

A: We had a couple of conference calls and then Tekmetric set up a demo scene of it, where you go in and start setting up all your preferences. They work with you to get all that correct and make sure everything in the background is how you want it. And then they set a date for you to go live. In the meantime, you can kind of play in there and build estimates. When you do go live, you're used to the system, so it makes it an easier transition.

Q: How easy was it to use?

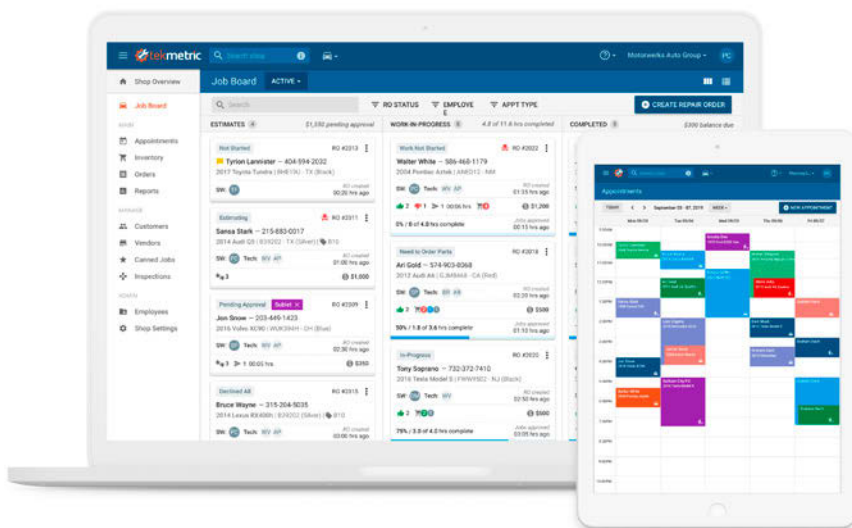
A: Even for the people who have the hardest time understanding computers and electronics, it's a really easy system to grasp ahold of. With no training at all, you basically can come into this thing, watch a few videos, and be up and running.

Q: Was customer support included?

A: The great thing with Tekmetric is they have a question mark icon up at the top of the screen. And at any point in time throughout the day, you can click on it, and you can chat with them right there, or you can call in and get help.

Q: What features did you like?

A: I'm a multi-store owner, meaning I could be in Florida tomorrow but North Carolina today. If my guys have an issue, I can jump on this system in five seconds and be able to look at the same thing they're looking at and make real time deci-



sions right then. What I also like about this system is that it's more like a democratic process. If we want anything on this system, then we can vote on it. Tekmetric puts it up on a board, and if the other stores that are out there on the system vote on it, they use that to add new things and upgrades to the system.

And our customers absolutely love it. The transparency to them of being able to see pictures and videos of what's wrong with their car, so they know they're not getting taken advantage of, is hands down one of the best features of this whole system.

Q: Is there any way you could think to improve or add to this tool?

A: I would like an icon with the clock feature that allows me to make an edit of a person's time on a day that they're not there and be able to label it a sick day or vacation day.

Q: How does this tool compare to similar tools?

A: It doesn't compare — it blows them out of the water. The reality is with our old system (we'll just use my Huntersville store for instance) we've been dilly dallying with hitting \$23,000 to \$27,000 sales weeks. We're so close to that \$30,000 week, we can see it. We didn't change anything but our point-of-sale system, and within five weeks of changing over we had our highest sale volume in a week of \$35,000. So, we're instantly seeing a ticket average increase in each store. **✘**



MICHAEL WILLIAMS is a partner with Tuffy Tire & Auto Service Centers. He owns six Tuffy Tire & Auto Service Centers across North Carolina and Florida and has been recognized as the Tuffy Multistore Franchise Dealer of the Year for 2019 and 2020.

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Sonic Tools NEXT Generation Combination Wrenches (Metric)

Reviewed by Brin Kline, owner/technician at Assured Auto Works in Melbourne, Florida.

PRODUCT DESCRIPTION:

The **Sonic Tools NEXT Generation Combination Wrenches** feature a stronger and more durable construction than the previous model, the company says. They are made from tough and durable Chrome Vanadium steel for long-lasting use and are resistant to rust and corrosion. The open end provides access to fasteners that are difficult to reach with a socket, while the box end is a 12-point design to quickly grip fasteners and provide multiple angles of attack. Sonic wrenches are backed by a lifetime warranty. **»100**



THE REVIEW:

Q: How did the tool function as far as saving you time?

A: The offset of the boxed end of the wrench is helpful. There is more depth there which can be helpful if working with a recessed fastener.

Q: How has using this tool impacted your shop's profitability?

A: When compared to using another brand of combination wrenches, the offset boxed end is an advantage that can save you time.

Q: How was its packaging? Did it come with any accessories?

A: I received three wrenches. Each wrench had a plastic hanger which I assume is used for displaying the wrench in a retail store or in a distribution warehouse. They didn't come with any accessories.

Q: What features did you like?

A: I like that they're lightweight, have a

comfortable feel, and matte finish.

Q: Is there any way you could think to improve or add to this tool?

A: The lightness may give a user the impression that they might be made of a cheap material and will not be a long-lasting product. If they do last, I don't have anything negative to say other than they may give a user the impression that they're made with less material and may not be a lifetime wrench in a professional environment. Also, when you see Chrome Vanadium engraved, laser etched, or embossed into a tool, it traditionally has meant that you have yourself a cheap tool. I would recommend removing that from the tool.

Q: What types of jobs/repairs did you use this tool for?

A: I was able to do several wheel alignments with the sizes of wrenches we

received. I also used them to remove the PCV system on a Volkswagen for a visual inspection due to a valvetrain noise.

Q: How does this tool compare to other tools you've used like it?

A: These wrenches are lightweight and have a matte finish which makes the wrench comfortable in your hand. The offset box end can be helpful when working with fasteners in recessed areas. ✖



BRIN KLINE is the owner of Assured Auto Works in Melbourne, Florida, an automotive general repair business with a mobile diagnostic and module programming division. He also teaches for Carquest Technical Institute and Trained by Techs, is a member of the Automotive Service Association's Mechanical Operations Committee, and president of the Automotive Service Association of Florida.

CATEGORY SPOTLIGHT

POWER TOOLS & AIR TOOLS

Everyone loves a power tool. The more power the better, right? The hardest part about seeing all these new power tools is deciding which ones you need – or just plain want. Both power tools and air tools help eliminate strenuous, manual labor, and there are some exciting trends and innovations emerging. Your *PTEN* editors have compiled a list of relevant products and tips that will help you choose the right power tools and air tools for your shop.

HAS TOOL-FREE ADJUSTABLE GUARDS

The **Milwaukee Tool M18 FUEL 4-1/2" / 5" Grinders**, Nos. 2880-20 and 2881-20, are available with paddle switch, no-lock and slide switch, lock-on options. The grinders are designed to generate 11A corded power and deliver 8,500 rpm. In addition, both grinders feature the company's proprietary Powerstate brushless motor, Redlithium battery pack, and Redlink Plus intelligence. For ease of use, the grinders include tool-free adjustable guards and accessory changes to provide quick guard installations and adjustments. FIXTEC Nut technology allows for tool-free accessory changes while remaining compatible with the most common accessories on the market today, the company says. **»101**



1/4" DROP AND LOAD HEX FOR QUICK BIT CHANGES

The **Mac Tools 12V Max 1/4" BL Impact Driver**, No. MCF801, measures 5.05" and weighs 1.77 lbs. Its BL-SPEC brushless motor delivers 200 ft-lbs breakaway torque. The tool features impact assist three-speed switch technology for forward and reverse control as well as a 1/4" drop and load hex for quick bit changes. It also offers a three LED ring, stainless steel mesh vents for durability, and R-SPEC glass-filled nylon housing for solvent resistant durability. **»102**



IDEAL FOR FROZEN OR STUCK AUTOMOTIVE FASTENERS

The **AME International Socket Bro Turbo Socket Set**, No. 68000, is 1/2" impact-rated and saves on time by eliminating the need to change tools. The Socket Bro can remove fasteners that are up to 70 percent rounded off and provides over 40 percent more torque when the weighted disc is added, the company says. Ideal in cases of over-torque or corroded fasteners, the Socket Bro set includes: 17mm, 19mm, and 21mm sockets. **»104**

INCLUDES A MOTOR SCREEN FOR PROTECTION FROM DEBRIS

The **Matco Tools 12V Cordless Infinium Screw Gun**, No. MCL12S, features a high torque drivetrain with 12-speed adjustable clutch. It has a two speed design for multiple applications: 400 and 1700 rpm for low and high speed.

It also has a precise variable-speed trigger with one hand forward/reverse switch. Its bit retainer holds both 1" regular bits and power bits. According to the company, its replaceable carbon brush motor allows users to easily service brushes and improves the life of the tool. The tool includes a motor screen to protect it from debris. **»103**



COMES IN A CUSTOM CUT EVA TRAY

The **OEMTOOLS 42-pc 3/8" Impact Socket Set**, No. 23983, includes a variety of metric and SAE size deep and shallow sockets, extension bar, and universal joint. The set comes in an EVA tray with custom cut contrast soft foam to keep the tools organized. Most trays have sizes etched in them for quick and easy identification. The sockets are made with alloy steel that is heat-treated for extra strength and longevity. The shallow and deep socket sizes include: SAE 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", and 3/4"; metric 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19 mm in addition to a 3/8" drive 3" extension bar. **»105**



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FEATURE A PUSH-TYPE CONNECTION

The **Milton Industries 5 In ONE Universal Safety Exhaust Couplers** are designed to disconnect air connections in a safe manner. With disconnection utilizing a protective sleeve and a controlled release of air, users can quickly change out tools without the risk of hose whip that can cause injuries to the operator and damages to surrounding tools and products. The couplers feature a push-type connection, safety sleeve, national pipe thread fitting end, and a rugged steel body. They have a 200 psi maximum operating pressure and 225 degrees F maximum operating temperature. On larger sizes, the couplers have protective bumpers. The couplers are easy to install and can be used with multiple style plugs. **»106**



VIDEO

Snap-on shows how their power tools, like the PT850 air impact wrench, are produced and tested in Murphy, North Carolina.

VehicleServicePros.com/21001048



INCLUDES 4-PC ROUND SHANK CHISEL SET

The **Mighty Seven Compact Air Hammer**, No. SC-211C, features an industrial-grade aluminum body, alloyed steel cylinder, and hardened piston. It delivers 3,200 bpm and has a 2-5/8" stroke length. The air hammer comes with a 4-pc round shank chisel set, designed for cutting and shearing various surface and material. It's held by a spring-type quick-change retainer and has a one-year warranty. **»107**



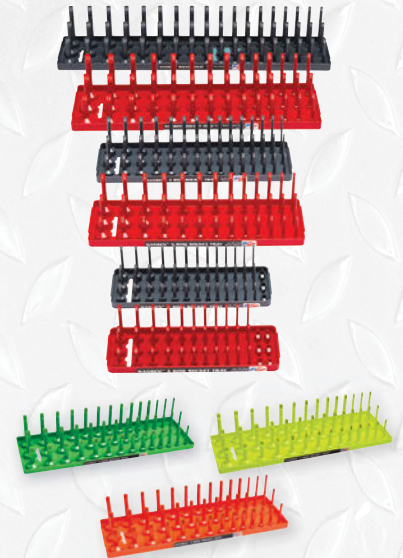
SUITABLE FOR BOTH RIGHT-OR LEFT-HANDED USERS

The **Hazet Twin Turbo Impact Wrench**, No. 9014 TT, is designed to provide high performance with low weight. The 9014 TT has a maximum loosening torque of 3,024 ft-lbs, determined with screw size M32. The low-vibration impact wrench in convenient gun shape is short, compact, and easy to operate. The mounting bracket that can be fitted optionally is freely adjustable for optimum handling. The tool is suitable for both right-handed and left-handed users alike. The exhaust air is guided downwards through the handle. The impact wrench is equipped with a twin hammer mechanism that is ideal for both industrial and automotive applications. A connecting socket is available for a low noise hose. **»108**



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CATEGORY SPOTLIGHT

Power Tools & Air Tools

OFFERS A SWOOP-BACK SIDE HANDLE FOR MANEUVERABILITY

The **Ascot Supply RPG 1" Drive Air Impact Wrench with 6" Extended Anvil**, No. 155-12856, offers an efficient six-vane motor and reliable pinless clutch mechanism for smooth operation. It also features a three-position forward and reverse as well as a swoop-back side handle for maneuverability and balance. The impact wrench delivers a maximum torque of 2,000 ft-lbs with a free speed of 5,000 rpm. It has a working torque range of 1,800 to 2,000 ft-lbs. >>>110



THREE-POSITION FLEX HEAD DESIGN FOR EASIER ACCESS IN TIGHT QUARTERS

The **AIRCAT 1/4" Flex Head Ratchet**, No. 811, provides 35 ft-lbs of torque and features a three-position flex head design for easier access in tight quarters. The ratchet has a feather trigger design and patented ergonomically-engineered handle to relieve stress and fatigue on the operator's hands, wrists, and arms. The 811 is designed with AIRCAT's patented quiet-tuned exhaust which allows discharged air to pass without developing back pressure, thus retaining more power, while significantly reducing noise, the company says. >>>112



INCLUDES A QUICK-CHANGE RETAINER

The **Ingersoll Rand 123MAX Air Hammer** is ideal for exhaust and front-end jobs, general bolt cutting, pin driving, and body shearing work. It offers an anti-vibration feature, a quick-change retainer for fast chisel changeovers, and a shock reduction and anti-slip grip for comfort. The tool is 18 percent shorter and five percent lighter than the company's 118MAX and 122MAX. The 123MAX is available as a bare tool or as a kit that includes the tool, quick-change retainer, and a 5-pc chisel set. >>>111

HOW-TO:

Five steps to cleaning your air tools with an air tool conditioner:

1. Flood the tool with the air tool conditioner through the air supply connection.
2. Let the tool sit for 15 minutes.
3. Reconnect the tool to the air supply.
4. Spray the air tool to expel fluids and deposits through the exhaust ports.
5. Lubricate the air tool regularly.

VehicleServicePros.com/21076974

Source: B'laster Corporation

OFFERS THREE VARIABLE FORWARD AND REVERSE SETTINGS

The **Snap-on 18V 3/8" Drive Brushless Cordless Impact Wrench Kit**, No. CT9010, is designed for applications that demand consistent high performance. It's lightweight yet provides 240 ft-lbs of working torque output and 325 ft-lbs of bolt breakaway torque. The digital microprocessor-controlled switch maximizes performance with three variable forward and reverse settings that help the tool adapt to various applications. A built-in brake quickly stops the anvil to prevent throwing fasteners while the brushless motor provides a smooth start-up. The CT9010 weighs 4.9 lbs with the battery, and offers a bright 100 lm LED headlight to illuminate the work area. The kit includes two 5Ah batteries and a charger with a built-in USB port. >>>113



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POWER OR MANUAL DRIVEN

The **Vessel Ball Grip Cordless Screwdriver**, No. 220USB-1U, is a battery powered/rechargeable or manually driven cordless Ball Grip screwdriver with enough torque for tough jobs in the automotive industry. When power driven, it delivers up to 17.7 lbf-in torque and withstands up to 88.5 lbf-in torque when manual driven. The tool is compact and features an easy-to-use Ball Grip, charging port and charging indicator with a slide on/off switch, and a built-in LED. It comes with a 1/4" hex bit, along with a USB charging cord with instructions for use and charging. **>>114**



REACHES DIFFICULT LINE NUTS WITH OFFSET PUNCH

The **Lock Technology 13-pc SAE Shockit Line Wrench Set**, No. LT1920, is designed to loosen fittings on steering, brake, AC, and fuel systems. It uses the force and vibration of an air hammer to enable safe and precise hammering with non-turning punch. Its compact design allows for use in tight places and is able to reach difficult line nuts with offset punch. The punch is kept from slipping by interlocking socket design. Also available as a 12-pc metric set (No. LT1930). **>>115**



SPIRAL BEVEL GEARS FOR SMOOTH POWER TRANSITIONS

The **Bosch PROFACTOR 18V Spitfire Connected-Ready 5-6" Angle Grinder with Slide Switch**, No. GWS18V-13CN, is designed to deliver power equivalent to a 13A corded grinder. It features advanced technology such as kickback and drop control, which helps shut the tool off in case of accidental mishandling and restart protection to help prevent accidental startup if power supply is interrupted. The tool includes spiral bevel gears for smooth power transitions, a two-position vibration control side handle, and a slim soft-grip design for additional ergonomics. It also comes equipped with Bosch's X-Lock mount, offering a quick wheel change and eliminates the need for a spanner wrench or flange nuts. **>>116**



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TECH TIP:

Consider power tools with an autobalancer. Some benefits include:

- Increased efficiency, profitability and productivity.
- The lifetime of the tool is enhanced as it has shorter trigger times.
- Abrasive disks last longer because the contact between the abrasive and the application is optimized.

VehicleServicePros.com/21025327

Source: Chicago Pneumatic



CATEGORY SPOTLIGHT

Power Tools & Air Tools



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EQUIPPED WITH A NOVEL LOCKING SPINDLE SYSTEM

The **Chicago Pneumatic CP74 Series Pneumatic Die Grinders** are designed to optimize productivity and operator comfort. Delivering up to 20 percent more power than the CP91 range and with a collet design for quick and easy burr changes, the CP74 pneumatic die grinders can help optimize productivity in metal fabrication applications, as well as vehicle servicing and repair. The CP74 Series of 1/4" and 6mm pneumatic die grinders offer six different heads, including short/long and straight/angle (120 degree, 90 degree). The die grinders operate between 22,000 and 28,000 rpm depending on the model. With the smallest grinder in the series weighing 1.1 lbs and the largest grinder at 2.43 lbs. >>>118



OFFERS QUICK TOOL-LESS ACCESSORY CHANGES

The **Makita X-LOCK Angle Grinders** feature a quick-change system to minimize downtime between accessory changes with no parts to lose. With X-LOCK, changing accessories is tool-less and eliminates the possibility of over- or under-tightening the threaded lock spindles. Users simply pull the lever all the way back to unlock, push wheel to attach (click-mount), and then pull level up to release wheel. Available models include 18V LXT Brushless 4-1/2"/5" Paddle Switch X-LOCK Angle Grinder with AFT, No. XAG26Z; 18V LXT Brushless 4-1/2"/5" X-LOCK Angle Grinder with AFT, No. XAG25Z; and 4-1/2" X-Lock Angle Grinder with AC/DD Switch, No. GA4570. >>>120



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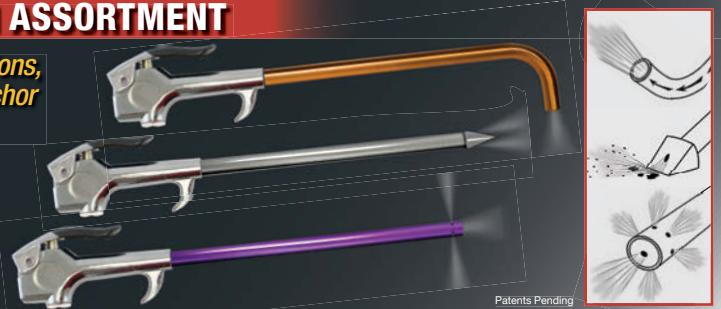


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Patents Pending

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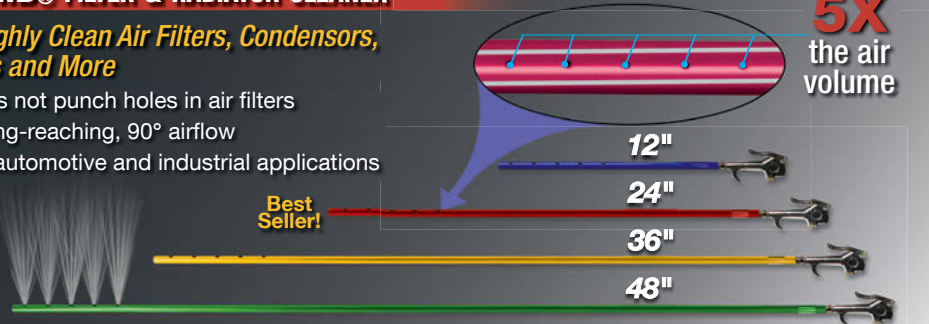
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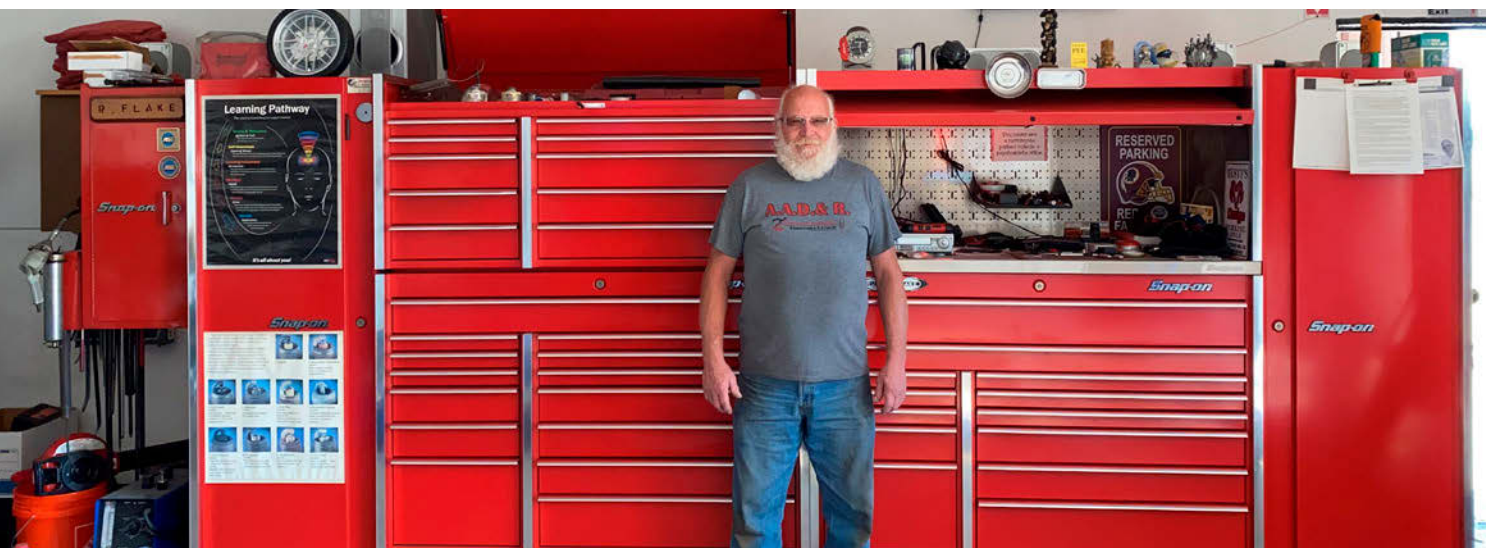
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1+1 = 1 huge box

Rusty Flake took his first Snap-on box and bolted on another of the same size to create a mega big-time box.

By *Amanda Silliker*, Editor

Rusty Flake's shop in Whiteland, Indiana, does pretty much everything, but he specializes in diagnostics. This means he needs a toolbox big enough to house his diagnostic equipment. His Snap-on box is 14.5' long and 6' high and has big drawers to fit his diagnostic tools. It has a built-in workstation, lights, and a stereo, and at one point, it even housed a microwave.

"It's nothing special by today's standards... Now you can buy boxes with lights and a stereo but when I bought mine, I never saw any that had this stuff built into it, so I just added that," says Flake, who is the owner of Advanced Automotive Diagnostics and Repair.

When the market crashed in 2001-02, Flake bought another bottom box that was the same size as his current toolbox and bolted the two together to make one huge box.

"It was very cost-effective at that time," he says. "But it just gets bigger and bigger as you go... It almost holds everything now."

Flake's box has six swivel casters and two fixed casters (so he can move it around a bit if needed) and a convenient side

locker. For added ease, he had the locks matched so all the doors and drawers can be opened with one single key.

Before 2002, Flake's box was half the size and he had a 4X4 closet packed full of equipment, an office brimming with tools, and three roll-around carts.

Today, Flake has his mega box but he still uses his four roll-around carts that house his most-used diagnostic equipment.

He also uses plastic blow molded cases for stuff that won't fit in his box but that he still needs to protect, such as leak detectors and a ball joint press.

Flake stores his SAE tools on the left and his metric tools are on the right side of his box. In his smaller drawers, he has his pliers on the left, job-specific pliers or plier-like tools on the right, and sockets go straight across. In the bigger drawers, he has his breakout boxes and his diagnostic equipment (other than the scopes, which are on his roll-around carts).

Flake says his favorite tools are all of his ATS equipment.

"I know almost everyone at the company, and they are just super nice people and you can't get better service than going to them," he says.

»»» OWNER

Rusty Flake

Shop: Advanced Automotive Diagnostics and Repair

Location: Whiteland, Indiana

He especially likes his four ATS scopes and he is currently looking to buy another one — the eight-channel scope that is an "absolutely phenomenal unit," he says.

"They're extremely capable, they are very easy to use, they're constantly upgrading features on them, and they are quick, simple, and easy to grab," he says. "You hook up and you know if you got a connection — this will tell you you either have a signal or you don't."

When it comes to purchasing tools, Flake says the more expensive items, such as the scanners, scopes, and TPMS tools should be the shop's responsibility. For hand tools that are purchased by the technicians, they should get whatever works for their budget and is comfortable, then they can upgrade as they go.

"If a ratchet feels good in your hand, you're going to be able to work more efficiently with it," Flake explains. "The best one out there is the one you will use and the one you are comfortable using." ❌

Want to see more photos of Flake's box? Visit: [VehicleServicePros.com/21225435](https://www.vehicle-service-pros.com/21225435)



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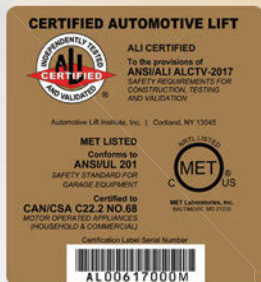
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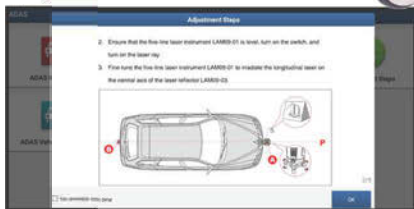
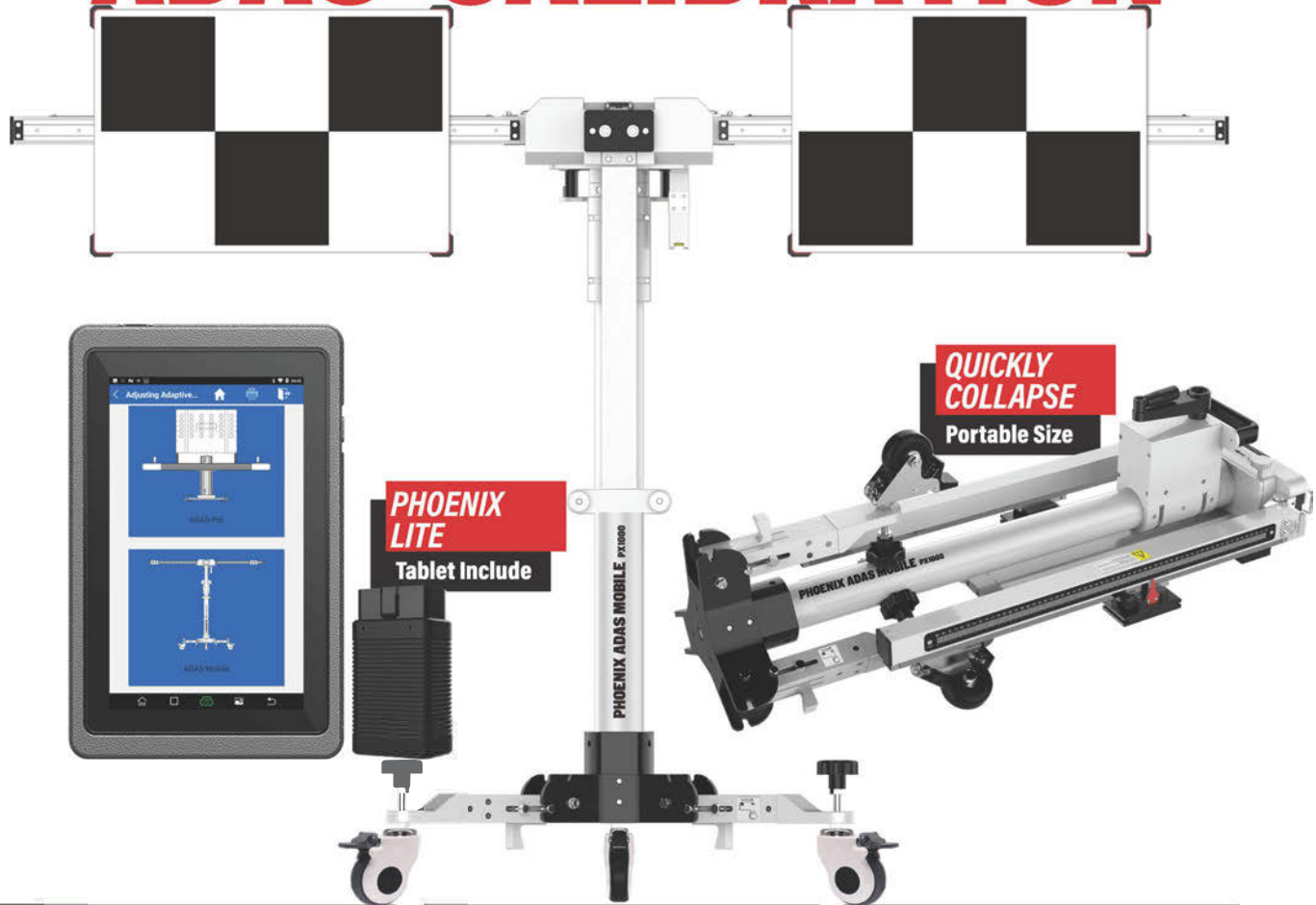
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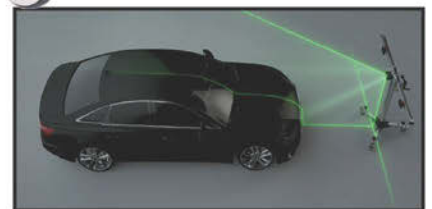
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