VOLUME 4

NAPA ADVANTAGE® GUIDE

Road-testing NAPA Advantage parts is a messy job, but someone's gotta do it. **Learn more about new repair solutions for the Jeep TJ Wrangler on page 8.**

NAPA SOLUTIONS

POWERED BY DORMAN

Pictured on Cover: Members of the Dorman product team test in severe conditions.

Below: Nick, Dorman's Master Technician, performs a fluid service on our NOE 666-2434-1 PTU during an on-vehicle test. Read more on page 6.

For decades, NAPA has exclusively partnered with Dorman for our NAPA Solutions line of products, giving repair professionals and vehicle owners greater freedom to fix cars and trucks. Dorman's signature innovations are its OE FIX products, which you can also find labeled as NAPA Advantage. This fourth edition of the NAPA Advantage Guide is focused on these unique solutions that are all designed to help you save time, save money and deliver a better customer experience.

To see what makes us so unique, take our Virtual Tour at DormanProducts.com/tour

DORMAN®

DRIVING NEW **SOLUTIONS**®

Dorman Products, Inc.
3400 East Walnut Street | Colmar, PA 18915

Customer Service: 1-800-523-2492
Technical Support: 1-866-933-2911

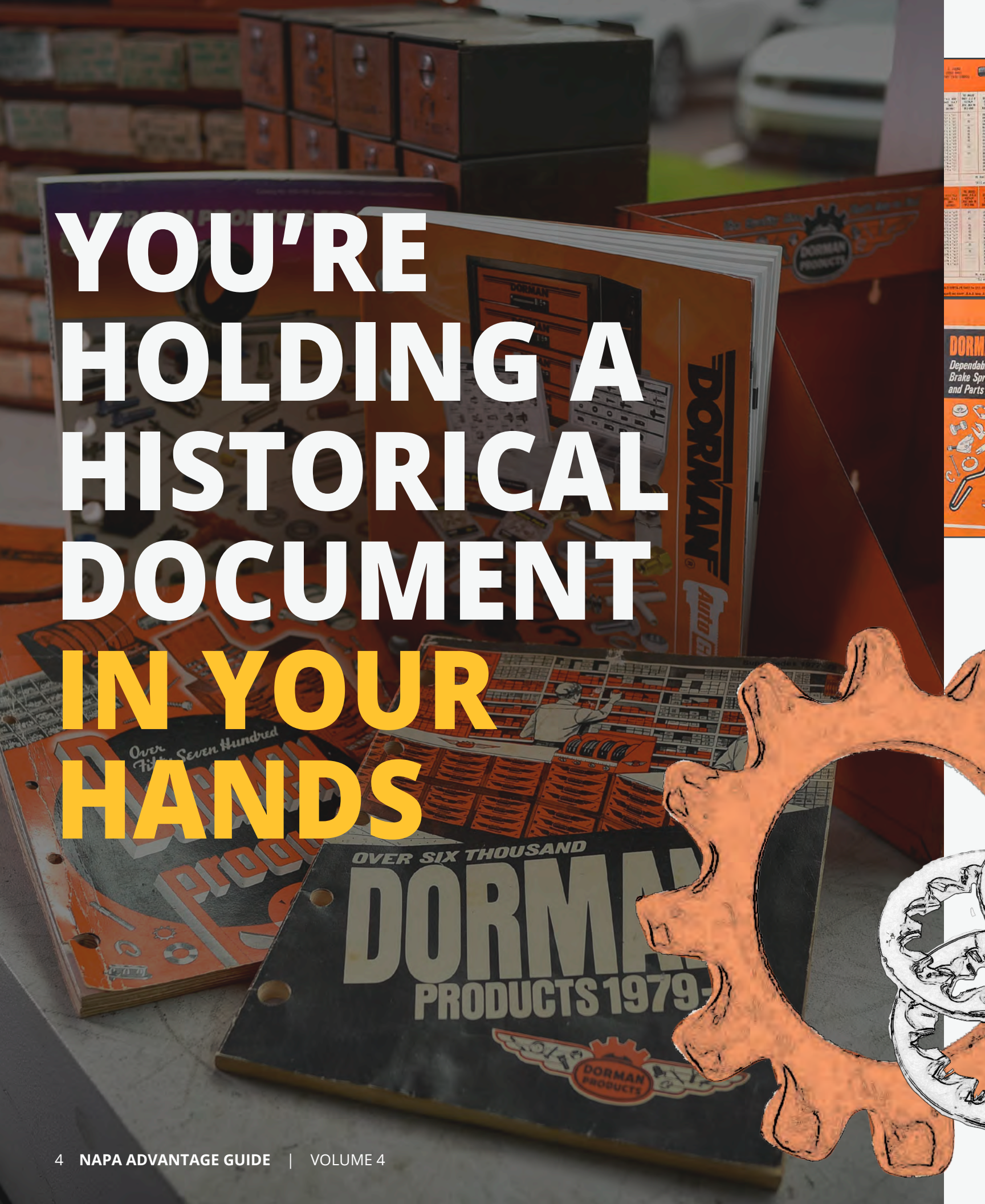
TABLE OF CONTENTS

To read past articles and get more exclusive content, visit **DormanProducts.com/OEFIX.**

*While supplies last. Survey responses must be submitted by Dec. 31, 2023.
One survey response per person, please.

Vehicles-in-operation information in this guide is based on Dorman's analysis of third party data.

YOU'RE HOLDING A HISTORICAL DOCUMENT IN YOUR HANDS



In 1918, Jack Dorman sold used auto parts with two of his brothers. They received many requests for star washers, a form of fastener lock that was popular in that era. Demand for them grew to the point they purchased a punch press, dies, and sheet steel so they could make them. They were joining many other small companies doing the same thing: writing history by forming the then-nascent automotive aftermarket.

Dorman star washers were born from an inadequate original equipment solution. The Dorman boys came up with a few more such items, and in 1927, we published our very first parts catalog, containing six parts. Humble beginnings, yes, but we're pretty proud of 'em.

We've come a long way and today OE FIX parts are the flagship parts in the Dorman Products portfolio. They're designed to save time and money and provide endurance, longevity, and reliability. Simply, our OE FIX parts provide a level of quality and convenience that you simply can't get from the dealer. Each day, our product team assesses used auto parts, analyzes failures, and then builds a better mousetrap.

The OE FIX Guide in your hands (still printed on good ol' paper) is the direct descendant of that 1927 catalog. It's filled with clever solutions to clear your bay faster and keep your customers on the road. There are parts that save money—not an insignificant consideration in the current economic climate—and parts that save time. This volume of The Guide has the same purpose our original catalog did, which is to help you find better solutions.

Set a few minutes aside to leaf through it. We invite you to take pleasure in carrying on the tradition mechanics have been participating in for over a hundred years: turning to Dorman after a hard day of turning wrenches. We'll always be out in front, innovating and developing new ways to make your job easier, but we'll also be right behind you.

STAR WASHERS

The Original Dorman Timesaver

▲ *An aftermarket exclusive when there was barely an aftermarket.*

▲ *A cartoon from an early Dorman catalog.*

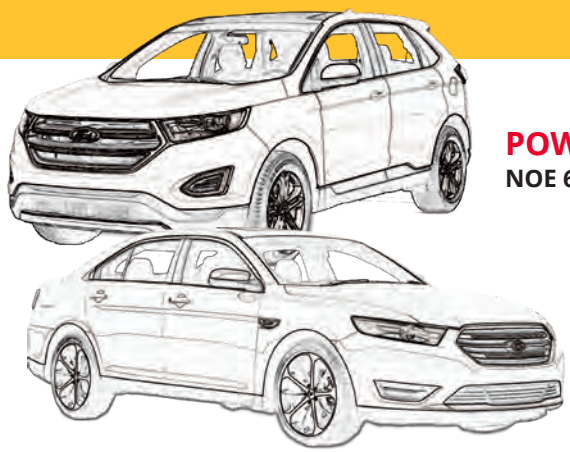
FMC'S AWD PTU: R&R OE ASAP

Some parts fix a problem. *Our PTU fixes all the problems.*

Ford equips some of its vehicles like the Taurus, Flex, and Explorer with an AWD system; this is commonplace in 2022. The increased traction in a package that's very transparent to the user proved perfect for those who weren't going out in search of adventure, but rather trying to navigate mundane terrain and keep the family safe. The PTU (power transfer unit) on these vehicles, however, proved to be a source of consternation rather than confidence.

Ford's power transfer unit is effectively an angle drive and a transfer case. Used in FWD-based vehicles with AWD as an option, the unit accepts power from the transmission to which it's attached, turns it 90 degrees, and sends that power back to the rear differential. Though the design is basically sound, failures began manifesting themselves in two ways. Reports of crunching and grinding noises while turning were fairly common customer complaints. Customers also reported an odor permeating into the passenger compartment that was often described as smelling like natural gas.

continued on opposite page ▶



POWER TRANSFER UNIT (PTU)

NOE 666-2434-1: Ford Motor Co. 2007-2016

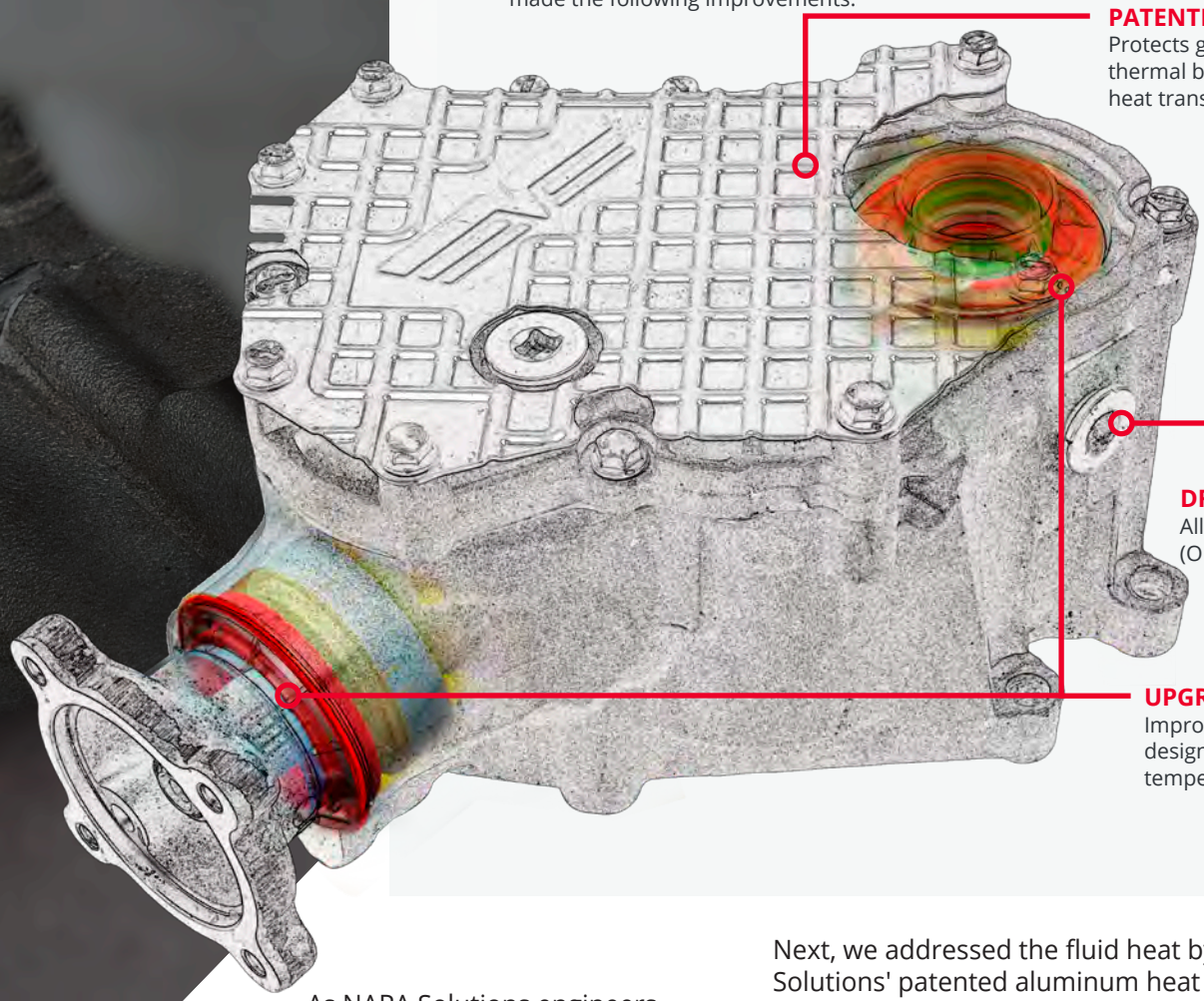
Watch our video to learn more.

PROBLEM

The factory PTU on certain Ford, Lincoln and Mercury SUVs and sedans often fails when extreme temperatures cause internal lubrication issues. When the lubricant overheats, it can cause catastrophic failures, also making it nearly impossible to salvage and rebuild it. In extreme cold, the factory seals fail and cause oil to leak from the unit.

ADVANTAGE

NAPA Solutions' engineering team made the following improvements:



As NAPA Solutions engineers analyzed failed units from the field, we actually found these problems were related. When the PTU lubricant level fell below recommended level, it overheated. The compromised fluid could no longer properly lubricate the gears, which would audibly voice their disapproval. If the fluid got very hot, it became gaseous. As the PTU vented it, the distinctive odor entered the passenger compartment.

To solve the problem, we had to address the low fluid level and the fluid quality. The low fluid levels were caused by seals that were failing in temperature extremes—both hot and cold. Careful examination of the seal lips showed the problem: the embrittled material began suffering repeated microtears that would lead to very slow (but certain) fluid migration. We selected a new seal material that outperformed the OEM.

Next, we addressed the fluid heat by installing NAPA Solutions' patented aluminum heat shield near the exhaust, which is routed very, very close to the PTU when installed. In testing, temperatures on the surface of the PTU dropped by no less than 24 degrees at any point in the test, and often more—nearly 50 degrees in some circumstances.

Finally, we also addressed dealing with fluid that had been heated beyond its maximum working temperature by installing drain and fill plugs in the case. Astonishingly, Ford did not fit these vehicles with simple drain plugs, permitting fluid level checks, changes, and addition as necessary. Rejuvenating the fluid from time to time with quality lubricants was the final step in helping to ensure our PTU would perform where originals failed.

Initial demand certainly has been aggressive for our upgraded solution. We're proud to have applied what we consider to be the ultimate bevy of fixes to this part. The NOE 666-2434-1 will keep all four wheels turning for motorists wanting a vehicle as reliable as it is sure-footed.

JUST ENOUGH ESSENTIAL PARTS, Eh?

The TJ-era Jeep Wrangler is an interesting creature. Built from 1997-2006, it was the last Wrangler to use an appreciable amount of AMC-era parts like those door handles you can identify a mile away. With traditional round headlights replacing the controversial square units of the outgoing YJ-series, the TJ Wrangler was immediately beloved by off-road enthusiasts, and its legendary simplicity, durability, and ease of ownership hasn't faded a lick. TJ Wranglers never seem to die; instead they're simply rebuilt by an occasional new owner.

And that's why we've developed so many NAPA Advantage parts for these vehicles. They stick around and their owners keep repairing them. In fact, we've just recently released several new solutions for the TJ. One of them is our shift tower kit (P/N NOE 666-2402-1) that replaces the sloppy shifters in Wranglers equipped with a six-speed manual. It's a real gem: it firms up the shift feel, locks the chosen gear in place, and shortens up the shift throw just enough that drivers won't smash knuckles into the heater controls when grippin' and rippin' gears. (It also frees up one hand so your customers can wave when they see another Wrangler.)

MANUAL TRANSMISSION SHIFT TOWER

NOE 666-2402-1: Jeep Wrangler 2005-2018

Watch our shift tower repair kit video.

To help keep those trusty 4.0L straight-six engines in service, we've developed a replacement cam synchronizer (P/N NOE 600-2921). Also known in Jeep-ese as the OPDA,

continued on opposite page ▶

CAMSHAFT SYNCHRONIZER

NOE 600-2921: Jeep Wrangler 2005-2006

Watch our upgraded OPDA video.

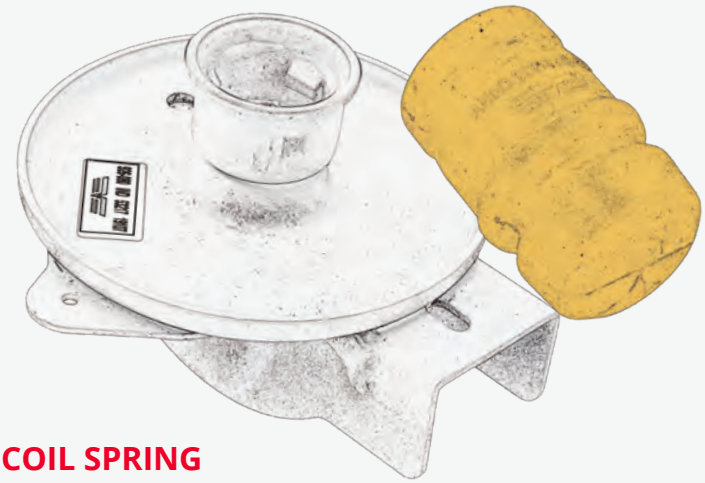
our unit rectifies the factory's sparse oiling by replacing the factory steel upper bushing with one made of a special self-lubricating alloy. The result is elimination of the "laughing monkeys" complaint you've surely received, staving off the otherwise-inevitable cam and lifter replacement that comes from ignoring the sound.

Note these new items join a curated mix of products within the NAPA Advantage portfolio. The TJ is the first Wrangler with coil springs, so we make rear coil spring repair brackets (P/N NOE 926-0080-1 and NOE 926-0081-1). The collection also includes split brake backing plates (P/N NOE 610-3060-1), a tilt column release cable (P/N NOE 641-3000), and quite a few other pieces.

There are a lot of old Wranglers still in service. We know you're keeping them that way, and we'll keep working hard to help you do it.

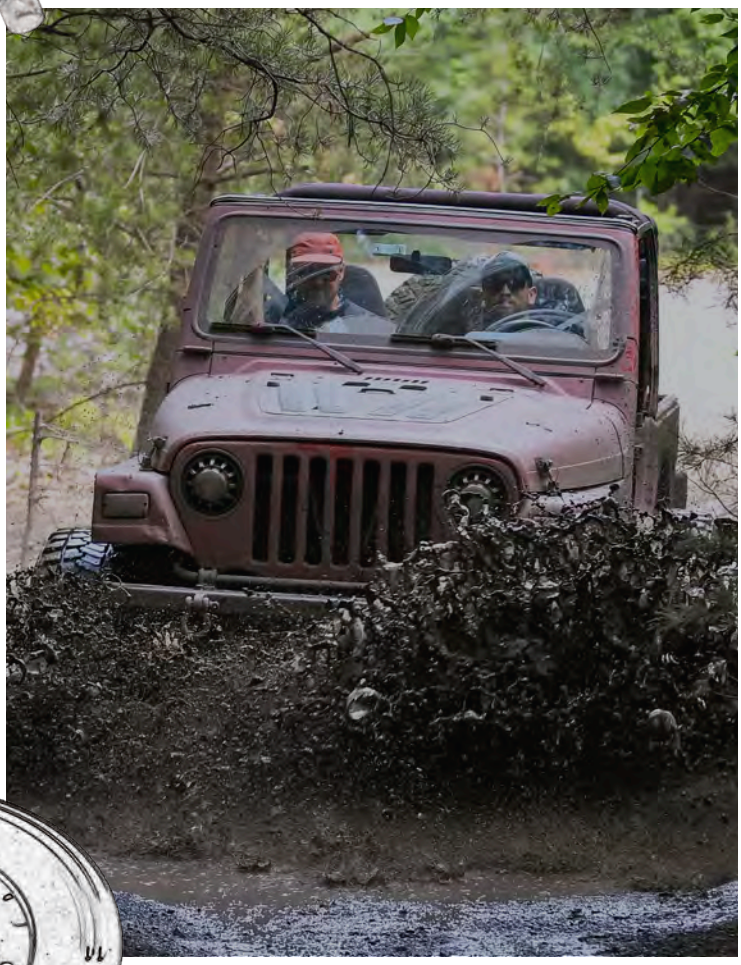
TILT COLUMN RELEASE CABLE

NOE 641-3000: Jeep 1997-2005



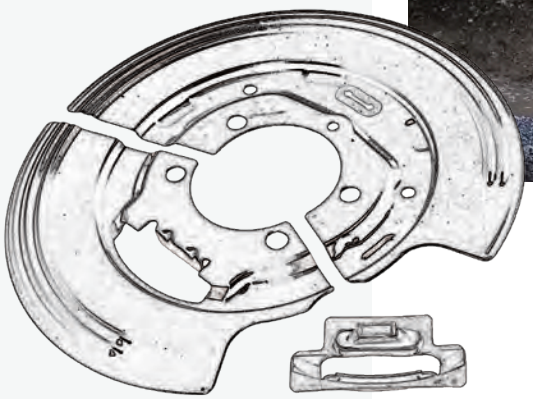
COIL SPRING BRACKET REPAIR

NOE 926-0080-1: Jeep Wrangler 1997-2006



BRAKE DUST SHIELD

NOE 610-3060-1:
Jeep Liberty 2003-2005,
Jeep Wrangler 2003-2006



GET YOUR PARTS WITH THE PROGRAM

It's hard work making plug-and-play parts possible. Here's what's happening behind the screens.

Dorman's advanced electronics team is currently building what they call a "subway map." It's a diagram filled with rectangles connected by colored lines, like you would see to navigate a metro system. It shows how more than 50 modules are connected by more than 20 different networks in a late model vehicle they're analyzing. And those are just the primary ones.

For instance, there's the ABS module that talks to the airbag module, by way of two other modules, to utilize information from sensors that detect the vehicle's yaw stability. Or the left and right blind spot modules that relentlessly send data to several other modules, including the seat, mirror, HVAC and steering wheel modules, always ready to trigger the lights and haptics that alert the driver to not change lanes or back up.

They're doing this work to be prepared for developing the next generation of aftermarket replacements. It can take OEMs years to develop a vehicle, and Dorman's software developers similarly start developing replacement parts for those vehicles years in advance.

"It's really hard to fix a car if you don't know how it works in a normal state," said Rob Nyce, a former service tech and now one of Dorman's Product Managers leading the project. "More and more, you really need to understand

continued on opposite page ▶

the vehicle as an entire network. We're finding there's a ton of shared information."

From the OEM perspective, interconnectivity offers intriguing possibilities. Safety and security are the two obvious ones. Less obvious is the cost and weight savings, since communication via data cables can help reduce the amount of heavy, expensive copper electrical wires running through the vehicle.

In terms of serviceability, it's a gift for some, a curse for others. For dealerships with full access, diagnosis can be quick, and resolution can be electronic rather than mechanical. For aftermarket shops, scan tools for all makes and models can be expensive, and navigating the different programming solutions can be laborious.

However, scanners aren't the only solution for replacing electronics on modern cars and trucks. Many techs get conditioned to automatically consult the service manual and check the control module references. The OEM may say a part requires programming, but what if that part already came with the programming solution you needed?

"We can use today's technology to fix yesterday's vehicles."

That's what Dorman's engineers started asking back in 2012 while developing replacement keyless remotes. They had begun producing fobs that required on-board programming, and learned some other automakers required scan tools, sending both vehicle owners and shops back to the dealership for programming.

"There were a lot of aftermarket tools for diagnosing back then, but just because you had a diagnostic tool didn't mean you could program," said Dorman Engineer Jessica Dessino. "It was way more common not to have that programming capability."

In reality, you didn't technically need a scanner at all to do the job. By identifying the underlying algorithms, the Dorman team was able to put everything needed to program the fob into a disposable dongle, for a fraction of what the dealership charged to do the same thing with a scan tool.

That work led to Dorman's U.S. patent #9,311,815 for a key fob dongle that enables keyless remotes to be paired to a keyless entry receiver of a vehicle. This OBD programmer was first included in our NOE 730-6949 NAPA Advantage keyless entry remote for a variety of 2004-2010 GM cars like the Malibu and Grand Prix. NAPA Solutions now has dozens of NAPA Advantage key fobs that include a programmer, as well as ignition lock cylinders, utilizing very similar code to pair the new keys.

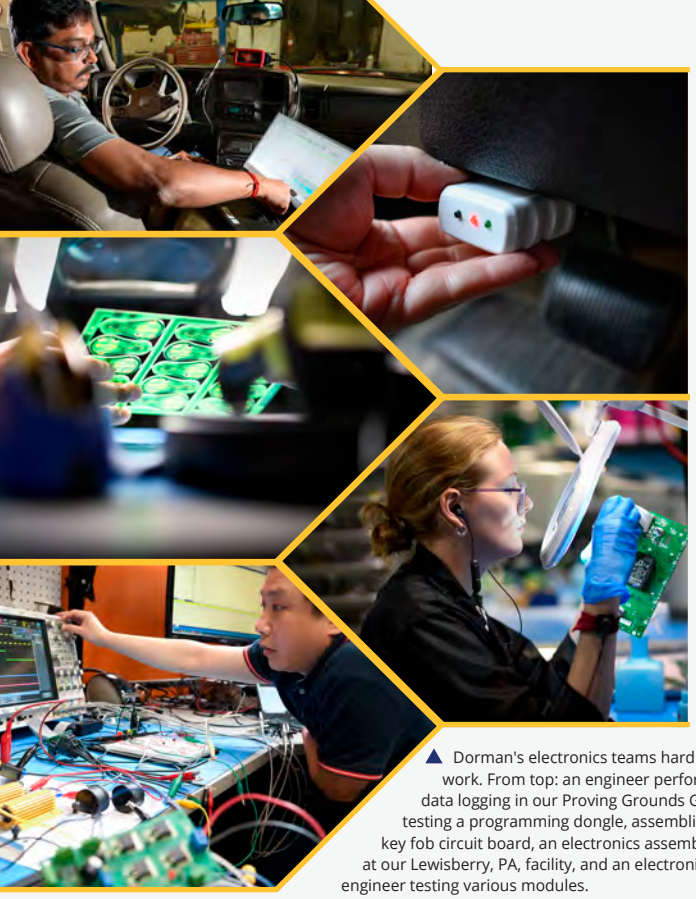
"We're essentially recreating the scan tool functionality, but also getting rid of everything you don't need," said Dessino.

At about the same time that dongle patent was issued, another team of Dorman engineers started developing another application of the same principle, except on the opposite side of the complexity spectrum from a fob.

They heard through Dorman's extensive database of auto repair professionals that there was very limited aftermarket availability for replacing the electronic power steering rack on certain F-150s. Apparently, shops also couldn't find a scan tool capable of performing the necessary calibration procedure after installation. Once again, independents didn't have freedom to fix these vehicles, and were being forced to go back to dealerships.

Delivering the physical product itself required precision manufacturing, but was relatively easy compared to the programming challenge. The first proposal was to insert the software into the rack itself, but the only way to make that work would've been for users to go on an extended test drive and allow the sensors and modules to sync up. "We couldn't really tell people to drive perfectly straight for two miles," said Nate Bailey, a Director of Product Management who worked on the project.

continued on next page ▶



▲ Dorman's electronics teams hard at work. From top: an engineer performs data logging in our Proving Grounds Garage, testing a programming dongle, assembling a key fob circuit board, an electronics assembler at our Lewisberry, PA, facility, and an electronics engineer testing various modules.

PROGRAMMING DONGLE

These handy devices include all the electronic power you need to finish the specific job at hand, in some cases saving you time even if you have a scan tool.

So, the answer was another OBDII dongle. They tested both the rack and programmer extensively, including on the same test track that Ford tested theirs, as well as one infamous night in the parking lot of Dorman's headquarters in Colmar, Pennsylvania.

"It was Christmas Eve, and the parking lot was empty, so we were driving our test truck around in circles, when a police officer stopped us to ask what we were doing," said Dorman Director of Engineering Raja Govindasamy. "We showed him our Dorman badges, and told him we were tuning a new design. He wound up just asking us to turn off the headlights."

The resulting rack and programmer – P/N NOE 732-0001-1, featured more extensively in NAPA Advantage Guide Vol. 3 – delivers all the functionality and compatibility of the OEM unit without any of the hassle of the programming. Simply install the rack, perform an alignment, insert the dongle, and wait a few seconds. No outsourcing to a dealership, nor wasting a tenth or two getting the scan tool, connecting to the internet, and finding the right menus and procedures.

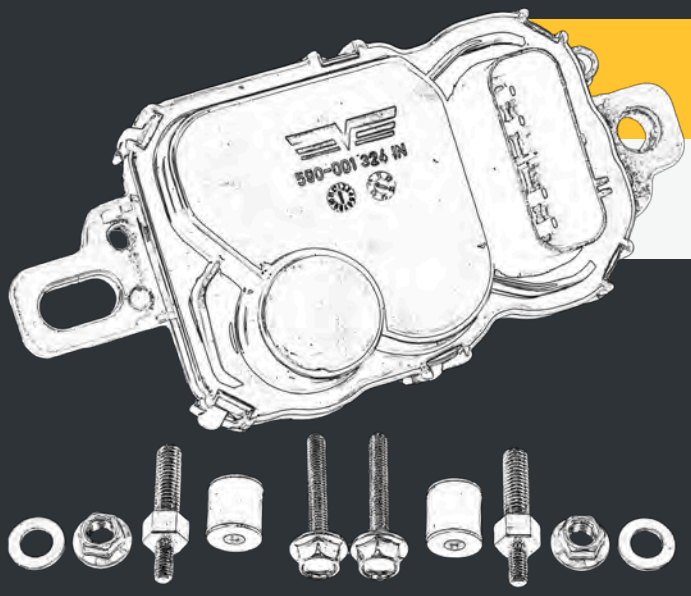
Since then, Dorman's engineers have found other creative opportunities to make aftermarket replacements better than their OE alternatives through software, including pre-programmed fuel pump control modules for a variety of 2008-2014 GM vehicles (P/Ns NOE 602-1613-1, NOE 602-1614-1 and NOE 602-1615-1). These don't even require a dongle – they are purely plug-and-play.

Another programming application has been saving shelf space for retailers, distributors and jobbers. For instance, NAPA Solutions' NOE 599-1210-1 and NOE 599-1211-1 climate control modules, manufactured at our advanced electronics facility in Lewisberry, Pennsylvania, combine many different OE numbers that only differ in programming. That creates the ability to stock fewer products to cover the same number of vehicles, in turn increasing part availability for garages.

Those HVAC modules are also a good example of the one place where the aftermarket has an advantage when it comes to replacement electronics. OEMs often start developing vehicles five years before that model's released, and aftermarket manufacturers typically don't release replacements until vehicles are out of their warranty window, creating at least a decade's difference in technology. That might not mean as much with pure mechanical parts, but it's a lifetime for advances in processing power. That's what enabled Dorman's engineers to squeeze so much more information into modules that look the same as the originals.

"OEMs aren't going to redesign a part unless there's something really wrong with it," Nyce said. "Meanwhile, we can use today's technology to fix yesterday's vehicles."

◀ *Products shown, from left: pre-programmed FPDMs, key fob with dongle, and electronic power steering rack with dongle.*



NO START, NO FUEL, No Prob.

FUEL PUMP DRIVER MODULE WITH MOUNTING BOLTS

NOE 600-5477: Ford & Mazda 2004-2011

▼ *Our upgraded FPDM next to an OEM unit so badly corroded its electronics were exposed.*

Crank/no-start conditions are a bread-and-butter repair for most automotive shops. These immediate problems generate estimates that yield corresponding diagnostic time, parts, and service that are almost never declined. That immediacy, coupled with the high cost of wrecker service, is a bit of a double-edged sword, though: jobs that come back usually come back with an irate customer, so it's imperative to get the car repaired correctly on the first visit. Enter the NAPA Advantage fuel pump control module for a variety of Ford and Mazda vehicles from 2004-2011 *(P/N NOE 600-5477).*

These cars, trucks and SUVs that come in and don't fire up frequently exhibit fuel pressure problems and the culprit is all too often the FPCM. On many vehicles, Ford chose to mount this module externally. At first blush, it might seem like it should last, but road salt, moisture, and galvanic corrosion all take their toll after rain and normal vehicle rust set in. The housing on these, made of aluminum, is usually mounted to a steel body or chassis component. On trucks, you'll find these often bolted to a frame crossmember, and on many cars they're attached directly to the unibody.

The cast aluminum housings, bolted to steel, are an invitation for galvanic corrosion. Water and salt frequently cause pitting on the casings severe enough to crack them and expose the delicate electronic innards. Cast aluminum is also rather brittle, and the solid mounting Ford used on most vehicles proved to be detrimental to the longevity of the driver modules. That mounting also helped harbor water—trapped moisture wasn't able to easily evaporate.

Dorman engineers employed a few techniques to solve for these problems. The first was at the case itself. Ours, like Ford's, is made of cast aluminum. However, ours is sealed in a tough-as-nails epoxy that passed salt-spray testing with flying colors. That epoxy helps stop galvanic corrosion in its tracks by sealing in the aluminum, which otherwise acts as an anode.

Another way the galvanic corrosion is thwarted is through the use of standoffs: our kit raises the FPDM off the previous mounting surface by about a half an inch so water can go as quickly as it comes. Rather elegantly, our engineers chose to make those standoffs out of rubber, to also isolate the delicate electronics from the normal shocks and vibration a chassis-mounted item will experience. And the microprocessor within? Well, we didn't snooze on that, either. It's faster than the OEM processor, leading to improved response times. Perhaps best of all, the module is made right here in Pennsylvania by American workers.

So when you've got a Blue Oval that's come in on the hook with no fuel pressure, ask for a NAPA Solutions FPCM by name. You might want to take a good look at your customer, too—you won't be seeing him again.

Watch our video to learn more.

CRIMPIN' ain't easy

Some wiper transmissions on the market **CRIMP OUR STYLE,** *so we upgraded 'em!*

PRODUCT SHOWN: *P/N NOE 819-2148 wiper linkage for Saturn Ion*

Ka-thunk! Thwack-thwack-thwack.

Those are the noises a driver usually hears immediately after a wiper transmission lets go, and then he has a first-row seat to watch what was previously a well-behaved wiper blade ding up the paint on the A-pillar. It's a little horrifying.

We found a way to improve a large swath of them so we can spare drivers pained winces and car scars on the sail panels.

The wiper transmission, a mechanical device, is an unsung hero. It's received remarkably little development over the years. The basic design of the wiper transmission from the '60s or '70s really doesn't look very different than one of today, because the design is generally sound. However, some OEM suppliers tried to reinvent the wheel, and the outcome wasn't so great.

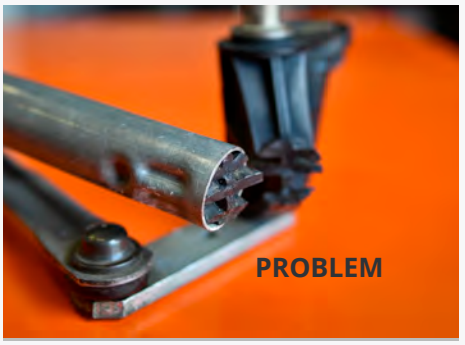
Manufacturers began fitting these wiper transmissions that had complex, molded polymer sections to vehicles. These are socketed into tubular extensions to span the breadth of the windshield, and then crimped. Somewhat predictably, linkage of this construction has a fairly high tendency toward failure. The metal sections hold up fine, but the crimped area doesn't. Breaks usually occur right outside of the crimped area, just like a weld might break in the heat-affected zone just outside the weld. Now imagine one of these poor things after a decade in service. Pretend it's winter, and there's a heavy load of snow on a windshield. The air is so cold the plastic is as brittle as glass. As soon as that driver puts power to the motor, that linkage is a goner. It's a wonder these things survive at all.

So we fixed it by eliminating the failure-prone plastic bits and making them from metal. You'll read elsewhere in this magazine about some of our systemic fixes—global redesigns we implement across a whole line of parts because we know that the failure point is a common one. We don't fix this issue on every wiper transmission, just ones that have crimped plastic sections, but we've done it enough that if our engineers see one, it's an immediate upgrade area. We have over twenty part numbers that beef up the original design and eliminates plastic under the cowl, where the transmissions are working hard at fairly high speeds.

We love to help you upgrade weak wiper transmissions, because it means we probably won't have to sell you sail panel garnish—but if you need it, we make that too!

WIPER TRANSMISSIONS

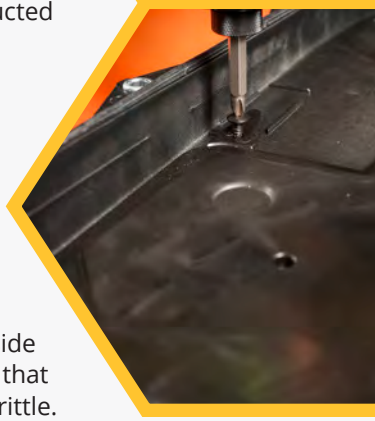
Available for: BMW & GM 1994-2022



DRAIN PLUGS & SERVICEABLE FILTERS: *optional equipment?*

Watch our video to learn more.

Our NAPA Advantage transmission oil pans include removable filters and drain plugs for easier service.



When we were investigating the feasibility of creating a transmission oil pan for BMW vehicles a few years back, our engineers realized that the filter was permanently attached to the transmission pan. The sedans were billed as having "lifetime transmission fluid," rendering service unnecessary. As you may know, neither the fluid, nor the filters, nor the trans itself were very keen on this "no service at all" specification. If a simple filter change was desired for reasons of maintenance or due to low fluid pressure, the purchase of a complete pan, filter, and gasket was required. If a pan began leaking at the gasket...a complete pan, filter, and gasket was required. If any one item required service, all three needed to be purchased every time, because the item was sold as a complete assembly and costs for complete pan assemblies were high enough to raise eyebrows.

From this absurdity, our NOE 635-1016-1 transmission oil pan was born. Complete with a filter that can be removed for future service, a drain plug, gasket, and bolts, that kit featured everything necessary to convert those transmissions into normal, easy-to-service slushboxes.

As we delved further, we found similar fixed filters on various Chryslers, Land Rovers, Jaguars and other BMWs, the commonality being that these transmissions all came from the ZF Company. We developed three more kits (P/Ns NOE 635-1015-1, NOE 635-1017-1 and NOE 635-1018-1), sticking with our recipe of upgrades: removable filters, gaskets, and hardware. Of course, with removable filters customers also need consumable parts in the future to perform regular service, so we also sell filters and gaskets separately to service converted automobiles—just add an "F" to the part number of your pan to purchase a conventional filter and gasket kit.

Let's spend a moment looking at the hardware, too. Note that we said we include a drain plug? It's been said that early automatic transmissions had no drain plug to prevent lazy owners and mechanics from simply exchanging fluid—by making the pan difficult to drain and forcing a filter replacement, early automatics set up in this fashion helped protect the transmission from the harmful effects of improper fluid pressure and volume. True to that lineage, we found no drain plugs on certain 2008 to 2019 Audis and Volkswagens when we started sniffing around those. One must loosen the pan to service it. Our NOE 635-2024-1 has a drain plug to simplify future service. In fact, every transmission pan we make at Dorman has a drain and plug constructed right in from the design stage.

Our latest iteration in the NAPA Advantage transmission oil pan lineup is our NOE 635-2033-1, which fits quite a few Mercedes-Benz vehicles. These pans feature two (!) filters that are ultrasonically welded into the pan. Furthermore, there's a standpipe to fill and drain fluid, and on the other side of the pan a polymer alignment tube that sometimes comes out looking a bit brittle.

Oh, and if you haven't worked on one of these beauties, you ought to know there's also a special dealer service tool you need to fill the transmission or adjust its fluid level. We applied our old standbys once we got on this project—removable filters and a convenient drain plug. We also thought we could simplify things by including a second drain plug that makes getting fluid into the bottom-fill transmission a bit easier. Of course, all the service items—drain plugs, filters, pan gasket, and trans tubes—are available separately; just put an "F" suffix on the transmission pan part number for any of our pans to get the filter kit, and if you guessed that "T" will get you the level adjusting tool for the NOE 635-2033-1, you're right on the money.

You may be thinking this is one of those systemic fixes you've read about elsewhere in this Guide. It is! As it turns out, we've found helping techs fix automobiles instead of trying to lock them out seems to be pretty popular in this industry.

Who could have guessed?

FREQUENTLY SOLVED PROBLEMS

We're long on NAPA Advantage parts
for the most common OEM shortcomings

As of this publication, we have about 2,000 NAPA Advantage parts in our catalog.

Some of these are individual products that solve particular problems unique to certain vehicle applications. A good example is our NOE 602-1554-1 NAPA Advantage intake manifold, featured in NAPA Advantage Guide Vol. 2, that fixes a particularly problematic PCV valve on popular 1.4L Ecotec engines. We have hundreds of these one-off solutions.

Meanwhile, there are many other parts that feature similar improvements, because many OEMs design their parts similarly. These endemic flaws are what lead to our most consistent NAPA Advantage parts.

1

DRIVE SHAFTS

500+ NAPA Advantage Parts

PROBLEM: OEM U-joints are staked, making them difficult to service.

ADVANTAGE: Many NAPA Solutions drive shafts feature serviceable U-joints.

2

BRAKE & FUEL LINES

200+ NAPA Advantage Parts

PROBLEM: OEMs use steel that can corrode over time.

ADVANTAGE: Many NAPA Solutions lines are upgraded to stainless steel.

3

WHEEL BEARING & HUB ASSEMBLIES

130+ NAPA Advantage Parts

PROBLEM: OEMs require use of a hydraulic press to replace worn bearings.

ADVANTAGE: NAPA Solutions loaded knuckles include pre-installed bearings.

4

WINDOW REGULATORS

100+ NAPA Advantage Parts

PROBLEM: Many OEM designs have lower-grade components that crack or bind.

ADVANTAGE: Many NAPA Solutions designs feature stronger cable tensioners, cable guides and slide blocks.

5

EGT SENSORS

70+ NAPA Advantage Parts

PROBLEM: Corroded EGT sensors often seize and can't be removed.

ADVANTAGE: NAPA Solutions sensors include a weld-in bung repair kit, potentially saving time and avoiding the need to buy a whole new catalyst.

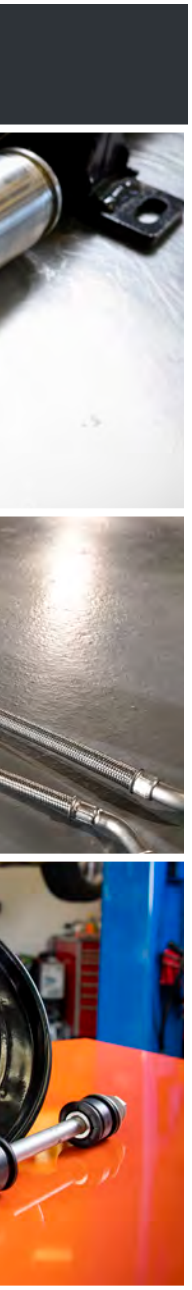
6

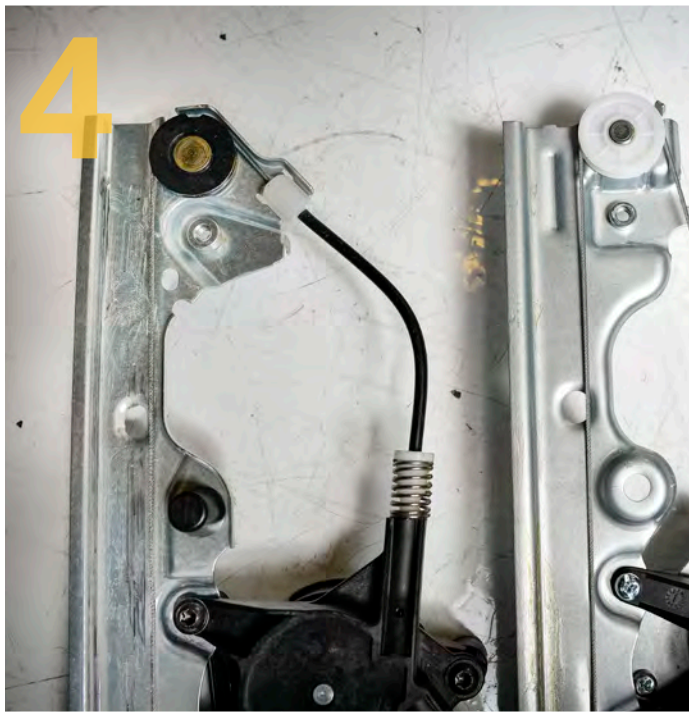
KEYLESS REMOTES

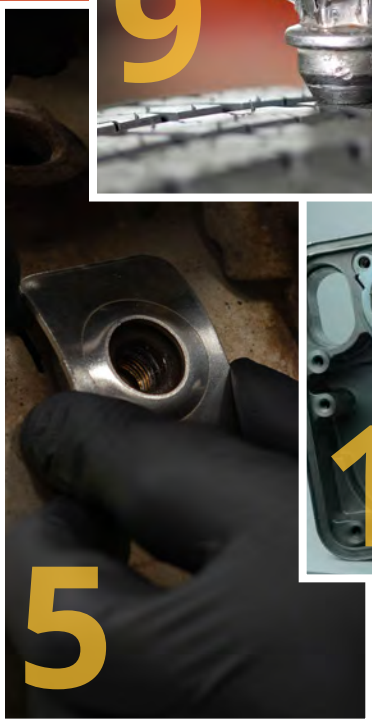
50+ NAPA Advantage Parts

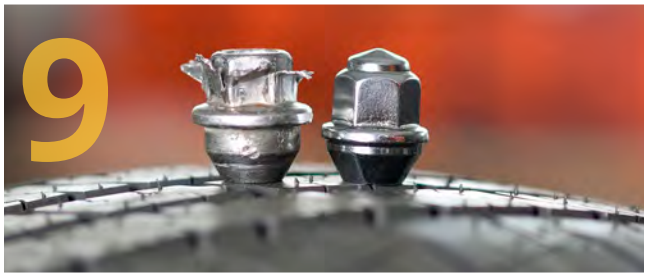
PROBLEM: Many OEM remotes require programming with a scan tool.

ADVANTAGE: NAPA Solutions fobs include a programming dongle.









7

DOOR HANDLES

40+ NAPA Advantage Parts

PROBLEM: Many plastic OEM door handles crack over time, or have insufficient seals that lead to corrosion.

ADVANTAGE: NAPA Solutions door handles feature upgraded metal designs or have additional seals to prevent water intrusion.

8

HEATER HOSE ASSEMBLIES

40+ NAPA Advantage Parts

PROBLEM: Many OEMs use plastic connectors that frequently crack over time.

ADVANTAGE: NAPA Solutions heater hoses feature upgraded aluminum connectors.

9

WHEEL LUG NUTS

40+ NAPA Advantage Parts

PROBLEM: Many OEM wheel nuts have a two-piece design with a veneer that gradually deforms, making removal difficult.

ADVANTAGE: NAPA Solutions wheel nuts have a solid, one-piece, corrosion resistant design.

10

THROTTLE BODIES

30+ NAPA Advantage Parts

PROBLEM: OEM throttle bodies often fail from oil intrusion.

ADVANTAGE: NAPA Solutions throttle bodies include a proprietary Sensor Shield shaft seal that prevents oil from entering the unit.

this old housing

Never leave a vehicle behind

If you read the third volume of the NAPA Advantage Guide, you might remember the introduction of our replacement upgraded aluminum oil filter housing for Pentastar engines found in plenty of Chrysler, Dodge, Jeep, and Ram cars and trucks. Demand was rather overwhelming. One of the comments we heard most often was, "When will you make one to fit my vehicle?"

That comment came largely from owners of the very earliest Pentastar engines. Our first upgrade kit (P/N NOE 926-0876-1) was designed to fit MY2014-and-up vehicles. The upgrade kit included all the pieces needed to install the keystone part, a die-cast aluminum housing that is far more capable of dealing with heat, oil, coolant, and vigorous application of torque from overzealous technicians. Gabriel Kovacs, Product Manager for Dorman's Innovation team (who also worked a parts counter for a Chrysler dealer), understood some of the passion behind the question. "When one of these vehicles comes into a shop, techs who know this engine instinctively check for an oil leak from the engine valley regardless of customer complaint or request," he said.

He's correct, of course. Mechanics sensitive to the high number of replacements this engine can generate usually make it a point to look the vehicle over thoroughly. It was no surprise that response to that first kit was immediate and positive—we knew we had a winner on our hands. However, owners of the very first generation of that motor (MY2011-2013) were unable to use it. In that cruel plot twist, the vehicle owners most likely to need relief from the constant replacement cycle were unable to avail themselves of our new housing. We knew that and were working overtime to develop a kit for these earlier engines concurrently. Our team found the parts needed to comprehensively bring those older vehicles up to the latest Pentastar specifications so our improved housing could be used on those early engines in one convenient package: our new NOE 926-0959-1 oil filter adapter kit.

"This next iteration immediately provided a viable, permanent solution to this oil leak issue for an additional 1.7M vehicle owners in the USA," Kovacs stated. He's sleeping a few more hours every night since the release of the second housing kit, knowing he's done his best to stem the combination of OEM housing failures and supply chain snafus that have plagued CDJR vehicles for a considerable period of time. "Believe it or not, because we also worked on making this kit fit very recent applications, we picked up a number of new vehicle fitments, too. Many of the new owners have no idea this part is likely to

PROBLEM

The factory oil filter adapter on certain vehicles leaks when its plastic material warps over time.

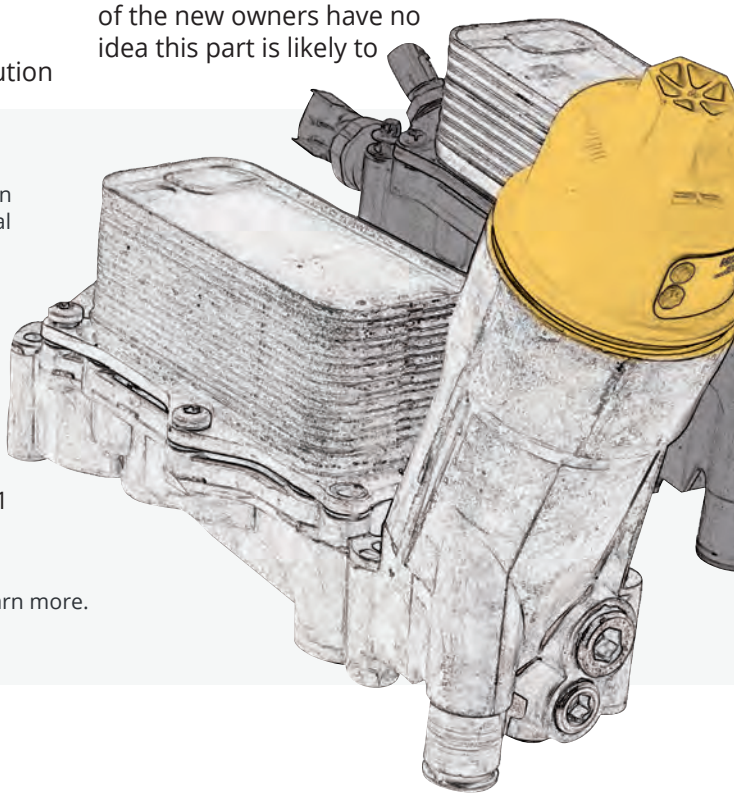
ADVANTAGE

Our oil filter housing is made entirely of aluminum for a more durable replacement.

OIL FILTER ADAPTER

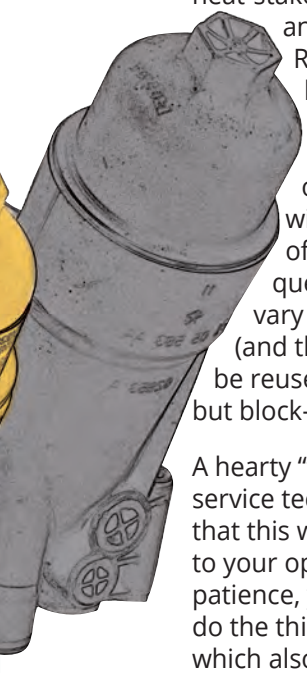
NOE 926-0959-1:
Chrysler & Volkswagen 2011-2021

Watch our video to learn more.



fail, but now this will be just a minor problem to solve should it occur during their ownership," he said.

The kit contains our aluminum housing and all the necessary gaskets and seals for installation, but we include a few other bits as well, like an updated oil filter. Also in the box is an updated filter cap that has a convenient parts cross-reference tag heat-staked permanently in place for anyone servicing the vehicle. Rounding out the kit is a brand-new oil cooler to adapt the kit to early engines. The kit can also be used on later vehicles and is a wise choice if the condition of a vehicle's oil cooler is questionable. Since sensors vary a bit on the run of engines (and they're almost always able to be reused), they're not included—but block-off plugs sure are.



A hearty "thank you" goes out to all you service techs who kept letting us know that this was a pressing need. Thanks to your open communication and your patience, you helped us find a way to do the thing that's best for the planet, which also happens to be what you do day in and day out—keep a few more cars and trucks out of the junk yards and continuing to serve their owners.

MANIFOLD EASYWARE

If you don't like our bolts and studs, we'd call you nuts.

Replacing exhaust manifold gaskets or manifolds themselves is a straightforward, bread-and-butter job in most automotive shops—but it ain't easy. You're fighting in cramped quarters. Some vehicles seem to need access from both the hood and under the car to get the job done. For most of us, though, the worst part of one of these jobs is broken hardware.

PRODUCT SHOWN: *P/N NDP 819-8622-1*

Harsh underhood conditions, galvanic corrosion, and heat cycling ad infinitum all contribute to that sinking feeling that comes along with a stuck fastener suddenly giving way very rapidly. We've all had to fight these situations with extractors, torches, welders, and drills. When the cylinder head is finally prepped once again to accept the gasket, manifold, and hardware, all too often the same failure-prone hardware is purchased and put back into play. It makes sense; lots of it is bespoke and not easily upgraded.

Until now.

NAPA Solutions now has NAPA Advantage stainless exhaust hardware for popular applications. We've patterned OEM hardware but upgraded the material to A2-70 stainless steel. No doubt you're familiar with stainless steel's resistance to oxidation, which is part of the reason we chose it. Another reason is its ductility; stainless has a bit more elasticity than some other materials chosen for manifold hardware.

The hardware kits are sold per-manifold, so whether you're working on an inline or a vee or a pancake engine, you can buy only what your customer needs and no more. If you take a look at our applications for these NAPA Advantage solutions, it reads like a "who's-who" of problem manifolds that have caused their fair share of struggles and strife—we tried to make sure the most failure-prone vehicles were covered well, and we're still rolling out new fitments.

This solution, good though it may be, won't stop that endless parade of tools designed for removing fasteners. It will, however, make it highly likely that the first set of stainless hardware you install could also be the last set that goes into the vehicle.

Watch our stainless steel hardware video.

THE LITTLE THINGS IN LIFE

"Sometimes, said Pooh, the smallest things take up the most room in your heart."

— A.A. Milne

Anyone who's ever seen a bolt sucked through an intake, found a misfire caused by incorrect plug gap or chased down a few milliamps' worth of parasitic draw can tell you that little things matter. In fact, in those situations, they matter *a lot*. Seemingly tiny items can have enormous effects upon automotive systems—bad and good alike.

On a brighter note than those three scenarios, we make a few small NAPA Advantage items that could fit easily into a brown paper lunch bag but pack a real big service punch. For example, some of our bespoke battery terminal hardware kits (P/N NOE 926-0875-1, NOE 926-0882-1) are tiny items, yet on a Saturday afternoon, they may be the pieces that save a customer the cost of a weekend rental.

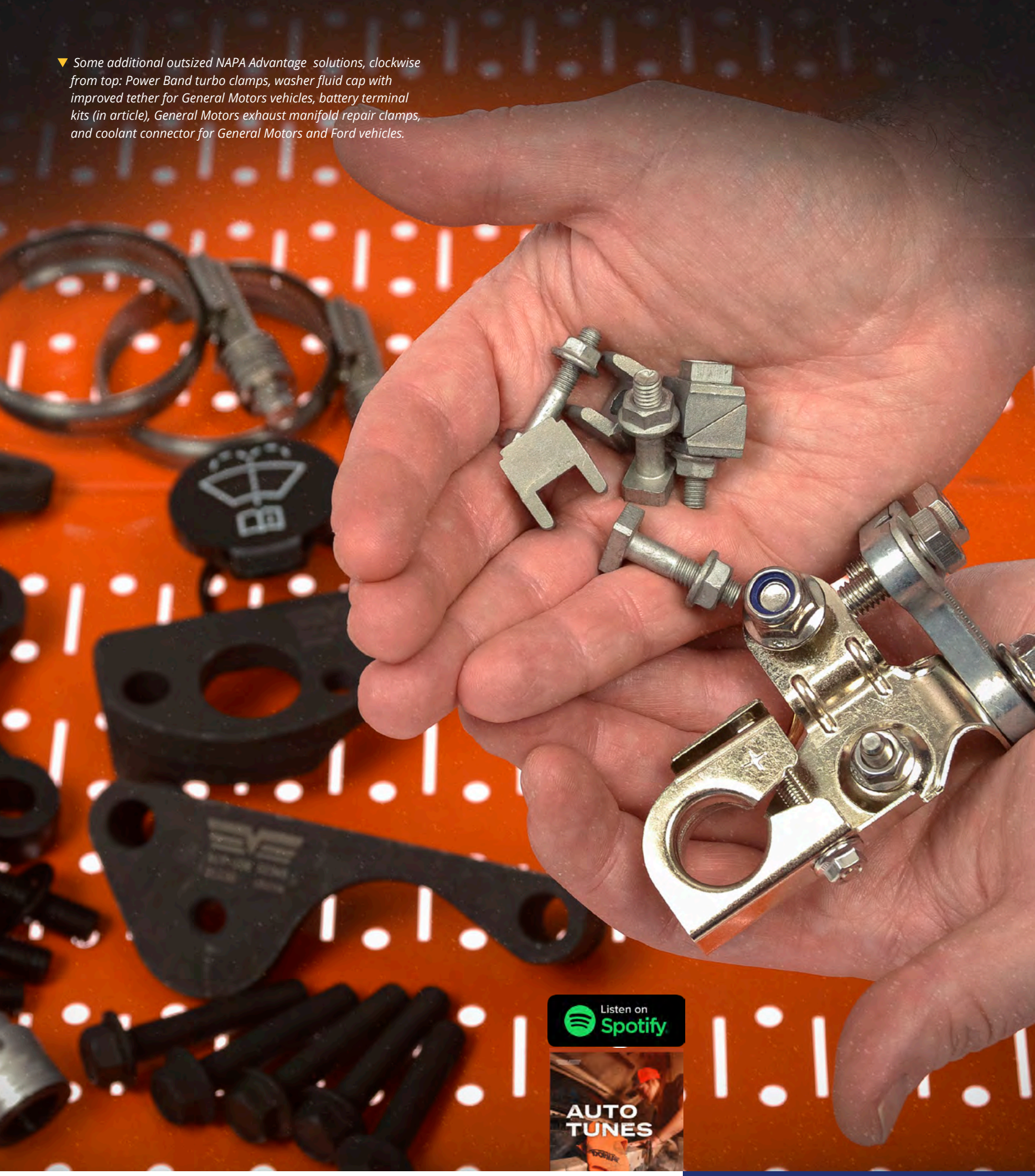
We make a shifter microswitch (P/N NOE 900-5026-1), which, as the name may tell you, is quite small. Also small: the price and the amount of time you'd need to install in a Ford truck, the vehicle in which they fail. The dealer solution is a new gearshift lever.

In a similar vein, did you know we make power seat gears? Our NOE 730-6503 is an itty-bitty little thing, but it's usually the item that goes south in many Nissan Maximas. Many salvage yards have been picked clean, because Nissan only sells the entire adjuster. At the time of this writing, it's got a list price approaching two grand. We think that's pretty big.

And some of our other small parts knock down big labor times and turn those tiny enough to tuck into a pocket, too. Take our NOE 601-1018-1 dipstick flange repair kit. Made for the Ford 7.3L diesel, this kit helps replace an engine oil dipstick flange seal that's begun to leak. Normally this job requires pulling the engine, but our kit can be installed in under half an hour with the engine in situ. Small part. Big labor-saver.

NOE 917-0954-1 is a real treat, too. A timing chain tensioner guide bolt for Ecotec 2.0, 2.2 and 2.4L engines, this piece can serve as a preventative measure as well as a repair item. When the original timing chain guide bolt shears (they are a bit undersized for the task at hand), this repair bolt allows the access plug in the casting to serve as a new, much beefier bolt retainer. It sure beats pulling the cylinder head—instead, this repair can be made in less than an hour.

Big value come in small packages.
Small, orange packages.



▼ *Some additional outsized NAPA Advantage solutions, clockwise from top: Power Band turbo clamps, washer fluid cap with improved tether for General Motors vehicles, battery terminal kits (in article), General Motors exhaust manifold repair clamps, and coolant connector for General Motors and Ford vehicles.*

"...the little things I could get in my big lunchbox/like nuts, and bolts and all four shocks..."

- Johnny Cash, "One Piece At A Time"

Scan to hear this and more of the best songs about cars and trucks on **Dorman's Spotify playlist.**

NAPA ADVANTAGE HALL OF FAME

We don't retire part numbers, *we keep selling more of 'em!*

ALUMINUM HEATER HOSE ELBOW

NOE 660-1942: GM 1995-2009

Mechanics of a certain age will certainly recall wondering why the accessory belt tensioner in a GM 3800 would have coolant running through it. Antifreeze ran to and from the intake manifold by way of the belt tensioner through small plastic elbows that push-fit at both ends. Fluid dribbles could look an awful lot like water pump leaks, but more often than not, a coolant elbow was the cause of coolant loss on FWD GM vehicles.

If you've done that job, you surely remember our NOE 660-1943 elbows. Those sold like hotcakes and still do. During that part's run, we reexamined this job and began cranking out an all-metal version. (P/N NOE 660-1942, the HP indicating "high performance.") This metal version eradicated all possibility of elbow failure, since the replacement driver is generally an elbow that's become brittle due to time and heat.

By now, we've sold millions of these upgraded metal connectors. Though GM 3800s aren't as ubiquitous on the ground as they once were, if you've got one with that leak (or you need to pull the tensioner or water pump for a different job), install a set of these and keep one more problem from cropping up.

SUSPENSION STABILIZER BAR

NOE 600-1666: Buick 1997-2005, Chevrolet 1997-2016, Oldsmobile 1997-2004, Pontiac 1997-2008

It is, perhaps, not a coincidence that our second '22 HoF recipient also fits FWD General Motors vehicles, many of which were powered by the 3800 engine we just mentioned. Prior to GM's bankruptcy, W- and U-body cars spanned the Buick, Oldsmobile, Pontiac, Chevrolet, and Holden marques. To put it plainly, they were everywhere—and there are still quite a few of them traveling the roads.

These vehicles were equipped with a front sway bar that was very susceptible to rust damage. The bars would simply rust through, usually at the area where the tubing used to make them was stamped flat into the eyelets. A simple sway bar link swap often expanded into stabilizer bar replacement once the links were off and the bar underwent visual inspection by a tech.

To combat this, NAPA Solutions developed a replacement sway bar (P/N NOE 600-1666) with an important construction difference—ours is solid. It's overbuilt, to say the least. It comes with all the pieces you need to do the complete job, including bar mounts, bar bushings, and new end links, and as a beefy chunk of steel that's over an inch in diameter, you can bet you won't be replacing ours any time soon after you install it. As of this publication, we'll have sold nearly a million of these kits to techs just like you—people who wanted something better for their customers and found it.

The next time a FWD GM comes in, take a peek at those elbows and the stabilizer bar, and if you see them looking a little haggard, know that there are some parts for that car that are worthy of a hall of fame. Not too bad for a family commuter, eh?