

OE FIX™

— GUIDE —

INNOVATIVE REPAIR SOLUTIONS AVAILABLE NOW AT



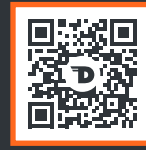
To build better aftermarket cam phasers, we push them to their limits. **Learn more about our innovative testing on page 13.**



Dorman gives repair professionals and vehicle owners greater freedom to fix motor vehicles. For over 100 years, we have been driving new solutions for the aftermarket, releasing tens of thousands of replacement products engineered to save time and money, and increase convenience and reliability. Founded and headquartered in the United States, we are a pioneering global organization offering an always evolving catalog of parts, covering products for cars, trucks and specialty vehicles, from chassis to body, from underhood to undercarriage, and from hardware to complex electronics.

When you see a Dorman product marked OE FIX™, that means it's designed to offer a better repair solution than the OEM. For years, you could also find OE FIX solutions through NAPA Solutions under the name NAPA Advantage. Regardless of the name, this magazine is dedicated to these innovative products, which are in turn dedicated to the hardworking men and women of the auto repair industry.

Learn more about us at
DormanProducts.com/tour.



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

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▶ Symbol indicates article includes a link to a video to see more.

▶ See page 17 for Dorman solutions to save you from breaking out the torch on stubborn exhaust jobs.



HELP![®] Wanted

OE FIX HAS DEEPER ROOTS THAN YOU MIGHT THINK.

Nearly every auto parts store has an aisle containing an eye-popping array of small, packaged items that don't fall as neatly into classification as the rest of the items in the store. "Chemicals," "Appearance," and "Towing" are straightforward. But what about that aisle with the smorgasbord of parts? If you're a counterman, tech, service writer, or shop foreman, odds are excellent you just thought to yourself, "Oh, that's the HELP! aisle."

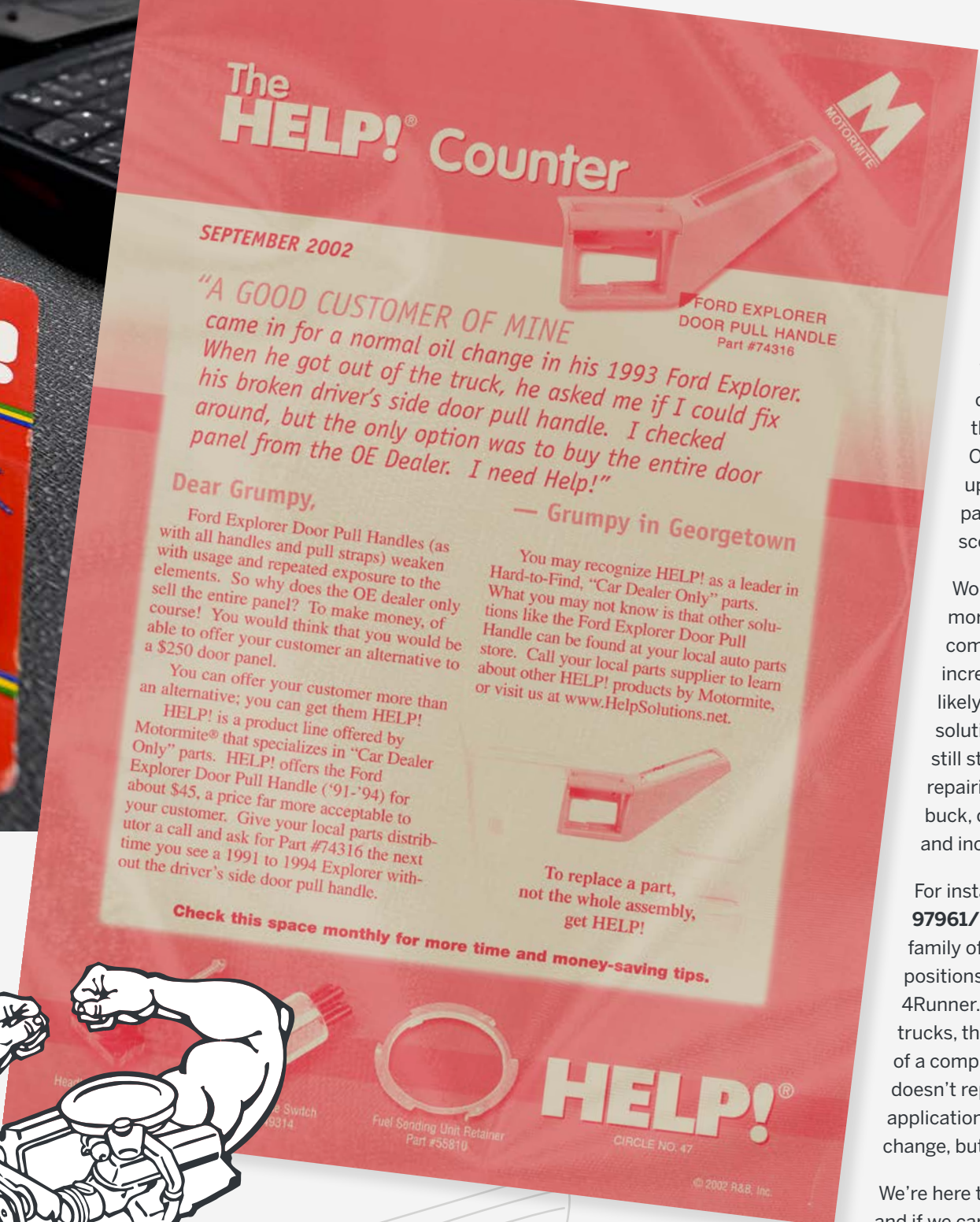
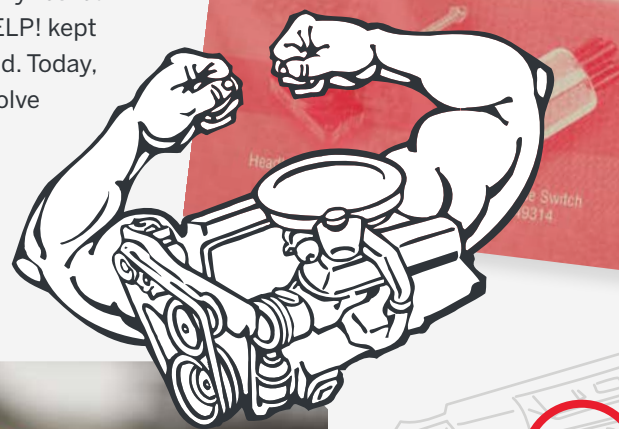
HELP! has become synonymous for the small parts needed to get out of a jam. By consistently delivering what that packaging promises—HELP!—we coined a category of products so distinctive the store section is labeled by brand name alone.

The HELP! line launched in 1981 to provide repair parts that were then considered difficult for vehicle owners and mechanics to buy both at the dealer and in the aftermarket. They came to be known as hard-to-find parts. And the name? Clear, simple, and direct, it was crafted to send the message that we offer creative assistance to those tasked with fixing a car. One of our go-to methods was improving OEM part designs that were known to predictably fail in the same fashion—the cornerstone of today's modern OE FIX components.

Of course, some things about HELP! have changed. It was originally a sub-brand of Motormite Manufacturing, which folks of a certain age will remember for its signature

vee engine logo with brawny, yoked arms. Motormite and Dorman merged in the '90s, and Motormite was officially retired as a brand in the 2000s, but HELP! kept going as a Dorman-owned brand. Today, our drive to deliver parts that solve problems is as strong as ever.

This very guide in your hands is a record of what our drive has helped us accomplish this year and in years gone by.



◀ HELP! parts ad from a 2002 catalog.

It's also our way of eagerly sharing parts that stemmed from that drive. The UN46-era Explorer mentioned in that old ad you can see to the left isn't relevant any longer. Providing a way to repair just the broken parts of expensive assemblies is still very much part of Dorman's DNA, though. We developed the OE FIX umbrella to clearly label those Dorman products that offer a better repair than the OEM. In a sense, OE FIX kind of picked up where HELP! left off, especially on parts of the vehicle that are beyond the scope of an ambitious weekend warrior.

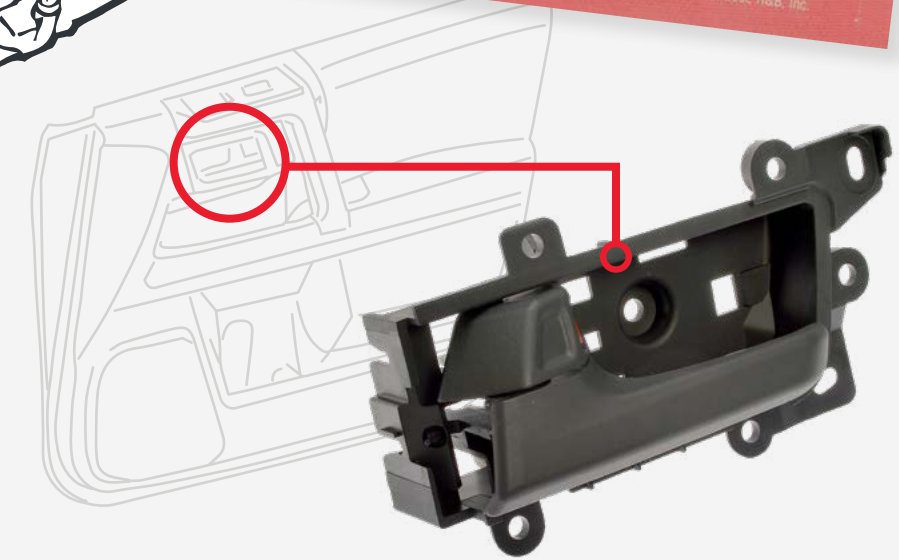
Working within door panels has gotten more difficult as the number and complexity of items found in doors has increased, so technicians are increasingly likely to be asked to repair them. OE FIX solutions, like their HELP! predecessors, still stem from the underlying ethos of repairing instead of replacing, saving a buck, cutting down time spent on the job, and increasing longevity and reliability.

For instance, you can now find our **97961/NOE 899-9253-1** door handle and its family of OE FIX relatives that cover several positions and interior colors for the Toyota 4Runner. When a handle breaks on one of those trucks, the repair necessitates the purchase of a complete door panel. They say history doesn't repeat, but we find it often rhymes. The applications and the specific parts to fix vehicles change, but the basic problems really never do.

We're here to help save money, save time, and if we can, help save the planet a little bit by not filling it needlessly with waste. We've got your shop's back with OE FIX parts, but whether a repair is trivial or towering, one thing's for sure: we're still here to HELP! 🛠️

INTERIOR DOOR HANDLE

97961/NOE 899-9253-1: Toyota 4Runner 2021-10





TRANSMISSION SHIFT CABLE REPAIR

74021/NOE 819-8281-1: Lexus 2003-00, Scion 2006-04, Toyota 2010-97

Making ends meet

AN AFFORDABLE, PATENTED SOLUTION FOR A WEAK LINK IN TOYOTA'S AUTOMATIC TRANSMISSIONS.

Toyota's drivetrains are famously long-lived, and countless older Toyota, Lexus, and Scion vehicles are still providing reliable daily transportation without complaint. Unfortunately, and uncharacteristically for these trusty drivetrains, a single plastic part can leave millions of Toyota-designed automatics stranded.

Shops and vehicle owners noticed that the plastic ends on some automatic transmission shift cables would wear, split, or break apart entirely. On these vehicles, a bad shift cable end might cause the trans to shift abruptly or pop out of gear in the early stages of failure. And when the cable end finally quits? The transmission will refuse to change gears at all. To make the situation worse, dealerships could only order the cable end as part of a complete cable assembly. That means all the labor of swapping in a new cable, only to still have a (new) flimsy plastic cable end.

There had to be a better solution. So we created one, and it worked so well that we were awarded a patent for the design.

Dorman's **74021/NOE 819-8281-1** OE FIX transmission shift cable repair kit is a patented fix for these vehicles that saves time and expense. We designed our stronger-than-stock steel cable end replacement to slip right onto the factory cable with minimal time and tools. Plus, our split collet design eliminates the need to purchase and install a full cable assembly that simply isn't needed. Even better, this part is as easy to sell as it is to install. Just show your customer the shattered plastic cable end and our sturdy steel OE FIX replacement, and see which piece they'd prefer. And because the existing cable is retained, an OE FIX transmission shift cable repair kit's parts and labor costs should handily undercut a competing shop's prices, winning the job with a superior repair.

Once locked into place, the OE FIX cable end performs the same job as the original, except it now boasts the durability to match the rest of the drivetrain. It's a surefire way to help prevent a comeback, not to mention cheap insurance for aging Toyotas. **D**



Scan to watch our shift cable repair video.



Catch as catch can

YESTERDAY'S RACE-ONLY PARTS HAVE FOUND NEW LIFE IN THE AVERAGE GROCERY-GETTER.

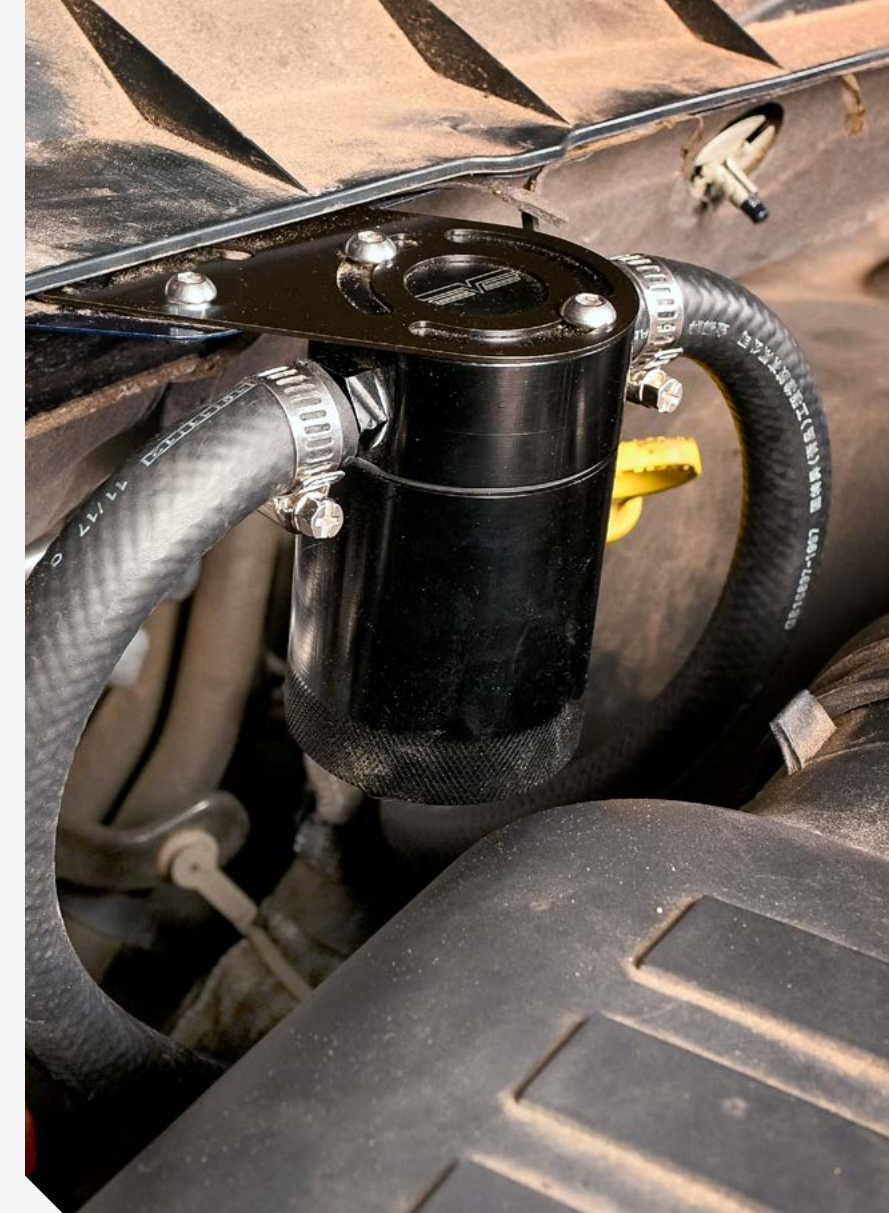
In days gone by, decoking engine internals was a common task, but as time marched on, fuel injection, emissions control devices, and fuel additives brought that task to a grinding halt. However, the need to manually decarburize engines is back stronger than ever. The drivers of that sharp uptick in this service are myriad.

The principle behind our OE FIX catch can is one that has existed for many years. Catch cans, popularized in the world of high performance, incorporate screens and baffles to help filter the oily mist of blowby gas that is routed to the intake. Our **46110/NOE 899-1346-1** catch can is a universal item; a performance part built for everyday cars, and we've tailored it—curiously, we know—to stock applications. We expect you'll install it right after you've just shocked a customer with the cost to manually clean his intake. But how did we get here? How did Dorman wind up designing a universal catch can as an OE FIX for workaday cars and trucks?

To understand our nuanced solution, you need to understand the whirlwind of complex problems that have cropped up very recently that have made the catch can an indispensable prescriptive item—and why it should be on a lot of the estimates your shop is writing. OE FIX parts aren't usually so universal, but our catch can truly can reduce expensive manual and chemical carbon removal and bring the cost of owning these vehicles back in line with customer expectations.

DIRECT INJECTION

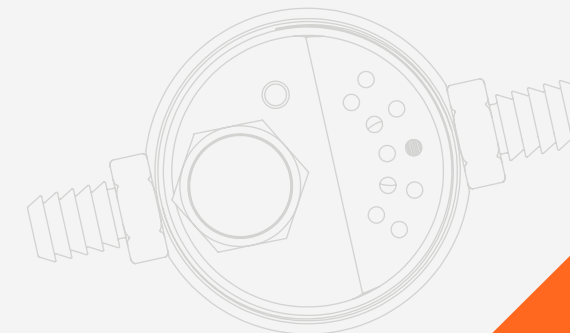
Gasoline direct injection is perhaps the most influential contributor to dirty intakes. DI packs a one-two punch when it comes to carbon fouling on both intake and exhaust valves. Fuel that's injected directly bypasses the intake valves. For years, mechanics knew at the very least intake valves were likely to be clean, since modern, additive-bearing fuel acted as a solvent to wash off any errant oil that had been drawn into the manifold and cylinder head. But with no fuel passing



over the backs of the valves, oil drawn into the intake coats the valves and is never washed off. This problem was severe enough that some manufacturers have since elected to add a set of port injectors that fire occasionally to help clean the intake.

DI vehicles also generate quite a bit of soot, due in part to their very nature—fuel doesn't have a long intake tract where it can tumble and swirl with the air. Instead, since it's injected at the last second, fuel burns somewhat incompletely. That soot cakes up on the back of the exhaust valves, where engine heat bakes it in place.

If you find yourself cleaning valves and ports on a modern DI engine, it's highly likely all valves will be rather dirty.



Continued on next page ▶

FORCED INDUCTION

In model-year 2000, fewer than 1% of cars produced were turbocharged. Now, though? You don't need us to tell you what you see in your bay every day: turbos are becoming as common as bellybuttons. Once the domain of fringe vehicles like diesels and exotica, the turbo has been tapped for its ability to exploit power gains. Because of this, engines are now produced in displacements that would have been unthinkable around the turn of the century. Cylinder pressures—and the resultant blowby—have increased dramatically. All that oil has to go somewhere, and that place is usually into the intake manifold. Our catch can extends the PCV lines, gives the hot gas a place to expand and shed heat, and adds surface area for oil to cool, condense, and collect.

LOW-TENSION PISTON RINGS

Reduced friction equates to less power lost, which is the exact reason we have low tension piston rings. However, when coupled with the increased cylinder pressures just mentioned, rings of this design don't seal the sump from blowby as well, nor do they scrape excess oil from the cylinder walls as aggressively as their counterparts from yesteryear. Our catch can helps intercept that oil before it makes its way into the intake tract.

THINNER OIL

10W40? The only place you'll find that used in 2023 is in a shed next to the garden tiller. Oil weights have trended thinner and thinner to reduce frictional losses and improve fuel efficiency. Customer demand for longer oil change intervals has permitted the widespread use of synthetics, which is how the current crop of 5W20, 0W20, and even 0W16 oils have come to rule the auto parts store shelves. Thin oil is oil that can blow by easily and collect and condense in places it doesn't belong—like the PCV system and intake manifold. The **46110/NOE 899-1346-1** uses a two-stage collection system. Oily mist is routed directly into a baffle, which causes oil to collect and uses gravity to separate it. As the gas moves through the can, a 50-micron filter blocks any oil that has circumvented the baffle and also routes it downward into the can.



THE OE FIX

Now, if this has all sounded like the perfect storm to you, it is. Manually and chemically cleaning intakes, valves, and cylinder head ports is time-consuming and difficult. It's a far cry from the days of just popping the top off an old flathead and scraping away. The catch can is elegant in its simplicity and infallibility, exactly why performance-minded enthusiasts have relied on them for years. They're pretty low-maintenance, too—just empty the can every now and then.

Unlike most catch cans, ours isn't a flashy piece anodized in a garish color, meant to draw attention to a modified hulk within an engine bay. Instead, we designed ours with a conservative appearance specifically to help it blend in for a factory look, which we know most customers want. And while some specialty setups are built specifically for a particular engine in a particular chassis, Dorman's included universal mount kit renders the **46110/NOE 899-1346-1** highly adaptable to most vehicles on the road.

The two mounting brackets and an almost infinite amount of indexing options clearly showcase the engineering employed to make this a snap to install on a breadth of different vehicles. You'll be hard-pressed to find a vehicle where this installation is difficult if you're using our OE FIX kit.

The can itself spins off for occasional emptying, and we've also incorporated a drain plug into the bottom in case removal of the can from the head is difficult. All the hardware you need to install this is in the box and plumbing one in couldn't be simpler.

If you're scraping, soaking, or blasting passages in an intake or cylinder head, *sell a catch can*. You'll increase your ticket average and truly help your customer avoid such needless, expensive service so frequently.

You can also let them know that by servicing the catch can, they're taking a proactive step to sidestep these heavy repair bills, all for the modest cost of the kit and your time to install it.

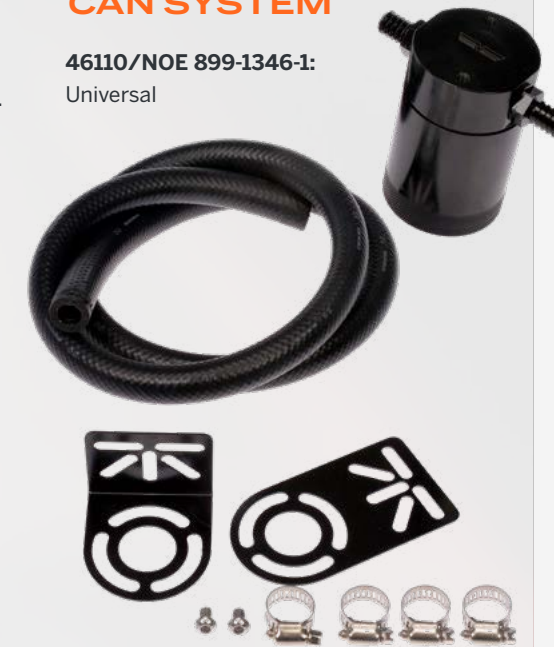
The OE FIX **46110/NOE 899-1346-1** is meant to be easy to sell and easy to service. It looks professional when installed under the hood, and helps you deliver on a promise to extend time between cleanings and reduce the cost of ownership. When it comes to keeping customer cars running reliably and economically, OE FIX parts really *are* performance parts. **D**



Scan to watch our universal catch can video.

OIL CATCH CAN SYSTEM

46110/NOE 899-1346-1:
Universal



► Installation is as easy as mounting with the included bracket and plumbing the system with the included hose.

And next time your customer comes back, it's much easier to empty the catch can for them or service the seals, which we also have direct replacements for as Dorman part number **NOE 42354**.



One-armed BANDIT

WHY WOULD YOU BUY NINE PARTS IF YOU ONLY **BROKE ONE?**

Variable-length runner systems are an ingenious technology used in intake manifolds to provide a significant boost in engine performance. First popularized by the high-performance segment, variable-length runners are increasingly common in everyday cars. Auto manufacturers use a variety of names for these systems, but they all use the same basic principles in operation.

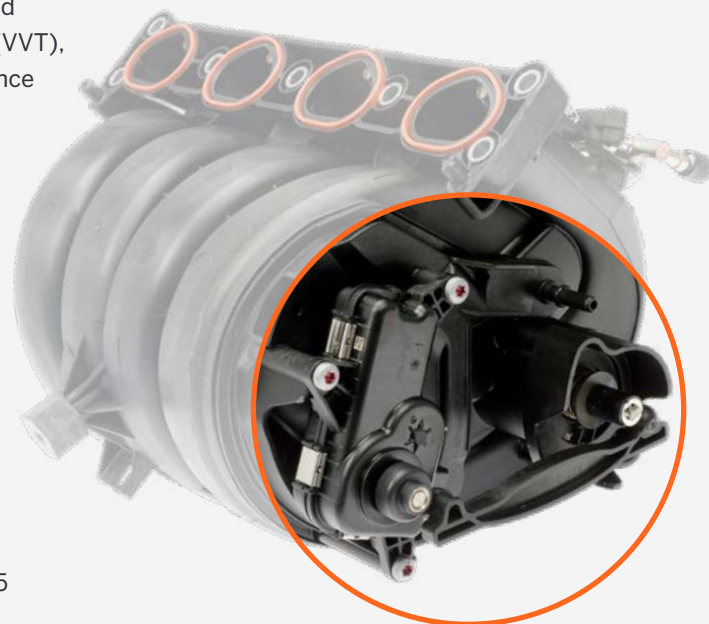
Variable-length runner systems alter the intake's path through the manifold to optimize flow and volume for different engine speeds based on sensor readings and careful tuning. When the engine is running at low speeds, the manifold's flaps select a longer runner length for improved low-end torque. Those flaps move to open a shorter path for the intake flow as revs climb, maintaining power across a broader spectrum of engine speeds. Pressure waves, or pulses, within the manifold are also manipulated by the runner length to extract the most from each combustion cycle.

Variable-length runner systems are often paired with other systems, like forced induction and variable valve timing (VVT), to further improve engine performance and efficiency. For example, a variable-length runner system can smooth out a turbocharged engine's power delivery by serving up additional intake volume and reduced runner length to match the spooling turbo's needs. And for engines with VVT, valve timing can be linked to runner length control to enhance the value of both systems.

However, a malfunctioning variable-length runner system will cause a car to run poorly at most engine speeds. Performance and efficiency take a dive when the manifold's flaps can no longer do their job.

If you've worked on Chevy Cruzes and Sonics with a 1.8L engine, you may be aware that they use variable-length intake runners. GM uses a flap system that closes and opens different sections of the runners, changing the length. That high-tech manifold relies on a simple actuator and mechanical linkage to function.

Those pieces make up the intake manifold runner control (IMRC). The problem is that the IMRC arm has a weak plastic ball that can wear to a nub, creating excess freeplay, and can cause the IMRC motor to burn out. Adding insult to injury, the OE only sells the entire intake manifold including the gaskets, purge valve, fuel rail, and all four injectors for a staggering amount of money. On top of that, the new OE intake manifold they sell you still includes the same failure-prone plastic ball that likely will just wear down again.



Our OE FIX solution for this problem features two approaches. First, we upgraded that plastic ball to a rugged brass ball stud that is designed for a more secure, longer-lasting connection to the motor assembly. Second, instead of the entire intake manifold, we sell the individual IMRC arm (**911-929A/NOE 602-1587-1**) or the IMRC motor/arm combination (**NOE 911-929**), so you only have to install (and pay for) the part or parts that failed rather than the entire assembly.

Our parts are a fraction of the cost of the entire OE intake manifold and are designed to save you up to approximately 90 minutes of repair time. In addition, installation of both is easy; in fact, they're much simpler than the factory solution of replacing the complete manifold. If you can do that, this will be a cakewalk.

If you are replacing either piece, you'll pop the ball stud from the butterfly shaft. For motor replacement, simply remove and replace the actuator, and reinstallation involves merely snapping the new arm into place. Once installed, the improved tuning arm design will solidly capture the existing linkage, provide increased service life, and reduce future related repair costs.

Our IMRC replacements will save you money and keep perfectly good manifolds out of landfills. By sticking beefy arms like this one on motors, perhaps our old Motormite logo is as relevant as ever. **D**

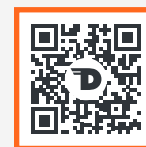
◀ OE runner arm can only be purchased with the intake manifold, gaskets, purge valve, fuel rail, IMRC motor, and all four injectors.

INTAKE MANIFOLD TUNING VALVE RUNNER ARM

911-929A/NOE 602-1587-:
Chevrolet Cruze 2015-11,
Chevrolet Cruze Limited 2016,
Chevrolet Sonic 2018-12



▲ Durable brass ball stud replaces failure-prone plastic factory design for a more reliable connection to the motor.



Scan to watch our Cruze and Sonic IMRC fix video.

INTAKE MANIFOLD RUNNER CONTROL MOTOR AND ARM

NOE 911-929: Chevrolet Cruze 2015-11,
Chevrolet Cruze Limited 2016,
Chevrolet Sonic 2018-12



Dead air

WHY WOULD ANYONE TRASH A WHOLE AIRBOX JUST BECAUSE OF A DIRTY FILTER?

The paper air cleaner element is a good idea—it's why it's been in use for better than 50 years. However, in the quest for improvement, some OEMs have looked beyond it. Certain 2005-2007 Ford Focus vehicles were fitted with an unconventional air filtration system. The airbox in these vehicles has filtration media made integrally—there's no separate filter to remove. It integrates a carbon arrestor and the assembly has a restriction gauge on it, like the one you've seen on many diesel airboxes. The air cleaner has internal baffling and uses multiple layers of foam designed to filter air progressively, and the housing is sealed.

Ford calls this a lifetime assembly. But like most items claiming to never require service, eventually the need crops up. The filtration media can and does eventually clog and lose its ability to filter the incoming air charge, especially when the vehicle is operated in dusty or dirty conditions. It's not uncommon to have one of these roll into a bay with complaints of rough idle and poor fuel economy. To add insult to injury, the restriction gauge will often fail to register any problems with obviously plugged assemblies.

Ford did sell a replacement, but it was only available as a complete assembly costing several hundred dollars. It too featured that same high-tech (but unserviceable) foam filtration media. Note the previous sentences were written in the past tense—the assembly has since been discontinued.

These vehicles are still on the road, and many of them are at the point where the air cleaners need attention. Our OE FIX

258-519/NOE 735-7810 is just the ticket.

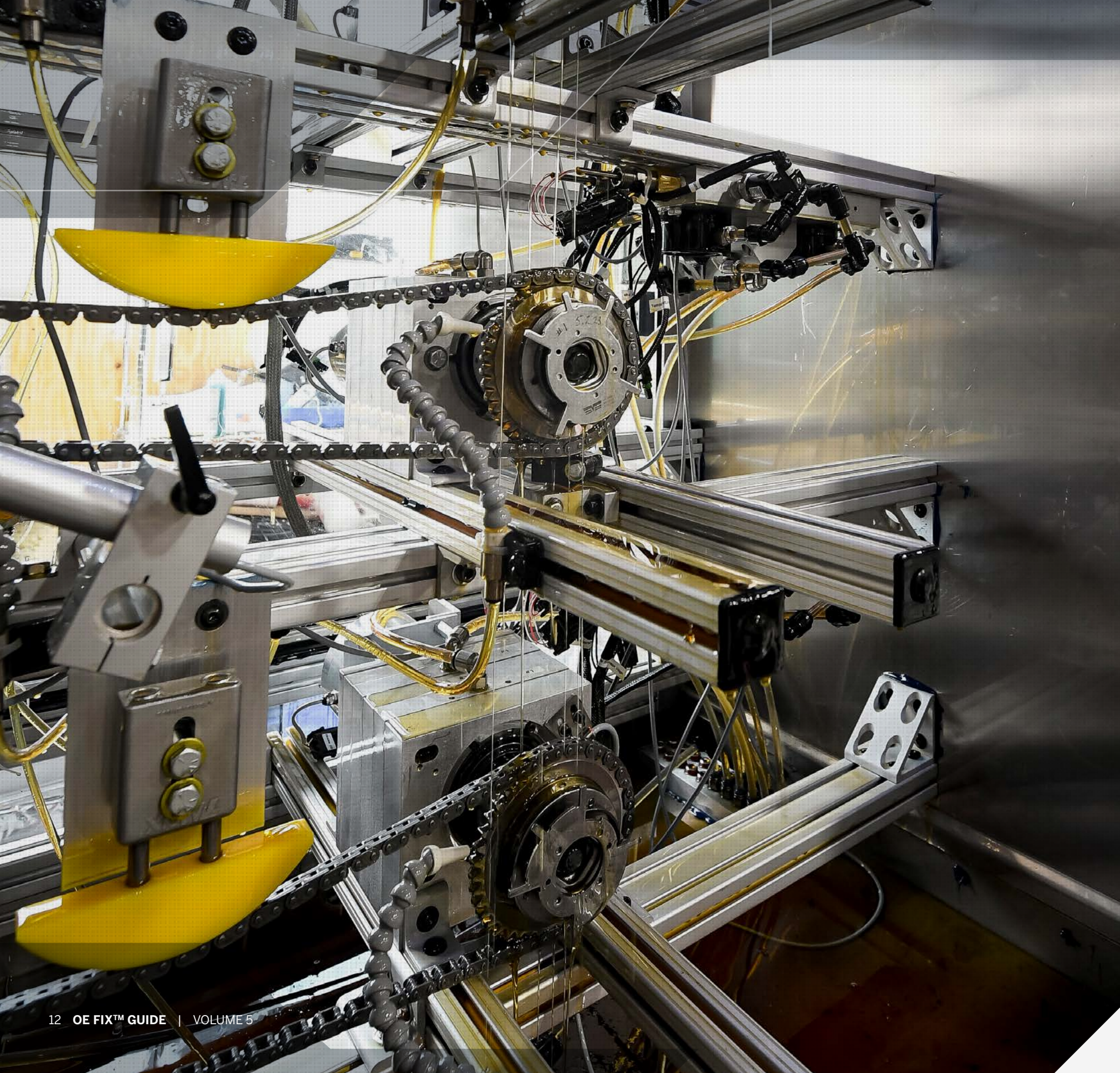
It's a complete air box that bolts right in place of the OEM unit. The difference is we designed ours to use a replaceable filter that's served well for many years. We chose not to use a bespoke element. Instead, it's designed around an existing paper air filter. Should you install our airbox (or be tasked with servicing a car that's already had our airbox installed), the air filter for a 1991-1994 Saturn SL will drop right in.

To us, this was an obvious improvement, allowing us to improve serviceability, lower cost, and provide access to inexpensive, high-quality aftermarket air filters. Hopefully you agree with our assessment of this part: it's a breath of fresh air. **D**

AIR CLEANER ASSEMBLY

258-519/NOE 735-7810: Ford Focus 2007-05





Unfazed by phasers

**A TESTING APPARATUS WITHOUT EQUAL MEANS
OE FIX CAM PHASERS WITHOUT REPAIR HASSLES.**

While you're reading this, two marvels of automotive and electromechanical engineering are faithfully going about their daily business of optimizing a delicate balancing act between engine horsepower, fuel economy, and emissions.

The first of those marvels was introduced about 30 years ago, and although OEMs have branded it with different proprietary names and acronyms, most of us know it as variable valve timing, or simply VVT. Regardless of the branding, VVT systems alter valve timing events under engine conditions ranging from cold start to thousands of RPMs. It's a sophisticated system on hundreds of millions of cars and trucks that relies on precisely manufactured camshaft phasers performing a mechanical ballet that's supposed to continue without intermission for tens of thousands of miles.

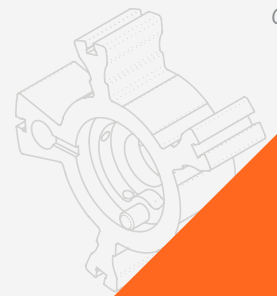
The second engineering marvel came to life just last year in a carefully guarded corner of the mammoth building that is Dorman headquarters in Colmar, Pennsylvania. It exists mainly because too many camshaft phasers aren't actually manufactured with the precision or quality their marketing shtick promises, and therefore fail well before they're supposed to. This more recent feat of American ingenuity doesn't have a catchy

acronym and doesn't need one, because our new VVT camshaft phaser test apparatus is the only one in the world.

It has a singular, mission-critical purpose: to develop and test Dorman cam phasers to the limits of their engineering to ensure that the techs who install them don't need to worry about being tested to the limits of their patience. With VVT system repair costs to customers ranging from 800 bucks to three grand or more, professionals demand an aftermarket phaser they can count on. Our unique test apparatus helps guarantee that reliability. More than that, it reflects the high level of commitment to OE FIX solutions that distinguishes Dorman from everybody else in the automotive aftermarket.

Conceived entirely in-house as a much faster and more accurate way to develop and prove the quality and durability of Dorman OE FIX cam phasers, the machine represents an investment of more than half a million dollars, including almost 5,000 components and 15,000 hours of design engineering and manufacturing.

Continued on next page ▶



Each of its four identical vertically-stacked sections is controlled by what serves as an analog to the vehicle's crankshaft that can be individually configured to test a cam phaser under load levels required by specified test parameters. The apparatus can test phasers from the same engine simultaneously or phasers from different applications asynchronously.

Configurations within each of the sections that replicate many popular OEM VVT systems are made via a rather ingenious series of precision-machined fixture blocks that Product Manager Joe Giannendra refers to as "the Wonder loaf," a tongue-in-cheek tribute to the (almost) equally ingenious idea of sliced bread.

This proprietary technology—software, hardware, enclosure, and the brainpower running it—is the very heart of our cam

phaser testing program. It allows each section, independently of the others, to test Dorman, OE, or competitive camshaft phasers for sprocket wear, locking performance, oil leakage rates, and activation time using drive cycle data published by the EPA, and to perform a cold cycle start every eight hours.

And here's the kicker: Each of the four machine testing sections can simulate 50,000 miles of real-world driving in just four weeks. That's nothing less than a game-changer for a part category notorious for no-name-brand knockoffs and OE factory designs known to fail within that relatively short mileage threshold after installation. It also means that we can test or have in development four phasers at a time, whether they're all from the same V8, four different 4-cylinder turbocharged engines, or just about any variation in between.

Doug Johnson led the team that brought the test apparatus from concept to creation. He explains that a complex, proprietary integration of electromechanical components and a cutting-edge data acquisition system is what makes this apparatus uniquely valuable to Dorman product engineers and customers. By decreasing the time needed to uniformly test and prove the performance of new phaser designs during their product development cycle, the machine can also significantly accelerate our speed from concept to market for those products, as well as expand our offering of upgraded OE FIX phasers.

"On-vehicle testing of cam phasers, a common method to measure phaser performance, is time-consuming and doesn't provide accurate or consistent data. This apparatus can simulate every type of drive cycle and load, from a cold start in subzero weather, to idle, to typical highway driving, all the way up to 7,000 RPMs, simultaneously performing

a million and a half calculations per minute. The data from test to test, minute to minute, and phaser to phaser, is consistent, valid, and fast."

For engineering nerds like us, this is very cool stuff. (Yeah, we know, maybe we need to get out more.) But our geek-out aside, here's why you should care about this aftermarket-exclusive machine: No technician wants to be forced to repeat a time-consuming VVT repair, and no shop wants to eat the cost of a seriously damaged engine because of a poor quality camshaft phaser.

Helping our customers avoid those costly scenarios is exactly how our OE FIX 917-250XD/NOE 610-0111-1 came to be. The original equipment phasers on a whole lot of V8-powered Ford and Lincoln trucks and SUVs built since 2004 are notorious for failing, often just outside the factory warranty window. Turns out Ford's alloy plate and rotor design aren't up to the intended valve timing task for the long haul, so we made our phaser better by addressing those documented failure points.

Continued on page 16 ▶



VARIABLE TIMING CAMSHAFT GEAR

917-250XD/NOE 610-0111-1: Ford 2014-04, Lincoln 2014-05, Mercury 2010-06

◀ The test apparatus' data acquisition system performs a million and a half calculations per minute.



Door Lock Actuator Durability Tester



Ball Joint Impact Tester



Window Regulator Durability Tester



Windshield Wiper Transmission Durability Tester



Throttle Body Durability Tester



Electronic Assembly Thermal Cycling Fixture

REAL-WORLD TESTING FOR REAL-LIFE PERFORMANCE

Our new camshaft phaser test apparatus is only part of an ever-expanding arsenal of proprietary, purpose-built machines we use to develop and evaluate Dorman OE FIX products. Our in-house engineers design and build equipment that replicates the cycles and operating conditions of every type of part and assembly you can imagine—and then pushes those cycles and conditions to extremes. To borrow a phrase from Sinatra, if a part can make it here, it can make it anywhere.

Door Lock Actuator Durability Tester

Ball Joint Impact Tester

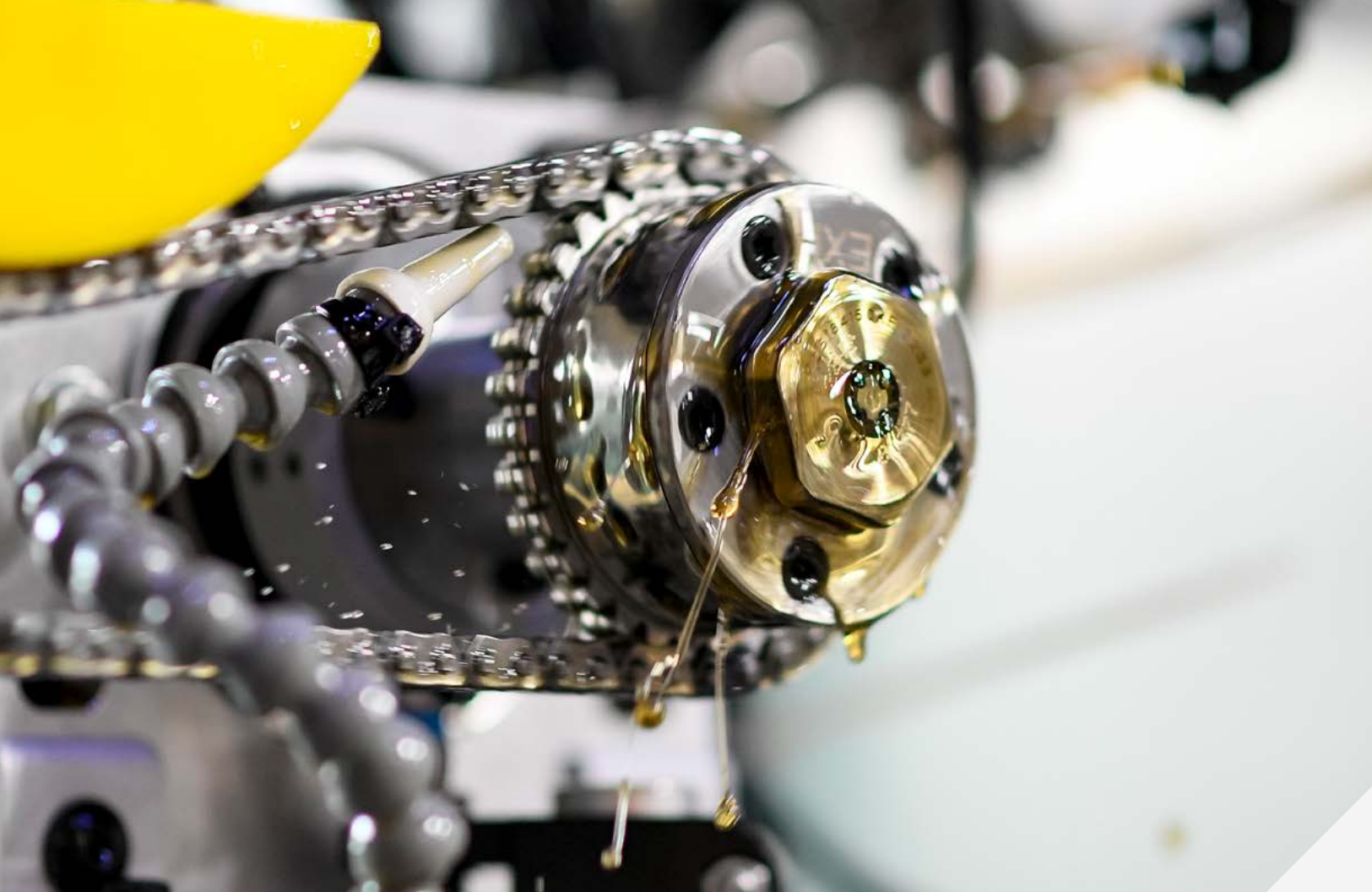
Window Regulator Durability Tester

Windshield Wiper Transmission Durability Tester

Throttle Body Durability Tester

Electronic Assembly Thermal Cycling Fixture

◀ The machines pictured are all custom-built by Dorman's engineering team in Colmar, Pennsylvania.



Our engineers tested the OE FIX variable timing camshaft gear against the original factory part, along with a competitive phaser claimed to be “better” than the Ford phaser. The data showed that our OE FIX design performed more reliably and longer than both.

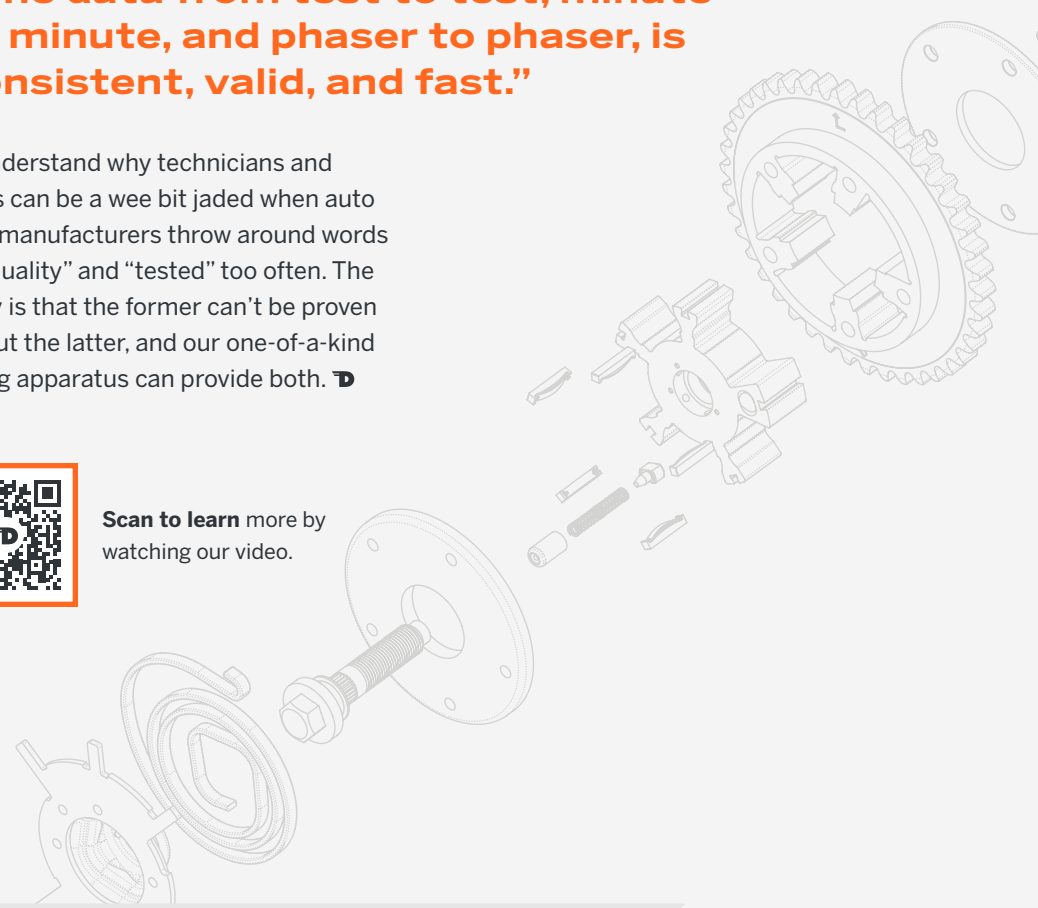
The dramatically shorter and much more accurate test cycles that we’ll be running on future OE FIX cam phasers separates Dorman from lesser aftermarket manufacturers by a wide margin, as does the major investment of resources that would be required for those competitors to keep up with us. Put simply, most aftermarket phasers are factory design imitations. Dorman OE FIX phasers are thoroughly tested innovations.

“The data from test to test, minute to minute, and phaser to phaser, is consistent, valid, and fast.”

We understand why technicians and DIYers can be a wee bit jaded when auto parts manufacturers throw around words like “quality” and “tested” too often. The reality is that the former can’t be proven without the latter, and our one-of-a-kind testing apparatus can provide both. **D**



Scan to learn more by watching our video.



Exhausting all possible solutions

OUR CATALOG OF SOLUTIONS IS MANIFOLD. EXHAUSTIVE, EVEN.

Exhaust work is often considered gravy work, right? It pays well, there’s decent markup in the parts, and usually there is a very noticeable difference for your customer, since the racket of a loud exhaust has finally abated.

There’s an exception, though, and that’s work involving the manifolds. Any mechanic who’s been in the game for a while has tussled with nightmare vehicles sporting problematic hardware. There are so many things to go wrong in this area. The parts undergo constant heat cycling. And the materials! Even today, cast iron and steel are still in widespread use, and most coatings that could stand up to the heat aren’t selected by the OEMs due to their cost. Even if they were, the hardware often takes a beating—in use, and perhaps even more so during removal!

Continued on next page ▶

These problems are not new, but our lack of access sure is. Gone are the days of nice open access to a header or manifold on the side of an overhead-valve vee engine. Exhausts sandwiched against firewalls and shock towers are the result of packaging more things under the hood without any increase in real estate in that area.

If you read Volume 4 of the OE FIX Guide, you may recall our announcement of our line of stainless exhaust hardware, designed to ward off future problems when replacing stubborn studs, bolts, and nuts that have failed due to corrosion. Those actually have a spiritual predecessor, though, from our HELP! line many moons ago: brass hardware. We offered replacement steel studs with lengthened brass nuts. Brass, of course, doesn't rust. Being softer than steel, brass will also generally deform before the more-difficult-to-extract-and-replace steel stud upon which it rides. And the increased length ensured they could exert the clamping force necessary to hold the manifolds securely.

Our **03109/NOE 600-1815** kits get sold a lot more frequently nowadays for Nissans than the air-cooled Volkswagens for which they were developed, and the \$3.92 retail list price we charged in 1982 has certainly changed, but the harsh conditions in which exhaust systems operate have not. Beyond our stainless upgrade hardware, we have many other solutions to make exhaust work less painful. Here are some of our favorites that might become your favorites, too.



EXHAUST STUD KIT

03109/NOE 600-1815: Infiniti 2003-01, Nissan 2008-07, Nissan 2004-98, Nissan 1992-86, Nissan 1984-83, Nissan 1975-74

CYLINDER HEAD REPAIR CLAMPS

NOE 917-107: General Motors 2019-99, Isuzu 2009-03

NOE 917-108: Chevrolet 2009-99, GMC 2009-99, Hummer 2007-03

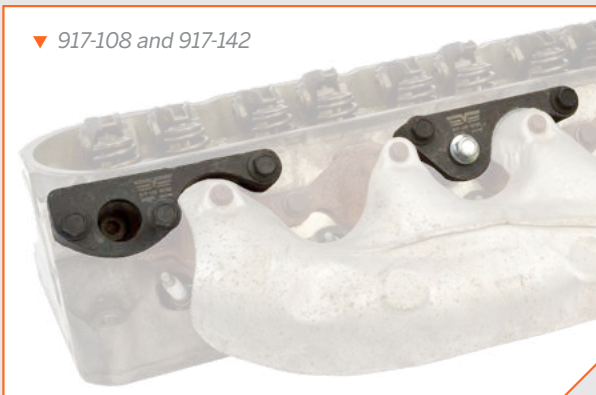
NOE 917-142: General Motors 2020-99, Isuzu 2009-03

917-499/NOE 601-0535-1: Ford 1997-96, Ford 1993-88

NOE 917-504: Ford 2016-97, Lincoln 2002-98

Have you seen our **NOE 917-107**? This is an awesome helper for techs tasked with an exhaust job on an aging GMC or Chevy truck powered by an LS engine. If you're replacing exhaust gaskets and snap the exhaust bolts at the rear of the

917-108 and 917-142



driver's side manifold, extraction is painful even on a vehicle in great shape. (These fit the passenger front too, but the driver rear is usually the offending position—and much more difficult to access.) But the GMT800 bodystyle these fit is an old one, and odds are the vehicle isn't a collector's item. It's probable

that the work and parts you damage could quickly outweigh the cost of the vehicle.

Our OE FIX exhaust clamp gives you a no-weld, no-fab way out of that jam. The clamps act as brackets that make use of unused threaded holes in the cylinder heads. Our brackets, made of beefy cast steel that's over 1/2" thick in many areas, include a "pusher bolt" that is offset just slightly from the broken fastener.

Once the bracket is installed, that pusher bolt can apply pressure to the manifold to hold it in place, completely avoiding the offending fastener that has broken. And not for nothin', but it doesn't look bad when it's installed. If you're

Dealer price list from 1983

Replaces No. DP-481N

MOTORMITE **Dealer Price List** **HELP!**

MOTORMITE MANUFACTURING
Division of P. B. Automotive, Inc.
2695 Plumert Avenue
Huntington Valley, PA 19006
(215) 947-7400 • 800-933-2492

#DP-1282 Effective Jan. 1, 1983

ITEM #	QTY	UNIT	PRICE	UNIT	PRICE	UNIT	PRICE	UNIT	PRICE	UNIT	PRICE
02344C	3.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
02369C	3.08	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
02404C	3.08	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
02409C	3.08	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
02411C	3.08	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
02412C	3.08	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03006	2.97	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03109	3.92	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03112	4.12	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03113	4.12	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03337C	1.67	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03368	4.73	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03374C	2.12	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03440	.43	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11
03440V	2.30	EA	1.11	EA	1.11	EA	1.11	EA	1.11	EA	1.11

installing this for a customer who might be suspicious of such an affordable fix, it looks pretty good when the hood goes up.

They work so well we made them for a few different positions on the LS. Check out the **NOE 917-108** (center) and **NOE 917-142** (passenger rear and driver front, though the rear one is usually the one that gives trouble). We also have two for Fords: one for the ol' 460 engine (**917-499/NOE 601-0535-1**) and another for the 5.4L (**NOE 917-504**).

EXHAUST MANIFOLD KIT

674-154/NOE 601-5154-1: Buick 2019-13, Chevrolet 2019-11



The **674-154/NOE 601-5154-1** is a money-saver. It's perfect for the less-expensive General Motors vehicles powered by the 1.4L turbocharged engine. That means you've got better chances of selling an exhaust job rather than watching your customer scrap a vehicle over a too-expensive repair.

In this instance, if you have a cracked manifold (a likely scenario for a forced-induction car with a cast exhaust manifold), The dealer will sell you a complete manifold with turbo. Obviously, that's prohibitively costly, so we sell just the manifold, gaskets, and hardware needed to install it. The labor is about the same except for the time you need to unbolt the old turbo and put it on the new manifold. You can undercut the estimate from your competition who might not be aware of this repair. (Guess it pays to read this guide!)

CATALYTIC CONVERTER FLANGE REPAIR PIPE

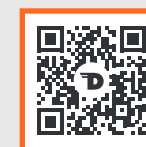
NOE 926-816: Chevrolet 2011-05, Pontiac 2010-05, Saturn 2007-05



Catalytic converters with integral flex pipes are nothing new. The flex section often rots out, and the dealer solution is usually a complete assembly including the cat. Universal flex sections to repair these pipes are available; every mechanic has installed those from time to time to save the customer the eye-popping cost of buying a platinum-laden converter.

However, the flex section doesn't sit between runs of pipe on many Chevy Cobalts, Saturn Ions, Pontiac G5s, and Chevy HHRs. On these vehicles the flex section butts against the pipe flange, so those universal sections can be a little trickier to install, since the OE flange would need to be salvaged. Our **NOE 926-816** flange repair is an easy choice. It's also the bee's knees for those cars that are so badly rotted that the flange isn't salvageable.

This is just a small smattering of some of the problem-solvers we've developed for exhaust jobs that have turned mean and nasty. The next time you're staring at a real chore, check and see if we've been on the same job before. It might save your customers some money, save the shop some time, and save you a shred of sanity. **TD**



Scan to watch our exhaust manifold repair kits video.

OE FIX BTS

BEHIND THE SCENES OF OE FIX PARTS—LITERALLY.

If you've ever watched a Dorman video, odds are excellent it was shot on a set that should look like a pretty convincing automotive repair shop. Truth be told, it's actually not a set, it's the Dorman Proving Grounds. Like the people who work there, it pulls double-duty.

Our Proving Grounds looks very much like an independent auto repair shop in Anytown, USA. By extension, the people coming and going into that shop (applications researchers, tech line specialists, engineers developing text fixtures and logging data, technical trainers, and a whole bunch of folks who bring our products from concept to reality) look a lot like the folks working in one of those shops. Dorman video hosts, Shop Press authors, and technical writers and editors can usually be found there, too.

The men and women telling you about parts, repair, and other things automobilia aren't hired for good looks, acting ability, or influencer status. Instead, like our customers (you!), they're subject-matter experts. Product development is the reason for The Proving Grounds' existence. Content like videos, our Shop Press media hub, and detailed product photos and instructions

are simply byproducts produced by the team developing, modifying, and vetting Dorman products.

To land a job in the Dorman Proving Grounds, the most important hurdle is that one must have legitimate wrenching experience—and a lot of it. And the highest profile products a technician there will touch are our OE FIX items.

REAL TECHNICIANS AND REALITY CHECKS

Ideas for new Dorman OE FIX products come from a bunch of different places; some are generated internally by our team of product managers and engineers, others from our Ideation Team, while still others bubble up from our customers via informal emails, social media posts, etc. Sooner or later, though, when a product idea meets the strict prerequisites of an OE FIX and transitions from concept to creation, it winds up in the wrench-calloused hands of Service Center Manager Nick D'Alessio and his team at the Proving Grounds. To steal a phrase from an old TV commercial, it doesn't say OE FIX until *they* say it says OE FIX. After all, who's more qualified to determine the value of a product to a professional technician than another professional technician?



"Our pay isn't based on how many or what types of parts or assemblies we approve or don't approve," D'Alessio explains. "Our job is to determine whether a fellow technician will find a new Dorman repair solution or innovation worth their labor time and money."

A significant portion of the team's workweek is devoted to installing, evaluating, and digitally logging the test results of OE FIX products in the development pipeline. The techs also spend a decent chunk of their time in close collaboration with the engineers and product managers responsible for shepherding those potential products through the journey from prototype to production.

THE ROAD TO ROADWORTHY

You've probably seen D'Alessio before; he's the "Hi, I'm Nick from Dorman Products" guy in many of our how-to videos, but he's also the Proving Grounds Manager. He's as effusive as his on-screen personality suggests, known to offer Proving Grounds visitors an espresso from the machine he houses in a toolbox (what else?) while he diagnoses what's ailing their cars.

He and his video cohosts Luke, Keith, and Miriam have more than 75 years of combined experience in auto and heavy-duty truck repair, along with an impressive laundry list of specialized degrees

and certifications in engineering and automotive technology from universities and trade schools.

The quality and qualifications of the team and the major investment Dorman has made in a genuine, fully-equipped auto repair shop is yet another unique in-house asset that distinguishes us from the rest of the aftermarket. By training and by temperament, these folks are the kind of techs you'd expect to work in *your* shop—smart, skilled, and articulate. But because they work for us, they can afford to be—in fact, they *must* be—unsparingly and (often hilariously) unfiltered in their assessments of the quality of an auto or heavy-duty truck part.

That experience and candor pays dividends throughout the OE FIX product development process. Dorman engineers and product managers will often run a product concept by a Proving Grounds tech long before investing further time and resources into it. The hands-on perspective of a working technician often leads to tweaks that improve upon the original design.

Every once in a while, it also provides a reality check that might send the design back to the drawing board. For instance, when Lemmy and Miriam installed a prototype door handle repair kit similar to the one mentioned elsewhere in this issue of The Guide, they spec'd different hardware than was originally chosen by General Motors. Why? They found variances in the plastic-welding procedure GM used, and by recommending a more robust selection of hardware, they ensured a technician would have the parts on hand to make sure a factory-like fit was possible.

Continued on next page ▶



◀ Clockwise from top left:
Keith, Miriam, Luke, Nick

When a proposed new OE FIX product does make it to the prototype stage and after it's been subjected to metrology and other testing relevant to the part's functionality, it's time for try-on and drive testing on one or several of the Proving Grounds' 52 vehicles. The test sequence invariably includes comparisons to the original equipment, and, depending on the part type, can last for thousands of miles.

Comprehensive data about the performance of the sample part is digitally logged and reviewed against required metrics. If the product proves its worth after enduring those rigors, it's officially promoted to the rank of OE FIX—one of our more than 2,000 repair solutions you can't get from the OEM, endorsed by technicians, for technicians.

The result of all this involvement cannot be duplicated in any other way we've found. When Miriam stands in front of the camera describing a repair solution, she often has performed the repair dozens of times and had no small part in influencing how the part was created.

Similarly, the instructions you examine before installing one of our parts was edited and reviewed by Luke before

printing. And why not? He is the technician who installed the part right, wrong, and everything in between to figure out the best way to help you save time on the vehicle when it shows up in your bay. Many of the custom or weld-in sections are installed on real vehicles with real (serious) rust issues, and he's usually the man behind the hood making sure they fit as well in practice as they do in a CAD program.

When you see Keith in an automotive challenge video being tested on his knowledge of dash warning lights or fastener torquing accuracy without the benefit of a torque wrench, it's because he's been looking at those lights and cranking down bolts since the Reagan administration. Testing him is fun—and tough.

And some of the articles you're reading on Shop Press or right here in

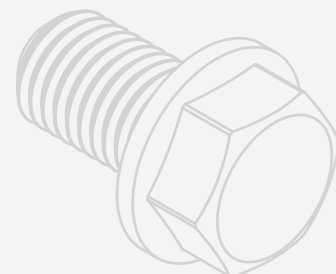
this guide were written by a mechanic who's repaired that which was supposed to be replaced and coaxed a few more miles out of a faithful vehicle for a faithful customer.

So "behind the scenes at Dorman" might not feel magical to you, but we hope it is reassuring. We're working on the same stuff you are and fighting the same problems—and we're trying to make your daily work easier.

As Luke declares, "Everyone here at the Proving Grounds lives, sleeps, and eats cars, and constantly thinks like technicians, not salespeople. Our job is to make sure our fellow technicians are as satisfied with Dorman parts as we are." 🛠️



Scan to view the Shop Press YouTube playlist and see the Proving Grounds crew in action.



HOST BOASTS

A talented fabricator, **Nick** holds a degree in Electrical Engineering and owned a performance shop, Elite JDM, specializing in tuning high-horsepower Japanese cars. Several have won shows and appeared in enthusiast magazines.
Manager, Service Center

Greaser, a former motorcycle road test editor, has been fixing cars since he was big enough to hand Dad wrenches. With a name like that, how couldn't he? He's a veritable wealth of Jeep Wrangler knowledge and is an amateur machinist in his off-hours.
Technical Editor

Miriam replaced her first engine in high school. When she's not at work, she's crewing in the pits and occasionally dabbles in drifting. She holds a bachelor's degree in Advanced Vehicle Technology.
Auto Technician

Keith graduated from the Ford ASSET program, earning an Automotive Engineering degree before Miriam was even born. A fan of many forms of motorsports including IMSA, F1, and Supercars Championship, Keith has also volunteered as an instructor for adult automotive education.
Auto Technician

Lemmy has worked as a counterman, technician, service writer, and dismantler. Dual-certified as an ASE Undercar Specialist and a Parts Specialist, he owns and operates a small manufacturing outfit specializing in antique motorcycle parts and tools.
Marketing Content Manager

Strong on diesel medium- and light-duty vehicles in addition to gas, **Luke** has earned a gold ASE patch. Fond of larger automotive projects because of the focus they demand, Luke can weld with the best of 'em and often applies both talents to the development of Dorman rust repair products.
Auto Technician



WE'LL TRADE YOU: FEEDBACK FOR FREE STUFF

Thanks for reading. We want to hear what you think of the guide. Please complete a very short survey and we'll send you some gear and shop swag.*



Scan to go to survey, or go to [OEFIXSurvey.com](https://oeifixsurvey.com).

*While supplies last. Survey responses must be submitted by Dec. 31, 2024. One survey response per person, please.



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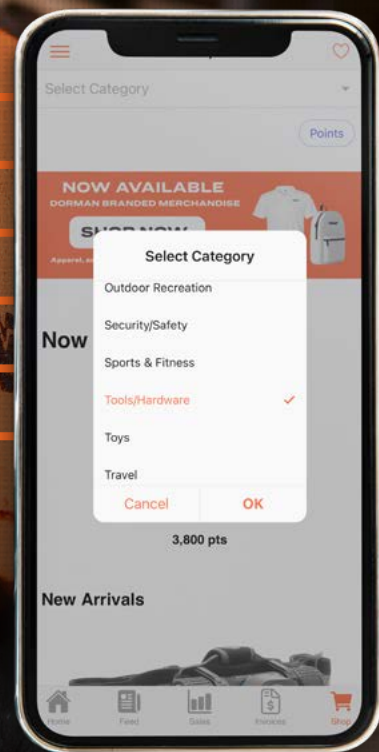
Profile completion



Completing training modules



Product purchases



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