



**M A G A Z I N E**

MAY 2021

GET READY FOR  
**TOWING SEASON**



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Distributor Edition

MAY 2021



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### Letters to the Editor

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## THE COVER

Towing and summer heat place additional stress on drivetrain components. AMSOIL Signature Series Synthetic Automatic Transmission Fluid and SEVERE GEAR® Synthetic Gear Lube are up for the challenge.

# LETTERS TO THE EDITOR

## OIL FILTERS

My son brought his 2016 Mazda\* 6 with a 2.5 litre, 4-cylinder engine in for an oil change and service. He brought his own AMSOIL motor oil and filter. While waiting, the technician came out of the service bay and recommended using an OEM Mazda filter instead because of the unique engine design. Apparently, he felt the Mazda engine did not pump enough oil pressure to get oil into the smaller holes into the top of the AMSOIL filter — too much resistance.

I'm assuming when filter manufacturers like AMSOIL make filters, they have to meet the specifications provided by Mazda, like how much oil can flow through the top of the filter. I also realize sometimes car manufacturers revisit their original specifications based upon new evidence or experience from the field (like a recall or service bulletin). While I have no doubt the AMSOIL filter offers much better filtration, the top of the Mazda filter does appear more porous.

Here are my questions:

- 1) Is the AMSOIL filter meeting the current Mazda specifications in this regard?
- 2) If the engine were to fail and the filter were found to be "dry," would the AMSOIL warranty cover the engine?

Greatly appreciate whatever assistance you can provide.

**Mark Durand**

**AMSOIL:** Thank you for your letter, Mark. When we design our filters, we ensure they meet or exceed OEM requirements. Yes, both your older AMSOIL Oil Filter design and our new Oil Filter design meet the current Mazda specifications. While the inlet holes for the AMSOIL and OEM filters are different sizes, the oil return holes are the same on both filters. To achieve proper oil flow, the total area of the inlet holes must be equal to or greater than the total area of the oil return hole. In this case, our filter's inlet hole area is equal to the oil return hole area, providing proper oil flow and meeting the OEM requirements. With our latest filter design, we upgraded the inlet hole design and improved cleanliness, oil flow and strength while still meeting OEM requirements.

*As far as your warranty coverage question, we would first investigate a "dry" filter and the cause of any engine failure. If our oil and filter were used properly and were the reason for an engine failure, yes, our warranty would cover it. See the full details on our warranty at [AMSOIL.com/warranty](http://AMSOIL.com/warranty). "Dry" filters typically stem from oil filters that don't have anti-drainback valves; they appear dry when removed from the engine. The filter that fits your son's Mazda 6 has an anti-drainback valve that prevents oil from draining back into the oil sump, as well as the appearance of a "dry" filter when removed.*

Email letters to:  
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Or, mail them to:  
**AMSOIL INC.  
Communications Department  
Attn: Letters  
925 Tower Avenue  
Superior, WI 54880**

Letters are subject to editing for length and clarity; please include your name, address and phone number. Unsigned letters will not be published.



**Matt Erickson** | VP, PRODUCT DEVELOPMENT

Devices we can loosely call “transmissions” have been around for more than 100 years. One of the earliest units was developed in 1904 and contained two gears automatically selected based on engine speed.

Owing to the relentless pursuit of increased fuel economy, today’s automatic transmissions contain up to 10 forward gears. More gears mean the engine runs at optimum efficiency more often, boosting fuel economy. Engineers have also used lightweight materials and low-viscosity fluid – and less of it – to further increase efficiency.

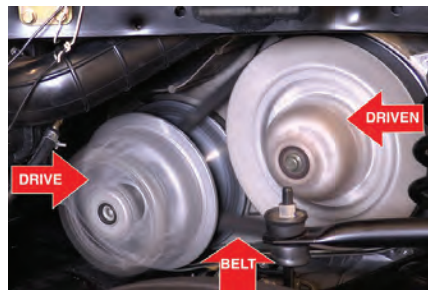
Continuously variable transmissions (CVT) and dual-clutch transmissions (DCT) present the latest developments in automotive transmissions. These technologies have been around for decades, but they’ve only recently caught on in mass-produced vehicles. Today, I want to talk about these “new” transmission designs and explain their lubrication needs.

### The shift to CVTs

CVTs continuously and smoothly select the optimum gear ratio as operating conditions change, meaning the engine is always running at its ideal rpm for maximum efficiency. In a CVT-equipped vehicle, the driver doesn’t feel gear changes like he or she does in a vehicle using a traditional stepped automatic transmission because, in essence, the transmission doesn’t “shift” gears. Some manufacturers program simulated shift points to create the illusion that the transmission is actually shifting. In reality, however, it uses a pair of pulleys that vary their diameters to adjust the effective gear ratio, similar to the CVT shown from a UTV.

## “New” transmissions help boost fuel economy

CVTs and DCTs are gaining popularity, but they require unique fluids for best performance.



**CVTs use variable-diameter pulleys to create the optimum gear ratio depending on conditions.**

The computer varies the pulley diameters so the engine can move the car as efficiently as possible, which improves fuel economy. Honda,\* for example, says CVTs can increase fuel economy by 5 percent.

There are challenges, however. Most CVTs use a metal chain or belt to transfer torque between the drive pulley and driven pulley. A fluid with incorrect frictional properties can allow the belt or chain to slip. This not only leads to a bad driving experience, it can cause the belt/chain and pulleys to wear out, leading to expensive repairs.

### DCTs continue to grow

While you’ll most likely find a CVT in a smaller sedan, DCTs are often used in sports cars and supercars.

Essentially, a DCT is an automatic transmission based on the architecture of a manual transmission. It consists of two manual clutches in the same housing. Most rely on computer-controlled, wet multi-plate clutches and do not require torque converters. By losing the torque converter and its inertia, DCTs gain energy efficiency. They provide more efficient shifts than traditional

automatics because as one clutch engages, the other readies the next gear, reducing the time spent shifting and increasing the time spent putting power to the ground, improving efficiency. Properly maintained and lubricated, the system delivers smooth, split-second shifts – the perfect complement to a powerful, high-performance engine.

While DCTs are capable of seamless shifts, they can shudder or lurch at slow speeds. Transmission fluid with specific frictional properties is required to prevent shudder. DCT fluid must also have excellent film strength to provide protection during the high-heat operation native to high-performance sports sedans and supercars.

While automatic transmissions still dominate the market, CVT and DCT use has grown steadily for years and is expected to continue as automakers look for all the fuel-economy gains they can find.

It’d be convenient if formulators could make a single lubricant for automatics, CVTs and DCTs. But it’s impossible given their unique needs. That’s why we design 100% Synthetic CVT Fluid (CVT) and 100% Synthetic DCT Fluid (DCT) to round out our transmission fluid line. Each lubricant is specifically formulated to target the performance areas critical for its unique application.

This gives you a complete line of solutions to offer all your customers.



# GET READY FOR TOWING SEASON

AMSOIL synthetic drivetrain fluids provide maximum protection for summer's extreme operating conditions.

Whether hauling heavy tools and equipment to a job site or towing a boat for a relaxing weekend on the lake, many vehicles are subjected to extreme operating conditions and hot temperatures in the summer, placing increased stress on drivetrain components.

People commonly overstress their vehicles in the summer by overloading them and pulling trailers, campers or even fifth-wheel and boat combinations. As vehicle stress increases, transmission and differential temperatures rise and cause conventional lubricants to thin, resulting in inadequate lubrication that can lead to component failure.

Differentials today are subjected to severe-duty service and encounter more stress and heat than was typical only a few years ago. Modern turbodiesel trucks and vehicles with V-10 engines boast more horsepower and torque, challenging gear oils to provide adequate wear protection, while also providing maximum fuel efficiency.

The extreme pressures and temperatures generated by modern vehicles increase stress on gear lubricants and can lead to a serious condition known as thermal runaway. As temperatures in the differential climb upward, gear lubricants lose viscosity and load-carrying capacity. When extreme loads break the lubricant film, metal-to-metal contact occurs, increasing friction and heat. This increased friction and heat, in turn, results in further viscosity loss, which further increases friction and heat. As heat continues to spiral upward, viscosity continues to spiral downward. Thermal runaway is a vicious cycle that leads to irreparable equipment damage from extreme wear, and ultimately catastrophic gear and bearing failure.

## The AMSOIL "Tow Package"

AMSOIL Signature Series Synthetic Automatic Transmission Fluid (ATF, ATL) and SEVERE GEAR® Synthetic Gear Lube (SVG, AGL, SVT, SVO) provide maximum protection in demanding environments such as towing, hauling and commercial use, providing increased lubricant film protection

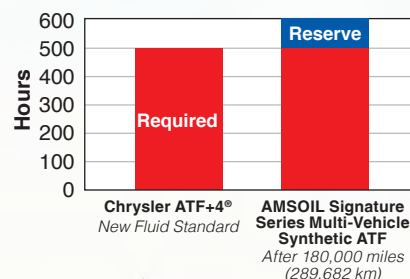
and reduced wear at elevated temperatures. They are formulated for extended drain intervals of up to 50,000 miles in severe service and 100,000 miles in normal service, or longer where specified by the vehicle manufacturer.

## Field Proven

To demonstrate its effectiveness in severe service, Signature Series Multi-Vehicle Synthetic ATF was installed in Las Vegas taxi cabs. The vehicles routinely encountered demanding stop-and-go driving loaded with passengers and cargo, while the desert environment presented extremely hot ambient temperatures, placing enormous strain on the fluid.

Following 180,000 miles (289,682 km), a transmission was selected for analysis. The Aluminum Beaker Oxidation Test (ABOT) is an industry-standard test used to determine a transmission fluid's oxidation resistance, which is a good indicator of its service life. Testing by an independent, third-party lab revealed that after 180,000 miles in severe service, Signature Series Multi-Vehicle Synthetic ATF resisted oxidation longer than required for new fluid to meet the Chrysler ATF+4 specification (see graph). Internal components, including the valve body and clutch plates (pictured), were virtually free of damaging sludge, deposits and wear, confirming the lubricant's high level of protection for severe-service applications.

**Reserve Protection Against Heat After 180,000 Miles (289,682 km)**  
ABOT Test Performed by Independent Lab  
Based on Total Acid Number (TAN)



Gain great insights on selling Signature Series Synthetic ATF and SEVERE GEAR Synthetic Gear Lube by referencing their respective Dealer Sales Briefs in the Dealer Zone under the Learning Center tab.







### Signature Series Synthetic Automatic Transmission Fluid (ATF, ATL)

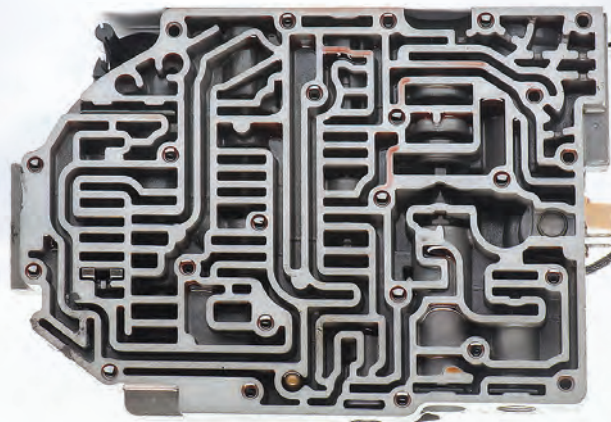
- Withstands the rigors of heavy towing, elevated temperatures and challenging terrain
- Remains fluid in sub-zero temperatures
- Provides reserve protection during heavy use and abuse

### SEVERE GEAR® Synthetic Gear Lube (SVG, AGL, SVT, SVO)

- Advanced protection against wear
- Controls thermal runaway
- Protects against rust and corrosion
- Helps reduce operating temperatures
- Long oil, seal & equipment life



The transmission's valve body is clean and virtually sludge-free following 180,000 severe-service miles (289,682 km). The clutch plates demonstrated only trace discoloration and earned a rating of "good," the highest possible, for deterioration/wear.







## THREE TIERS OF PROTECTION

The AMSOIL OE, XL and Signature Series synthetic motor oil lines offer three levels of protection and present drivers with ample options.

AMSOIL has crafted three distinct synthetic motor oil lines tailored to a wide range of vehicles. The passenger car and light truck market represents the foundation of AMSOIL innovation. Today we continue to explore ways to provide superior engine protection and performance. Recognizing that no two drivers are alike, our three tiers of motor oil offer motorists the opportunity to choose from multiple levels of engine protection.

### Advanced Engine Protection

OE Synthetic Motor Oil provides peace-of-mind protection. It is excellent for drivers who are moving up from conventional oil to synthetic oil for their vehicles. OE Synthetic Motor Oil is favored by mechanics and individuals seeking exceptional value and full engine protection.

### Boosted Engine Protection

Providing an extra level of protection, XL Synthetic Motor Oil helps vehicles maintain like-new performance. It's perfect for automotive enthusiasts who want a considerable boost in engine protection. XL Synthetic Motor Oil offers protection that goes beyond the industry standards and is ideal for high-mileage vehicles.

### Maximum Engine Protection

Signature Series Synthetic Motor Oil is the industry benchmark in protection. It combines industry-premier synthetic technology with AMSOIL premium additives in a unique formulation that exceeds the high-performance demands of your engine. It delivers 75 percent more engine protection against horsepower loss and wear.\*

### OE Synthetic Motor Oil (OEZ, OEM, OEF, OET)

- Outperforms conventional motor oil
- Protects against wear
- Protection to cover today's longer vehicle manufacturer-recommended drain intervals

### XL Synthetic Motor Oil (XLZ, XLM, XLF, XLT, XLO)

- Boosted cleaning power
- Excellent wear protection
- Ideal for high-mileage vehicles

### Signature Series Synthetic Motor Oil (ASM, ALM, AZO, ASL, ATM, AZF, AMR)

- Outstanding wear protection
- Maximum cleanliness
- Extreme-temperature protection

\*Based on independent testing of AMSOIL Signature Series 0W-20, in ASTM D6891 as required by the API SN specification.

A man with a mustache, wearing a blue baseball cap, sunglasses, a grey t-shirt, and black shorts, stands with his hands in his pockets next to a white Volkswagen Beetle. The car is parked in front of a grey garage door. The headline "Half-Million-Mile VW\* Beetle\* Still Running Strong" is overlaid in large white text.

# Half-Million-Mile VW\* Beetle\* Still Running Strong

Most people can't believe it when Randy Melvin tells them his 2000 Volkswagen Beetle has 500,000 miles (804,700 km) on it. The UPS tractor-trailer driver from Troutman, N.C. commutes 125 miles (201 km) round trip between home and Winston-Salem, N.C. each day. When it came time to purchase a new vehicle back in 1999, he opted for a VW TDI due to its high estimated fuel economy, despite the car's poor reviews.

"If you go back to the *Consumer Reports* reviews on that 2000 Beetle, they're terrible," said Melvin. "My dad said, 'Why are you getting that? The reviews are so bad.'" But Melvin knew a Volkswagen mechanic nearby whom he trusted, and he wanted the fuel-economy benefits of a diesel.

"At the time, the Volkswagen TDI was hard to get a hold of; you had to be in the right place at the right time," said Melvin. After 20 years, the 1.9L turbodiesel five-speed manual still gets 46 mpg.

### **AMSOIL exclusively since almost day one**

After buying the car, the dealership performed the first three oil changes using Castrol.\* Then Melvin switched to AMSOIL synthetic diesel oil exclusively and today uses Signature Series 5W-30 Max-Duty Synthetic Diesel Oil.

A shop mechanic and AMSOIL Preferred Customer with whom Melvin worked piqued his interest in AMSOIL products after sharing a testimonial about a truck

driver who'd eclipsed 1 million miles using AMSOIL products.

The car has run excellent all these years. Melvin hasn't performed any engine maintenance, except replacing the alternator, air compressor and routine timing-chain service.

"It's proven to me, especially if you can get a half-million miles with no engine failure whatsoever," he said. "The thing runs just as powerfully as it ever did." Melvin used to have a pre-owned 2001 Volkswagen with the same 1.9L diesel engine. "It only had 192,000 miles (309,000 km), but my 2000 would have run circles around it."

### **People can't believe it**

How do people react to his story? "They just can't believe [the car] has half a million miles on it," said Melvin. "Because I've worked at night the entire 20 years I've owned the car, it sits in the garage mainly in the daytime, so it pretty much looks like a brand-new car.



"I change oil every 10,000 miles (16,000 km), and with conventional oil changing every 3,000 (4,800 km), you're going to spend more money, not counting the labor. To me, it's a no-brainer."

### **Drive it until it quits**

"I've always believed you should drive a car until it quits," said Melvin. "To me, buying a car every two to three years isn't beneficial." With the help of AMSOIL products, it may be a while before Melvin's Beetle quits running. "I just think it's a good product. It's proven to me, and I can tell that to anybody," he said. "I'll probably work until I'm 62, so I hope to put at least another 150,000 miles (241,000 km) on it."





# POWERFUL CLEANING ACTION

AMSOIL Heavy-Duty Degreaser, Engine Degreaser and Brake & Parts Cleaner are powerful cleaning products, effectively removing grease and grime from your vehicles, equipment and work spaces.

## Heavy-Duty Degreaser

Heavy-Duty Degreaser (ADG) is formulated with powerful and fast-acting solvents, attacking petroleum-based grime on a molecular level to loosen its hold on metal, concrete and other surfaces. Its active citrus formula makes cleaning easy and leaves a clean scent.

- Dissolves oil, tar and grime
- Removes sticky residue
- Works fast
- Low-VOC formula
- Non-foaming

### Applications

- Metal surfaces
- Oil-stained concrete
- Adhesive-coated surfaces
- Heavy-duty equipment
- Gears and chains
- Powersports equipment
- Farm equipment and more

## Engine Degreaser

Engine Degreaser (AED) is a professional-strength formula fine-tuned specifically to quickly and easily remove the toughest grease, dirt and grime from engine surfaces. Just spray it on and wash off with water.

- Removes the toughest grease, dirt and grime
- Leaves no residue
- Easy to use
- Powerful stream
- Safe on all engine components

### Applications

- Engine surfaces

## Brake & Parts Cleaner

Brake & Parts Cleaner (BPC) quickly removes oil, grease, brake fluid and other contaminants from brake parts and other automotive components. It cleans brake parts with no major disassembly and leaves no residue, helping eliminate brake squeal and chatter.

- Quickly removes grease and oil
- Leaves no residue
- Dries quickly
- Chlorinated, non-flammable formula
- VOC-free

### Applications

- Brake parts
- Brake pads
- Calipers
- Drums and more



# Get Ready for Classic-Car Season

Summer means hitting the local car shows and cruising the main drag in your classic car or hot rod.

Classic-car owners sometimes ask if they need to add a lead substitute to their gasoline. For decades, Tetraethyllead was added to gasoline to reduce engine knock and help prevent valve-seat recession. Once lead's negative effects became clear, regulators began phasing it out in the 1970s. But, what about classic-car engines from the 1950s and 1960s that were built with leaded gasoline in mind? Do they require a lead substitute?

## Why lead was added to gasoline

First, let's look at the primary reasons lead was added to gasoline in the first place.

- Increase octane to help reduce engine knock
- Protect against valve-seat recession

## Protects against pre-ignition

Gasoline's octane rating indicates its ability to withstand compression before igniting. During operation, the piston travels up the cylinder and compresses the fuel/air mixture in preparation for ignition. Compression heats the mixture to help it ignite more easily and burn more completely. Compressing the fuel/air also maximizes the volume packed into the cylinder, which boosts power and efficiency. All other factors being equal, that's why engines with higher compression ratios typically put out more power.

If the compressed, heated gasoline reaches its ignition point too soon, however, it will auto-ignite prior to the spark plug firing. This disrupts

engine timing, reduces power and can damage the engine. It's important to use gasoline with the correct octane rating for your engine to avoid pre-ignition. Higher-compression engines require higher-octane gas.

Chemists discovered in the 1920s that Tetraethyllead added to gasoline was a cost-effective solution to pre-ignition and helped engines run better.

## Protects against valve recession

Lead also emerged as an effective way to protect against valve-seat recession, which can occur under high-rpm, high-heat, high-load conditions. As the intensely hot exhaust valve hammers against the valve seat thousands of times per minute, the two components can momentarily fuse together in a process called "microwelding." Once the valve opens, the microweld tears apart. Multiply this by thousands of times and the valve seat deteriorates until the valve no longer seats properly. This leads to compression and power loss, in addition to catastrophic failure if the valve breaks off.

## Hardened valve seats introduced

By the mid-1970s, we'd become aware of lead's negative effects on human health, the environment and automotive catalytic converters. As



- **Improves** performance
- **Removes** carbon deposits
- **Maximizes** power
- **Reduces** engine knock
- **Excellent** as a lead substitute in classic cars

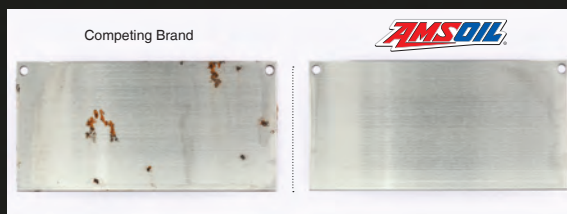


regulators began working to eliminate lead from gasoline (and other products), engineers began designing engines with unleaded gas in mind. To combat microwelding, they used hardened valve seats, which are more resilient to valve recession.

But, what about classic-car engines built prior to widespread use of hardened valve seats?

## AMSOIL Delivers Superior Rust Protection

In industry-standard testing, AMSOIL Z-ROD® completely prevented rust formation while a leading competitor did not.<sup>11</sup>



<sup>11</sup>Based upon in-house testing of AMSOIL Z-ROD 10W-40 and a leading competitor obtained on 7/25/2019 in ASTM D1748-10.





- Engineered for classic vehicles
- High-zinc formula
- Protects against rust during storage

### Do Classic-Car Engines Need High-Zinc Oil?

This is one of the most common questions we receive regarding older engines in classic cars and hot rods. For the best protection, we recommend using a high-zinc oil, such as Z-ROD® Synthetic Motor Oil, in these engines.

### What is high-zinc motor oil?

Zinc dialkylthiophosphate (ZDDP) is the most common zinc-based additive and is used primarily as an anti-wear agent to help prevent engine wear. It also provides corrosion and oxidation protection.

However, because the zinc and phosphorus found in ZDDP can negatively affect catalytic converters, it has been phased out of motor oil formulations in recent years.

Reducing ZDDP has drawbacks. Older vehicles with flat-tappet camshafts and high-tension valve springs or other modifications that create high contact pressures can suffer premature wear due to reduced ZDDP levels.

For the best protection, use high-zinc and high-phosphorus motor oil to offer extra protection for flat-tappet cams, lifters and other components.

### How do ZDDP additives work?

ZDDP anti-wear additives are heat-activated, meaning they provide wear protection in areas of increased friction.

As temperatures rise and surfaces come closer together, ZDDP decomposes and the resulting chemistry protects critical metal surfaces.

When parts move during operation, any sliding or rolling motion takes place on top of or within the ZDDP anti-wear film, which reduces metal-to-metal contact. This helps prevent wear so enthusiasts can keep their classic cars or hot rods running great for years.



**Flat-tappet lifters can wear down sooner compared to roller lifters due to increased pressure. Z-ROD Synthetic Motor Oil contains added ZDDP to protect lifters against wear and help maintain power.**

### Lead substitutes offer an answer

To solve the problem, many enthusiasts add a lead substitute to their gasoline. Lead substitutes contain chemicals that form a sacrificial layer to inhibit microwelds and protect valve seats.

### Do I need a lead substitute?

If you've rebuilt the motor or done work to the cylinder heads, it's likely that hardened valve seats were used, which means a lead substitute isn't necessary.

However, if the engine is original and uses stock valve seats (i.e. non-hardened), we recommend using a lead substitute for added protection. This is especially true if your operating conditions border on "severe" territory. For a cast-iron, high-compression-ratio engine of that era, it doesn't take much to wind up the rpm, turn up the heat and operate in conditions that promote valve-seat recession. Using a lead substitute offers peace of mind that your classic is protected.

### AMSOIL DOMINATOR® Octane Boost = excellent lead substitute

DOMINATOR Octane Boost works great as a lead substitute in classic cars. It contains MMT (Methylcyclopentadienyl manganese tricarbonyl), which is a metallic additive that creates a sacrificial barrier on valve seats to help prevent recession and keep your engine running strong.

Not only that, as its name suggests, it boosts octane up to four numbers, which is just as important in older high-compression engines that were made with leaded gas in mind. It increases engine response and power in all two- and four-stroke gasoline-fueled engines. Just one treatment reduces engine knock, improves ignition and helps fuel burn cleaner.

It's another product in your arsenal when you talk to classic-car owners this summer.





# No More Confusion

## ONE MIX RATIO POWERS THEM ALL

Landscape professionals know what a hassle it is to maintain different fuel containers at different mix ratios. Offer them the convenience of one fuel container for all their two-stroke equipment needs.

SABER® Professional can be mixed at conventional mix ratios or, for maximum results, AMSOIL recommends the SABER Ratio™ (80:1, 100:1).

**Saves Time & Money • Low Smoke • Stabilizes Fuel**





### May Close-Out

The last day to process May orders in the U.S. and Canada is the close of business on Friday, May 28. Individual telephone and walk-in orders will be processed if initiated by the close of business. Internet and fax orders will be accepted until 3 p.m. Central Time on that day. All orders received after these times will be processed for the following month. Volume transfers for May

business will be accepted until 3 p.m. Central Time on Friday, June 4. All transfers received after this time will be returned.

### Holiday Closings

The AMSOIL corporate headquarters and U.S. distribution centers will be closed Monday, May 31 for Memorial Day. The Edmonton and Toronto distribution centers will be closed Monday, May 24 for Victoria Day.

### Bypass-Filter Packaging

Throughout 2021, AMSOIL EABP90, EABP100 and EABP110 Bypass Filters will be transitioned out of filter boxes. Like Heavy-Duty Oil Filters (EAHD) and the EABP120 Bypass Filter, they will be packaged in shrink wrap to ensure quality.

# EVERYTHING YOUR HARLEY NEEDS, INCLUDING BETTER PROTECTION

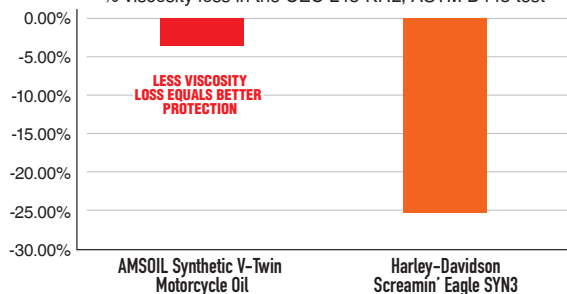
Dealers and customers asked for more V-twin oil-change kits, and we've delivered. Four kits are now available, including kits with an extra quart of oil for larger Milwaukee-Eight\* engines or a black oil filter instead of chrome. And, as always, Synthetic V-Twin Motorcycle Oil delivers **excellent protection against extreme heat** so you have **peace of mind your bike is protected**.

### AMSOIL Resists Viscosity Breakdown

AMSOIL resists viscosity breakdown **6X better** than Harley-Davidson\* SYN3\* for **improved protection** against compensator and transmission gear wear.<sup>BB</sup>

#### Viscosity Breakdown

% viscosity loss in the CEC L45-KRL, ASTM D445 test



<sup>BB</sup>Based on testing of AMSOIL 20W-50 Synthetic V-Twin Motorcycle Oil purchased on 3/19/19 and Harley-Davidson Screamin' Eagle SYN3 purchased on 3/19/19 in the CEC L45-KRL, ASTM D445 test.

### AMSOIL V-Twin Oil Change Kits include...

- 4-5 quarts of 20W-50 Synthetic V-Twin Motorcycle Oil (MCV)
- 1 chrome or black AMSOIL Motorcycle Oil Filter (EAOM103/EAOM103C)
- 1 drain-plug O-ring



Check out the Motorcycle Product Guide at [AMSOIL.com](https://www.amsoil.com) to find the right kit for your Harley-Davidson.



# WHY BUY AMSOIL FUEL ADDITIVES?

**DO YOU WANT  
FUEL TREATMENT  
THAT WORKS?**



AMSOIL Upper Cylinder Lubricant delivers **18 percent more lubricity than Lucas\*** and **20 percent more than Sea Foam\*** for better retention of horsepower and fuel economy.<sup>1</sup>

**DO YOU WANT TO  
PREVENT COSTLY FUEL-  
SYSTEM REPAIRS?**



AMSOIL Diesel Injector Clean provides the lubricity your fuel pump and injectors need, **reducing wear, improving service life and saving time and money** on maintenance costs.

**DO YOU WANT IMPROVED  
HORSEPOWER?**



AMSOIL P.i.<sup>®</sup> Performance Improver **restores up to 14 percent horsepower.**<sup>2</sup>

**DO YOU DRIVE IN COLD  
TEMPERATURES?**



AMSOIL Diesel All-in-One provides as much as **32°F (18°C) better protection** against cold temperature gelling than Howes\* Lubricator Diesel Treat<sup>3</sup> and raises cetane up to four points.

**DO YOU STORE  
SEASONAL EQUIPMENT?**



AMSOIL Gasoline Stabilizer provides fuel stability that **Sea Foam Motor Treatment can't match**, helping maintain startability and protect against the formation of varnish and gum.<sup>4</sup>

<sup>1</sup>Based on independent testing of AMSOIL Upper Cylinder Lubricant, Lucas Upper Cylinder Lubricant and Sea Foam Motor Treatment obtained on 02/13/2019 using the ASTM D6079 modified for use with gasoline. <sup>2</sup>Based on third-party testing in a 2016 Chevrolet\* Silverado\* 1500, 5.3L V-8 GDI with 100,616 miles (161,926 km), using one tank treated with AMSOIL P.i. Actual results may vary. Visit [AMSOIL.com/pi](http://AMSOIL.com/pi) for test details. <sup>3</sup>Based on third-party testing in July 2017 of AMSOIL Diesel All-In-One and Howes Lubricator Diesel Treat using diesel fuel representative of the U.S. marketplace and Howes' recommended treat ratio for above 0°F (-17.8°C). <sup>4</sup>Based on third-party testing of AMSOIL Gasoline Stabilizer obtained Nov. 8, 2018 and Sea Foam Motor Treatment purchased Oct. 25, 2018 in the ASTM D525 using test fuel containing no oxidation-stability improving additives.







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- **Freeze protection** down to -34°F (-37°C)