AMSOIL MAGAZINE

NOVEMBER 2020

MUSCLE CAR MANIA: VOL. 3

GM Revolutionary Power

| PAGE 8

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AMSOIL MAGAZINE

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NOVEMBER 2020

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THE COVER

Jerry “Monza” Johnston’s 1972 Sinister Split-Bumper Camaro* is fitted with a Proline 481X* with Twin 98mm Precision Turbos.

LETTERS TO THE EDITOR

AIR FILTERS

It is appalling that AMSOIL continues to stop making air filters! First they quit with the panel for cars and trucks so a lot of us had to retrofit an aftermarket intake system just so we can run an EAAU filter; now those are being discontinued. This injustice has already lost me sales here in the dirty desert of Arizona. There are absolutely no other options for filtration anywhere near the quality of AMSOIL. An air filter is the first line of defense, and with your imported cartridge oil filters, AMSOIL has many people worried about how anyone can get to a million miles. It seems Al cared more about the needs of the people than the bottom line! Whoever is running this company is insane if they think we're going to pull up to a car show with an AMSOIL car and have people see a K&N* filter when the hood opens!

Cody Gentry

AMSOIL: *We understand your frustration, Cody. Unfortunately, we are at a crossroads with air filtration. Sales have been extremely low and continue to decline, while our air-filter partner increased the minimum production requirements to maintain the relationship. After carefully weighing our options, we made the difficult decision to discontinue our air filtration products. We know that we have a small group of customers who appreciate these filters, but every year that group gets smaller. The logistics of maintaining the Ea® Universal Air Induction and Ea Racing Air Filters are just not achievable anymore. We apologize for the inconvenience. There are other brands in the market that make good filters if you do not respect K&N, and we encourage you to investigate filters from Banks,* S&B* and Airaid.**

OIL PRICES

I have been an AMSOIL Dealer since about 1983 and have seen AMSOIL prices rise, but never fall. When prices did rise, AMSOIL claimed it was because of rising gas prices, but as of today, gas prices have been the lowest for a long time, yet AMSOIL has not lowered prices. Why has this not happened?

Robert Augeri

AMSOIL: *Thanks for bringing this up, Robert. Synthetic-lubricant raw-material costs are tied to crude-oil prices (not gasoline prices), but that is not the only factor affecting their cost. In fact, raw-material prices often increase at the same time gasoline prices are decreasing. Many of the chemicals we require are used to create other, non-lubricant products, and there are a limited number of suppliers. Increased demand from multiple markets causes tighter supply, resulting in increased pricing from those few suppliers. Rest assured we will reduce prices whenever we are able – it would give us an excellent competitive advantage – and we have done so in the past. We implemented two rounds of price decreases in 2009 when raw-material costs dropped after a period of great volatility. We also effectively decreased prices when we introduced free shipping for Dealers, P.C.s and retail and commercial accounts as we did so with no commensurate price increase. Over the past three years specifically, we have introduced minimal, surgical price adjustments on select products while the competition has generally delivered much higher increases across the board.*

DIESEL ADDITIVES

I can't tell you how many times my customers have ordered the wrong diesel fuel additive size bottle in regards to Diesel All-In-One, Diesel Injector Clean and Diesel Injector Clean + Cetane Boost. The confusion is when they grab the pull-down menu and the first item that comes up is the 8-oz. bottle which treats 20 gallons of fuel. Most of the time, the desire is for the 16-oz. bottle which treats 80 gallons of fuel. They see the picture of the item desired, and when they see the proper color bottle and wording they figure, "Bingo, correct item!" Think about a solution; maybe when they click on the 8-oz. bottle, a new window pops up alerting them that they have selected the 8-oz. bottle for passenger cars or 20-gallon convenience, also alerting them there is a 16-oz. bottle for diesel pickups and trucks that treats 80 gallons.

Thanks always for what you do for us.

Tom Georgalos

AMSOIL: *Thank you for sharing this concern, Tom. We are always looking for feedback on ways to improve the web experience. We are currently working on a project that will display the correct image for each specific product-size and unit-of-measure selection in the pull-down menu, so you can look forward to having this rectified in the months ahead.*

OIL VISCOSITY

I currently live in Fairbanks, Alaska, but am planning to move to Tucson, Ariz.

I read Matt Erickson's column (July *AMSOIL Magazine*) about the challenges of extreme heat on oils (chemical breakdown and maintaining viscosity).

My concern/question is that my wife's vehicle (2014 FJ Cruiser*) calls for 0W-20 motor oil. It is great for our Fairbanks winters (as cold as -30°F to -50°F), but I do have concerns about running that in the 110°F heat of Arizona.

Researching the manufacturer's information leads me to believe the engine was designed to operate with 0W-20. It states that I can use 5W-30 in an emergency, but I need to replace that with 0W-20 as soon as possible.

Would you recommend installing an auxiliary engine-oil cooler or shorten my change intervals?

Thank You,

Jeff Cooper

AMSOIL: *Thank you for your letter, Jeff. You're going to feel quite a temperature difference moving from Alaska to Arizona, but as long as you're using AMSOIL synthetic motor oil, you need not worry about your oil. An auxiliary oil cooler is not necessary under normal operation, and Toyota's 0W-20 specification applies to all temperature ranges. Not only do original equipment manufacturers (OEMs) conduct validation testing in all environments and conditions, so do we. We have many happy customers using the OEM-recommended viscosities in Arizona. AMSOIL Signature Series is a great choice in high temperatures, as it holds its viscosity 2X better than the industry standard even when doubling the length of the test.GG We also stand behind our drain-interval recommendations, even in hot weather. However, if you aren't comfortable extending drain intervals, you can stick with the OEM change interval for peace of mind. You may also monitor the condition of the oil through oil analysis.*

Email letters to:
letters@amsoil.com

GGBased on independent testing of AMSOIL Signature Series 5W-30 in the Sequence IIIH Engine Test (ASTM D8111), required by the ILSAC GF-6 and API SP specifications.

Motor oil isn't "one-size-fits-all"

There are notable differences between oil for European and domestic vehicles.

Matt Erickson | DIRECTOR, TECHNICAL PRODUCT MANAGEMENT

For all their benefits, like finely tuned performance, styling and prestige, European cars can be a hassle to maintain. Some makes and models are notorious for their interesting and sometimes expensive quirks. Another notable difference is the motor oil they use, which I'd like to explain today.

OEMs Create Their Own Oil Specifications

One of the biggest differences between oils for European cars and domestic cars is the performance requirements each must meet. In the U.S. and Canada, it's typically an industry-wide motor oil specification, such as API SP.

European original equipment manufacturers (OEMs), however, typically maintain their own motor oil performance specifications. A Volkswagen* owner, for example, must use an oil that meets the requirements of VW's own performance specs. The same holds for Mercedes-Benz,* BMW,* Porsche* and other European cars.

Complicating matters, each OEM motor oil specification is slightly different. One OEM may require an oil that offers better performance against oxidation, while another requires better resistance to viscosity loss. And different engine models can require different oil chemistries of the same viscosity. For example, VW requires some of its engines to use a 0W-20 oil that meets its 508.00/509.00 spec, but others must use a 0W-20 oil that meets a different spec. Some BMW engines require a 5W-40 oil that meets the BMW LL-01 spec, while others require a 5W-40 that meets the BMW LL-04 spec. The specificity can easily confuse motorists.

OEM specifications tend to be more strict and require increased motor oil performance than the industry specs to which we're accustomed. This, of course, requires more advanced (and typically expensive) motor-oil technology delivered almost exclusively by synthetics.

General Motors,* for its part, has taken a page out of the playbook of its European counterparts by maintaining its own GM dexos* performance specifications. I suspect we'll see more of this from domestic OEMs in the coming years.

More-Strict Emissions Standards

The European Union maintains more strict standards for carbon dioxide (CO_2) and carbon monoxide (CO) emissions than we do. (Our standards for nitrogen oxides [NOx] and particulate matter [PM] are more strict, however.) Because modern diesels emit lower CO_2 than gasoline engines, the European market pivoted toward diesel-powered vehicles in the 1990s. Diesels also provide better fuel economy.

One drawback, however, is the higher levels of NOx and PM that diesels produce. To counteract this, diesel-powered vehicles use diesel particulate filters (DPF) and catalysts designed to reduce pollutants from the exhaust before they exit the tailpipe.

An oil's formulation can negatively affect sensitive emissions-control devices. Certain components in the motor oil can reduce the effectiveness and life of DPFs and other emissions devices. For that reason, European specifications often limit certain ingredients to protect emissions-control systems.

Longer Oil-Change Intervals

Europeans have long practiced what's only recently caught on in North America – longer oil-change intervals.

Europeans are accustomed to changing oil far less often, with drain intervals of 10,000 miles (16,000 km) or so quite common. One reason is the higher cost of oil in Europe. Another is the differences between manufacturer recommendations. For example, most modern BMWs require oil changes only every 15,000 miles (24,140 km). In the U.S., most people change oil around every 5,000 miles (8,000 km). The figure increases if the vehicle is equipped with an electronic oil-life monitoring system.

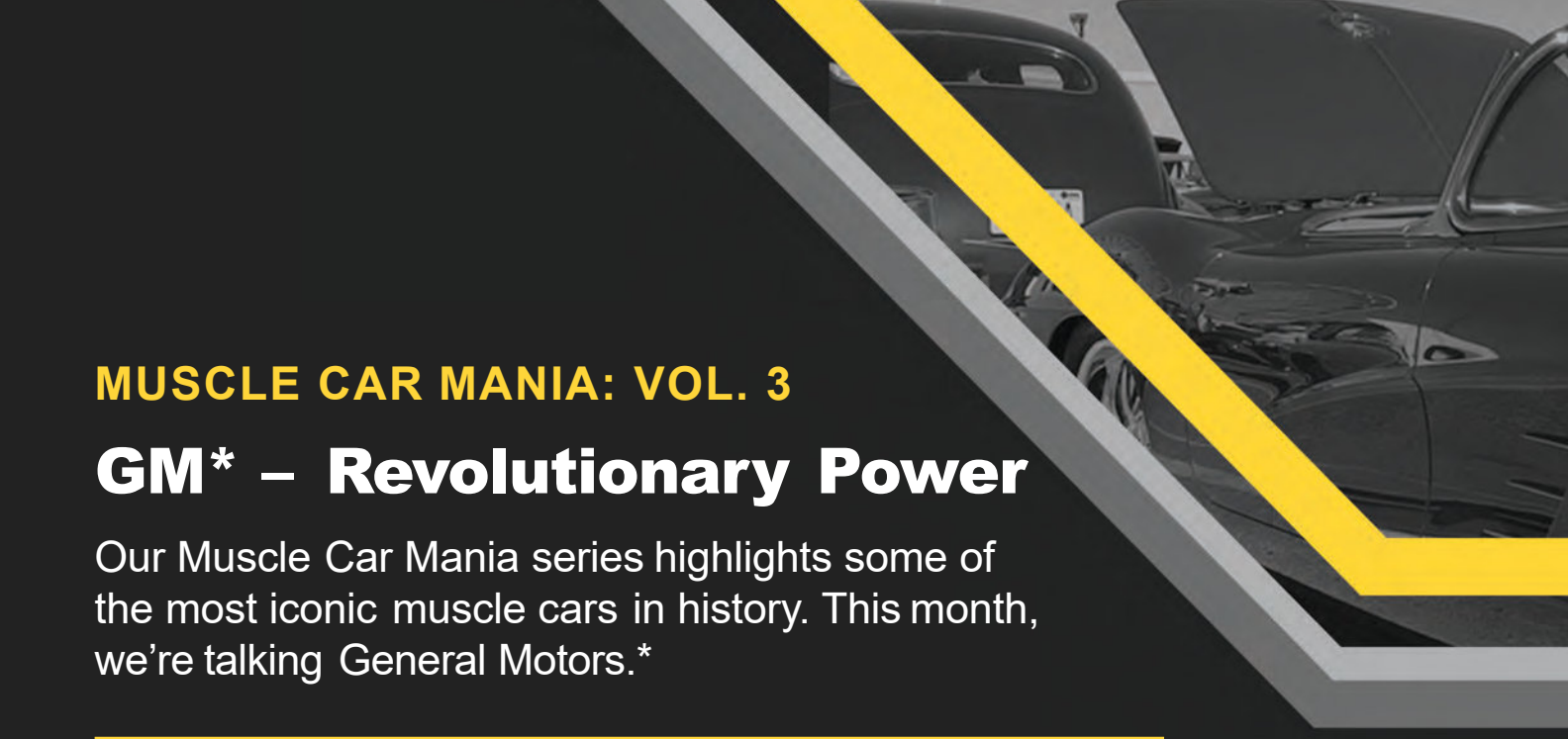
Longer drain intervals common with European cars require an oil capable of protecting against wear, deposits and sludge for the duration, which requires a more robust oil.

Different Viscosities

In addition, many European OEMs have historically suggested different viscosities for different operating temperature ranges. In cold weather, the OEM may recommend 5W-30. In warm weather, 5W-40. Traditionally, drivers settle on a 0W-40 or 5W-40 to offer the best of both worlds – good cold-flow at startup to protect against wear and good resistance to heat once operating temperatures are reached. However, like their domestic counterparts, European manufacturers are increasingly recommending reduced oil viscosities to help improve fuel economy.

Our updated line of 100% Synthetic European Motor Oil reflects this trend. We recently introduced two new 0W-20 products. Our full line provides an option for just about any European car owner, no matter the performance spec or viscosity. The best way to find the right oil is to use our Product Guide at AMSOIL.com or AMSOIL.ca.

European cars offer an excellent driving experience; be sure to protect them with AMSOIL Synthetic European Motor Oil.



MUSCLE CAR MANIA: VOL. 3

GM* – Revolutionary Power

Our Muscle Car Mania series highlights some of the most iconic muscle cars in history. This month, we're talking General Motors.*

Back in 1954, Chevrolet* chief engineer Ed Cole was tasked with creating a new engine to power the 1955 model-year Corvette.* Little did Cole and his team know that the 265 cubic-inch V8 they'd build would become the most successful, widely used engine in history. Without it, we wouldn't have staples like the 283, the 327 and the 350 engines of the muscle-car era. The fundamental engine design of the 265 is still being used to this day in modern variants of the Corvette, Camaro* and other vehicle models.

Chevy receives credit for the small-block V8, but GM divisions Buick,* Oldsmobile* and Pontiac* also made their way well into muscle-car history. Buick had the Nailhead* engine, named after the relatively small heads on the valve stems. This style was used from the mid-'50s to the mid-'60s and went from 264 cubic inches all the way up to 425 by 1966. Some of those notable models were the Riviera,* the Wildcat* and the Electra.* Around this time, Buick also introduced a 350 cubic-inch small-block V8 that differed from the Chevy version and was typically found in Skylark GS* models. Then, in 1967, Buick rolled out its first big-block V8, which would eventually become the popular 455 by 1970.

Oldsmobile was also getting in on the action in 1964 by introducing the 4-4-2 package option on its Cutlass* models. The "4-4-2" name originates from the four-barrel carburetor, four-speed transmission and dual exhaust that the original car had in 1964. By 1970, the 4-4-2 would also have a 455 cubic-inch option.

Another contender in the race for more horsepower in 1964 was Pontiac and its offering of the GTO* package in the LeMans* model. With all the bells and whistles, this package could get you the highest-rated 389 cubic-inch V8 with "Tri-Power" (three two-barrel carburetors) that pumped out 348 hp. The GTO would become its own model in 1966 and, like Buick and Oldsmobile, would eventually receive the 455 cubic-inch engine treatment by 1970.

In the mid-'60s, GM's Chevrolet division made plans to develop a pony car to compete with the popular Ford* Mustang.* In 1966, the Chevy Camaro debuted. Its first-year V8 engine options would be 302, 327, 350 and 396 cubic inches. In addition, the SS (Super Sport),* RS (Rally Sport)* and Z/28* packages were available to offer further visual and mechanical varieties.

For people seeking performance in a mid-sized car, Chevrolet offered the Chevelle.* Introduced in 1964, it was one of the best-selling models GM produced. With options like the SS 396 and 454, the Chevelle held its own and then some in the muscle-car market. For those interested in top-of-the-line performance, Chevy made a step up with the Corvette. Its production began as a modest "sports car" for the 1953 model year, but the following years led it on the path for more serious power. By 1966, its 427 big-block engine was producing up to 435 hp. The popular 454 big block rolled out in 1970, but this would be the peak for power in the Chevy Corvette, as lower-leaded fuels and emissions regulations of the '70s required a drop in its engine output.

The Resurgence

After the 1970s, "true" muscle cars seemed to go extinct. The familiar models were still there (Chevelle, Camaro, Corvette, etc.), but the high-performance numbers and engine displacements of the original

muscle-car era decreased more every year. That began to change in 2005, when Ford brought back its "retro" Mustang with design cues from its original models of the '60s. A muscle-car resurgence started gaining traction. Dodge* soon followed suit with the revamped Challenger.* But while Chevrolet still had the Corvette model, the Camaro hadn't been produced since 2002. It was time for a GM muscle-car revival.

In 2006, Chevy unveiled its Camaro concept at the North American International Auto Show and received critical acclaim. The company announced production of its award-winning concept for the 2010 model year. The returning Camaro SS* would come equipped with a 6.2L LS-based small block producing 426 hp. Around the same time, the Corvette Z06* came out with the largest-displacement small block ever produced, a 7.0L V8 creating 505 hp and 470 lb.-ft. of torque. This would be known as the LS7.*

Just like the muscle-car era years ago, horsepower ratings have begun to climb. Modern Camaros and Corvettes are now pushing out more power than ever. A Camaro ZL1* package with a supercharged 6.2L LT4* boasts 650 hp and 650 lb.-ft. of pavement-peeling torque, and can go from 0-60 mph in 3.7 seconds. If that seems impressive, the all-new mid-engine Corvette can achieve the same feat in 2.9 seconds. Plus, it's got a top speed of 194 mph. It's no secret that extra horsepower puts additional stress and pressure on the lubricants needed to protect them. AMSOIL products are up for the challenge. Our motor oils are engineered to meet the increasing demands of these high-performance vehicles and ensure they keep producing power for years to come.

FOR EARLY MODEL GM MUSCLE CARS:

Z-ROD® Synthetic Motor Oil

- Specially engineered for classic and high-performance vehicles
- High-zinc formulation to prevent wear on flat-tappet camshafts and other critical engine components
- Proprietary blend of rust and corrosion inhibitors for added protection during long-term storage.

DOMINATOR® Octane Boost is an excellent lead substitute at the same treat rates in collector automobiles designed for leaded gasoline.

- Reduces engine knock
- Improves ignition and engine response
- Helps fuel burn cleaner
- Inhibits corrosion
- Recommended for racing use

FOR MODERN GM MUSCLE CARS:

Signature Series 5W-30 Synthetic Motor Oil
Signature Series 0W-40 Synthetic Motor Oil
(2019-present LT1, LT2 and LT4 engines)

- 75 percent more wear protection[1]
- 100 percent protection from LSPI[2]
- 50 percent more cleaning power[3]
- Ideal for turbos & direct injection
- Guaranteed protection for up to 25,000 miles (40,200 km) or 1 year, whichever comes first

[1]Based on independent testing in the ASTM D6891 test using 0W-20 as worst-case representation. [2]Based on independent testing in the LSPI engine test as required for the GM dexos1® Gen 2 specification. [3]vs. AMSOIL OE Motor Oil.

MAKE LIFE EASIER WITH GASOLINE STABILIZER

Everyone wants their seasonal vehicles and equipment to start easily and run properly when removed from storage. To make your life easier next spring, treat your lawnmower and other summer vehicles and equipment to AMSOIL Gasoline Stabilizer (AST) before putting everything away for the season.

Gasoline is not formulated for long-term storage and can start to degrade in as little as 30 days. Degraded fuel leads to varnish and sludge that clog injectors, fuel lines and carburetors; stick floats; and cause poor engine performance, starting problems, increased maintenance expenses and decreased equipment life.

Gasoline Stabilizer inhibits the oxidation process that occurs when fuel is stored for extended periods, improving performance, extending equipment life and decreasing maintenance expenses.

Delivers Confidence

Treating fuel with Gasoline Stabilizer prior to storing equipment provides confidence. It offers peace of mind that equipment will not only start when it is needed, but will also perform properly.

Eliminates Need to Drain Fuel

Draining fuel from equipment can not only be difficult, it invites corrosion on the bare metal in the tank and drying and cracking of gaskets and seals. Some fuels are pre-treated with oxidation inhibitors that allow them to be stored for short periods without forming excessive deposits, while other fuels have no inhibitors at all. Gasoline Stabilizer eliminates the need to drain fuel from equipment before long-term storage. It fights fuel deterioration, severely limiting the formation of damaging varnish and deposits to help extend equipment life.

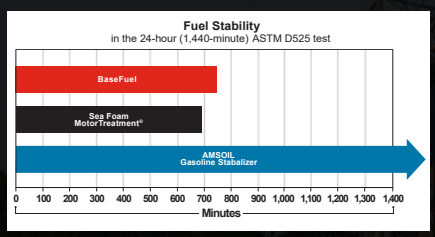
Decreases Maintenance

Deposits, varnish and sludge that form from degraded fuel can cause important components in the fuel system to become clogged or stuck and require thorough cleaning or replacement. Gasoline Stabilizer helps reduce maintenance time and costs by preventing harmful deposits from forming in the tank and fuel system, eliminating the need to clean or replace carburetors after long-term storage.

- **Helps** keep fuel from deteriorating
- **Protects** against varnish and gum buildup
- **Fights** ethanol corrosion

AMSOIL Improves Stability

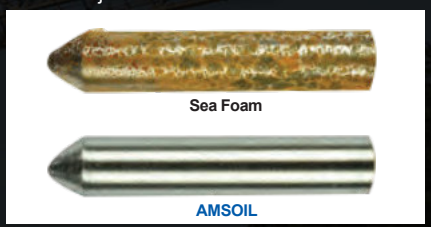
AMSOIL provides fuel stability that Sea Foam* Motor Treatment can't match, helping maintain startability and protect against the formation of varnish and gum.[Z]



[Z]Based on independent 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. *All trademarked names and images are the property of their respective owners and may be registered marks in some countries. No affiliation or endorsement claim, express or implied, is made by their use.

AMSOIL Fights Corrosion

AMSOIL provides corrosion protection Sea Foam* Motor Treatment can't match, helping maintain power and performance and keeping metal looking like new even when subjected to salt water.[X]



[X]Based upon independent testing of AMSOIL Gasoline Stabilizer obtained Nov. 8, 2018 and Sea Foam Motor Treatment purchased Oct. 25, 2018 in a modified NACE TM0172 using synthetic sea water per ASTM D665 part B. *All trademarked names and images are the property of their respective owners and may be registered marks in some countries. No affiliation or endorsement claim, express or implied, is made by their use.

MORE GREAT PRODUCTS FOR FALL

Engine and Transmission Flush (FLSH)
Helps restore fuel economy, increase operating efficiency and reduce emissions in gasoline and diesel engines, and automatic transmissions.

Engine Fogging Oil (FOG)
Designed to protect internal engine components during storage or long periods of inactivity.

KEEPING LUBRICATION SYSTEMS CLEAN

Contaminants will inevitably corrupt any lubricating system, but quality lubricants considerably reduce contamination and extend oil service. There are four ways contamination occurs in lubrication systems.

- **First,** the system itself can generate contamination through poor system or component design, temperature-related chemical reactions or just normal use.
- **Second,** contamination can be caused by careless packaging or handling of components before or during installation.
- **Third,** contamination can be introduced though improper or careless maintenance.
- **Fourth,** contamination can be caused by another system leaking into the first system.

Base oils possess a varying degree of solvency (the ability to dissolve a solid, liquid or gas), which assists in maintaining internal cleanliness. However, commonly paired detergents and dispersants play a key role. These pairings maintain internal cleanliness by suspending contaminants, minimizing contaminant clumping (agglomeration) and preventing contaminants from adhering to components. Over time, degradation of the oil can result in a cleanliness issue, but oxidation inhibitors can reduce this effect.

Detergents added to lubricants minimize deposit formation in the high-temperature areas of an engine. The most used detergents in motor oil formulations are metallic (ash) soaps with reserve basicity to neutralize the acids formed as byproducts of combustion. Other detergents include metalorganic compounds of sodium, calcium and magnesium phenolates, phosphonates and sulfonates.

Dispersants are additives that help keep solid contaminants in suspension. By keeping contaminants suspended within the lubricant, sludge, varnish and other carbon deposits are prevented from forming on engine parts. Dispersants also prevent contaminants from agglomerating into larger and potentially dangerous particles. When particles are held in suspension and prevented from agglomorating, they can be carried to the filter and removed from the lubricant.

Dirty components run poorly, pollute and don't last. They cause system failures in engines, compressors and gear-box systems that dramatically increase downtime, increase operating costs and reduce equipment life. Clean lubrication systems, on the other hand, require less maintenance, produce more energy, use fuel more efficiently, increase equipment service life and run cleaner.

AMSOIL lubricants use detergent and dispersant additives to significantly reduce sludge and carbon deposit formation better than other oils.

One way to know how well a lubricant can protect your vehicles and equipment is to look at the total base number (TBN), which indicates its ability to neutralize contaminants such as combustion byproducts and acidic materials. It is a measure of (alkaline) additives in the oil. Higher-TBN oils can neutralize a greater amount of acidic materials, which results in improved protection against corrosive reactions.

TBN levels are targeted for the intended application. Typically, gasoline engine oils display lower TBN numbers, while diesel engine oils must manage the heavy contaminant loading from soot and sulfur and usually run higher.

TBN levels decrease as the oil remains in service. When the level reaches a point where it can no longer protect against corrosion, the oil must be changed.

Oils formulated specifically for extended drain intervals typically display elevated TBN numbers to ensure proper corrosion protection for the duration of the extended interval.

Base Number Test (ASTM D2896/ ASTM D4739)

The Base Number Test measures the detergents and dispersants in oils.

ASTM D2896 is commonly used on new oil samples and typically results in higher values as it titrates both strong and weak base materials. ASTM D4739 is frequently used on used oil samples and only titrates the remaining strong base material. The biggest difference between the methods is the type of acid used for titration.

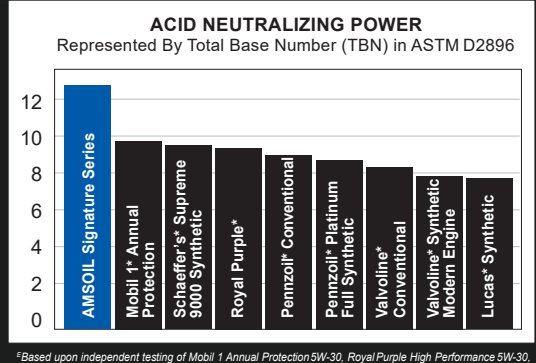
AMSOIL Advantage

High TBN

Because AMSOIL lubricants contain consistently high TBNs, they neutralize acidic contaminants formed during the combustion process and keep these contaminants in suspension to prevent corrosion.

Signature Series Neutralizes Acids

AMSOIL Signature Series is fortified with a heavy treatment of detergent additive and it delivers **30% more** acid neutralizing power[E] than Mobil 1,* and **36% more** than Royal Purple,* helping engines to stay cleaner, longer.



[E]Based upon independent testing of Mobil 1 Annual Protection 5W-30, Royal Purple High Performance 5W-30, Schaeffer's Supreme 9000 Full Synthetic 5W-30, Royal Purple High Performance 5W-30, Pennzoil 5W-30, Pennzoil Platinum Full Synthetic 5W-30, Valvoline Conventional Daily Protection 5W-30, Valvoline Full Synthetic Modern Engine 5W-30, Lucas Synthetic 5W-30 and AMSOIL Signature Series 5W-30 in ASTM D2896. Oils purchased 05/03/18 *All trademarked names and images are the property of their respective owners and may be registered marks in some countries. No affiliation or endorsement claim, expressed or implied, is made by their use.

Volkswagen* R32 Clocks 300,000 Miles with AMSOIL

Richard Nyguist of Manheim, Pa. is the epitome of a Volkswagen enthusiast. He's owned several cars from the German automaker, including a Mark 1, several Mark 2s and the rare Golf* GTI 337 edition, of which only 1,500 were sold in the United States.

Currently, Nyguist owns a 2004 VW R32 equipped with a 3.2L V-6. VW only sold 5,000 R32s in the U.S., and that was only after enthusiasts petitioned the company to make the car available stateside.

"It's kind of Volkswagen's version of a rally car," said Nyguist. "It has nice leather sports seats that were only available in that car, a special steering wheel, dash, exhaust system…all those good things," he said. But the all-wheel drive is the key that unlocks the car's potential.

The car makes 240 hp and hits 60 mph in about six seconds. "Back in 2004, that was pretty solid," said Nyguist. "Today, your 2.0L turbos are going to be pushing 300 hp, but the naturally aspirated V-6 is such a pleasure to drive," he said. "You have the full powerband at your fingertips – it's an extension of yourself."

Though Nyguist says the car is no "rocket ship," it's perfect for his driving style. "I come from Scotland," he said. "We're used to passing other cars and twisty, turny roads. To jump on the highway and see how fast you can go – that doesn't do anything for me. Twisty, turny roads, shuffling and dicing on the gears, getting the revs just right and getting G-force on the corners is fun driving to me."

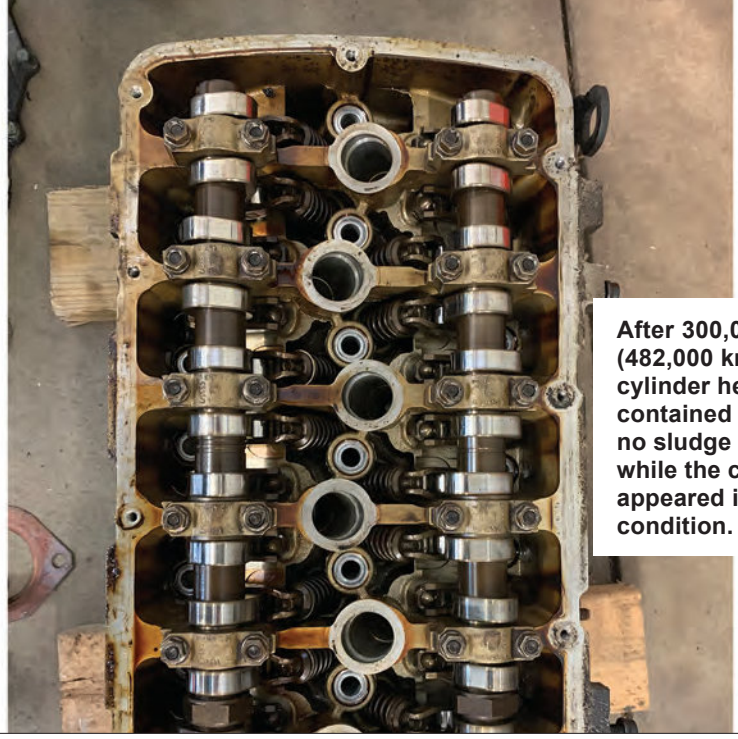
Extended drains drew Nyguist to AMSOIL

Nyguist has used AMSOIL 5W-40 Synthetic European Motor Oil (EFM) since the car was new. "In the early days, it was serviced under VW's new-car service agreement, and I took the oil with me and told them, 'This is the oil that's going in it.'" He changes oil about every 12,000 miles (19,300 km).

Nyguist originally used AMSOIL products because finding a 5W-40 in his area proved difficult in 2004. Plus, a friend had been practicing extended drain intervals with AMSOIL synthetic motor oil and oil analysis, which appealed to Nyguist since extended drains have been common in Europe for years. "I was looking for that longer change interval, and I definitely wanted synthetic," he said.

Mechanic "shocked and surprised" at AMSOIL performance

AMSOIL motor oil has performed flawlessly in the engine ever since, which recently hit 300,000 miles (482,800 km). Recently, the front differential failed, which required extensive work to repair. Nyguist had also noticed his engine was wet from oil. "It wasn't leaking profusely or dripping; it was just wet," he said. "And we'd never done the timing chains, which a lot of people change at 100,000 miles (160,934 km) or even less."



After 300,000 miles (482,000 km), the cylinder head contained virtually no sludge or varnish, while the cylinders appeared in excellent condition.

EUROPEAN MOTOR OIL FAMILY

0W-20 LS-VW (EZT):
Use in vehicles that require API SN-PLUS, SN… • ACEA C5 • VW 508.00/509.00

0W-20 LS (AFE):
Use in vehicles that require API SN-PLUS (Resource Conserving), SN, SM… • ILSAC GF-5 • ACEA C5 • A1/B1 • BMW LL-17FE+ • MB 229.71 • Ford WSS-M2C947-B1 • Opel/Vauxhall OV0401547 • Fiat 9.55535-GSX • Chrysler MS-12145 • Volvo VCC RBS0-2AE

0W-40 FS (EFO):
Use in vehicles that require ACEA A3/B3, A3/B4 • API SN/SM... • BMW LL-01 • MB 229.1/229.3/229.5 • Porsche A40 • Renault 0710, 0700 • VW/Audi 502.00/505.00

5W-30 LS (AEL):
Manufacturer Approvals: VW 504.00/507.00
Use in vehicles that require API SN • ACEA C3 • GM dexos2 • Chrysler MS-11106 • MB 229.51 • BMW LL-04 • Porsche C30

5W-40 MS (AFL):
Manufacturer Approvals: MB-Approval 229.51 • Porsche A40
Use in vehicles that require ACEA C3 • API SN/SM/CF... • BMW LL-04 • Chrysler MS-10850 (supersedes MS-10896) • Ford WSS-M2C917-A • GM dexos2 (supersedes LL-A-025 and LL-B-025) • Renault RN0700/RN0710 • VW/Audi 502.00/505.01

5W-40 FS (EFM):
Manufacturer Approvals: MB-Approval 229.5 • Porsche A40 • VW/Audi 502.00/505.00
Use in vehicles that require ACEA A3/B3, A3/B4 • API SN/SM... • BMW LL-01 • Renault 0710, 0700 • Opel GM LL-B-025

So, while repairing the differential, his mechanic pulled the engine apart and changed the timing chains and head gasket. What he saw inside surprised him.

"He was completely shocked and surprised by how clean the cylinder head was. Normally he'd see sludge in cars with similar miles," said Nyguist. There was also no sign of a groove at the top of the cylinder bores where the piston ring rubs against the cylinder at the top of its stroke. "There was barely any varnish in the engine, which was quite surprising," said Nyguist.

No plans to part with his R32

Nyguist has no plans to part with his R32. "It's a keeper for me," he said. "It's in fabulous condition. I've seen other R32s that have half the mileage, and they look terrible," he said.

Nyguist also had a Honda* Pilot* that hit 300,000 miles (482,800 km) using AMSOIL synthetic motor oil before he sold it to his mechanic's brother. The vehicle still runs great at 330,000 miles (531,000 km).

"In both my cars, I've hit 300,000 miles and could have kept going, and that's the only oil they've ever seen."

Sell value, not products

Show prospects how AMSOIL products help increase the value of their vehicles and equipment.

Dan Peterson | SENIOR VICE PRESIDENT, DEALER SALES AND MARKETING

I recently sold an older 6-hp Yamaha* four-stroke outboard motor. I found the original paperwork my dad obtained when he had purchased the motor, including the invoice, which showed the original purchase price. It turns out I sold the motor for slightly more than what my dad had paid for it brand-new. I guess you could say the motor held its value the past 20 years. On the other hand, serious investors in the stock market might say it was a terrible investment that yielded zero return and didn't even cover inflation.

We all know the enjoyment we get from our outdoor activities is worth a lot to us, but it does cost money for all the equipment. I have bought many things over the years, and much of it is worthless or completely worn out after 20 years. So, maybe the investment in this outboard motor was not such a bad deal after all.

Regardless, it got me thinking about value and the way we make decisions each day about whether something is sufficiently valuable enough for us to shell out our hard-earned money to purchase. When we think about the overall value of a piece of equipment, a lot goes into the calculation. Let's take a brand-new 2020 Ford* F-150 King Ranch pickup, which lists for $52,990 in the U.S. That's a lot of money to spend on a vehicle, but they are moving off lots all over the U.S. and Canada every day. So, how do people calculate the value of this purchase and make the decision to take out an 84-month car loan to pay for this beast? What kind of mental calculus do we all go through that leads us to make this decision? There must be a price that is just too high that runs us off the lot. There also must be a calculation on what the vehicle is worth in our minds that leads us to signing the paperwork. I want to lay out a framework for how we all make this decision.

(Fun Factor + Practical Jobs + Resale Value)
≥
(Car Payment + Maintenance Costs + Fuel Costs)

It's fun to drive a new vehicle. It's shiny, smells good and runs like a dream. You get a lot of enjoyment out of a new vehicle, period. As a result of being brand-new, maintenance costs are very low and predictable. A new vehicle also allows us to drive to work, take the kids to school, plow snow, trailer the boat to the lake and head out for a hunting trip without worrying about a breakdown.

Many people think about resale value, too. They may like having new vehicles, so getting some good money out of a vehicle when they are ready for a new one is important and goes into the calculation. Fuel economy is also an important factor, especially when gas prices go up.

AMSOIL products don't have anything to do with several factors in the equation, but they do have a significant influence on overall maintenance and fuel costs, which are a big part of the bottom portion of the equation. Maintenance and fuel costs add up to significant dollars over time. What if you could get better fuel economy on every tank of fuel? How about reduced maintenance costs? Dirty fuel injectors, intake-valve deposits, turbocharger failure, premature engine wear, power loss, a transmission that shifts poorly, cooling-system corrosion and more all work to increase maintenance and reduce the enjoyment we get from our vehicles and toys.

We are in the business of creating value and helping maximize the variables on the top portion of the equation, like "fun factor" and "resale value," while reducing the variables on the bottom portion of the equation, like "maintenance costs" and "fuel costs." We are all helping our customers solve problems, some of which they have been living with for a long time. We provide value through education and by helping to reduce maintenance and fuel costs while keeping equipment running better, longer. The value we create is simple, but it sometimes gets hidden in the big equation. Our job is to keep highlighting the problems we solve so that customers can make well-informed judgments about the value of AMSOIL products.

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