



► DISTRIBUTOR EDITION

MAGAZINE

OCTOBER 2025

BRAD LOVELL: BUILD FOR OFF ROAD ADVENTURE RIDE

| PAGE 8



A Closer Look at Hydraulic Systems | PAGE 10



PRODUCT SPOTLIGHT:

AMSOIL INTERCEPTOR® Synthetic 2-Stroke Oil (AIT)



WHAT IS IT?

- Our BEST all-around two-stroke snowmobile oil

WHAT DOES IT DO?

- **Prevents** piston scuffing for long engine life
- **Fights** exhaust power valve sticking for reduced maintenance and maximum performance
- **Delivers** outstanding cold-flow [-69°F (-56°C)] for exceptional wear protection

WHO IS IT FOR?

- Hardcore enthusiasts
- Owners of powerful sleds that require extra protection, including those with Ski-Doo® E-TEC® and Arctic Cat® C-TEC® engines
- Snowmobile dealerships and other shops that cater to snowmobilers

Riding season is almost here. Contact your snowmobile customers to make sure they're fully stocked with AMSOIL INTERCEPTOR and ready to hit the snow.



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From the Chairman

Right now, AI is in the news daily. The technology is evolving rapidly and is suddenly present in many aspects of our lives. Searching the web on your mobile device? AI results are at the top of the list. Visiting the doctor? AI transcribes your conversation and places the notes in your medical chart. Writing this column? AI wants to help. It is nearly inescapable and for many people, that is frightening. I understand that perspective; however, ignoring the potential gains AI can provide would be foolish – much like ignoring synthetic oil technology in the '70s was foolish. Users must learn how to wield the tool effectively and harness its ability to accelerate productivity. It is not foolproof; it can "hallucinate" and provide inaccurate information, but it is an amazing aid. Think of it like a calculator. Using a calculator increases the speed and accuracy with which you can crunch the numbers, but you must perform your part properly or it will return inaccurate results, and if you don't have a basic understanding of mathematics, you can't spot when something is amiss and correct the issue. The same can be true for AI platforms.

We use AI mostly to help with data insights, fraud detection and workflow automation. While AI is powerful and its potential is intriguing, it is not the end-all, be-all some purport it to be. At least, not yet. Who can guess where the technology will be in five, 10 or 50 years? Imagine how life is different today compared to 1975. Communication, health care, transportation...all very different today, largely due to technological advancements. The 1975 Ford* F150* had a carbureted engine, made from 113 to 245 hp and up to 315 lb.-ft. of torque. It got 10-14 mpg and you could get it with a manual transmission. The 2025 Ford F150 engine is direct-injected and often turbocharged. It makes 325 to 720 hp and up to 640 lb.-ft. of torque, and it is much more fuel efficient. As engine technology evolved, motor-oil technology was forced to evolve with it. Modern engines have tighter tolerances and require lower-viscosity oils. Turbocharged engines demand oil that can withstand higher temperatures and pressures. And emissions systems require additive packages that will protect sophisticated engine technology, while remaining compatible with sensitive emissions components

like catalytic converters. Sometimes, these requirements are in conflict with one another, making oil formulation increasingly challenging.

Fortunately, we stay ahead of the technology curve as a matter of practice. We employ a continuous cycle of research and development and experiment with unique chemistries, always seeking ways to improve lubricant performance. We developed a new formulation for Signature Series Synthetic Motor Oil, and it has been undergoing a series of extreme tests in an independent setting. Validation work won't be complete until next spring, but I have seen some of the preliminary results and I am truly impressed. The current Signature Series formulation was the best oil we've ever made or tested. Until now. The new formulation delivers next-level protection and performance, and I can't wait to share it with all of you. And, in case you were wondering, we did not use AI to formulate it.

Alan Amatzuzio

Alan Amatzuzio
Chairman & CEO

COMBAT FUEL ISSUES WITH AMSOIL DIESEL FUEL ADDITIVES

Poor diesel fuel quality can foul injectors, accelerate injector pump wear, lead to rough running, impede starting and cause cold-temperature stalling. AMSOIL diesel fuel additives effectively combat these issues and help improve diesel engine performance.

AMSOIL Diesel 4-IN-1 (ADB)

- Combines superior detergency, improved lubricity, excellent anti-gelling properties and increased power in one convenient package

AMSOIL Diesel Injector Clean (ADF)

- Effectively removes all types of fuel-system deposits and improves lubricity

AMSOIL Diesel Cold Flow (ADD)

- Depresses diesel-fuel pour point and improves cold-flow filtration properties

Not available in Canada

AMSOIL Diesel Cetane Boost (ACB)

- Improves combustion efficiency and power and increases cetane up to eight points

AMSOIL Diesel Injector Clean + Cetane Boost (ADS)

- Combines superior detergency, improved lubricity and increased power in one convenient package

AMSOIL Diesel Recovery (DRC)

- Quickly liquefies gelled diesel fuel and thaws frozen fuel filters



LETTERS TO THE EDITOR

HEAVY-DUTY PRODUCT LOOKUP

I want to share some constructive feedback on an essential tool we use regularly: the product lookup application for heavy-duty trucks.

AMSOIL rightly encourages us to open commercial accounts with transportation companies and vehicle fleets. This is a high-potential market, and to succeed, we need to be equipped with the best tools. However, the application currently has a significant shortcoming: the database for the year, make and model lookup stops at the year 2017. This means we are currently missing eight years of truck models. For a Dealer meeting with a fleet manager who operates recent vehicles, this limitation makes our work more difficult and less professional.

An update to this database to include heavy-duty truck models from 2018 to the present would be immensely appreciated and would strengthen our credibility and effectiveness with these key accounts.

Furthermore, when analyzing the other search options, I question the relevance of the license-plate lookup for determining lubricant specifications. This feature also appears to be limited to the United States.

Thank you for considering this feedback from the field.

Regards,

Bruno Ranger

AMSOIL: You are absolutely correct, Bruno, and we're currently working to fix this issue. We are planning to implement a new set of heavy-duty lookups very soon. Stay tuned. The license-plate and VIN lookups have been very helpful for customers who don't know their exact vehicle information and want to find and buy the correct AMSOIL products for their vehicles. You are correct; this feature is only available for U.S. license plates at this time. We are constantly looking for new ways to improve our Shop by Vehicle tool and we appreciate your feedback.

0W-20 VISCOSITY

I would like to hear the AMSOIL standpoint on the GM* 6.2L recall regarding engine failures caused by 0W-20 oil. The recall is updating oil to 0W-40. With so many OEMs calling for 0W-20, is this really the best oil suited for today's engines or is it strictly a way to meet EPA mandates?

A lot of people are looking to change to 0W-40. Can you go into detail on this? Many European OEMs still maintain 40 weight.

Sincerely,

John Cockerill

AMSOIL: Thank you for your letter, John. The GM safety recall is specific to a condition within that particular engine platform. The engine failures are not being caused by the use of 0W-20 motor oil; they are occurring because some of the affected engines contain defective parts. GM continues to recommend 0W-20 for engines not affected by the recall, including 6.2L engines in the latest models. For engines built to accept it, 0W-20 motor oils provide excellent wear protection. We recommend AMSOIL Signature Series 0W-40 (AZF) for customers who have been affected by the recall and instructed by GM to switch to 0W-40 motor oil. Customers who have not been affected by the recall should continue using 0W-20.

Generally speaking, vehicle owners should stick with the manufacturer's recommended viscosity because that is what the engine is designed for. Oil that is too thick can lead to pumpability issues and lack of lubrication, while oil that is too thin can lead to low oil pressure and premature wear.

Lastly, while European vehicles are quickly transitioning to 20- and 30-weight oils, you are correct that many still recommend 40-weight oil. This again is determined by the engine design and clearances built into the engine. Thanks again for the great questions, John.

ASTERISKS

In the July "Letters to the Editor" column, in a letter by Greg Finnican, there were asterisks beside several items with no explanation of what they were for. Please explain.

Thanks,

Henry S. Winokur

AMSOIL: Good question, Henry. The asterisks appear next to trademarked names for legal purposes. The explanation appears as a footnote on the Table of Contents page and the back cover. It states, "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."

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



Alex Thompson | DIRECTOR, PRODUCT MARKETING – AUTOMOTIVE & COMMERCIAL PRODUCTS

Why Does Gasoline Go Bad?

Gasoline is a blend of hydrocarbons and performance-enhancing additives. Over time, this mix can degrade due to chemical and physical changes, leading to poor engine performance and potential damage. The main culprits? Oxidation, evaporation, contamination and polymerization.

Oxidation: The Silent Fuel Killer

Oxidation is the leading cause of gasoline degradation. When hydrocarbons react with oxygen, they form unstable compounds like peroxides. These break down into aldehydes, ketones and acids, which thicken the fuel, reduce its volatility and leave behind sticky deposits. These deposits can clog fuel injectors, carburetors and fuel lines, choking your engine's performance.

Evaporation: Losing the Lightweights

Gasoline contains light, volatile hydrocarbons like butane and pentane. These evaporate easily, especially in warm environments or poorly sealed containers. As these lighter elements disappear, the fuel becomes harder to ignite, leading to sluggish starts and reduced power.

Contamination: Water and Ethanol Don't Mix Well

Water can enter fuel tanks through condensation. Ethanol-blended fuels are especially vulnerable because ethanol absorbs water. Above certain concentrations, this can trigger **phase separation**, where a water layer forms at the bottom of the tank due to its heavier density compared to gasoline. When your engine pulls from this layer instead of pure fuel, it can misfire, stall or experience corrosion.

Polymerization: Gum and Varnish Build-Up

Over time, hydrocarbons and additives in gasoline can link together to form long-chain molecules. This process, accelerated by heat, light and oxygen, creates gum and varnish that coat fuel system components, restricting flow and causing performance issues.

How Bad Gas Affects Your Engine

Degraded gasoline doesn't just sit quietly — it actively harms engine performance. Here's how:

- **Hard starts:** Loss of volatile compounds makes ignition difficult, especially in cold weather.
- **Poor combustion:** Oxidized fuel disrupts combustion, reducing power and increasing emissions.
- **Clogged components:** Gum and varnish block fuel injectors and lines, causing misfires and rough idling.
- **Engine knock:** Lower octane levels from degraded fuel lead to premature detonation, damaging pistons and spark plugs.
- **Corrosion:** Water in fuel promotes rust in tanks, lines and injectors.
- **Phase separation:** Ethanol-water mixture causes stalling and poor combustion.
- **Loss of power:** Altered fuel chemistry reduces energy output.
- **Increased emissions:** Incomplete combustion releases more pollutants.
- **Severe engine damage:** Long-term use of bad gas can lead to costly repairs — or even engine replacement.

How to Prevent Gasoline Degradation

Proper storage is key. Follow these tips:

- Use **airtight, approved containers** to limit oxygen exposure.
- Store in a **cool, dry place**, ideally below 68°F (20°C).
- Choose **opaque containers** to block sunlight and prevent photochemical reactions.

- Add a **gasoline stabilizer** to extend fuel life and protect your engine.

AMSOIL Gasoline Stabilizer: Your Fuel's Best Friend

AMSOIL Gasoline Stabilizer keeps fuel fresh for up to 12 months, making cold starts easier and preventing gum and varnish buildup. It works with ethanol-blended fuels and includes corrosion inhibitors to protect metal components. Compared to Sea Foam Motor Treatment,* AMSOIL delivers...

- **Superior corrosion protection**, even when subjected to salt water.¹
- **8X longer fuel stability** in ASTM D525 testing.²

Keep Your Engine Running Strong

Gasoline degradation is inevitable, but preventable. By understanding the science and using the right products, you can keep your fuel fresh, your engine clean and your performance sharp. Whether you're storing a classic car or lawnmower for winter, smart fuel management keeps your vehicles and equipment ready to roll.

Check out our "How to Choose an Effective Fuel Additive" video and share it with your customers and prospects on social media.



¹Based on independent third-party testing of AMSOIL Gasoline Stabilizer obtained July 1, 2022, and Sea Foam Motor Treatment purchased June 30, 2022, in a modified NACE TM0172 using synthetic sea water per ASTM D665B.

²Based on independent third-party testing of AMSOIL Gasoline Stabilizer obtained July 1, 2022 and Sea Foam Motor Treatment purchased June 30, 2022 in a triple-length gasoline oxidation stability test (ASTM D525) using test fuel containing no oxidation-stability-improving additives.

BRAD LOVELL: BUILD FOR OFF ROAD ADVENTURE RIDE

The MotorTrend original series Build for Off Road showcases aggressive off-road builds operating in challenging off-road environments. Its Adventure Ride episodes feature groups of adventurers traveling through some of the most extreme off-road terrain in the country. This year's Adventure Ride was even more legendary with the addition of multi-time King of the Hammers champion, Off-Road Motorsports Hall of Famer and #TeamAMSOIL racer Brad Lovell.

A Lifelong Passion

Lovell's lifelong love of all things off-road started early, with family adventures in a pop-up camper pulled by his dad's Bronco* in the Colorado Rockies. "We'd go camping and really enjoyed exploring new places and seeing new things," says Lovell. This early exposure to exploration and seeking increasingly tough trails with his brother in their own vehicles fueled a competitive spirit.

But it was witnessing his first Supercrawl rock-crawling competition in Farmington, N.M. that truly sealed the deal. Lovell adds, "It blew my mind. I fell in absolute love with it." That pivotal moment sparked a desire to not just participate, but push boundaries. "My whole challenge is just to see how far we can take this," he said. "What different challenges can we find? That's what's kept me motivated the whole time."

That spirit of adventure and desire to push limits is what inspired Lovell to join the Build for Off Road Adventure Ride.

"Watching what [show host Ian Johnson] is doing; he's always cooking up new crazy ideas and fun,

adventurous things," said Lovell. "AMSOIL has supported our team for many years and is the fabric of who we are. Partnering with AMSOIL and Ian is pretty exciting, and I was thrilled when it came together."

Adding an extra layer of excitement to this adventure is that Lovell is bringing back an old partner to help tackle these trails.

A Seasoned Warrior

Lovell will be bringing his beastly 2007 Ranger* Rock Racer on the Adventure Ride. This machine comes with a serious pedigree, having made its debut at the legendary King of the Hammers (KOH). As Lovell explains, "This vehicle helped us establish our team. It's won 44 races, including competition rock crawls, rock races, hill climbs, and we even won a desert race down in Texas. It's been an extremely versatile and iconic vehicle for us."

This celebrated rig has been battle-tested across a spectrum of off-road disciplines, making it the perfect choice for the Adventure Ride, which will include some intense wheeling in Johnson Valley, the very heart of King of the Hammers.



"King of the Hammers is a big challenge," says Lovell, explaining that the event can be as heartbreaking as it is alluring. It's been a few years since the Rock Racer last competed at KOH, with an impressive second-place finish. However, except for an occasional weekend outing, the legendary vehicle has been idle since. Thankfully, the iconic machine is being dusted off and prepped for new adventures.

Brad's approach to recreational off-roading isn't much different from high-stakes racing. "It's always competitive," he says with a laugh. While a competitive spirit is ingrained in Lovell's DNA, he emphasizes the key differentiator is balance between challenge and camaraderie.

"Enjoying trails can sometimes be hard, because we go to the trails to challenge ourselves and try new things," he said. While he firmly believes off-roading is fundamentally about facing and conquering obstacles, he also stresses the importance of being patient with fellow adventurers, staying open to advice and maintaining a positive attitude. "I encourage my sons and other people I go wheeling with to push their limits. If you're not growing, you're not excelling," he said. "But it has to be at a measured rate."

A Growing Legacy

Adding an extra dimension to the Adventure Ride, Brad won't be the only Lovell on this journey. His son, Adam, will be joining the crew, creating a unique father-son off-road experience. Adam is a seasoned off-roader in his own right, having co-driven to a remarkable victory alongside his dad at the 2025 King of the Hammers Every Man Challenge. Having conquered King of the Hammers together, Brad and Adam bring a unique dynamic to the upcoming Adventure Ride. "Your co-driver is like your mechanic and

your confidante — able to help you fix things," says Brad. "I'm sure he'll do a great job on the Adventure Ride."

Adam will be bringing his own solid-axle, big-tired Ranger creation on the Adventure Ride. "It's a really cool vehicle. I had a Ranger when I was his age," Brad shared proudly. "It's pretty neat to see him following in my footsteps."

"What I absolutely love about off-road is the sense of adventure," Brad says in closing. "That's why I'm so excited to go on this ride. I'm really looking forward to enjoying time with my son and making new friends along the way." Their shared experience in navigating challenging terrain and working as a team will undoubtedly be a valuable asset to the entire group. We can't wait to see father and son side-by-side on the trails.

Watch a video featuring Brad and Adam Lovell as they discuss the Build for Off Road Adventure Ride and their work to prepare the Ranger.



SAVE THE DATES

Be sure to save the dates for upcoming episodes with the Lovells and keep up with additional AMSOIL off-road build and ride content leading up to the Adventure Ride:

12/20/25

AMSOIL on Build for Off Road
Build premiere

1/17/26

AMSOIL on Build for Off Road
Lovell Adventure Ride

1/31/26

AMSOIL on Build for Off Road
Lovell Adventure Ride



A CLOSER LOOK AT HYDRAULIC SYSTEMS

Hydraulics are essential to the operation of commercial equipment, using pressurized fluid to complete jobs that would otherwise be impossible or highly inefficient.

Hydraulic systems operate based on Pascal's Law, which states that pressure applied to a confined fluid is transmitted equally in all directions. This principle allows hydraulic systems to amplify force that allows heavy lifting with precise control.

COMMERCIAL APPLICATIONS

- **Excavators** and loaders use hydraulic systems for digging, lifting and handling materials.
- **Cranes** use hydraulic systems to lift and position heavy loads.
- **Telehandlers** use hydraulic systems for precise placement of materials.
- **Tractors** use hydraulic systems for lifting implements like plows and seeders.
- **Harvesters** use hydraulic systems for cutting, threshing and handling grain.
- **Sprayers and spreaders** use hydraulic systems for even distribution of fertilizers and pesticides.

HYDRAULIC-SYSTEM COMPONENTS

Each component in the hydraulic system plays a specific and important role. Routine inspection and maintenance are critical for keeping systems in peak condition.

Hydraulic Pump

The hydraulic pump converts mechanical energy from an engine into hydraulic energy by pressurizing and circulating fluid throughout the system to power various actuators such as cylinders and motors. Common hydraulic-pump problems include cavitation, wear of internal surfaces and seal failure.

Key Maintenance

- Keep hydraulic fluid clean and free from contaminants.
- Regularly inspect the inlet line for blockages or leaks.
- Perform routine pressure tests to ensure the pump is working at optimal capacity.

Control Valves

Control valves direct the flow of pressurized fluid to specific actuators, regulating the movement, speed and force of the machinery. Common control-valve problems include valve sticking, internal leaks caused by wear in the valve body or seals and damaged linkage or solenoids (in electrically actuated valves).

Key Maintenance

- Clean valves periodically to avoid blockages or debris buildup.
- Inspect for worn-out seals and replace as needed.
- Verify proper calibration and adjust as necessary.

Hydraulic Cylinders

Hydraulic cylinders convert hydraulic energy into mechanical force for lifting, pushing and pulling. Hydraulic fluid enters the cylinder through an inlet port, pushing the piston inside. The movement of the piston extends or retracts the cylinder rod, creating mechanical motion. Common cylinder problems include seal deterioration, rod scoring or pitting, bent rods from overloading or misalignment and fluid leaks around the piston.



Key Maintenance

- Replace seals regularly to avoid leaks.
- Inspect rods for wear, corrosion or bending and repair or replace as needed.
- Ensure cylinders are correctly aligned to prevent undue stress on components.

Reservoir

The reservoir provides a ready supply of hydraulic fluid to the pump, collects fluid returning from the system and helps dissipate heat. Proper fluid levels ensure consistent operation and prevent air from entering the system. Common reservoir problems include contamination, overheating, corrosion and cracking.

Key Maintenance

- Routinely check fluid levels and top off when necessary.
- Use clean, sealed containers when adding fluid to prevent contamination.
- Flush the reservoir periodically to remove debris and sediment.

Hoses and Fittings

Flexible hoses and rigid pipes transport hydraulic fluid, while fittings connect hoses to other components to ensure secure, leak-free connections. Common hose and fitting problems include abrasion or cracking, burst hoses and loose or leaking fittings.

Key Maintenance

- Routinely inspect hoses for cracks, kinks or abrasion marks.
- Secure hoses properly with clamps to prevent rubbing or pinching.
- Replace fittings that show corrosion, wear or inadequate sealing.

Filters

Filters are located at key points in the hydraulic system, including the reservoir outlet and return lines, to trap contaminants before they enter the pump

or other components. Common filter problems include clogging and bypass-valve activation that allows unfiltered fluid to enter the system.

Key Maintenance

- Replace filters at the recommended intervals, or sooner in extreme environments.
- Use filters compatible with the specific hydraulic fluid.
- Monitor filter pressure indicators to identify blockages early.

THE ROLE OF HYDRAULIC FLUID

Hydraulic fluid is the primary medium through which energy is transferred in a hydraulic system. It is responsible for the following tasks:

Power Transmission

The hydraulic fluid transmits energy from the pump to the actuators, including hydraulic cylinders and motors. High-pressure fluid generates the force necessary to perform operations.

Component Protection

The hydraulic fluid reduces friction and cushions moving parts, preventing premature wear and overheating. For example, the pistons in a hydraulic cylinder rely on the hydraulic fluid to create a smooth, continuous motion.

Heat Dissipation

The hydraulic fluid helps absorb and transfer heat away from critical components.

Sealing Properties

Hydraulic fluid helps form a seal within cylinders to maintain pressure and prevent internal leaks.

Contaminant Removal

Hydraulic fluid helps carry contaminants to the reservoir, where filters remove them from the system.

Hydraulic-Fluid Maintenance

Hydraulic fluid absorbs dirt, water and other impurities during operation, reducing protection and performance. Staying on top of fluid maintenance ensures consistent protection and performance, while reducing the risk of costly repairs and downtime.

AMSOIL HYDRAULIC OILS

AMSOIL hydraulic oils provide significant benefits and cost savings.

AMSOIL Synthetic Anti-Wear Hydraulic Oil

ISO 22 (AWG), ISO 32 (AWH), ISO 46 (AWI)
Offers superior protection for hard-working hydraulic systems from the stress of high-pressure, high-load and heavy-duty operations.

AMSOIL Synthetic Multi-Viscosity Hydraulic Oil

ISO 22 (HVG), ISO 32 (HVH), ISO 46 (HVI), ISO 68 (HVJ)
Cost-effective formulation that provides all-season protection and reliable operation in most types of hydraulic systems.

AMSOIL Commercial-Grade Hydraulic Oil

ISO 32 (HCG32), ISO 46 (HCG46), ISO 68 (HCG68)
Formulated to protect industrial and mobile hydraulic applications. Resists oxidation, fights corrosion and inhibits foam to help maintain component cleanliness and promote efficient operation.

AMSOIL Synthetic Biodegradable Hydraulic Oil

ISO 46 (BHO)
Synthetic formulation delivers the ideal combination of excellent biodegradability and wear protection for mobile and stationary hydraulic applications.





TWO-STROKE



Two- and Four-Stroke Engine Applications and Lubrication Needs

Two-stroke and four-stroke engines are designed differently and operate under different conditions, requiring different lubrication methods.

Internal combustion engines are used to produce mechanical power from the chemical energy contained in hydrocarbon fuels. The power-producing part of the engine's operating cycle starts inside the engine's cylinders with a compression process. Following compression, the burning of the fuel-air mixture releases the fuel's chemical energy and produces high-temperature, high-pressure combustion products. These gases expand within each cylinder and transfer work to the piston, producing mechanical power to operate the engine.

Each upward or downward movement of the piston is called a stroke, and the two commonly used internal combustion engine cycles are the two-stroke cycle and the four-stroke cycle. The terms "two-cycle" and "two-stroke," as well as "four-cycle" and "four-stroke," are often interchanged.

Two-Stroke and Four-Stroke Differences

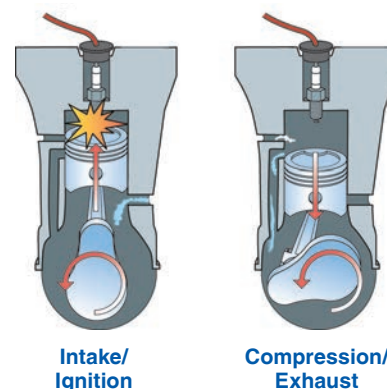
The fundamental difference between two-stroke and four-stroke engines is in their gas-exchange process, or more simply, the removal of the burned gases at the end of each expansion process and the introduction of a fresh mixture for the next cycle. A two-stroke engine has an expansion, or power stroke, in each cylinder during each revolution of the crankshaft. The exhaust and the charging processes occur simultaneously as

the piston moves through its lowest or bottom center position.

In a four-stroke engine, the burned gases are first displaced by the piston during an upward stroke, and a fresh charge enters the cylinder during the following downward stroke.

Four-stroke engines require two complete turns of the crankshaft to make a power stroke, compared to the single turn necessary in a two-stroke engine. Two-stroke engines operate on 360° of crankshaft rotation, whereas four-stroke engines operate on 720° of crankshaft rotation.

Combustion cycle of a two-stroke gasoline engine



FOUR-STROKE



Applications

Two-stroke engines are generally less expensive to build compared to four-stroke engines, and they are lighter and can produce a higher power-to-weight ratio. For these reasons, two-stroke engines are ideal in applications such as chain-saws, weed trimmers, outboard motors, off-road motorcycles and racing applications. Two-stroke engines are also easier to start in cold temperatures, making them ideal for use in snowmobiles. Four-stroke engines, on the other hand, produce more torque at lower rpm, generally providing greater equipment durability than high-revving two-stroke engines, while also providing greater fuel efficiency and lower emissions. For these reasons, four-stroke engines are ideal in applications such as motorcycles, ATVs and personal watercraft.

Four-Stroke Lubrication

Four-stroke engines are lubricated by oil held in an oil sump. The oil is distributed through the engine by splash lubrication or a pressurized lubrication pump system; these systems may be used alone or together.

Splash lubrication is achieved by partly submerging the crankshaft in the oil sump. The momentum of the rotating crankshaft splashes oil to other engine components such as the cam lobes, wrist pins and cylinder walls.

Pressurized lubrication uses an oil pump to provide a pressurized film of lubricant between moving parts such as the main bearings, rod bearings and cam bearings. It also pumps oil to the engine's valve guides and rocker arms.

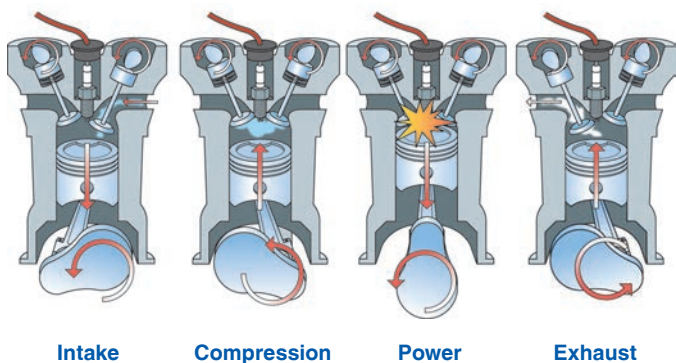
Two-Stroke Lubrication

Two-stroke engines collect some oil beneath the crankshaft; however, two-stroke engines employ a total-loss lubrication system that combines oil and fuel to provide both energy and engine lubrication. The oil and fuel are combined in the cylinder's intake tract and lubricate critical components such as the crankshaft, connecting rods and cylinder walls.

Oil-injected two-stroke engines inject the oil directly into the engine, where it mixes with the fuel, while pre-mix two-stroke engines require a fuel-oil mixture that is combined before being installed in the fuel tank. In general, two-stroke engines are known to wear more quickly than four-stroke engines because they don't have a dedicated lubricant source; however, high-quality two-stroke oil significantly reduces engine wear.

AMSOIL provides a full line of premium synthetic two- and four-stroke oils that provide outstanding protection and performance for recreational and work equipment.

Combustion cycle of a four-stroke gasoline engine





DISTRIBUTOR SPOTLIGHT

Over the past 27 years, Dirego has established a reputation for excellence and innovation as an automotive parts distributor in Mexico. With a robust distribution network of 30 locations spanning the country's major cities, the team is committed to delivering premium automotive products to a diverse customer base. The company became an AMSOIL Distributor in 2022, with a vision to become the leader in synthetic lubricants throughout Mexico.

Building a Legacy of Trust

When seeking a partner to provide premium, certified lubricants, the leadership team recognized that AMSOIL products are known for consistently delivering on promises of performance and protection. After speaking with AMSOIL corporate, the team determined that the superior product quality, proven results and passion for doing things right aligned well with its desire to serve even the most demanding customers.

Customers in Mexico seek performance, durability and trust. The Dirego team appreciated that AMSOIL technology is the best available, and added that their customers notice the difference from the first use.

Customer-Centric Approach

Serving customers through online and commercial sales, automotive and motorcycle retailers and high-performance and service workshops, Dirego's success is rooted in a deep understanding of individual customer needs. Whether serving large fleets or individual enthusiasts, the team prioritizes face-to-face engagement and personalized service. By adapting its sales strategies to meet the expectations of clients who value regular visits and fast online support, it has fostered lasting relationships and earned the loyalty of discerning drivers.

Overcoming Market Challenges

Mexico is a price-sensitive market, which is reflected in the sales volume of product lines like AMSOIL OE Synthetic Motor Oil and Synthetic 4T Motorcycle

"AMSOIL is more than a product—it's a promise of performance."

Oil. However, the company also sees strong sales of premium products, including AMSOIL Signature Series Synthetic Motor Oil and V-Twin Synthetic Motorcycle Oil, because the owners of high-performance cars and Harley-Davidson* motorcycles are already familiar with and often use AMSOIL products exclusively.



Distributor Spotlight

COUNTRY: MEXICO
COMPANY NAME: DIREGO

"Some customers bike from Mexico to Sturgis and only trust AMSOIL products."

Brand awareness remains a key challenge in a market dominated by large, established competitors with unlimited budgets. Dirego tackles this by investing in product training and growing the sales team to maintain regular weekly contact. A focus on training the salesforce and educating consumers enables everyone to experience the superior protection and performance of AMSOIL products firsthand. Those customers then become advocates, sharing their positive experiences and increasing brand reach organically.

Innovative Marketing Initiatives

Understanding the extreme cultural significance of football (soccer) in Mexico, Dirego recently launched a high-profile advertising campaign, including television ads during major matches, positioning AMSOIL products alongside the country's top brands. Complementary grassroots efforts include collaborations with local influencers and digital creators and race-team sponsorships. Exclusive AMSOIL booths at every major trade show throughout Mexico reinforce awareness and offer customers direct access to AMSOIL product experts and technical support. This all-encompassing approach ensures the AMSOIL brand resonates with different communities and customers at every level.

Commitment to Growth

Looking ahead, Dirego is focused on expanding both its AMSOIL product

offerings and customer education efforts. Strategic investments in infrastructure, training and partnerships with leading automotive workshops are paving the way for continued growth. By staying true to the AMSOIL core values of quality and integrity, the team is well-positioned to meet Mexico's evolving automotive demands.

A Shared Vision for the Future

Through a passion for excellence and innovation and an unwavering commitment to customer satisfaction, Dirego continues to elevate the AMSOIL brand and set new standards throughout Mexico. Its journey exemplifies how delivering the best products and services, building strong partnerships and a commitment to strategic marketing and education can empower customers and drive continuous growth.

AMSOIL Synthetic Greases Produced by Aerospace Lubricants Available Soon

AMSOIL acquired Aerospace Lubricants in June 2024 with a commitment to invest in enhancing the capabilities and capacity of the operation. We have spent the past year fulfilling that commitment and partnering with the Aerospace team to bring upgraded AMSOIL grease formulations to market. Thanks to the expertise of the Aerospace and AMSOIL Product Development teams and the investments we've made in production equipment, the recent backorder issues faced by customers are coming to an end and several AMSOIL grease products produced by Aerospace in Columbus, Ohio will roll out over the next six months. You might notice some changes in color, packaging or base-oil viscosity in the new formulations. The new formulations will deliver enhanced protection and performance, providing equal or superior benefits compared to previous formulations – while maintaining full compatibility.

- AMSOIL NLGI #2 100% Synthetic Polymeric Truck, Chassis and Equipment Grease (GPTR2)
- AMSOIL NLGI #2 100% Synthetic Polymeric Off-Road Grease (GPOR2)
- AMSOIL 100% Synthetic Multi-Purpose Grease (GLC)
- AMSOIL 100% Synthetic Water-Resistant Grease (GWR)
- AMSOIL NLGI #1 100% Synthetic Polymeric Off-Road Grease (GPOR1)
- AMSOIL NLGI #1 100% Synthetic Polymeric Truck, Chassis and Equipment Grease (GPTR1)

New Interactive Commercial Equipment Pages

We've developed several new interactive commercial equipment pages on the AMSOIL website (Buy for Business>For Your Commercial Equipment: Learn More>Is the AMSOIL Commercial Program Right for Your Business?) designed to show prospective and current commercial accounts the full breadth of AMSOIL products available for their vehicles and equipment. They will also help you familiarize yourself with the common vehicles and equipment found in commercial markets and the AMSOIL products available to protect them.

These interactive, graphically driven pages cover each of the five commercial markets on which we focus: excavators/off-road contractors, trades/construction contractors, lawn & landscape contractors, regional fleets and agriculture. Each market page includes links to common equipment used in that market. For example, the excavators/off-road contractors page features links to interactive excavator, skid-steer, dump truck, bulldozer and wheel loader pages. Each interactive application page reveals the AMSOIL products recommended for that piece of equipment.

AMSOIL Distributor Conferences

AMSOIL recently hosted its third ASEAN Distributor Conference in Bangkok, Thailand. AMSOIL Distributors for most of the Association of Southeast Asian Nations (ASEAN) region attended, including Brunei, Cambodia, Malaysia, the Philippines, Singapore, Thailand and Vietnam.

Each Distributor gave a presentation about their company and the lubrication market in their country. Group forum discussions included diverse business-development topics, including brand promotion, intellectual property protection, new product-development opportunities, pricing management and EV market considerations. Attendees also received extensive product marketing, sales and technical training and identified additional opportunities for AMSOIL to support Distributor growth in the region.

AMSOIL Distributor conferences play a pivotal role in exchanging ideas for overcoming challenges and building successful businesses. Attendees develop strong and supportive relationships with other Distributors and with the AMSOIL team. We look forward to supporting your AMSOIL business at our next regional event.





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SPECIALIZED LUBRICANTS ENGINEERED FOR WHAT YOU DRIVE AND HOW YOU DRIVE®

V-twins, hybrids, lawn mowers, race cars – whatever you drive, no two engines function exactly the same way. Getting the best performance and longest life out of your vehicles and equipment requires specialized lubricants.

AMSOIL products are engineered to deliver targeted, application-specific benefits so you can extract maximum performance and life from your equipment.

