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M A G A Z I N E

MARCH 2011

Superior Hydraulic Protection

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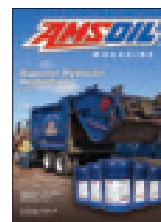
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THE COVER

Hydraulic systems are all around. Protect them with AMSOIL synthetic hydraulic oils.

FROM THE PRESIDENT'S DESK

I was interviewed recently by a young reporter from a local television station. She was well aware that AMSOIL INC. was a major employer in the area and that our sales reach extended well beyond the local community, but, as I expected, she knew very little about motor oil. Her answer to my standard question, "What brand of oil do you use?" was typical of most. "Whatever kind they put in," she said. The reprimand I gave her was not severe.

She asked first about my childhood, and then, knowing I had been a jet fighter pilot, asked about my passion for flying. I explained that as a young boy I would sit on the shore of St. Louis Bay and watch the mail plane land on the water. I imagined myself flying that plane and dreamed that I would one day become a pilot. We talked briefly about my flying career.

She then asked how the idea for synthetic oil originated. I explained that as a pilot I was aware that every jet engine in the world used only synthetic oil, and I reasoned that cars, trucks and other internal combustion engines could benefit greatly from the same type of technology. When I began formulating oil in the early-1960s, my critics thought I was crazy. They claimed I had been at altitude too long without oxygen. But I persisted.

I further explained that making synthetic oil for internal combustion engines was much more complicated than making oil for jet engines, and the chemistries available at the time were much less sophisticated than they are today. Base stock options were limited and the obstacles were many. Eventually, I had my oil tested at Southwest Research in San Antonio, Texas. It exceeded all test limits and proved conclusively that it could go well beyond the traditional drain interval recommendations. AMSOIL coined the phrase "extended drain interval," and our 25,000-mile recommendation flew squarely in the face of conventional thought. We had taken lubrication to an entirely new level.

It would be a few years later, I told her, before another synthetic oil was introduced. Mobil 1 hit the market in 1974 and, coincidentally, carried a 25,000-

mile drain interval recommendation. Although many AMSOIL Dealers feared that with another synthetic oil now in the game our sales would plummet, I knew otherwise. The money Mobil would lay out in advertising would only serve to support our effort. That proved to be the case. Mobil, by the way, was pressured, I suspect, and backed off on its 25,000-mile drain interval recommendation.

Our reporter friend left the interview impressed with the impact AMSOIL has had.

And speaking of impact, it is interesting that Mobil's recent repositioning of its motor oil lineup closely mirrors the positioning of our oils. I am not suggesting, necessarily, that Mobil modeled their approach after us, but it is worth noting. Mobil Clean oils have been discontinued and replaced with a new family called Mobil Super. This line has been added to Mobil's flagship Mobil 1 products. The Mobil Super line includes Mobil Super Synthetic, a lower cost synthetic oil recommended for 7,500 miles or six months. This oil is positioned to attract those consumers who are interested in moving up to a synthetic but are not yet ready to invest in a more expensive, longer lasting oil. According to Hesham Omar, Americas automotive marketing manager for ExxonMobil Lubricants and Petroleum Specialties, as quoted in *Lube Report*, the company "...anticipated that the Mobil Super Synthetic consumers will be trading up from conventional and synthetic blends. The Mobil 1 buyer is seeking a superior product, and less likely to be interested in the Mobil Super proposition." Sound familiar? That was exactly our strategy with the introduction of AMSOIL OE.

The Mobil Super Synthetic product falls in behind Mobil 1, which is recommended for 10,000-mile drain intervals, similar to our XL oils. At the top end, Mobil 1 Extended Perfor-

mance, with its 15,000-mile or one year oil drain recommendation, is positioned to attract those consumers who want the best that Mobil has to offer. Those are the same consumers who are drawn to our top-tier, 25,000-mile oils. Separate tiers of motor oils differentiated by drain interval and price, each aimed at satisfying the needs of distinct levels of consumers. Sounds familiar.

Again, I am not suggesting that Mobil intentionally "borrowed" our strategy, but it is curious. Our impact has been seen before.



A.J. "Al" Amatuzio
President and CEO, AMSOIL INC.



The First in Synthetics®

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President &
Chief Executive Officer



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REALIZE SUPERIOR PROTECTION, PERFORMANCE AND COST SAVINGS WITH AMSOIL SYNTHETIC HYDRAULIC OILS



Hydraulic systems are everywhere, with common examples including the following:

- Garbage trucks
- Mobile cranes
- Snow plows
- Forklifts
- Dump trucks
- Excavators
- Front-end loaders
- Mobile shears
- Backhoes
- Mobile well-drilling and core-sampling equipment
- Skidders
- Piling rigs
- Street sweepers
- Mobile hydraulic power units
- Bucket trucks
- Tow trucks
- Feller bunchers
- Scissor lifts

Hydraulic Systems

Hydraulic systems can look complex and intimidating, but most are relatively straightforward, consisting of a sump, a pump, hoses, valves and either pistons or hydraulic motors.



Sump – The hydraulic system's sump is responsible for holding the oil, providing time for the transferring of heat, and a place for contaminants, including water, to settle.

Pump – The hydraulic system's pump produces the fluid flow that creates pressure. In most cases, it is the most expensive part in the system. Hydraulic oils are subjected to pump tests to prove their ability to protect pumps under normal operating conditions. Hydraulic systems can have many different types of pumps, but the three most common are gear, vane and piston pumps. Gear pumps are often found on lower-pressure systems and are relatively simple and reliable. As positive displacement pumps, they pump a fixed amount of fluid for every revolution. Although variations exist, a good example is an automotive oil pump. Vane pumps are common on mobile equipment and can be variable or constant displacement. Piston pumps can be found on higher-pressure applications and are more complex and sensitive to contamination than vane or piston pumps.

Hoses – Hoses carry hydraulic pressure and flow to various components, and are perhaps the weakest link in any hydraulic system. Maintenance is often ignored until a problem develops. Hoses fail due to heat, cold, repeated flexing, physical damage and exposure to the elements.

Valves – Valves control the route of the hydraulic flow within the system, sending flow and pressure to components in order to operate them. Pulling a lever back may route fluid to one side of the hydraulic system, causing it to extend a piston,

while pushing it forward may cause it to retract. Varnish presents a major problem with valves, causing them to stick or not allowing them to seal properly.

Pistons/Hydraulic Motors –

Pistons and hydraulic motors convert the hydraulic flow and pressure into work. Pistons provide linear motion, allowing bulldozer blades to lift and backhoe buckets to tip, while motors convert hydraulic flow and pressure into rotational force, allowing drills to operate. Common issues associated with pistons and hydraulic motors are internal or external leakage. External leakage results in loss of fluid and possible contamination issues, while internal leakage results in lost efficiency. For example, a bottle jack with its valve only partially closed requires furious pumping to lift an object off the ground and won't be able to keep it there.

Hydraulic Oil

Zinc-containing hydraulic oil is a commonly-used hydraulic fluid, while other applications call for zinc-free hydraulic oil, motor oil or transmission fluid. Hydrostatic hydraulic oil is required when the fluid must also operate the hydrostatic transmission, biodegradable hydraulic oil is often required in environmentally sensitive areas and some applications require fire-resistant hydraulic oils.

Each type of hydraulic oil has unique characteristics, and it's important to understand what's required for specific applications. The equipment's operator's manual will usually recommend viscosities for the ambient temperatures the machine is operated in or could even recommend a specific oil brand. This information can be used to determine the appropriate AMSOIL synthetic hydraulic oil. When in doubt, contact AMSOIL Technical Services at 715-399-TECH.

Hydraulic Oil Problems

Heat and contamination present serious challenges for hydraulic oils. If the system becomes too hot, the oil's viscosity can thin to the point where the pump is damaged or seals are destroyed. Because conventional hydraulic oil is often less expensive than synthetic hydraulic oil, it is important to understand the benefits and cost savings AMSOIL synthetic hydraulic oils provide.

Heat Reduction – The synthetic construction of AMSOIL synthetic hydraulic oils can reduce heat in hydraulic systems, leading to better viscosity retention, less varnish build-up and oxidation, reduction in component wear (including hoses), longer seal life and better overall system performance.



Cold-Weather Performance – AMSOIL synthetic hydraulic oils have much better cold-temperature characteristics than many petroleum oils. This can be seen by comparing the viscosity index, Brookfield viscosity and pour point numbers of a conventional oil to the corresponding viscosity AMSOIL synthetic hydraulic oil. Because mobile equipment generally sits out in the elements while on a job site, conventional hydraulic oils can thicken in the cold and lead to damage such as excessive pump wear due to cavitation, blown hoses, broken shafts or extended warm-up times that waste fuel. Use of the proper AMSOIL synthetic hydraulic oil viscosity helps reduce or eliminate many of these issues.

All-Season Functionality –

To eliminate some of the problems associated with temperature changes, many mobile equipment owners switch viscosities with the

seasons. They may run an ISO VG 22 viscosity oil in the winter and switch to an ISO VG 32 or 46 oil in the summer. AMSOIL synthetic hydraulic oils are high-viscosity-index formulations that can eliminate the need for seasonal changes. It's very possible to run an ISO 32 or ISO 46 successfully year-round in all but the most extreme cold conditions.

Hose Life Preservation –

Because many equipment operators consider blown hoses, leaky seals and loss of hydraulic fluid an unavoidable problem, they may not initially be interested in investing in more expensive hydraulic fluid they believe will just end up on the ground. If hoses mainly get snagged, chafed or damaged externally, they will continue to lose hoses until they physically remedy the situation. However, if the hoses and seals are blowing in cold weather or because of deterioration, AMSOIL synthetic hydraulic oils can help. Cold and heat wreak havoc on hoses and seals. Cold, thick fluid can cause pressure spikes and extremely hot fluid breaks down hoses and seals over time. The superior cooling and flow properties of AMSOIL synthetic hydraulic oils help preserve hose integrity.



AMSOIL Synthetic Anti-Wear Hydraulic Oils

AMSOIL Synthetic Anti-Wear Hydraulic Oils effectively inhibit oxidation to help prevent acid formation and viscosity increase, resist carbon and varnish deposits and inhibit rust and foam (providing smooth hydraulic operation). They contain a very effective zinc-based anti-wear/antioxidant additive which controls wear in high-speed, high-pressure vane and gear pumps while meeting the lubrication requirements of axial piston pumps with bronze-on-steel metallurgy.

- Extended oil drain intervals
- Anti-wear protection
- Recommended for gear, vane and piston pumps
- Contain rust, oxidation and foam inhibitors
- Designed for a wide temperature range
- Hydrolytically stable and readily separate from water

AMSOIL Biodegradable Hydraulic Oil

AMSOIL Biodegradable Hydraulic Oil (BHO) is a premium-performance hydraulic oil that exhibits high biodegradability and low aquatic toxicity, along with superior oxidative stability, excellent low-temperature performance and outstanding results in laboratory and extended duration pump testing. It contains antioxidants that prolong oil life and foam inhibitors that help promote problem-free operation. ■





Dan Peterson | VICE PRESIDENT, TECHNICAL DEVELOPMENT

Industry trends are forcing SAPS levels downward.

While SAPS has outstanding engine protection properties, too much can be detrimental to exhaust aftertreatment devices.

The AMSOIL Technical Services Department gets a lot of questions related to SAPS and why it is important. SAPS is an acronym for sulfated ash, phosphorus and sulfur, the three inorganic additives that provide key performance properties to a lubricating fluid's detergency, wear protection and oxidation resistance. Total base number (TBN) and sulfated ash have had a strong correlation in past oil formulations, so most of us associate a lubricant's SAPS levels with its starting TBN level. The appropriate level of SAPS for lubricants has been the subject of debate for the past few years. Lubrication engineers attempt to formulate oils that provide a high level of resistance to acid formation while limiting one of the main acid-neutralizing additives in order to protect exhaust aftertreatment devices. So, what exactly does SAPS do?

First, let's understand the "SA" in SAPS. Sulfated ash is a term used for materials added to lubricants to soak up excess oxidation byproducts and acids created by exhaust gases. Sulfated ash is an important component of diesel oil to ensure long oil life and good engine protection over time. As noted, some oil specifications restrict the sulfated ash content in order to protect certain emissions aftertreatment devices. The diesel particulate filter (DPF) is a good example of an emissions system device and is a relatively new development in the diesel world. The DPF is a large, honeycomb-type filter designed to capture and burn soot in diesel applications. It filters particulate matter from the exhaust so we don't have to breathe in harmful material from buses, trucks and other diesel applications.

As the DPF fills with contaminants, pressure builds within the exhaust system. When the pressure reaches a

certain level it triggers a DPF regeneration process where soot particles are burned. Materials that don't burn, like sulfated ash, build up in the filter over time and block the flow of exhaust through the filter. When ash build-up becomes excessive, it must be professionally cleaned. The latest diesel oil specification for 2007 and newer diesel vehicles, API CJ-4, limits the level of sulfated ash for this reason. It is normal and accepted that these filters need to be cleaned, but the new CJ-4 specification limits sulfated ash levels to prolong time between cleanings.

Many European vehicles come equipped with smaller DPFs that do the same job as their large diesel counterparts, which is why the VW 504.00/507.00 engine oil specification limits an oil's sulfated ash content. AMSOIL European Car Formula 5W-30 Synthetic Motor Oil (AEL) has a lower TBN than many other AMSOIL products in order to meet the VW 504.00/507.00 SAPS restrictions. VW specifies precise SAPS limits, which limits the level of resulting oil TBN.

Now for the "P" portion of SAPS. Phosphorus is a component of what is commonly recognized as an anti-wear agent and oxidation inhibitor, zinc dialkyldithiophosphate (ZDDP). ZDDP is very prevalent in the lubrication industry due to its excellent anti-wear and antioxidant properties. Alternatively, larger quantities of volatile phosphorus contained in ZDDP have been linked to premature poisoning of the catalyst surface of three-way catalytic converters and is a primary reason phosphorus has been limited in certain oil specifications. The VW 504.00/507.00 oil specification limits phosphorus content to help prolong catalytic converter life. While higher phosphorus levels

can reduce catalytic converter life, a low-SAPS lubricant is engineered to provide emissions system compatibility in both gas- and diesel-fueled vehicles.

The last "S" in SAPS stands for sulfur. Sulfur compounds are typically associated with anti-wear and extreme-pressure protection, but they can also be a component of corrosion inhibitors, friction modifiers and antioxidants. Excess sulfur can contribute to catalyst poisoning because sulfur is preferentially absorbed by the catalyst sites. When sulfur gets into the exhaust stream, it can poison catalyst surfaces, resulting in formation of particulate matter. Particulates in the emissions system can increase system back-pressure that negatively affects vehicle performance. Sulfur is generally being reduced in diesel fuel and lubricants.

There are a number of very positive benefits of SAPS in lubricants; however, as government emissions legislation imposes stricter emissions limits, the latest and forthcoming oil specifications require reduced SAPS levels to improve the life and performance of exhaust aftertreatment devices.

New materials are continually being developed that provide performance functions similar to SAPS, yet help overcome the detrimental effects SAPS can have on emissions treatment systems. AMSOIL continues to be at the forefront of evaluating new SAPS-replacement materials, and we are challenging the industry on SAPS limits that don't make sense for consumers. ■

WHATEVER THE BIKE, AMSOIL HAS IT COVERED

Synthetic 20W-50 Motorcycle Oil

AMSOIL Synthetic 20W-50 Motorcycle Oil (MCV) is recommended for air- or liquid-cooled four-stroke engines, including Harley-Davidson®, Buell®, KTM, Ducati®, Aprilia®, BMW®, Triumph® and other motorcycles specifying 15W-50 or 20W-50 engine oil or SAE 90, GL-1 gear oil. Its superior shear stability provides unsurpassed protection for high-performance engines, transmissions and primary chaincases, performing like a gear lube without the negative effects of extreme-pressure additives.

AMSOIL 20W-50 Motorcycle Oil provides maximum wear protection regardless of the operating conditions, while resisting breakdown and damaging sludge and carbon deposits. It provides extended service life of up to twice the manufacturer-recommended change interval (miles/hours) or one year, whichever comes first.



Synthetic SAE 60 Motorcycle Oil

AMSOIL Synthetic SAE 60 Motorcycle Oil (MCS) is recommended for early-model air-cooled V-Twin engines, including Harley-Davidson® Knucklehead, Panhead, Shovelhead and big-bore motorcycles specifying 60-weight motor oil or SAE 140, GL-1 gear oil. Its superior shear stability provides unsurpassed protection for high-performance engines and transmissions, performing like a gear lube without the negative effects of extreme-pressure additives.

AMSOIL SAE 60 Motorcycle Oil provides maximum wear protection regardless of the operating conditions, while resisting breakdown and damaging sludge and carbon deposits. It provides extended service life of up to twice the manufacturer-recommended change interval (miles/hours) or one year, whichever comes first.



Synthetic 10W-40 Motorcycle Oil

AMSOIL Synthetic 10W-40 Motorcycle Oil (MCF) is recommended for liquid- or air-cooled four-stroke engines, including Honda®, Kawasaki®, Yamaha®, Suzuki®, BMW®, Husqvarna®, Victory® and other motorcycles specifying 10W-40 or 20W-40 engine oil or SAE 80W/90, GL-1 gear oil. Its superior shear stability provides unsurpassed protection for high-performance engines and transmissions, performing like a gear lube without the negative effects of extreme-pressure additives.

AMSOIL 10W-40 Motorcycle Oil provides maximum wear protection regardless of the operating conditions, while resisting breakdown and damaging sludge and carbon deposits. It provides extended service life of up to twice the manufacturer-recommended change interval (miles/hours) or one year, whichever comes first.



Synthetic 10W-30 Motorcycle Oil

AMSOIL Synthetic 10W-30 Motorcycle Oil (MCT) is recommended for liquid- or air-cooled four-stroke engines, including Honda®, Kawasaki®, Yamaha® and Suzuki® motorcycles and scooters, as well as Arctic Cat®, Can-Am®, Honda®, Kawasaki® and Suzuki® ATVs and UTVs, specifying 10W-30 engine oil or SAE 80, GL-1 gear oil. Its superior shear stability provides unsurpassed protection for high-performance engines and transmissions, performing like a gear lube without the negative effects of extreme-pressure additives.

AMSOIL 10W-30 Motorcycle Oil provides maximum wear protection regardless of the operating conditions, while resisting breakdown and damaging sludge and carbon deposits. It provides extended service life of up to twice the manufacturer-recommended change interval (miles/hours) or one year, whichever comes first.



A CLOSER LOOK AT GEAR OIL

Alan Amatzuzio | EXECUTIVE VICE PRESIDENT / CHIEF OPERATING OFFICER



Automakers continue building vehicles that produce substantially more horsepower, torque and towing capacity than their predecessors, yet the gears and bearings responsible for converting this increased power into wheel

rotation remain largely unchanged. To reduce drag and improve fuel economy in some vehicles, engineers have also reduced the volume of gear lube available to cool and protect. The 1996 Ford F-250 Crew Cab, for example, features a 10,500-lb. maximum towing capacity using a rear differential that holds 3.75 quarts of gear lube. The 2011 Ford F-250 Crew Cab, meanwhile, boasts 14,000 lbs. of maximum towing capacity despite a rear differential with a smaller, 3.45-quart capacity.

Increasingly, synthetics are relied upon to meet these higher demands. Some manufacturers now recommend synthetics in the differentials of certain newer vehicles, such as the Chevrolet Silverado and Ram pickup.

Increased Wear Resistance

Differential designs come with inherent suffering points, and it's here that synthetics prove their worth. In a traditional automotive differential (Figure 1), the input pinion gear concentrates intense pressure on the ring gear, forcing it to turn the side and spider gears. As all the gear teeth mesh, they slide against one another repeatedly, separated only by a microscopic film of lubricant. The constant stress the lubricant film bears can shear lesser gear lubes, causing permanent viscosity loss. Once sheared, the fluid film weakens, ruptures and allows metal-to-metal contact, leading to increased friction, accelerated wear and eventual gear and bearing failure.

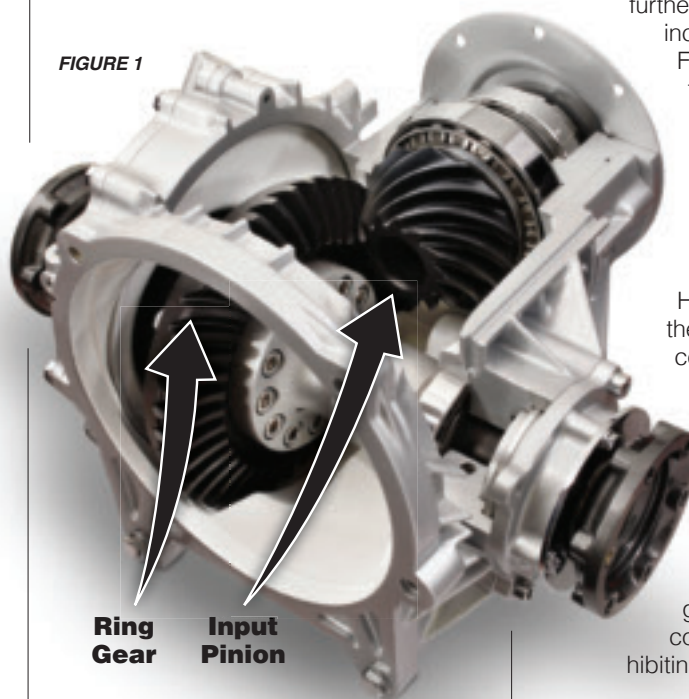
The composition and characteristics of synthetics play a vital role in wear

reduction, an area in which AMSOIL synthetic gear lubes excel. Conventional lubes formulated with viscosity index (VI) improvers shear more readily under stress. AMSOIL synthetic gear lubes, however, maintain viscosity better than other conventional and synthetic gear lubes despite rigorous use and contain advanced anti-wear additives for further protection.

Extreme-Pressure Additives

Severe-service applications used for towing, hauling, 4x4 off-road driving and commercial use place even greater stress on gears and bearings. Many drivers operate under severe-service conditions without even knowing it. The sliding motion and pressure on gears can wipe the lubricant away, particularly in spiral-cut hypoid gears. AMSOIL Severe Gear® Synthetic EP Gear Lubes contain extreme-pressure (EP) additives that form a durable iron sulfide barrier on gear and bearing surfaces to guard against metal-to-metal contact in the harshest driving conditions.

FIGURE 1



Increased Operating Temperatures

Differentials have always run hot, but increases in power and torque coupled with reduced fluid volume and reduced airflow due to improvements in vehicle aerodynamics only worsen the problem. Testing has shown applications simulating trailer towing at 88 km/h (55 mph) at a 3.5 percent grade can experience differential temperatures as high as 188°C (370°F). Those readings could be even higher using today's more powerful vehicles.

Thermal Runaway

As temperatures in the differential climb, gear lubricants tend to lose viscosity, while extreme loads and pressures can break the lubricant film, causing increased metal-to-metal contact and heat. The increased friction and heat, in turn, cause the lubricant to lose further viscosity, which further increases friction and heat. Friction and heat continue to spiral upward, creating a vicious cycle known as thermal runaway that eventually leads to greatly increased wear and irreparable equipment damage.

Here again AMSOIL synthetic gear lubes outperform conventional gear lubes.

Not only do they resist viscosity loss due to mechanical shear, they resist thinning at high temperatures better than conventional lubes. In addition, the deposits conventional gear lubes leave behind coat gears and bearings, inhibiting heat transfer and short-

ening their life spans. What's more, the lubricant thickens, increasing internal drag and reducing fuel economy.

AMSOIL synthetic gear lubes, however, are engineered in a lab and contain only uniform molecules less prone to volatilizing at high temperatures. As a result, they not only resist thinning in heat to provide better cooling and protective properties, they stay fluid in cold weather to ensure immediate start-up protection. Their uniform molecules also reduce friction, effectively reducing drag and increasing fuel economy.

Extended Drain Intervals

Following the original equipment manufacturer (OEM)-recommended differential drain interval using the OEM-recommended fluid can get very expensive. A 2006 Dodge Ram 1500 (see example below) requires a differential fluid change every 15,000 miles if driven under severe-service conditions, which includes towing, short trips of less than 10 miles and use where temperatures are below 32°F.

AMSOIL Severe Gear Synthetic EP Gear Lube is recommended for 50,000 miles in severe service. Its use in this example saves over \$220. In addition, synthetic gear lubes recommended by OEMs are often more expensive. The lower cost of AMSOIL synthetic gear lubes combined with their extended-drain capabilities and superior performance and protection make them the ideal choice. ■

COMPARE THE SAVINGS

USING OEM-RECOMMENDED FLUID AND DRAIN INTERVAL*



\$30 X 3 QUARTS = \$90
15,000 MILES



\$30 X 3 QUARTS = \$90
30,000 MILES



\$30 X 3 QUARTS = \$90
45,000 MILES

VS

USING AMSOIL SEVERE GEAR SYNTHETIC 75W-140 EP GEAR LUBE**



\$16.15 X 3 QUARTS = \$48.45
50,000 MILES

9 QUARTS \$270 VS 3 QUARTS \$48.45

SAVINGS OF
\$221.55

* Mopar® Synthetic Gear Lubricant 75W-140. \$30 per quart dealership pricing.

** \$16.15 per quart retail pricing.

AMSOIL SYNTHETIC GEAR LUBES

Severe Gear® Synthetic EP Gear Lube

Specifically engineered for high-demand applications, including trailer towing, heavy hauling, 4x4 off-road driving, commercial use and racing. Superior film strength combined with extra additives protects gears and bearings from scoring and wear. Resists high heat and possesses excellent cold-flow properties. Outperforms conventional gear oils. Recommended for all types of vehicles such as turbo-diesel pick-ups, SUVs, autos, trucks, heavy equipment and motor homes. Compatible with most limited-slip differentials.



Long Life Synthetic Gear Lube

Specifically engineered for drain intervals up to 500,000 miles as set by equipment manufacturers for over-the-road trucks. Protects against wear and improves equipment life. Excellent all-season summer and winter performance. Outperforms conventional gear oils. Also excellent for passenger cars and trucks. Compatible with most limited-slip differentials.



Synthetic 80W-90 Gear Lube

High-quality replacement for applications specifying SAE 80W-90 conventional gear lube. Synthetic construction provides improved cold-flow properties, high viscosity index, high heat resistance and excellent wear protection.



Severe Gear® Synthetic Racing EP Gear Lube

High-viscosity, extreme-pressure gear lube engineered for the demands of severe racing conditions, including off-road truck racing, rock racing, rock crawling, tractor pulling, funny car racing and dragster racing. Protects gears from shock-loading and tire shake. Resists sling-off from G-forces and high speeds. Effectively clings to gears, promoting cooler operating temperatures and extending gear and bearing life.



TEAM AMSOIL COLLECTS FOUR MEDALS AT WINTER X GAMES

Team AMSOIL was well-represented at the 2011 ESPN Winter X Games, earning some hardware during the high-profile event. The opening night of competition featured Team AMSOIL/Scheuring Speed Sports rider and defending gold medalist Justin Hoyer competing in the freestyle competition. Holding the top score after two rounds of eliminations, Hoyer was the last rider to compete in the final round and needed to top Daniel Bodin's 91.66 score for a shot at the gold medal. Although a small hand check on a no-handed landing may have cost him the gold, Hoyer's 91.00 run was enough for the silver medal.

AMSOIL-sponsored snocross rider Mike Schultz is no stranger to the Winter X Games podium. Despite losing his left leg during a pro snocross race three years ago, Schultz remains dedicated to the sport and earned the gold medal in the adaptive snocross event.

Although Tucker Hibbert won his fifth straight snocross gold medal, Team AMSOIL/Judnick Motorsports racer Ross Martin pushed through the field

to earn his second straight silver medal and Team AMSOIL/Scheuring Speed Sports racer Robbie Malinoski overcame a poor start to earn the bronze medal.

Martin shows off his ESPN Winter X Games silver medal.

Malinoski fought through the pack to earn an X Games bronze medal.



MARTIN TAKES FIRST TWO VICTORIES OF SEASON

Eastern Nationals – Farmington, N.Y.

The fourth round of the AMSOIL Championship Snocross Series took place in Farmington, N.Y., where Martin took advantage of a strong start and a quick charge to the front in the Pro Super Stock final to earn his first victory of the season. Fighting heavy traffic on the first lap, Martin soon began pressuring race leader Dan Ebert and made the pass into the lead about a third of the way through the race. He was not challenged the rest of the way.

"I got off the start, not the best jump, I was sandwiched between everyone and the snow dust just hung in the air," said Martin. "I couldn't really see until we were coming back down the straight toward the finish line. I just kept looking ahead going forward trying to get to the

front as quick as I could."

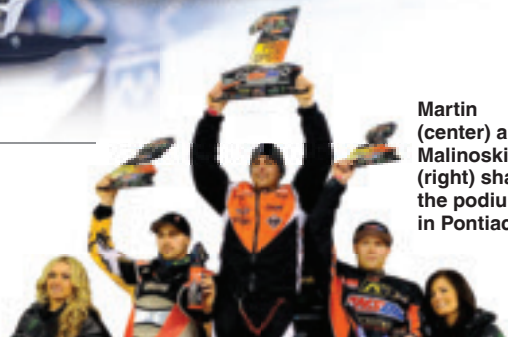
In the AMSOIL Pro Open class, Martin again ran a solid race, finishing second behind Hibbert. Malinoski rounded out the podium in third.

Michigan National – Pontiac, Mich.

Martin continued his strong racing at the Pontiac Silverdome in Pontiac, Mich., jumping to an early lead in the Pro Super Stock final before he was overtaken by Hibbert with five laps remaining. Martin took the second-place podium.

After a first-turn pileup induced a restart, the AMSOIL Pro Open final saw Tim Tremblay jump out to a massive lead with Hibbert and Martin giving chase.

Martin (center) and Malinoski (right) share the podium in Pontiac.



Martin's strong start in Farmington propelled him to his first victory of the season.

Hibbert went down on the back straight, leaving Martin to concentrate on closing the gap on Tremblay. With seven laps remaining, he passed Tremblay and earned the win. Malinoski worked through the pack and held off Hibbert to take third.

TOMAC TURNING HEADS IN ROOKIE MONSTER ENERGY SUPERCROSS SEASON

The third round of the 2011 Monster Energy AMA Supercross season, including the third round of the Lites Western Regional Supercross Championship, was held at Dodger Stadium in Los Angeles, Calif. After achieving two strong top-10 finishes in the first two rounds of Lites class racing, Team AMSOIL rookie rider Eli Tomac got off to a great start in Los Angeles, starting third, quickly moving into second and fighting off the competition for his first pro podium.

Having acquired a taste for the podium in Los Angeles, Tomac continued his success at the fourth round of the season at Oak-Alameda City Stadium in Oakland, Calif., taking advantage of a strong start to finish third.



Tomac took advantage of yet another strong start at the fifth round of the season at Angel Stadium in Anaheim, Calif. Trading the lead back and forth with Josh Hansen, Tomac was in position to earn his first career victory. Although Hansen eventually took the win, Tomac successfully held off charges from Ken Roczen and Brock Tickle to finish second, his third straight podium.



Tomac has been busy collecting podiums in his rookie season. Photo by Hoppenworld.

BARCIA TAKES OPENING ROUND VICTORY

The sixth round of the 2011 Monster Energy AMA Supercross season at Reliant Stadium in Houston, Texas included the kickoff to the Lites Eastern Regional Supercross Championship, where Team AMSOIL racer Justin Barcia had his sights set on a strong finish. Engaging in an intense 15-lap battle with Dean Wilson, Barcia finally pulled away to take the victory and the early lead in the championship chase.

In the supercross class, Team AMSOIL racer Kevin Windham was having a stellar night, putting down a solid start and leading for 11 laps before landing a jump cross-ways in a rut. Windham and his bike cartwheeled from there with the bike eventually landing on top of him. Although the 17-year veteran was roughed up and suffered a slight concussion from the impact, he had no broken bones.



Barcia celebrates his opening round victory in Houston. Photo by Hoppenworld.

ON THE BOX WITH JEREMY MEYER

At a recent Monster Energy Supercross event, I ran into an AMSOIL Preferred Customer who wondered if he could buy some motorcycle oil. Although we had no oil on hand to offer, he was thankful and mentioned how well our product performed in his bike.

During our conversation about bikes and racing, he asked a few questions about ordering product. Being on the road and away from his hometown as much as he is throughout the racing season, he had a hard time always being able to get in touch with his sponsoring Dealer. I asked if he had ever ordered online and had his product shipped to him at his next race. He said he always worked with his Dealer to get his product and didn't know he could order online.

As a Preferred Customer or Preferred Racer you can order AMSOIL products directly and get them shipped immediately by either going through your Dealer's website or directly to www.amsoil.com. You can also find out if you are near one of our 14 distribution centers. We still encourage you to contact your Dealer, as he or she will be able to help you with all your lubrication needs on a one-on-one basis, but also remember that getting product is just a few clicks away.



New Ladies Hoody

Navy full-zip hooded sweatshirt is constructed of 60/40 combed cotton/polyester blend material. Rib knit cuffs and waistband. Embroidered logo. Sizes S-3X.

NEW!

Stock #	Size	U.S.	Can.
G2853	S	38.25	42.75
G2854	M	38.25	42.75
G2855	L	38.25	42.75
G2856	XL	38.25	42.75
G2857	2X	41.25	46.25
G2858	3X	44.25	49.50

Action Jersey

Exciting jersey is constructed of 100% moisture wicking polyester. Sizes S-3X.



Jersey Back

Jersey Front

Stock #	Size	U.S.	Can.
G2700	S	39.25	47.00
G2701	M	39.25	47.00
G2702	L	39.25	47.00
G2703	XL	39.25	47.00
G2704	2X	40.50	48.50
G2705	3X	42.00	50.25

New Speedway Cap

Embroidered logo and design. Velcro closure.

NEW!

Back View



Front View



Stock #	U.S.	Can.
G2832	13.25	15.80

AGGRAND Launches Improved Natural Liquid Lime Formulation

The new AGGRAND Natural Liquid Lime (NLL) formulation is now available. Incorporating pure calcitic limestone, the improved formulation boasts an average particle size 600 percent smaller than the previous formulation and nearly doubles the available calcium. Because calcium plays a critical role in overall plant nutrient uptake, it should be part of any long-term fertilization program. In fact, approximately 90 percent of the soil analyses received by AGGRAND need calcium. In addition, the new formulation's suspension agents reduce product separation for longer shelf-life. AGGRAND Natural Liquid Lime pricing remains unchanged for the new formulation. For more information visit www.aggrand.com/lime.aspx.



FTC Issues Consumer Alert on Magnuson-Moss Warranty Act

The Federal Trade Commission (FTC) recently issued a consumer alert clarifying that the Magnuson-Moss Warranty Act prohibits automobile manufacturers and dealers from denying warranty coverage based on use of an after-market product, unless they can show the product caused the damage or was installed incorrectly.

"The FTC's statement should help those ILMA members, for example, who have decided not to license General Motors' dexos™ engine oil," said ILMA counsel Jeff Leiter. "Some ILMA members have complained to me that the automaker has made confusing statements about its new engine oil and warranty coverage for new vehicles. It makes sense to hand a customer a copy of the FTC consumer alert, showing that the use of equivalent products should not affect warranty coverage."

The FTC consumer alert can be viewed at <http://www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt192.shtm>.

Synthetic 10W-30 Motor Oil 2.5-Gallon Bottles

AMSOIL Synthetic 10W-30 Motor Oil 2.5-gallon bottles (ATMTP) are discontinued and available as supplies last.

YOUR VEHICLE HAS GONE HIGH TECH. HOW ABOUT YOUR DRIVETRAIN FLUIDS?

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Unlike conventional petroleum-based gear lubes, AMSOIL Severe Gear® Synthetic Gear Lube contains no wax. Long after petroleum oils have solidified, AMSOIL continues to flow, moving quickly to lubricate gears, bearings and

limited-slip clutches in the differential. This fluidity during cold temperatures reduces drag on drivetrain components, resulting in improved fuel economy and better wear protection.



The Facts: Modern aerodynamics have decreased airflow over the differential and oil capacities have been lowered. All contribute to increased differential temperatures. Meanwhile, because differential size and design has remained virtually unchanged, today's gear lubes are exposed to considerably more heat and stress.

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