

# GET READY FOR TOWING SEASON

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

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

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

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

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

## The AMSOIL "Tow Package"

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

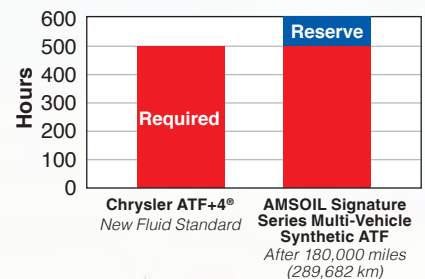
and reduced wear at elevated temperatures. They are formulated for extended drain intervals of up to 50,000 miles in severe service and 100,000 miles in normal service, or longer where specified by the vehicle manufacturer.

## Field Proven

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

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

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



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



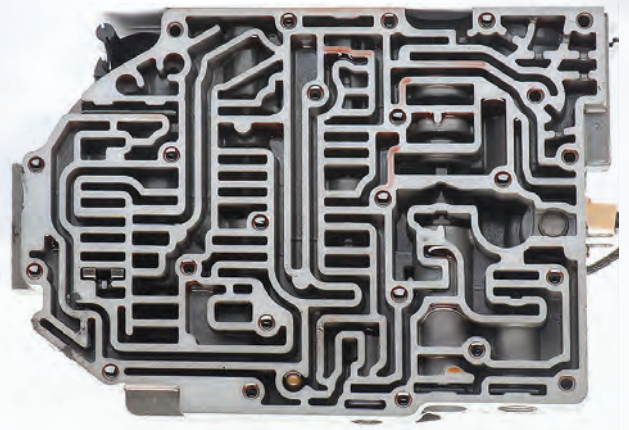


**Signature Series Synthetic Automatic Transmission Fluid (ATF, ATL)**

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

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

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



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





## Signature Series Synthetic Automatic Transmission Fluid

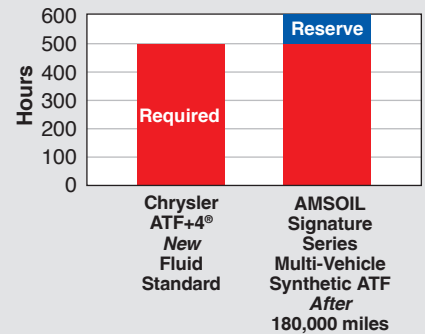
Transmissions in commercial vehicles, SUVs, trucks and vans – particularly those used for hauling or towing – are subjected to severe-service operation and increased heat. Elevated temperatures cause fluids to break down, allowing damaging metal-to-metal contact and the formation of sludge and deposits. The problem is worse in modern transmissions with more gears, clutch packs and narrow oil passages that require clean, high-quality fluid to achieve maximum performance and life.

AMSOIL Signature Series Synthetic Automatic Transmission Fluid is specifically formulated to withstand the rigors of heavy towing, elevated temperatures and challenging terrain. It remains fluid in sub-zero temperatures and provides reserve protection during heavy use and abuse.



### Reserve Protection Against Heat After 180,000 Miles

ABOT Test Performed by Independent Lab  
Based on Total Acid Number (TAN)

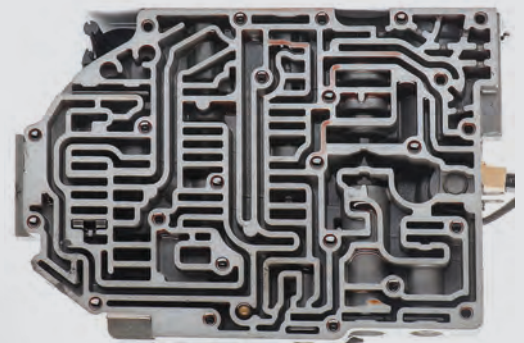


### Proven in 180,000-mile, Severe-Service Taxi Fleet Field Trial

To demonstrate its effectiveness in severe service, Signature Series Multi-Vehicle Synthetic ATF was installed in Las Vegas taxi cabs. The vehicles routinely encountered demanding stop-and-go driving loaded with passengers and cargo, while the desert environment presented extremely hot ambient temperatures, placing enormous strain on the fluid. Following 180,000 miles, a transmission was selected for analysis. The Aluminum Beaker Oxidation Test (ABOT) is an industry standardized test used to determine a transmission fluid’s oxidation resistance, which is a good indicator of its service life. Testing by an independent, third-party lab revealed that after 180,000 miles in severe service, Signature Series Multi-Vehicle Synthetic ATF resisted oxidation longer than required for new fluid to meet the Chrysler ATF+4 specification (see graph). Internal components, including the valve body and clutch plates (pictured), were virtually free of damaging sludge, deposits and wear, confirming the lubricant’s high level of protection for severe-service applications.

### Protects Against Thermal Breakdown

Signature Series Synthetic ATF is formulated with high concentrations of antioxidants, making it naturally heat resistant. It provides outstanding protection against sludge and varnish deposits that clog narrow oil passages and contribute to clutch glazing. After 180,000 miles in severe service, fluid analysis revealed Signature Series Multi-Vehicle Synthetic ATF contained 83 percent of its original oxidation inhibitors, proving its long-lasting resistance to thermal breakdown.



The transmission’s valve body is clean and virtually sludge-free following 180,000 severe-service miles. The clutch plates demonstrated only trace discoloration and earned a rating of “good,” the highest possible, for deterioration/wear.

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## TYPICAL TECHNICAL PROPERTIES

### AMSOIL Signature Series Multi-Vehicle Synthetic Automatic Transmission Fluid (ATF) AMSOIL Signature Series Fuel-Efficient Synthetic Automatic Transmission Fluid (ATL)

	ATF	ATL
Kinematic Viscosity @ 100°C, cSt (ASTM D445)	7.5	6.3
Kinematic Viscosity @ 40°C, cSt (ASTM D445)	38.5	30.8
Viscosity Index (ASTM D2270)	165	159
Pour Point °C (°F) (ASTM D97)	-53 (-63)	-65 (-85)
Flash Point °C (°F) (ASTM D92)	234 (453)	224 (435)
Four-Ball Wear Test (ASTM D4172 @ 40 kg, 75°C, 1200 rpm, 1hr), Scar, mm	0.39	0.41
Brookfield Viscosity @ -40°C, cP (ASTM D2983)	9755	7676

## Outstanding Wear Protection

Varying speeds and loads causes torque multiplication and extreme stress on gears and bearings. AMSOIL formulated Signature Series Synthetic ATF with high film strength and premium anti-wear/extreme-pressure additives to help prevent wear during severe service. In the industry-standard FZG Gear Wear Test, Signature Series Multi-Vehicle Synthetic ATF that had been used for 180,000 severe-service miles achieved a "Pass" at stage 12 – the highest stage. The results exceeded the Ford MERCON V and Chrysler ATF+4 specifications for new fluid, demonstrating the lubricant's long-lasting wear protection.

## Cold-Temperature Fluidity

Cold, thick automatic transmission fluid lengthens shift times and reduces fuel economy. Signature Series Synthetic ATF is wax-free and delivers extraordinary cold-flow properties. It helps improve shift response, energy efficiency and warm-up times.

## Friction Durability

Today's transmissions are smaller and must withstand higher horsepower and torque while delivering smoother shifts, all with longer fluid life recommendations. AMSOIL Signature Series Synthetic ATF is formulated with friction modifier additives that deliver outstanding clutch-holding capacity (static friction), torque-transfer ability (dynamic friction) and anti-shudder properties (slipping torque-converter clutches). Analysis reveals that after 180,000 miles in severe service, Signature Series Multi-Vehicle Synthetic ATF provides nearly identical friction properties as new fluid for smooth, reliable shifts.

## APPLICATIONS

**AMSOIL Signature Series Multi-Vehicle Synthetic ATF** is recommended for transmissions, hydraulics, power steering systems and other applications that require any of the following specifications:

**Allison** C-4, TES-389; **BMW** 7045E, 8072B, LA 2634, LT 71141; **Chrysler** ATF+4\*, MOPAR\* ASRC, 68089195AA, 68049954AA; **Ford** MERCON\*, MERCON\* V, ESP-M2C166-H, FNR5, M2C924-A, XL-12; **GM** DEXRON\* II, DEXRON\* III, AutoTrak II; **Honda/Acura** ATF-Z1; **Hyundai/Kia** SP-II, SP-III, Red-1; **IDEMITSU** K17; **JASO** 1A; **JWS** 3309, 3314, 3317; **MAN** 339 Type V-1, 339 Type V-2, 339 Type Z-1, 339 Type Z-2, 339 Type Z-3, 339F; **Mazda** ATF-M III, ATF-MV, F-1; **Mercedes Benz** 236.1, 236.2, 236.3, 236.5, 236.6, 236.7, 236.9, 236.10, 236.11, 236.81, 236.91; **Mitsubishi** SP-II, SP-III, ATF-J2; **Nissan** Matic-D, Matic-J, Matic-K,

402; **SAAB** 3309; **Shell** 3403, LA 2634; **Subaru** ATF, ATF-HP; **Suzuki** 3314, 3317; **Texaco** ETL-7045E, ETL-8072B, N402; **Toyota** Type T, T-II, T-III, T-IV; **Voith** 55.6335, 55.6336; **Volvo** 97340, 97341; **VW/Audi** G 052 162, G 052 990, G 055 025; **ZF** TE-ML 03D, 04D, 05L, 09, 11A, 11B, 14A, 14B, 14C, 16L, 16M, 17C, 20B, 20C, 21L.

**AMSOIL Signature Series Fuel-Efficient Synthetic ATF** is recommended for transmissions and other applications that require any of the following specifications:

**Aisin-Warner** AW-1; **BMW** 83 22 0 142 516, 83 22 2 152 426; **Chrysler** MOPAR\* 68157995AA, SP-IV, 68218925AB; **DSIH** 6p805; **Ford** MERCON\* LV, SP, ULV; **GM** DEXRON\* HP, DEXRON\* VI, ULV; **Honda/Acura** DW-1\*, Type 3.0; **Hyundai/Kia** SP-IV, SPH-IV, SP-IV-RR, NWS-9638, SP4-M; **JASO** 1A-LV; **JWS** 3324; **Mercedes Benz** 236.12, 236.14, 236.15, 236.41; **Mitsubishi** SP-IV, ATF J3, ATF-PA, ATF-MA1; **Nissan** Matic-S, Matic-W; **Saab** 93 165 147; **Shell** M-1375.4, M-1375.5, M-1375.6, M-L 12108; **Toyota** WS; **Volvo** 31256774; **VW/Audi** G 055 005, G 055 162, G 060 162; **ZF** S671 090 255.

**AMSOIL Signature Series Fuel-Efficient Synthetic ATF** is backward compatible and replaces DEXRON III fluids in older GM automatic transmissions. (DEXRON VI specification supersedes the obsolete DEXRON III in GM vehicles.)

## SERVICE LIFE

**Normal Service:** Follow the vehicle manufacturer's normal-service drain interval.

**Severe Service:** Double the vehicle manufacturer's severe-service drain interval in passenger cars and light trucks.

*Change at the vehicle manufacturer's recommended drain interval outside U.S. and Canada.*

## HEALTH & SAFETY

This product is not expected to cause health concerns when used for the intended application and according to the recommendations in the Safety Data Sheet (SDS). An SDS is available online at [www.AMSOIL.com](http://www.AMSOIL.com) or upon request at (715) 392-7101. **Keep Out of Reach of Children.**

## AMSOIL PRODUCT WARRANTY

AMSOIL products are backed by a Limited Liability Warranty. For complete information visit [www.AMSOIL.com/warranty.aspx](http://www.AMSOIL.com/warranty.aspx).

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The First in Synthetics®

# SEVERE GEAR® 100% Synthetic Extreme-Pressure (EP) Gear Lube

Formulated for the severe operating conditions of today's pick-up trucks, SUVs, heavy equipment and other hard-working vehicles.

AMSOIL SEVERE GEAR® 100% Synthetic Extreme-Pressure (EP) Gear Lube is a premium-grade gear oil specifically engineered for maximum performance in severe-duty applications. It maintains its viscosity for long-lasting protection against metal-to-metal contact. The proprietary AMSOIL additives form an iron-sulfide barrier coating on gear surfaces, providing the ultimate line of defense against wear, pitting and scoring. AMSOIL SEVERE GEAR helps prevent "thermal runaway" – a phenomenon caused by a lubricant's inability to control friction and increased heat under high-stress conditions. By controlling thermal runaway, AMSOIL SEVERE GEAR 100% Synthetic EP Gear Lube inhibits rapid lubricant degradation and component damage – helping equipment run better and last longer.



## Performance

SEVERE GEAR provides performance far beyond what is possible with conventional gear oil. We engineered our gear lubes to provide superior gear and bearing protection, better friction and heat reduction, increased efficiency and extended service life.

## Temperature Extremes

AMSOIL SEVERE GEAR 100% Synthetic EP Gear Lube excels in hot and cold temperature extremes. By design, it resists breakdown from high heat, preventing acids and carbon/varnish formation. Its wax-free construction also improves cold-flow properties, improving fuel economy and cold-weather shifting. As the graph shows, SEVERE GEAR delivers 20 percent more cold-temperature protection than required by the industry standard.

## Applications

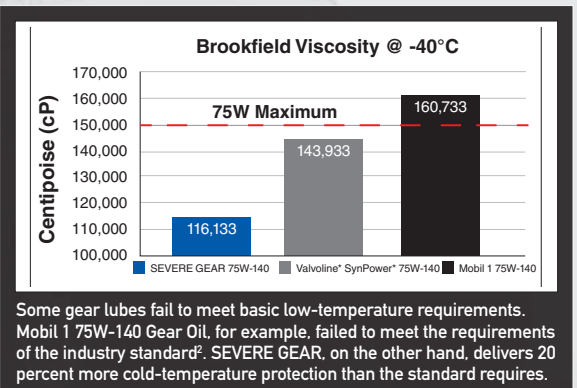
SEVERE GEAR 100% Synthetic EP Gear Lube is excellent for severe applications, such as towing, hauling, steep-hill driving, commercial use, plowing, racing, off-road use, rapid acceleration, frequent stop-and-go operation and high ambient temperatures. Higher horsepower, towing and hauling capabilities of modern vehicles make pick-ups, SUVs, vans and delivery/utility vehicles especially prone to severe service. Other severe-duty vehicles include light-, medium-, and heavy-duty trucks, buses, heavy equipment, 4X4s, tow trucks, race cars, tractors and motor homes.

- **Advanced protection** against wear, even with up to 15 percent water contamination<sup>1</sup>
- **Controls** thermal runaway
- **Protects** against rust and corrosion
- **Helps reduce** operating temperatures
- **Maximum** efficiency
- **Long** oil, seal & equipment life
- **Flexible** easy-pack for clean, fast installation

<sup>1</sup>Based upon AMSOIL testing of AMSOIL Synthetic SEVERE GEAR® 75W-90 and Long-Life 75W-90 Synthetic Gear Lube in ASTM 3233 and ASTM D892.

<sup>2</sup>Based upon results of samples of Mobil 1 75W-140 and Valvoline® SynPower 75W-140 purchased in 2018 and tested in ASTM D2983 by an independent testing facility in May 2018. Samples sent blind to eliminate bias.

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## TYPICAL TECHNICAL PROPERTIES

### AMSOIL SEVERE GEAR® Synthetic Extreme Pressure (EP) Gear Lube

	SAE 75W-90 (SVG)	SAE 75W-110 (SVT)	SAE 75W-140 (SVO)	SAE 80W-90 (AGL)
Kinematic Viscosity @ 100°C, cSt (ASTM D445)	15.9	20.9	26.1	15.5
Kinematic Viscosity @ 40°C, cSt (ASTM D445)	102.4	139.9	177.7	120.2
Viscosity Index (ASTM D2270)	166	174	181	135
Brookfield Viscosity, cP @ (°C) (ASTM D2983)	78,400 (-40)	102,100 (-40)	109,400 (-40)	46,200 (-26)
Flash Point, °C (°F) (ASTM D92)	208 (406)	216 (421)	210 (410)	208 (406)
Pour Point, °C (°F) (ASTM D97)	-43 (-45)	-44 (-47)	-43 (-45)	-42 (-44)
Copper Corrosion (ASTM D130) @ 121 °C (250°F) / 3hr	1b	1b	1b	1b
Foam Stability (ASTM D892)	0/0, 10/0, 0/0	0/0, 20/0, 0/0	0/0, 20/0, 0/0	0/0, 0/0, 0/0

For product service life in differentials, consult your owner's manual or the Original Equipment Manufacturer (OEM) to establish the application, NORMAL or SEVERE.

	Normal Service	Severe Service
<b>Cars, SUVs, Light Trucks</b>	Drain at <b>100,000</b> miles of service or according to the owner's manual, whichever is longer	Drain at <b>50,000</b> miles of service or according to the owner's manual, whichever is longer
<b>Heavy-Duty Class 8 Line Haul</b>	Follow the OEM drain interval (miles or hours) for synthetic oil up to <b>250,000</b> miles or three years, whichever comes first.	
<b>Vocational/Delivery</b>	Follow the OEM drain interval (miles or hours) for synthetic oil up to <b>120,000</b> miles or three years, whichever comes first.	
<b>Heavy-Duty Off-Road</b>	Follow the OEM drain interval (miles or hours) for synthetic oil up to <b>100,000</b> miles or two years, whichever comes first.	

For product service life in non-differential applications, consult owner's manual or the OEM for either normal or severe synthetic oil service intervals. Where service intervals are unavailable, drain at twice the interval for conventional oil.

Gear oils should be changed more frequently when operating vehicles or equipment in dusty or dirty conditions, unless the gear system is properly sealed and equipped with membrane-type breathers.

**Note:** AMSOIL does not support extended drain intervals where water contamination occurs. Check and service the gear oil frequently when water contamination is possible.

Recommended for use in differentials, manual transmissions and other gear applications requiring any of the following specifications: API GL-5, MT-1, MIL-PRF-2105E, Dana SHAES 234 (Formerly Eaton PS-037), Mack GO-J, or other GL-5 based specifications from vehicle manufacturers, including Ford\*, GM\* and Chrysler\*. Can also be used in axles where an API GL-4 lubricant is recommended.

**AMSOIL SEVERE GEAR (75W-90)** provides superior performance and replaces competitors' 75W-90 and 80W-90 gear oils. It delivers the best fuel efficiency and cold-temperature performance of the Severe Gear oils.

**AMSOIL SEVERE GEAR (75W-110)** provides superior performance and replaces competitors' 75W-110, 75W-90 and 80W-90 gear oils. It delivers better viscosity protection than Severe Gear 75W-90.

**AMSOIL SEVERE GEAR (75W-140)** provides superior performance and replaces competitors' 75W-140, 80W-140 and 85W-140 gear oils. Use where these viscosities are required by OEMs and where maximum viscosity protection is needed for extreme severe-duty applications.

**AMSOIL SEVERE GEAR (80W-90)** provides superior performance and replaces competitors' 80W-90 gear oils. It is formulated to exceed the requirements of front and rear differentials, transfer cases, transaxles, manual transmissions, oil-lubricated wheel bearings and steering gear boxes.

**AMSOIL SEVERE GEAR** is compatible with conventional and synthetic gear oils. Mixing AMSOIL gear oil with other oils, however, will shorten the oil life expectancy and reduce the performance benefits. AMSOIL does not support extended drain intervals where oils have been mixed.

Aftermarket oil additives, other than those specified by AMSOIL, are **not recommended** for use with AMSOIL gear oil.

**AMSOIL SEVERE GEAR** is compatible with most limited-slip differentials. For applications that require additional limited-slip friction modifier, add AMSOIL Slip Lock®.

#### AMSOIL PRODUCT WARRANTY

AMSOIL products are backed by a Limited Liability Warranty. For complete information visit [www.AMSOIL.com/warranty.aspx](http://www.AMSOIL.com/warranty.aspx).

#### HEALTH & SAFETY

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