



Driveline Fluids

Formulated to protect and preserve driveline components



Castrol® Heavy Duty driveline fluids

Off-road



Castrol® Trans-C™ HT

Castrol Trans-C HT is a synthetic transmission/hydraulic fluid that balances high-temperature wear protection for gears and bearings with low-temperature flow properties. This results in positive shifting to protect against wear in low-temperature start-ups. It meets the requirements of Caterpillar TO-4 and is recommended for use where TO-4, TO-4M, C-4, and Vickers 35VQ25 is specified.

Extended Service Intervals

Castrol Trans-C HT successfully extends service intervals to more than 2,500 hours in power-shift transmissions and more than 5,000 hours in hydraulic systems. It does so in various types of off-road equipment without excessive wear or fluid degradation when supported by a comprehensive used oil analysis program like Castrol® Labcheck®.

Operational Efficiency

With its multipurpose formulation for both TO-4 10-weight and 30-weight applications, Castrol Trans-C HT simplifies maintenance practices and consolidates inventory SKUs.

Wear Protection

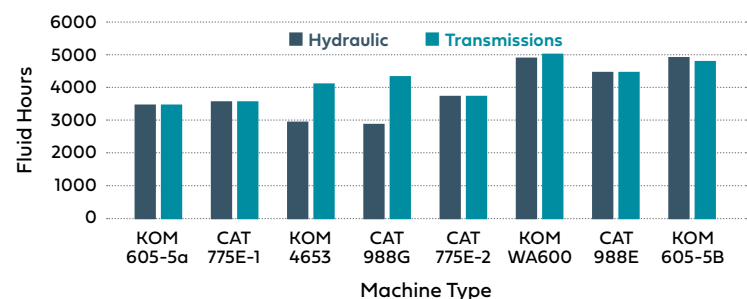
The excellent wear protection offered by Castrol Trans-C HT is further demonstrated during the ASTM D5182 FZG gear wear test. This product achieved a 12-load stage pass delivering excellent wear protection at high loads, which can help increase component life. This can lead to reduced maintenance and repair costs with cleaner parts.

Oxidation Stability

The Castrol Trans-C HT formulation can achieve up to 25% better oxidation stability over typical anti-wear hydraulic oils. This means it can:

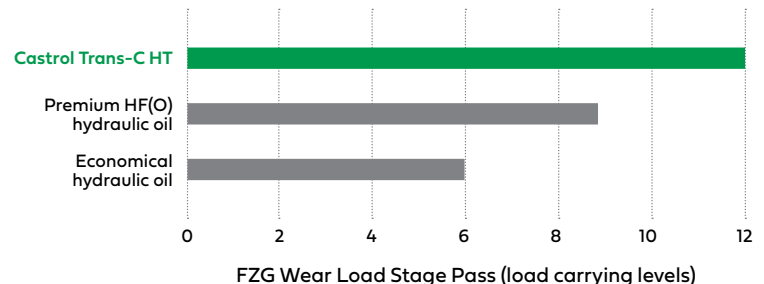
- Withstand higher temperatures
- Neutralize acidic decomposition
- Provide greater assurance during extended service intervals

Trans-C HT Field Test

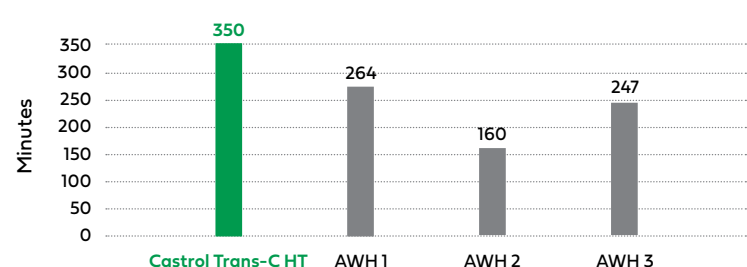


In every machine type tested, Castrol Trans-C HT was able to protect equipment well beyond manufacturers' suggested service interval. This extended service means more uptime and savings in both time and maintenance for your business.

Load Carrying Capability FZG Load Test



TGHT RPVOT Oxidation Performance Versis Typical AWH



Castrol® Trans-C™

Castrol Trans-C combines a high-viscosity-index base oil with select additives to maximize transmission life under severe, high-load conditions.

In a Caterpillar transmission, where paper and elastomer disc materials are used, Castrol Trans-C provides the right balance of frictional performance with its proprietary friction modifiers. It excels in many on- and off-road transmission and hydraulic applications and is approved for use under Caterpillar TO-4, Allison C-4, and Vickers 35VQ25 specifications.

Wear protection is critical in driveline fluids. In the ASTM D4998 FZG test where gear-teeth wear is measured, Castrol Trans-C 50 and Castrol Trans-C 60 improved wear protection versus other competitive mineral grade TO-4 fluids. This helped to deliver enhanced protection to final drives and improved component life.

Castrol Trans-C can help to:

- Prolong equipment life with improved friction and anti-wear performance
- Reduce downtime by eliminating friction degradation and clutch slippage
- Reduce component failure by preventing sludge and deposit formation
- Resist wear on final drives to provide a margin of safety during severe operations
- Extend drains with a comprehensive used oil analysis program like Castrol Labcheck
- Increase worker and equipment productivity with fast start-up during cold temperatures

Castrol® Axle FD-1 80W-140

Castrol Axle FD-1 is semi-synthetic, multi-grade final drive fluid designed to extend drain intervals up to 6,000 hours* in off-road final drives where FD-1 spec fluids are suitable for use. Additionally, Castrol Axle FD-1 provides excellent wear protection and outstanding oxidation resistance, which can extend component life.

Oxidation Resistance

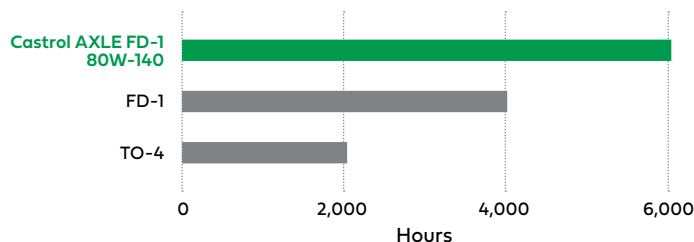
Castrol Axle FD-1's outstanding resistance to oxidation improves fluid life while resisting the formation of sludge and deposits. In the ASTM D2272 oxidation test, Castrol Axle FD-1 demonstrated up to 56% oxidation resistance versus conventional monograde fluids, which can provide extra assurance during extended drain intervals. Additionally, this fluid's synthetic base stock can withstand a wide range of operating temperatures.

Wear Protection

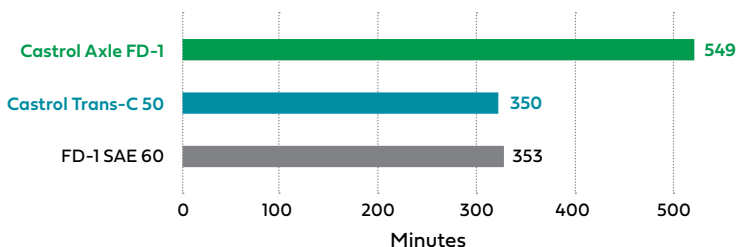
The excellent wear protection that Castrol Axle FD-1 provides is further demonstrated in the ASTM D4998 FZG test which measures gear-teeth wear. This can lead to improved wear protection in final drives when compared to mineral TO-4 50 fluids.

* With a comprehensive used oil analysis program like Castrol Labcheck

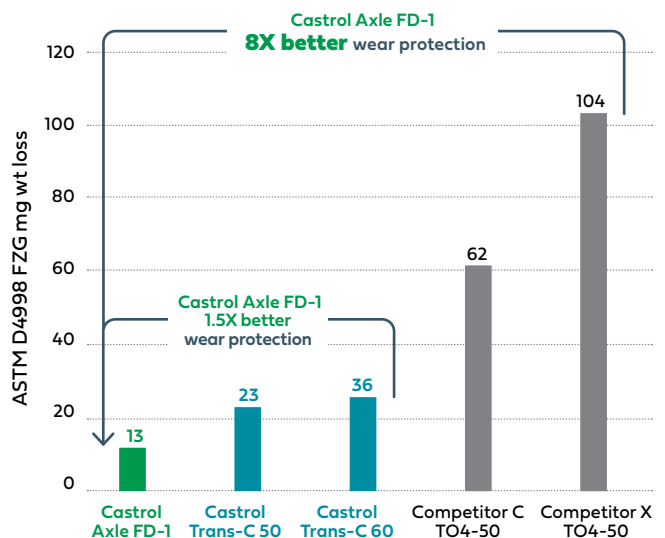
Drain Intervals



Oxidation Resistance



Final Drive Lubricants ASTM D4998 FZG Wear Data



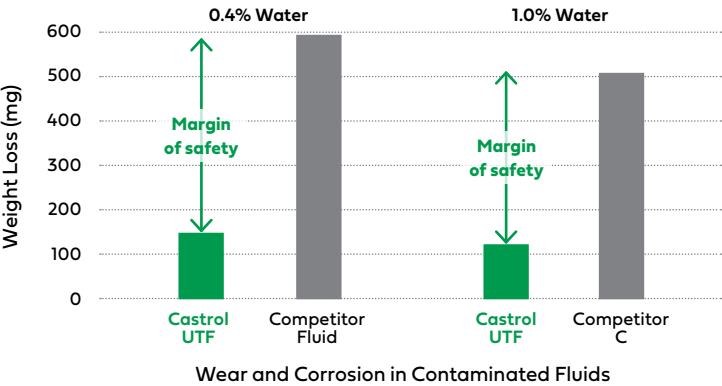
Castrol® Universal Tractor Fluid

Castrol Universal Tractor Fluid (UTF) is a premium transmission/hydraulic fluid that exceeds the demands of industrial tractor transmissions, hydraulic applications, and wet disc brakes. Its shear-stable viscosity-index improver ensures minimal changes in viscosity during high-temperature operation. Castrol UTF holds many OEM and industry approvals including Allis Chalmers, Case/IH, Caterpillar TO-2, John Deere, Deutz-Allis, Ford Tractor, Kubota, Massey Ferguson, Oliver/White, Sperry Vickers, and Volvo.

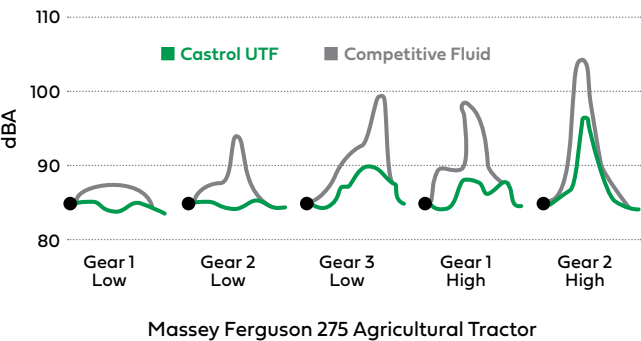
Castrol UTF can help users to:

- Control brake chatter
- Maintain performance and wear protection, even in the presence of up to 1% water contamination
- Maximize system performance with excellent wear protection for seals and gaskets
- Prevent wear during high-load conditions
- Reduce inventory due to compatibility with all seal materials and miscibility with other tractor fluids
- Protect components from rust and corrosion
- Control oxidation and inhibit oil breakdown during high operating temperatures

Water Tolerance Test



Brake Chatter Comparison



Driveline Fluid Application Guide

	Castrol Trans-C HT	Castrol Axle FD-1	Castrol Trans-C	Castrol UTF (hydrostatic)
Extended Drain	●	●	×	×
Severe Service	●	●	①	①
Low-Temp Performance	●	●	○	①
Shear Stability	●	●	×	①
Oxidation Stability	●	●	①	①
Correction Frictional Properties	●	●	●	●
Anti-Wear Protection	●	●	①	①
Condition Seals	●	●	●	●
Multi-Grade	●	●	×	●

● indicates best performance ① indicates better performance ○ indicates good performance × not applicable

Castrol® Heavy Duty driveline fluids

On-road



TranSynd® 668

TranSynd is a full-synthetic, automatic transmission fluid designed specifically for Allison transmissions. Its unique formulation offers numerous benefits over conventional and other non-Allison-approved synthetic ATF's, including extended drain intervals, enhanced transmission performance, lower operating expenses, and optimum transmission protection.

TranSynd 668 delivers:

- **Improved gear protection**, extended anti-shudder durability and extended clutch-friction durability
- **Superior high-low temperature performance** due to full-synthetic base fluids

TranSynd 668 provides excellent:

- **Shear stability that helps maintain a stable viscosity**, which can provide wear protection in gears throughout a drain interval
- **Thermal and oxidation stability** resulting in lower deposit formation
- **Corrosion and foaming resistance**

TranSynd 668 allows for:

- **Extended drain intervals** of up to 300,000 miles/48 months in general-duty transmissions and up to 150,000 miles/48 months in severe-duty transmissions
- **12-times longer drain intervals** than conventional and other non-Allison approved synthetic fluids

* The Allison TES 668™ spec is fully backwards compatible for both TES 295® and TES 468™ applications; TES 668 is not approved for TC10 applications

Heavy Duty Multipurpose ATF

Castrol Heavy Duty Multipurpose ATF is a multipurpose power transmission fluid that is designed for most power transmission and hydraulic systems to include passenger car and truck automatic transmissions, powershift transmissions in off highway construction equipment, hydrostatic drives, and hydraulic fluid in many industrial, agricultural, mining, and marine applications.

Castrol Heavy Duty Multipurpose ATF can deliver:

- Longer transmission, torque converter, and hydraulic system life
- Better productivity through efficient equipment performance
- Longer equipment life under severe service conditions
- Extended uptime with less maintenance



Transmax[®] Manual E Long Life 40

Castrol Transmax Manual E Long Life 40 is a specially formulated synthetic transmission lubricant designed for fuel efficiency, extended drain intervals, and severe service in commercial vehicle transmissions that require a non-EP transmission lubricant.

It is formulated to protect higher torque transmissions coupled with increased horsepower engines. It is approved for use in Eaton transmissions such as Ultrashift Plus, Fuller Advantage, FR, and RT Series transmissions.

This fluid is Eaton PS-386 approved.

Transmax Manual E Long Life 40 can provide:

- Excellent thermal and oxidation stability, which helps to resist deposit and sludge formation
- Excellent protection from corrosion, foaming, rust, and wear
- Superb high- and low-temperature performance
- Friction retention, friction durability, and excellent shear stability to help maintain smooth transmission operations throughout an extended drain interval
- Reduced sump operating temperatures

Transmax[®] Manual AT 75W-90

Castrol Transmax Manual AT 75W-90 is a synthetic fluid approved for use in DT12 automated manual transmissions found in Freightliner and Western Star trucks.

Transmax Manual AT 75W-90 can provide:

- Excellent viscosity temperature characteristics, which provides effective lubrication over a wide temperature range
- Smooth gear shifting at low temperatures, which increases transmission efficiency and aids fuel economy
- Very good wear protection, especially under high loads, which extends component life and reduces downtime and service costs

Transmax[®] Manual HD 75W-90

Castrol Transmax Manual Heavy Duty 75W-90 is a full-synthetic manual transmission lubricant developed for use in synchronized and non-synchronized transmissions in long-haul trucks and other severe-duty applications.

This product is approved for use in Volvo and Mack severe-duty manual and automated manual (Volvo I-Shift and Mack mDrive) transmission applications. This fluid can help enable extended oil drain intervals.

Transmax Manual HD 75W-90 benefits:

- Excellent oxidation stability helps to ensure suitability in high-temperature and extended-drain applications
- Proven synchronizer performance makes for easier gear changes and quieter transmission operation
- Excellent low-temperature fluidity ensures easy gear shifting during cold starts
- Excellent wear protection reduces wear and prolongs gear life
- Long-drain performance offers the potential to lower maintenance costs and increase vehicle availability

Syngear™ 75W-90 & 80W-140

Castrol Syngear is a premium, synthetic, heavy-duty, multi-grade gear lubricant that meets API GL-5 service. It provides excellent cold-weather performance, outstanding stability under higher-than-normal operating temperatures, and substantial load-carrying ability for cooler operation and longer equipment life.

Castrol Syngear is ideal for severe service environments and customers who want to extend service intervals.

Syngear advantages:

- Contains 100% synthetic base stocks for outstanding oxidation control and thermal stability for improved fuel economy and longer equipment life
- Premium additive package can inhibit rust, corrosion, and wear to protect against premature bearing failure and gear-tooth wear
- Excellent shear stability protects against viscosity loss to safely extend service intervals
- Accepted and approved by the Eaton Corporation as alternatives to their Eaton Roadranger gear oils; suitable for use to conform with Eaton Roadranger extended warranties

Your equipment relies on efficient power transfer from the engine to the driveline in order to operate at its best.

Castrol Heavy Duty Driveline Fluids are formulated to preserve and protect drivelines which translates to outstanding efficiency, reduced downtime, and increased savings for your business.

To learn more about how Castrol fluids can protect your fleet, contact your Castrol sales representative.

Toll-free: 888.227.8765

www.castrol.com/hd



 **Castrol**
Heavy Duty
Lubricants



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