



DEXRON®-III K Transmission Fluid

1 Scope

1.1 Material Description. This specification covers DEXRON®-III K Transmission Fluid (TF) primarily for use in General Motors specified manual transmissions and power steering applications only. The fluid specified is intended for use as initial and top off fill.

1.2 Symbols. Not applicable.

1.3 Applicability. This lubricant is intended for use as initial and top off fill for manual transmissions and power steering applications only.

1.3.1 This lubricant may be used as a factory fill in power steering application if validated by product engineering.

1.3.2 This lubricant may be used as a factory fill fluid in manual transmission if validated by product engineering.

1.4 Remarks. This specification may involve hazardous materials, operations, and equipment. This specification does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this specification to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

1.5 This specification uses the International System of Units (SI) as standard per Institute of Electrical and Electronics Engineers (IEEE)/ASTM International (ASTM) SI 10 (IEEE/ASTM SI 10) except for certain components, which are commercially available only in American conventional units.

1.6 This specification uses the Rounding-Off Method per ASTM E29 for significant figures to determine conformance to specification requirements.

1.7 Unless otherwise noted, part numbers of this specification refer to those of General Motors Powertrain (GMPT).

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASTM D92	ASTM D1748	ASTM D4927	CEC L-084-02
ASTM D130	ASTM D2240	ASTM D5185	CEC L-45-99
ASTM D445	ASTM D2270	ASTM D5800	CEC L-48
ASTM D471	ASTM D2983	ASTM D6082	DIN 51819
ASTM D664	ASTM D3182	ASTM D6304	EHDPROC_11
ASTM D665	ASTM D4052	ASTM D6443	FED-STD-791
ASTM D892	ASTM D4289	ASTM D6922	IEEE/ASTM SI 10
ASTM D1193	ASTM D4629	ASTM D7043	
ASTM D1500	ASTM D4683	ASTM E29	

2.2 GM Standards/Specifications.

GMW3059	GMW14270	GMW16444
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2.3 Additional References.

- GM Aeration Test.
- GM Cycling Test.

- Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02 (available at www.gmsupplypower.covisint.com).

2.3.1 Test Method Sources.

- ASTM International, 100 Barr Harbor Drive, Post Office Box C700, West Conshohocken, Pennsylvania, 19428-2959, United States of America (available at: www.enterprise.astm.org).
- EHDPROC_11 is available from Southwest Research Institute, 6220 Culebra Road, San Antonio, Texas U.S.A.
- Test Methods CEC L-45-99 Coordinating European Council, Madou Plaza, 25th Floor, Place Madou 1, B-1030 Brussels, Belgium. (Available at: www.cectests.org).

2.3.2 Forms.

- A spreadsheet is available from the GM TF committee that contains all report formats.
- All GM DEXRON® testing forms, including Form A, are available from the Team Leader for Service Parts Engineering and DEXRON® Licensing or the GM TF and Gear Oil Committee Chairman, via GM Supply Power. Folders/ENGINEERING/Powertrain Product Engineering/Transmission. (gmsupplypower.covisint.com/c/document_library/get_file?p_l_id=4211828&folderId=4501165&name=DLFE-188908.docx).

3 Requirements

3.1 Test Requirements. Form A (see 2.3.2) is required for testing to be started on TF pursuing DEXRON® fluid approval.

3.2 Mechanical Requirements. Test procedures shall be conducted as specified, with no deviation, unless express written authorization is obtained from the General Motors TF and Gear Oil Committee. Test transmissions and parts are to be used as received. Replacement or modification of any part shall be made only if directed in this specification or to replace damaged parts. The laboratory must target to the mean of the specified test conditions.

3.3 Physical Requirements. Fluids qualified under this specification shall conform to the test methods and requirements as listed in Table 1.

3.4 Approved Additive Chemistries.

3.4.1 Fluids meeting this specification shall be manufactured using approved additive chemistries listed in Table 2.

3.5 Requirements for New DEXRON®-III K Additive Chemistry Combinations.

3.5.1 Successful completion of a complete DEXRON®-III K Qualification Program (Table 1).

3.5.2 Successful completion of a complete DEXRON®-III K Qualification Program (Table 1) using the following fluid blends from 3.5.2a thru 3.5.2c.

- Seventy-Five Percent (75%) Candidate, 25% Reference Fluid.
- Fifty Percent (50%) Candidate, 50% Reference Fluid.
- Twenty-Five Percent (25%) Candidate, 75% Reference Fluid.

3.5.3 Successful completion of a 241 400 km (150 000 mi) fleet test using the new candidate chemistry and blends of fluids from 3.5.2. A proposal for the fleet test shall be submitted to and approved by the GM TF and Gear Oil Committee before commencing the fleet test.

3.5.4 Any additional testing as directed by the GM TF and Gear Oil Committee.

3.6 Additional Requirements.

3.6.1 The test requirements given in this specification are minimum or maximum acceptance limits for valid tests. No adjustments for test precision are to be applied as test variability was taken into account in the determination of the requirements.

3.6.2 The General Motors TF and Gear Oil Committee reserves the right to require any additional tests that may be deemed necessary to ensure satisfactory performance of fluids submitted for qualification as DEXRON®-III K.

Table 1: DEXRON®-III K Test Methods and Requirements

Reference Letter	Test	Method	Requirement
A	Color	ASTM D1500	6.0 to 8.0
B	Elemental Analysis	ASTM D5185	Report, Parts per Million (ppm): Al, Ba, B, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Si, Ag, Na, S, Sn, Ti, V, Zn
		ASTM D6443	Report, ppm: Cl
		ASTM D4629	Report, ppm: N
		ASTM D4927	Report, ppm: S
C	Fluid Profile	Proprietary GM Test	Report
D	D1. Miscibility and Homogeneity	ASTM D6922	No separation or color change at end of test using Reference Fluid
	D2. FED-STD-791	Compatibility per 3430	Pass
		Storage Solubility per 3440	Pass
E	Water Content	ASTM D6304	1000 ppm maximum
F	Density	ASTM D4052: 15 °C	Report
G	Kinematic Viscosity	ASTM D445	30 cSt to 34 cSt at 40 °C
			7.0 cSt to 7.5 cSt at 100 °C
H	Base Oil Viscosity	ASTM D445	Report in cSt
I	Viscosity Index	ASTM D2270	Report
J	Brookfield Viscosity	ASTM D2983	20 000 cP Maximum at -40 °C
K	Flash Point	ASTM D92, closed cup	170 °C (minimum)
L	Fire Point	ASTM D92	195 °C minimum
M	NOACK Evaporation, 3 h/ 150 °C	ASTM D5800	Report
N	Total Acid Number (TAN)	ASTM D664	Report in milligrams (mg) KOH/g
O	Copper Strip Corrosion Test	ASTM D130 Modified: 3 h at 150 °C	1B
P	Corrosion Test	ASTM D665: Procedure A	Pass
Q	Humidity Rust Protection Test	ASTM D1748 Sandblasted Surface 40 °C 50 h New coupon for each test	No rust or corrosion on any test surface
R	Wear Test	ASTM D7043 Modified: 80 °C ± 3 °C 6.9 MPa 11.356 L (3 gal) Conestoga pump parts	10 mg weight loss (maximum)
S	Bearing Test New Chemistry Only	DIN 51819 T3 Bearing: Aßmann TBA/TBB Wear: 100 kN/7.5 RPM/80 °C/80 h Pitting: 60 kN/500 RPM/100 °C/200 h	Report in milligrams (mg) wear Report in hours (h)
T	Scuffing - Forschungstelle Fur Zahnrad und Getriebebau (FZG)	CEC L-084-02 A10/16.6R/90 °C	Load Stage four (4) minimum
U	High Temperature, High Shear	ASTM D4683: 100 °C	2.0 cP (minimum)
V	Film Thickness	EHDPROC_11 at Imperial College 60 °C, 80 °C, 100 °C, 120 °C	Report
W	Tapered Roller Bearing Shear	CEC L-45-99 Modified: For a Reblend and approved chemistry: 20 h at 100 °C	Report
		For Original and New Chemistry: 40 h at 100 °C	< 10%

Reference Letter	Test	Method	Requirement
X	Foam Test	Appendix A ASTM D892 Modified	New Fluid: Sequence I, ASTM D892; 50/0 (maximum) Sequence II, ASTM D892; 50/0 (maximum) Sequence III, ASTM D892; 50/0 (maximum) Sequence IV, ASTM D6082; 50/0 (maximum) After Thermal Aging at 130 °C for 100 h for New Chemistry Sequence I, ASTM D892; 50/0 maximum Sequence II, ASTM D892; 50/0 maximum Sequence III, ASTM D892; 50/0 maximum Sequence IV, ASTM D6082; 100/0 maximum
Y	Aeration Test Reference Fluid Shall Be Run Before Every Candidate Fluid	Per Appendix K of GMW16444	Better or Equal to Reference
Z	Seal Test	Appendix B	Pass
AA	Low-Speed Carbon Fiber Friction Test	Per Appendix J of GMW16444	New and used fluid from Cycling Test (Report)
AB	Plate Friction Test For Factory Fill, Original and New Chemistry Only	Appendix C	1) Satisfactory operation for 150 h with 3T40 clutch plates 2) No unusual wear or flaking on test parts 3) Between 10 h and 150 h of operation: a) Midpoint dynamic torque between 150 Nm and 180 Nm b) Maximum Torque > 150 Nm c) Delta Torque < 30 Nm d) Stop Time between 0.5 s and 0.6 s Report End Torque, Nm
AC	Cycling Test For Factory Fill, Original and New Chemistry	Per Appendix F of GMW16444 Four (4) speed cycling transmission	1) Satisfactory operation for 32 000 cycles 2) Condition of transmission parts must be equal to or better than that obtained with the Reference Fluid 3) TAN Increase < 2.0 4) Carbonyl Absorbance increase < 0.30 5) Used fluid viscosity at 100 °C > 5.0 cSt 6) Used fluid viscosity at -20 °C < 2 000 cP 7) 1-2 shift time between 0.30 s and 0.75 s 8) 2-3 shift time between 0.30 s and 0.75 s 9) 3-4 shift time, seconds (Report) 10) No expulsion of TF from vent. Used fluid viscosity at -40 °C (Report, cP)
AD	Deutscher Koordinierungsausschuss (DKA) Oxidation Stability Test	CEC L-48 modified 155 °C for 192 h	Delta Kinetic Viscosity (KV) at 40 °C, 15% Maximum Delta KV at 100 °C, 13% Maximum Peak Arrival Interval (PAI) (unit) Report Delta Total Acid Number (TAN) (mg KOH/g fluid), report (Typical one (1) to three (3)) Sludge rating of flask, maximum 1.0 Blotter, report with photo

Table 2: DEXRON®-III K, G and H, TF Approved Chemistry Combinations

Company	Base Oils	Chemistry/Additive	Treat Rate Weight Percent (wt%)
Afton	Petro Canada HCl 65/Petro Canada HT 80/HT-60	HiTEC 411 ^{Note 1}	14.5%
	Petro-Canada VHVI 2/Petro-Canada VHVI 4	HiTEC 480, HiTEC 5769, HiTEC 008	14.5%
	S-Oil S-8/S-Oil -20	HiTEC 2436	14.5%
	Exxon Mobil EHC-35	HiTEC 472	14.5%
	Citgo 85 N/Pure Performance 110 N	HiTEC 3474	14.5%
	Motiva Star 3/Pure Performance 110 N	HiTEC 492	14.5%
	Chevron Texaco RLOP 100 R	HiTEC 3472	14.5%
	KPE 70 N/KPE UBO	HiTEC 429	14.5%
	Petro-Canada HCL 65/Petro-Canada HT 100	HiTEC 470	14.5%
	Petro-Canada RDS-3412	HiTEC 491	14.5%
	Petro-Canada RDA-3413	HiTEC 491	14.5%
Infineum	Motiva Star 4	T4570	10.5%
	Chevron RLOP 100	T4571	14.0%
	Phillips 66 Excel 110	T4572	16.0%
	Calpar 80	T4575	16.0%
	S-Oil P 20/S8	T4585	10.0%
	Japan Energy	T4282	9.0%
	Yubase 3/Yubase 6	T4587	10.5%
Lubrizol	75/100 - HC	G-34034	10.3%
	Yubase 3/4	H-36002	8.5% + 9.4%
	Yubase 4	H-36023	14.9%

Note 1: Validated for Factory Fill.

3.7 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to submit a full material composition disclosure to GM via the International Material Data System (IMDS) or via a completed GMW3059 report form.

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. All shipments of material or parts under contract or purchase order manufactured to this specification shall be equivalent in every respect to the initial samples approved by Engineering. There shall be no changes in either formulation or manufacturing processes permitted without prior notification and approval by Engineering. Lack of notification by the supplier constitutes grounds for rejection of any shipment. While samples may be taken from incoming shipments and checked for conformance to this specification, the supplier shall accept the responsibility for incoming shipments meeting this specification without dependence upon purchaser's inspection.

The series of tests used to approve each batch of product along with acceptance limits will be agreed upon by the purchaser and seller. The laboratory providing the certificate of analysis must also participate in a proficiency testing program (round robin) that is approved by the Fuels, Fluids, and Lubricants Global Subsystem Leadership Team (GSSLT) or designate. The Fuels, Fluids, and Lubricants GSSLT or designate must receive copies of the proficiency testing reports directly from the test program administrator.

5.4 Initial Source Approval. No shipment shall be made by any supplier until representative initial production samples have been approved by the Fuels, Fluids, and Lubricants Global Subsystem Leadership Team or designees meeting the requirements of this specification.

5.5 Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS). For new product submissions, or when a change in chemical composition of an existing product has occurred, a complete copy of the Material Safety Data Sheet/Safety Data Sheet must be submitted in compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) requirements or other country-specific MSDS/SDS requirements. In addition, product MSDS/SDS submissions must be in compliance with specific country General Motors S&IH TS 3.4-160-02 where available.

5.6 Trademark Licensing.

5.6.1 Licenses to use the trademark DEXRON®-III K and related "H" identification numbers are issued for fluids which have been tested by an independent laboratory and/or by General Motors and subsequently approved by the General Motors Transmission Fluid and Gear Oil Committee.

Note: For information on qualification of service replacement fluids for use in General Motors axles, contact the Team Leader for Service Parts Engineering and DEXRON® Licensing or the GM TF and Gear Oil Committee Chairman, via GM Supply Power. Folders/ENGINEERING/Powertrain Product Engineering/Transmission. (gmsupplypower.covisint.com/c/document_library/get_file?p_l_id=4211828&folderId=4501165&name=DLFE-188908.docx).

6 Approved Sources

Materials supplied to this specification must be approved by General Motors.

The appropriate GM Materials Engineering department(s) must confirm material as meeting the requirements of this specification. Any test data sheets of material submitted to General Motors for such confirmation (e.g., during Production Part Approval Process (PPAP)) under this material specification must list all properties and must apply corresponding test methods of this material specification.

Engineering qualifications of an approved source are required for this standard. Only sources listed in the GM Materials File (i.e., GM SupplyPower) under this standard number have been qualified by engineering as meeting the requirements of this standard. To access this list, reference GMW14270 for latest location.

For other GM locations, the responsible engineering group should be contacted to obtain the approved source in that individual country.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

Ag	Silver
Al	Aluminum
ASTM	ASTM International