



GEAR LUBE APPLICATION GUIDE

**A HANDY GUIDE TO THE CORRECT RECOMMENDATION
FOR HEAVY MOBILE EQUIPMENT TRANSMISSION AND
DIFFERENTIALS BOTH ON-ROAD AND OFF-ROAD**



TRANSMISSIONS

Allison

Allison
 1000/2000/2400 AF3, SLF
 20000MH SLF
 3000MH/4000MH AF3, SLF
 AT545 AF3, HF, SLF
 B300/B400/B500 AF3, SLF
 DP8000 15W/40 HF
 EVS AF3, SLF
 HD4060, HD4560 (P) (R) AF3, SLF
 M5610, M6610, M9600 15W/40 HF
 MD3060/MD3066/MD3560 AF3, HF, SLF
 MT643/MT647/MT648 AF3, HF, SLF
 MTB643/MT647 AF3, HF, SLF

(D), (I), (L), (R)

(P), (Q) & (V) may be used in Allison Transmissions not under warranty

Caterpillar T0-2

Caterpillar T0-4

**Power Shift, Manual Transmissions
and Winches**

Hydrostatic Transmissions

LUBRICANT VISCOSITIES FOR AMBIENT TEMPERATURES

	°C		°F	
	Min.	Max.	Min.	Max.
SAE 10W ¹	-20	+10	-4	+50
SAE 30 ¹	0	+35	+32	+95
SAE 40	+5	+45	+41	+113
SAE 50	+10	+50	+50	+122
SAE 10W	-20	+40	-4	+104
SAE 30	+10	+50	+50	+122
SAE 10W30	-20	+40	-4	+104
SAE 15W40	-15	+50	+5	+122
	-25	+40	-13	+104

(D), (I), (L), (M), (P), (Q), (R), (S), (V), [All T0-2]

(I) [T0-4]

¹ Special Recommendations Power Shift Transmissions for 768C, 769C & 771C SAE 10W has an upper limit of +22°C (+72°F) and SAE 30 has a minimum limit of +10°C (+50°F).

(P), (Q), (V) Multi-Purpose Tractor Oils

Clark - Manual Trans

Above -15°F (-26°C), 80W-90 GL-5
 -40° to 0°F (-40° to -18°C), 75W GL-5

(A), (B), (F), (G), (W), (X)

Clark - Power Shift & Torque Converters

Above 32°F (0°C), 30 SF, CD, HF
 Above -10°F (-23°C), 10W SF, CD, HF
 Above -30°F (-34°C) AF3

(D), (I), (L)

TRANSMISSIONS (Continued)

FABCO - On-Highway	 GL-1, GL-5 Above 10°F (-12°C), 90 Below 10°F (-12°C), 80	(A), (B), (C), (F), (G), (W), (X)
FABCO - Off-Highway	CC Above 10°F (-12°C), 50 Below 10°F (-12°C), 30 Consistently below 0°F (-18°C), 20W	(C), (I), (L), (N), (O)
Fuller, Clark/Fuller, Eaton/Fuller	All transmissions Cat TO-4, (1, 2), MT-1, (3) Eaton Roadranger CD-50(4) Above 10°F, 40, 50, 80W-90 Below 10°F (-12°C), 30, 75W CEEMAT® HF, AF3 Above 0°F (0-18°C), 10W, HF, AF3 Below 0°C, 0W/20 Arctic Oil Note: Never mix engine oil with gear oil. 1. General Service. 2. Or heavy duty engine oil meeting MIL-L-2104d. 3. MT-1 meeting MIL-PRF-2105E. 4. Eaton-approved lubricant.	(A), (C), (F), (I), (J), (L), (M), (N), (O), (W)
New Process #440 & #833	All temperatures AF3	(D)
New Process Others	Above 10°F (-12°C), 90 GL-4, GL-5 Below 10°F (-12°C), 80W GL-4, GL-5	(A), (B), (E) ISO 220, ISO 150 (F), (G), (K), (W), (X)
ZF Meritor/Rockwell -Transmissions	Transmissions SJ, CF, CF-4, GL-1 Above 10°F (-12°C), 40, 50, 90 Above -15°F (-25°C), 30, 80 All temperatures, 50 synthetic Note: Do not use multi-grade or EP oils. Do not mix different types of oils	(C), (I), (J), (L), (M), (N), (O)
ZF Meritor/Rockwell - Transfer Cases	Transfer Cases SJ, SL, CF, CF-4, GL-1 Above 10°F (-12°C), 40, 50, 90 Above -15°F (-25°C), 30, 80 All temperatures, 50 synthetic Note: Do not use multi-grade or EP oils. Do not mix different types of oils	(C), (I), (J), (L), (M), (N), (O)

TRANSMISSIONS (Continued)

Spicer/Dana	Transmissions 2009-00 Non-synchronized CF, CF-4, SJ, SL, TO-4, GL-1 All temperatures Synthetic transmission oil 50 Above 0°F (-18°C) HD engine oil 50 Gear oil 80W-90 Below 0°F (-18°C) HD engine oil 30 Gear oil 75W Synchronized..... CF, CF-4, SJ, SL, TO-4, GL-1, GL-2 All temperature Synthetic transmission oil 30, 50 Gear oil 80W Above 0°F (-18°C), 30, 50 Below 0°F (-18°C), 30 1999 and older Non-Synchronized CD, CE, SF, TO-4, MT-1 Synchronized..... CF, CF-4, SJ, SL, SG, TO-4, GL-1 EP not recommended for operating temperature above 230°F (110°C), All temperature, Synchronized HD engine oil 30, 40 Gear oil 80W Non-synchronized HD engine oil 50 Synthetic gear oil, 75W-90 Above 0°F (-18°C) Synchronized 30, 40 Non-synchronized HD engine oil 50 Gear oil, 80W-90 Below 0°F (-18°C) Synchronized 30 Non-synchronized HD engine oil 30 Gear oil, 75W	(C), (I), (J), (L), (M), (N), (O)
Warner - Cast Iron Case	With cast iron case GL-1, SE/CC Above 32°F (0°C), 140, 50 0° to 32°F (-18°C to 0°C), 90, 30 Below 0°F (-18°C), 80W	(C), (I), (L), (M), (N), (O)
Warner - Aluminum	With aluminum case AF3 Note: Some manufacturers specify special lubricants for Borg-Warner aluminum case transmissions. Check before filling.	(D)

DIFFERENTIAL GEARS

Clark	All axles GL-5 Above 100°F (38°C), 85W-140 Above -10°F (-23°C), 80W-140 0° to 100°F (-18° to 38°C), 90 -10° TO 100°F (-23° to 38°C), 80W-90 -10° to 0°F (-23° to 0°C), 80W Below -10°F (-23°C), 75W -40° to 100°F (-40° to 38°C) 75W90 Synthetic	(A), (B), (F), (G), (K), (W), (X)
Eaton/Fuller	All differentials GL-5# Above 10°F (12°C), 85W-140 Above -15°F (-26°C), 80W-140 -15° to 100°F (-26° to 38°C), 80W-90 -40° to -15°F (-40° to -26°C), 75W Normal Ambient temperatures, 75W-90 synthetic High Ambient temperatures, 80W-140 synthetic For severe service, use 85W-140 or 80W-140 Do not mix types. # Must meet spec MIL-PRF-2105E	(A), (F), (K), (W), (X) For older equipment also: (B), (G) Equipment that existed prior to MIL-PRF-2105E specs. and allows MIL-L-2105D gear lubes
Meritor/Rockwell	All differentials GL-5# Above 10°F (-12°C), 85W-140 Above -15°F (-26°C), 80W-90 Above -40°F (-40°C), 75W-90, synthetic -40° to 35°F (-40° to 2°C), 75W Axle sump temperature must never exceed 250°F (121°C) With Traction Equalizer, install friction-modifier additive, 3 pints to 40 pints (1.4 liters to 19 liters) gear oil #Must meet MIL-L-2105D or MIL-PRF-2105E	(A), (B), (F), (G), (K), (W), (X)
Spicer/Dana	Standard Differentials GL-5 Limited-Slip Differentials GL-5★ Above 40°F (4°C), 140 Above 10°F (-12°C), 85W-140 Above -15°F (-26°C), 80W-140 10° to 100°F (-12° to 38°C), 90 -15° to 100°F (-26° to 38°C), 80W-90 -15° to 70°F (-26° to 21°C), 80W -40° to 32°F (-40° to 0°C), 75W All temperatures for GM medium duty-synthetic 75W-90	(B), (G), (X) - - GL-5 (A), (F), (K), (W) - - GL-5★

ADDITIONAL CATERPILLAR RECOMMENDATIONS

COMPARTMENT/ SYSTEM	SAE OIL VISCOSITY	°C		°F		OIL TYPE
		MIN.	MAX.	MIN.	MAX.	
Final Drive Differential Gear Boxes (excludes Off-Highway trucks, 988, 992, 994, 834, 836)	10W	-30	0	-22	+32	*TO-2 (I), (L), (N), (O) TO-4 (I)
	30	-25	+25	-13	+77	
	50	-15	+50	+5	+122	
Final Drive Differential Gear Boxes (for Off-Highway trucks, 988, 992, 994, 834, 836)	10W	-30	-10	-22	+14	*TO-2 (I), (L), (N), (O) TO-4 (I)
	30	-25	+15	-13	+59	
	50	-15	+50	+5	+122	
Final Drive Differential Gear Boxes and Manual Transmissions	80W90	-20	+40	-4	+104	GL-5 (A), (B), (F), (G), (W), (X)
	85W140	-10	+50	+14	+122	

* TRC Products (N), (O) not for TO-2 transmissions because of Moly Additives but ok for differentials.

(A) 790 SURE® UNIVERSAL MT-1, GL-5★
 (B) 890 VARI-PURPOSE® GL-5
 (C) 999 S & F CC or CD
 (D) TEXTRANS MULTI-VEHICLE SYNTHETIC ATF AF2, AF3, AF4, AF6, MA5, MLV
 (E) INDUSTRIAL GEAR LUBE GL-4
 (F) L.S. ENERGY SAVER MT-1, GL-5★
 (G) MOLY UNIVERSAL GEAR GL-5
 (I) PRO-TAC IV EXCEL TO-4, CC or CD, HF

(J) SYNTEX 2000 SYNTHETIC CD 50
 (K) SYNTEX 2700 MT-1, GL-5★ SYNTHETIC 75W90 & 80W140
 (L) PRO-SPEC® SINGLE-VIS SE, SF, SG, SH, SJ, CD, CE, HF
 (M) PRO-SPEC® D.D. SE, SF
 (N) MOLY PRO-SPEC® SINGLE-VIS SG, SH, SJ, CO, CE or CF
 (O) MOLY XL PRO-SPEC® SINGLE-VIS SG, SH, SJ, CO, CE or CF
 (P) UNIVERSAL TORQUE FLUID HTF
 (Q) SPECIAL 303 HTF

(R) PRO-SPEC® MULTI-VIS SJ, SL, SM, SN, HF
 (S) PRO-SPEC® III SE, SF, SG, SH, CC, CD, or CE, HTF
 (T) MOLY PRO-SPEC® MULTI-VIS III SH, SJ, SL, CH-4, CI-4, CI-4 PLUS
 (U) MOLY XL PRO-SPEC® IV SH, SJ, SL, CH-4, CI-4, CI-4 PLUS, CJ-4
 (V) UTF-RED HTF
 (W) ULTRA-TEC MT-1, GL-5★
 (X) MOLY ULTRA-TEC MT-1, GL-5

MILITARY AND INDUSTRIAL SPECS

MIL-L-2105D MIL-PRF-2105E		(A), (B), (F), (G), (K), (W), (X) (A) Except SAE 80 & SAE 250, (F), (K), (W), (X)
API GL-1 API GL-4 API GL-5 API MT-1		(C) (A), (B), (E), (F), (G), (K), (W), (X) (A), (B), (F), (G), (K), (W), (X) (A) Except SAE 80 & SAE 250, (F), (K), (W), (X)
MACK GO-G MACK GO-H MACK GO-H/S MACK GO-J MACK GO-J PLUS	Mack GL-5 Mineral: 90, 140, 80W-90, 80W-140, 85W-140 Synthetic: 75W-90, 75W-140, 80W-140 GO-H/S Synthetic Only GO-J Plus All temperatures, 75W-90 GL-5 synthetic	(A), (B), (F), (G), (K), (W), (X) (A), (F), (K), (W), (X) (K) (A) Except SAE 80 & SAE 250, (W), (X), (F), (K) (K) SAE 75W90

(A) 790 SURE® UNIVERSAL..... MT-1, GL-5★
 (B) 890 VARI-PURPOSE®..... GL-5
 (C) 999 S & F..... Suitable for GL-1, CC or CD
 (D) TEXTRANS MULTI-VEHICLE SYNTHETIC ATF..... AF2, AF3, AF4, AF6, MA5, MLV
 (E) INDUSTRIAL GEAR LUBE GL-4
 (F) L.S. ENERGY SAVER..... MT-1, GL-5★
 (G) MOLY UNIVERSAL GEAR..... GL-5
 (H) SYNTHETIC SPEC TES 295 (Not Available from TRC)..... SLF
 (I) PRO-TAC IV EXCEL TO-4, CC or CD, HF
 (J) SYNTEX 2000..... SYNTHETIC CD 50
 (K) SYNTEX 2700..... MT-1, GL-5★ SYNTHETIC 75W90 & 80W140
 (L) PRO-SPEC® SINGLE-VIS..... SG, SH, SJ, CD, CE, CF, HT

(M) PRO-SPEC® D.D..... SE, SF
 (N) MOLY PRO-SPEC® SINGLE-VIS SG, SH, SJ, CD, CE or CF
 (O) MOLY XL PRO-SPEC® SINGLE-VIS..... SG, SH, SJ, CD, CE or CF
 (P) UNIVERSAL TORQUE FLUIDHTF
 (Q) SPECIAL 303.....HTF
 (R) PRO-SPEC® MULTI-VIS.....SJ, SL, SM, SN, HF
 (S) PRO-SPEC® IIISG, SH, SJ, SL, CH-4, CI-4 or CI-4 PLUS, HF
 (T) PRO-SPEC IVSJ,SL, SM, CH-4, CI-4, CJ-4
 (U) MOLY XL PRO-SPEC® IIISG, SH, SJ, SL,CH-4, CI-4 or CI-4 PLUS
 (V) UTF-RED.....HTF
 (W) ULTRA-TEC..... MT-1, GL-5★
 (X) MOLY ULTRA-TECMT-1, GL-5

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**PRINTED 2019
CL125E**