

Approved List of Lubricants

For Cone Drive Double Enveloping Worm Speed Reducers & Gearsets

MANUFACTURER	AGMA #7S SYNTHETIC (ISO Viscosity Grade 460) ⁵		
	BRAND NAME	POUR POINT °F (°C)	VISCOSITY SUS@210°F
Chevron/Texaco	Chevron Clarity Synthetic PMO 460	-33 (-36)	222 SUS
Chevron/Texaco	Texaco Pinnacle 460	-20 (-29)	218 SUS
Cognis Corporation	Emgard 2843 Synthetic WGL	-30 (-34)	273 SUS
Exxon Mobil Oil Corp.	Mobil SHC634 Synthetic Lubricant	-44 (-42)	218 SUS
Exxon Mobil Oil Corp.	Mobil Glygoyle 460 (Note 6)	-27 (-33)	77.2 cSt
Keystone/Total Fina Elf	KSL-460 Synthetic Lubricant	-40 (-40)	227 SUS
Royal Purple, Ltd.	Thermyl-Glyde Worm Gear 680 (Note 4)	-20 (-29)	45.3 cSt

MANUFACTURER	AGMA #8 COMPOUND (NON-E.P.) (ISO Viscosity Grade 680)			AGMA #8A COMPOUND (NON-E.P.) (ISO Viscosity Grade 1000)		
	BRAND NAME	POUR POINT °F (°C)	VISCOSITY SUS@210°F	BRAND NAME	POUR POINT °F (°C)	VISCOSITY SUS@210°F
BP Oil NOT AVAILABLE IN THE U.S.				Energol DC-C 1000	6	1000 CST
Behnke Lubricants	Jax Super Cylinder	30	190	Jax Super Cylinder	15	243
Bel-Ray Company	Steam Cylinder Oil 150	5	167	Steam Cylinder Oil 250	10	205
Bel-Ray Company	No-Tox Worm Gear Lube (FOOD GRADE H1) Oil ISO 680	5	216	No-Tox Worm Gear Lube (FOOD GRADE H1) Oil ISO 1000	5	292
Cato Oil & Grease	Mystik Power Lube #680	5	212	Mystik Power Lube #1000	5	315
Chevron	Cylinder Oil W-ISO #680	10	191	Cylinder Oil W-ISO #1000	10	252
Citgo	Cylinder Oil #680-7	15	193			
Conoco	Inca Oil #680	30	165	Inca Oil #1000	35	211
Dryden Oil Co.	Worm Gear Oil #680	20	180	Worm Gear Oil #1000	20	222
Engineered Lubricants	Enlubol SCO-3400	15	685 CST	Enlubol SCO-193 Comp.	15	916 CST
Exxon	Cylesstic TK 680	20	184	Cylesstic TK 1000	30	227
Fina Oil	Cylan Steam Cyl. Oil 680	20	175			
Fiske Brothers Refining	Lubriplate CP-8	22	160	Lubriplate CP-8A	35	230
Fiske Brothers Refining	Lubriplate SPO-288	20	173			
Imperial/Esso Oil	Cylesso TK 680	37	680 CST	Cylesso TK 1000	37	925 CST
Kendall Motor Oil Co.	Kendco 155 Comp.	25	177	Kendco 206 Comp.	35	229
Lubrication Engineers	680 Almasol	15	191			
Lyondell Lubricants	Modoc #175	30	190			
Mobil Oil	Extra Hecla Super Cylinder Oil	0°C	155	Extra Hecla Super Cylinder Oil Mineral	3°C	200
Pennzoil Products	Cylinder Oil #680	30	680 CST	Cylinder Oil #1000	30	1000 CST
Pennzoil Products	Cylinder Oil #6-NR	36	680 CST			
Phillips 66 Company	Hector 630-S	10	172			
Schaeffer Manufacturing	#147 Steam Cylinder Oil	10	190			
Shell Oil	Valvata J-680	20	650 CST			
Sunoco	Sun Gear Oil 8C	10	677			
Texaco Lubricants	Vanguard 680	20	190	Vanguard 1000	25	220

NOTES:

- 1... The listed synthetic lubricants are acceptable for use as an AGMA #7, #8 or #8A. AGMA #7 lubricants are primarily used in force feed lubrication systems or other special applications.
- 2... Manufacturers listed in bold print have product available worldwide. Contact a listed manufacturer for availability in your area.
- 3... Centistoke (cSt) viscosity values in the AGMA #8 and #8A tables are at 40° centigrade.
- 4... Thermyl-Glyde Worm Gear 680 is an ISO grade 680 and AGMA 8S lubricant
- 5... Synthetic lubricants with viscosity grades other than those shown may be recommended by Cone Drive Engineering in some cases.
- 6... Glygoyle Series lubricants are polyalkylene glycol (PAG) based food grade products. See www.mobilindustrial.com for compatibility guidelines and other specifications unique to this PAG lubricant.

Cone Drive reserves the right to improve or change product design and specifications without notice.

Lubrication Information

For Cone Drive Double Enveloping Worm Speed Reducers & Gearsets

AGMA Lubricant Number Guidelines

CENTER DISTANCE	WORM SPEED (RPM)	AMBIENT TEMPERATURE		WORM SPEED ABOVE (RPM)	AMBIENT TEMPERATURE
		-10°C to +10°C (14°F to 50°F)	+10°C to +50°C (50°F to 125°F)		
Up to 6" inclusive	0-700	AGMA 7S or AGMA 8 comp	AGMA 7S or AGMA 8A comp	700-up	AGMA 7S or AGMA 8 comp
Over 6" to 12"	0-450			450-up	
Over 12" to 18"	0-300			300-up	
Over 18" & above	0-200			200-up	

Viscosity Ranges

AGMA NO.	ASTM SYSTEM		
	SUS @210°F	SUS @100°F	ISO VISC. CST @40°C
7S Synthetic		1919-2346	414-506
7 Compound	125-150	1919-2346	414-506
8 Compound	150-190	2837-3467	612-748
8A Comp.	190-250	4171-5098	900-1100

IMPORTANT: In any applications of Cone Drive Products where breakage, damage, disconnection, any other malfunction of any drive train component, or excessive wear could result in personal injury or property damage, a fail safe device capable of stopping and holding the load in the event of such an occurrence must be incorporated after the drive train.

Lubrication and Maintenance Notes:

- 1 Type of Oil.** For Cone Drive double enveloping worm gear speed reducers use the lubricant information on the nameplate and this *Approved List of Lubricants* to select the proper lubricant. For Cone Drive gear sets used in other assemblies, use this document to select a lubricant. Contact Cone Drive if in doubt.
- 2 Ambient Temperature.** The lubricants in this list are for use in an ambient temperature range of approximately 15°F to 125°F with the low end of the range depending on the pour point of the specific oil used. The lubricant Pour Point must be at least 5°C (9°F) less than the minimum startup temperature expected. If the ambient temperature will be below or above this range please contact Cone Drive for specific recommendations on proper lubricant as well as proper oil seal and shim materials.
- 3 Sludge.** It is necessary that the oil be clean and free from sludge at all times to obtain long life from the gear unit. Sludge in gear units may be caused by excessive heat, from dust and dirt and other contaminants and by the presence of moisture or chemical fumes. Therefore, every precaution should be taken to prevent water and foreign particles from entering the gear case.
- 4 Oil Change.** If an approved synthetic lubricant is used, it should be changed after 5000 hours of operation or once per year, whichever occurs first. If a recommended steam cylinder oil is used, the change interval should be after 2500 hours of operation or every six months, whichever occurs first. These change intervals are recommended for units operating under

favorable conditions. Where operating conditions are severe, such as a rapid rise and fall in temperature of the gear case with accompanied sweating of the inside wall and resulting formation of sludge, or where operation is in moist or dusty atmospheres, or in the presence of chemical fumes or extended running at sump temperatures in excess of 180°F, it may be necessary to change the oil at intervals of one to three months. It is recommended a sampling program be established with your lubricant manufacturer where reducers are exposed to the severe operating conditions, mentioned above.

- 5 Oil Level.** Oil level should always be checked with the unit stopped.
- 6 Extreme Pressure (EP) Lubricants.** Extreme Pressure (EP) lubricants or cylinder oils with sulfur-phosphorus additives are not acceptable and should not be used with worm gearing.
- 7 High Speed Applications.** Double enveloping worm gears operating at a sliding velocity in excess of 10 m/s (2,000 ft/min) may require force-feed lubrication. For force feed lubrication recommendations, contact Cone Drive Engineering.
- 8 Greased Bearings.** High quality lithium base NLGI #2 or NLGI #3 grease should be applied to fittings at normal maintenance intervals depending on duty cycle. Only bearings requiring added grease will have fittings.