

Technical Bulletin

TB97-101

Lubrication of Cotta Gearboxes

Rev.: 8

Rev. Date: Apr '15

Note: Products listed in this bulletin are typical lubricants. Cotta does not recommend any specific manufacturer's product for use in our gearboxes.

CAUTION: USE OF LUBRICANT ADDITIVES IN A COTTA GEARBOX IS STRICTLY PROHIBITED EXCEPT BY PRIOR WRITTEN AUTHORIZATION BY COTTA TRANSMISSION COMPANY.

CAUTION: SOME ANTI-SCUFF (EP) ADDITIVES ARE CORROSIVE TO COPPER, BRASS, BRONZE, AND/OR ALUMINUM. IF THE LUBRICANT WILL COME INTO CONTACT WITH THESE METALS (e.g. heat exchangers), CONSULT YOUR LUBRICANT MANUFACTURER TO VERIFY THAT THE EP ADDITIVES WILL NOT DAMAGE THE SYSTEM COMPONENTS.

Standard Product Line Lubrication Guidelines:

NOTE: This bulletin is an update to the green Speed Reducer nameplate and the lubricant viscosities listed on this bulletin should be used instead of the printed lubricants on the nameplate. The lubricant requirements stamped on the blue Speed Increaser or yellow nameplate supersedes this table.

The following lubricant viscosities listed are guidelines for Cotta standard gearboxes. All values listed are ISO viscosity grades. Values in parenthesis are former AGMA lubricant numbers. An "S" after the viscosity grade indicates a synthetic requirement.

	Ambient Temperature			
	-40°F to +14°F -40°C to -10°C	14°F to 50°F -10°C to +10°C	50°F to 95°F 10°C to 35°C	95°F and above 35°C and above
Speed Reducers AR2053, SR2, SR3, SR972, GR15, GR16, GR1600, GR3200, GR975 & others	100S (3S)	100S (3S)	220 (5)	320 (6)
Speed Increasers AO2053, SI2, SI3, GO1500, GO1700, GO1900 & others	46S (1S)	68S (2S)	68 (2)	68 (2)
Transfer Cases and Pump Drives TR2059, TR2205, TR2237, PD100's, PD200's, PD300's & others	Input <2300 68S (2S) Input >2300 46S (1S)	Input <2300 100S (3S) Input >2300 68S (2S)	Input <2300 220 (5) Input >2300 100 (3)	Input <2300 320 (6) Input >2300 150 (4)

NOTES:

- 1) The pour point of the lubricant must be at least 9°F (5°C) below the minimum ambient temperature. If the ambient temperature approaches the pour point, sump heaters or synthetic lubricant may be required to facilitate starting and ensure proper lubrication.

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Petroleum R&O lubricants:

The Cotta standard lubricant recommendation is a petroleum based rust and oxidation inhibited gear lubricant. These are lubricants that have been formulated to include chemical additives which provide system rust protection and oxidation resistance. Acceptable R&O lubricants are listed in Table 1. Maximum sump temperature for these lubricants is 203°F (95°C). If a unit's sump temperature exceeds this value, or if the unit is exposed to cold starting conditions, a cooler and/or synthetic lubricant will need to be used.

Former AGMA Viscosity Grade	0	1	2	3	4
ISO Viscosity Grade	32	46	68	100	150
Viscosity @ 104°F (40°C) (cSt)	28.8-35.2	41.4-50.6	61.2-74.8	90-110	135-165
Manufacturer	Lubricant	Lubricant	Lubricant	Lubricant	Lubricant
Chevron	Machine Oil R&O 32	Machine Oil R&O 46	Machine Oil R&O 68	Machine Oil R&O 100	Machine Oil R&O 150
Citgo	Pacemaker 32	Pacemaker 46	Pacemaker 68	Pacemaker 100	Pacemaker 150
Phillips 66	Multipurpose R&O 32	Multipurpose R&O 46	Multipurpose R&O 68	Multipurpose R&O 100	Multipurpose R&O 150
Mobil	DTE Light	DTE Medium	DTE Heavy Medium	DTE Heavy	DTE Extra Heavy
Shell	Morlina S2 B - 32	Morlina S2 B - 46	Morlina S2 B - 68	Morlina S2 B - 100	Morlina S2 B - 150
Texaco	Regal R&O 32	Regal R&O 46	Regal R&O 68	Regal R&O 100	Regal R&O 150
AGMA Viscosity Grade	5	6			
ISO Viscosity Grade	220	320			
Viscosity @ 104°F (40°C) (cSt)	198-242	288-352			
Manufacturer	Lubricant	Lubricant			
Chevron	Machine Oil AW 220	Machine Oil AW 320			
Citgo	Pacemaker 220	Pacemaker 320			
Phillips 66	Multipurpose R&O 220	Multipurpose R&O 320			
Mobil	DTE BB	DTE AA			
Shell	Morlina S2 B - 220	Morlina S2 B - 320			
Texaco	Regal R&O 220	Regal R&O 320			

Table 1 - Petroleum R&O Lubricants

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Synthetic gear lubricants:

Synthetic lubricants differ from petroleum based liquids in that they are not found in nature, but are manufactured chemically with special properties to enhance performance or accommodate severe operating conditions. In general, synthetic lubricants have the advantage of being stable over a wider range of operating temperatures, have a higher viscosity index, and in some cases have greater load carrying capacity and better lubricity. Acceptable synthetic lubricants are listed in Table 2. Maximum sump temperature for synthetic lubricants is 225°F (107°C). If the unit's sump exceeds this temperature, a cooler will need to be added to the system.

Former AGMA Viscosity Grade	0S	1S	2S	3S	4S
ISO Viscosity Grade	32	46	68	100	150
Viscosity @ 104°F (40°C) (cSt)	28.8-35.2	41.4-50.6	61.2-74.8	90-110	135-165
Manufacturer	Lubricant	Lubricant	Lubricant	Lubricant	Lubricant
Chevron	Tegra Compressor 32	-----	Tegra Compressor 68	Tegra Compressor 100	Tegra Compressor 150
Phillips 66	Syncon R&O 32	Syncon R&O 46	Syncon R&O 68	Syncon R&O 100	Syncon R&O 150
Mobil	SHC 624	SHC 625	SHC 626	SHC 627	SHC 629
Shell	Tellus S4 ME 32	Tellus S4 ME 46	Morlina S4 B 68	Morlina S4 B 100	Morlina S4 B 150
Texaco	Pinnacle 32	Pinnacle 46	Pinnacle 68	Pinnacle 100	Pinnacle 150

Table 2 - Synthetic Gear Lubricants

Anti-scuff Lubricants (formerly Extreme Pressure):

These lubricants are petroleum or synthetic based liquids with chemical additives such as sulfur-phosphorus which produce a protective film to provide anti-scuff properties. Anti-scuff lubricants may be used instead of the R&O lubricants **providing there is no copper, brass, or bronze components that will be damaged by the additives in the lubricant.** Items such as spray nozzles, heat exchangers, labyrinth seals, or some bearings may be significantly damaged by some anti-scuff lubricants. Items such as bronze shift forks, however, will not be significantly damaged by the additives. Consult your lubricant manufacturer and Cotta Transmission before using anti-scuff lubricants.