

Cotta Transmission Company

Technical Bulletin

TB97-101

Lubrication of Cotta Gearboxes

Approved:

Manager of Engineering

Rev.: 7

Rev. Date: Nov '12

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

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

CAUTION: SOME EXTREME PRESSURE (EP) ADDITIVES ARE CORROSIVE TO COPPER, BRASS, BRONZE, AND/OR ALUMINUM. IF THE OIL WILL COME INTO CONTACT WITH THESE METALS (e.g. heat exchangers), CONSULT YOUR OIL 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 oil viscosities listed on this bulletin should be used instead of the printed oils on the nameplate. The oil requirements stamped on the blue Speed Increaser or yellow nameplate supersedes this table.

The following lubrication 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 oil 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, oil sump heaters or synthetic oil may be required to facilitate starting and ensure proper lubrication.

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Petroleum R&O oils:

The Cotta standard oil recommendation is a petroleum based rust and oxidation inhibited gear oil. These are oils that have been formulated to include chemical additives which provide system rust protection and oil oxidation resistance. Acceptable R&O oils are listed in Table 1. Maximum sump temperature for these oils is 203°F (95°C). If a unit's sump temperature exceeds this value, or if the unit is exposed to cold starting conditions, an oil 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	Mach. Oil R&O 100	Mach. Oil R&O 150
Citgo	Pacemaker 32	Pacemaker 46	Pacemaker 68	Pacemaker 100	Pacemaker 150
Conoco	Hydroclear 32	Hydroclear 46	Hydroclear 68	Hydroclear 100	Hydroclear 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			
Conoco	Hydroclear 220	Hydroclear 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 Oils

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Synthetic gear lubricants:

Synthetic oils 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 oils have the advantage of being stable over a wider range of operating temperatures, having a higher viscosity index, and in some cases having greater load carrying capacity and better lubricity. Acceptable synthetic oils are listed in Table 2. Maximum sump temperature for synthetic oils is 225°F (107°C). If the unit's sump exceeds this temperature, an oil 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
Conoco	Syncon 32	Syncon 46	Syncon 68	Syncon 100	-----
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 Oils

Extreme Pressure Lubricants:

These lubricants are petroleum or synthetic based liquids with chemical additives such as sulfur-phosphorus which produce a protective film to provide anti-scuffing properties. EP 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 oil.** Items such as spray nozzles, heat exchangers, labyrinth seals, or some bearings may be significantly damaged by some EP oils. Items such as bronze shift forks, however, will not be significantly damaged by the EP additives. Consult your oil manufacturer and Cotta Transmission before using EP oil.