

Supplier Approval

47 049 13 05
63107848.13



SEW drives of the series

X.F.. / X.K.. / X.e.. / P.. / XP.. / P-X..

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Change information:

Chap. /page	Description (changes to the previous edition)	Modification no.
1.1 /3	Explanation of the structure of the tables and abbreviations: excerpt lubricant table replaced	211148
1.2 /4	Information on permitted oil sump temperature added.	
1.3 /4	Lubricant change intervals: (5) SEW GearOil Base on GearOil Base / (6) SEW GearOil Synth/Synth H1 on GearOil Synth/Synth H1	
1.5 /6	Compatibility of lubricants with oil seals: new elastomer SKF FKM 00934 added in table.	
2 /7-9	Name "SEW GearOil" changed to "GearOil" in the Base and Synth series	
2 /7-9	Lubricant manufacturer SINOPEC added	
2 /8	The production of Shell Omala S4 GX 68 has been stopped. It is no longer available.	
2 /8	Fuchs Renolin HighGear Synth series deleted.	
2 /9	Easily biodegradable oil: new viscosity class E320 added	
2 /9	Easily biodegradable oil E420: Lower oil bath temperature changed from -20°C to -15°C / upper oil bath temperature changed from 80°C to 95°C. Ambient temperature changed from -20°C to 40°C to -15°C to 50°.	
2 /9	Food grade oil VG 680 : new viscosity class CLP HC 680 H1 added.	
2 /9	Information on inadmissible extended storage for NSF-H1 registered oils.	

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1. Introduction/area of application

The present document describes the approved lubricants for SEW-EURODRIVE industrial gear units (helical gear units, bevel-helical gear units and planetary gear units). The approvals are valid worldwide.

SEW accepts no liability if different lubricants are used in the gear units and/or they are used outside of the recommended temperature ranges.

Lubricants for industrial gear units are subject to approval. The approval will be made according to the document "Supplier approval for qualification and approval of lubricants – gear unit oils" 07004__13 in its current version.

NOTE: Printed documents may not include the latest changes. For the latest version of this document, refer to <https://www.sew-eurodrive.de/lubricants>.

1.1 Explanations of the structure of the tables and abbreviations

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	
		VG 150	-20 -5 +5	+65
			GearOil Base 150 E1 / US1 / CN1 / BR1 SEW070040313	
	X...	VG 220	-15 0 +10	+75
			GearOil Base 220 E1 / US1 / CN1 / BR1 SEW070040313	
		VG 320	-10 +5 +15	+85
			GearOil Base 320 E1 / US1 / CN1 / BR1 SEW070040313	

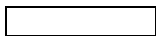
CLP

Viscosity class

Note on special approvals

Gear unit type

Abbreviations:



Mineral lubricant



Synthetic lubricant

CLP

Mineral oil

CLP HC

Synthetic hydrocarbons (PAO)

E

Oil based on esters



Lubricant for the food processing industry and feed industry. Oils are NSF-H1 registered and compliant according to FDA 21 CFR § 178.3570.



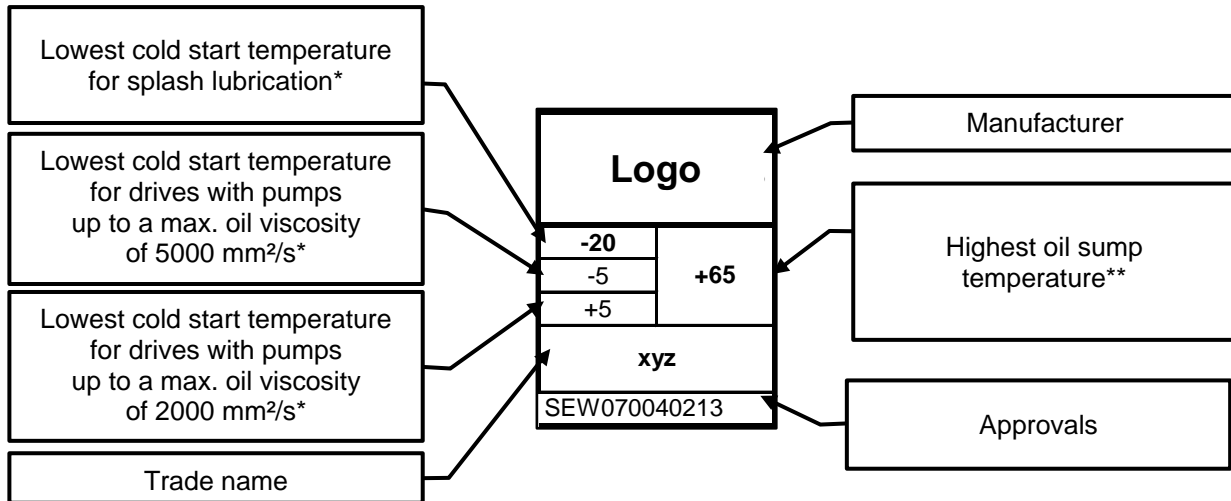
Biodegradable oil (lubricant for agriculture, forestry, and water management)

RWDR

Radial oil seal

1.2 Explanations on the individual lubricants

The minimum and maximum permitted oil sump temperature depends on the lubricant used and serves as a coarse preselection. If the actually measured or configured oil temperature in your drive is outside the specified limit, contact SEW-EURODRIVE.



* In case of low temperatures, the oil must be heated to the specified minimum temperature, for example by using an oil heater. The maximum permitted oil viscosity per pump type can be found in chapter 1.4.

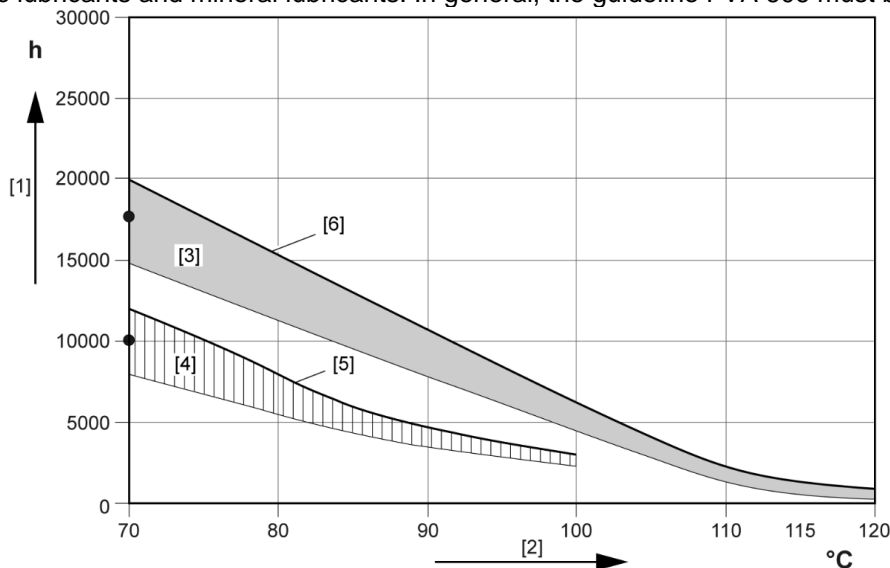
** The service life will be considerably reduced when exceeded. Observe the lubricant change intervals according to chapter 1.3.

1.3 Lubricant change intervals

The following image depicts the change intervals for industrial gear units under normal ambient conditions. In case of special designs under severe/aggressive ambient conditions, change the lubricant more frequently.

Notice: Filling of wrong lubricant may lead to a loss of the lubricant properties and thus damage the gear unit.

Do not mix synthetic lubricants and mineral lubricants. In general, the guideline FVA 606 must be adhered to.



- | | |
|--|----------------------------|
| [1] Operating hours | [4] CLP (CC)/E |
| [2] Sustained oil bath temperature
Average value per oil type at 70°C | [5] GearOil Base |
| [3] CLP HC/ CLP HC NSF H1 | [6] GearOil Synth/Synth H1 |

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1.4 Explanations on oil supply systems and their viscosity

Type	Name	Supplier	Maximum oil viscosity [mm ² /s]	Picture	Comment
Shaft end pump for pressure lubrication	SEP		5000		Flanged on the gearbox housing
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator gearbox housing
Motor pump for pressure lubrication (light)	ONP1L		5000		
Motor pump for pressure lubrication	ONP1		5000		
Device for oil cooling by air	OAC		2000		
Device for oil cooling by water	OWC		2000		
Motor pump an heat exchanger for pressure lubrication and cooling by water	OWP		2000		
Device for oil cooling by air	OAC1		5000		
Motor pump an heat exchanger for pressure lubrication and cooling by air	OAP1		5000		
Device for oil cooling by water	OWC1		5000		
Motor pump an heat exchanger for pressure lubrication and cooling by water	OWP1		5000		

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1.5 Compatibility of lubricants with the radial oil seals

SEW07004__13: A lubricant especially recommended by SEW-EURODRIVE, also in regard of compatibility with the approved oil seals. The lubricant exceeds the state-of-the-art requirements.

Limitations of use of radial oil seals with the specific lubricant are indicated in the following table:

Material class	Manufacturer	Material	Permitted oil sump temperature		
S	1 NBR	1 Freudenberg	72 NBR 902	-40° C to +80 °C	
		2 Trelleborg	4NV11	-40° C to +80 °C	
	2 FKM	1 Freudenberg	1	75 FKM 585	-25° C to +115 °C
			2	75 FKM 170055	-25° C to +115 °C
		2 Trelleborg	1	VCBVR	-25° C to +115 °C
			3 SKF	1	FKM 00934

In the low temperature range, oil seals can withstand shaft deflections (e. g. through overhung load) only to a limited extent. Especially avoid or limit pulsating or changing radial displacements of the shaft. Please contact SEW-EURODRIVE if required.

Example 1:

S11 - Only the elastomer Freudenberg 72 NBR 902 meets the requirements of the SEW-EURODRIVE approval in regard of the specific lubricant.

Example 2:

S2 - Only the elastomer FKM meets the requirements of the SEW-EURODRIVE approval in regard of the specific lubricant.

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2. Industrial gear units (X.F., X.K., X.e., P., XP., P-X.)

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE				Mobil			SINOPEC				
X... 	CLP	VG 150	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65		
			-5		-5		-5		-5		-5		-5	
			+5		+5		+5		+5		+5		+5	
			GearOil Base 150 E1 / US1 / CN1 / BR1			Optigear BM 150	Alpha SP 150	Renolin CLP 150 Plus	Renolin HighGear 150	Mobilgear 600 XP 150	Klüberoil GEM 1-150 N	AP-SGO 150		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
P... 	CLP	VG 220	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75		
			0		0		0		0		0		0	
			+10		+10		+10		+10		+10		+10	
			GearOil Base 220 E1 / US1 / CN1 / BR1			Optigear BM 220	Alpha SP 220	Renolin CLP 220 Plus	Renolin HighGear 220	Mobilgear 600 XP 220	Klüberoil GEM 1-220 N	AP-SGO 220	Carter EP 220	
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
P... 	CLP	VG 320	-10	+85	-10	+80	-10	+80	-10	+80	-10	+80		
			+5		+5		+5		+5		+5		+5	
			+15		+15		+15		+15		+15		+15	
			GearOil Base 320 E1 / US1 / CN1 / BR1			Optigear BM 320	Alpha SP 320	Renolin CLP 320 Plus	Renolin HighGear 320	Mobilgear 600 XP 320	Klüberoil GEM 1-320 N	AP-SGO 320	Carter EP 320	
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
P... 	CLP	VG 460	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90		
			+10		+10		+10		+10		+10		+10	
			+20		+20		+20		+20		+20		+20	
			GearOil Base 460 E1 / US1 / CN1 / BR1			Optigear BM 460	Alpha SP 460	Renolin CLP 460 Plus	Renolin HighGear 460	Mobilgear 600 XP 460	Klüberoil GEM 1-460 N	AP-SGO 460	Carter EP 460	
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
P... 	CLP	VG 680	0	+90	0	+90	0	+90	0	+90	0	+90		
			+15		+15		+15		+15		+15		+15	
			+25		+25		+25		+25		+25		+25	
			GearOil Base 680 E1 / US1 / CN1 / BR1			Optigear BM 680	Alpha SP 680	Renolin CLP 680 Plus	Renolin HighGear 680	Mobilgear 600 XP 680	Klüberoil GEM 1-680 N	AP-SGO 680	Carter EP 680	
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
P... 	CLP	VG 1000	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90		
			+20		+20		+20		+20		+20		+20	
			+30		+30		+30		+30		+30		+30	
			Optigear BM 1000											
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		
			SEW070040313			SEW070040313			SEW070040013			SEW070040313		

NOTICE: The thermal application limits of radial oil seal materials (chapter 1.5) have to be considered as well!

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Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	bremer & leguil	Castrol	FUCHS	Mobil	KLÜBER LUBRICATION	Shell	SINOPEC	TOTAL
X... 	CLP HC	VG 32					-40 -30 -25 +30 SHC 624				
		VG 68				-35 -20 -10 +50 Renolin Unisyn CLP 68	-40 -25 -15 +50 SHC 626	-35 -20 -10 +50 Kübersynth GEM 4-68 N			
		VG 150	-35 -15 -5 +75 GearOil Synth 150 E1 SEW 070040313	-25 -10 0 +70 Alphasyn EP 150	-30 -10 0 +70 Optigear Synthetic X 150	-30 -10 0 +70 Renolin Unisyn CLP 150	-30 -10 0 +75 SHC 629	-35 -15 -5 +75 SHC Gear 150	-25 -10 0 +70 Kübersynth GEM 4-150 N	-30 -10 0 +75 Omala S4 GX 150	-35 -15 -5 +75 Carter SH 150
		VG 220	-30 -10 0 +85 GearOil Synth 220 E1 SEW 070040313	-25 -5 +5 +80 Alphasyn EP 220	-25 -5 +5 +80 Optigear Synthetic X 220	-25 -5 +5 +80 Renolin Unisyn CLP 220	-25 -5 0 +85 SHC 630	-30 -10 +5 +85 SHC Gear 220	-25 -5 +5 +80 Kübersynth GEM 4-220 N	-25 -5 +5 +85 Omala S4 GX 220	-25 -5 +5 +80 Carter SH 220
		VG 320	-25 -5 +5 +100 GearOil Synth 320 E1 SEW 070040313	-20 0 +10 +90 Alphasyn EP 320	-20 0 +10 +90 Optigear Synthetic X 320	-20 0 +10 +90 Renolin Unisyn CLP 320	-20 0 +10 +95 SHC 632	-25 -5 +10 +100 SHC Gear 320	-20 0 +10 +95 Kübersynth GEM 4-320 N	-20 0 +10 +95 Omala S4 GX 320	-20 0 +10 +90 Carter SH 320
		VG 460	-20 0 +15 +110 GearOil Synth 460 E1 SEW 070040313	-15 +5 +15 +100 Alphasyn EP 460	-15 +5 +15 +100 Optigear Synthetic X 460	-15 +5 +15 +100 Renolin Unisyn CLP 460	-15 +5 +15 +105 SHC 634	-20 0 +15 +110 SHC Gear 460	-15 +5 +20 +105 Kübersynth GEM 4-460 N	-15 +5 +15 +105 Omala S4 GX 460	-15 +5 +15 +100 Carter SH 460
		VG 680	-15 +5 +20 +110 GearOil Synth 680 E1 SEW 070040313		-10 +10 +25 +110 Optigear Synthetic X 680	-10 +10 +25 +110 Renolin Unisyn CLP 680	-10 +10 +25 +110 SHC 636	-15 +10 +25 +110 SHC Gear 680	-10 +10 +25 +110 Kübersynth GEM 4-680 N	-10 +10 +25 +110 Omala S4 GX 680	-10 +10 +25 +110 Carter SH 680
		VG 1000					-10 +15 +30 +110 SHC 639	-10 +15 +30 +110 SHC Gear 1000	0 +20 +30 +110 Kübersynth EG 4-1000		

NOTICE: The thermal application limits of radial oil seal materials (chapter 1.5) have to be considered as well.

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Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	bremer & leguil	Castrol	FUCHS	Mobil	KLÜBER LUBRICATION	Shell	SINOPEC	TOTAL																													
X... 	CLP HC NSF H1 ²⁾	VG 68 ¹⁾		-35 -20 -10	+45	-40 -25 -15	+45	-35 -20 -10	+45	Cassida Fluid HF 68	Optileb HY 68	-35 -20 -10	+45	Klüberoil 4UH1-68 N																										
															-30 -5 0	+80	-20 -5 +5	+75	-25 -5 +5	+75	-20 -5 +5	+75	Cassida Fluid GL 220	Optileb GT 220	-25 -5 +5	+75	Klüberoil 4UH1-220 N													
																												-20 0 +15	+100	-15 +5 +20	+90	-15 +5 +20	+95	-15 +5 +20	+90	Cassida Fluid GL 460	Optileb GT 460	-15 +5 +15	+95	Klüberoil 4UH1-460 N
-20 0 +10	+85	-20 0 +10	+85	-20 0 +10	+85	-20 0 +10	+85	Plantogear 320 S	Klüber Bio EG 2-320																															
										-15 +5 +15	+95	-15 +5 +15	+95	-15 +5 +15	+95	-15 +5 +15	+95	Plantogear 460 S																						

1) Lubricants must only be used if the service factor F_s and peak load factor $F_F \geq 1.6$.
The peak output torque M_{K2per} is limited as follows: $F_F \geq 1.6 \rightarrow M_{K2per} \leq 1.25 \times M_{N2}$ (nominal torque) $\rightarrow M_{K2per} \leq 2 \times M_{N2} / F_F = 2/1.6 \times M_{N2}$. In case of deviations, contact SEW-EURODRIVE.

2) NSF-H1 registered oils for the food processing industry can not be combined with the gear unit option "Extended storage" (a VCI anti-corrosion agent is added).

NOTICE: The thermal application limits of radial oil seal materials (chapter 1.5) have to be considered as well!