

Supplier Approval

SEW drives of the series

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

Lubricant approvals – latest version: www.sew-eurodrive.de/lubricants

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Change information:

Chap. /page	Description (changes to the previous edition)	Modification no.
1.1 / 3	Footnote 1) adjusted, 2) deleted.	190704
1.4 / 5	Oil supply systems: With supplier Tuthill, max. oil viscosity increased from 2000 to 5000 mm ² /s.	
2 / 7	SEW GearOil Base US1 added.	

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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.

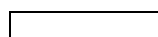
Lubricants for industrial gear units are subject to approval. The approval will be made according to the document "Supplier approval for qualification and approval of lubricants – gear unit oils" 07004__13 in its current version.

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

Viscosity class	Produkt / Product	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	b bremer & leguil		Castrol	
					-35 -20 -10	+45	-40 -25 -15	+45
	X...	NSF H1	VG 68 ¹⁾		Cassida Fluid HF 68		Optileb HY 68	
	P...	CLP HC	VG 220 ¹⁾		-20 -5 +5	+75	-25 -5 +5	+75
			VG 460 ¹⁾		-15 +5 +20	+90	-15 +5 +20	+95
					Cassida Fluid GL 220		Optileb GT 220	
							SEW 07004213	
					Cassida Fluid GL 460		Optileb GT 460	
							SEW 07004213	

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)

1)

Lubricants must only be used if service factor F_s and peak load factor $F_F \geq 1.6$.

Peak output torque factor M_{K2per} are 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.

RWDR

Radial oil seal

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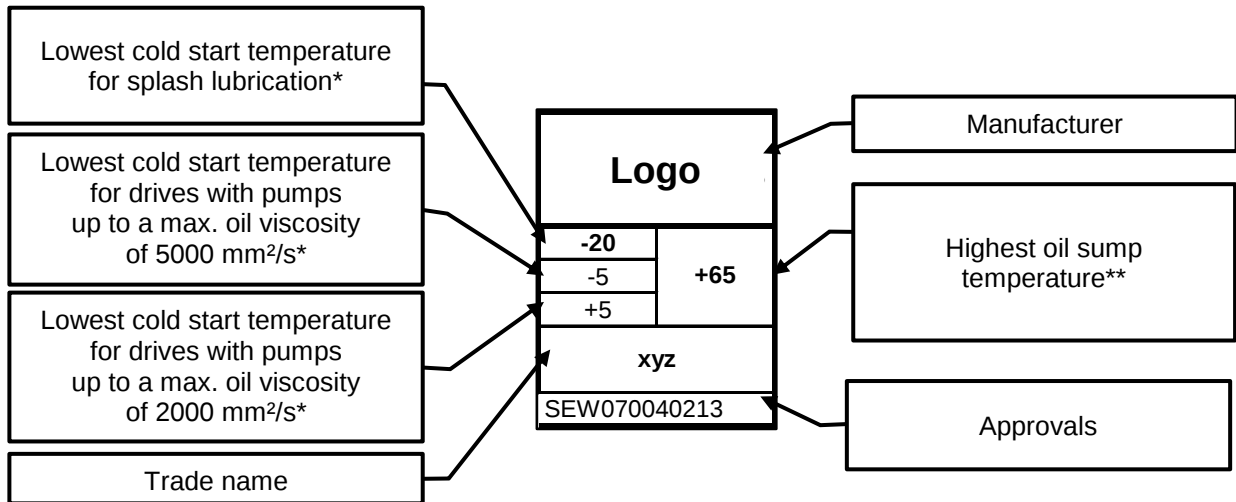
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1.2 Explanations on the individual lubricants



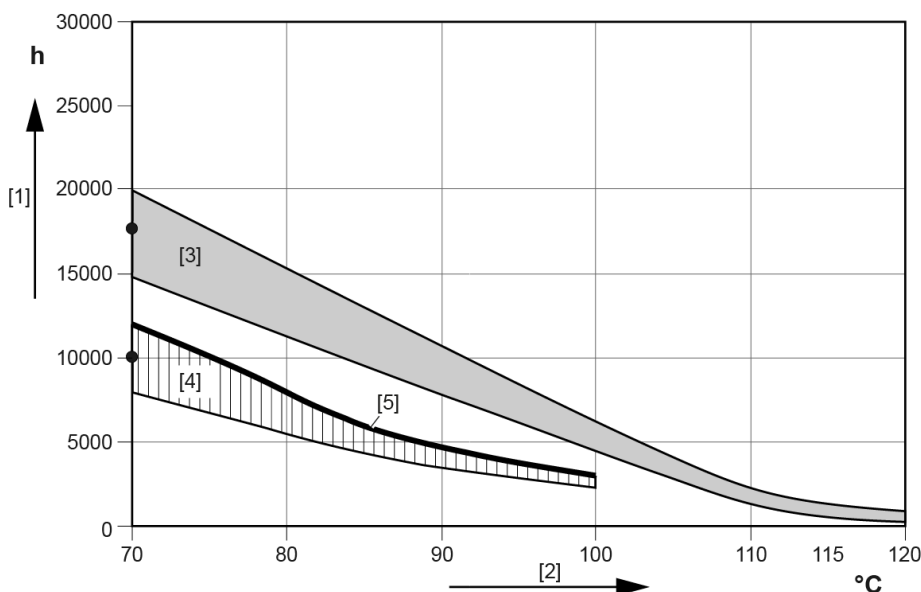
* In case of low temperatures, the oil must be heated to the specified minimum temperature, for example by using an oil heater. The maximum permitted oil viscosity per pump type can be found in chapter 1.4.

** 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

[2] Sustained oil bath temperature
Average value per oil type at 70 °C

[3] CLP HC/ CLP HC NSF H1

[4] CLP (CC)/E

[5] SEW GearOil Base

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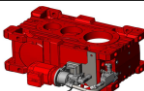
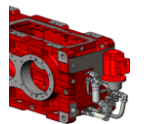
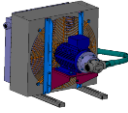
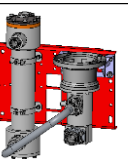
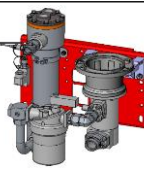
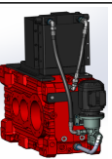
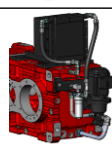
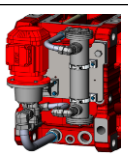
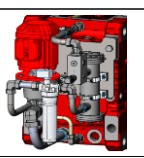
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1.4 Explanations on oil supply systems and their viscosity

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

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..., P..., XP..., P-X...)

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE				Mobil										
X... 	CLP	VG 150	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	Klüberoil GEM 1-150 N				
			-5		-5		-5		-5		-5						
			+5		+5		+5		+5		+5						
			SEW Gear Oil Base 150 E1 / US1		Optigear BM 150		Alpha SP 150		Renolin CLP 150 Plus		Renolin HighGear 150					Mobilgear 600 XP 150	
		SEW070040313				SEW070040313				SEW070040013							
		VG 220	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	Klüberoil GEM 1-220 N	Shell Omala Oil F 220	Carter EP 220
			0		0		0		0		0						
			+10		+10		+10		+10		+10						
			SEW Gear Oil Base 220 E1 / US1		Optigear BM 220		Alpha SP 220		Renolin CLP 220 Plus		Renolin HighGear 220		Mobilgear 600 XP 220				
		SEW070040313				SEW070040313				SEW070040013							
		VG 320	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	Klüberoil GEM 1-320 N	Shell Omala Oil F 320	Carter EP 320
			+5		+5		+5		+5		+5						
+15	+15		+15		+15		+15										
SEW Gear Oil Base 320 E1 / US1			Optigear BM 320		Alpha SP 320		Renolin CLP 320 Plus		Renolin HighGear 320		Mobilgear 600 XP 320						
SEW070040313				SEW070040313				SEW070040013									
VG 460	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	Klüberoil GEM 1-460 N	Shell Omala Oil F 460	Carter EP 460		
	+10		+10		+10		+10		+10								
	+20		+20		+20		+20		+20								
	SEW Gear Oil Base 460 E1 / US1		Optigear BM 460		Alpha SP 460		Renolin CLP 460 Plus		Renolin HighGear 460		Mobilgear 600 XP 460						
SEW070040313				SEW070040313				SEW070040013									
VG 680	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	Klüberoil GEM 1-680 N		Carter EP 680		
	+15		+15		+15		+15		+15								
	+25		+25		+25		+25		+25								
	SEW Gear Oil Base 680 E1 / US1		Optigear BM 680		Alpha SP 680		Renolin CLP 680 Plus		Renolin HighGear 680		Mobilgear 600 XP 680						
SEW070040313				SEW070040313				SEW070040013									
VG 1000			+5	+90													
			+20														
			+30														
			Optigear BM 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	bremner & leguil	Castrol	FUCHS	Mobil	KLÜBER LUBRICATION	Shell	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 Klübersynth GEM 4-68 N	-40 -20 -10 +50 Omala S4 GX 68				
		VG 150			-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 Klübersynth GEM 4-150 N	-30 -10 0 +75 Omala S4 GX 150	-35 -15 -5 +75 Carter SH 150	
		VG 220			-25 -5 +5 +80 Alphasyn EP 220	-25 -5 +5 +80 Optigear Synthetic X 220	-25 -5 +5 +80 Renolin Unisyn CLP 220	-20 0 +10 +75 HighGear Synth 220	-25 -5 0 +85 SHC 630	-30 -10 +5 +85 SHC Gear 220	-25 -5 +5 +80 Klübersynth GEM 4-220 N	-25 -5 +5 +85 Omala S4 GX 220	-25 -5 +5 +80 Carter SH 220
		VG 320			-20 0 +10 +90 Alphasyn EP 320	-20 0 +10 +90 Optigear Synthetic X 320	-20 0 +10 +90 Renolin Unisyn CLP 320	-15 0 +15 +85 HighGear Synth 320	-20 0 +10 +95 SHC 632	-25 -5 +10 +100 SHC Gear 320	-20 0 +10 +95 Klübersynth GEM 4-320 N	-20 0 +10 +95 Omala S4 GX 320	-20 0 +10 +90 Carter SH 320
		VG 460			-15 +5 +15 +100 Alphasyn EP 460	-15 +5 +15 +100 Optigear Synthetic X 460	-15 +5 +15 +100 Renolin Unisyn CLP 460	-10 +5 +20 +95 HighGear Synth 460	-15 +5 +15 +105 SHC 634	-20 0 +15 +110 SHC Gear 460	-15 +5 +20 +105 Klübersynth GEM 4-460 N	-15 +5 +15 +105 Omala S4 GX 460	-15 +5 +15 +100 Carter SH 460
		VG 680			-10 +10 +25 +110 Optigear Synthetic X 680	-10 +10 +25 +110 Renolin Unisyn CLP 680	-5 +10 +25 +110 HighGear Synth 680	-10 +10 +25 +110 SHC 636	-15 +10 +25 +110 SHC Gear 680	-10 +10 +25 +110 Klübersynth 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 Klübersynth EG 4-1000						

P...


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	TOTAL			
X...  P... 	E	VG 68 ¹⁾		-35	+45	-40	+45		-35	+45			-35	+45				
				-20		-25			-20				-10					
				-10		-15			-10				-10					
				Cassida Fluid HF 68		Optileb HY 68			Cassida Fluid HF 68				Klüberoil 4UH1-68 N					
		VG 220 ¹⁾		-20	+75	-25	+75			-20	+75			-25	+75			
				-5		-5				-5				-5				
				+5		+5				+5				+5				
				Cassida Fluid GL 220		Optileb GT 220				Cassida Fluid GL 220				Klüberoil 4UH1-220 N				
		VG 460 ¹⁾		-15	+90	-15	+95			-15	+90			-15	+95			
				+5		+5				+5				+5				
				+20		+20				+20				+15				
				Cassida Fluid GL 460		Optileb GT 460				Cassida Fluid GL 460				Klüberoil 4UH1-460 N				
					SEW 070040213													
	E	VG 460							-15	+95			-15	+95				
									+5				+5				+5	+5
									+15				+15				+15	+15
									Plantogear 460 S				Klüberbio CA2-460					
				S2								S2						

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