

# Supplier Approval

47 049 11 05  
63107848.11



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.
1.3 /4	Diagram: SEW GearOil Synth added	200209
2 /7	SEW GearOil Base US version available for VG 220 and VG680. Further viscosities as US version on request.	
2 /7	SHELL Omala F series deleted.	
2 /8-9	SEW GearOil Synth E1 and GearOil Synth H1 E1 series 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.

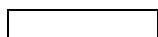
Lubricants for industrial gear units are subject to approval. The approval will be made according to the document "Supplier approval for qualification and approval of lubricants – gear unit oils" 07004\_\_13 in its current version.

**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	+45	-40	+45
X...		NSF H1 CLP HC	VG 68 <sup>1)</sup>		-20	+75	-25	+75
					-10		-15	
					Cassida Fluid HF 68		Optileb HY 68	
Note on special approvals	P...		VG 220 <sup>1)</sup>		-20	+75	-25	+75
					-5		-5	
					+5		+5	
					Cassida Fluid GL 220		Optileb GT 220	
					SEW 07004213			
Gear unit type			VG 460 <sup>1)</sup>		-15	+90	-15	+95
					+5		+5	
					+20		+20	
					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:

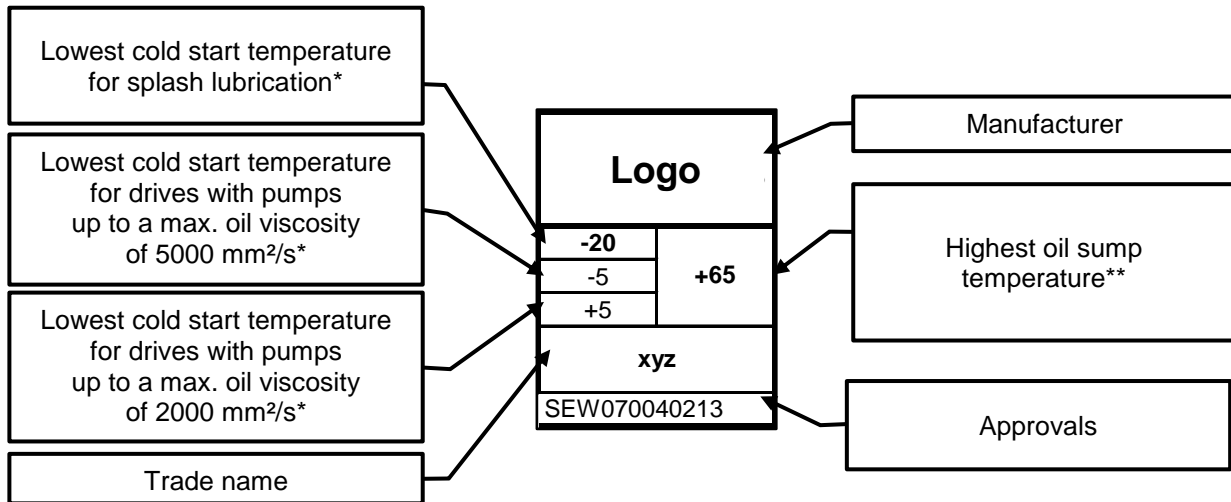
$F_F \geq 1.6 \rightarrow M_{K2per} \leq 1.25 \times M_{N2}$  (nominal torque)  $\rightarrow M_{K2per} \leq 2 \times M_{N2} / F_F = 2 / 1.6 \times M_{N2}$

In case of deviations, contact SEW-EURODRIVE.

RWDR

Radial oil seal

## 1.2 Explanations on the individual lubricants



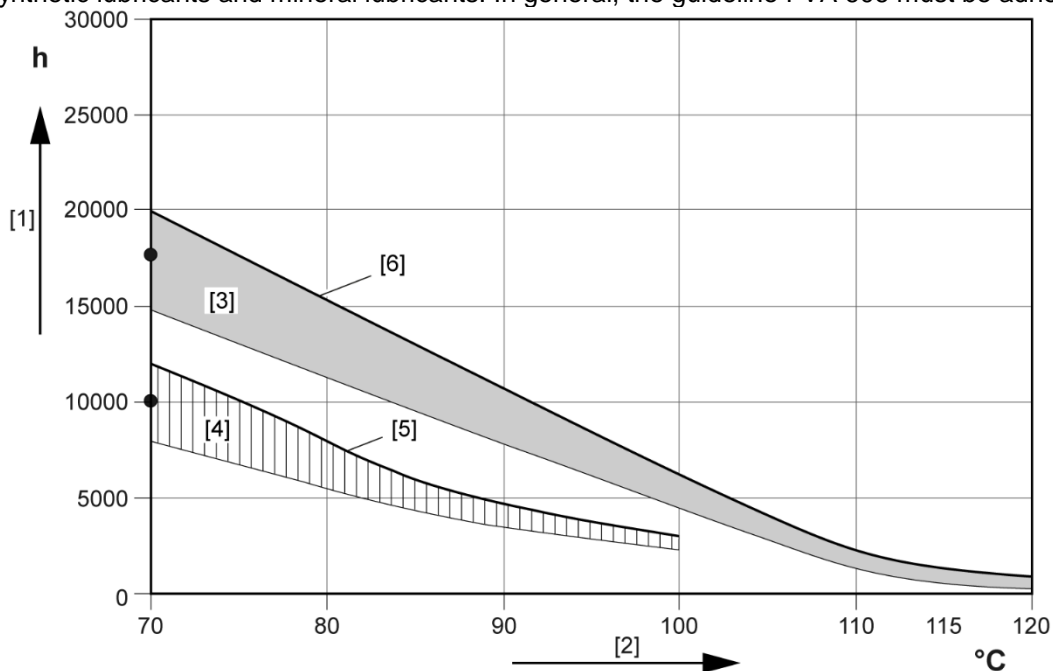
\* In case of low temperatures, the oil must be heated to the specified minimum temperature, for example by using an oil heater. The maximum permitted oil viscosity per pump type can be found in chapter 1.4.

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

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## 1.4 Explanations on oil supply systems and their viscosity

Type	Name	Supplier	Maximum oil viscosity [mm <sup>2</sup> /s]	Picture	Comment
Shaft end pump for pressure lubrication	SEP	 Pumpen nach Maß!	5000		Flanged on the gearbox housing
Shaft end pump for pressure lubrication	SEP	 PUMP YOUR HEAT INTO IT	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., X.e., P., XP., P-X.)

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	<b>SEW</b> EURODRIVE				<b>Mobil</b>																												
X... 	CLB	VG 150	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65	-20	+65													
			-5		-5		-5		-5		-5		-5		-5		-5		-5		-5		-5	-5	-5	-5	-5	-5	-5	-5	-5	-5			
			+5		+5		+5		+5		+5		+5		+5		+5		+5		+5		+5	+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			Klüberoil GEM 1-150 N														
			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013			SEW070040013														
P... 	CLB	VG 220	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75	-15	+75											
			0		0		0		0		0		0		0		0		0		0		0		0	0	0	0	0	0	0	0			
			+10		+10		+10		+10		+10		+10		+10		+10		+10		+10		+10		+10	+10	+10	+10	+10	+10	+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			Klüberoil GEM 1-220 N														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
P... 	CLB	VG 320	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85	-10	+85											
			+5		+5		+5		+5		+5		+5		+5		+5		+5		+5		+5		+5	+5	+5	+5	+5	+5	+5	+5	+5	+5	
			+15		+15		+15		+15		+15		+15		+15		+15		+15		+15		+15		+15	+15	+15	+15	+15	+15	+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			Klüberoil GEM 1-320 N														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
P... 	CLB	VG 460	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90	-5	+90											
			+10		+10		+10		+10		+10		+10		+10		+10		+10		+10		+10		+10	+10	+10	+10	+10	+10	+10	+10	+10	+10	+10
			+20		+20		+20		+20		+20		+20		+20		+20		+20		+20		+20		+20	+20	+20	+20	+20	+20	+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			Klüberoil GEM 1-460 N														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
P... 	CLB	VG 680	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90	0	+90											
			+15		+15		+15		+15		+15		+15		+15		+15		+15		+15		+15		+15	+15	+15	+15	+15	+15	+15	+15	+15	+15	+15
			+25		+25		+25		+25		+25		+25		+25		+25		+25		+25		+25		+25	+25	+25	+25	+25	+25	+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			Klüberoil GEM 1-680 N														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
P... 	CLB	VG 1000	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90	+5	+90											
			+20		+20		+20		+20		+20		+20		+20		+20		+20		+20		+20		+20	+20	+20	+20	+20	+20	+20	+20	+20	+20	+20
			+30		+30		+30		+30		+30		+30		+30		+30		+30		+30		+30		+30	+30	+30	+30	+30	+30	+30	+30	+30	+30	+30
			Optigear BM 1000			Optigear BM 1000			Optigear BM 1000			Optigear BM 1000			Optigear BM 1000			Optigear BM 1000			Optigear BM 1000														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														
			SEW070040313			SEW070040313			SEW070040313			SEW070040313			SEW070040013			SEW070040013			SEW070040013														

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

\* Viscosity as US version available on request.

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Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	<b>SEW</b> <b>EURODRIVE</b>				<b>Mobil</b>					
X... 	CLP HC	VG 32										
							-40 -30 -25	+30				
								SHC 624				
		VG 68										
								-35 -20 -10	+50			
								Renolin Unisyn CLP 68				
P... 	CLP HC	VG 150										
P... 	CLP HC	VG 220										
P... 	CLP HC	VG 320										
P... 	CLP HC	VG 460										
P... 	CLP HC	VG 680										
P... 	CLP HC	VG 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	TOTAL				
X... 	NSF H1	VG 68 <sup>1)</sup>		-35		-40		-35		-35				
				-20	+45	-25	+45	-20	+45	-20	+45			
				-10		-15		-10		-10				
				Cassida Fluid HF 68		Optileb HY 68		Cassida Fluid HF 68		Klüberoil 4UH1-68 N				
P... 	CLP HC	VG 220 <sup>1)</sup>		-30		-20		-20		-25				
				-5	+80	-5	+75	-5	+75	-5	+75			
				0		+5		+5		+5		+5		
				SEW GearOil Synth 220 H1 E1 SEW 070040313		Cassida Fluid GL 220		Optileb GT 220 SEW 070040213		Cassida Fluid GL 220		Klüberoil 4UH1-220 N		
	E	VG 460		-20		-15		-15		-15				
				0	+100	+5	+90	+5	+95	+5	+95			
				+15		+20		+20		+20		+15		
				SEW GearOil Synth 460 H1 E1 SEW 070040313		Cassida Fluid GL 460		Optileb GT 460 SEW 070040313		Cassida Fluid GL 460		Klüberoil 4UH1-460 N		
	E	VG 460						-15		-15				
								+5	+95	+5	+95			
									+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.