

# Supplier Approval

47 049 15 05  
63107848.15



SEW drives of the series

X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

Lubricant approvals – latest version at: [www.sew-eurodrive.de/lubricants](http://www.sew-eurodrive.de/lubricants)

EN Page 1/11

EGT-TD Aug 28, 2024

Change information:

Chap./page	Description (changes to the previous edition)	Modification no.
1.1 / 3	Abbreviations: Explanation "SPC" included	240860
2	Inclusion: Lubricant-specific information "SPC" for <ul style="list-style-type: none"><li>- ExxonMobil Mobil SHC Gear 150, 220, 320, 460, 680, 1000</li><li>- Klüber Klüberoil 4UH1-68, -220, -460, -680 N</li></ul>	
2.1 / 11	Chapter "Other approved lubricants" added: <ul style="list-style-type: none"><li>- Approval for lubricant "Chevron / Texaco / Caltex Meropa EliteSyn XM 150 to 680" granted</li><li>- Approval for lubricant "Hindustan Petroleum Corporation Limited Parthan SL 220 to 460" granted</li><li>- Approval for lubricant "Klüber Lubrication Klübersynth MEG-4 150 to 680" granted</li><li>- Approval for lubricant "Shell S4 GXV Plus 150 to 680" granted</li></ul>	

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EN Page 2/11

EGT-TD Aug 28, 2024

## Table of contents

1	Introduction/area of application .....	3
1.1	Explanation of the structure of the tables and abbreviations .....	3
1.2	Explanations of the various lubricants .....	4
1.3	Lubricant change intervals.....	4
1.4	Explanation of the oil supply systems and their viscosity .....	5
1.5	Lubricant compatibility with radial oil seals .....	7
2	Industrial gear units (X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..).....	8
2.1	Other approved lubricants .....	11

## 1 Introduction/area of application

The present document describes the approved lubricants for SEW-EURODRIVE industrial gear units (helical gear units, bevel 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.

The responsibility for the consistent quality of the lubricants lies with the respective manufacturer.

**INFORMATION:** 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 Explanation of the structure of the tables and abbreviations

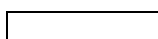
Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE										
		VG 150	<table border="1"> <tr> <td>-20</td> <td rowspan="3">+65</td> </tr> <tr> <td>-5</td> </tr> <tr> <td>+5</td> </tr> <tr> <td colspan="2">GearOil Base 150</td> </tr> <tr> <td colspan="2">E1 / US1 / CN1 / BR1</td> </tr> <tr> <td colspan="2">SEW070040313</td> </tr> </table>	-20	+65	-5	+5	GearOil Base 150		E1 / US1 / CN1 / BR1		SEW070040313	
-20	+65												
-5													
+5													
GearOil Base 150													
E1 / US1 / CN1 / BR1													
SEW070040313													
	X...	VG 220	<table border="1"> <tr> <td>-15</td> <td rowspan="3">+75</td> </tr> <tr> <td>0</td> </tr> <tr> <td>+10</td> </tr> <tr> <td colspan="2">GearOil Base 220</td> </tr> <tr> <td colspan="2">E1 / US1 / CN1 / BR1</td> </tr> <tr> <td colspan="2">SEW070040313</td> </tr> </table>	-15	+75	0	+10	GearOil Base 220		E1 / US1 / CN1 / BR1		SEW070040313	
-15	+75												
0													
+10													
GearOil Base 220													
E1 / US1 / CN1 / BR1													
SEW070040313													
		VG 320	<table border="1"> <tr> <td>-10</td> <td rowspan="3">+85</td> </tr> <tr> <td>+5</td> </tr> <tr> <td>+15</td> </tr> <tr> <td colspan="2">GearOil Base 320</td> </tr> <tr> <td colspan="2">E1 / US1 / CN1 / BR1</td> </tr> <tr> <td colspan="2">SEW070040313</td> </tr> </table>	-10	+85	+5	+15	GearOil Base 320		E1 / US1 / CN1 / BR1		SEW070040313	
-10	+85												
+5													
+15													
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 – polyalphaolefins (PAO)

E

Ester-based lubricant



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



Lubricants with slight bio-degradability for environmentally sensitive areas (> 60% according to OECD 301 or according to appendix A of EPA 2013 VGP).

RWDR

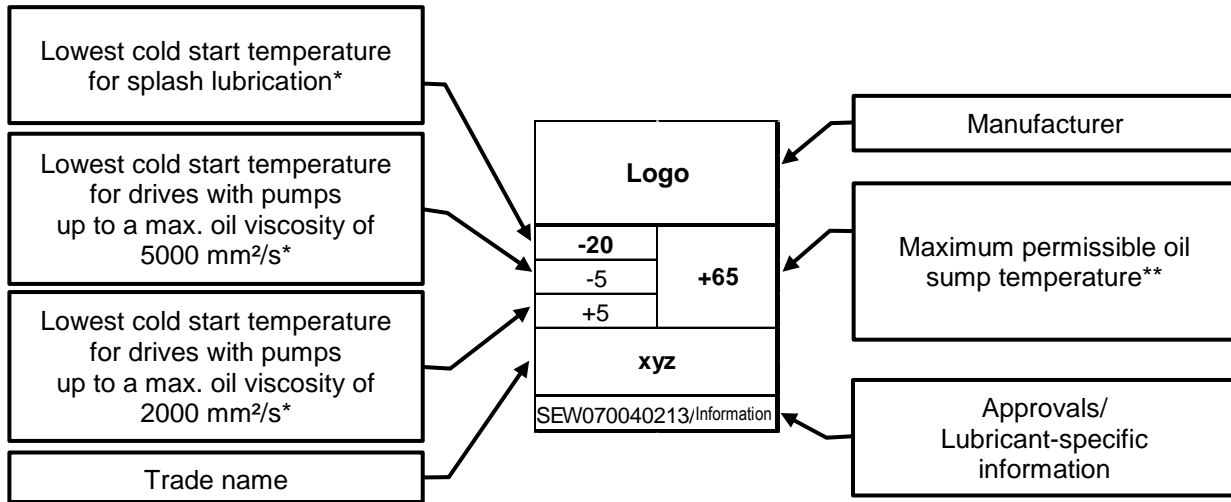
Radial oil seal

SPC

Special product classification  
Note safety data sheet for product classification – requires special procedures

## 1.2 Explanations of the various 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 limits, contact SEW-EURODRIVE.



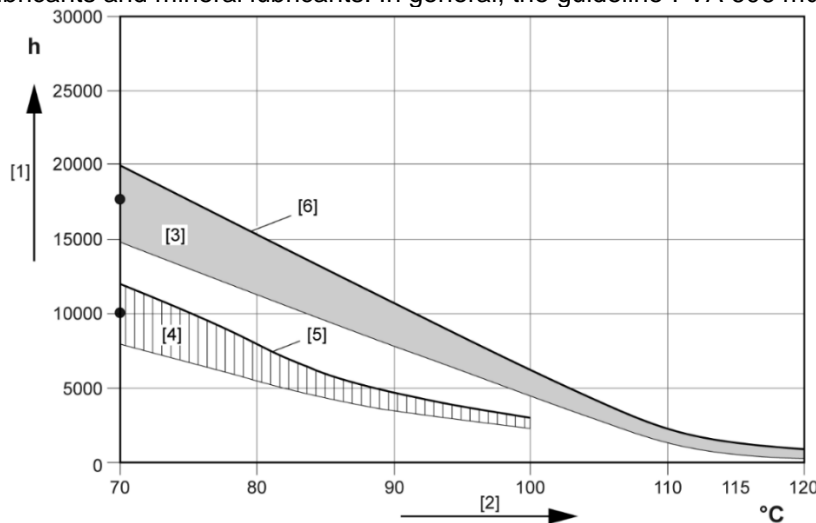
\* In case of low temperatures, the oil must be heated to the specified minimum temperature, for example, by using an oil heater. The maximum permitted oil viscosity per pump type can be found in chapter 1.4.

\*\* 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

[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] GearOil Base by SEW-EURODRIVE

[6] GearOil Synth (H1) by SEW-EURODRIVE






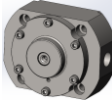

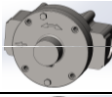

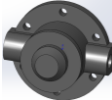



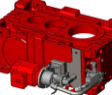

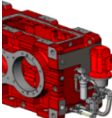

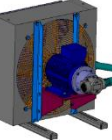


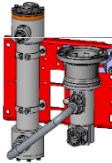


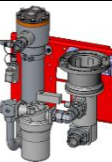

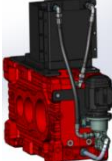
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## 1.4 Explanation of the oil supply systems and their viscosity

Type	Name	Supplier	Maximum oil viscosity [mm <sup>2</sup> /s]	Image	Comment
Shaft end pump for pressure lubrication	SEP		5000		Flanged on the gear unit housing
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator drive
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator drive
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator drive
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator drive
Shaft end pump for pressure lubrication	SEP		5000		Mounted inside the vertical agitator drive
Motor pump for pressure lubrication	ONP1L		5000		
Motor pump for pressure lubrication	ONP1		5000		
System for oil cooling by air	OAC		2000		
System for oil cooling by water	OWC	 	2000		
Motor pump and heat exchanger for pressure lubrication and cooling by water	OWP	 	2000		
System for oil cooling by air	OAC1		5000		

# Supplier Approval

47 049 15 05  
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X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

Lubricant approvals – latest version at: [www.sew-eurodrive.de/lubricants](http://www.sew-eurodrive.de/lubricants)

EN Page 6/11

EGT-TD Aug 28, 2024

Motor pump and heat exchanger for pressure lubrication and cooling by air	OAP1		5000		
System for oil cooling by water	OWC1		5000		
Motor pump and heat exchanger for pressure lubrication and cooling by water	OWP1		5000		

**Comment:** For the maximum permitted oil viscosity for oil supply systems that are not included in the table above, refer to the order documents or operating instructions or contact SEW-EURODRIVE if necessary.

# Supplier Approval

47 049 15 05  
63107848.15



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X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

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EN Page 7/11

EGT-TD Aug 28, 2024

## 1.5 Lubricant compatibility with 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	Approved oil sump temperature		
S	1 NBR	1 Freudenberg	72 NBR 902	-40 °C ... +80 °C	
		2 Trelleborg	4NV11	-40 °C ... +80 °C	
	2 FKM	1 Freudenberg	1	75 FKM 585	-25 °C ... +115 °C
			2	75 FKM 170055	-25 °C ... +115 °C
		2 Trelleborg	1	VCBVR	-25 °C ... +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 72 NBR 902 from Freudenberg 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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X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

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47 049 15 05  
63107848.15



EN Page 8/11

EGT-TD Aug 28, 2024

## 2 Industrial gear units (X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..)

**Comment:** Lubricant recommendations also apply to older or discontinued SEW industrial gear unit series.

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

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



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X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

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47 049 15 05  
63107848.15

**SEW**  
**EURODRIVE**

EN Page 9/11

EGT-TD Aug 28, 2024

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	<b>SEW</b> EURODRIVE							
  	CLP HC	VG 32					-40 -30 -25 +30 SHC 624			
		VG 68				-35 -20 -10 +50 Renolin Unisyn CLP 68	-35 -20 -10 +50 Klübersynth GEM 4-68 N	-40 -25 -15 +50 SHC 626		
		VG 150	-35 -15 -5 +75	-25 -10 0 +70	-30 -10 0 +70	-30 -10 0 +70	-25 -10 0 +70	-30 -10 0 +75	-35 -15 -5 +75	-35 -15 -5 +75
			GearOil Synth 150 E1 SEW 070040313	Alphasyn EP 150	Optigear Synthetic X 150	Renolin Unisyn CLP 150	Klübersynth GEM 4-150 N	SHC 629	SHC Gear 150	Carter SH 150
									SPC	
		VG 220	-30 -10 0 +85	-25 -5 +5 +80	-25 -5 +5 +80	-25 -5 +5 +80	-25 -5 +5 +80	-25 -5 0 +85	-30 -10 +5 +85	-25 -5 +5 +80
			GearOil Synth 220 E1 SEW 070040313	Alphasyn EP 220	Optigear Synthetic X 220	Renolin Unisyn CLP 220	Klübersynth GEM 4-220 N	SHC 630	SHC Gear 220	Carter SH 220
									SPC	
		VG 320	-25 -5 +5 +100	-20 0 +10 +90	-20 0 +10 +90	-20 0 +10 +90	-20 0 +10 +90	-20 0 +10 +95	-25 -5 +10 +95	-20 0 +10 +90
			GearOil Synth 320 E1 SEW 070040313	Alphasyn EP 320	Optigear Synthetic X 320	Renolin Unisyn CLP 320	Klübersynth GEM 4-320 N	SHC 632	SHC Gear 320	Carter SH 320
							SPC			
VG 460	-20 0 +15 +110	-15 +5 +15 +100	-15 +5 +15 +100	-15 +5 +15 +100	-15 +5 +15 +105	-15 +5 +15 +105	-20 0 +15 +110	-15 +5 +15 +100		
	GearOil Synth 460 E1 SEW 070040313	Alphasyn EP 460	Optigear Synthetic X 460	Renolin Unisyn CLP 460	Klübersynth GEM 4-460 N	SHC 634	SHC Gear 460	Carter SH 460		
							SPC			
VG 680	-15 +5 +20 +110		-10 +10 +25 +110	-10 +10 +25 +110	-10 +10 +25 +110	-10 +10 +25 +110	-15 +10 +25 +110	-10 +10 +25 +110		
	GearOil Synth 680 E1 SEW 070040313		Optigear Synthetic X 680	Renolin Unisyn CLP 680	Klübersynth GEM 4-680 N	SHC 636	SHC Gear 680	Carter SH 680		
							SPC			
VG 1000					0 +20 +30 +110	-10 +15 +30 +110	-10 +15 +30 +110			
					Klübersynth EG 4-1000	SHC 639	SHC Gear 1000			
							SPC			

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

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47 049 15 05  
63107848.15

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**EURODRIVE**

EN Page 10/11

EGT-TD Aug 28, 2024

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI												
 	II	CLP HCN SFH <sup>1)</sup>	VG 68 <sup>1)</sup>	-35	+45	-40	+45	-35	+45	-35	+45			
				-20		-25		-20		-20				
				-10		-15		-10		-10				
				Cassida Fluid HF 68				Optileb HY 68		Cassida Fluid HF 68		Klüberoil 4UH1-68 N		
				SPC										
				VG 220 <sup>1)</sup>	-30	+80	-20	+75	-25	+75	-20	+75	-25	+75
					-5		-5		-5		-5			
					0		+5		+5		+5			
					GearOil Synth 220 H1 E1				Cassida Fluid GL 220		Cassida Fluid GL 220		Klüberoil 4UH1-220 N	
					SEW 070040313				SEW 070040213		SEW 070040213		SEW 070040213	
				SPC										
				VG 460 <sup>1)</sup>	-20	+100	-15	+90	-15	+95	-15	+90	-15	+95
					0		+5		+5		+5			
					+15		+20		+20		+20			
					GearOil Synth 460 H1 E1				Cassida Fluid GL 460		Optileb GT 460		Cassida Fluid GL 460	
					SEW 070040313				SEW 070040313		SEW 070040313		SEW 070040313	
SPC														
VG 680 <sup>1)</sup>	-10	+105	-10	+105	-10	+105	-10	+105	-10	+110				
	10		10		10		10							
	+25		+25		+25		+25							
Cassida Fluid GL 680				Cassida Fluid GL 680		Cassida Fluid GL 680		Klüberoil 4UH1-680 N						
SPC														
E	VG 320	-20	+85	-20	+85	-20	+85	-20	+85	-20	+85			
		0		0		0		0						
		+10		+10		+10		+10						
		Plantogear 320 S				Plantogear 320 S		Plantogear 320 S		Klüber Bio EG 2-320				
		S2				S2		S2		S2				
VG 460	-15	+95	-15	+95	-15	+95	-15	+95	-15	+95				
	+5		+5		+5		+5							
	+15		+15		+15		+15							
	Plantogear 460 S				Plantogear 460 S		Plantogear 460 S		Plantogear 460 S					
	S2				S2		S2		S2					

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 (Ch. 1.5) have to be considered as well.

# Supplier Approval

SEW drives of the series

X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

Lubricant approvals – latest version at: [www.sew-eurodrive.de/lubricants](http://www.sew-eurodrive.de/lubricants)

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**SEW**  
**EURODRIVE**

EN Page 11/11

EGT-TD Aug 28, 2024

## 2.1 Other approved lubricants

The lubricants listed below meet the SEW requirements according to SEW specification SEW07004\_\_13 for use in industrial gear units of the X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK.. series, they are, however, not available as initial filling ex works.

The responsibility for the consistent quality of the lubricants lies with the respective manufacturer.

The maximum permitted oil bath temperatures must not be exceeded.

The viscosity temperature behavior can vary greatly depending on the selected lubricant product.

The minimum and maximum permissible operating viscosities must be observed. Please contact SEW-EURODRIVE for this.

Oil type	Manufacturer – product name	Viscosity
<b>CLP ( mineral)</b> Max. oil bath temperature 80 °C (90 °C for a short time)	<b>Total Energies</b> – Carter EP	VG150, VG1000
	<b>Chevron / Texaco / Caltex</b> – Meropa EliteSyn XM	VG150 – VG680
<b>CLP HC (synthetic based on polyalphaolefin)</b> Max. oil bath temperature 100 °C (short-term 110 °C)	<b>Hindustan Petroleum Corporation Limited</b> – Parthan SL	VG220 – VG460
	<b>Klüber Lubrication</b> – Klübersynth MEG-4	VG150 – VG680
	<b>PetroChina Lubricant Company</b> – KunLun KPM/S Synthetic Heavy-duty Industrial Gear Oil	VG150 – VG680
	<b>Shell</b> – Omala S4 GXV Plus	VG150 – VG680
	<b>Sinopec</b> – AP-S Industrial Gear Oil	VG150 – VG680
	<b>Total Energies</b> – Carter SY	VG1000