

Supplier Approval

SEW drives of the series

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

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47 049 16 05
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EN Page 1/14

EGT-TD Jul 22, 2026

Change information:

Chap./page	Description (changes to the previous edition)	Modification no.
Entire document	Editorial revision	260801
1.1/3	Revision of the definition CLP HC	
1.2/4	Adjustment of the explanation for the individual lubricants	
1.5/7	Revision of the approved oil seals	
1.5/7	Revision of the chapter	
2/8-10	Separation of the gear unit series: Industrial gear units X series Revision of the tables	
3/10-13	Separation of the gear unit series: Industrial gear units P series Revision of the tables	
4/14	Revision of the chapter	
4/14	New lubricant: Deutsche Ölwerke Lubmin GmbH – Aveno Gear Ultimate FLD	
4/14	New lubricant: Gulf Oil Geartek SHD	
4/14	New lubricant: Ravensberger Schmierstoffvertrieb GmbH – Ravenol Synthetic Wind Turbines SWT	

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

47 049 16 05
63107848.16



EN Page 2/14

EGT-TD Jul 22, 2026

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 series (X.e / M1..N / ML..2 / MC..)	8
3	Industrial gear units P series (P..2e / P..2 / XP.. / P-X.e / PPK..)	11
4	Other approved lubricants	14

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

47 049 16 05
63107848.16

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EN Page 3/14

EGT-TD Jul 22, 2026

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.

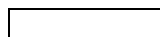
The responsibility for the consistent quality of the lubricants lies with the respective manufacturer.

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
			-20 -5 +5
		VG 150	+65 GearOil Base 150 E1 / US1 / CN1 / BR1 SEW070040313
Viscosity class			
			-15 0 +10
		VG 220	+75 GearOil Base 220 E1 / US1 / CN1 / BR1 SEW070040313
Note on special approvals	X...		
			-10 +5 +15
		VG 320	+85 GearOil Base 320 E1 / US1 / CN1 / BR1 SEW070040313
Gear unit type			
	CLP		

Abbreviations:



Mineral lubricant



Synthetic lubricant

CLP

Mineral oil

CLP HC

Polyalphaolefins (PAO) and related hydrocarbons with comparable technical properties. Base oils with the code letter PR according to DIN 51502-2.

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

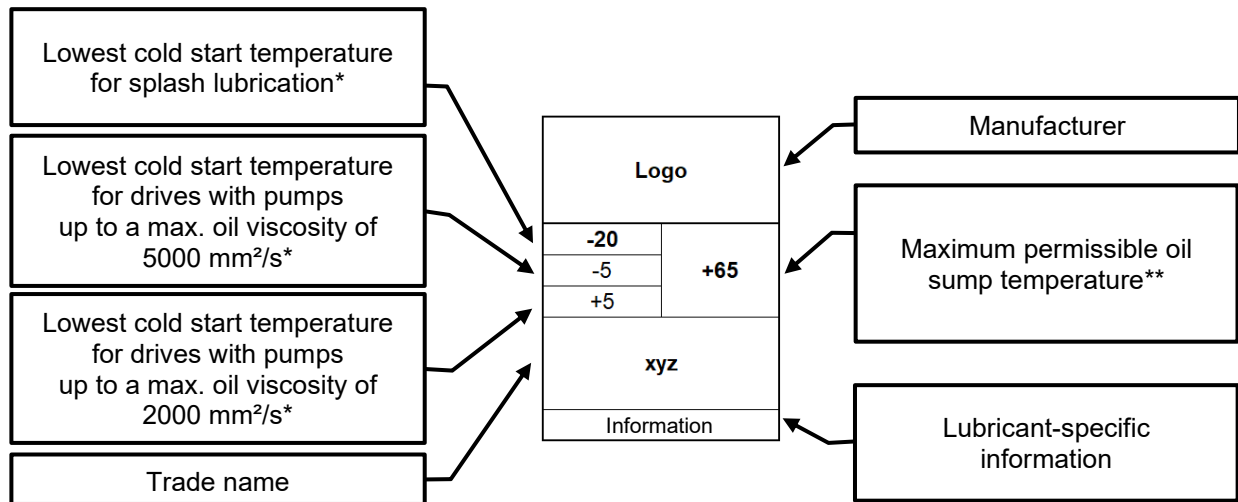
Radial oil seal

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.



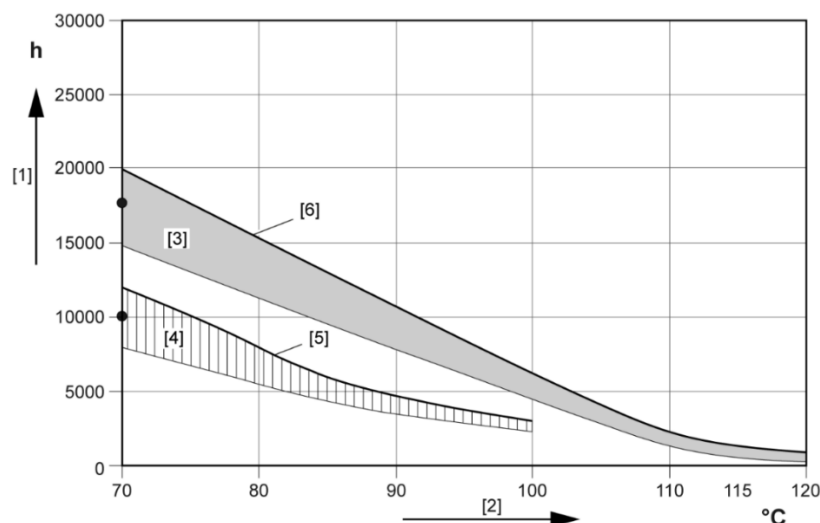
* In case of low temperatures, the oil must be heated to the specified minimum temperature, for example, by using an oil heater. The maximum permitted oil viscosity per pump type can be found in chapter 1.4.

** 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

Supplier Approval

47 049 16 05
63107848.16

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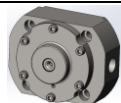
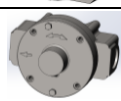
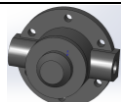
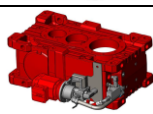
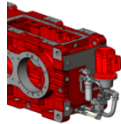
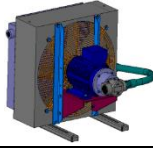
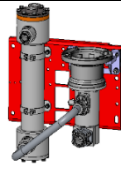
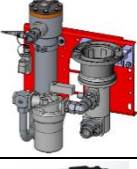
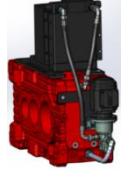
X.e / M1..N / ML..2 / MC.. / P..2e / P..2 / XP.. / P-X.e / PPK..

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

EN Page 5/14

EGT-TD Jul 22, 2026

1.4 Explanation of the oil supply systems and their viscosity

Type	Name	Supplier	Maximum oil viscosity [mm ² /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 16 05
63107848.16



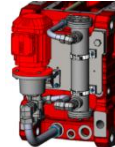
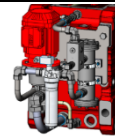
SEW drives of the series

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

EN Page 6/14

EGT-TD Jul 22, 2026

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 16 05
63107848.16



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

EN Page 7/14

EGT-TD Jul 22, 2026

1.5 Lubricant compatibility with radial oil seals

The listed lubricants meet the minimum requirements for compatibility with radial oil seals according to SEW specification 97118__15.

Permitted temperature range of the radial oil seals

Radial oil seal material class	Permitted oil sump temperature
NBR	-40°C ... +80°C
FKM	-25°C ... +115°C
FKM-PSS	-25°C ... +115°C

In the low temperature range, radial 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.

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

47 049 16 05
63107848.16

SEW
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EN Page 8/14

EGT-TD Jul 22, 2026

2 Industrial gear units X series (X.e / M1..N / ML..2 / MC..)

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

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	Castrol	FUCHS	KLÜBER LUBRICATION	Mobil	Shell	SINOPEC	TotalEnergies							
 IG-X	CLB	VG 150	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80	-20 -5 +5 +80			
			GearOil Base 150 E1 / US1 / CN1 / BR1	Optigear BM 150	Alpha SP 150	Renolin CLP 150 Plus	Renolin HighGear 150	Klüberoil GEM 1-150 N	Mobilgear 600 XP 150	Shell Omala S2 GX Plus 150	AP-SGO 150						
		VG 220	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	-15 0 +10 +90	Carter EP 220
			GearOil Base 220 E1 / US1 / CN1 / BR1	Optigear BM 220	Alpha SP 220	Renolin CLP 220 Plus	Renolin HighGear 220	Klüberoil GEM 1-220 N	Mobilgear 600 XP 220	Shell Omala S2 GX Plus 220	AP-SGO 220	Carter EP 220					
		VG 320	-10 +5 +15 +90	-10 +5 +15 +90	-10 +5 +15 +90	-10 +5 +15 +90	-10 +5 +15 +90	-10 +5 +15 +90	-10 +5 +15 +90	-10 5 +15 +90	-10 5 +15 +90	-10 5 +15 +90	-10 5 +15 +90	-10 5 +15 +90	-10 5 +15 +90	-10 +5 +15 +90	Carter EP 320
			GearOil Base 320 E1 / US1 / CN1 / BR1	Optigear BM 320	Alpha SP 320	Renolin CLP 320 Plus	Renolin HighGear 320	Klüberoil GEM 1-320 N	Mobilgear 600 XP 320	Shell Omala S2 GX Plus 320	AP-SGO 320	Carter EP 320					
		VG 460	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	-5 +10 +20 +90	Carter EP 460
			GearOil Base 460 E1 / US1 / CN1 / BR1	Optigear BM 460	Alpha SP 460	Renolin CLP 460 Plus	Renolin HighGear 460	Klüberoil GEM 1-460 N	Mobilgear 600 XP 460	Shell Omala S2 GX Plus 460	AP-SGO 460	Carter EP 460					
		VG 680	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	0 +15 +25 +90	Carter EP 680
			GearOil Base 680 E1 / US1 / CN1 / BR1	Optigear BM 680	Alpha SP 680	Renolin CLP 680 Plus	Renolin HighGear 680	Klüberoil GEM 1-680 N	Mobilgear 600 XP 680	Shell Omala S2 GX Plus 680	AP-SGO 680	Carter EP 680					
		VG 1000	+5 +20 +30 +90	+5 +20 +30 +90													
Optigear BM 1000																	

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

47 049 16 05
63107848.16

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EN Page 9/14

EGT-TD Jul 22, 2026

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI									
 IG-X	CLP HC	VG 32					-40 -30 -25 +45 SHC 624				
		VG 68				-35 -20 -10 +65 Renolin Unisyn CLP 68	-35 -20 -10 +65 Klübersynth GEM 4-68 N	-40 -25 -15 +70 SHC 626			
		VG 150	-35 -15 -5 +95 GearOil Synth 150 E1	-25 -10 0 +85 Alphasyn EP 150	-30 -10 0 +90 Optigear Synthetic X 150	-30 -10 0 +90 Renolin Unisyn CLP 150	-25 -10 0 +90 Klübersynth GEM 4-150 N	-30 -10 0 +90 SHC 629	-35 -15 -5 +95 SHC Gear 150	-35 -15 0 +90 Shell Omala S4 GXV Plus 150	-35 -15 -5 +90 Carter SH 150
		VG 220	-30 -10 0 +105 GearOil Synth 220 E1	-25 -5 +5 +100 Alphasyn EP 220	-25 -5 +5 +100 Optigear Synthetic X 220	-25 -5 +5 +100 Renolin Unisyn CLP 220	-25 -5 +5 +100 Klübersynth GEM 4-220 N	-25 -5 0 +105 SHC 630	-30 -10 +5 +105 SHC Gear 220	-30 -10 0 +100 Shell Omala S4 GXV Plus 220	-25 -5 +5 +100 Carter SH 220
		VG 320	-25 -5 +5 +110 GearOil Synth 320 E1	-20 0 +10 +110 Alphasyn EP 320	-20 0 +10 110 Optigear Synthetic X 320	-20 0 +10 +110 Renolin Unisyn CLP 320	-20 0 +10 +110 Klübersynth GEM 4-320 N	-20 0 +10 +110 SHC 632	-25 -5 +10 +110 SHC Gear 320	-25 0 +5 +110 Shell Omala S4 GXV Plus 320	-20 0 +10 +110 Carter SH 320
		VG 460	-20 0 +15 +110 GearOil Synth 460 E1	-15 +5 +15 +110 Alphasyn EP 460	-15 +5 +15 +110 Optigear Synthetic X 460	-15 +5 +15 +110 Renolin Unisyn CLP 460	-15 +5 +20 +110 Klübersynth GEM 4-460 N	-15 +5 +15 +110 SHC 634	-20 0 +15 +110 SHC Gear 460	-20 0 +15 +110 Shell Omala S4 GXV Plus 460	-15 +5 +15 +110 Carter SH 460
		VG 680	-15 +5 +20 +110 GearOil Synth 680 E1		-10 +10 +25 +110 Optigear Synthetic X 680	-10 +10 +25 +110 Renolin Unisyn CLP 680	-10 +10 +25 +110 Klübersynth GEM 4-680 N	-10 +10 +25 +110 SHC 636	-15 +10 +25 +110 SHC Gear 680	-15 +5 +20 +110 Shell Omala S4 GXV Plus 680	-10 +10 +25 +110 Carter SH 680
		VG 1000					0 +20 +30 +110 Klübersynth EG 4-1000	-10 +15 +30 +110 SHC 639	-10 +15 +30 +110 SHC Gear 1000		
									SPC		

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

47 049 16 05
63107848.16

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EN Page 10/14

EGT-TD Jul 22, 2026

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	 bremer & leguil	 Castrol							
 IG-X	 CLP HC NSF H1 2)	VG 68 ¹⁾			-35	+50	-40	+50	-35	+50	-35	+50
					-20		-25		-20		-20	
					-10		-15		-10		-10	
					Cassida Fluid HF 68		Optileb HY 68		Cassida Fluid HF 68		Klüberoil 4UH1-68 N	
				SPC				SPC				
		VG 220 ¹⁾	-30	+85	-20	+80	-25	+85	-20	+80	-25	+80
			-5		-5		-5		-5			
			0		+5		+5		+5		+5	
			GearOil Synth 220 H1 E1		Cassida Fluid GL 220		Optileb GT 220		Cassida Fluid GL 220		Klüberoil 4UH1-220 N	
		SPC				SPC				SPC		
		VG 460 ¹⁾	-20	+110	-15	+100	-15	+110	-15	+100	-15	+105
			0		+5		+5		+5		+5	
			+15		+20		+20		+20		+15	
			GearOil Synth 460 H1 E1		Cassida Fluid GL 460		Optileb GT 460		Cassida Fluid GL 460		Klüberoil 4UH1-460 N	
		SPC				SPC				SPC		
		VG 680 ¹⁾			-10	+110			-10	+110	-10	+110
	10				10				10			
	+25				+25				25			
	Cassida Fluid GL 680				Cassida Fluid GL 680				Klüberoil 4UH1-680 N			
					SPC							
 E1	VG 320							-20	+95	-20	+95	
								0		0		0
								+10		+10		+10
								Plantogear 320 S		Klüber Bio EG 2-320		
	VG 460							-15	+105			
								+5				
								+15				
								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 (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..

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47 049 16 05
63107848.16

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EN Page 11/14

EGT-TD Jul 22, 2026

3 Industrial gear units P series (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																																																																																																																																																																																																																																																											
 IG-P	C.D.	VG 150	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65	-20 -5 +5	+65																																																																																																																																																																																																																																									
			GearOil Base 150 E1 / US1 / CN1 / BR1	Optigear BM 150	Alpha SP 150	Renolin CLP 150 Plus	Renolin HighGear 150	Klüberoil GEM 1-150 N	Mobilgear 600 XP 150	Shell Omala S2 GX Plus 150	AP-SGO 150																																																																																																																																																																																																																																																		
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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

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SEW
EURODRIVE

EN Page 12/14

EGT-TD Jul 22, 2026

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI																																																																															
 IG-P	CLP HC	VG 32					<table><tr><td>-40</td><td rowspan="3">+30</td></tr><tr><td>-30</td></tr><tr><td>-25</td></tr><tr><td colspan="2">SHC 624</td></tr><tr><td colspan="2"></td></tr></table>	-40	+30	-30	-25	SHC 624																																																																					
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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

47 049 16 05
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SEW
EURODRIVE

EN Page 13/14

EGT-TD Jul 22, 2026

Typ / Type	Öltyp / Oil Type	ISO, SAE NLGI	SEW EURODRIVE	b bremer & leguil	 Castrol	 FUCHS											
 IG-P	 CLP HC NSF H1 2)	VG 68 ¹⁾		-35 -20 -10	+45	-40 -25 -15	+45	-35 -20 -10	+45	-35 -20 -10	+45						
				Cassida Fluid HF 68		Optileb HY 68		Cassida Fluid HF 68		Klüberoil 4UH1-68 N							
						SPC				SPC							
				VG 220 ¹⁾	-30 -5 0	+80	-25 -5 +5	+75	-25 -5 +5	+75	-25 -5 +5	+75	-25 -5 +5	+75			
		GearOil Synth 220 H1 E1			Cassida Fluid GL 220		Optileb GT 220		Cassida Fluid GL 220		Klüberoil 4UH1-220 N						
		SPC					SPC				SPC						
		VG 460 ¹⁾	-20 0 +15		+100	-15 +5 +20	+90	-15 +5 +20	+95	-15 +5 +20	+90	-15 +5 +15	+95				
			GearOil Synth 460 H1 E1			Cassida Fluid GL 460		Optileb GT 460		Cassida Fluid GL 460		Klüberoil 4UH1-460 N					
			SPC					SPC				SPC					
			VG 680 ¹⁾			-10 10 +25	+105			-10 10 +25	+105	-10 10 25	+110				
		Cassida Fluid GL 680				Cassida Fluid GL 680				Klüberoil 4UH1-680 N							
										SPC							
		 E					VG 320								-20 0 +10	+85	-20 0 +10
			Plantogear 320 S		Klüber Bio EG 2-320												
			VG 460								-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 (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..

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47 049 16 05
63107848.16

SEW
EURODRIVE

EN Page 14/14

EGT-TD Jul 22, 2026

4 Other approved lubricants

The lubricants listed below meet the SEW requirements according to SEW specification 07004__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
CLP (mineral) Max. oil bath temperature 80 °C (90 °C for a short time)	Total Energies – Carter EP	VG150, VG1000
CLP HC (Polyalphaolefins and related hydrocarbons) Max. oil bath temperature 100 °C (short-term 110 °C)	Chevron / Texaco / Caltex – Meropa EliteSyn XM	VG150 – VG680
	Deutsche Ölwerke Lubmin GmbH – Aveno Gear Ultimate FLD	VG150 – VG680
	Gulf Oil – Geartek SHD	VG150 – VG680
	Hindustan Petroleum Corporation Limited – Parthan SL	VG220 – VG460
	Klüber Lubrication – Klübersynth MEG-4	VG150 – VG680
	PetroChina Lubricant Company – KunLun KPM/S Synthetic Heavy-duty Industrial Gear Oil	VG150 – VG680
	Petro Canada Enduralex Synthetic EP series	VG150 – VG680
	Ravensberger Schmierstoffvertrieb GmbH – Ravenol Synthetic Wind Turbines SWT	VG150 – VG680
	Sinopec – AP-S Industrial Gear Oil	VG150 – VG680
	Total Energies – Carter SY	VG1000