

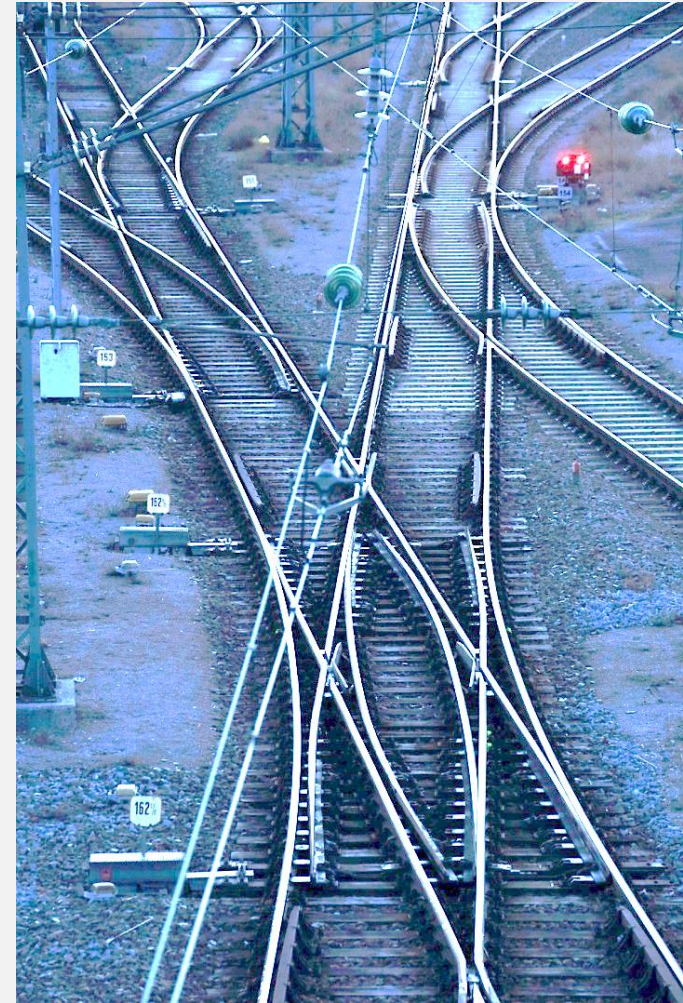
Safer process.  
Safer profit.



# Greases for Railroad



# Applications



Quelle: DB-Mediathek

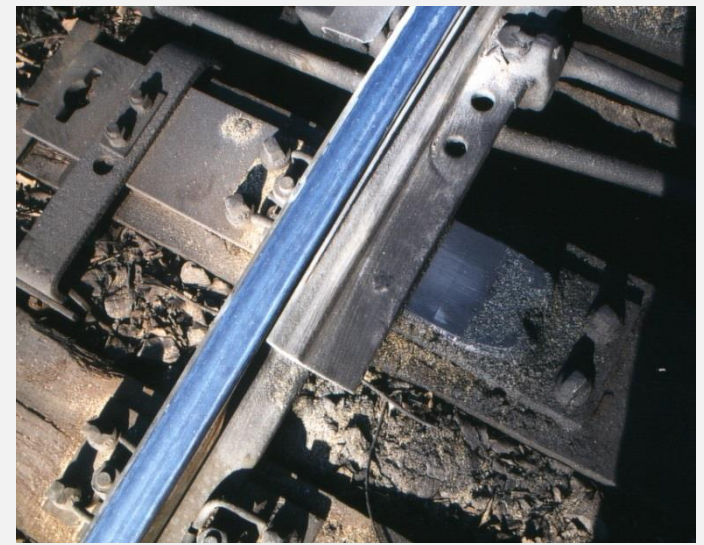
# Switch plates

Safer process.  
Safer profit.



Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus LSN 04	Li	0000	Synthetic	-40 to 120°C	DB approval	Biodegradable, in use at DB and private railways companies in Germany, ÖBB, and Norway
rhenus LWN 04	Li	0000	Synthetic	-40 to 120 °C	In use at SNCF	Biodegradable, better adhesion, even for high speed trains, In use at SNCF, Finland

Video: Move the mouse on picture and press left mouse button



# Rail flank lubrication (stationary system)

Safer process.  
Safer profit.

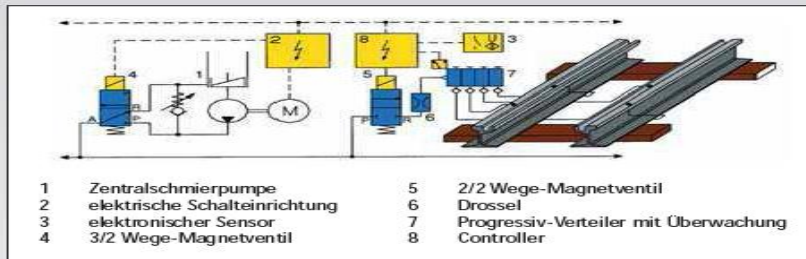


Name	Thicken er	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus LAC 2	Li	2	Synthetic	-45 to 120°C	In use in Italy	
rhenus CEN 1	Ca	1	Synthetic	-20 to 100 °C	In use in Denmark and Norway, for cold regions	Biodegradable
<b>rhenus BDG 2</b> (1. recommandation)	<b>Gel</b>	<b>00-000</b>	<b>Synthetic</b>	<b>- 30 to 100°C</b>		Biological degradable, contains graphite, very adhesive

## IM PRINZIP: STATIONÄRE SCHMIERANLAGE

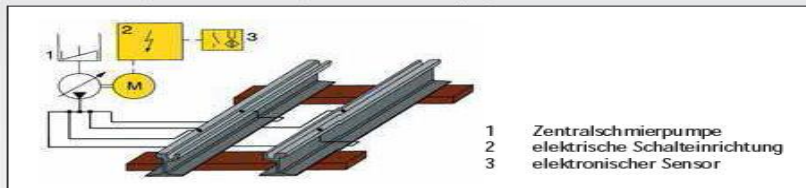
Schematische Darstellung einer stationären Schienenschmieranlage mit Vorratsbehälter, Antrieb, Steuerung und Leitungssystem mit Verteilern (Fabrikat Delimon).

Zentrale Anlage mit Progressiv-Verteilern



Delimon GmbH

Dezentrale Anlage mit Mehrleitungs-Zentralschmierpumpe



Delimon GmbH

## IM EINSATZ: CEMAFER SCHMIERANLAGE



Cemafer GmbH



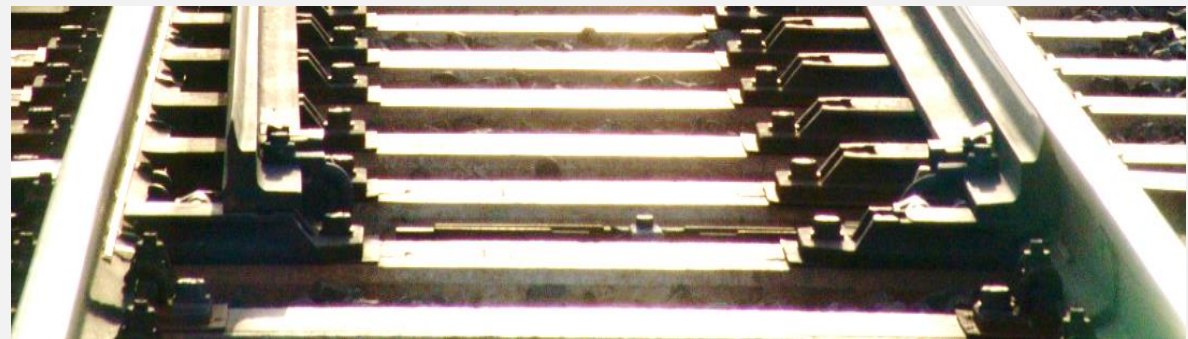
Cemafer GmbH

# Track fastening

Safer process.  
Safer profit.



Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus CAZ 2	Ca	2	semisynthetic	-30 to 110°C		Corrosion-protective, facilitates unlock of screw connections, strong water repellent, highly adhesive

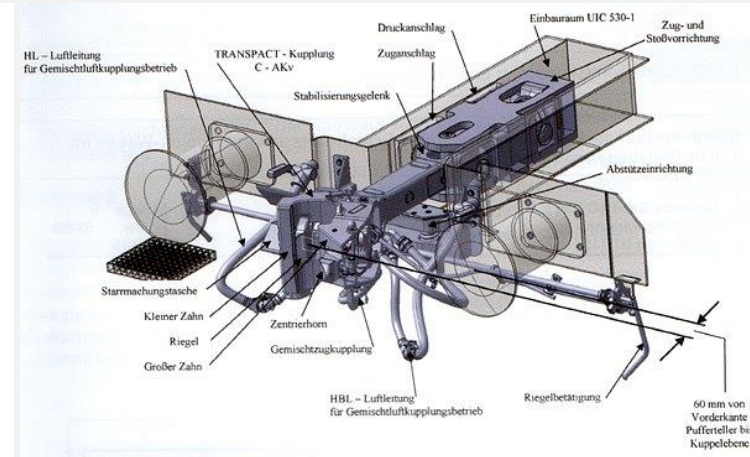
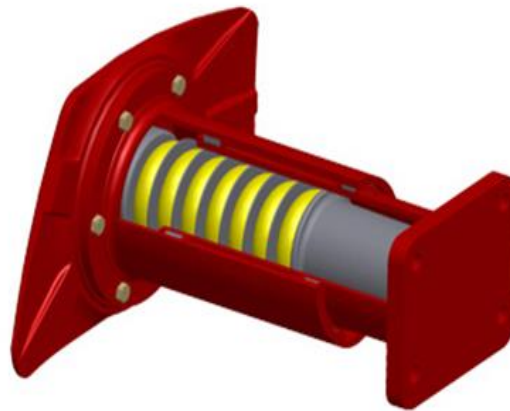


# Buffer head and coupling

Safer process.  
Safer profit.

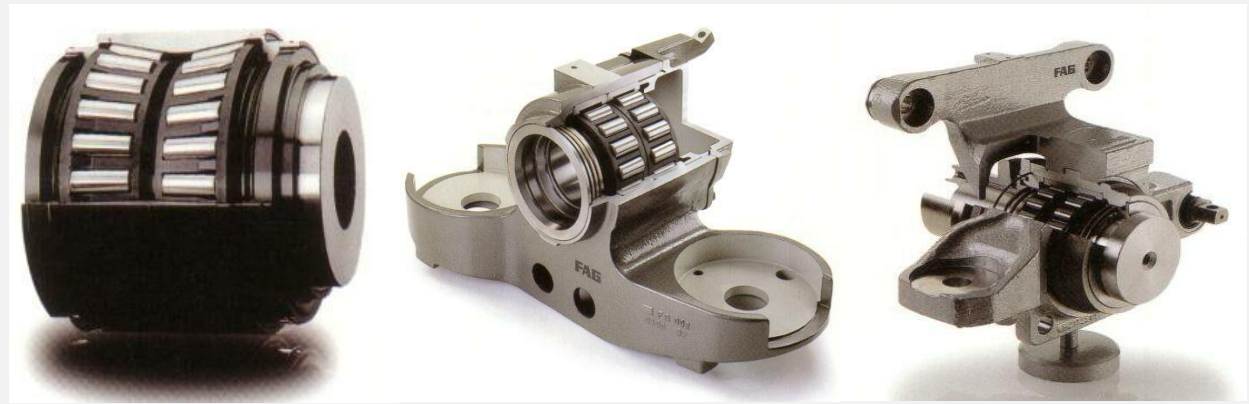


Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Refernces	Remarks
rhenus BAC 0	Gel	0	Synthetic	-50 to 100°C	DB approval	Biodegradable, in use at DB



# Wheels - Railways Axlebox bearings

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus LKR 2	Li-Co	2	Semi synthetic	-30 to 150°C	Used in the Netherland Railway for years	
rhenus LWW 2 GE	Li	2	synthetic	-40 to 140°C		New development



ICE

Local Train

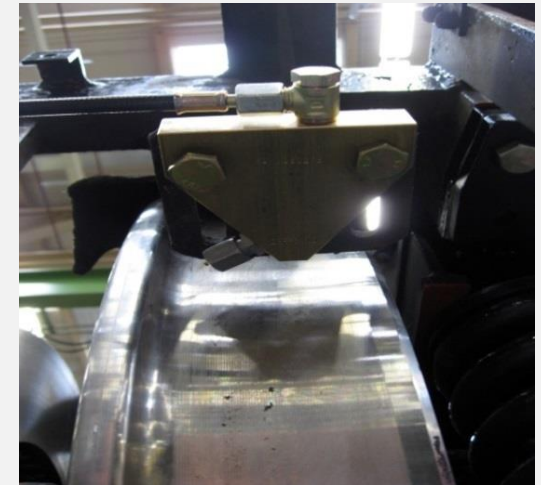
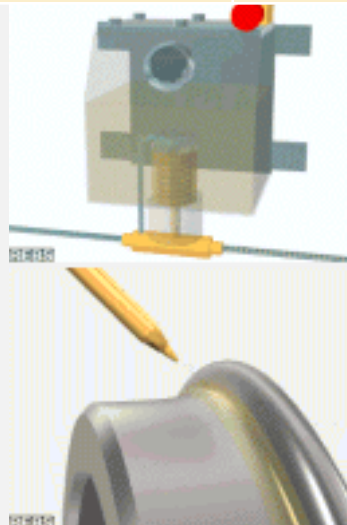
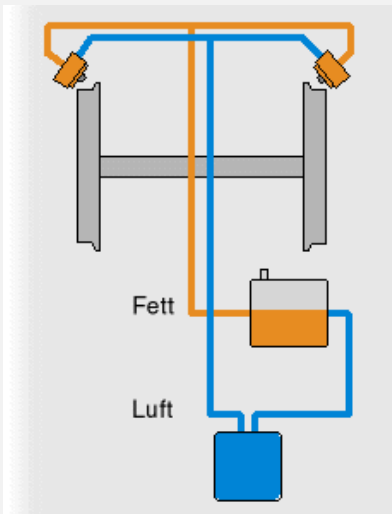
Tramway

# Wheels - Wheel flange lubrication (mobile system)

Safer process.  
Safer profit.



Name	Thicker	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus LDU 02 GR	Li	00-000	Synthetic	-40 to 120°C	Willy Vogel, Lincoln, Baier & Köppel, MAN 283, Delimon, Rebs	
rhenus CBG 03	Ca	000	Synthetic	-30 to 80°C	Rebs	Contains graphite
<b>rhenus BDG 02</b> (1. recommandation)	<b>Gel</b>	<b>00-000</b>	<b>Synthetic</b>	<b>- 30 to 100°C</b>		<b>Biological degradable, contains graphite, not flung off at high speeds until 250 km/h</b>





# Locomotives

Safer process.  
Safer profit.



## Disc brakes

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Refernces	Remarks
rhenus MCK 2	Gel	2	Semi synthetic	-30 to 180°C		Non dripping, very good adhesion, labrication of bolts



Source (Knorr-Bremse): <http://fahrzeugtechnik.fh-joanneum.at/workshops/2008-06-04/presentation.pdf>

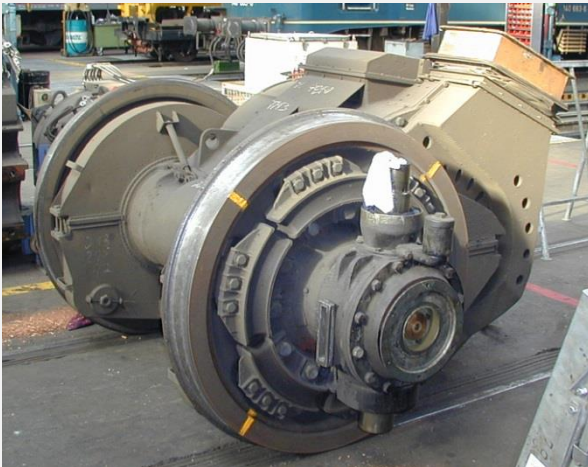
# Locomotives

Safer process.  
Safer profit.



## Traction motors bearings

Name	Thicker	NLGI grade	Baseoil	Operating Temperature	Approvals Refernces	Remarks
rhenus LKZ 2	Li-Co	2	Synthetic	-40 to 140°C	ABB approval	Up to 250 km/h
rhenus LKR 2	Li-Co	2	Semi synthetic	-30 to 150°C	Used in the Netherland Railway for years	Up to 200 km/h
<b>rhenus LWW 2 GE</b>	<b>Li</b>	<b>2</b>	<b>Synthetic</b>	<b>-40 bis 140°C</b>		<b>Neu development, Up to 250 km/h</b>



Source: wikipedia- Traction motor german-class140, Solaris 2006

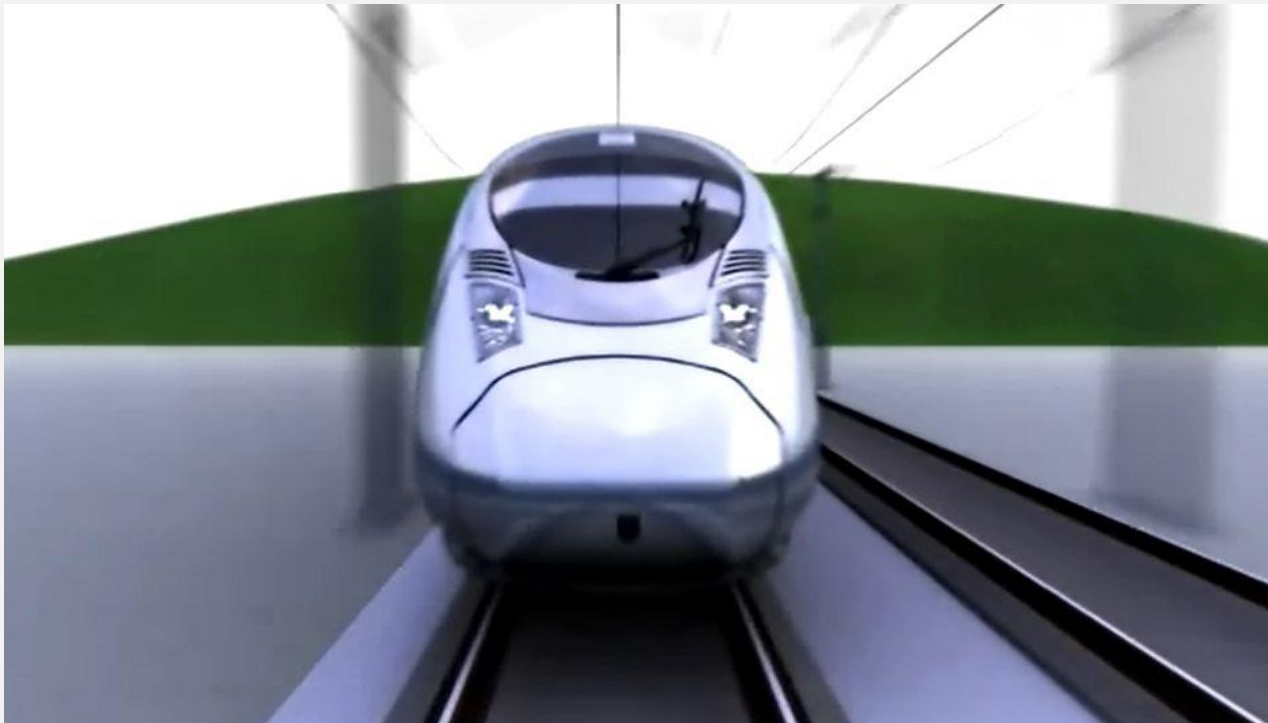
# Locomotives

Safer process.  
Safer profit.



## Curved gear coupling

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Referneces	Remarks
rhenus LKX 2	Li-Co	2	Semi synthetic	-25 to 150		Very good EP/AW behaviour



Video: Move the mouse on picture and press left mouse button

Source:  
<http://www.industry.siemens.com/drives/global/de/kupplungen/bahnkupplungen/Seiten/Default.aspx?stc=wwidt102712#>

# Locomotives

Safer process.  
Safer profit.

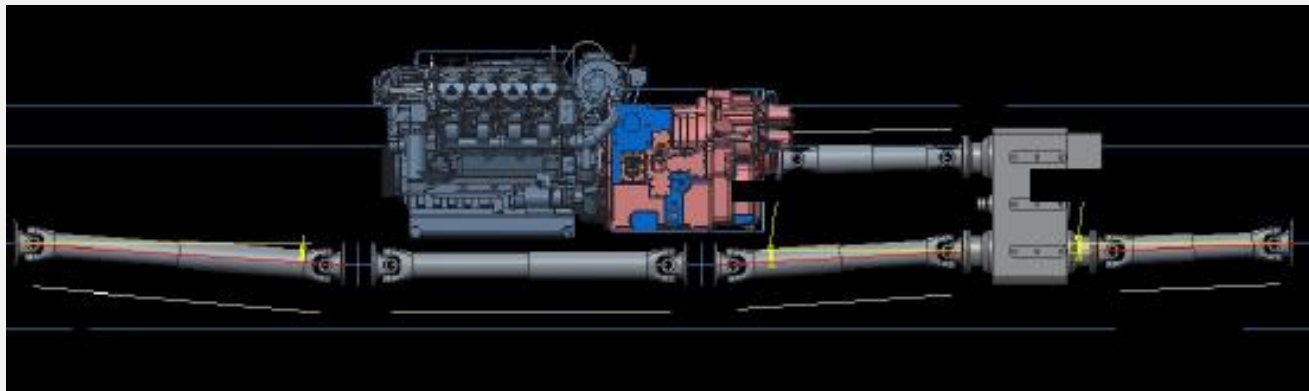


## Gearbox-Wheelset

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Refernces	Remarks
rhenus OGS 24	---	ISO 68	Synthetic	Pourpoint: -55°C V40=68 V100=12		CLP-gear oils according to DIN 51 517.

## Cardan shaft joints

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Refernces	Remarks
rhenus LKI 2	Li-Co	2	Synthetic	-35 to 140°C		



Picture: Elbe-Group

# Bogies

Safer process.  
Safer profit.

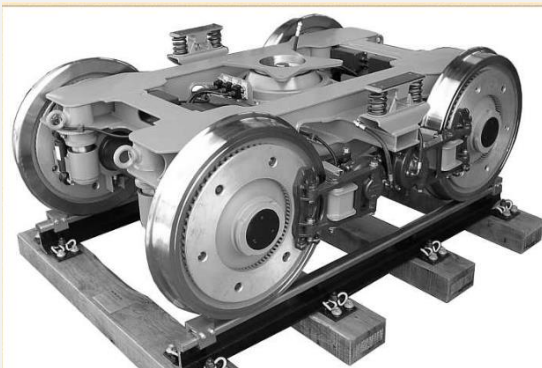


## Screw and bolt connections

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Referneces	Remarks
rhenus CAZ 2	Spec. Ca	2	Mineral	-30 to 110°C	DB approval	Assembling paste and for bearings with water contact

## Wheel flange

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Referneces	Remarks
rhenus BDG 02	Gel	00-000	Synthetic	- 30 to 100°C		Biological degradable, not flung off at high speeds



Picture: TU Berlin,  
Fachgebiet  
Schienenfahrzeuge/IFV  
Bahn-Technik e. V.  
Sammlung Hermann Jahn



Source: Foto:  
Bengt  
Dahlberg,  
September  
2004, Berlin  
(InnoTrans)

# Coach and further applications

## Doors, seals, general applications

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals Referneces	Remarks
rhenus LZN 2	Li	2	Mineral	-30 to 130°C	DB approval	Universal grease for standard applications



# Coach and further applications

## Air compressors

Name	Thickener	NLGI grade	Baseoil	Pourpoint	Approvals Referneces	Remarks
rhenus OVS 23, rhenus OVS 24	---	ISO 46, 68	synthetic	-55°C		Long relubrication intervals



Video: Move the mouse on picture and press left mouse button

Source: Knorr-Bremse

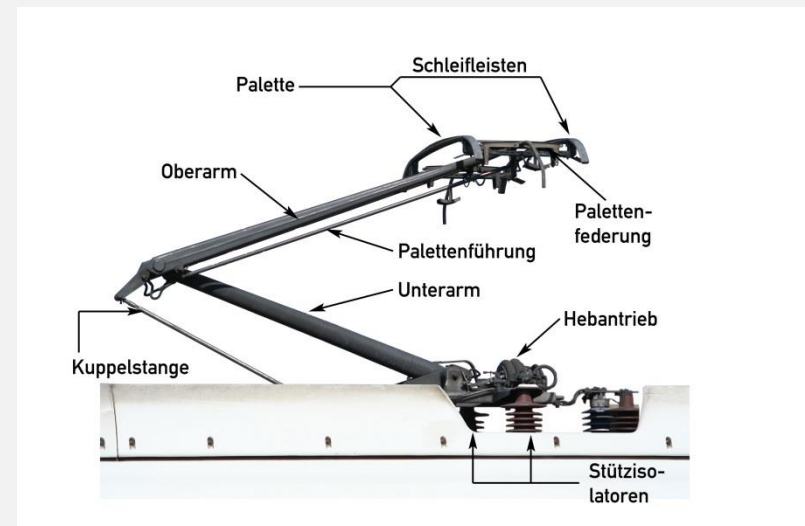
# Additional greases for railroad

Safer process.  
Safer profit.



## Pantographs

Name	Thickener	NLGI grade	Baseoil	Operating Temperature	Approvals References	Remarks
rhenus LKO 2	Li-Co	2	Synthetic	-45 to 150°C		High performance grease, extreme low friction coefficient





**Thank you for your attention**

