



Axles and wheel heads for buses and trucks

List of lubricants TE-ML 12

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1. Axles and wheel heads for buses

Product group	Lubricant classes for service fills ⁽¹⁾
Axles A series, wheel heads RL series	ZF Ecofluid X SAE 80W-90 12B / 12C / 12D / 12E / 12M / 12N
Low-floor portal axles AV series without multi-disc self-locking differentials	ZF Ecofluid X SAE 80W-90 12B / 12E / 12M / 12N
Low-floor portal axles AV series with multi-disc self-locking differentials	12C / 12D
Low-floor portal axles AV 133 with efficiency package	ZF Ecofluid XL SAE 75W-85 12F
Grease-lubricated wheel bearings with individual mounts at the front and rear axles	12G
Compact bearings (hub unit) in the wheel heads at the front and rear axles	12H
General greasing points	12G
General greasing points Lubrication by means of centralized lubricating system	12P

2. Electric axles for buses

Product group	Lubricant classes for service fills ⁽¹⁾
AVE 130	ZF Ecofluid X SAE 80W-90 ZF Ecofluid XL SAE 75W-85 12F / 12L
Compact bearing (hub unit) in the wheel heads at the central and rear axles of the AVE 130	12H

<p>The list of lubricants TE-ML 12, edition 01.10.2018 replaces all previous editions. The current list can be requested from any ZF after-sales service center or accessed on the Internet under www.zf.com/lubricants.</p>	<p>ZF Friedrichshafen AG D-88038 Friedrichshafen www.zf.com/contact</p>
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3. Axles for trucks

Product group	Lubricant classes for service fills ⁽¹⁾
APL 9000, APL 90	ZF Ecofluid X SAE 80W-90 ZF Ecofluid XL SAE 75W-85 12B / 12E / 12F / 12M / 12N
Compact bearing (hub unit) in the wheel heads at the front axles of the APL 90	12H
General greasing points	12G

4. Oil level check, oil and grease change intervals, breather maintenance (ZF breather)

4.1 Axles and wheel heads for buses (A, AV and RL series)

Lubricant class	Operating conditions	Oil level check	Oil change intervals and breather maintenance (ZF breather) ⁽⁴⁾	Oil change intervals and breather maintenance (ZF breather) Hot-country operation ⁽³⁾
12B, 12E	Line operation City, suburban operation	With each engine-oil change	150.000 km / 100,000 miles / 3 years ⁽²⁾	60.000 km / 40,000 miles / 1 year ⁽²⁾
	Coaches		150.000 km / 100,000 miles / 3 years ⁽²⁾	60.000 km / 40,000 miles / 1 year ⁽²⁾
ZF Ecofluid X SAE 80W-90 12M, 12N	Line operation City, suburban operation		180.000 km / 110,000 miles / 3 years ⁽²⁾	120.000 km / 80,000 miles / 2 years ⁽²⁾
	Coaches		180.000 km / 110,000 miles / 3 years ⁽²⁾	120.000 km / 80,000 miles / 2 years ⁽²⁾
ZF Ecofluid XL SAE 75W-85 12F	Line operation City, suburban operation		300.000 km / 180,000 miles / 5 years ⁽²⁾	180.000 km / 110,000 miles / 3 years ⁽²⁾
12C, 12D	Line operation		60.000 km / 40,000 miles / 1 year ⁽²⁾	-

Grease class	Operating conditions	Check	Change interval
12H - Compact bearings (hub unit) in the wheel heads at the front and rear axles	Line, suburban operation	Refer to ZF operating instructions	500.000 km / 310,000 miles / 4 years ⁽²⁾
	Coaches		800.000 km / 500,000 miles / 6 years ⁽²⁾
12G - Grease-lubricated wheel bearings with individual mounts at the front and rear axles	Line, suburban operation, Coaches		500.000 km / 310,000 miles / 2 years ⁽²⁾
12G - General greasing points	Line, suburban operation, Coaches		Relubrication 80.000 km / 50,000 miles / 1 year ⁽²⁾
12P - General greasing points Lubrication by means of centralized lubricating system	Line, suburban operation, Coaches	Regular check of all lubricating points for escaping fresh grease	Observe provisions of centralized lubricating system manufacturer

4.2 Electric axles for buses (AVE 130)

Lubricant class	Operating conditions	Oil level check	Oil change intervals
ZF Ecofluid X SAE 80W-90 ZF Ecofluid XL SAE 75W-85 12F, 12L	Line operation	Refer to ZF operating instructions	60.000 km / 40,000 miles / 1 year ⁽²⁾





Grease class	Operating conditions	Check	Change interval
12H - Compact bearing (hub unit) in the wheel heads at the central and rear axles of the AVE 130	Line operation	Refer to ZF operating instructions	500.000 km / 310,000 miles / 4 years ⁽²⁾

4.3 Axles for trucks (APL 9000, APL 90)

Lubricant class	Operating conditions	Oil level check	Oil change intervals
ZF Ecofluid X SAE 80W-90 ZF Ecofluid XL SAE 75W-85 12B, 12E, 12M, 12N, 12F	-	With each engine-oil change	Initial oil change after 10 000 km / 7,000 miles Subsequent oil change interval 120.000 km / 80,000 miles / 2 years ⁽²⁾

Grease class	Operating conditions	Check	Change interval
12H - Compact bearing (hub unit) in the wheel heads at the front axles of the APL 90	-	Refer to specifications provided by the vehicle manufacturer	500.000 km / 310,000 miles / 4 years ⁽²⁾
12G - General greasing points	-		Relubrication according to the specifications provided by the vehicle manufacturer

5. Low temperatures limits

Viscosity grades	Use at outside temperatures
SAE 75W-85, 75W-90, 75W-110, 75W-140	- 40°C 
SAE 80W-90, 80W-110, 80W-140	- 26°C 
SAE 85W-90, 85W-110, 85W-140	- 12°C 
SAE 90	- 5°C 

6. Explanation of footnotes and comments

Footnotes

- (1) **Refer to the following pages for approved commercial products. Pay due attention to the note on oil level check, oil and grease change intervals, breather maintenance (ZF breather), and low temperature limits on Pages 2 and 3.**
When changing the oil type within one lubricant class or to another lubricant class, mixing of the new oil with the residual oil in the axle is permitted.
- (2) Change required, depending on what occurs first.
- (3) The denomination „hot country use“ is derived from the area where the vehicle is used, rather than from a country in the sense of a state.
Regarding ZF units, we say "Hot country use" when:
1. the monthly average temperature exceeds 25°C in more than 2 months within a year
2. or if temperatures rise above 40°C on more than 7 days in a year
Examples for possible countries or regions are:
- America: Mexico, USA (South and deserts)
- Whole Africa (without South Africa)
- Middle East: Bangladesh, India (regional), Pakistan, Afghanistan, Sri Lanka
- Near East: Iran, Iraq, Kuwait, Bahrain, Oman, Qatar, Saudi-Arabia, United Arab Emirates, Yemen, Israel, Lebanon, Syria, Egypt, Jordan
- Australia (deserts)
- China (deserts)
- (4) Change the filter insert on the ZF breather at every oil change (see ZF Service Information 13/16d or 11/17)

Comments

Additives of any kind added **later** to the oil change the oil in a manner that is unpredictable, and they are therefore not permitted. No liability of any kind will be accepted by ZF for any damage resulting from the use of such additives.

7. Lubricant classes and approved trade products**Lubricant class 12B**

Transmission oil

Viscosity grades: SAE 75W-90 / 75W-110 / 75W-140

Manufacturer (12B)

ARAL AG, BOCHUM/DE
 ARAL AG, BOCHUM/DE
 BASF SE, LUDWIGSHAFEN/DE
 BASF SE, LUDWIGSHAFEN/DE
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE

Trade name (12B)

ARAL GETRIEBEÖL BS 75W-90
 ARAL GETRIEBEÖL SNA-C 75W-90
 EMGARD UAF 4209
 EMGARD RW-A, SAE 75W-90
 CASTROL SYNTRAX LONG LIFE 75W-90
 CASTROL TRANSMAX AXLE LONG LIFE 75W-90
 LUKOIL TRANSMISSION SYNTH BSX 75W-90
 SRS GETRIEBEFLUID AFS

ZF approval number

ZF000133
 ZF000134
 ZF000363
 ZF000917
 ZF000230
 ZF002142
 ZF001763
 ZF000826

Lubricant class 12C

Transmission oil with limited-slip additives

Viscosity grades: SAE 80W-90 / 80W-110 / 80W-140 / 85W-90 / 85W-110 / 85W-140 / 90

Manufacturer (12C)

ADDINOL LUBE OIL GMBH, LEUNA/DE
 ADDINOL LUBE OIL GMBH, LEUNA/DE
 ARAL AG, BOCHUM/DE
 AVISTA OIL DEUTSCHLAND GMBH, UETZE/DE
 BAYWA AG MÜNCHEN, MÜNCHEN/DE
 BELGIN MADENI YAGLAR TIC. VE SAN. A.S., KOCAELI/TR
 BUCHER AG LANGENTHAL, LANGENTHAL/CH
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CHAMPION CHEMICALS N.V., HEMIKSEM/BE
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CLASS KGAA MBH, HARSEWINKEL/DE
 EXXONMOBIL CORPORATION, HOUSTON, TX/US
 FINKE MINERALÖLWERK GMBH, 27374 VISSSELHÖVEDE/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GEORG OEST MINERALÖLWERK GMBH & CO.KG, FREUDENSTADT/DE
 GRUPA LOTOS S.A., GDANSK/PL
 GRUPA LOTOS S.A., GDANSK/PL
 GS CALTEX CORPORATION, SEOUL/KR
 GULF OIL INTERNATIONAL, MUMBAI/IN
 HINDUSTAN PETROLEUM CORPORATION LTD., MUMBAI/IN
 INA MAZIVA LTD., ZAGREB/HR
 INDIAN OIL CORPORATION LTD, MUMBAI/IN
 INDIAN OIL CORPORATION LTD, MUMBAI/IN
 JOHN DEERE, MOLINE, ILLINOIS/US
 JOHN DEERE, MOLINE, ILLINOIS/US
 KUWAIT PETROLEUM INTERNATIONAL LUBRICANT, ANTWERP/NL
 LIEBHERR HYDRAULIKBAGGER GMBH, KIRCHDORF/DE
 LIQUI MOLY GMBH, ULM/DE
 MEGUIN GMBH & CO. KG, SAARLOUIS/DE
 MOL-LUB KFT, ALMASFUZITO/HU
 MOL-LUB KFT, ALMASFUZITO/HU
 MORRIS LUBRICANTS, SHREWSBURY/GB
 NILS SPA, BURGSTALL/IT
 NORTHLAND PRODUCTS COMPANY, WATERLOO, IOWA/US
 NORTHLAND PRODUCTS COMPANY, WATERLOO, IOWA/US
 OILFINO MINERALÖL GMBH, PRISDORF/DE
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 ORLEN OIL SP. Z O.O., KRAKOW/PL
 ORLEN OIL SP. Z O.O., KRAKOW/PL
 ORLEN OIL SP. Z O.O., KRAKOW/PL
 OY TEBOIL AB, HELSINKI/FI
 PAKELO MOTOR OIL, SAN BONIFACIO (VR)/IT
 PANOLIN AG, MADETSWIL/CH
 PETROGAL S.A., LISBOA/PT
 PETROL OFISI A.S., ISTANBUL/TR
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PHI OIL GMBH, ST. GEORGEN/AT
 PTT OIL AND RETAIL BUSINESS PLC., BANGKOK/TH
 RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/DE
 REPSOL LUBRICANTES Y ESPECIALIDADES, S.A, MADRID/ES
 RN-LUBRICANTS, LLC, MOSCOW/RU
 RN-LUBRICANTS, LLC, MOSCOW/RU
 SASOL OIL, RANDBURGZA
 SAVITA OIL TECHNOLOGIES LIMITED, MUMBAI/IN
 SAVITA OIL TECHNOLOGIES LIMITED, MUMBAI/IN
 SINOPEC LUBRICANT CO., LTD., BEIJING/CN
 SK LUBRICANTS, SEOUL/KR
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 UNIL OPAL, SAUMUR/FR
 VALVOLINE CUMMINS PVT LIMITED, GURGAON/IN
 VALVOLINE EUROPE, DORDRECHT/NL
 WOLF OIL CORPORATION N.V., HEMIKSEM/BE
 YACCO SAS, ST PIERRE LES ELBEUF/FR

Trade name (12C)

ADDINOL GETRIEBEÖL GH 85W-90 LS
 ADDINOL GETRIEBEÖL GH 80W-90 LS
 ARAL GETRIEBEÖL HYP LS 85W-90
 PENNASOL LIMITED SLIP HYPOID GEAR OIL LS SAE 90
 TECTROL MULTIGEAR LS 90
 BELGEAR LS 85W90
 MOTOREX UNIVERSAL LS SAE 90
 CASTROL AXLE Z LIMITED SLIP 90
 CASTROL AXLE Z LIMITED SLIP 85W-90
 CASTROL TRANSMAX LIMITED SLIP Z 85W-90
 CEPSA AURIGA LS PLUS 80W-90
 CHAMPION OEM SPECIFIC 80W90 LS GL 5
 GEAR OIL ZF SAE 80W-90
 GEARTEX LS 80W-90
 GEARTEX LS 85W-90
 GEARTEX LS SAE 85W-140
 CLAAS AGRISHIFT BLS 90
 MOBILUBE LS 85W-90
 AVIATICON HYPOID LS 90
 FUCHS TITAN GEAR LS SAE 90
 G-TRUCK LS 80W-90
 G-TRUCK LS 85W-140
 G-TRUCK LS 85W-90
 OEST GETRIEBEÖL HYPOID LS 90
 LOTOS TITANIS LS GL-5 80W-90
 LOTOS TITANIS LS GL-5 SAE 85W-140
 DOOSAN LS GEAR OIL 80W90
 GULF GEAR LS 90
 HP GEAR OIL ZFL 80W 90 LS
 INA HIPENOL GTL LS 90
 SERVO GEAR SUPER LS 90
 SERVO GEAR SUPER LS 80W-90
 JOHN DEERE GL-5 GEAR LUBRICANT W/LS ADD 80W-90
 JOHN DEERE GL-5 GEAR LUBRICANT W/LS ADD 85W-140
 Q8 T 45 LS SAE 90
 LIEBHERR GEAR BASIC 90 LS
 LIQUI MOLY HYPOID-GETRIEBEÖL PLUS GL 5 LS 85W-90
 MEGOL HYPOID-GETRIEBEÖL AXLE LS SAE 85W-90
 MOL HYKOMOL LS 85W140
 MOL HYKOMOL LS 85W90
 TERRAIN LS 80W-90
 ALGOL HYPOID LS 90
 POSI-GRIP JDZF 80W90
 POSI-GRIP JDZF 85W140
 OILFINO VARIUS G 400LS 85W-90
 LUKOIL TRANSMISSION LS 85W-90
 LUKOIL TRANSMISSION LS 80W-90
 PLATINUM GEAR LS 80W-90
 PLATINUM AGRO LS 80W-90
 PLATINUM GEAR LS 85W-140
 TEBOIL HYPOID LS 80W-90
 UNIVERSAL GEAR EP LS SAE 85W90
 PANOLIN SUPER DUTY LS 90
 GALP TRANSOIL HP LS 90
 MAXIGEAR EP-X 85W-90LS
 AMBRA AXF 80W-90 (SAE 80W-90)
 AKCELA AXLEPOWER (SAE 80W-90)
 AKROS AXLEGEAR 80W-90 (SAE 80W-90)
 TUTELA TRANSMISSION W90/LS (SAE 80W-90)
 ARBOR TTF (SAE 80W-90)
 SUPERGEAR BRONZE 85W90 LS
 PTT LIMITED SLIP (SAE 80W-90)
 RAVENOL SPERRDIFF.-GETR.-OEL LS 90
 REPSOL CARTAGO EP AUTOBLOCANTE SAE 80W90
 TNK TRANS GIPOID LS 80W-90
 TNK TRANS GIPOID LS 85W-90
 SASOL DIFFERENTIAL OIL LIMITED SLIP 80W-90
 SAVSOL AUTOGEAR 85W140 LIMITED SLIP GL5
 SAVSOL AUTOGEAR 90 LIMITED SLIP GL-5
 SINOPEC GREATWALL ZLS GL-5 85W/90
 SK ZIC G-5 LSD 80W-90
 SRS VIOLIN RSH
 TOTAL DYNATRANS DA 80W-90
 TOTAL DYNATRANS DA 85W-140
 TOTAL DYNATRANS LS 80W-90
 ELF TRACTELF BLS 80W-90
 GULF LS REAR AXLE 80W-90
 TOTAL DYNATRANS DA 80W-90
 GEAR AB-EP 85W90
 GEAR DURA 80W90 LS
 VALVOLINE HEAVY DUTY AXLE OIL PRO 80W-90 LS
 WOLF OFFICIALTECH 80W90 LS GL 5
 BVX LS 200 80W-90

ZF approval number

ZF000629
 ZF000703
 ZF000465
 ZF000844
 ZF001167
 ZF002257
 ZF000727
 ZF000307
 ZF002044
 ZF002178
 ZF001050
 ZF003555
 ZF000787
 ZF000809
 ZF000810
 ZF001686
 ZF001287
 ZF000031
 ZF002301
 ZF000651
 ZF000558
 ZF000561
 ZF000937
 ZF001479
 ZF000924
 ZF001135
 ZF001341
 ZF000891
 ZF001578
 ZF000424
 ZF001445
 ZF001450
 ZF001312
 ZF001313
 ZF002109
 ZF000845
 ZF001367
 ZF001345
 ZF001075
 ZF001114
 ZF001637
 ZF003447
 ZF000049
 ZF000051
 ZF000740
 ZF001761
 ZF003406
 ZF000603
 ZF001272
 ZF001459
 ZF003352
 ZF000027
 ZF000396
 ZF003410
 ZF001480
 ZF000546
 ZF000781
 ZF000782
 ZF000901
 ZF001373
 ZF001004
 ZF000013
 ZF001180
 ZF000981
 ZF000761
 ZF000791
 ZF000700
 ZF001857
 ZF001898
 ZF000127
 ZF003340
 ZF000442
 ZF001255
 ZF001512
 ZF001545
 ZF001546
 ZF001548
 ZF002309
 ZF000526
 ZF001465
 ZF001996
 ZF003552
 ZF001614

Lubricant class 12D

Transmission oil with limited-slip additives

Viscosity grades: SAE 75W-90 / 75W-110 / 75W-140

Manufacturer (12D)

ARAL AG, BOCHUM/DE
CASTROL LTD, LONDON/GB
CASTROL LTD, LONDON/GB
EXXONMOBIL CORPORATION, HOUSTON, TX/US

Trade name (12D)

ARAL GETRIEBEÖL BS-LSX 75W-140
CASTROL SYNTRAX LIMITED SLIP 75W-140
CASTROL TRANSMAX LIMITED SLIP LL 75W-140
GEARLUBE VS 500

ZF approval number

ZF000140
ZF000269
ZF002141
ZF000851

Lubricant class 12E

Transmission oil

Viscosity grades: SAE 80W-90 / 80W-110 / 80W-140 / 85W-90 / 85W-110 / 85W-140 / 90

Manufacturer (12E)

ARAL AG, BOCHUM/DE
 BAHRAIN PETROLEUM COMPANY, AWALI/BH
 BAHRAIN PETROLEUM COMPANY, AWALI/BH
 BAHRAIN PETROLEUM COMPANY, AWALI/BH
 BP PLC., LONDON/GB
 BP PLC., LONDON/GB
 BUCHER AG LANGENTHAL, LANGENTHAL/CH
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CLASS KGAA MBH, HARSEWINKEL/DE
 CYCLON HELLAS SA, ATHENS/GR
 EKO ABEI, ATHENS/GR
 ENI S.P.A., ROME/IT
 ENI S.P.A., ROME/IT
 FUCHS PETROLUB SE, MANNHEIM/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 HILL CORPORATION, SHYMKENT/KZ
 HUILES BERLIET S.A., SAINT-PRIEST/FR
 INGRAX INDUSTRIA E COMERCIO DE GRAXA S/A, DUQUE DE CAXIAS/BR
 MOL-LUB KFT, ALMASFUZITO/HU
 MOOVE LUBRICANTS, GRAVESEND/GB
 MORRIS LUBRICANTS, SHREWSBURY/GB
 MORRIS LUBRICANTS, SHREWSBURY/GB
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 PETROL OFISI A.S., ISTANBUL/TR
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 QATAR LUBRICANTS COMPANY, DOHA/QA
 RN-LUBRICANTS, LLC, MOSCOW/RU
 RN-LUBRICANTS, LLC, MOSCOW/RU
 RN-LUBRICANTS, LLC, MOSCOW/RU
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 TEXSA DO BRASIL LTDA, UMUARAMA/PR/BR
 TEXSA DO BRASIL LTDA, UMUARAMA/PR/BR
 TEXSA DO BRASIL LTDA, UMUARAMA/PR/BR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR

Trade name (12E)

ARAL GETRIEBEÖL HYP 85W-140
 SPAREX EP 90 GL-5
 SPAREX EP 80W-90 GL-5
 SPAREX EP 85W-140 GL-5
 BP ENERGEAR HYPO 85W-140
 BP ENERGEAR HYPO 80W-90
 GEAR OIL HYPOID SAE80W/90
 CASTROL AXLE EPX 85W-140
 CASTROL AXLE EPX 80W-90
 CASTROL AXLE EPX 80W-90
 CASTROL TRANSMAX AXLE EPX 85W-140
 CASTROL TRANSMAX AXLE EPX 80W-90
 CEPSA TRANSMISIONES EP 80W-90
 CEPSA TRANSMISIONES EP 85W-140
 MAN SUPER AXLE 342-M2
 CLAAS AGRISHIFT MT 80W-90
 GEAR EP GL-5 80W-90
 EKO GEAROL-5 80W-90
 ENI ROTRA MP 80W-90
 ENI ROTRA MP 85W-140
 FUCHS TITAN SUPERGEAR SAE 80W-90
 FUCHS TITAN SUPERGEAR SAE 85W-140
 GAZPROMNEFT GL-5 80W-90
 FASTROIL MTF5 80W-90
 RTO HD 80W-90
 MULTIGEROL 85W140
 MOL HYKOMOL ZF 80W90
 COMMA PRO EP 80W-90
 EP 80W-90 GEAR OIL
 EP 85W-140
 LUKOIL TRANSMISSION TM-5 SAE 80W-90
 LUKOIL TRANSMISSION TM-5 SAE 85W-140
 LUKOIL TRANSMISSION GL-5 80W-90
 LUKOIL TRANSMISSION GL-5 90
 LUKOIL TRANSMISSION GL-5 85W-140
 MAXIGEAR EP-X 80W-90
 ARBOR TRW 90 (SAE 80W-90)
 ARBOR TRW 140 (SAE 85W-140)
 AMBRA HYPOIDE 90 (SAE 80W-90)
 AKCELA GEAR 135H EP (SAE 80W-90)
 AKROS GEAR EP 90 (SAE 80W-90)
 AMBRA HYPOIDE 140 (SAE 85W-140)
 AKCELA GEAR 135H EP (SAE 85W-140)
 TUTELA TRANSMISSION W90/LA (SAE 80W-90)
 ARBOR TRW 90 (SAE 80W-90)
 QALCO SUPER GEAR OIL ZX 85W-140
 ROSNEFT KINETIC HYPOID 80W-90
 ROSNEFT KINETIC HYPOID 85W-140
 ROSNEFT KINETIC HYPOID 85W-90
 SHELL SPIRAX S3 AS 80W-140
 SRS WIOLIN HL 5 SAE 80W-90
 SRS WIOLIN HL 5 SAE 85W-90
 TEXSA GEAR MULTI GL-5 85W140
 TEXSA GEAR MULTI GL-5 90
 TEXSA GEAR MULTI GL-5 80W90
 TOTAL TRANSMISSION AXLE 7 80W-90
 TOTAL TRANSMISSION AXLE 7 85W-140
 ELF TRANSELF TYPE B 80W-90
 TOTAL DYNATRANS HD 80W-90

ZF approval number

ZF000930
 ZF002316
 ZF002317
 ZF002318
 ZF000865
 ZF001321
 ZF002005
 ZF000910
 ZF001320
 ZF001754
 ZF002145
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 ZF000516
 ZF001201
 ZF002076
 ZF003335
 ZF003336
 ZF003337
 ZF000479
 ZF001911
 ZF001912
 ZF001458
 ZF001941
 ZF001942
 ZF001770
 ZF001846
 ZF002071
 ZF002310

Lubricant class 12F

Transmission oil

Viscosity grades: SAE 75W-85

Manufacturer (12F)

ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAFEN/DE

Trade name (12F)

ZF-ECOFLUID XL SAE 75W-85

ZF approval number

ZF003441

Lubricant class 12G

Multi-purpose grease according to specification / requirement:

- DIN 51825 classification at least KP2K-20
- ISO 6743-9 classification at least ISO-L-XBCEB2
- Consistency class: NLGI 2
- Base oil: API Group 1 / 2 / 3 / 4
- Thickener type: Li
- EP additives
- temperature operation limits: min. -20°C to +120°C

Note:

All trade products which satisfy the above specifications may be used. There will be no product listing.

Lubricant class 12H

Lubricating grease for long-term lubrication of compact bearings (Hub Unit)

Manufacturer (12H)FUCHS PETROLUB AG, MANNHEIM/DE
FUCHS PETROLUB AG, MANNHEIM/DE
FUCHS PETROLUB AG, MANNHEIM/DE**Trade name (12H)**RENOLIT LX-PEP 2
RENOLIT LX-N EP 2
RENOLIT LX-NHU 2

Manufacturer (12L)

OY TEBOIL AB, HELSINKI/FI
 OY TEBOIL AB, HELSINKI/FI
 PAKELO MOTOR OIL, SAN BONIFACIO (VR)/IT
 PANOLIN AG, MADETSWIL/CH
 PANOLIN AG, MADETSWIL/CH
 PAZ LUBRICANTS & CHEMICALS, HAIFA/IL
 PETROGAL S.A., LISBOA/PT
 PETROGAL S.A., LISBOA/PT
 PETROL OFISI A.S., ISTANBUL/TR
 PETROL OFISI A.S., ISTANBUL/TR
 PETROMIN CORPORATION, JEDDAH/SA
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PHI OIL GMBH, ST. GEORGEN/AT
 PHI OIL GMBH, ST. GEORGEN/AT
 REPSOL LUBRICANTES Y ESPECIALIDADES, S.A, MADRID/ES
 REPSOL LUBRICANTES Y ESPECIALIDADES, S.A, MADRID/ES
 SASOL OIL, RANDBURG/ZA
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SINOPEC LUBRICANT CO., LTD., BEIJING/CN
 SINOPEC LUBRICANT CO., LTD., BEIJING/CN
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 TEDEX S.A., WARSZAWA/PL
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 VALVOLINE EUROPE, DORDRECHT/NL
 VALVOLINE EUROPE, DORDRECHT/NL
 VALVOLINE EUROPE, DORDRECHT/NL
 VEEDOL INTERNATIONAL LIMITED, GLASGOW/GB
 WOLF OIL CORPORATION N.V., HEMIKSEM/BE
 YACCO SAS, ST PIERRE LES ELBEUF/FR
 YORK LUBRICANTS - GINOUVES SAS, LA GARDE/FR
 YPF S.A., BUENOS AIRES/AR
 ZELLER+GMELIN GMBH&CO.KG, EISLINGEN/DE
 ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAFEN/DE

Trade name (12L)

TEBOIL HYPOID SAE 75W-90
 TEBOIL HYPOID SAE 80W-90
 GLOBAL MULTIGEAR TS SAE 75W/90
 PANOLIN TOPGEAR 80W/90
 PANOLIN SUPER DUTY SYNTH 75W/90
 PAZ GEAR LD 80W-90
 GALP TRANSVEX TDL 75W90
 GALP TRANSOIL HP XT 80W90
 MAXIGEAR D 75W-90
 MAXIGEAR TECH EP-X 80W-90
 PETROMIN GEAR BOX Z12 SAE 80W90
 TUTELA TRANSMISSION STARGEAR AX-ED (SAE 75W-90)
 TUTELA TRANSMISSION FE-AXLE (SAE 75W-90)
 TUTELA TRANSMISSION STARGEAR AX-ED (SAE 75W-90)
 UNIGEAR GOLD 75W90
 UNIGEAR GOLD 75W90
 REPSOL CARTAGO FE LD 75W90
 REPSOL CARTAGO LD 80W90
 SYN GEAR DIFFERENTIAL OIL 75W-90
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S3 AD 80W-90
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S3 AM 80W-90
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S6 ADME 75W-90
 SINOPEC GREATWALL VT 75W/90
 SINOPEC MULTIPURPOSE-II GEAR OIL 80W-90
 SRS GETRIEBFLUID SML 80W-90
 SRS GETRIEBFLUID SXL 75W-90
 TEDEX SUPER GEAR OIL (TDL) SAE 80W-90
 ELF TRANSELF SYNTHSE FE 75W-90
 TOTAL TRANSMISSION DUAL 9 FE 75W-90
 TOTAL TRANSMISSION AXLE 9 80W-90
 VALVOLINE HEAVY DUTY TDL PRO 75W-90
 VALVOLINE HEAVY DUTY AXLE OIL PRO 80W-90 LD
 VALVOLINE HEAVY DUTY AXLE OIL PRO 80W-90
 VEEDOL TRANSMISSION SYNTHETIC LD 75W-90
 WOLF OFFICIALTECH 75W90 GL 5
 BVX 1000 75W-90
 YORK 896 75W90
 HIPOIDAL SUPER S 75W-90
 DIVINOL MULTI-AXLE 80W90
 ZF-ECOFLUID X SAE 80W-90

ZF approval number

ZF001969
 ZF001970
 ZF001224
 ZF000423
 ZF000462
 ZF003437
 ZF000980
 ZF001981
 ZF001591
 ZF001665
 ZF001966
 ZF001017
 ZF001199
 ZF001738
 ZF001203
 ZF003606
 ZF000451
 ZF001141
 ZF000702
 ZF000016
 ZF001237
 ZF001262
 ZF001292
 ZF001433
 ZF003334
 ZF000527
 ZF003332
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 ZF001283
 ZF001837
 ZF001869
 ZF001629
 ZF003525
 ZF001612
 ZF000550
 ZF003384
 ZF001684
 ZF001266

Manufacturer (12M)

ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAFEN/DE

Trade name (12M)

ZF-ECOFLUID X SAE 80W-90

ZF approval number

ZF001266

Lubricant class 12N

Transmission oil

Viscosity grades: SAE 75W-90 / 75W-110 / 75W-140

Manufacturer (12N)

ADDINOL LUBE OIL GMBH, LEUNA/DE
 ARAL AG, BOCHUM/DE
 BASF SE, LUDWIGSHAFEN/DE
 BASF SE, LUDWIGSHAFEN/DE
 BP PLC., LONDON/GB
 BUCHER AG LANGENTHAL, LANGENTHAL/CH
 BUCHER AG LANGENTHAL, LANGENTHAL/CH
 CASTROL LTD, LONDON/GB
 CASTROL LTD, LONDON/GB
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CEPSA COMERCIAL PETRÓLEO S.A.U., MADRID/ES
 CHAMPION CHEMICALS N.V., HEMIKSEM/BE
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CHEVRON LUBRICANTS, SAN RAMON, CA/US
 CONDAT LUBRIFIANTS, CHASSE SUR RHONE/FR
 DE OLIEBRON BV, ZWIJNDRECHT/NL
 DE OLIEBRON BV, ZWIJNDRECHT/NL
 ENI S.P.A., ROME/IT
 ENI S.P.A., ROME/IT
 EXXONMOBIL CORPORATION, HOUSTON, TX/US
 EXXONMOBIL CORPORATION, HOUSTON, TX/US
 EXXONMOBIL CORPORATION, HOUSTON, TX/US
 FABRIKA MAZIVA FAM AD, KRUŠEVAC/RS
 FINKE MINERALÖLWERK GMBH, 27374 VISSELHÖVEDE/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 FUCHS PETROLUB SE, MANNHEIM/DE
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GAZPROMNEFT-LUBRICANTS, MOSCOW/RU
 GEORG OEST MINERALÖLWERK GMBH & CO.KG, FREUDENSTADT/DE
 GRUPA LOTOS S.A., GDANSK/PL
 GULF OIL INTERNATIONAL, MUMBAI/IN
 HUILES BERLIET S.A., SAINT-PIERRE/FR
 IGOL FRANCE, AMIENS/FR
 INA MAZIVA LTD., ZAGREB/HR
 KUWAIT PETROLEUM INTERNATIONAL LUBRICANT, ANTWERP/NL
 KUWAIT PETROLEUM INTERNATIONAL LUBRICANT, ANTWERP/NL
 KUWAIT PETROLEUM INTERNATIONAL LUBRICANT, ANTWERP/NL
 LIEBHERR HYDRAULIKBAGGER GMBH, KIRCHDORF/DE
 LIQUI MOLY GMBH, ULM/DE
 MEGUIN GMBH & CO. KG, SAARLOUIS/DE
 MOL-LUB KFT, ALMASFUZITO/HU
 MOOVE LUBRICANTS, GRAVESSEND/GB
 MOTUL SA, AUBERVILLIERS/FR
 NIS AD, NOVI SAD/RS
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OOO "LLK-INTERNATIONAL", MOSCOW/RU
 OY TEBOil AB, HELSINKI/FI
 PAKELO MOTOR OIL, SAN BONIFACIO (VR)/IT
 PANOLIN AG, MADETSWIL/CH
 PANOLIN AG, MADETSWIL/CH
 PETROGAL S.A., LISBOA/PT
 PETROL OFISI A.S., ISTANBUL/TR
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PETRONAS LUBRICANTS INTERNATIONAL SDN BH, KUALA LUMPUR/MY
 PHI OIL GMBH, ST. GEORGEN/AT
 PHI OIL GMBH, ST. GEORGEN/AT
 RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/DE
 REPSOL LUBRICANTES Y ESPECIALIDADES, S.A, MADRID/ES
 SASOL OIL, RANDBURG/ZA
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SHELL INTERNATIONAL PETROLEUM COMP. LTD, LONDON/GB
 SINOPEC LUBRICANT CO., LTD., BEIJING/CN
 SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/DE
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 TOTAL LUBRIFIANTS S.A., NANTERRE/FR
 VALVOLINE EUROPE, DORDRECHT/NL
 VALVOLINE EUROPE, DORDRECHT/NL
 VEEDOL INTERNATIONAL LIMITED, GLASGOW/GB
 WOLF OIL CORPORATION N.V., HEMIKSEM/BE
 YACCO SAS, ST PIERRE LES ELBEUF/FR
 YORK LUBRICANTS - GINOUVES SAS, LA GARDE/FR
 YPF S.A., BUENOS AIRES/AR

Trade name (12N)

ADDINOL GETRIEBEÖL GH 75 W 90 SL
 ARAL GETRIEBEÖL SNA-E 75W-90
 EMGARD HP 75W-90
 EMGARD UAF 7105
 BP ENERGEGEAR SHX-M 75W-90
 UNISYNT ZX SAE 75W90
 PENTA TL SAE 75W/90
 SYNTRAX UNIVERSAL PLUS 75W-90
 CASTROL TRANSMAX UNIVERSAL LL 75W-90
 CEPSA TRANSMISIONES EP FE+LD 75W-90
 MAN SUPER AXLE 3343 75W-90
 CHAMPION OEM SPECIFIC 75W90 GL 5
 MULTIGEAR S 75W-90
 MULTIGEAR S 75W-140
 DELO SYN-GEAR XS 75W-140
 DELO SYN-TDL 75W-90
 GEAR TXS 75W90
 TOR UNI GEAR LD 75W90
 TOR UNI GEAR 75W110 LD
 ENI ROTRA LSX 75W-90
 ENI ROTRA MP 75W-90
 MOBILUBE 1 SHC 75W-90
 MOBIL DELVAC SYNTHETIC GEAR OIL 75W-90
 MOBIL DELVAC 1 GEAR OIL 75W-90
 MULTIHOPO 75W-90 SINT
 AVIATICON FINKOGEAR PREMIUM 75W-90
 FUCHS TITAN CYTRAC HSY SAE 75W-90
 FUCHS TITAN CYTRAC RR SAE 75W-90
 GEARWAY S5 75W-90
 FUCHS TITAN CYTRAC TD SAE 75W-90
 Q-BOX GL-4/GL-5 75W-90
 GAZPROMNEFT GL-4/GL-5 75W-90
 KAMAZ G-PROFI SERVICE LINE GL-4/GL-5 75W-90
 OEST SYNTH GETRIEBEÖL SAE 75W-90
 TITANIS SUPER GL-5 75W/90
 GULF SYNGEAR 75W-90
 RTO LONGEVIA TCX ECO 75W-90
 SYNTHEGEAR 75W-90
 INA HIPENOL SHD 75W-90
 Q8 TRANS XGS 75W-90
 Q8 TRANS XGR 75W-140
 Q8 T 66 SAE 75W-110
 LIEBHERR SYNTOGEAR PLUS 75W-90
 LIQUI MOLY VOLLSYN. HYPOID GETR.ÖL TRUCK (75W-90)
 MEGOL GETRIEBEÖL TRUCK-SYNTH SAE 75W-90
 MOL HYKOMOL TDL 75W90
 COMMA PRO EP 75W-90 TDL
 MOTUL GEAR SYNTH TDL 75W-90
 NISOTEC HIPO SINT TDL SAE 75W-90
 LUKOIL TRANSMISSION TM-4/5 75W-90
 LUKOIL TRANSMISSION UNI S 75W-90
 LUKOIL TRANSMISSION MN 75W-90
 TEBOil HYPOID SAE 75W-90
 GLOBAL MULTIGEAR TS SAE 75W/90
 PANOLIN SUPER DUTY SYNTH 75W/140
 PANOLIN SUPER DUTY SYNTH 75W/90
 GALP TRANSVEX TDL 75W90
 MAXIGEAR D 75W-90
 TUTELA TRANSMISSION X-ROAD (75W-140)
 TUTELA TRANSMISSION STARGEAR AX-ED (SAE 75W-90)
 TUTELA TRANSMISSION FE-AXLE (SAE 75W-90)
 TUTELA TRANSMISSION STARGEAR AX-ED (SAE 75W-90)
 UNIGEAR GOLD 75W90
 UNIGEAR GOLD 75W90
 RAVENOL TDG 75W-110
 REPSOL CARTAGO FE LD 75W90
 SYN GEAR DIFFERENTIAL OIL 75W-90
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S6 AXME 75W-140
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S 75W-140
 SHELL SPIRAX S6 AXME 75W-90
 SHELL SPIRAX S6 ADME 75W- 90
 SINOPEC GREATWALL VT 75W/90
 SRS GETRIEBEFLUID SXL 75W-90
 ELF TRANSELF SYNTHSE FE 75W-90
 TOTAL TRANSMISSION DUAL 9 FE 75W-90
 VALVOLINE HEAVY DUTY TDL PRO 75W-90
 VALVOLINE HEAVY DUTY AXLE OIL PRO 75W-140
 VEEDOL TRANSMISSION SYNTHETIC LD 75W-90
 WOLF OFFICIALTECH 75W90 GL 5
 BVX 1000 75W-90
 YORK 896 75W90
 HIPODAL SUPER S 75W-90

ZF approval number

ZF002260
 ZF000142
 ZF001716
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 ZF001555
 ZF001771
 ZF001283
 ZF001874
 ZF001629
 ZF003525
 ZF001612
 ZF000550
 ZF003384

Lubricant class 12P

Lubricating grease according to specification / requirement:

- DIN 51502 classification at least GP 0/00/000 G -30
- ISO 6743-9 classification at least ISO-L-X C C E/F/H/I B 0/00/000
- Consistency class: NLGI 0 / 00 / 000
- Base oil: API Group 1 / 2 / 3 / 4
- Thickener type: Li / Ca
- EP additives
- Release of centralized lubricating system manufacturer for the used system must be available

Note:

- **All trade products can be used which comply with the specifications / requirements mentioned above.**
- **The system or vehicle operator ensures that a regular and reliable supply of the greasing points is guaranteed.**
- **The system or vehicle operator ensures that greasing supply is never insufficient at any lubricating point (automatic error message via system and regular visual inspection).**
- **The system manufacturer's provisions with regard to checking for escaping fresh grease and the change intervals must be observed.**