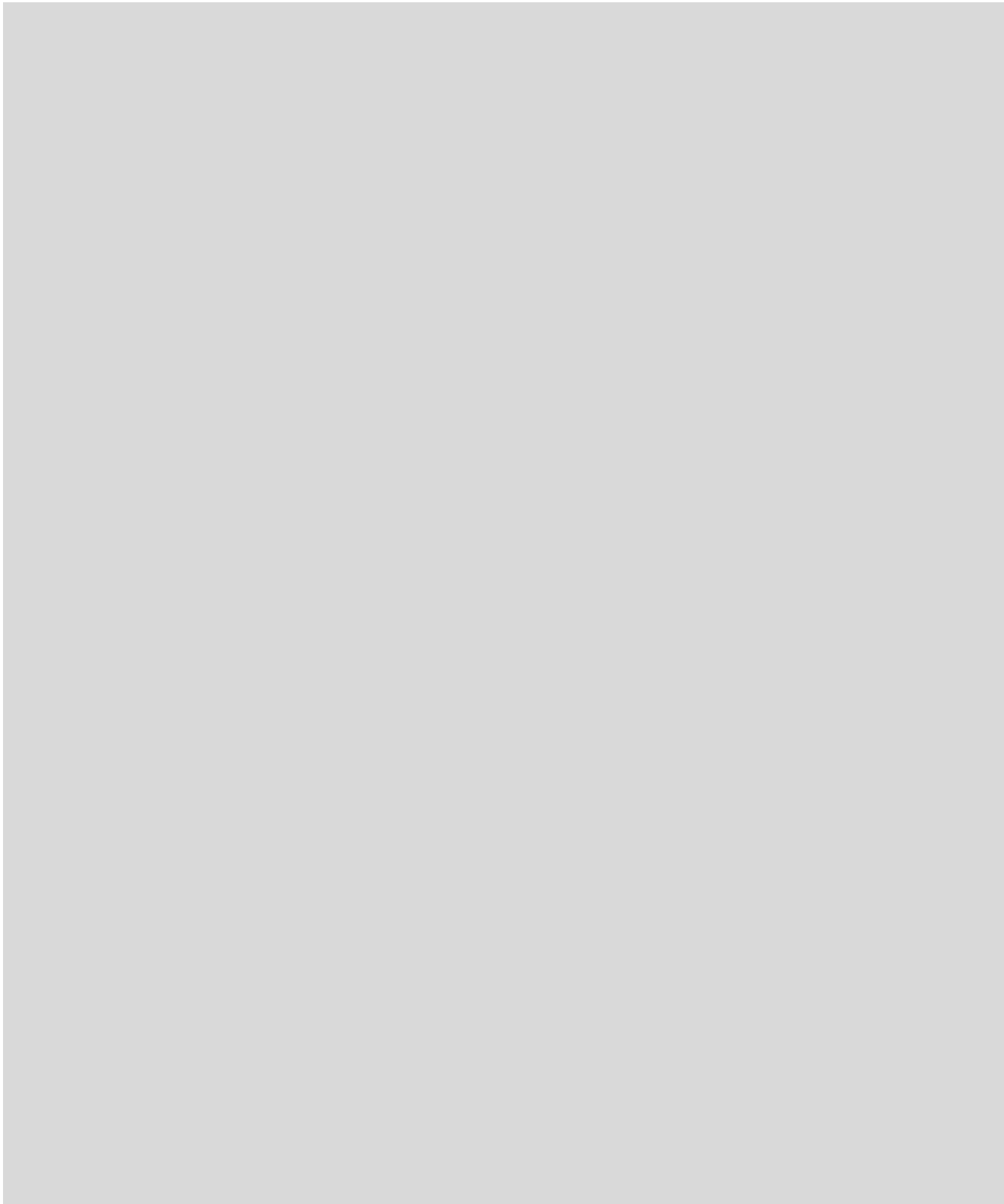


# Specifications manual, fluids and lubricants





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series

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# SAFETY INSTRUCTIONS

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## 5. GENERAL

### 5.1 GENERAL

**IN ORDER TO SATISFY THE WARRANTY CONDITIONS AND GUARANTEE THE LIFESPAN, SAFETY AND RELIABILITY OF DAF PRODUCTS, IT IS OF THE UTMOST IMPORTANCE THAT THE CORRECT FLUIDS, OIL AND LUBRICANTS, COOLANT AND FUEL ARE USED AND THAT THE REQUIRED REPLACEMENT INTERVALS ARE OBSERVED.**

Lubricant, engine coolant and fuel additives, of whatever type, must not be used except in those circumstances specified by DAF.

Always follow the safety instructions below and the instructions that are supplied with the product.

Ask your lubricant and fuel supplier(s) whether the products supplied comply with DAF specifications.

**DAF is not liable for damage or problems in the following instances:**

1. if oil of a lower quality than specified has been used.
2. if oil of a different viscosity grade than specified has been used.
3. if the change interval is exceeded.
4. if fuel, lubricants or coolants that do not meet the requirements specified by DAF have been used.



**WARNING! Avoid contact with:**  
*lubricants  
coolants  
fuel  
clutch fluid*

***In the event of contact with the skin:  
remove with paper or a cloth, wash  
with soap and water. If irritation  
persists, consult a doctor.***

***In the event of contact with the eyes:  
remove with a cloth and rinse with  
water. If irritation persists, consult a  
doctor.***

***If swallowed: DO NOT induce  
vomiting. Rinse mouth, drink two  
glasses of water and consult a  
doctor.***

***In the event of inhalation: get some  
fresh air and rest.***

# SAFETY INSTRUCTIONS

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# FLUIDS AND LUBRICANTS

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Cabin

## 7. CABIN

### 7.1 CAB TILTING MECHANISM

Cab tilting mechanism oil must meet MIL-H-5606C.

The following oils may be used:

ESSO Univas J13

TEXACO Aircraft Hydraulic 5606G

TOTAL Aerohydraulic 520.

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# FLUIDS AND LUBRICANTS

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Cabin

series

## 7.2 AIR CONDITIONING

Compressor oil  
Refrigerant

PAG 46  
R134a

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series

Cabin

**7.3 ANTI-ROLL BAR**

Lubricating grease

Lithium-based EP grease, NLGI 2





## 8. ENGINE

### 8.1 ENGINE OIL SPECIFICATIONS

**DAF specification lists refer to international standards such as ACEA and API. In addition, requirements are made as to viscosity.**

If necessary, the engine oil can be subjected to additional requirements. These are listed in the DAF HP (High Performance) specification. If the engine oil must meet the DAF HP specification, it is listed as such in the overviews.

On the oil specification sheet pertaining to the specific oil company and on the packaging, there is an indication as to whether the DAF HP specifications are met. This means that the oil may be used for the relevant application.

#### **DAF HP (High Performance) specification for Euro 3 diesel engines**

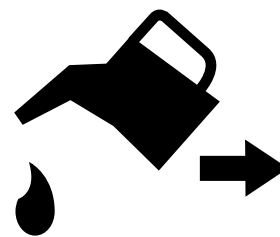
The purpose of the DAF-HP procedure is to define oil qualities that can be used in DAF engines for either fuel economy, long drain interval, high performance engines or LPG engines.

- HP 1: low-viscosity oil ..W30 E4/E5/E7
- HP 2: oil to be used for extended oil change ..W40 E5/E7
- HP gas: oil to be used in DAF LPG engines

#### **Oil drain interval**

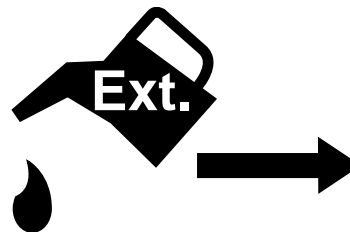
Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard drain interval symbol.



GO 00 230

This is the extended drain interval symbol.



GO 00 229

**Additional information:**

- ACEA E4:** Stable, stay-in-grade oil providing excellent control of piston cleanliness, wear, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II and Euro III emission requirements and running under very severe conditions, e.g. extended oil drain intervals
- ACEA E6:** Stable, stay-in-grade oil providing excellent control of piston cleanliness, wear, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro IV and Euro V emission requirements and running under very severe conditions, e.g. extended oil drain intervals. It is suitable for engines fitted with SCR NOx reduction systems and/or particulate filters. E6 quality is strongly recommended for use in combination with low sulphur diesel fuel. This oil contains a limited amount of sulphated ash, phosphorus and sulphur (low SAPS).
- ACEA E7:** Stable, stay-in-grade oil providing effective control with respect to piston cleanliness and bore polishing. It further provides excellent wear control, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II and Euro III emission requirements and running under severe conditions, e.g. it is suitable for engines without particulate filters.
- ACEA E9:** Stable, stay-in-grade oil providing effective control with respect to piston cleanliness and bore polishing. It further provides excellent wear control, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV and Euro V emission requirements and running under severe conditions, e.g. extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines with or without particulate filters, for most EGR engines and for most engines fitted with SCR NOx reduction systems. E9 is strongly recommended for engines fitted with particulate filters and is designed for use in combination with low-sulphur diesel fuel.

**8.2 ENGINE OIL, 45/55 SERIES**

The engine oil specification overview is related to the vehicle series and the engines used for this series.

**Explanation of overview:**

**V** = may be used.

**Engines used in vehicle series: 45/55**

Oil specification →	ACEA E5/E7 ..W40	DAF Super 15W40	Note
Engine type ↓			
CB	V	V	
CD	V	V	
CN	V	V	
CT	V	V	
CS	V	V	

**Engines used in vehicle series: LF45/LF55**

Oil specification →	ACEA E7 or E6 <sup>(1)</sup> ..W40	DAF Super 15W40	DAF Xtreme LD 10W- 40	Note
Engine type ↓				
BE	V	V	V	
CE	V	V	V	

(1) The E6 oil must comply with the E7 standard

**Engines used in vehicle series: LF45 IV/LF55**

**IV**

Oil specification →	ACEA E7 or E6 <sup>(1)</sup> ..W40	DAF Super 15W40	DAF Xtreme LD 10W- 40	Note
Engine type ↓				
FR	V	V	V	
GR	V	V	V	

(1) The E6 oil must comply with the E7 standard

## 8.3 ENGINE OIL, 65, 75 AND 85 SERIES

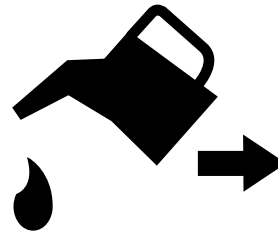
The engine oil specification overview is related to the vehicle series and the engines used for this series.

### Explanation of overview:

#### Oil drain interval

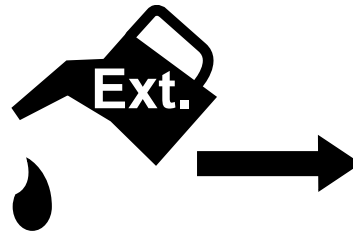
Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard drain interval symbol.



GO 00 230

This is the extended drain interval symbol.



GO 00 229


**V** = may be used.

..... = may be used if the listed specifications are met.

#### Engines used in vehicle series: 65/75/85


Oil specification →	ACEA E4/E6 ..W40	ACEA E5/E7 ..W40	DAF Super 15W40	DAF Premium 10W40
Engine type ↓				
NS	V	V	V	V
RS	V	V	V	V
WS	V	V	V	V

#### Engines used in vehicle series: 65CF/75CF/ 85CF

Oil specification →	ACEA E4/E6 ..W40	ACEA E4/E6 ..W30	ACEA E5/E7 ..W40	ACEA E5 ..W30	DAF Super 15W40	DAF Premium 10W40	DAF Xtreme 5W30	Note
Engine type ↓								
NS	V		V		V	V	V	
PF	V	HP 1	V	HP 1	V	V	V	
XF 	V	HP 1	V	HP 1	V	V	V	

series



Engine

Oil specification →	ACEA E4/E6 ..W40	ACEA E4/E6 ..W30	ACEA E5/E7 ..W40	ACEA E5 ..W30	DAF Super 15W40	DAF Premium 10W40	DAF Xtreme 5W30	Note
Engine type ↓								
	V	HP 1	HP 2	HP 1/ HP 2		V	V	Only permitted if supplementary conditions are met. See explanation.
PE	V	HP 1	V	HP 1	V	V	V	
XE	V	HP 1	V	HP 1	V	V	V	

**Explanation of supplementary conditions for extended changing interval**

- An oil filter with a greater filtering capacity must be fitted.
- A fuel filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.



**Engines used in vehicle series: CF65/CF75/CF85**

Oil specification →	ACEA E4/E6 ..W40	ACEA E7 ..W40	ACEA E5/E7 ..W40	ACEA E5/E7 ..W30	DAF Super 15W40	DAF Premium 10W40	DAF Xtreme LD 10W-40	Note
Engine type ↓								
CE		V			V			
	V		V	HP 1	V	V	V	
	V		HP 2	HP 1/HP 2		V	V	Only permitted if supplementary conditions are met. See explanation.

# FLUIDS AND LUBRICANTS

Engine

series

Oil specification →	ACEA E4/E6 ..W40	ACEA E7 ..W40	ACEA E5/E7 ..W40	ACEA E5/E7 ..W30	DAF Super 15W40	DAF Premium 10W40	DAF Xtreme LD 10W-40	Note
Engine type ↓								
XE 	V		V	HP 1	V	V	V	
XE 	V		HP 2	HP 1/HP 2		V	V	Only permitted if supplementary conditions are met. See explanation.

### Explanation of supplementary conditions for extended changing interval for PE engine

- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.

### Explanation of supplementary conditions for extended changing interval for XE engine



- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.
- A fuel filter with a greater filtering capacity must be fitted.

### Engines used in vehicle series: CF65 IV

Oil specification →	ACEA E7 or E6 <sup>(1)</sup> ..W40	DAF Super 15W40	DAF Xtreme LD 10W-40	Note
Engine type ↓				
GR	V	V	V	

(1) The E6 oil must comply with the E7 standard

### Engines used in vehicle series: CF75 IV

DAF oil →	DAF Xtreme LD 10W-40	Note
Oil specification →	ACEA E6 ..W40	Note
Engine type ↓		
PR 	V	
PR 	V	Only permitted if supplementary conditions are met. See explanation.

**Explanation of supplementary conditions for extended changing interval for PR engine**



- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.

**Engines used in vehicle series: CF75 IV, Non-Western European driving conditions**

DAF oil →	DAF Xtreme LD 10W-40	X	
Oil specification →	ACEA E6 ..W40	API CJ-4 ..W40 <sup>(1)</sup>	Note
Engine type ↓			
PR	V	V	

(1) Only allowed if other specified oils are not available

**Engines used in vehicle series: CF85 IV**

DAF oil →	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil specification →	ACEA E6 ..W30 <sup>(1)</sup>	ACEA E6 ..W40	ACEA E9 ..W30 <sup>(1)</sup>	ACEA E9 ..W40	Note
Engine type ↓					
	V	V	V	V	Only ACEA E6 ..W40 permitted with the use of Biodiesel
	V	V			Only permitted if supplementary conditions are met. See explanation.

(1) Vehicles with specification week ≤ 2010-13: if the oil viscosity is changed from ..W40 to ..W30, the DMCI unit needs to be up to date according to the vehicle ID card in order to prevent an inaccurate activation of the oil pressure warning.

**Explanation of supplementary conditions for extended changing interval for MX engine**

- A centrifugal oil filter must be fitted.
- A double fuel filter must be fitted.

## FLUIDS AND LUBRICANTS

Engine

series

Engines used in vehicle series: CF85 IV, Non-Western European driving conditions

DAF oil →	DAF Xtreme LD 10W-40	X	
Oil specification →	ACEA E6 ..W40	API CJ-4 ..W40 <sup>(1)</sup>	Note
Engine type ↓			
MX	V	V	

(1) Only allowed if other specified oils are not available

2



**8.4 ENGINE OIL, 95 SERIES**

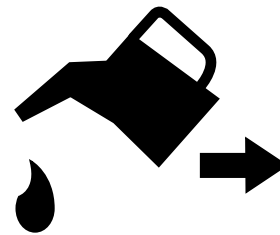
The engine oil specification overview is related to the vehicle series and the engines used for this series.

**Explanation of overview:**

**Oil drain interval**

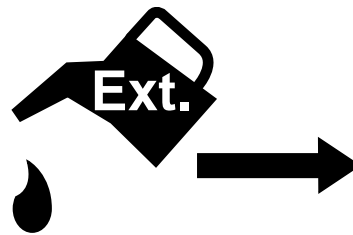
Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard drain interval symbol.



GO 00 230

This is the extended drain interval symbol.



GO 00 229

**V** = may be used.

**Engines used in vehicle series: F95**

Oil specification →	ACEA E4/E6 ..W40	ACEA E4/E6 ..W30	ACEA E5/E7 ..W40	API CI-4 ..W40	DAF Premium 10W40	DAF Super 15W40	Note
Engine type ↓							
WS	V		V		V	V	
VF				V		V	



**Engines used in vehicle series: 95XF**

Oil specification →	ACEA E4/E6 ..W40	ACEA E4 ..W30	ACEA E5/E7 ..W40	API CI-4 ..W40	DAF Premium 10W40	DAF Super 15W40	DAF Xtreme 5W30	Note
Engine type ↓								
VF				V		V		
XF 	V	HP 1	V		V	V	V	

## FLUIDS AND LUBRICANTS

Engine





series

Oil specification → Engine type ↓	ACEA E4/E6 ..W40	ACEA E4 ..W30	ACEA E5/E7 ..W40	API CI-4 ..W40	DAF Premium 10W40	DAF Super 15W40	DAF Xtreme 5W30	Note
XF 	V	HP 1	HP 2		V		V	Only permitted if supplementary conditions are met. See explanation.
XE	V	HP 1	V		V	V	V	
XE 390 kW 	V	HP 1			V			

### Explanation of supplementary conditions for extended changing interval

- An oil filter with a greater filtering capacity must be fitted.
- A fuel filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.
- The vehicle must drive at least 100,000 km per year.



### Engines used in vehicle series: XF95

Oil specification → Engine type ↓	ACEA E4/E6 ..W40	ACEA E4 ..W30	ACEA E5/E7 ..W40	DAF Super 15W40	DAF Premium 10W40	DAF Xtreme LD 10W40	DAF Xtreme 5W30	Note
XE 	V	HP 1	V	V		V	V	
XE 	V	HP 1	HP 2		V	V	V	Only permitted if supplementary conditions are met. See explanation.
XE 390 kW 	V	HP 1		V		V	V	
XE 390 kW 	V				V			Only permitted if supplementary conditions are met. See explanation.

**Explanation of supplementary conditions for extended changing interval for XE engine**

- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.
- A fuel filter with a greater filtering capacity must be fitted.

**Engines used in vehicle series: XF95 Engine Field Validation**

DAF oil →	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil specification →	ACEA E6 ..W40	ACEA E6 ..W40	ACEA E9 ..W30	ACEA E9 ..W40	Note
Engine type ↓					
MX 	V	V			
MX 	V	V			Only permitted if supplementary conditions are met. See explanation.

**Explanation of supplementary conditions for extended changing interval for MX engine**

- A centrifugal oil filter must be fitted.
- A double fuel filter must be fitted.

## 8.5 ENGINE OIL, 105 SERIES

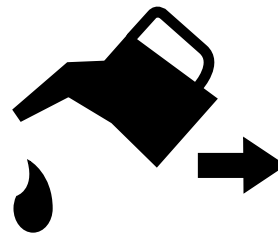
The engine oil specification overview is related to the vehicle series and the engines used for this series.

### Explanation of overview:

#### Oil drain interval

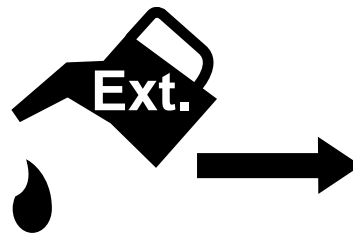
Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard drain interval symbol.



GO 00 230



This is the extended drain interval symbol.



GO 00 229

V = may be used.

Engines used in vehicle series: XF105

DAF oil →	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil specification →	ACEA E6 ..W30 <sup>(1)</sup>	ACEA E6 ..W40	ACEA E9 ..W30 <sup>(1)</sup>	ACEA E9 ..W40	Note
Engine type ↓					
	V	V	V	V	Only ACEA E6 ..W40 permitted with the use of Biodiesel
	V	V			Only permitted if supplementary conditions are met. See explanation.

(1) Vehicles with specification week ≤ 2010-13: if the oil viscosity is changed from ..W40 to ..W30, the DMCI unit needs to be up to date according to the vehicle ID card in order to prevent an inaccurate activation of the oil pressure warning.

**Explanation of supplementary conditions for extended changing interval for MX engine**

- A centrifugal oil filter must be fitted.
- A double fuel filter must be fitted.

**Engines used in vehicle series: XF105, Non-Western European driving conditions**

DAF oil →	DAF Xtreme LD 10W-40	X	
Oil specification →	ACEA E6 ..W40	API CJ-4 ..W40 <sup>(1)</sup>	Note
Engine type ↓			
MX	V	V	

(1) Only allowed if other specified oils are not available

## 8.6 ENGINE OIL 106 SERIES

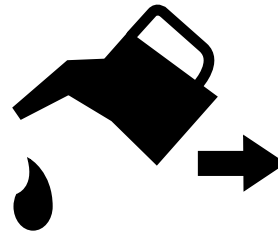
The engine oil specification overview is related to the vehicle series and the engines used for this series.

### Explanation of overview:

#### Oil drain interval

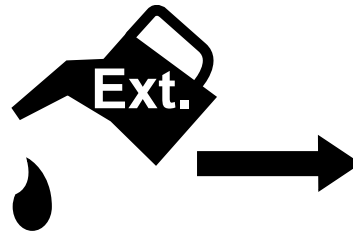
Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard drain interval symbol.



GO 00 230



This is the extended drain interval symbol.



GO 00 229

V = may be used.

### Engines used in vehicle series: 106

DAF oil →	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil spec- ification →	ACEA E6 ..W30	ACEA E6 ..W40	ACEA E9 ..W30	ACEA E9 ..W40	Note
Engine type ↓					
MX-13 	V	V	V	V	
MX-13 	V	V			Only permitted if supplementary conditions are met. See explanation.

**Explanation of supplementary conditions for extended changing interval for MX-13 engine**

- A centrifugal oil filter must be fitted.
- A longer fuel filter must be fitted.
- Larger oil quantity

## 8.7 ENGINE OIL USED IN BUSES, COACHES AND OTHER APPLICATIONS

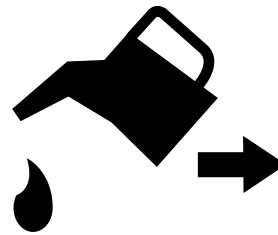
### Explanation of overview:

#### Oil drain interval

Depending on the engine type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

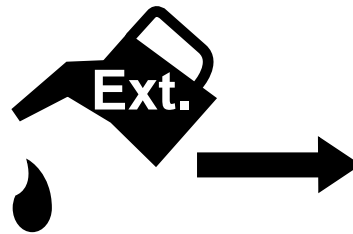
2

This is the standard drain interval symbol.



GO 00 230

This is the extended drain interval symbol.



GO 00 229







- V** = may be used.
- ..... = may be used if the listed specifications are met.



# FLUIDS AND LUBRICANTS

series

Engine

DAF oil →	DAF Premium 10W-40	DAF Xtreme 5W-30	DAF Super 15W-40	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil specification →	ACEA E4 ..W40	ACEA E4 ..W30	ACEA E5/E7 ..W40	ACEA E6 ..W30 <sup>(1)</sup>	ACEA E6 ..W40	ACEA E9 ..W30 <sup>(1)</sup>	ACEA E9 ..W40	Note
Engine type ↓								
PE 	V	HP 1	V		V			
PE 	V	HP 1	HP 2					Only permitted if supplementary conditions are met. See explanation.
XE 	V	HP 1	V		V			
XE 	V	HP 1	HP 2		V			Only permitted if supplementary conditions are met. See explanation.
PR_EU 					V			
PR_EU 					V			



2

# FLUIDS AND LUBRICANTS

Engine

series

2

DAF oil →	DAF Premium 10W-40	DAF Xtreme 5W-30	DAF Super 15W-40	DAF Xtreme LD FE 10W-30	DAF Xtreme LD 10W-40	DAF Xtreme FE 10W-30	X	
Oil specification →	ACEA E4 ..W40	ACEA E4 ..W30	ACEA E5/E7 ..W40	ACEA E6 ..W30 <sup>(1)</sup>	ACEA E6 ..W40	ACEA E9 ..W30 <sup>(1)</sup>	ACEA E9 ..W40	Note
Engine type ↓								
MX_EU 				V	V	V	V	Only ACEA E6 ..W40 permitted with the use of Bi-diesel
MX_EU 				V	V			

(1) Engines with specification week ≤ 2010-13: after an oil change using engine oil with the viscosity ..W30, the DMCI unit needs to be up to date according to the vehicle ID card in order to prevent an inaccurate activation of the oil pressure warning.

### Explanation of supplementary conditions for extended changing interval for PE/PR engine

- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.

### Explanation of supplementary conditions for extended changing interval for XE engine

- An oil filter with a greater filtering capacity must be fitted.
- A centrifugal oil filter must be fitted.
- A fuel filter with a greater filtering capacity must be fitted.

### Explanation of supplementary conditions for extended changing interval for MX engine

- A centrifugal oil filter must be fitted.
- A double fuel filter must be fitted.

Oil specification →	ACEA E4/E6 ..W40	ACEA E5/E7 ..W40	DAF Super 15W40	DAF Xtreme LD 10W-40	Note
Engine type ↓					
NS	V	V	V	V	
RT	V	V		V	
RS/GS	V	V	V	V	
WS	V	V	V	V	
PF	V	V	V	V	

series

Engine

Oil specification →	ACEA E4/E6 ..W40	ACEA E5/E7 ..W40	DAF Super 15W40	DAF Xtreme LD 10W-40	Note
Engine type ↓					
XF	V	V	V	V	
LPG GG/RG					HP GAS

Engines used in buses, coaches and other applications in non-Western European driving conditions

DAF oil →	DAF Xtreme LD 10W-40	X	Note
Oil specification →	ACEA E6 ..W40	API CJ-4 ..W40 <sup>(1)</sup>	
Engine type ↓			
MX_EU (Heavy Duty)	V	V	
PR_EU (Heavy Duty)	V	V	

(1) Only allowed if other specified oils are not available

Engines not related to the above series

DAF oil →	DAF Super 15W40	Note
Oil specification →	ACEA E7 ..W40	
Engine type ↓		
Other diesels	V	

## 8.8 PRESCRIBED OIL GRADE AFTER AN ENGINE REPAIR/OVERHAUL

After engine repairs/overhauls during which the short block, piston rings and/or cylinder linings were replaced, fill the engine with the oil as specified in the table.

2

Engine type	Oil specification	DAF oil	Note
PR	ACEA E6 ..W40	DAF Xtreme LD 10W-40	
PR_EU	ACEA E6 ..W40	DAF Xtreme LD 10W-40	
MX	ACEA E6 ..W30	DAF Xtreme LD FE 10W-30	-Only ACEA E6 ..W40 permitted with the use of Biodiesel -Use of ACEA E9 is only permitted with the standard service interval -ACEA E9 oils are not allowed for the non-Western European driving conditions
	ACEA E6 ..W40	DAF Xtreme LD 10W-40	
	ACEA E9 ..W30	DAF Xtreme FE 10W-30	
	ACEA E9 ..W40	X	
MX_EU	ACEA E6 ..W30	DAF Xtreme LD FE 10W-30	-Only ACEA E6 ..W40 permitted with the use of Biodiesel -Use of ACEA E9 is only permitted with the standard service interval -ACEA E9 oils are not allowed for the non-Western European driving conditions
	ACEA E6 ..W40	DAF Xtreme LD 10W-40	
	ACEA E9 ..W30	DAF Xtreme FE 10W-30	
	ACEA E9 ..W40	X	
MX-13	ACEA E6 ..W30	DAF Xtreme LD FE 10W-30	-Use of ACEA E9 is only permitted with the standard service interval
	ACEA E6 ..W40	DAF Xtreme LD 10W-40	
	ACEA E9 ..W30	DAF Xtreme LD 10W-30	
	ACEA E9 ..W40	X	
Other engines	ACEA E5/E7 ..W40 <sup>(1)</sup>	DAF Super 15W40 <sup>(1)</sup>	

(1) Change the oil after driving 7500–10,000 km with the specified oil.



*NOTE: This specification does not apply to V200/V400 engines. The oil in LPG engines must be changed at 2500 km. Change the oil after driving 7500–10,000 km with the specified oil.*

**8.9 CYLINDER LINER O-RINGS**

Molykote PG21



## 9. COOLING SYSTEM

### 9.1 COOLING SYSTEM



**WARNING! Coolant fluid is toxic. Protect skin and eyes. Coolant is harmful to the environment; after use, it must be processed as chemical waste.**

Coolant is a mixture of antifreeze and water that is used in the cooling system to protect the system against freezing, corrosion and cavitation.

The cooling system should preferably be filled with a ready-mixed coolant containing antifreeze and corrosion-inhibiting additives.

The factory-filled coolant is a Longlife Coolant (with corrosion inhibitors based on organic acids).

#### Mixture

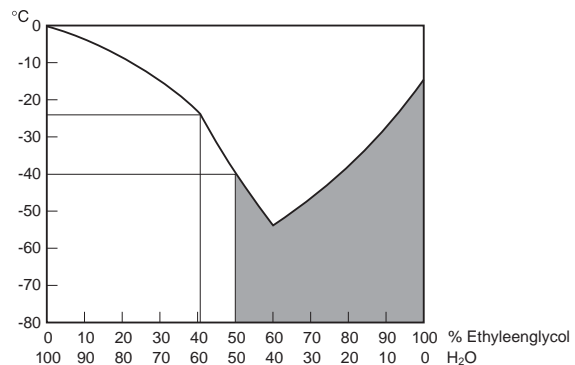
Use a mixture of 40-50% antifreeze in water. This mixture provides good protection against freezing and corrosion.



**WARNING! A mixture of more than 50% antifreeze in water must not be used.**



**NOTE: The cooling system must not be filled with water alone.**



G001336

#### Coolant

Except for the F45/55 and the LF45/55, a sticker behind the grille states the information on the coolant used. The DAF specifications are given here, together with the minimum protection of the coolant that is used.

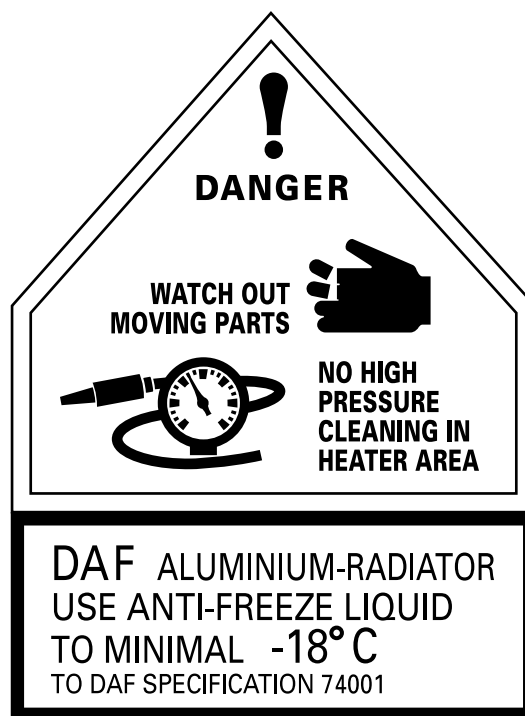
#### Coolant according to DAF specification 74001

The coolant, which has an ethylene glycol base, must meet the specifications ASTM D-3306, BS 6580 and SAE J-1034 (for propylene glycol: ASTM D-5216 and BS 6580).



**NOTE:**

1. *This specification also applies to the F45/55 with chassis number <0L146081.*
2. *The cooling system must be topped up with a type of coolant that meets DAF specification 74001 or 74002.*
3. *When changing coolant in the cooling system, the system must preferably be filled with coolant according to DAF specification 74002. Do not forget to remove the sticker behind the grille and replace it with the sticker reading Longlife Coolant (DAF number 1653084).*



G000315

**Coolant according to DAF specification 74002**

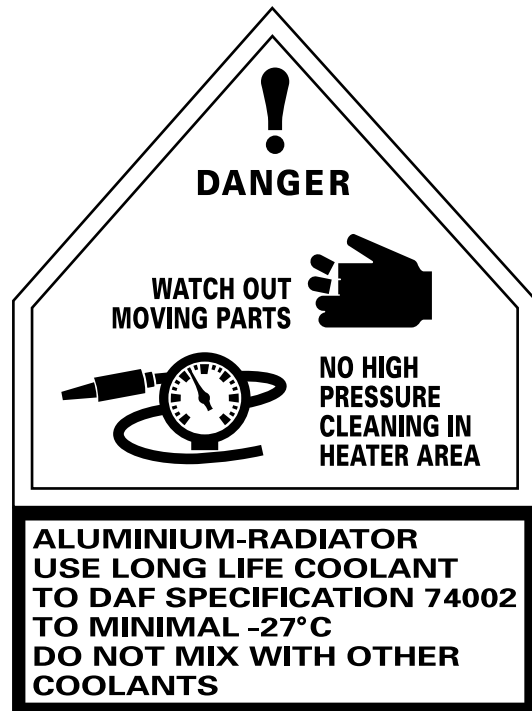
- The corrosion inhibitor must be based on organic acids (carboxylates). Improved anti-corrosive inhibitors allow a longer changing interval for this coolant compared to the coolant according to DAF specification 74001.



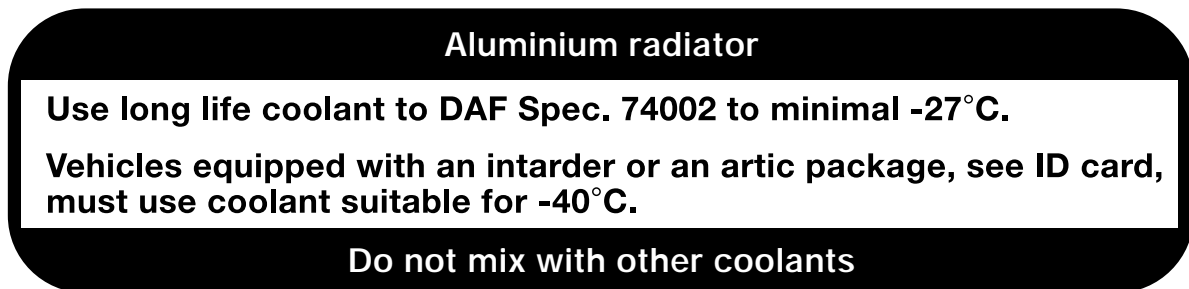


**NOTE:**

1. The cooling system must be topped up with a type of coolant that meets DAF specification 74002.
2. When changing coolant in the cooling system, the system must be filled with coolant according to DAF specification 74002.
3. This specification also applies to:
  - F45/55 with chassis number  $\geq$  0L146081
  - LF45/55
  - MX\_EU, PR\_EU, PE and XE engine applications



G000316



M201906-2



**WARNING!** For all vehicle series with an XE, PE, MX or PR engine and intarder or arctic package, coolants with a mixture of 50% glycol and 50% water must be used.

A mixture of 50% glycol and 50% water offers better cooling and corrosion protection than 40% glycol and 60% water. If the coolant concentration is not correct, the coolant must be changed for one with the correct concentration. It

## FLUIDS AND LUBRICANTS

Cooling system

series

is possible to order the sticker with DAF part number 1783195 to check that the correct concentration for the vehicle configuration is used. The position of the sticker is on the cover of the bulkhead connector.

### Coolant suppliers

The table below lists the current suppliers that meet DAF specification 74002; the mixtures available are 40% glycol and 60% water and also 50% glycol and 50% water.

The cooling system must not be filled with coolants other than those specified in this overview.

Brand name	Supplier
DAF Xtreme Longlife Coolant	DAF Trucks N.V.
Havoline XLC/Havoline Extended Life Antifreeze Coolant	Chevron/Texaco/Arteco
Caltex Extended Life Coolant	Caltex
Glacelf Auto Supra/Coolelf Auto Supra	Total
G-Energy Antifreeze SNF	Gazpromneft-lubricants Ltd
Maxigel Plus/Ultracooling Plus	Renault Truck Oils
BP Procool	BP
Castrol Antifreeze SF Premix	Castrol
Inugel Optimal/Inugel Optimal Ultra	Motul
Yacco LR Organique	Yacco
Petrol Antifriz Koncentrat	Petrol
Orvema Protex Long Life/Coolmix LL	Orvema
SB-G12	Sotragel
York 718	Ginouves Georges SAS
Coolant Maxmaster Truckcool	Platinum Oil Wielkopolskie Centrum Dystrybucji
PS Longlife Coolant	Achtel
Maintain Fricofin LL	Fuchs Europe Schmierstoffe GMBH
Coolant concentrate Maxmaster Redcool	Platinum Oil Wielkopolskie Centrum Dystrybucji
Glysantin G 30-91	BASF

### Cooling water requirements

- pH: 5.5–9.0
- hardness\*:  $\leq 170$  ppm (calcium and/or magnesium carbonate)
- total solid content:  $\leq 340$  ppm (  $\leq 340$  mg/litre)
- chloride:  $\leq 40$  ppm (  $\leq 40$  mg/litre) (sodium chloride)
- sulphate:  $\leq 100$  ppm (  $\leq 100$  mg/litre) (magnesium and/or sodium sulphate)

\*hardness 170 ppm = 9.5° German hardness/17° French hardness/12° British hardness.



***WARNING! Ethylene and propylene glycol must never be mixed. Do not mix different makes of glycol/anti-corrosion additives. Follow the coolant manufacturer's directions for use.***

## 9.2 COOLING SYSTEM INVERTER, HYBRID DRIVE



**WARNING!** Coolant fluid is toxic. Protect skin and eyes. Coolant is harmful to the environment; after use, it must be processed as chemical waste.

2

Coolant is a mixture of antifreeze and water that is used in the cooling system to protect the system against freezing, corrosion and cavitation.

The cooling system for the inverter should preferably be filled with a ready-mixed coolant containing antifreeze and corrosion-inhibiting additives.

The factory-filled coolant is a Longlife Coolant (with corrosion inhibitors based on organic acids).

### Mixture

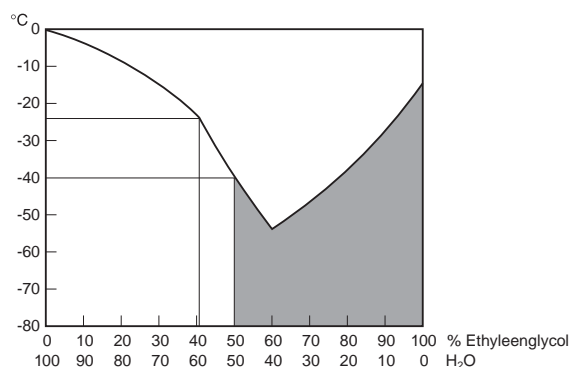
Use a mixture of 40-50% antifreeze to water. This mixture provides good protection against freezing and corrosion.



**WARNING!** A mixture of more than 50% antifreeze to water must not be used.



**NOTE:** The cooling system for the inverter must not be filled with water alone.



G001336

### Coolant according to DAF specification 74002

- The corrosion inhibitor must be based on organic acids (carboxylates). Improved anti-corrosive inhibitors allow a longer changing interval for this coolant compared to the coolant according to DAF specification 74001.

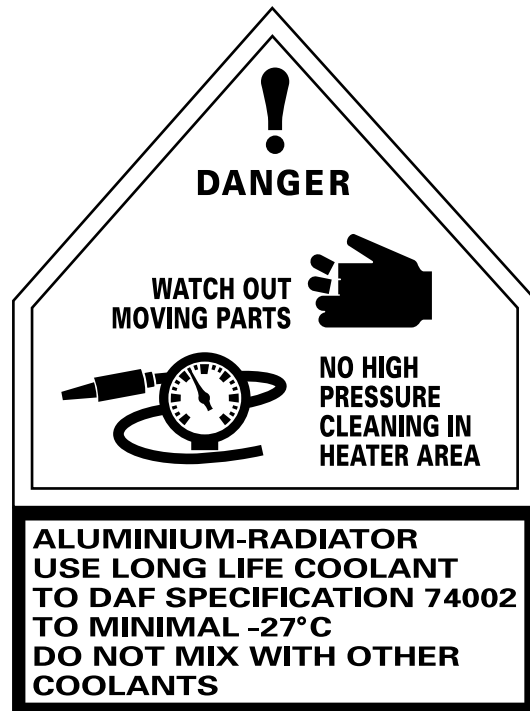


**NOTE:**

1. The cooling system must be topped up with a type of coolant that meets DAF specification 74002.
2. When changing coolant in the cooling system for the inverter, the system must be filled with coolant according to DAF specification 74002.

**Coolant suppliers**

The table below lists the current suppliers that meet DAF specification 74002; the mixtures available are 40% glycol and 60% water and also 50% glycol and 50% water. The cooling system must not be filled with coolants other than those specified in this overview.



G000316

Brand name	Supplier
DAF Xtreme Longlife Coolant	DAF Trucks N.V.
Havoline XLC/Havoline Extended Life Antifreeze Coolant	Chevron/Texaco/Arteco
Caltex Extended Life Coolant	Caltex
Glacelf Auto Supra/Coolelf Auto Supra	Total
G-Energy Antifreeze SNF	Gazpromneft-lubricants Ltd
Maxigel Plus/Ultracooling Plus	Renault Truck Oils
BP Procool	BP
Castrol Antifreeze SF Premix	Castrol
Inugel Optimal/Inugel Optimal Ultra	Motul
Yacco LR Organique	Yacco
Petrol Antifriz Koncentrat	Petrol
Orvema Protex Long Life/Coolmix LL	Orvema
SB-G12	Sotragel
York 718	Ginouves Georges SAS
Coolant Maxmaster Truckcool	Platinum Oil Wielkopolskie Centrum Dystrybucji
PS Longlife Coolant	Achtel
Maintain Fricofin LL	Fuchs Europe Schmierstoffe GMBH
Coolant concentrate Maxmaster Redcool	Platinum Oil Wielkopolskie Centrum Dystrybucji
Glysantin G 30-91	BASF

## FLUIDS AND LUBRICANTS

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Cooling system

series

### 9.3 HYDRAULICALLY DRIVEN FAN

DEXRON III with valid approval number

2

**10.FUEL SYSTEM****10.1 FUEL SPECIFICATION FOR DAF DIESEL ENGINES**

Based on the present status of DAF engine development, the fuel (compositions) used must meet certain international standards to be assured of the required engine performance, durability and emission goals. Therefore DAF prescribes for all its engines that:

- Any diesel or alternative fuel mixture must fully comply with European Fuel Standard EN 590. Biodiesel must comply with European Biodiesel Standard EN14214.

### 10.2 DIESEL FUEL

#### Diesel fuel

Diesel fuel must comply with European Fuel Standard EN 590.



*NOTE: If the sulphur content is higher than 50 ppm, the engine oil change interval must be adapted.*

**Fuel additives are not permitted.**



### 10.3 WHY ALTERNATIVE FUELS?

The worldwide demand for less pollutant engine emissions in combination with the growing use of renewable energy sources, to diminish our dependency on fossil raw material, are the main reasons why alternative fuels are being developed. Some of the alternative fuels developed are:

#### **Biodiesel (FAME)**

Biodiesel (FAME) is fuel manufactured using agricultural products such as rapeseed oil, soybean oil, sugar beet, sun flower oil and palm oil. Widely used are Rape Methyl Ester (RME), Soybean Methyl Ester (SME) and Palm Methyl Ester (PME). Collectively they are known as Fatty Acid Methyl Esters (FAME). The fatty oils are chemically modified by reaction with mostly methanol (esterification), during which the long tri-glycerides molecules are split into short fatty acid methyl ester molecules, producing a common diesel-like product with glycerine as a (waste) by-product. The bio 'fuel' can be blended with fossil diesel fuel demanding only minor or no engine modification (concentrations < 7%) but intensified maintenance and sometimes exchange of rubbers when a biodiesel concentration above 7% is applied. \*) Biodiesel can also be made from non-vegetable oils although this form is not preferred.

#### **Straight vegetable oil (SVO)**

PPO (Pure Plant Oil) is fuel that can be extracted from a range of agricultural products of which rapeseed oil is most commonly used. In contrast to biodiesel fuel the SVO fuel types are not subjected to esterification. As a result they remain a very (high) viscous liquid even at normal and low temperatures, which makes a preheated engine fuel supply system indispensable to improve or even enable a cold engine start. At operating temperature engines will run but the fuel will lead to increased emissions and deposits in the combustion chambers and reduced performance and durability of the fuel injecting equipment. The use of SVO is not allowed as fuel in combustion engines because the above-mentioned issues will lead to unacceptable damages and (reduced) engine life expectations.

#### **City diesel**

Like the current everyday diesel fuel, city diesel is refined from fossil raw material, but improved in composition during the refinery process. Sulphur reduction and lower aromatic content are common for all city diesel fuels which, together with possible other chemicals changes during the

## FLUIDS AND LUBRICANTS

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Fuel system

series

refinery process, finally results in a virtually sulphur-free emission with reduced particles (PM) and nitrogen oxide (NOx) content. City diesel is also referred to as ULSD (Ultra Low Sulphur Diesel).

2

## 10.4 BIODIESEL

Biodiesel (FAME) is fuel manufactured using agricultural products such as rapeseed oil, soybean oil, sugar beet, sunflower oil and palm oil. Widely used are Rape Methyl Ester (RME), Soybean Methyl Ester (SME) and Palm Methyl Ester (PME). Collectively they are known as Fatty Acid Methyl Esters (FAME).

The fatty oils are chemically modified by reaction with mostly methanol (esterification), during which the long tri-glyceride molecules are split into short fatty acid methyl ester molecules, producing a common diesel-like product with glycerine as a (waste) by-product. The bio 'fuel' can be blended with fossil diesel fuel demanding only minor or no engine modification (concentrations < 7%) but intensified maintenance and sometimes exchange of rubbers when a biodiesel concentration above 7% is applied. Biodiesel can also be made from non-vegetable oils, although this form is not preferred.

Biodiesel must meet the specifications according to EN 14214.

### Characteristics of biodiesel

Some advantages are:

- It contains almost zero sulphur and no aromatics, resulting in generally lower particulate exhaust emissions.
- It is biodegradable and non-toxic; however, its biodegradability is virtually lost when blended with standard diesel.

Some disadvantages are:

- Biodiesel is unstable and will deteriorate (at higher temperatures).
- Reduced cold start performance at low ambient temperatures.
- Less evaporating effect when heated, resulting in a negative effect on the oil change interval.
- Due to its high oxygen content, it produces higher NO<sub>x</sub> levels during combustion — it has a lower volumetric energy density than diesel, leading to higher fuel consumption (± 10%) and power loss (6-8%).
- Biodiesel is hygroscopic, which leads to water absorption during storage. Bacteria and fungi will grow on the interface of water and biodiesel, which leads to corrosion of the fuel injection equipment components and filter blockage.
- Biodiesel is a solvent and can affect paint and elastomers.

- Biodiesel has a high pour point — phosphorus, sodium and potassium can attack the catalyst unit in SCR systems.
- Increased maintenance.

### General guidelines for alternative fuel per engine type

Based on gathered knowledge concerning the effects of alternative fuels, DAF supports the following rule: alternative fuels and mixtures of diesel fuel for DAF vehicles are allowed, if all the conditions below are met.

Current and non-current engine types and descriptions of vehicle series:

Engine type	Euro emission class	Series
BE-CE	Euro 3 (and earlier)	LF 45/55 and CF65
PE	Euro 3 (and earlier)	CF75
XE	Euro 3 (and earlier)	XF95
XE	Euro 3 (and earlier)	CF85 and XF95
FR-GR	Euro 4/5	LF 45/55 IV and CF65 IV
PR	Euro 4/5	CF75 IV
MX	Euro 4/5	CF85 IV and XF105

### Guidelines for alternative fuel per engine type

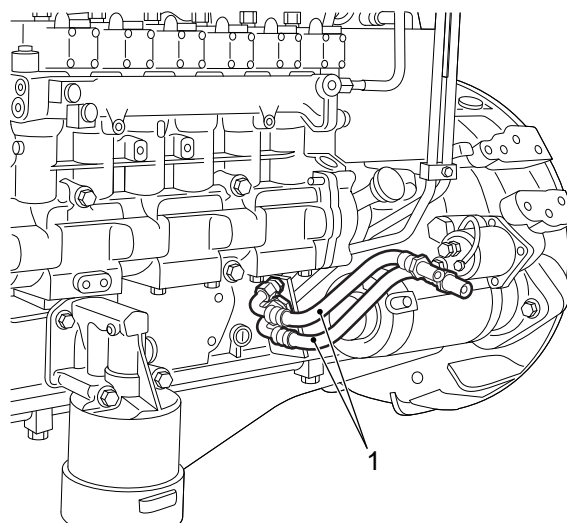
- **All Euro 5 'EEV' type vehicles** equipped with passive soot filter:  
Only officially produced diesel or blends with alternative fuel up to 7% biodiesel according to standard EN590 are allowed.
- **All Euro 3 vehicles** retrofitted with a passive soot filter unit (released via DAF aftersales):  
Only officially produced diesel or blends with alternative fuel up to 7% biodiesel according to standard EN590 are allowed.
- There may be no negative (destructive) chemical reaction of the fuel on any of the engine or fuel system components.
- All of the officially effectuated EN590 Fuel Standard requirements must be met.
- LF vehicles with BE or CE engine according to Euro 3 emissions class: only officially produced diesel according to EN590 and mixtures of diesel according to EN590 with a maximum of 20% biodiesel according to EN14214 are allowed.
- LF vehicles with FR, GR engines: only officially produced diesel according to EN590 and mixtures of diesel according to EN590 with a maximum of 20% biodiesel according to EN14214 are allowed.
- 95XF vehicles with XE engines: only officially produced diesel or blends with alternative fuel up to 7% biodiesel according to standard EN590 are allowed.

- XF95 vehicles with XE engines: only officially produced diesel according to EN590 or biodiesel according to EN14214 and mixtures of these 2 products are allowed.
- CF75/85 vehicles with PE or XE engines up to chassis number 0E552890: only officially produced diesel or blends with alternative fuel up to 7% biodiesel according to standard EN590 are allowed.
- CF75/85 vehicles with PE or XE engines from chassis number 0E552891: only officially produced diesel according to EN590 or biodiesel according to EN14214 and mixtures of these 2 products are allowed.
- CF75/85 and XF105 vehicles with PR or MX engines: only officially produced diesel according to EN590 or biodiesel according to EN14214 and mixtures of these 2 products are allowed.
- Fuel produced from straight vegetable oil (SVO) is not allowed.

### Additional conditions and requirements

The following additional conditions apply to engine types in which blends of standard diesel fuel with 7% up to 100% biodiesel are used.

- The fuel hoses '1' that run from the connection in the chassis member to the engine (see below) must be replaced. See the table for the part numbers of biodiesel resistant fuel hoses\*.



i400685

Biodiesel resistant fuel hoses <sup>(1)</sup>	
Engine type	DAF part number
PR	Supply hose: 1782404 Return hose: 1782405
MX <sup>(2)</sup>	Supply hose: 1832779 Return hose: 1832778
MX <sup>(3)</sup>	Supply hose: 1782406 Return hose: 1782417

(1) These fuel hoses are available through the Parts After Sales department only.

(2) Only chassis produced up to 2007-45

(3) Only chassis produced from 2007-45 onwards

- The sealing of the fuel filler cap may cause leakage; if so, it must be replaced in good time.
- The oil drain and fuel filter change interval must be reduced by half.
- Extended oil drain intervals are not allowed.
- In cold weather conditions, the fuel may cause problems in the fuel system; this can be prevented by heating the fuel, the use of (a higher percentage of) normal diesel or the use of additives. Solutions to this problem must be discussed with the supplier of the biodiesel fuel.
- For the Euro 4/5 catalytic converter (silencer unit) on vehicles that operate on fuel blends of between 7% and 100% biodiesel, the warranty ends after 1 year or 150,000 km, whichever comes first.

- The fuel tank content must be checked regularly (monthly) for water, deposits, bacteria growth, etc. and cleaned if necessary. In addition, if fuel tank fillings change from diesel to biodiesel according to the EN14214 standard then the tank must be cleaned thoroughly before being put into service. See notes below for more information.
- The additional fuel pump that is used in the dual tank layout must be checked frequently for leakage and replaced when necessary.
- The installation of a water separator unit is mandatory if not already fitted. If ambient temperatures below 0°C are expected for a prolonged period (several days at a time) then a heated water separator unit must be specified.
- Blends of diesel fuel with water are not allowed.



*NOTE: If fuel blends with > 7% biodiesel are used on a Euro 4 or 5 chassis then a minimum Care + R&M package is compulsory. This package covers the required engine oil drain and oil filter change requirements and the necessary additional dealer inspections.*

- *The service intervals are related to the nature of vehicle operation (urban and off-road, regional distribution and long distance); check the service maintenance schedule for details.*
- *The fuel tank can be cleaned with high pressure steam or biodiesel or any appropriate third party cleaning agent. Always check that all dirt and cleaning agents, if used, are fully removed from the tank interior. As an alternative to fuel tank cleaning: halve the already reduced fuel filter service interval (by 50% as compared to standard); one additional fuel filter renewal needs to be carried out.*
- *Biodiesel has dissolving characteristics so that the change from diesel to biodiesel may cause deposits in the fuel system to dissolve and clog the filter. Check the filters after 1 or 2 tank fillings and replace if necessary.*
- *The water separator unit must be located in an area protected from driving wind and spray water (i.e. close to the engine compartment).*

### Auxiliary heater

- The D1LC compact and D3LC compact air heater versions are suitable for 100% biodiesel.
- The Hydronic 10 and D2 Airtronic water heater versions are suitable for blends of standard diesel with a maximum of 7% biodiesel.
- The D4 Airtronic is suitable for 100% biodiesel.
- The Airtop 2000 ST (ACH-W3) is suitable for 100% biodiesel.



#### NOTE:

- *When using 100% biodiesel, the heater must be operated twice a year with diesel fuel (in the middle and at the end of a heating period) to burn off any possible contaminating deposits. To do so, let the vehicle tank run almost empty and fill with diesel fuel without adding any biodiesel. While running on this tank filling, switch the heater on 2 to 3 times for 30 minutes at a time at the highest temperature setting.*
- *When operating with diesel/biodiesel mixtures of up to 50% biodiesel, intermediate operation with pure diesel fuel is not necessary.*

### Storage and use of fuel

- Users are reminded that fuel standards apply to the fuel only to the point of delivery from the distribution network. From this point on it is the user's responsibility to protect the fuel in storage tanks, in supply systems and during use in the vehicle from water and dirt contamination to enable engines to achieve the designed performance, emission and durability targets.
- Biodiesel fuel is unstable and deteriorates at higher temperatures. Storage time must therefore be limited to a maximum period of:
  - 4 weeks in fuel tanks on vehicles that are temporarily out of service.
  - 6 months when stored in storage tanks and supply systems.



### 10.5 LPG FUEL

The EON number (Engine Octane Number) must be a minimum of 93.5 (not to be confused with the RON number (Research Octane Number)).



## 11.EMISSION SYSTEM

### 11.1 ADBLUE

#### AdBlue

AdBlue is a non-flammable, non-toxic, colourless, odourless and water-soluble liquid.

AdBlue is a liquid consisting of 32.5% urea and 67.5% demineralised water.

Special additives are not permitted. If AdBlue comes into contact with painted or aluminium surfaces when filling the tank, rinse the affected area immediately with plenty of water.

AdBlue must meet the specifications according to DIN 70070.

#### High temperatures

If AdBlue is heated in the tank to 50°C over a long period of time, the decomposing AdBlue can produce ammonia vapours. Ammonia vapours have a pungent odour. For this reason, avoid inhaling possible ammonia vapours escaping when unscrewing the AdBlue filler cap. These concentrations of ammonia vapours are neither toxic nor hazardous to health.

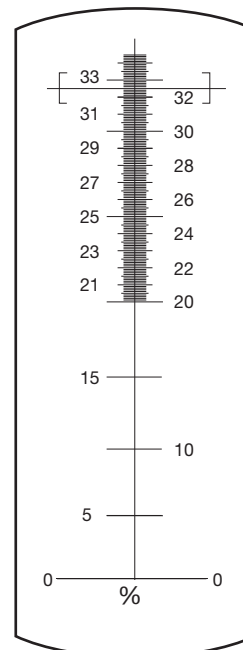
#### Low temperatures

AdBlue freezes at temperatures of approximately -11°C.

#### Measuring urea concentration in AdBlue

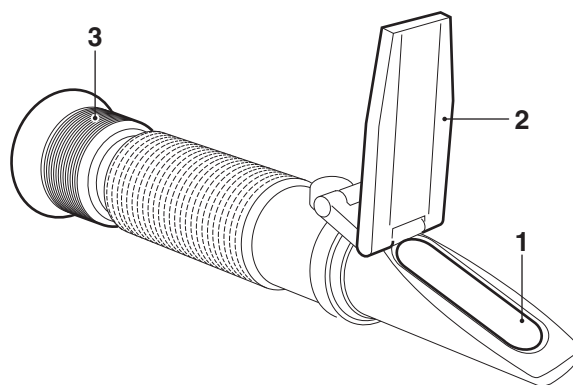
The urea concentration in AdBlue can be measured with a refractometer.

After carefully cleaning the prism and lift-up lid with a soft, lint-free cloth, put some drops of the sample liquid which you want to measure on the prism (1). By closing the lift-up lid (2), the sample will be distributed evenly. Point the refractometer to a light or bright background, so it is easier to recognise the scale and the bright-dark border. Rotate the eyepiece (3) until the scale is sharp to the observer. The measured value of the sample can be read out at the bright-dark border.



G000629

Refractometer scale according to DIN V70070 indicated for urea solution with 32.5%. The permissible deviation at 20°C lies between 31.8% and 33.3%.



G000630

2

### Special additives

Do not add any special additives to AdBlue and do not dilute AdBlue with tap water. This can destroy the Emission Aftertreatment System (EAS). Any damage caused by the use of such additives or tap water invalidates liability for material defects.

### Storage instructions

- Use the original storage tanks only.
- Store in a cool, dry, well-ventilated area.
- Protect storage tanks from freezing.
- Observe the manufacturer's storage instructions and directions for use.

### Purity

The purity of AdBlue is essential in order to avoid malfunctions of the Emission Aftertreatment System (EAS). For example, if AdBlue is pumped out of a tank for repair purposes, the tank must not be refilled with the liquid pumped out, because its purity is no longer guaranteed.



### **WARNING!**

#### **AdBlue safety instructions**

- **Avoid direct contact.**
- **In the event of contact with the skin, rinse with plenty of water.**
- **In the event of contact with the eyes, rinse for at least 15 minutes with plenty of water and seek medical assistance.**
- **If swallowed, rinse mouth with plenty of water; do not induce vomiting.**
- **Use in a ventilated area.**

#### **Procedure after spillage**

- **Rinse with plenty of water.**

**12. TRANSMISSION**

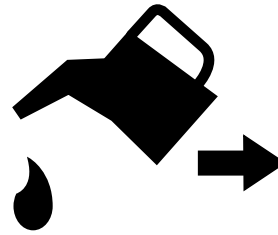
**12.1 GEARBOX OIL FOR ZF GEARBOXES, 45/55 SERIES**

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

**Oil changing interval**

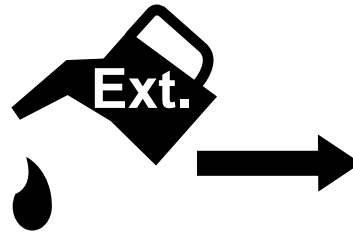
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.





GO 00 229

**Explanation of overview**

V = may be used.

**ZF gearbox used in vehicle series: 45/55**

See the document for the applicable specifications.

Oil specification →	02B	02E	02F	02G	02H	02L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓									
ZF gearboxes without interarder 	V	V	V	V	V		V	V	See explanation
ZF gearboxes without interarder 		V				V		V	See explanation

**Explanation:** Use of 02B or 02H grade oil is advised against as there may be an increase in the required gear-changing forces at low temperatures.



# FLUIDS AND LUBRICANTS

Transmission

series

## ZF gearbox used in vehicle series: LF45/55




See the document for the applicable specifications.

Oil specification →	02B	02E	02F	02G	02H	02L	DAF Premi- um 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓									
ZF gearboxes with- out intarder 	V	V		V	V	V	V	V	See explana- tion
ZF gearboxes with- out intarder (not 6S850) 		V						V	See explana- tion

**Explanation:** Use of 02B or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.

## ZF gearbox used in vehicle series: LF45 IV/ LF55 IV

See the document for the applicable specifications.

Oil specification →	02B	02E	02F	02G	02H	02L	DAF Pre- mium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓									
ZF gearboxes without intarder 	V	V		V	V	V	V	V	See explana- tion
ZF gearboxes without intarder 		V						V	See explana- tion
AS Tronic Lite 	V	V		V		V		V	

**Explanation:**

- Use of 02B or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.
- Extended changing interval not permitted for: 6S700, 6S800 and 6S1000.

2

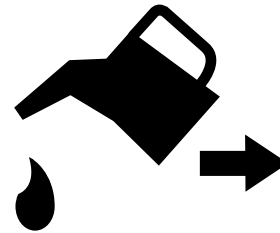
**12.2 GEARBOX OIL FOR ZF GEARBOXES, 65/75/85 SERIES**

**Oil changing interval**

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

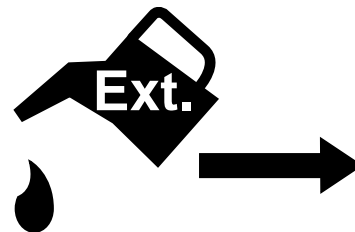
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



G0 00 230

This is the extended changing interval symbol.






G0 00 229

**Explanation of overview**

V = may be used.

**ZF gearbox used in vehicle series: 65/75/85**

See the document for the applicable specifications.

Oil specification →	02 B	02 C	02 E	02 G	02 H	02 L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓									
ZF S6-36 	V		V	V	V	V	V	V	See explanation
ZF gearboxes without intarder 									
Standard changing interval	V	V	V		V	V	V	V	
ZF gearboxes with intarder 			V	V	V	V	V	V	

**Explanation:** Use of 02B, 02C or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.







# FLUIDS AND LUBRICANTS

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series

## ZF gearbox used in vehicle series: 65/75/85CF

See the document for the applicable specifications.

Oil specification → Type of gearbox ↓	02 B	02 C	02 E	02 G	02 H	02 L	DAF Premium 75W80	DAF Xtreme 75W80	Note
ZF S6-36 	V		V	V	V		V	V	See explanation
ZF 6S850 	V	V	V	V	V		V	V	See explanation
ZF gearboxes without intarder (not S6-36/6S850) 	V	V	V		V	V	V	V	
ZF gearboxes without intarder (not S6-36/6S850) 			V			V	V	V	
ZF gearboxes with intarder (not S6-36/6S850) 		V	V		V	V	V	V	
ZF gearboxes with intarder (not S6-36/6S850) 			V			V	V	V	

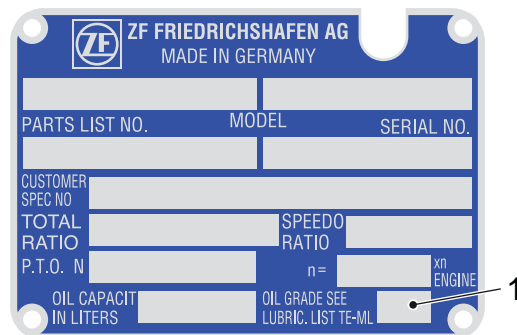
**Explanation:** Use of 02B, 02C or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.

## ZF gearbox used in vehicle series: CF65/75/85

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.






See the document for the applicable specifications.



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2






Oil specifications →	02 B	02 C	02 E	02 G	02 H	02 L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓									
ZF 6S850 	V	V		V	V				See explanation
ZF gearboxes without intarder (not 6S850) 	V	V	V		V	V	V	V	
ZF gearboxes without intarder (not 6S850) 			V			V	V	V	
ZF gearboxes with intarder (not 6S850) 		V	V		V	V	V	V	
ZF gearboxes with intarder (not 6S850) 			V			V	V	V	
AS Tronic			V					V	

**Explanation:** Use of 02B, 02C or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.

**ZF gearbox used in vehicle series: CF65 IV**

See the document for the applicable specifications.

Oil specification →	02B	02E	02G	02H	02L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓								
ZF gearboxes without intarder 	V	V	V	V	V	V	V	See explanation
ZF gearboxes without intarder 		V					V	See explanation
AS Tronic Lite 	V	V	V		V			

**Explanation:** Use of 02B or 02H grade oil is advised against, as it may cause an increase in the required gear-changing forces at low temperatures.

# FLUIDS AND LUBRICANTS

Transmission

series

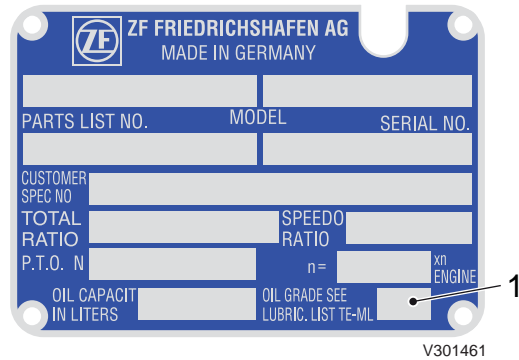
2

## ZF gearbox used in vehicle series: CF75 IV/ CF85 IV

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

See the document for the applicable specifications.



Oil specification →	01E	02E	DAF Xtreme 75W80	Note
Type of gearbox ↓				
ZF gearboxes with/without intarder	V (1)	V (1)	V	
AS Tronic Mid/AS Tronic		V	V	

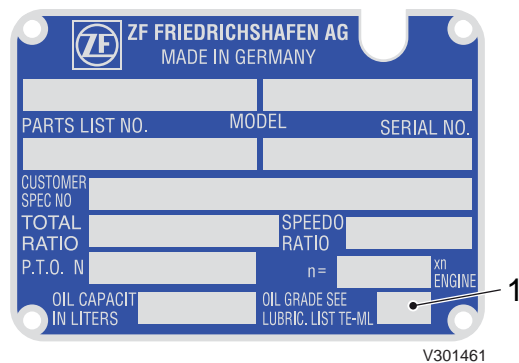
(1) See identification plate

## ZF gearbox used in vehicle series: CF75 IV/CF 85 IV, Non-Western European driving conditions

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

See the document for the applicable specifications.



Oil specification →	01E	02E	DAF Xtreme 75W80	Note
Type of gearbox ↓				
ZF gearboxes with/without intarder	V (1)	V (1)	V	
AS Tronic Mid/AS Tronic		V	V	

(1) See identification plate

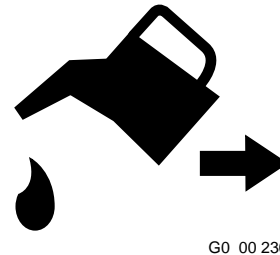
**12.3 GEARBOX OIL FOR ZF GEARBOXES, 95 SERIES**

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

**Oil changing interval**

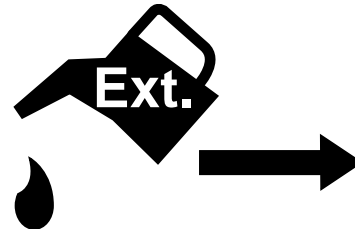
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.





GO 00 229

**Explanation of overview**

V = may be used.

**ZF gearbox used in vehicle series: F95**

See the document for the applicable specifications.

Oil specification →	02B	02C	02L	DAF Premium 75W80	Note
Type of gearbox ↓					
ZF gearboxes without interarder 	V	V	V	V	
ZF gearboxes with interarder 		V	V	V	

**ZF gearbox used in vehicle series: 95XF**





See the document for the applicable specifications.

# FLUIDS AND LUBRICANTS

Transmission

series

2

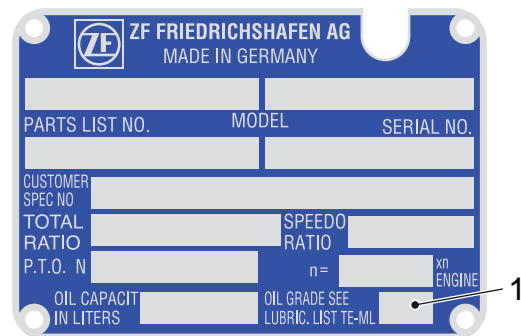
Oil specification →	02B	02C	02H	02L	DAF Premium 75W80	Note
Type of gearbox ↓						
ZF gearboxes without intarder 	V	V	V	V	V	
ZF gearboxes without intarder 				V	V	
ZF gearboxes with intarder 		V	V	V	V	
ZF gearboxes with intarder 				V	V	

### ZF gearbox used in vehicle series: XF95




The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.



Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

See the document for the applicable specifications.



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Oil specification →	02 B	02 C	02E	02F	02G	02H	02L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓										
ZF gearboxes without intarder 	V	V	V			V	V	V	V	
ZF gearboxes without intarder 			V				V	V	V	
ZF gearboxes with intarder 		V	V			V	V	V	V	

Oil specification →	02 B	02 C	02E	02F	02G	02H	02L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓										
ZF gearboxes with intarder 			V				V	V	V	
AS Tronic 			V				V		V	

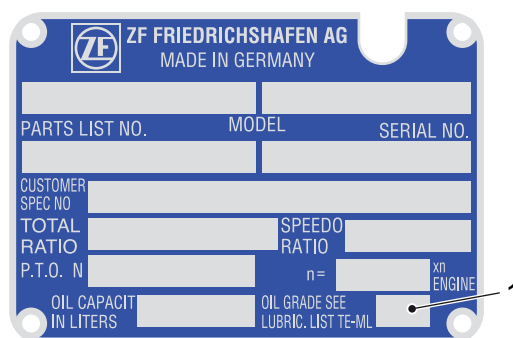
**ZF gearbox used in vehicle series: XF95**

**Engine Field Validation**

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

See the document for the applicable specifications.



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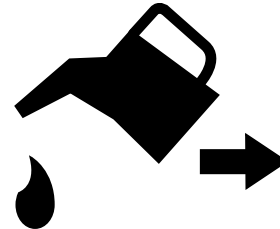
Oil specification →	02L	DAF Premium 75W80	DAF Xtreme 75W80	Note
Type of gearbox ↓				
ZF gearboxes with/without intarder	V	V	V	

## 12.4 GEARBOX OIL FOR ZF GEARBOXES, 105 SERIES

### Oil changing interval

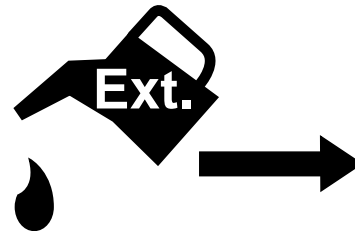
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.



GO 00 229

### Explanation of overview

V = may be used.

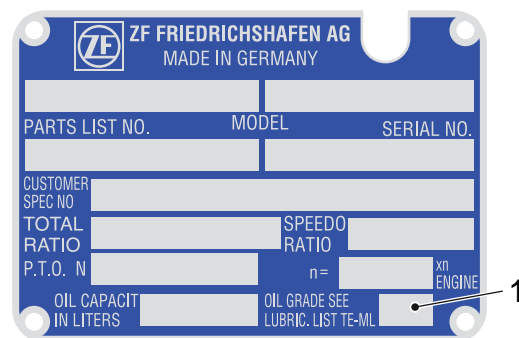
### ZF gearbox used in vehicle series: XF105

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML 02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

See the document for the applicable specifications.



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Oil specification →	01E	02E	DAF Xtreme 75W80	Note
Type of gearbox ↓				
ZF gearboxes with/without interarder	V (1)	V (1)	V	
AS Tronic Mid/AS Tronic		V	V	

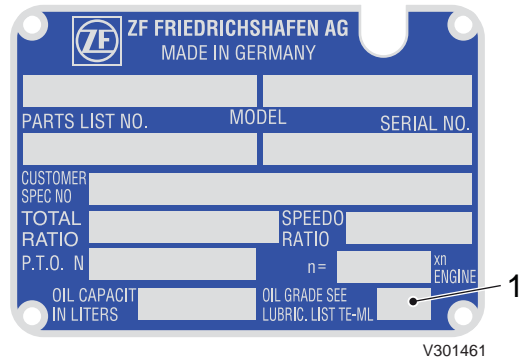
(1) See identification plate

**ZF gearbox used in vehicle series: XF105,  
Non-Western European driving conditions**

The lubrication list number (1) is mentioned on the gearbox identification plate; depending on the gearbox type it can be either 01 or 02.

Within the TE-ML 01 and TE-ML02 lubrication lists, there are several lubrication classes mentioned, such as 01E and 02E.

See the document for the applicable specifications.



Oil specification →	01E	02E	DAF Xtreme 75W80	Note
Type of gearbox ↓				
ZF gearboxes with/without intarder	V (1)	V (1)	V	
AS Tronic Mid/AS Tronic		V	V	

(1) See identification plate

## 12.5 GEARBOX OIL FOR EATON GEARBOXES

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

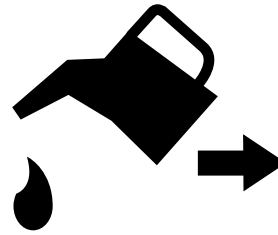
See the document for the applicable specifications.

2

### Oil changing interval

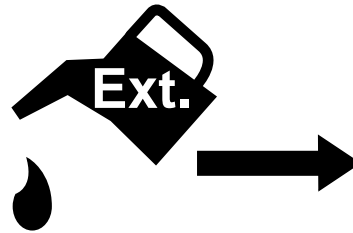
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.




GO 00 229

### Explanation of overview

V = may be used.

Eaton gearbox used in vehicle series: 45/55



Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/semi-synthetic oil	API GL4 SAE 90 Synthetic/semi-synthetic oil	DAF Super 80W90	Note
Type of gearbox ↓						
6109 	V	V			V	



series


Transmission

**Eaton gearbox used in vehicle series: LF45/55**



Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	DAF Premium 75W80	Note
Type of gearbox ↓							
6309 8309 	V	V			V		
6309 8309  Extended changing interval			V	V		V	

2

**Eaton gearbox used in vehicle series: LF45 IV  
Hybrid**

Oil specification →	PS-164 REV7 SAE 50						Note
Type of gearbox ↓							
6AH8306 	V						

**Eaton gearbox used in vehicle series: LF45 IV/  
LF55 IV/CF65 IV**


Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	DAF Premium 75W80	Note
Type of gearbox ↓							
6309 8309 	V	V			V		
6309 8309 			V	V		V	

# FLUIDS AND LUBRICANTS



Transmission

series



Eaton gearbox used in vehicle series: 65/75/  
85

Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	Note
Type of gearbox ↓						
TS(O) 	V	V			V	


Eaton gearbox used in vehicle series: 65/75/  
85 CF

Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	DAF Premium 75W80	Note
Type of gearbox ↓							
TS 	V	V			V		
TS 			V	V		V	

Eaton gearbox used in vehicle series: CF 65/  
75/85

Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	DAF Premium 75W80	Note
Type of gearbox ↓							
6309 	V	V			V		
6309 			V	V		V	

Eaton gearbox used in vehicle series: 95

Oil specification →	API GL4 SAE 80W Mineral oil	API GL4 SAE 90 Mineral oil	API GL4 SAE 80W Synthetic/ semi-synthetic oil	API GL4 SAE 90 Synthetic/ semi-synthetic oil	DAF Super 80W90	Note
Type of gearbox ↓						
TS(O) 	V	V			V	

series

Transmission

Eaton gearbox used in vehicle series: CF85 IV  
and XF105 for Australia, New Zealand and  
South Africa

Oil specification →	SAE 50 Synthetic oil	Note
Type of gearbox ↓		
RTLO 18918B RTLO 20918B	V	

2

## 12.6 GEARBOX OIL FOR ALLISON GEARBOXES

The oil specification overview is related to the maintenance schedules as stated in Service Rapido.

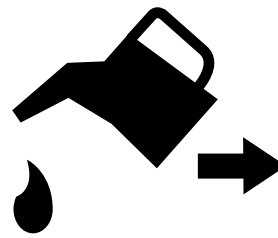
See the document for the applicable specifications.

2

### Oil changing interval

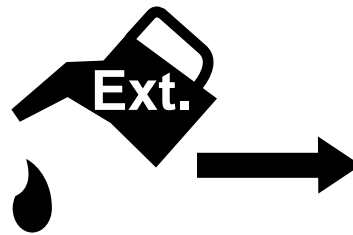
Depending on the gearbox type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.







GO 00 229

### Explanation of overview

V = may be used.



Allison automatic gearbox used in vehicle series: LF45/55

Oil specification →	TES 389	TES 295	Note
Type of gearbox ↓			
AT1000/2000 	V		
AT1000/2000 		V	
MD 3060 	V		
MD 3060 		V	

# FLUIDS AND LUBRICANTS





series

Transmission


Oil specification →	TES 389	TES 295	Note
Type of gearbox ↓			
1000 2500 3000 	V		
1000 2500 3000 		V	

2

Allison automatic gearbox used in vehicle  
series: LF45 IV/LF55 IV/CF65 IV

Oil specification →	TES 389	TES 295	Note
Type of gearbox ↓			
2500 	V		
2500 		V	
MD 3000 	V		
MD 3000 		V	

Allison automatic gearbox used in vehicle  
series: 65/75/85



Oil specification →	TES 389	Note
Type of gearbox ↓		
MD 3060 MD 3066 MD 3560 	V	

# FLUIDS AND LUBRICANTS



Transmission

series

Allison automatic gearbox used in vehicle  
series: 65/75/85CF

Oil specification →	TES 389	TES 295	Note
Type of gearbox ↓			
MD 3060 MD 3066 MD 3560 	V		
MD 3060 MD 3066 MD 3560 		V	

Allison automatic gearbox used in vehicle  
series: CF65/75/85

Oil specification →	TES 389	TES 295	Note
Type of gearbox ↓			
MD 3060 MD 3066 MD 3560 	V		
MD 3060 MD 3066 MD 3560 		V	

Allison automatic gearbox used in vehicle  
series: CF75 IV

Oil specification →	TES 295	Note
Type of gearbox ↓		
MD 3000 MD 3200 MD 3500	V	

Allison automatic gearbox used in vehicle  
series: CF75 IV, Non-Western European  
driving conditions



Oil specification →	TES 295	Note
Type of gearbox ↓		
MD 3000 MD 3200 MD 3500	V	

2

series

Transmission

Allison automatic gearbox used in other vehicle series

Oil specification →	Dexron II D	CCMC G5 SAE 10W-30 or 10W-40	Note
Type of gearbox ↓			
R5-150 (V400) LT-140 (V200) 	V		
P5-100 (V400) 		V	

2

## FLUIDS AND LUBRICANTS

Transmission

series

### 12.7 TRANSFER BOX

Type of transfer box	API GL4 or GL5 SAE 90	DAF Premium 80W90	Note
Steyr	V	V	

2



series

Transmission

**12.8 RETARDER**

Type	Viscosity	Oil grade
Voith	SAE 10W SAE 20W-20 SAE 30	Mineral oil: API CC/SF or higher
	SAE 5W-40 SAE 5W-50 SAE 10W-30 SAE 10W-40	(Semi-) synthetic oil: API CC/SF or higher

For an overview of all the permitted oil products in Voith retarders, see the list published by Voith.

# FLUIDS AND LUBRICANTS

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Transmission

series

## 12.9 HYDRAULIC CLUTCH

DOT 4 brake fluid

2

## 12.10 HYDRAULIC GEARBOX OPERATION

### AS Tronic Lite:

DAF hydraulic fluid 70W75

Pentosin CHF 11S 70W75



**WARNING!** *The use of a hydraulic fluid other than those specified will damage the gearbox.*

### HGS (Hydraulic Gear Shift):

DOT 3 or DOT 4 brake fluid

# FLUIDS AND LUBRICANTS

Transmission

series

## 12.11 DRY-PLATE CLUTCH

Clutch plate axle connection

Lithium-based EP grease, NLGI 3

### **Thrust bearing:**

Thrust bearing with plastic inner sleeve:

Dry mounting

Thrust bearing with steel inner sleeve:

Lithium-based EP grease, NLGI 3

### **Clutch lever**

Clutch lever with rollers (Ecosplit III gearbox):

Dry mounting

Clutch lever without rollers (AS Tronic gearbox):

Lithium-based EP grease, NLGI 3

Clutch lever with rollers (AS Tronic and Ecosplit IV gearbox)

Lithium-based EP grease, NLGI 3

Clutch lever (Eaton transmission, Hybrid application):

Lithium-based EP grease, NLGI 3

Clutch lever (Eaton 18S RTLO)

XXXXXXXXXX

2

series

Transmission

**12.12 UNIVERSAL JOINT, PROP SHAFT**

Shell Retinax LX 2  
Renolit LX PEP 2B

### 12.13 TORQUE CONVERTER

#### Torque converter fluid

DAF Xtreme ATF

DEXRON III with valid approval number

2

series

Front axle and rear axle

**13.FRONT AXLE AND REAR AXLE**

**13.1 DRIVEN FRONT AXLE**

**Explanation of overview:**

V = may be used.

Type of axle	API GL5/ MIL-PRF 2105E/SAE J2360 SAE 85W-140	API GL5/ MIL-PRF 2105E/SAE J2360 SAE 80W-140	DAF Super 85W140	DAF Premium 75W140	Note
2235V	V	V	V	V	See explanation

**Explanation**

For extremely cold regions, where the temperature remains below 0°C for long periods, it is recommended to use the viscosity of SAE 80W-140.

### 13.2 FRONT AXLE HUB

Oil lubricated front axle hubs:

DAF Premium 75W140  
SAE 80W140 according to API GL5/MIL-PRF  
2105E/SAEJ2360

Greased front axle hubs:

Lithium complex based EP additive grease,  
NLGI 2, such as:  
Castrol LMX BP ENERGREASE LC2  
MOBILGREASE HP2  
Q8 RUBENS  
SHELL RETINAX LX  
TEXACO STARPLEX EP2  
Renolit LX PEP 2B  
TOTAL MULTIS COMPLEX EP2  
or equivalent

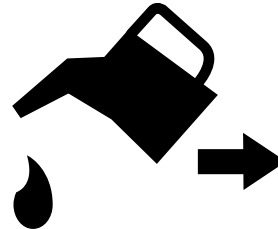


**13.3 REAR AXLE WITHOUT HUB REDUCTION**

**Oil changing interval**

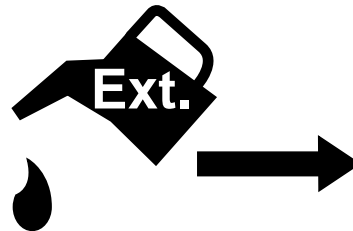
Depending on the rear axle type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.



GO 00 229

**Explanation of overview:**

V = may be used.

**Rear axles used on vehicle series:**



- 45/55
- LF45/55

# FLUIDS AND LUBRICANTS

Front axle and rear axle

series

2

Oil specification → Type of axle ↓	API GL5 / MIL-PRF 2105 E <sup>(2)</sup> / SAE J2360 85W140	MIL-PRF 2105 E <sup>(1)</sup> <sup>(2)</sup> / SAE J2360 75W90	DAF Xtreme 75W90	Note
5.10 5.12 <sup>(3)</sup> 5.14 7.20 8.20 10.20 10.26 11.20 11.26 11.32 	V			See overview of permitted viscosities
5.10 5.12 <sup>(3)</sup> 5.14 7.20 8.20 10.20 10.26 11.20 11.26 11.32 		V	V	Consult the relevant maintenance manual as to which extended changing interval is permitted.

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.  
 (2) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E  
 (3) Viscosity 85W90 for a 5.12 rear axle.

## Overview of permitted viscosities Viscosity, 5.12 axles

- 85W90 (normal use)
- 80W90 (low temperatures)
- 75W90 (extended changing interval)

## Viscosity, all other axles



- 85W140 (normal use)
- 80W140 (low temperatures)
- 75W90 (extended changing interval)

## Rear axles used on vehicle series:

- LF45 IV/LF55 IV
- CF65 IV

series

Front axle and rear axle

Oil specification →	API GL5 / MIL-PRF 2105 E <sup>(2)</sup> / SAE J2360 85W140	MIL-PRF 2105 E <sup>(1) (2)</sup> / SAE J2360 75W90	DAF Xtreme 75W90	Note
Type of axle ↓				
5.10 5.14 8.20 10.20 10.26 11.20 11.32 	<b>V</b>			See overview of permitted viscosities
5.10 5.14 8.20 10.20 10.26 11.20 11.32 		<b>V</b>	<b>V</b>	Consult the relevant maintenance overview in Service Rapido as to which extended changing interval is permitted.

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.

(2) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E

## Overview of permitted viscosities

### Viscosity, 5.12 axles

85W90 (normal use)  
 80W90 (low temperatures)  
 75W90 (extended changing interval)

### Viscosity, all other axles

85W140 (normal use)  
 80W140 (low temperatures)  
 75W90 (extended changing interval)

### Rear axles used on vehicle series:

- 65/75/85
- 65/75/85CF
- CF65/65(II)/75/85



2

## FLUIDS AND LUBRICANTS

Front axle and rear axle

series

2

Oil specification →	API GL5 / MIL-PRF 2105 E <sup>(2)</sup> / SAE J2360 85W140	MIL-PRF 2105 E <sup>(1)</sup> (2) / SAE J2360 75W90	DAF Xtreme 75W90	Note
Type of axle ↓				
11.32 11.32T 13.39 13.46 13.47 	V			
11.32 11.32T 13.39 13.47 		V	V	Consult the relevant maintenance manual as to which extended changing interval is permitted.

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.

(2) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E

### Rear axles used on vehicle series

- CF75 IV
- CF75 IV, Non-Western European driving conditions

Oil specification →	MIL-PRF 2105 E <sup>(1)</sup> / SAE J2360 75W90	DAF Xtreme 75W90	Note
Type of axle ↓			
11.32 11.32T 13.39 13.47	V	V	Consult the relevant maintenance overview in Service Rapido as to which extended changing interval is permitted.



(1) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E

### Rear axles used on vehicle series

- 95
- 95XF
- XF95

series

Front axle and rear axle

Oil specification →	API GL5 / MIL-PRF 2105 E <sup>(2)</sup> / SAE J2360 85W140	MIL-PRF 2105 E <sup>(1)</sup> <sup>(2)</sup> / SAE J2360 75W90	DAF Xtreme 75W90	Note
Type of axle ↓				
13.46 13.47 	V			
13.46 13.47 		V	V	Consult the relevant maintenance manual as to which extended changing interval is permitted.
13.55 low-deck		V	V	This oil must be changed every 120,000 km.

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.

(2) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E

### Rear axle used on vehicle series

- XF105 and CF85 IV
- XF105 and CF85 IV, Non-Western European driving conditions

Oil specification →	MIL-PRF 2105 E <sup>(1)</sup> / SAE J2360 75W90	DAF Xtreme 75W90	Note
Type of axle ↓			
11.32T 13.47 13.60T	V	V	Consult the relevant maintenance overview in Service Rapido as to which changing interval is permitted.

(1) The specification MIL-PRF 2105E is transformed into SAE J2360. The requirements of SAE J2360 are identical to those in MIL-PRF 2105E

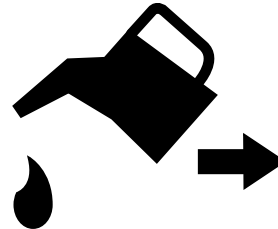
2

## 13.4 REAR AXLE WITH HUB REDUCTION

### Oil changing interval

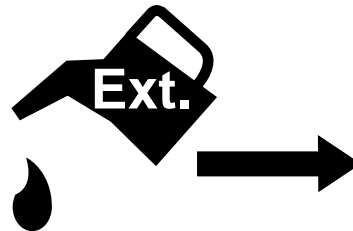
Depending on the rear axle type, it is possible to choose a standard or extended drain interval. The symbols used are listed below.

This is the standard changing interval symbol.



GO 00 230

This is the extended changing interval symbol.





GO 00 229

### Explanation of overview:

V = may be used.

### Rear axles used on vehicle series:

- 75/85
- 75/85CF
- CF75/85
- 95
- 95XF
- XF95

Type of axle	API GL5 / MIL-PRF 2105 E / SAE J2360	MIL-PRF 2105 E <sup>(1)</sup> / SAE J2360 75W90	Shell Spirax S6 AXME 75W90 Q8 T65 75W90 BASF UAF 4209 75W90 Mobil Delvac Syn- thetic Gear Oil 75W-90 Total Transmission SYN FE 75W90	Notes
1354 	V	V		See explanation
1355T 	V	V		See explanation
1356			V	

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.

series

Front axle and rear axle

## Explanation

Depending on the circumstances in which the vehicle is used, a synthetic oil according to MIL-PRF-2105 E/SAE J2360 75W90 must be used. See text below.

### Vehicle weight (GCW) ≤ 40 tons

Ambient temperature often ≥ 30°C due to hilly or mountainous terrain and poor roads and/or unmetalled terrain

### Vehicle weight (GCW) ≥ 40 tons

Always use a synthetic oil according to MIL-PRF-2105 E/SAE J2360 75W90

### Rear axles used on vehicle series:

- **CF75 IV**
- **CF75 IV, Non-Western European driving conditions**
- **XF105 and CF85 IV**
- **XF105 and CF85 IV, Non-Western European driving conditions**

Type of axle	API GL5 / MIL-PRF 2105 E / SAE J2360	MIL-PRF 2105 E <sup>(1)</sup> / SAE J2360 75W90	Shell Spirax S6 AXME 75W90 Q8 T65 75W90 BASF UAF 4209 75W90 Mobil Delvac Synthetic Gear Oil 75W-90 Total Transmission SYN FE 75W90	Notes
1355T	<b>V</b>	<b>V</b>		See explanation
1356			<b>V</b>	

(1) A quality improvement leads to a change in specification, from API GL5 to MIL-PRF 2105E/SAE J2360 75W90.

## Explanation

Depending on the circumstances in which the vehicle is used, a synthetic oil according to MIL-PRF-2105 E 75W90 must be used. See text below.

### Vehicle weight (GCW) ≤ 40 tons

Ambient temperature often ≥ 30°C due to hilly or mountainous terrain and poor roads and/or unmetalled terrain

### Vehicle weight (GCW) ≥ 40 tons

Always use a synthetic oil according to MIL-PRF-2105 E/SAE J2360 75W90

### Rear axles used on vehicle series:

- **XF105 and CF85 IV for Australia, New Zealand and South Africa**

## FLUIDS AND LUBRICANTS

Front axle and rear axle

series

Type of axle	API GL5 / SAE J2360 80W140	Notes
MT 21/23	V	

2



series

Front axle and rear axle

### 13.5 REAR AXLE HUB

Greased rear axle hubs:

Lithium complex based EP additive grease,  
NLGI 2 (or better), such as:  
Castrol LMX  
BP ENERGREASE LC2  
MOBILGREASE HP2  
Q8 RUBENS  
SHELL RETINAX LX  
TEXACO STARPLEX EP2  
RENOLIT LX PEP 2B  
TOTAL MULTIS COMPLEX EP2  
or equivalent.

2

## FLUIDS AND LUBRICANTS

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Front axle and rear axle

series

### 13.6 TRAILING AXLE LOAD TRANSFER DEVICE

Lifting gear oil:

DEXRON III with valid approval number

2

series

Front axle and rear axle

**13.7 CENTRAL TANDEM AXLE**

Quality

MIL-PRF 2105E/SAE J2360

Viscosity

SAE 80W-90/ SAE 75W90

# FLUIDS AND LUBRICANTS

---

Front axle and rear axle

series

2

series

Chassis and body

## 14. CHASSIS AND BODY

### 14.1 CHASSIS LUBRICATION

Lubricating grease

Lithium based grease, NLGI 2  
EP quality

Automatic greasing system

Lithium based EP additive grease, NLGI 0

## FLUIDS AND LUBRICANTS

Chassis and body

series

### 14.2 RATCLIFF PALFINGER TAIL LIFT

Lubricating grease	Lithium complex based EP additive grease, NLGI 2 (or better), such as: Castrol LMX BP ENERGREASE LC2 MOBILGREASE HP2 Q8 RUBENS SHELL RETINAX LX TEXACO STARPLEX EP2 RENOLIT LX PEP 2B TOTAL MULTIS COMPLEX EP2 or equivalent.
Hydraulic fluid	ISO VG22

2

**15. STEERING GEAR AND BRAKE SYSTEM****15.1 STEERING BOX**

Hydraulic power steering:	DEXRON III with valid approval number
Hydraulic power steering V 200/400:	DEXRON III
Steering box V 200/400 (model without power steering):	SAE 80W-90 or SAE 90 according to MIL-PRF 2105E/SAE J2360

**TRW steering box with angular drive**

Steering box	DEXRON III with valid approval number
Between the angular drive and steering box	EP additive grease NL GI 2 (or better)

### 15.2 IDLER ARM

2

Lithium complex based EP additive grease,  
NLGI 2 (or better), such as:  
Castrol LMX  
BP ENERGREASE LC2  
MOBILGREASE HP2  
Q8 RUBENS  
SHELL RETINAX LX  
TEXACO STARPLEX EP2  
RENOLIT LX PEP 2B  
TOTAL MULTIS COMPLEX EP2  
or equivalent.



series

Steering gear and brake system

### 15.3 EVS

Oil for hydraulic steering gear:

DEXRON III with valid approval number.

Accumulator:

nitrogen, industrial quality, 99% pure.

## FLUIDS AND LUBRICANTS

---

Steering gear and brake system

series

### 15.4 EMAS

Oil for hydraulic steering gear:

DEXRON III with valid approval number.

2

series

Steering gear and brake system

**15.5 RAS-EC**

Oil for hydraulic steering gear:

DEXRON III with valid approval number.

## FLUIDS AND LUBRICANTS

---

Steering gear and brake system

series

### 15.6 BRAKING SYSTEM

Brake fluid:

DOT 4

Lubricating grease for brake claw guide sleeves  
in disc brake systems

Renolit HLT2, Syntheso GL EP1

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**Date**



series

ZF

## 17.ZF

### 17.1 ZF

#### Lubricant class 01E

Transmission oil viscosity, SAE 75W-80  
(synthetic, suitable for intarder)

Make	Brand name
DAF TRUCKS N.V., EINDHOVEN/NL	DAF Xtreme 75W-80
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL SYNTRANS Z LONG LIFE 75W-80
CEPSA LUBRICANTS S.A., MADRID/E	MAN SUPER GEAR 341-Z5
HUILES BERLIET S.A., SAINT PRIEST/F	RTO LONGEVIA BZV ECO 75W-80
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION XT-D 540 (SAE 75W-80)
TOTAL LUBRIFIANTS S.A., PARIS/F	TOTAL TRANSMISSION XS FE 75W-80
ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAFEN/D	ZF-ECOFLUID M SAE 75W80

#### Lubricant class 02B

Transmission oil viscosity, SAE 80W / 80W-85 / 80W-90 / 75W-80 / 75W-85 / 75W-90  
(not suitable for intarder)

Make	Brand name
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL GETRIEBEÖL GS 80W
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL GETRIEBEÖL GS 80W-90
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL GETRIEBEÖL GX 80 W 90 ML
AGIP SCHMIERTECHNIK GMBH, WÜRZBURG/D	AGIP ROTRA TRUCK GEAR S, SAE 75W-90
AGIP SCHMIERTECHNIK GMBH, WÜRZBURG/D	AUTOL GETRIEBEÖL 80W-90
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/D	ARAL GETRIEBEÖL EP 80W
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/D	ARAL GETRIEBEOL EP 80W
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/D	ARAL GETRIEBEOL EP 85W-90
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/D	ARAL GETRIEBEOL EP PLUS 80W-90
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/D	ARAL GETRIEBEÖL SNA-E 75W-90
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA GEAR OIL MZ 80
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA GEAR OIL MZ 90
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA SYNTOGEAR FE 75W-90 EP
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA SYNTOGEAR FE 80W-90
BAYWA AG, MÜNCHEN/D	TECTROL MULTIGEAR PLUS 8090
BAYWA AG, MÜNCHEN/D	TECTROL UNIGEAR 80
BEHRAN OIL CO, TEHRAN/IR	BEHRAN SAMAND OEM 1 80W90

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## PERMITTED OIL PRODUCTS, ZF

ZF

series

Make	Brand name
BELGIN MADENI YAGLAR, GEBZE KOCAELI/TR	BELGEAR EP MB 80
BP INTERNATIONAL, PANGBOURNE READING/ GB	ENERGEAR SHX-M SAE 75W-90
BP INTERNATIONAL, PANGBOURNE READING/ GB	BP ENERGEAR EP 80W90
BP INTERNATIONAL, PANGBOURNE READING/ GB	BP ENERGEAR HT 80W90
BP INTERNATIONAL, PANGBOURNE READING/ GB	ENERGEAR SHX-M SAE75W90
BUCHER AG LANGENTHAL, LANGENTHAL/CH	GEAR ZX TP SAE80W/90 GL4/5
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX GEAR OIL EP 80W
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX GEAR OIL EP 80W/90
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX UNISYNT TX
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL DYNADRIVE 80W-90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL DYNADRIVE PLUS 75W90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL EP 80W
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL EP 80W90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL MANUAL EP 80W
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL MANUAL EP 80W-90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL MULTIDRIVE 80W90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL SYNTRAX UNIVERSAL 80W-90
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL SYNTRAX UNIVERSAL PLUS 75W-90
CENTRO HANDELS GMBH & CO. KG, KARL- SRUHE/D	CENTRO MEHRZWECKGETRIEBEÖL SAE 80W
CEPSA LUBRICANTS S.A., MADRID/E	CEPSA TRANSMISIONES 80W-90
CEPSA LUBRICANTS S.A., MADRID/E	CEPSA TRANSMISIONES EP FE+LD 75W-90
CEPSA LUBRICANTS S.A., MADRID/E	ERTOIL TRANSMISIONES 80W-90
CEPSA LUBRICANTS S.A., MADRID/E	ERTOIL TRANSMISIONES F SAE 80
CEPSA LUBRICANTS S.A., MADRID/E	MAN SUPER AXLE 3343
CHEVRON BRASIL LUBRIFICANTES LTDA., RIO DE J./BR	UNIVERSAL EP SAE 80W
CHEVRON/TEXACO, GHENT/B	CALTEX TRANSLUBE LD SAE 80W
CHEVRON/TEXACO, GHENT/B	CALTEX TRANSLUBE LD SAE 90
CHEVRON/TEXACO, GHENT/B	GEARTEX EP-A 80W
CHEVRON/TEXACO, GHENT/B	MGEARTEX EP-A 80W-90
CHEVRON/TEXACO, GHENT/B	MGEARTEX EP-A 85W-90

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## PERMITTED OIL PRODUCTS, ZF

series

ZF

Make	Brand name
CHEVRON/TEXACO, GHENT/B	MULTIGEAR 80W-90
CHEVRON/TEXACO, GHENT/B	MULTIGEAR S 75W-90
CLAAS KGAA MBH, HARSEWINKEL/D	CLAAS AGRISHIFT 4SC 80W90
CONDAT LUBRIFIANTS, CHASSE SUR RHONE/ F	GEAR A (80W)
CONDAT LUBRIFIANTS, CHASSE SUR RHONE/ F	GEAR TDM 80W
CONDAT LUBRIFIANTS, CHASSE SUR RHONE/ F	GEAR TDMX 80W90
CONDAT LUBRIFIANTS, CHASSE SUR RHONE/ F	GEAR TXS 75W90
DAF TRUCKS N.V., EINDHOVEN/NL	DAF SUPER 80W-90
DE OLIEBRON BV, ZWIJNDRECHT/NL	TOR MULTIPURPOSE GEAR OIL SAE 80W90
DE OLIEBRON BV, ZWIJNDRECHT/NL	TOR UNIGEAR 75W90 LD
ENI SPA REFINING & MARKETING DIVISION, ROMA/I	ROTRA HY 80W-90
ENI SPA REFINING & MARKETING DIVISION, ROMA/I	ROTRA HY DB 80W
ENI SPA REFINING & MARKETING DIVISION, ROMA/I	ROTRA LSX 75W-90
ENI SPA REFINING & MARKETING DIVISION, ROMA/I	ROTRA TRUCK GEAR 80W-90
EXXON MOBIL CORP, FAIRFAX, VIRGINIA/USA	ESSO GEAR OIL GP-D 80W
EXXON MOBIL CORP, FAIRFAX, VIRGINIA/USA	ESSO GEAR OIL TDL 75W-90
EXXON MOBIL CORP, FAIRFAX, VIRGINIA/USA	MOBILUBE 1 SHC 75W-90
EXXON MOBIL CORP, FAIRFAX, VIRGINIA/USA	MOBILUBE S 80W-90
FABRIKA MAZIVA FAM A.D, KRUEVAC/SRB	MULTIHIPO 75W-90 SINT
FALCON OIL COMPANY LTD., SHARJAH/UAE	FALCON SUPER EP GEAR OIL 80W/90
FINKE MINERALÖLWERK GMBH, VISSL- HÖVEDE/D	AVIATICON FINKOGEAR SUPER 80W-90
FUCHS PETROLUB AG, MANNHEIM/D	FUCHS TITAN GEAR MP 80
FUCHS PETROLUB AG, MANNHEIM/D	TITAN EG MP 80
FUCHS PETROLUB AG, MANNHEIM/D	TITAN SUPERGEAR MC 80W-90
GAZPROMNEFT-LUBRICANTS, LTD., MOSCOW/ RUS	G-BOX GL-4/GL-5 75W-90
GAZPROMNEFT-LUBRICANTS, LTD., MOSCOW/ RUS	G-TRUCK GL-4 80W-90
GAZPROMNEFT-LUBRICANTS, LTD., MOSCOW/ RUS	G-TRUCK GL-4/GL-5 80W-90
GAZPROMNEFT-LUBRICANTS, LTD., MOSCOW/ RUS	TRANS KP-2 (SAE 80W85)
GAZPROMNEFT-LUBRICANTS, LTD., MOSCOW/ RUS	TRANS KP-4 (SAE 80W-90)
GENOL GMBH & CO., WIEN/A	GENOL GEAR SYN 80W-90
GINOUVES GEORGES SA, LA FARLEDE/F	YORK 793 80W90

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## PERMITTED OIL PRODUCTS, ZF

ZF

series

<b>Make</b>	<b>Brand name</b>
GINOUVES GEORGES SA, LA FARLEDE/F	YORK 896
GRUPA LOTOS SA, GDANSK/PL	TITANIS SUPER GL-5 75W90
GRUPA LOTOS SA, GDANSK/PL	TITANIS SUPER GL-5 80W/90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR MZ 80W
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR MZ 80W-90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR MZ 85W-90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR MZ 90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR TDL 80W-90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR XP 80W
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR XP 80W-90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR XP 90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR XP DURA MAX 80W-90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR XP MAX 90
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF SYNGEAR 75W-90
HANDEL MIJ NOVIOIL B.V., NIJMEGEN/NL	KENDALL TOTAL DRIVE LINE ED 75W90
HARMS MINERALÖLE, PRISDORF/D	OILFINO VARIUS G 300 SAE 80W-90
HIGH INDUSTRIAL LUBRICANTS & LIQUIDS (HILL) CO./KZ	FASTROIL TRANSMISSION GB 1 SAE 80W-90
HINDUSTAN PETROLEUM CORP LTD., MUMBAI/IND	HP GEAR OIL EP 80W90 (MN)
HUILES BERLIET S.A., SAINT PRIEST/F	RTO EP 80W
HUILES BERLIET S.A., SAINT PRIEST/F	RTO EP 80W-90
HUILES BERLIET S.A., SAINT PRIEST/F	RTO LONGEVIA P ECO 80W-90
HUILES BERLIET S.A., SAINT PRIEST/F	RTO LONGEVIA PXD ECO 75W90
IGOL FRANCE S.A., AMIENS/F	GEAR M 80W90
IGOL FRANCE S.A., AMIENS/F	GEAR M 80W90
IGOL FRANCE S.A., AMIENS/F	SYNTHEGEAR SAE 75W90
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO GEAR ALT 80W-90 (LL)
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO GEAR ALT 90
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO GEAR HP 80W(T)
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO GEAR HP 80W-90 (T)
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO GEAR HP 90(T)
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO UNIDRIVE 80W-90
IPIRANGA PRODUTOS DE PETRÓLEO S, RIO DE JANEIRO/BR	IPIRGEROL EP 80W
KOMPRESSOL-OEL VERKAUFS GMBH, KÖLN/D	KOMPRESSOL-MEHRZWECK-GETRIEBEOEL SAE 80W-90
KRAFFT S.L., ANDOAIN/E	HIDROIL SAE 80W90
KROON-OIL B.V., ALMELO/NL	GEARLUBE GL-4 80W-90
KROON-OIL B.V., ALMELO/NL	TRANSMISSION OIL SP 1011
KUWAIT PETROLEUM R&T BV, EUROPOORT RT/NL	Q8 GEAR OIL XG SAE 80W-90

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## PERMITTED OIL PRODUCTS, ZF

series

ZF

Make	Brand name
KUWAIT PETROLEUM R&T BV, EUROPOORT RT/NL	Q8 T 35 SAE 80 W
KUWAIT PETROLEUM R&T BV, EUROPOORT RT/NL	Q8 T 35 SAE 80W-90
KUWAIT PETROLEUM R&T BV, EUROPOORT RT/NL	Q8 T 35 SAE 90
KUWAIT PETROLEUM R&T BV, EUROPOORT RT/NL	Q8 TRANS XGS SAE 75W-90
LIQUI MOLY GMBH, ULM/D	HYPOID GETRIEBEÖL TDL SAE 80W-90
LIQUI MOLY GMBH, ULM/D	LIQUI MOLY GETRIEBEÖL GL 4 SAE 80W
LIQUI MOLY GMBH, ULM/D	LIQUI MOLY GETRIEBEÖL GL 4 SAE 85W-90
LLK FINLAND OY, HAMINA/FIN	TEBOIL EP SAE 80W
LLK FINLAND OY, HAMINA/FIN	TEBOIL EP SAE 80W-90
LUBRICANT OIL COMPANY, SINOPEC, BEIJING/ CN	SINOPEC GREATWALL 80W/90 GL-4
LUBRICANT OIL COMPANY, SINOPEC, BEIJING/ CN	SINOPEC GREATWALL MTF 80W/90
LUBRICANT OIL COMPANY, SINOPEC, BEIJING/ CN	SINOPEC GREATWALL MTF 85W/90
LUBRICANT OIL COMPANY, SINOPEC, BEIJING/ CN	SINOPEC GREATWALL MTF C-I 80W
MAZIVA ZAGREB DOO, ZAGREB/HR	INA HIPENOL SHD 75W-90
MAZIVA ZAGREB DOO, ZAGREB/HR	INA HIPENOL TDL 80W-90
MAZIVA ZAGREB DOO, ZAGREB/HR	INA TRANSMOL DB 80W
MAZIVA ZAGREB DOO, ZAGREB/HR	INA TRANSMOL HD 80W-90
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL GETRIEBEOEL TRUCK-SYNTH SAE 75W-90
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL HYPOID-GETRIEBEOEL TDL SAE 80W-90
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL MEHRZWECKGETRIEBEOEL GL 4 SAE 80W
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL MEHRZWECKGETRIEBEOEL GL 4 SAE 85W-90
MILLERS OILS LIMITED, BRIGHOUSE/GB	SYNTRAN FE/MILLERS TRX SYNTH 75W/90
MINERALÖL-RAFFIN. DOLLBERGEN, UETZE-DOLLBERGEN/D	PENNASOL MEHRZWECK-GETRIEBEOEL GL 4 SAE 80W
MINERALÖL-RAFFIN. DOLLBERGEN, UETZE-DOLLBERGEN/D	PENNASOL MEHRZWECK-GETRIEBEOEL GL 4 SAE 85W90
MINERALÖL-RAFFIN. DOLLBERGEN, UETZE-DOLLBERGEN/D	PENNASOL MEHRZWECK-GETRIEBEOEL GL 4 SAE 90
MOL LUB LTD, ALMASFUZITO/HU	MOL HYKOMOL KZ 80W-90
MORRIS LUBRICANTS, SHREWSBURY/GB	SERVOL EP 80W/90
MORRIS LUBRICANTS, SHREWSBURY/GB	LODEXOL HPS 75W-90
MORRIS LUBRICANTS, SHREWSBURY/GB	LODEXOL SS 80W
MOTUL S.A., AUBERVILLIERS CEDEX/F	MOTUL GEAR MB 80W

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## PERMITTED OIL PRODUCTS, ZF

ZF

series

Make	Brand name
MOTUL S.A., AUBERVILLIERS CEDEX/F	MOTUL GEAR SYNT TDL 75W-90
NESTE MARKKINOINTI OY, ESPOO/FI	NESTE GEAR EP 80W-90
NESTE MARKKINOINTI OY, ESPOO/FI	NESTE HYPOIDI TDL S 75W-90
NEW PROCESS AG, TÜBACH/CH	EP GEAROIL SAE 80W
NEW PROCESS AG, TÜBACH/CH	GEAROIL SYNTH
OEL-BRACK AG, HUNZENSCHWIL/CH	MIDLAND SUPER M 5 80W-90
OEST, GEORG MINERALÖLWERK, FREUDENS-TADT/D	OEST MEHRZWECK-GETRIEBEÖL FE SAE 80W-90
OEST, GEORG MINERALÖLWERK, FREUDENS-TADT/D	OEST MEHRZWECK-GETRIEBEÖL SAE 80W
OEST, GEORG MINERALÖLWERK, FREUDENS-TADT/D	OEST MEHRZWECK-GETRIEBEÖL SAE 80W-90
OEST, GEORG MINERALÖLWERK, FREUDENS-TADT/D	OEST SYNTH GETRIEBEÖL SAE 75W-90
OK NEDERLAND, STAPHORST/NL	OK UNI-CARDAN OIL LD-SAE 75W/90
OK NEDERLAND, STAPHORST/NL	QUINTOL TRANSMISSION OIL VS-45 SAE 75W/90
OMV AG, SCHWECHAT/A	OMV GEAR OIL MP SAE 80W-85
OMV AG, SCHWECHAT/A	OMV GEAR OIL MP SAE 85W-90
OMV AG, SCHWECHAT/A	OMV UNIGEAR S SAE 80W-90
OMV AG, SCHWECHAT/A	OMV GEAR OIL XD-4 SAE 80W-85
OOO 'LLK-INTERNATIONAL', MOSCOW/RUS	LUKOIL TRANSMISSION TM-4 SAE 80W
OOO 'LLK-INTERNATIONAL', MOSCOW/RUS	LUKOIL TRANSMISSION TM-4 SAE 80W-85
OOO 'LLK-INTERNATIONAL', MOSCOW/RUS	LUKOIL TRANSMISSION TM-4 SAE 80W-90
OOO 'LLK-INTERNATIONAL', MOSCOW/RUS	LUKOIL TRANSMISSION TM-4/5 SAE 75W-90
OPET PETROLCÜLÜK A.S., IZMIR/TR	FULLGEAR EP MT 80W
OPET PETROLCÜLÜK A.S., IZMIR/TR	ORSA EP MT 80W
ORLEN OIL SP. Z O.O., KRAKOW/PL	PLATINUM GEAR GL-4 80W
ORLEN OIL SP. Z O.O., KRAKOW/PL	PLATINUM GEAR GL-4 80W/90
ORLEN OIL SP. Z O.O., KRAKOW/PL	PLATINUM GEAR LL 80W-90
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GEAR OIL EP/FZ SAE 80W
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GEAR OIL EP/FZ SAE 80W/90
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL GEAR CBS SAE 75W/85
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL GEAR SA SAE 80W
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL GEAR SA SAE 80W/85
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL GEAR SA SAE 80W/90
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL GEAR SA SAE 85W/90

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<b>Make</b>	<b>Brand name</b>
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GLOBAL MULTIGEAR TS SAE 75W/90
PANOLIN AG, MADETSWIL/CH	PANOLIN EP GEAR 80W
PANOLIN AG, MADETSWIL/CH	PANOLIN EP GEAR 80W/90
PANOLIN AG, MADETSWIL/CH	PANOLIN SUPER DUTY SYNTH 75W/90
PANOLIN AG, MADETSWIL/CH	PANOLIN TOPGEAR 80W/90
PETROBRAS DISTRIBUIDORA S.A., DUQUE DE CAXIAS/BR	LUBRAX TRM-4 (SAE 80W)
PETROBRAS DISTRIBUIDORA S.A., DUQUE DE CAXIAS/BR	LUBRAX TRM-4 SAE 90
PETROGAL S.A., LISBOA/P	GALP TRANSOIL 80W90
PETROGAL S.A., LISBOA/P	GALP TRANSOIL 80W
PETROGAL S.A., LISBOA/P	GALP TRANSVEX TDL 75W90
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION STARGEAR
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION STARGEAR AX-ED
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION STARGEAR HD
PHI OIL GMBH, ST. GEORGEN BEI SALZBURG/A	UNIGEAR GOLD 75W90
PRISTA OIL EAD, ROUSSE/BG	PRISTA EP 80W
PTT PUBLIC COMPANY LIMITED, BANGKOK/TH	PTT EUROTRAN 341 SAE 80W-90
RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/D	RAVENOL SLG SPEC LKW GETRIEBEÖL 80W90
REPSOL YPF LUBRICANTES ESPECIALIDADES, MADRID/E	CARTAGO FE LD 75W90
REPSOL YPF LUBRICANTES ESPECIALIDADES, MADRID/E	CS EP M SAE 80W
REPSOL YPF LUBRICANTES ESPECIALIDADES, MADRID/E	REPSOL CARTAGO EPM SAE 80W
REPSOL YPF LUBRICANTES ESPECIALIDADES, MADRID/E	REPSOL CARTAGO EPM SAE 90
S-OIL CORPORATION, SEOUL/KOREA	DRAGON GEAR TM 80W
SASOL OIL, RANDBURG/ZA	SYN GEAR DIFFERENTIAL OIL 75W-90 (SAE 75W-90)
SHARJAH NATIONAL LUBE OIL CO. LTD., SHARJAH/UAE	SHARLU EP GEAR LUBE 80W90 (GL-4)
SHELL BRASIL, BARRA DA TIJUCA - RIO DE JANEIRO/BR	SHELL SPIRAX G 80W (IN BRAZIL ONLY)
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX GX 80W
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX GX 80W-90
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX MA 80W

# PERMITTED OIL PRODUCTS, ZF

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<b>Make</b>	<b>Brand name</b>
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX MX 80W-90
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX S3 AM 80W-90
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX S3 G 80W
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL SPIRAX S3 G 80W-90
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS GETRIEBEFLUID SML 80W-90
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS WIOLIN MEHRZWECK-GETRIEBEÖL 80
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS WIOLIN MEHRZWECK-GETRIEBEÖL 80W-90
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS WIOLIN MEHRZWECK-GETRIEBEÖL 90
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS WIOLIN RSG 80
STATOIL LUBRICANTS, NYNÄSHAMN/S	GEARWAY G4 80W
STATOIL LUBRICANTS, NYNÄSHAMN/S	GEARWAY G4 80W
STRUB + CO AG, REIDEN/CH	STRUB MULTIGEAR SGO 80W-90
STRUB + CO AG, REIDEN/CH	VULCOGEAR SYNT SGX 75W-90
TEDEX PRODUCTION SP ZOO, TOMASZOW MAZOWIECKI/PL	TEDEX GEAR OIL SAE 80W
TEDEX PRODUCTION SP ZOO, TOMASZOW MAZOWIECKI/PL	TEDEX SUPER GEAR OIL 3343ML SAE 80W90
TNK LUBRICANTS, MOSCOW/RUS	TNK TRANS 80W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	FINA PONTONIC FDL 75W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	GULF GEAR LUBRICANT 80W-85
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	GULF SYNTHETIC GEAR LUBRICANT 75W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TOTAL EP 80W-85
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TOTAL EP 80W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TOTAL TRANSMISSION MDL 80W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TOTAL TRANSMISSION RS FE 80W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TOTAL TRANSMISSION SYN FE 75W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TRANSELF EP 80W
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TRANSELF EP 80W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TRANSELF SYNTHESE FE 75W-90
TOTALFINAELF LUBRIFIANTS S.A., PARIS/F	TRANSELF UNIVERSAL FE 80W-90
UNIL OPAL, SAUMUR CEDEX/F	UNIL OPAL GEAR EP SAE 80W85W
VALVOLINE EUROPE, DORDRECHT/NL	SYNPOWER GEAR OIL TDL 75W-90
VALVOLINE EUROPE, DORDRECHT/NL	VALVOLINE STX GEAR OIL GL-5 80W-90
VIAL OIL LTD., MOSCOW/RUS	CONSOL TRANS LUX SAE 80W-90
YACCO, ST. PIERRE LES ELBEUF/F	BVX 1000

<b>Make</b>	<b>Brand name</b>
YPF S.A., ENSAENADA/RA	HELICOIDAL M (80W)
ZELLER + GMELIN GMBH & CO., EISLINGEN/D	DIVINOL GEAR OIL STO SAE 80W-90
ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAF- EN/D	ZF-ECOFLUID X



*NOTE: For regions with low outside temperatures the shifting quality is adversely affected at a viscosity above SAE 80W.*

**Lubricant class 02C**

Monograde engine oil: SAE 30/40  
(mineral base oil, suitable for intarder)

<b>Make</b>	<b>Brand name</b>
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL TURBO DIESEL MD 305 SAE 30
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL TURBO DIESEL MD 405 SAE 40*
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/ D	ARAL BASIC TURBORAL SAE 30
ARAL LUBRICANTS GMBH & CO. KG, BOCHUM/ D	ARAL BASIC TURBORAL SAE 40*
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA SPECIAL HDC SAE 30
BEHRAN OIL CO, TEHRAN/IR	BEHRAN TURBO DIESEL SAE 40*
BLASER SWISSLUBE AG, HASLE-RÜEGSAU/ CH	BLASOL 30
BLASER SWISSLUBE AG, HASLE-RÜEGSAU/ CH	BLASOL 40*
BP INTERNATIONAL, PANGBOURNE READING/ GB	BP VANELLUS C3 MONO SAE 30
BP INTERNATIONAL, PANGBOURNE READING/ GB	BP VANELLUS C3 MONO SAE 40*
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX MULTI DF 30
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX EXTRA 30
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL ASSURONT PLUS SAE 30
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL ASSURONT PLUS SAE 40*
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL TROPICAL TURBO 40 ZF*
CHEVRON BRASIL LTDA, RIO DE JANEIRO/ BRAZIL	URSA LA 3 SAE 40(*)
CHEVRON BRASIL LTDA, RIO DE JANEIRO/ BRAZIL	URSA TRANS FF SAE 40 (*)
CHEVRON/TEXACO, GHENT/B	URSA SUPER LA 30
CHEVRON/TEXACO, GHENT/B	URSA STOURING HIGH TECH MOTOROIL SAE 30UPER LA 40(*)
DAF TRUCKS N.V., EINDHOVEN/NL	DAF SUPER 30 GEAR OIL

## PERMITTED OIL PRODUCTS, ZF

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<b>Make</b>	<b>Brand name</b>
FUCHS PETROLUB AG, MANNHEIM/D	TITAN UNIVERSAL HD 30
GENOL GMBH & CO., WIEN/A	GENOL MULTI-TURBO 30
HINO MOTORS LTD, HINO-SHI TOKYO/J	BLUE RIBBON BIG SUPER 30 SAE 30
HUILES BERLIET S.A., SAINT PRIEST/F	RTO PREXIMA 40(*)
INA MAZIVA RIJEKA, RIJEKA/HR	INA SUPER 5 30
INA MAZIVA RIJEKA, RIJEKA/HR	INA SUPER 3 30
INA MAZIVA RIJEKA, RIJEKA/HR	INA SAGARTIA 30
INA MAZIVA RIJEKA, RIJEKA/HR	INA GORGONELA S 30
KRAFFT SL, ANDOAIN/E	MONOGRADO SUPER S-3 SAE 40(*)
LIQUI MOLY GMBH, ULM/D	LIQUI MOLY TOURING HIGH TECH HD 40*
LIQUI MOLY GMBH, ULM/D	TOURING HIGH TECH MOTOROIL SAE 30
LUBRICATION ENGINEERS, INC., FORTH WORTH, TEXAS/USA	MONOLEC GFS ENGINE OIL SAE 30
MAGNA INDUSTRIAL CO. LIMITED, HONG KONG/HK	OMEGA 643 SAE 40*
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL MOTORENOEL HD-C3 SG SAE 30
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL MOTORENOEL HD-C3 SG SAE 40(*)
NEW PROCESS AG, TÜBACH/CH	MONO DIESEL SAE 30
OMV REFINING & MARKETING GMBH, WIEN/A	OMV TRUCK SAE 30
OMV REFINING & MARKETING GMBH, WIEN/A	OMV TRUCK SAE 40*
ORLY INTERNATIONAL G.I.E., VIEUX-THANN/F	ORLY DRACO 3001 SAE 30
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO PKO HD 4 SAE 30
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO PKO HD 4 SAE 40*
PANOLIN AG, MADETSWIL/CH	PANOLIN EXTRA DIESEL 30
PANOLIN AG, MADETSWIL/CH	PANOLIN EXTRA DIESEL 40*
PROFI-TECH CHEM TECHN. PRODUKTE GMBH, GINGEN/D	PROFI-CAR EXTRA C SAE 40*
RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/D	RAVENOL SUPER TRUCK SAE 30
RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/D	RAVENOL SUPER TRUCK SAE 40*
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL GADINIA 30
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL GADINIA 40*
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL RIMULA X 30
STATOIL LUBRICANTS, NYNÄSHAMN/S	DIESELWAY 30
STATOIL LUBRICANTS, NYNÄSHAMN/S	DIESELWAY 40*
STRUB + CO AG, REIDEN/CH	TURBO HD SAE 30

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<b>Make</b>	<b>Brand name</b>
SUOMEN PETROLI OY, HAM/FI	TEBOIL POWER D SAE 30
TEXACO BRASIL SA, RIO DE JANEIRO/BR	URSA LA 3 SAE 40*
TEXACO BRASIL SA, RIO DE JANEIRO/BR	URSA TRANS FF SAE 40*
TOTAL LUBRICANTS S.A., PARIS/F	TOTAL RUBIA S 30
TOTAL LUBRICANTS S.A., PARIS/F	ELF PERFORMANCE SUPER D 30
TOTAL LUBRICANTS S.A., PARIS/F	LF PERFORMANCE SUPER D 40*

**Lubricant class 02D**

Transmission oil viscosity, SAE 75W-80 / SAE 75W-85 / 75W-90  
(semi-synthetic oil, suitable for intarder)

<b>Make</b>	<b>Brand name</b>
AGIP SCHMIERTECHNIK GMBH, WÜRZBURG/D	AUTOL GETRIEBEÖL VSL-4 75W-80
ARAL AG, BOCHUM/D	ARAL GETRIEBEÖL SNS SAE 75W-80
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX PRISMA TF 75W/80
CEPSA LUBRICANTS S.A., MADRID/E	CEPSA TRANSMISIONES FE+LD 75W-80
CHEVRON/TEXACO, GHENT/B	MULTIGEAR MTF 75W-80W
DE OLIEBRON B.V., ZWIJNDRECHT/NL	TOR MT/LD GEAR OIL 75W80
DAF TRUCKS N.V., EINDHOVEN/NL	DAF PREMIUM 75W-80W
EXXON MOBIL CORPORATION, FAIRFAX, VIRGINIA/USA	MOBILUBE XHP 75W-80
FL SELENIA S.P.A., VILLASTELLONE/I	TUTELA TRUCK GEAR FE SAE 75W80
FL SELENIA S.P.A., VILLASTELLONE/I	TUTELA TRUCK GEARLITE SAE 75W80
FUCHS PETROLUB AG, MANNHEIM/D	TITAN CYTRAC LD 75W-80
GINOUVES GEORGES S.A., LA FARLEDE/F	YORK 894 75W-80
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF GEAR TX 75W80
HANDEL-MIJ NOVIOL B.V., NIJMEGEN/NL	KENNOCO FLEET TRANSMISSION LUBE ED SAE 75W-80W
HUILES BERLIET S.A., SAINT PRIEST/F	RTO LONGEVIA ECO 75W-80
IGOL FRANCE S.A., AMIENS/F	TRANS GEAR ZF 75W80
KUWAIT PETROLEUM R&T B.V., EUROPOORT RT/NL	Q8 T 60 SAE 75W-80
MAZIVA ZAGREB DOO, ZAGREB/HR	INA TRANSMOL HD 75W-80
MOTUL SA, AUBERVILLIERS CEDEX/F	MOTUL MOTYLGEAR 75W-80
OEL-BRACK AG, HUNZENSCHWIL/CH	MIDLAND CRYPTO GEAR
OMV AG, SCHWECHAT/A	OMV GEAR OIL LDI SAE 75W-80
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO GOLDENGear LD SAE 75W/80
PANOLIN AG, MADETSWIL/CH	PANOLIN TRANSGEAR 75W/80W
PETROGAL S.A., LISBOA/P	GALP TRANSVEX TDL ULTRA 75W80
RALOY LUBRICANTS SA DE CV, TIANGUISTENCO/MEX	NEW EXPERIENCE SYNTHETIC OIL 341

## PERMITTED OIL PRODUCTS, ZF

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Make	Brand name
REPSOL YPF LUBRICANTES Y ESPECIALIDADES, MADRID/E	CARTAGO CAJAS FE LD 75W80
S.A.E.L., MADRID/E	GULF INTARDER GEAR OIL 75W-80
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	SHELL TRANSMISSION OIL ZFLD 75W-80
TOTAL LUBRICANTS S.A., PARIS/F	ANTAR LD 75W-80
TOTAL LUBRICANTS S.A., PARIS/F	FINA PONTONIC TI 75W-80
TOTAL LUBRICANTS S.A., PARIS/F	TRANSELF LD 75W-80
TOTAL LUBRICANTS S.A., PARIS/F	TOTAL TRANSMISSION TI 75W-80
UNIL S.A., SAUMUR CEDEX/F	GERION LD 75W80
YACCO, ST. PIERRE LES ELBEUF/F	BVX Z-500 75W-80



**NOTE: Product group *Ecolite*:**  
For regions with low outside temperatures the shifting quality is adversely affected at a viscosity above SAE 75W-80.

### Lubricant class 02E

Transmission oil viscosity, SAE 75W-80  
(synthetic, suitable for intarder)

Make	Brand name
DAF TRUCKS N.V., EINDHOVEN/NL	DAF Xtreme 75W-80
ZF FRIEDRICHSHAFEN AG, FRIEDRICHSHAFEN/D	ZF-ECOFLUID M 75W80
TOTAL LUBRIFIANTS S.A., PARIS/F	TOTAL TRANSMISSION XS FE 75W-80
CEPSA LUBRICANTS S.A., MADRID/E	MAN SUPER GEAR 341-Z5
HUILES BERLIET S.A., SAINT PRIEST/F	RTO LONGEVIA BZV ECO 75W-80
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION XT-D 540 (SAE 75W-80)
CASTROL INTERNATIONAL, PANGBOURNE READING/GB	CASTROL SYNTRANS Z LONG LIFE 75W-80

### Lubricant class 02F

ATF corresponding to group standard ZFN 13015 and special conditions.

Make	Brand name
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL ATF D II D
ADDINOL LUBE OIL GMBH, LEUNA/D	ADDINOL ATF D III
AGIP SCHMIERTECHNIK GMBH, WÜRZBURG/D	AGIP DEXRON III
AMALIE PETROQUIMICA, SL, MADRID/E	AGIP HD SYNTHETIC BLEND ATF
BAYWA AG, MÜNCHEN/D	BAYWA ATF 3000
BEHRAN OIL CO, TEHRAN/IR	BEHRAN AUTOMATIC II
BELGIN MADENI YAĞLAR, GEBZE, KOCAELI/TR	LUBEX ATF III M

<b>Make</b>	<b>Brand name</b>
C R DEALER DO BRASIL LTDA, RIBEIRÃO PRE-TO/BR	PETROL ATF PLUS SYNT
DAF TRUCKS N.V., EINDHOVEN/NL	DAF Xtreme ATF
DE OLIEBRON BV, ZWIJNDRECHT/NL	TOR ATF DMM
ENGEN PETROLEUM LTD, CAPE TOWN/ZA	ENGEN ATF III
ENI S.P.A. REFINING & MARKETING DIVISION, ROME/I	AGIP DEXRON III
FUCHS PETROLUB AG, MANNHEIM/D	TITAN ATF 3000
GINOUVES GEORGES SA, LA FARLEDE/F	YORK 886
GRUPA LOTUS SA, GDANSK/PL	LOTOS ATF IID
GRUPA LOTUS SA, GDANSK/PL	LOTOS ATF SUPER IIID
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF ATF DX II
GULF OIL MARINE, LTD., WANCHAI/HK	GULFSEA ATF III
HARMS MINERALÖLE, PRISDORF/D	OILFINO SPONTE ATF II
INDIAN OIL CORPORATION LTD., MUMBAI/IND	SERVO TRANSDEX II
IRANOL CO., TEHRAN/IR	IRANOL ATF III
KLORA GRES VE YAG SANAYI AS, GEBZE, KOCAELI/TR	KLORA ATF IIK
KROON-OIL B.V., ALMELO/NL	ALMIROL ATF
KUWAIT PETROLEUM R&T B.V., EUROPOORT RT/NL	Q8 AUTO 14
KUWAIT PETROLEUM R&T B.V., EUROPOORT RT/NL	Q8 AUTO 15
MAZIVA ZAGREB DOO, ZAGREB/HR	INA ATF DX IID
MOL LUB LTD, ALMASFUZITO/HU	MOL ATF
MOL LUB LTD, ALMASFUZITO/HU	MOL ATF SYNT 3H
MORRIS LUBRICANTS, SHREWSBURY/GB	LIQUIMATIC SUPER ATF
OK NEDERLAND, STAPHORST/NL	OK TRANSMISSION OIL ATF III
OK NEDERLAND, STAPHORST/NL	QUINTOL TRANSMISSION FLUID AQ III
ORLEN OIL SP. Z O.O., KRAKOW/PL	HIPOL ATF III
PANOLIN AG, MADETSWIL/CH	PANOLIN ATF DEXRON III
PETRO-CANADA LUBRICANTS, MISSISSAUGA/CDN	HEAVY DUTY SYNTHETIC BLEND ATF
PETROL OFISI A.S, MASLAK-ISTANBUL-TURKEY/TR	PO ATF-2
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	AKCELA TRANS XHD
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	AMBRA HYDRODEX 3
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA CAR GI/E
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA GI/A

## PERMITTED OIL PRODUCTS, ZF

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<b>Make</b>	<b>Brand name</b>
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION STARFLUID
PETRONAS LUBRICANTS SPAIN S.L.U., CANOVELLAS/E	ARBOR MTA
PETRONAS LUBRICANTS SPAIN S.L.U., CANOVELLAS/E	TUTELA GI / A
PETRONAS LUBRICANTS SPAIN S.L.U., CANOVELLAS/E	TUTELA GI / E
PETRONAS LUBRIFICANTES BRASIL S.A., CONTAGEM/BR	TUTELA GI/A PLUS
PRISTA OIL AD, ROUSSE/BG	PRISTA ATF
RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/D	RAVENOL DEXRON F III
REPSOL YPF LUBRICANTES Y ESPECIALIDADES, MADRID/E	REPSOL ATF 3
RS200 MOTOR OIL, LAKKOMA/GR	ATF DEXRON IID
SRS SCHMIERSTOFF VERTRIEB GMBH, SALZBERGEN/D	SRS WIOLIN ATF D
STATOIL LUBRICANTS, STOCKHOLM/S	STATOIL TRANSWAY DX II
STATOIL LUBRICANTS, STOCKHOLM/S	TRANSWAY S DX III F
TNK LUBRICANTS, MOSCOW/RUS	TNK ATF IID
TOTAL LUBRIFIANTS S.A., PARIS/F	FINAMATIC HP
TOTAL LUBRIFIANTS S.A., PARIS/F	TOTAL FLUIDE AT 42
YACCO, ST. PIERRE LES ELBEUF/F	YACCO ATF III

### Lubricant class 02G

Transmission oil corresponding to ZF order specification ZFB 864 (ZF number 0671 071 010)  
Viscosity: SAE 75W (mineral base oil, not suitable for intarder).

<b>Make</b>	<b>Brand name</b>
CHEVRON/TEXACO BELGIUM N.V., GHENT/B	MULTIGEAR MTF LT
FUCHS PETROLUB AG, MANNHEIM/D	TITAN EG 75 ZF
FUCHS PETROLUB AG, MANNHEIM/D	TITAN GEAR ZF

### Lubricant class 02H

Transmission oil: SAE 80W-90  
(mineral base oil, suitable for intarder)

<b>Make</b>	<b>Brand name</b>
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX MULTI DF 30
C R DEALER DO BRASIL LTDA, RIBEIRÃO PRETO/BR	PETROL SUPER HD 30
C R DEALER DO BRASIL LTDA, RIBEIRÃO PRETO/BR	PETROL SUPER HD 40 (*)
CHEVRONTEXACO, GHENT/B	URSA TRANS SAE 40 (*)

<b>Make</b>	<b>Brand name</b>
FUCHS PETROLUB AG, MANNHEIM/D	TITAN UNIVERSAL HD SAE 30 ZF
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF SUPER DUTY LE 30
HUILES BERLIET S.A., SAINT PRIEST/F	RTO PREXIMA 40 (*)
IPIRANGA PRODUTOS DE PETRÓLEO S, RIO DE JANEIRO/BR	IPIRANGA ULTRAGEAR 40 (*)
NEW PROCESS AG, TÜBACH/CH	MONO DIESEL SAE 30
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO PKO HD 4 SAE 30
PAKELO MOTOR OIL S.R.L, SAN BONIFACIO (VR)/I	PAKELO PKO HD 4 SAE 40 (*)
PANOLIN AG, MADETSWIL/CH	PANOLIN EXTRA DIESEL 30
PANOLIN AG, MADETSWIL/CH	PANOLIN EXTRA DIESEL 40 (*)
PETROBRAS DISTRIBUIDORA S.A., DUQUE DE CAXIAS/BR	LUBRAX TRM-5 HD SAE 30
PETROBRAS DISTRIBUIDORA S.A., DUQUE DE CAXIAS/BR	LUBRAX TRM-5 HD SAE 40 (*)
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION ZCS 160
S-OIL TOTAL LUBRICANTS CO. LTD., SEOUL/ROK	TOTAL RUBIA ZS 30
STATOIL LUBRICANTS, STOCKHOLM/S	STATOIL DIESELWAY 30
STATOIL LUBRICANTS, STOCKHOLM/S	STATOIL DIESELWAY 40 (*)
STRUB + CO AG, REIDEN/CH	TURBO HD SAE 30

**Lubricant class 02L**

Transmission oil viscosity, SAE 75W-80 / 75W-85 (synthetic, suitable for intarder)

<b>Make</b>	<b>Brand name</b>
BAYWA AG, MÜNCHEN/D	TECTROL SYNTOGear MA 7580
BUCHER AG LANGENTHAL, LANGENTHAL/CH	MOTOREX GEAR OIL PRISMA TF SAE 75W80
CHEVRONTEXACO, GHENT/B	MULTIGEAR MTF 75W-80
DAF TRUCKS N.V., EINDHOVEN/NL	DAF PREMIUM 75W80
DE OLIEBRON B.V., ZWIJNDRECHT/NL	TOR MT/LD GEAR OIL 75W80
DEUTSCHE PENTOSIN WERKE GMBH, WEDEL/D	PENTOSIN TLD 75W-80
EXXON MOBIL CORPORATION, FAIRFAX, VIRGINIA/USA	MOBIL DELVAC XHP TRANSMISSION OIL 75W-80
FUCHS PETROLUB AG, MANNHEIM/D	FUCHS TITAN CYTRAC MAN SYNTH 75W-80
GINOUVES GEORGES SA, LA FARLEDE/F	YORK 994 75W80
GULF OIL INTERNATIONAL, PITTSBURG/USA	GULF SYNGEAR FE 75W-80
IGOL FRANCE SA, AMIENS/F	TRANS GEAR ZF PLUS 75W80
KUWAIT PETROLEUM R&T B.V., EUROPOORT RT/NL	Q8 T 60 NTECH SAE 75W-80

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<b>Make</b>	<b>Brand name</b>
MEGUIN GMBH & CO. KG MINERALOELWERKE, SAARLOUIS/D	MEGOL PREMIUM GETRIEBEOEL HC GL 4 SAE 75W-80
MOL-LUB KFT., ALMÁSFÜZITÖ/H	MOL HYKOMOL SYNTRANS 75W80
OMV REFINING & MARKETING GMBH, WIEN/A	OMV GEAR OIL LDI SAE 75W-80
OOO 'LLK-INTERNATIONAL', MOSCOW/RUS	LUKOIL TRANSMISSION TM-4 SAE 75W-80
PETROGAL S.A., LISBOA/P	GALP TRANSVEX TDL ULTRA 75W80
PETRONAS LUBRICANTS INTERN., KUALA LUMPUR/MAL	TUTELA TRANSMISSION FE-GEAR (SAE 75W-80)
RALOY LUBRICANTES S.A. DE C.V., TIANGUISTENCO/MEX	KRÖNEN TRANSMISSION SYNTHETIC OIL 341 SAE 75W-80
RAVENSBERGER SCHMIERSTOFFVERTRIEB GMBH, WERTHER/D	RAVENOL SSG SPEC SYNT LKW GETRIEBEÖL 75W-80
SHELL INTERNATIONAL PETROLEUM COMP. LTD., LONDON/GB	TRANSMISSION ZFLD
UNIL OPAL, SAUMUR CEDEX/F	GERION LD 75W80
YACCO, ST PIERRE LES ELBEUF/F	BVX Z 1000 SAE 75W80

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**19.EATON**

**19.1 EATON**

**Synthetic and semi-synthetic oil**

**Synthetic oil**

<b>Make</b>	<b>Brand name</b>
COGNIS (HENKEL/EMERY)	MTF 4200
CASTROL	CASTROL SYNTRANS
MOBIL	MOBILUBE 1 SHC

**Semi-synthetic oil**

<b>Make</b>	<b>Brand name</b>
ELF	TRANSELF 75W80W
MOBIL	MOBILUBEXHP
Q8	KUWAIT T 60
FUCHS DEA	DEAGEAR LD & TITAN CYTRAC LD
FIAT LUBRIFICANTI	TUTELA TRUCK GEAR FE
DE OLIEBRON	TOR MT/LD GEAR OIL
OMV AKTIENGESELLSCHAFT	OMVLDL 75W-80
PAKELO MOTOR OIL	PAKELO GOLDENGEAR LD
TEXACO	MULTIGEAR MTF 75W80W

**Approved lubricant suppliers for Australia, New Zealand and South Africa**

<b>Make</b>	<b>Brand name</b>
BP OIL NEW ZEALAND LTD	TRANSMISSION OIL S-CD50
CALTEX OIL PTY LIMITED	SYNSTAR GL50
CASTROL AUSTRALIA PTY LTD	SYNDRIVE 50E SYNTRAX E
FUCHS LUBRICANTS AUSTRALIA	TITAN GEAR SYN 50
FUCHS LUBRICANTS AUSTRALIA	TUTELA GEAR XLD TUTELA TRUCK FE AXLE
PENRITE OIL COMPANY PTY LTD	PENRITE SYNFLEET 50
SHELL COMPANY OF AUSTRALIA LTD	SHELL SPIRAX GSX SAE-50
VALVOLINE AUSTRALIA PTY LTD	VALVOLINE HD SYNTHETIC TRANSMISSION FLUID SAE50

# PERMITTED OIL PRODUCTS, EATON

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**21.ALLISON**

**21.1 ALLISON**

**TES 389 approved products**

<b>Make</b>	<b>Brand name</b>
BP CASTROL	CASTROL THE PROTECTOR SERIES ATF TQ DII
BP CASTROL	CASTROL TQ DIII
BP LUBRICANTS	CASTROL HEAVY DUTY MULTI-VEHICLE
CHEVRON PRODUCTS COMPANY	CALTEX TEXAMATIC 1888
CHEVRON PRODUCTS COMPANY	CHEVRON AUTOMATIC TRANSMISSION FLUID HD-389
CHEVRON PRODUCTS COMPANY	CHEVRON SYNTHETIC AUTOMATIC TRANSMISSION FLUID HEAVY DUTY
CHEVRON PRODUCTS COMPANY	TEXACO AUTOMATIC TRANSMISSION FLUID HD-389
EXXONMOBIL LUBRICANTS & PETROLEUM SPECIALTIES CO.	MOBIL ATF D/M
EXXONMOBIL LUBRICANTS & PETROLEUM SPECIALTIES CO.	MOBIL MULTIPURPOSE ATF
PETRO-CANADA PETRO-CANADA	PETRO-CANADA ATF D3M
SHELL LUBRICANTS	DONAX TA-389
SHELL LUBRICANTS	DONAX TX

**TES 295 approved products**

<b>Make</b>	<b>Brand name</b>
Castrol Heavy Duty Lubricants	TranSynd
BP Lubricants	Autran Syn 295
Cognis Corporation	Emgard 2805
International Truck & Engine Company	Fleetrite Synthetic ATF
ExxonMobil Lubricants and Petroleum Specialties Company	Mobil Delvac Synthetic ATF
John Deere & Company	HD SynTran

# PERMITTED OIL PRODUCTS, ALLISON

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**23.VOITH**

**23.1 VOITH**

**Single-grade mineral oil**

Agip:	Agip Diesel Sigma S Agip Motor Oil HD
Aral:	Aral Turboral Aral Super Kowal
Avia:	Avia Special HDC Avia Motor Oil HD
BP:	BP Vanellus C3
Burmah Oil:	Castrol CRD-DB 10 Castrol CRD-DB 20 Castrol CRD-DB 30
DEA:	DEA Cronos Super
Elf:	Performance XC Monograde
Esso:	Essolube HDX Plus+ Essolube XD-3+
Fina:	Fina Kappa Super Fina Kappa TC
Mobil Oil:	Mobil Delvac 1300 series
Motorex:	Extra Corbra
Repsol:	Repsol Serie 3 SAE 10W CS Mizar Serie 3 SAE 10W CS Mizar HD SAE 20 (W) CS Mizar Serie 3 SAE 30 Repsol Serie 3 SAE 30
Shell:	Shell Rimula X Monograde Shell Rotella X
Sofomil:	Galp Diesel Galp Orion
SRS:	Wintershall Rekord
Texaco:	Havoline Motor Oil Ursa Super LA
Total:	Total Rubia H Total Rubia S

**Multi-grade mineral oil**

Agip:	Agip Superdiesel Multigrade Agip Sigma Multi Agip Sigma Turbo
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## PERMITTED OIL PRODUCTS, VOITH

Voith

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	Agip Blitum T
	Agip Universal Motoröl
Aral:	Aral Multi Turboral
Avia:	Avia Multi HDC
	Avia Super 365
BP:	BP Vanellus Multigrad
	BP Vanellus C3 Multigrad
	BP Vanellus C 3 Extra
Burmah Oil:	Castrol RX Super Plus 15W-40
	Castrol CVX SAE 10W-40
DEA:	DEA Cronos Super DX
	DEA Cronos Super TDL
Elf:	Performance 3D
	Performance XC
Esso:	Essolube TDS
	Essolube MHX
	Essolube TDX
	Essolube MHC
Fina:	Fina Kappa Supra
	Fina Kappa LDO
	Fina Kappa FE
	Fina Kappa DFE
Mobil Oil:	Mobil Delvac Super 1300
	Mobil Delvac 1400 Super
	Mobil Delvac Super FL 10W-40
Motorex:	Universal SAE 15W-40
	Multi SAE 20W-40
	Turbo Sk SAE 15W-40
	Cobra SAE 15W-40
Repsol:	Repsol Super Gasolina 20W-50
	Repsol Super Turbo Diesel 15W-40
	Repsol Multi G Gasolina 10W-30
	Repsol Multi G Gasolina 20W-40
	Repsol Multi G Diesel 20W-40
	CS Todogrado 20W-50
	CS Dieselgrado 20/40
	Repsol Telex W 10W-20
Shell:	Shell Rimula TX
	Shell Myrina
	Shell Rimula X
Sofomil:	Galp Camius 15W/40

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## PERMITTED OIL PRODUCTS, VOITH

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Voith

	Galp Camius 20W/40
	Galp Galaxia LD
SRS:	Wintershall Multi-Rekord
	Wintershall TFE
Texaco:	Eurotex Multigrade HD
	Havoline Multigrade
	Dieseltex
	Ursa Super LA
Total:	Total Rubia XT
	Total Rubia XLD
<b>Synthetic oil</b>	
Agip:	Agip Sigma TFE
Aral:	Aral Multi Turboral DLX
Avia:	Avia Synth 5W-40
	Avia Multi CFE 10W-40
BP:	BP Vanellus FE 10W-40
	BP Vanellus HT 10W-40
Burmah Oil:	Castrol Syntruck
	Castrol Transmax Z*
DEA:	DEA Cronos Synth
	DEA Cronos Premium HC
	DEA Cronos Premium XL
Esso:	ESSO Ultra Oil
	ESSO Ultra Synthetic Oil
	Motorenöl LDX
Fina:	Fina Kappa Ultra
	Fina First
Klüber:	Klübersynth GEM 4-68
Mobil Oil:	Mobil Delvac XHP
	Mobil Delvac 1 SHC
Motorex:	MC plus SAE 10W-40
	Star Synt SAE 5W-40
Multimiles:	Multimiles 10W-40
Repsol:	Repsol Competicion 5W-40
	Repsol Sintetico Gasolina 10W-40
	Repsol Sintetico Diesel 10W-40
Shell:	Shell Myrina TX
Sofomil:	Galp Synth D 1040
SRS:	Wintershall Primalub Alpha
	Wintershall TFE
Texaco:	Havoline Synthetic 5W-40

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## PERMITTED OIL PRODUCTS, VOITH

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Voith

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	Havoline X1 10W-40
Total:	Total rubia TIR 8200
	Total rubia FE
	Total quartz 9000
	Total quartz 7000
Wameco:	Wameco Green Rallenter Fluid N
	Wameco Red Rallenter Fluid N



