

4.1 Lube Oil

4.2 Fuel

4.3 Coolant

Operating Media

4.1 Lube Oil

4

4.1.1 Quality Grade

Lube oils are differentiated by **Deutz** according to their performance and quality class. Oils of other, comparable specifications can be used.

Approved oils:			
Deutz	DQC I	DQC II	DQC III
ACEA	E2-96	E3/96/E5-02	E4-99
API	CF/CF-4	CH-4/CG-4	-
DHD	-	DHD-1	-

The precise assignment of the admissible oil qualities to the engines is indicated in chapter 6.1.1.
If in doubt, contact your service representative.

4.1.2 Viscosity

Generally, multi-grade oils shall be used. In closed heated rooms at temperatures $>5^{\circ}\text{C}$, also single-grade oils can be used.

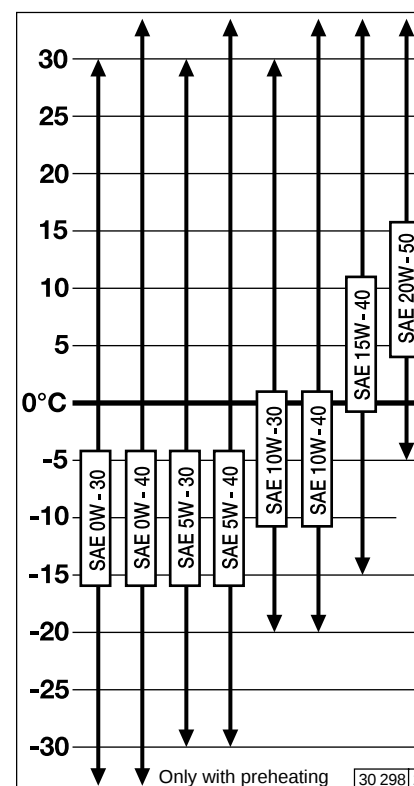
As the viscosity of lube oil is dependent on temperature, the choice of SAE grade should be governed by the ambient temperature prevailing at the engine operating site.

Optimum operating behaviour will be attained if you take the accompanying oil viscosity diagram as a guide.

Should the temperature fall temporarily below the limits of the SAE grade selected, cold starting may be affected but the engine will not be damaged.

In order to keep wear to a minimum, do not exceed application limits for extended periods of time.

Synthetic lube oils feature an improved temperature and oxidation stability.



Operating Media

4.2 Fuel

4

4.2.1 Quality Grade

Use commercially available diesel fuel with less than 0.5% sulphur content. If the sulfur content is higher than 0.5%, oil change intervals should be reduced (see 6.1.1).

The following fuel specifications/standards are approved:
(refer to TR 0199-3002)

- **Diesel fuel**
 - DIN EN 590
 - BS 2869: A1 and A2
(with A2, take note of the sulfur content!)
 - ASTM D 975-88; 1-D and 2-D
 - NATO Code F-54 and F-75
 - ISO 8217 DMX
 - ISO 8217 DMA
- **Light heating oil**
 - according to DIN 51603
 - ASTM D 396; 1 and 2
 - BS 2869 Class D
- **Jet fuel**
 - F34/F35/F44 (kerosene)
 - F54 (equivalent to diesel fuel according to DIN EN 590)
 - XF 63 (equivalent to F34+F35 with additives)
- **Bio diesel fuel**
 - according to DIN 51606- FAME

© 2002

Exhaust emission values which may be determined in the cause of type approval tests always refer to the reference fuel prescribed by the authorities for the type approval test.

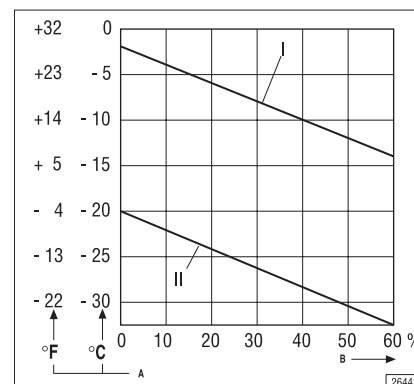
4.2.2 Winter-Grade Fuel

Waxing may occur at low temperatures, clogging the fuel system and reducing engine efficiency. If the ambient temperature is less than 0 °C, winter-grade fuel (suitable down to -20 °C) should be used. This fuel is usually available from filling stations well in advance of the cold months.

- At temperatures below -20°C/, kerosene should be added to the diesel fuel. The relevant percentages are given in the diagram at the right
- Special diesel fuels can be used for climatic zones down to - 44 °C.

If summer-grade diesel fuel must be used at temperatures below 0°C, up to 60% kerosene can be added (see diagram).

In most cases, adequate resistance to cold can be obtained by adding a flow improver (additive). Please contact your **Deutz** partner.



Legend:

I	Summer diesel fuel
II	Winter diesel fuel
A	Outside temperature
B	Percentage of kerosene to be added



Diesel fuels must never be mixed with petrol (normal and super grade petrol)!



Mix in tank only. Fill with the appropriate amount of kerosene first, then add the diesel fuel.

