

# MAN Nutzfahrzeuge Aktiengesellschaft

## Service Information



Date 04.02.09	Issued by SASTI	SI number: <b>2nd supplement, 180911b</b> <b>B7 Diesel</b>
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**Adding up to 7 Vol. % FAME to diesel fuel (so-called "B7 Diesel")**

To date, in accordance with the diesel fuel standard DIN EN 590, it was permitted to add up to 5 Vol. % of FAME to diesel fuel.

The permitted addition of FAME to diesel fuel has now been increased to a maximum of 7 Vol. %.

At the same time, two new standards have been introduced in which the addition of 7 Vol. % has already been included. These standards are: DIN 51628 for Germany and ÖNORM C 1590 for Austria.

The European standard DIN EN 590 will be adapted in the near future.

Fuel with 7 Vol. % FAME, also known as B7 Diesel, can be used for all MAN vehicles/engines without reservation if the diesel fuel complies with one of the standards mentioned above and the added FAME fuel complies with DIN EN 14214.

Yours faithfully,  
MAN Nutzfahrzeuge Aktiengesellschaft

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i.V. 

Distribution of this SI to the worldwide service organisation			
Note: The 1st supplement of this SI only affected workshops in Germany and was therefore not translated. It is not relevant for other countries apart from Germany. Please do not request the supplement. It is normal if workshops outside of Germany do not have this supplement.			
Forwarding within the MAN service workshop organisation:			
Workshop management	yes	Personnel in spare parts store	yes
Workshop personnel for performance of the work	yes	Emergency service mechanics	no
Workshop personnel in general	yes	Customers' workshops authorised for servicing	yes

# MAN Nutzfahrzeuge Aktiengesellschaft

## Service Information







<b>Instruction</b> Product technology	Date 20.06.2007	Issued by VAST	SI number <b>180911b</b> <b>FAME biodiesel</b>
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<b>Vehicles concerned</b>	All
<b>Parts concerned</b>	Engine, fuel system, supplementary heating

<b>Basic considerations</b>	<p>This SI contains instructions regarding the operation of MAN engines/vehicles with</p> <p style="text-align: center;"><b>FAME (Fatty Acid Methyl Esters).</b></p> <p>“FAME” is a generic term for various different fatty acid ethyl esters, which includes, for example, “RME” (Rapeseed Methyl Ester). All instructions in this SI regarding FAME therefore apply equally to RME.</p> <p>Contents:</p> <p>Approved fuels ..... Page 2</p> <p>Fluctuating fuel quality ..... Page 2</p> <p>Mixed operation FAME/Diesel ..... Page 3</p> <p>Engines/vehicles approved for operation with FAME ..... Page 3</p> <p>Operation of supplementary heating with FAME ..... Page 3</p> <p>Maintenance ad repair instructions ..... Page 4</p> <p>Downtimes ..... Page 4</p> <p>Material defect liability ..... Page 5</p> <p>Purchase guarantees ..... Page 5</p> <p>FAME fuel filter for D20/D26 ..... Page 6</p>
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Yours faithfully,  
MAN Nutzfahrzeuge Aktiengesellschaft


  
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	This SI replaces SI 180911a and all subsequent supplements.		
Distribution of this SI to Service Organisation worldwide			
Forwarding within the organisation of the MAN Service Workshop:			
Workshop management	yes	Personnel in spare parts store	yes
Workshop personnel for the performance of the work	yes	24-hour service (fitters)	no
Workshop personnel in general	yes	Customers' workshops authorised for servicing	yes

<b>Approved fuels</b>	<p>MAN engines which are approved for operation with FAME in accordance with the listing on page 3 can be operated with <b>FAME (Fatty Acid Methyl Ester)</b> if:</p> <ul style="list-style-type: none"> <li>• the FAME fuel corresponds to <b>DIN EN 14214</b>; and</li> <li>• the preconditions/restrictions described hereafter are respected.</li> </ul>
<b>Non-approved fuels</b>	<p>All other fuels designated as “biodiesel” or other alternative fuels, such as</p> <ul style="list-style-type: none"> <li>• <b>vegetable oils</b> (e.g. rapeseed oil, palm oil),</li> <li>• <b>oils and greases heated by means of the double tank system</b>,</li> <li>• <b>alcohols</b> (ethanol, methanol) etc.</li> </ul> <p>or mixtures of these are <b>not approved for use in MAN engines</b>.</p> <p>Enquiries are repeatedly made into whether other “alternative” fuels other than FAME in accordance with DIN EN 14214 (such as vegetable oils heated by means of double tank systems) might indeed be approved for MAN engines.</p> <p>In such cases, please advise the customer that the information provided in this SI regarding approved fuels and engines/vehicles which are approved for FAME operation apply without exception, and that “special approvals” are not possible.</p> <p>Moreover, research at the Federal Research Institute for Agriculture and at universities and technical colleges has provided indications that the mutagenity (incurring of mutations), and therefore the possible risk of cancer, is up to 30 times greater with exhaust gases from the combustion of vegetable oils than with the combustion of diesel fuel. Advise your customers of the risk to drivers and the environment associated with the use of vegetable oils as fuel.</p> <p>If customers use fuels other than those which are approved, or use approved fuels in engines other than those which have been approved for them, they do so at their own risk. Material defect liability will be invalidated with regard to any damages which result.</p> <p>If a sales organization issues special approvals, the individual organization concerned will be liable for the resulting damages and MAN Nutzfahrzeuge AG will incur no material defect liability in such cases.</p>

<b>Fluctuating fuel quality</b>	<p>Even with FAME fuels in accordance with DIN EN 14214, quality varies substantially.</p> <p>Experience has shown that there are manufacturers/suppliers who constantly supply fuels with which the approved vehicles/engines can be operated with no problems at all. Likewise, there are manufacturers/suppliers with whom the fuel quality does not always guarantee trouble-free operation.</p> <p>Our customers and we ourselves of course want MAN vehicles and engines to operate without any problems. Please be sure to advise customers who operate their vehicles with FAME about regional fuel suppliers who are reliable and those who are less so. Bear this experience in mind when advising your customers about FAME operation.</p> <p>If the need arises, your VASL team is available to advise you as always (see current edition of the <a href="#">500SM</a>).</p>
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<b>Mixed operation</b>	<ul style="list-style-type: none"> <li>• Admixture of FAME in accordance with DIN EN 14214 to diesel fuel in accordance with DIN EN 590: <ul style="list-style-type: none"> <li>• All vehicles/engines can be operated without restriction with the admixtures of FAME to diesel fuel permissible under the legislation currently in force in Europe.</li> <li>• For admixtures beyond this, the same restrictions/maintenance regulations apply as to operation with pure FAME fuel.</li> </ul> </li> <li>• Alternating diesel DIN EN 590/FAME DIN EN 14214 operation: <ul style="list-style-type: none"> <li>• The same restrictions/maintenance regulations apply as to operation with pure FAME fuel.</li> </ul> </li> </ul>
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<b>Engines/vehicles <u>not</u> approved for operation with FAME</b>	<ul style="list-style-type: none"> <li>• All vehicles with CRT filters</li> <li>• Buses and coaches with Common Rail D08 engines</li> <li>• All horizontally-installed Common Rail engines</li> </ul>
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<b>Engines/vehicles approved for operation with FAME</b>	<p>The following are approved for operation with FAME (with the exception of the vehicles/engines referred to above):</p> <p>D08 engines★: FAME operation permissible from manufacturing date October 1998 onwards (engine numbers 1998: xxx8953591xxxx)</p> <p>D20 engines★: FAME operation permissible</p> <p>D26 engines★: FAME operation permissible</p> <p>D28 engines★: FAME operation permissible from manufacturing date October 1998 onwards (engine numbers 1998: xxx8953001xxxx)</p> <p>★: For Common Rail engines, FAME operation is only permissible if a purchase guarantee has been acquired for the injection components (see <a href="#">page 5</a>).</p> <p>All trucks in which FAME-approved engines are installed are also equipped with FAME-compatible components on the chassis side (fuel system and fuel tank feeder).</p> <p>Soon, vehicles will be supplied with OBD1b + NOx monitoring (as from EDC7 software status V34). These vehicles must be ordered with a “biodiesel” sales group. This sales group will contain an FUP (function parameter set) 81.25890-2135. If such a vehicle is later converted to FAME operation, this FUP must be applied for and loaded, since otherwise operational faults and loss of performance may occur. The FUP has no effect on the maintenance system, and the maintenance computer must be converted separately to the altered oil-change intervals that apply with FAME. Otherwise, all the instructions in this SI also apply to vehicles with OBD1b.</p>
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<b>Operation of supplementary heating with FAME</b>	<p>The following are approved for FAME operation (subject to the precondition of the fuel supply system being FAME-resistant):</p> <p>Airtronic D4S, Hydronic D5WSC, D1LCC, D3LCC</p> <p>Experience has shown that even with approved heating systems, operation with FAME can lead to increased maintenance expenditure or faults. This is due to the still substantial fluctuations in the quality of the fuels available.</p> <p>With supplementary bus and coach heating systems, neither Webasto nor Eberspächer have approval. The components are indeed FAME-resistant, so from a purely technical perspective operation with FAME would be possible, but the systems do not fire up reliably at low temperatures without the jet heads being pre-heated. Substantial soot formation when starting is also to be expected, which means more rapid soot clogging of the jet nozzles.</p>
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**Maintenance and repair instructions**

FAME has more unfavourable evaporation properties than diesel, and therefore causes thinning of the oil and a fall in the viscosity of the engine oil. The engine oil change intervals (including the oil filters) must be shortened in accordance with the following table.

<b>Annual travel distance</b>	<b>Change engine oil, engine oil filters and fuel filters</b>
Up to maximum 45,000 km or maximum 600 operating hours	Every 20,000 km or 400 operating hours
Over 45,000 km	Every 30,000 km or 600 operating hours

Due to the effect of temperature, oxygen and water, FAME is subject to accelerated ageing. The oxidation products which this incurs can lead to the clogging of the fuel filters. In particular, when converting from diesel to FAME operation, there may initially be more frequent fuel filter clogging because FAME will dissolve any residues which might be present in the fuel system.

Fuel filters are parts subject to wear and cannot under any circumstances be charged against material defect liability. The fuel filters are to be replaced at every engine oil change at the latest.

Depending on the fuel quality, it may happen that the fuel filters need to be replaced between the usual change intervals, due to clogging. In such cases there are larger fuel filters for D20 and D26. These fuel filters are not available from the plant, but can be fitted at MAN Service workshops if required. See also [page 6](#).

If FAME is used, we do not advise the installation of fuel pre-filters (e.g. SEPAR). It is true that a separation of the oxidation products takes place in the pre-filter, but because the effective filter surface of the pre-filter is small in relation to the main fuel filter, this can soon lead to deficient fuel supply.

**Injectors:**

With some FAME fuels it may be that the injectors are inclined to clog. In such cases, please do not replace the injectors straight away. Instead, recommend to the customer that two tanks full of diesel be run through first.

**Downtimes**

Before downtimes or taking out of operation for more than 4 weeks, the entire fuel system must be flushed through first by driving with at least two tanks full of diesel in accordance with DIN EN 590.

### Material defect liability

All engines approved for operation with FAME are subject to the usual material defect liability, but with Common Rail engines this applies only if an additional purchase guarantee has been acquired.

In the event of damage to the injection system (high-pressure pump, rail system, injectors, injection pump or injection nozzles) a fuel sample should be taken (about ½ litre from the middle of the fuel content). This will be requested by VASL if required. If the injectors are clogged, see also the “Maintenance and repair instructions” item.

A precondition for claims under material defect liability is confirmation in the maintenance record of engine oil and filters being changed at the due time by an authorised MAN Service workshop (see “Maintenance” for due times).

### Purchase guarantee

For Common Rail engines, the acquisition of a purchase guarantee will be a precondition for approval of operation with FAME fuels in accordance with DIN EN 14214.

If the purchase guarantee has been acquired for a vehicle which is in operation outside Europe, proof must be provided that FAME fuel in accordance with DIN EN 14214 is available in the country in question.

The purchase guarantee will be set up via a negative guarantee application

- Claim code for trucks: GWGS030 00 00 R1
- Claim code for coaches and buses: GWGS820 00 00 R1
- Text BIODIESEL KAEUFLICHE GARANTIE ERWEITERUNG (Biodiesel purchase guarantee extension)

The purchase guarantee must be acquired no more than 3 months after delivery of the vehicle and is valid for:

- 48 months from first registration of the vehicle;
- maximum 600,000 km for engines D20, D26, D28;
- maximum 400,000 km for engines D08; and
- for claims relating to damage to the:
  - injector with nozzle;
  - rail/pressure pipe; or
  - high-pressure pump.

Exceptions:

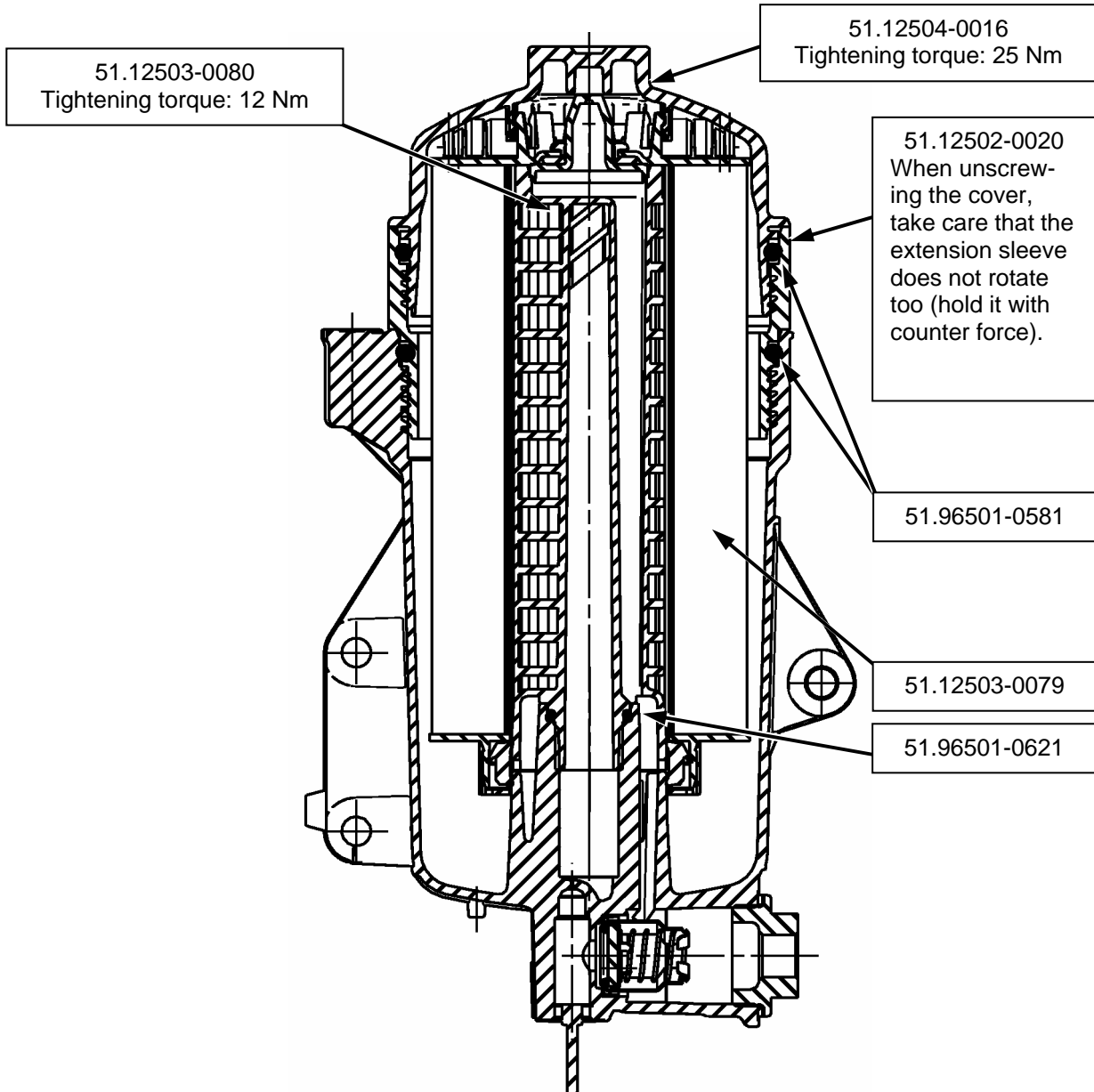
- For presentation vehicles, the purchase guarantee can still be acquired on sale of the vehicle to the end customer, but no more than 12 months after the delivery of the vehicle. Again, it applies from the first registration of the vehicle as described above.
- ~~For vehicles which run under an MTBD maintenance contract, the contract must be amended accordingly. The purchase guarantee will then be factored into the maintenance contract and no separate purchase guarantee will be needed. Maintenance contract vehicles which are operated with FAME must be registered with MTBD-VD in order for the contract to be amended accordingly. This must be done no more than 3 months after delivery of the vehicle (for presentation vehicles no more than 12 months after delivery).~~

**Larger fuel filter for D20/D26**

If required, the KSC tank can be lengthened upwards on engines D20 and D26 and a larger fuel filter for FAME fitted.

For this, the conversion kit 51.12501-6006 is available. It comprises:

Quantity	Designation	Part number
1	Extension sleeve	51.12502-0020
1	Fuel filter set for FAME (with O ring 51.96501-0581)	51.12503-0081
1	Support dome for fuel filter	51.12503-0080
1	Cover	51.12504-0016
1	O ring 100x4 HNBR 60	51.96501-0581
1	O ring 18x2.5 FPM 60	51.96501-0621



**Caution: Risk of confusion!**

Under no circumstances should you fit the standard series fuel filter insert for diesel fuel into an extended KSC. Since this is shorter than the insert for FAME, it would no longer have a tight seal at the bottom and the fuel would no longer be filtered.