

MAINTENANCE AND SERVICE PRODUCT RECOMMENDATION 2021

Bus
MAN and NEOPLAN



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Bus

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General information on service literature

MAN service outlet

A MAN service outlet is a specialist workshop belonging to the MAN service network. The workshop works in accordance with MAN Truck & Bus SE specifications and is authorised to carry out warranty work.

Information on MAN service outlets is available in the MAN After Sales Portal.

www.asp.mantruckandbus.com

Specialist workshop

A specialist workshop is a workshop qualified to carry out work on vehicles. The workshop must have technically qualified personnel plus the required tools and equipment to be able to perform the maintenance and repair work according to MAN Truck & Bus SE specifications.

Maintenance and Service Product Recommendation

The Maintenance and Service Product Recommendation contain comprehensive information:

- on the maintenance system
- on the service products recommended by MAN Truck & Bus SE
- on change intervals for service products
- on fill quantities

The Maintenance and Service Product Recommendation are not supplied with the vehicle.

They are available in the freely accessible area of the MAN After Sales Portal under the section “Repair and maintenance”.

www.asp.mantruckandbus.com

Maintenance checklists

The maintenance checklists describe the scope of the maintenance work that must be performed on the vehicle after a fixed number of kilometres or after a certain time interval.

The content of the maintenance checklists is regularly updated according to technical developments. For this reason, you should always use the current maintenance checklists to perform the maintenance work.

The maintenance checklists are not supplied with the vehicle.

After successful registration, they can be viewed and downloaded from the MAN After Sales Portal under the section “Repair and maintenance”, after entering the vehicle identification number (VIN) under the information type “Maintenance checklists”.

www.asp.mantruckandbus.com

Introduction

General information on service literature

Maintenance instructions

This describes the maintenance work to be performed on the vehicle.

The maintenance instructions are not supplied with the vehicle.

After successful registration, they can be viewed and downloaded from the MAN After Sales Portal under the section "Repair and maintenance", after entering the vehicle identification number under the information type "Maintenance instructions".

www.asp.mantruckandbus.com

Maintenance record

MAN service outlets or specialist workshops use the maintenance record to confirm that maintenance work has been carried out properly and at the correct intervals by trained and authorised technical personnel. The maintenance record should therefore always be retained in the vehicle.

The maintenance record must be submitted for maintenance and repair works at an MAN service outlet or a specialist workshop. It must also be presented in the event of warranty claims.

In case of an existing repair and maintenance contract, the cost shall only be covered if maintenance and repair work which is part of the MAN Truck & Bus SE service scope is carried out by an MAN service outlet with MAN genuine parts.

The maintenance record contains information:

- on the maintenance system
- on liability for defects
- on the service products recommended by MAN Truck & Bus SE that are necessary for the driver to operate the vehicle
- on maintenance intervals for the units that may be relevant for a workshop appointment prior to the first annual inspection.

Information on other service products for maintenance and repair can be found in this maintenance and service product recommendation.

Further information

The Operator's Manual contains further information on the vehicle.

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MAN After Sales Portal

Access to the MAN After Sales Portal

www.asp.mantruckandbus.com



Maintenance system

Maintenance work

Maintenance work

General information on maintenance work

Maintenance work is preventive in character. It does not involve repairs. Repairs must be dealt with separately.

The specified maintenance work must be performed at an MAN service outlet or specialist workshop by qualified specialist personnel. Having maintenance work performed at an MAN service outlet or a specialist workshop is one of the best ways to ensure that the vehicle retains its value.

Properly completed maintenance records and the copies of the maintenance checklists handed over to the customer by the MAN service outlet or specialist workshop detailing the maintenance work that has been carried out and confirmed allow for complete documentation of the maintenance of the vehicle. They are also a prerequisite for all warranty claims to liability for defects.

Vehicle maintenance

To maintain the operational and road safety of the vehicle, it is essential to comply with the maintenance appointments and the statutory inspections prescribed by MAN.

In addition, the maintenance work set out in the Operator's Manual must also be carried out.

Maintenance scope and maintenance intervals

Scope of maintenance and maintenance intervals are specified in the maintenance checklists. Information about change intervals for the service products can be found in the chapter "Maintenance intervals" (📄 page 51).

New structure and new designation of the maintenance checklists

During the course of 2020, the contents of the maintenance checklists have been rewritten and the maintenance checklists were renamed.

Previously	New
Check	Initial inspection
Inspection I	Annual inspection
Inspection II	Maintenance work dependent on time-intervals or mileage
Inspection III	
Oil change sheet	

Maintenance checklists

Acceptance sheet

The acceptance sheet test contains information regarding:

- Customer
- Vehicle
- Maintenance contract

Initial inspection

The initial inspection must be performed after between 4,000 and 5,000 km.

In addition, the due date of the next service is first entered in the maintenance record during the initial inspection.

Annual inspection

The annual inspection must be performed at least every 12 months.

Maintenance work dependent on time-intervals or mileage

Maintenance work dependent on time-intervals is performed at the same time as the annual inspection. Maintenance work dependent on mileage may be due at the same time as the annual inspection or at another time.

Winter service

To maintain operational and road safety, the winter service is to be performed before the start of the cold season.

Maintenance system

Maintenance interval calculator

Maintenance interval calculator

Vehicles with a service interval calculator switched on

The next service due is determined by a maintenance interval calculator in the vehicle and appears on the driver's display. It is possible to have statutory inspections displayed.

Exclusively the currently applicable maintenance checklists are to be used to carry out the maintenance work.

The completion of a service must be entered in the vehicle's maintenance interval calculator.

An entry is made on the relevant verification page in the maintenance record that the time of the next service is indicated on the driver's display.

Vehicles without maintenance interval calculator or with a switched off maintenance interval calculator

Exclusively the currently applicable maintenance checklists are to be used to carry out the maintenance work.

The time of the next service (mileage, date) is indicated on the relevant verification page in the maintenance record.

Fuels

Note

Information on the labelling of approved fuels is contained in the Operator's Manual of the vehicle.

Information on permissible fuels for MAN engines is available in the freely accessible area of the MAN After Sales Portal.

www.asp.mantruckandbus.com

Fuel additives

WARNING

Danger of engine damage

Fuel additives are permissible if the fuels remain compliant with the standards EN 590, EN 14214 or EN 15940 when used. Fuel additives that do not guarantee this may cause engine damage.

Therefore:

- Do not use fuel additives that change the quality of the approved fuels in such a way that they no longer comply with the respective standard.

MAN Truck & Bus SE does not accept warranty claims for resulting damage.

Engine starting aid

WARNING

Danger of engine damage

Engine starting aids of any kind can cause engine damage.

Therefore:

- Do not use engine starting aids.

MAN Truck & Bus SE does not accept warranty claims for resulting damage.

Service products

Mineral diesel fuel

Mineral diesel fuel

Diesel fuel quality requirement

In all countries of the European Union, the diesel fuel must comply with the standard EN 590.

All vehicles may be operated without restrictions if the diesel fuel contains the amount of FAME which is currently legally permissible in the EU (7 vol. %). In the case of other mixtures, the restrictions and maintenance specifications are the same as those that apply to operation with pure FAME fuel.

From the Euro 6 emission standard onwards, the diesel fuel must comply with the standard EN 590.

Outside the European Union, for the emission standards up to and including Euro 5 and EEV, the country-specific regulations must be observed.

If the sulphur content in the fuel exceeds 50 ppm, shorten the intervals between engine oil changes. Information on shortened oil-change intervals is contained in the chapter "Maintenance intervals" (☞ page 52).

The maximum permissible sulphur content in the diesel fuel for vehicle configurations up to and including Euro 5 and EEV can be found in the following table:

This is merely technical approval.

However, MAN Truck & Bus SE offers no assurance that the certified emission values of the respective emission standard are complied with when using fuels with a higher sulphur content than in EN 590.

The use of such fuels is only permissible in countries where such use complies with the respective country-specific regulations.

Emission standard	EGR	AGN	Sulphur content in diesel fuel (ppm)
Euro 3	No	No	Not limited
	Yes	No	Up to 500
	Yes / No	CRT	Up to 10
Euro 4	Yes	PM catalytic converter	Up to 50
	Yes	CRT	Up to 10
	No	SCR	Not limited
Euro 5	Yes	PM catalytic converter	Up to 50
	Yes	DOC	Up to 50
	No	SCR	Not limited
EEV	Yes	PM catalytic converter	Up to 50
	Yes	CRT	Up to 10
	No	SCR	Not limited

Water content and total contamination

The permitted water content in the diesel fuel is at most 200 ppm. If this limit is exceeded, a water trap must be installed. The maximum permitted total contamination of the fuel is 24 ppm.

Fuel recommendation for winter operation

At ambient temperatures of below 0 °C, diesel fuel deposits paraffin crystals which increase the flow resistance in the fuel filter so much that an adequate fuel supply is no longer guaranteed.

To ensure trouble-free operation during winter, you must use winter diesel fuel for which the fuel manufacturer guarantees operational reliability in addition to compliance with the EN standard.



WARNING

Danger of engine damage

Mixing petrol with diesel fuel can lead to engine damage.

Therefore:

- Do not add petrol to the diesel fuel.

Drain the fuel pre-filter and fuel tank as necessary before the onset of winter.

Up to Euro 6c

At ambient temperatures below -10 °C, MAN Truck & Bus SE recommends installing fuel filter heating for vehicles up to emission standard Euro 6c.

Ambient temperature up to (°C)	Fuel recommendation
0	Summer diesel fuel
-10	Winter diesel fuel
-20	Winter diesel fuel and fuel filter heating
-30	Arctic-quality winter diesel fuel and fuel filter heating

From Euro 6d

In the case of vehicles from emission standard Euro 6d, the fuel is pre-heated via a mixer valve in the fuel pre-filter. This secures the fuel supply down to an ambient temperature of 20 °C. For lower ambient temperatures, the fuel filter must be equipped with an electric heater.

Service products

Mineral diesel fuel

Hazard classes

WARNING

Risks to humans and the environment

Diesel fuel can be a risk to humans and the environment.

Therefore:

- Comply with the country-specific statutory and internal provisions regarding occupational and environmental protection.

FAME fuel (biodiesel)

FAME fuel in accordance with EN 14214

Fatty acid methyl ester (FAME) is a fuel composed of vegetable oils, which is also known as biodiesel. The best known example is rapeseed oilmethyl ester (RME).

The FAME fuel must comply with the European standard EN 14214.

Note the following requirements and restrictions when using FAME.

Possible uses and miscibility

Vehicles that are approved for use with FAME fuel according to EN 14214 may also be operated with diesel fuel according to EN 590.

Vehicles that are approved for use with FAME fuel in compliance with EN 14214 must not be operated using paraffinic diesel fuel in compliance with EN 15940.

Vehicle operation with FAME up to and including emission standard Euro 5 and EEV

If a vehicle is subsequently converted to FAME operation, a function parameter (FUP) must be applied for and installed.

If the vehicle is no longer operated with FAME, the FUP must be removed again.

Vehicle operation with FAME as of emission standard Euro 6

Vehicles that are to be operated with FAME must be ordered with the “Operation with biodiesel” equipment. For which vehicles the “Operation with biodiesel” equipment is available can be found in the information available to the sales organisations of the countries.

A subsequent conversion from operation with diesel fuel to operation with FAME is not possible.

Regarding the FAME quality, the regulations for the operation of auxiliary heaters and the general instructions for the operation of vehicles with FAME also apply to Euro 6 vehicles.

Not approved for operation with FAME

- All vehicles with CRT up to and including emission standard Euro 5 and EEV (individual approvals can be obtained from MAN Truck & Bus SE)
- All horizontal common rail engines up to and including emission standard Euro 5 and EEV
- All Euro 6 engines which have not been procured with the equipment “Operation with biodiesel”

Service products

FAME fuel (biodiesel)

Vehicles with CRT up to and including emission standard Euro 5 and EEV only upon approval

In the case of vehicles equipped with CRT, the decision as to whether use of FAME is possible or not depends heavily on the phosphorous and alkali content of the FAME fuel used as well as on the application conditions.

“Contamination” of the catalytic converter from sulphur may occur due to the chemicals involved. In physical terms, “blocking” may occur (by soot clogging the pores). This problem is independent of the engine type, engine or vehicle manufacturer.

A close examination of the operating conditions is therefore required to determine whether and, if applicable, under which circumstances / restrictions it is possible to use FAME fuel.

Vehicles equipped with CRT are only allowed to be operated using FAME following individual approval from MAN Truck & Bus SE.

Further information is available from the MAN service outlets.

If vehicles are operated with FAME without approval from MAN Truck & Bus SE, the liability for defects shall not apply to any resulting damage.

Alternating operation with FAME fuel in compliance with EN 14214 and diesel fuel in compliance with EN 590

For diesel engines that are approved for FAME fuel and diesel fuel, shortened change intervals for engine oil, engine oil filter and fuel filter apply.

Relevant details can be found in the chapter “Maintenance intervals” (➔ page 67).

Injectors:

With some FAME fuels, the injectors may exhibit a tendency to stick. Do not replace the injectors straight away in this case, instead fill the vehicle with two tanks of diesel fuel.

Decommissioning

Before decommissioning for longer than four weeks, the entire fuel system must be flushed by driving with at least two tanks of diesel fuel.

Auxiliary heater

The auxiliary heater from Valeo is approved for FAME operation. There is no approval for auxiliary heaters from Webasto, Spheros and Eberspächer.

Warranty

The usual warranty applies to all engines approved for operation with FAME fuel, except vehicles equipped with CRT.

Agreements made on a case-by-case basis apply for vehicles with CRT.

In case of damage to the injection system (high-pressure pump, common rail injection system, injectors, injection pump, injection nozzles), a fuel sample (about 0.5 litres from the middle of the fuel content) must be ensured. If required, the sample will be requested by the department in the plant that is inspecting the case.

Information on clogged injectors can be found in this chapter (📄 page 18).

Fuel recommendation for winter operation

WARNING

Danger of engine damage

Mixing petrol with FAME fuel can lead to engine damage.

Therefore:

- Do not add petrol to the FAME fuel.

Drain the fuel pre-filter and fuel tank as necessary before the onset of winter.

In the case of start problems in winter, use mineral-based diesel fuel in compliance with EN 590.

Service products

Paraffinic diesel fuels

Paraffinic diesel fuels

Paraffinic diesel fuels in accordance with EN 15940

Paraffinic diesel fuels must comply with the standard EN 15940. This standard specifies the quality requirements for paraffinic diesel fuels.

Examples of paraffinic diesel fuels:

- HVO: Hydrotreated Vegetable Oils
- GTL: Gas to Liquid

Possible uses and miscibility

Vehicles that are approved for use with paraffinic diesel fuel in compliance with EN 15940 may also be operated using diesel fuel in compliance with EN 590.

Vehicles that are approved for use with paraffinic diesel fuel according to EN 15940 must not be operated using FAME fuel according to EN 14214.

Oil change intervals for operation with paraffinic diesel fuels

Engine oil, engine oil filters and fuel filters are subject to the same change intervals as diesel fuel in compliance with EN 590 apply.

Fuel recommendation for winter operation

The same fuel recommendations as for operation with diesel fuel in compliance with EN 590 apply. Information on this can be found in this chapter (📄 page 15).

Micro-organisms in the fuel system

Micro-organisms when operating with diesel fuel and FAME fuel

Diesel fuels and FAME fuels may be contaminated with micro-organisms, which could multiply under unfavourable circumstances.

These micro-organisms may multiply when exposed to condensation water, sulphur, phosphorus, nitrogen, oxygen, trace elements and fuel additives. Depending on the temperature conditions, the micro-organisms may multiply to various extents. This leads to the formation of fibrous fungal braids and sludge, leading to microbial corrosion in the fuel tank and fuel lines. The fuel filters then become blocked with rust particles and biomass.

The result is a reduction in engine performance, ultimately ending in the vehicle becoming immobilised. The fuel filters then have to be replaced at relatively short intervals.

Preventive measures

To prevent the formation of microorganisms in the fuel system:

- Keep storage tanks clean
- Only park the vehicle for an extended period of time with a full fuel tank

Remedies

If the fuel system or storage tanks have already been affected by micro-organisms, MAN Truck & Bus SE recommends using one of the disinfectants listed below:

- GrotaMar 71
- GrotaMar 82
- Bakzid

Please note that the fuel tanks or storage tanks need to be drained prior to the application of disinfectants because the disinfectant binds with water.

Water bound in the fuel can damage the injection system.

i Note

Always refer to the current safety data sheets and technical data sheets before using the disinfectants indicated.

Service products

CNG fuel (natural gas and biomethane)

CNG fuel (natural gas and biomethane)

General information about natural gas and biomethane

Natural gas is a gas that comes naturally from the earth. Its chemical composition varies considerably depending on where it is found.

Biomethane can also be used as an alternative to natural gas. Biomethane is created by processing biogas.

Natural gas and biomethane as CNG fuel

High compression of the gas is necessary to be able to use natural gas and biomethane as a fuel for mobile applications in the automotive area. Only then can the energy content be stored in a limited volume.

Therefore, natural gas and biomethane are stored in the form of CNG (Compressed Natural Gas) at a pressure of 200 bar.

Properties of CNG

- Colourless, augmented with odour-intensive substances for easy detection
- Highly flammable
- Gaseous storage at approx. 200 bar
- Lighter than air, rises to the top

CNG fuel quality requirements

Natural gas and biomethane for use as a fuel in CNG vehicles must comply with standard EN 16723.

In addition, biomethane must be free from harmful gas admixtures (phosphorus, silicon, arsenic, fluorine, chlorine) that can impair the function of the 3-way catalytic converter. Vehicles that use CNG as a fuel must comply with the conditions of legal standard ECE-R 110.

Methane content in natural gas

Due to the varying methane content (CH₄) in natural gas, CNG is divided into two groups:

- H-gas (High, high net calorific value – 10.0 to 11.1 kWh/m³), Methane content 87 to 99 Vol. %
- L-gas (Low, low net calorific value – 8.2 to 8.9 kWh/m³), Methane content 80 to 87 Vol. %

L-gas has a somewhat higher nitrogen content (N₂) and carbon dioxide content (CO₂) than H-gas. As a result, L-gas has a lower calorific value, which means that the absolute gas consumption in a vehicle operated with L-gas is higher than in a vehicle operated with H-gas.

In comparison with CNG vehicles with Motronic ME7 engine control unit (installed until 2009), the natural gas quality does not need to be adjusted in CNG vehicles with EGC4 engine control unit (installed from 2010).

The fuel mixture generation system of the engines automatically adjusts to the currently existing natural gas quality.

Methane content in biomethane

In contrast to natural gas, biomethane always has a high net calorific value with a methane content of up to 98 vol. %.

Exhaust gas aftertreatment (AGN) with gas engine (CNG)

For vehicles with a gas engine (CNG) the exhaust gas is aftertreated in a downstream three-way catalytic converter integrated into the silencer.

For vehicles with diesel engines, no particulate filters or SCR catalytic converter are required for vehicles with gas engines (CNG) in order to comply with the emission limits for EEV and Euro 6 engines.

Service products

AdBlue

AdBlue

Effect of AdBlue

By adding a reducing agent (trade name AdBlue fluid) to the emission control system, pollutants in the exhaust gas (nitrogen oxide NO_x) are converted into environmentally friendly substances (nitrogen and water vapour).

Note

If a vehicle is equipped with an AdBlue system, operation of this vehicle with a reducing agent is necessary in order to comply with emissions standards, and is therefore a condition for type approval within the EU.

WARNING

Danger of engine damage

AdBlue is not an additive and can lead to engine damage in combination with diesel fuel.

Therefore:

- Do not mix AdBlue fluid with diesel fuel.
- Only use AdBlue **without additives/auxiliary agents** in accordance with the following standards:
 - ISO 22241
 - DIN 70070
- Only use suitable storage and filling systems in order to avoid loss of quality.

Environmental note

AdBlue is easily decomposed by microbes. It is therefore readily biodegradable. This means that AdBlue presents very little danger to the environment.

Therefore, in Germany, AdBlue has been placed in the lowest water hazard class WHC1. AdBlue is an aqueous solution which poses no significant risks according to the applicable EU chemical laws.

Service products in accordance with MAN company standard

Use of service products

MAN recommends using MAN Genuine service products. MAN reserves the right to refuse any material defects or warranty claims if the fault for which such claims are made by the customer originates from the use of a specific service product from another supplier.

If several specifications are permissible, the **specifications written in bold** in this maintenance and service product recommendation and in the maintenance checklist denote the initial fill.

i Note

Further information on service products can be found in the MAN service product database or is available from the MAN service outlets.

www.asp.mantruckandbus.com

Service products

Service products in accordance with MAN company standard



MAN Genuine Oil

- less friction, more efficiency. Engine oil, gearbox oil, axle oil

The most important thing when it comes to motorisation and technology is without a doubt the optimum coordination of all components. MAN Genuine Parts fulfil this prerequisite. MAN Genuine Oil is the perfect complement to the core components of an MAN vehicle, for engines, gearboxes, driven axles and transfer cases. MAN Genuine Oils are proven to provide optimum protection against wear, and thus contribute to a longer lifespan and reduce overall operating costs (TCO).

Only the best MAN oil is good enough for MAN vehicles. MAN Genuine Oil.

MAN Genuine Oil: Our favourites

MAN Genuine Oil is always the right choice. We recommend these favourites.



Paragon MAN 3977 5W-20
MAN Genuine engine oil

- Increased fuel savings compared to Excellence MAN 3677 with identical performance characteristics
- Service intervals up to 140,000 km (for MAN engines from Euro 6d)
- Service intervals for diesel particulate filters of up to 850,000 km
- Low viscosity Fuel Economy oil in accordance with the state of the art



Excellence MAN 3677 5W-30
MAN Genuine Engine Oil

- Service intervals of up to 140,000 km
- Service intervals for diesel particulate filters of up to 850,000 km
- Longer service life, even under extreme loads
- High efficiency and performance with minimal oil consumption



Flexor MAN 341 Z5 75W-80
MAN Genuine Gearbox Oil

- High oxidation resistance and thermal stability, even with long oil change intervals
- Optimum viscosity for unproblematic cold starts and smooth shifting at low temperatures
- Long service life of the gearbox, even under extreme operating conditions and ambient temperatures
- High efficiency and performance



Note: Specific information on service products and other regulations in this Maintenance and Service Product Recommendation must be observed!

Service products

Service products in accordance with MAN company standard



Nexus MAN 342 S1 75W-90

MAN Genuine Axle Oil

- High oxidation resistance and thermal stability, even with long oil change intervals
- Prevention of oil sludge formation thanks to cleaning effect
- Long service life of driven axles and transfer cases, even under extreme operating conditions and ambient temperatures
- High efficiency and performance



Note: Specific information on service products and other regulations in this Maintenance and Service Product Recommendation must be observed!

Engine oils

Engine oils for diesel engines

Diesel engine		Sulphur content in diesel fuel (ppm)	Approved engine oil in accordance with MAN company standard				
			M 3277	M 3377	M 3477	M 3677	M 3977
Euro 0 Euro 1		Not limited	Yes	Yes	No	No	No
Euro 2	D08, D28	Not limited	Yes	Yes	No	No	No
	D20, D26	Up to 50	Yes	Yes	Yes	Yes	No
	D20, D26	Over 50	Yes	Yes	No	No	No
Euro 3	with/without EGR, without catalytic converter	Up to 50	Yes	Yes	Yes	Yes	No
	without EGR, without catalytic converter	Over 50	Yes	Yes	No	No	No
	D20/D26 with EGR, without catalytic converter	51 to 500	Yes	Yes	No	No	No
	without/with EGR, with CRT	Up to 10	No	No	Yes	Yes	No
Euro 4	with EGR, with PM catalytic converter	Up to 50	No	No	Yes	Yes	No
	with EGR, with CRT	Up to 10	No	No	Yes	Yes	No
	without EGR, with SCR	Up to 50	Yes	Yes	Yes	Yes	No
		Over 50	Yes	Yes	No	No	No
Euro 5	with EGR, with DOC	Up to 50	Yes	Yes	Yes	Yes	No
	with EGR, with PM catalytic converter	Up to 50	No	No	Yes	Yes	No
	without EGR, with SCR	Up to 50	Yes	Yes	Yes	Yes	No
		Over 50	Yes	Yes	No	No	No

Service products

Engine oils

Diesel engine		Sulphur content in diesel fuel (ppm)	Approved engine oil in accordance with MAN company standard				
			M 3277	M 3377	M 3477	M 3677	M 3977
EEV	with EGR, with PM catalytic converter	Up to 50	No	No	Yes	Yes	No
	with EGR, with CRT	Up to 10	No	No	Yes	Yes	No
	without EGR, with SCR	Up to 50	Yes	Yes	Yes	Yes	No
		Over 50	Yes	Yes	No	No	No
Euro 6a	D08LOH75/76/77 with EGR, with SCR + CRT	Up to 10	No	Yes	No	Yes	No
Euro 6b	D08LOH66/67/72/73/74 with EGR, with SCR + CRT	Up to 10	No	Yes ¹	No	Yes	No
	D20LUH50/51/52/53/55/56 with EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No
	D20LOH30/31/32, D26LOH30/31/32 with EGR, with SCR + CRT	Up to 10	No	Yes ¹	No	Yes	No
Euro 6c	D08LOH78/79/80/81/82 with EGR, with SCR + CRT	Up to 10	No	Yes	No	Yes ²	No
	D08LOH83/84/85 with EGR, with SCR + CRT	Up to 10	No	Yes	No	Yes	No
Euro 6c	D20LUH57/58/59/61/62 with EGR, with SCR + CRT	Up to 10	No	Yes	No	Yes ²	No
	D26LOH35/36/37 with EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No

Diesel engine		Sulphur content in diesel fuel (ppm)	Approved engine oil in accordance with MAN company standard				
			M 3277	M 3377	M 3477	M 3677	M 3977
Euro 6d	D08LOH86/87 without EGR, with SCR + CRT	Up to 10	No	Yes	No	Yes ²	No
Euro 6e	D08LOH90/91 without EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No
Euro 6d,e	D0836LOH88/89/92/93 without EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No
Euro 6d,e	D1556LOH10/11/12/13/14/15/16/17/18/ 19/20/21 without EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No
Euro 6d	D20LUH63/64/65/67/68/69/70 with EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No
Euro 6d,e	D2676LOH38/39/40/42/43/47/48/49 with EGR, with SCR + CRT	Up to 10	No	No	No	Yes	Yes
Euro 6e	D2676LOH50/51/52 with EGR, with SCR + CRT	Up to 10	No	No	No	Yes	No

¹ M 3377: Longlife oil upon special customer request for shortened standstill times of the diesel particulate filter and extended oil change intervals — not permissible for vehicles with maintenance and FullService contracts.

² M 3677: Fuel economy oil at special customer request for extended standstill periods of the diesel particulate filter and reduced oil-change intervals - not permissible for vehicles with maintenance and full service contracts.

For vehicles with a maintenance interval calculator, the vehicle parameters must be reprogrammed by the workshop in case of a change of oil specifications.

Further information about oil specifications and oil-change intervals for diesel engines can be found in the chapter “Service intervals” (page 51).

Service products

Engine oils

Engine oils for gas engines (CNG)

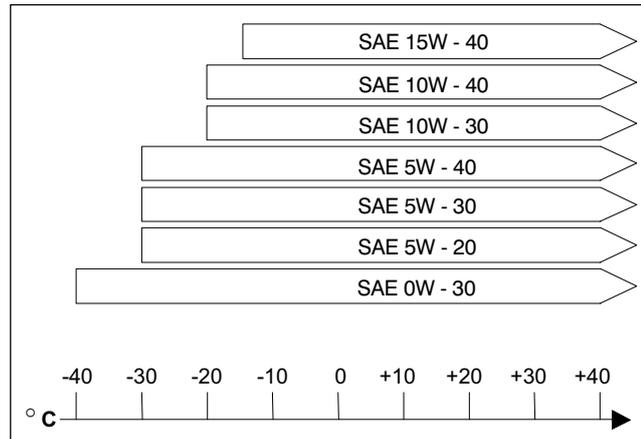
Gas engine		Approved engine oil in accordance with MAN company standard				
		M 3271-1	M 3271-3	M 3477	M 3677	M 3977
EEV	E2866DUH03/04, with three-way catalytic converter	Yes	Yes	Yes	Yes	No
	E2876LUH01/02, with three-way catalytic converter	Yes	Yes	Yes	Yes	No
	E2876LUH03/04, with three-way catalytic converter	No	Yes	No	Yes	No
Euro 6c,d	E2876LUH07/08/09/10/11/12, with three-way catalytic converter	No	Yes	No	Yes	No
Euro 6d,e	E1856LOH01/02/03/04, with three-way catalytic converter	No	No	No	Yes	No

For vehicles with a maintenance interval calculator, the vehicle parameters must be reprogrammed by the workshop in case of a change of oil specifications.

Further information about oil specifications and oil-change intervals for gas engines can be found in the chapter "Maintenance intervals" (page 72).

Further requirements for engine oils

Low-temperature limits



Engine oil additives

WARNING

Danger of engine damage

Engine oil additives can lead to engine damage.

Therefore:

- Do not use engine oil additives.

MAN Truck & Bus SE does not accept warranty claims for damage resulting from engine oil additives.

Mixing engine oils

Engine oils from different manufacturers, but in accordance with the same specifications, can be mixed.

Mixing oils of different specifications is not permissible.

Exception up to and including emission standard Euro 5 and EEV:

- M 3677 and M 3477 may be mixed
- M 3377 and M 3277 may be mixed

Exception from Euro 6d emission standard:

- M 3977 and M 3677 may be mixed

Shortened engine oil-change intervals depending on the sulphur content in the diesel fuel

Engine oil change intervals may be reduced depending on the sulfur content in the diesel fuel.

Information on shortened oil change intervals can be found in the chapter "Maintenance intervals" ( page 51).

Service products

Oil for drive unit (electric)

Oil for drive unit (electric)

Lion's City type C with electric drive

Drive unit	Oil specification
Drive unit	M 3703

Air compressor oil (for electric air compressor)

Lion's City type C with electric drive

Air compressor	Oil specification
Air compressor	Castrol Alphasyn T46 (PAO-oil), Chevron Cetus PAO 46

Service products

Coolants

Coolants

MAN Genuine corrosion protection and antifreeze

Developed specially for the operation of MAN high-performance diesel engines, MAN genuine corrosion protection and antifreeze offers protection against corrosion and cavitation at the same time as providing antifreeze protection to -37°C .

Pipe-constricting deposits or gas bubbles can result in extreme pressure and temperature peaks that can permanently damage the system. MAN genuine corrosion protection and antifreeze is optimally tuned to the cooling systems of MAN engines and to their seal materials and coatings, and therefore provides maximum protection, optimum function and considerable cost advantages due to longer engine service life.

MAN genuine corrosion protection and antifreeze meets the MAN 324 SI-OAT and VW TL 774-G specifications and is thus suitable for all MAN vehicles.

Where available, use MAN genuine corrosion protection and antifreeze.



Antifreeze and anti-corrosion agents

Antifreeze and anti-corrosion agent
in accordance with company standard MAN 324

Use and properties of antifreeze and anti-corrosion agents according to company standard MAN 324	MAN 324 type Si-OAT plus, MAN 324 Type Si-OAT	MAN 324 Type NF
Colour	Pink	Not prescribed
Application	For all emissions standards Obligatory as of Euro 6	Up to and including Euro 5, EEV
Utilisation forbidden	-	From Euro 6
No mixing	with N, SNF and N-Arctic types	with SNF and N-Arctic types
Permissible coolant hoses	Without restriction	Without restriction
Standard mixing ratio, antifreeze/water	50% by vol. antifreeze 50% by vol. water	50% by vol. antifreeze 50% by vol. water
Antifreeze	down to -37 °C	down to -37 °C
Mixing ratio for antifreeze/water at low temperatures (cold climate package)	60% by vol. antifreeze 40% by vol. water (if temperatures remain higher than -37 °C, change to standard mixing ratio)	60% by vol. antifreeze 40% by vol. water (if temperatures remain higher than -37 °C, change to standard mixing ratio)
Antifreeze	down to -50 °C	down to -50 °C

Service products

Coolants

Use and properties of antifreeze and anti-corrosion agents according to company standard MAN 324	MAN 324 type SNF	MAN 324 type N-Arctic
Colour	Not prescribed	Not prescribed
Application	Up to and including Euro 4	Up to and including Euro 4
Utilisation forbidden	From Euro 5 EEV	From Euro 5 EEV
No mixing	Mixing with other types not permissible	Mixing with other types not permissible
Permissible coolant hoses	Only EPDM hoses (black) no silicon tubing (blue)	Without restriction
Standard mixing ratio, antifreeze/water	40% by vol. antifreeze 60% by vol. water	50% by vol. antifreeze 50% by vol. water
Antifreeze	down to -27 °C	down to -37 °C
Mixing ratio for antifreeze/water at low temperatures (cold climate package)	-	65% by vol. antifreeze 35% by vol. water (if temperatures remain higher than -37 °C, change to standard mixing ratio)
Antifreeze	-	down to -65 °C



WARNING

Danger of engine damage

The ability of the coolant to protect against corrosion may decrease over the course of the service life, which can lead to engine damage.

Therefore:

- Replace coolant when it turns brown or deteriorates.

Anti-corrosion agent without antifreeze in accordance with company standard MAN 248

If the use of antifreeze is not necessary for certain individual cases, anti-corrosion agents according to company standard MAN 248 must be used.

Use of anti-corrosion agents without antifreeze is not permissible in Euro 5, EEV and Euro 6 engines.

Do not mix anti-freeze and anti-corrosion agent according to company standard MAN 248 with anti-freeze and anti-corrosion agent according to company standard MAN 324.

i Note

Further information is available from the MAN service outlets.

Water quality

To ensure reliable vehicle operation, the coolant must meet the following minimum requirements:

- Information on anti-freeze and anti-corrosion agents can be found in this chapter (☞ page 36)
- Analysis values of water, see table

Analysis values of water	
Appearance	Colourless, clear, free from contamination
Total hardness	German hardness: max. 20 °dH French hardness: max. 35.6 °fH British hardness: max. 25 °e
Chlorides	max. 100 mg/l
Sulfates	max. 150 mg/l
pH value at 20 °C	6.5 to 8.5

If tap water with these values is not available, use fully desalinated, distilled or condensed water.

Service products

Coolants

Replacing and disposing of coolant

Changing coolant

Information about the intervals specified for changing the coolant can be found in the chapter “Maintenance intervals” (📄 page 76).

Environmental note

Disposing of coolant

Treat undiluted antifreeze and anti-corrosion agents as hazardous waste.

Follow the instructions issued by the relevant local authority when disposing of used coolants (mixture of antifreeze or anti-corrosion agent with mains water).

There are disposal companies that specialise in the recycling of coolants containing antifreeze and antifreeze concentrates. If you decide to use these companies, you must collect the product groups separately and not mix them with different types of service products (oils, solvents, fuels).

Gearbox, retarder and axle oils

After the MAN company standard, the oil type designations are specified which are generally composed of a letter and a number and provide the user with information about a suitable unit, oil quality and performance level of the oil. Within an oil type, the lowest number (e.g. Z2) always signifies the lowest oil-change interval and oil performance level, while the highest number (e.g. Z5) signifies the highest of these. Currently, there are the following oil types:

Oil specification in accordance with MAN company standard	Oil type	Application
MAN 339	V1, V2	DIWA automatic gearbox oils for hydraulic gearbox
	Z4	Ecomat automatic gearbox oils for hydraulic gearbox
	Z11, Z12, Z13, Z14	EcoLife automatic gearbox oils for hydraulic gearbox
MAN 341	Z2, Z4, Z5	High-pressure gearbox oils for manually operated gearboxes Ecolite, Ecomite, Ecoshift and automated manually operated gearbox MAN TipMatic AS/TX, TipMatic Mid
	MB	High-pressure gearbox oils for manually operated gearbox GO 210-6
	VR	High-pressure gearbox oils for Voith retarder
	Z5	High-pressure gearbox oils for the hybrid adapter gearbox
	Z5 (Castrol Syntrans Z Long Life 75W-80)	High-pressure gearbox oil for hybrid summation gearbox
M 3277	-	High-performance diesel engine oils for Voith retarder
MAN 342	M2, M3	Highest-pressure gearbox oils for hypoid axles and drop centre axles; mineral base oil
	S1, S2	Highest-pressure gearbox oils for hypoid axles and drop centre axles; synthetic base oil

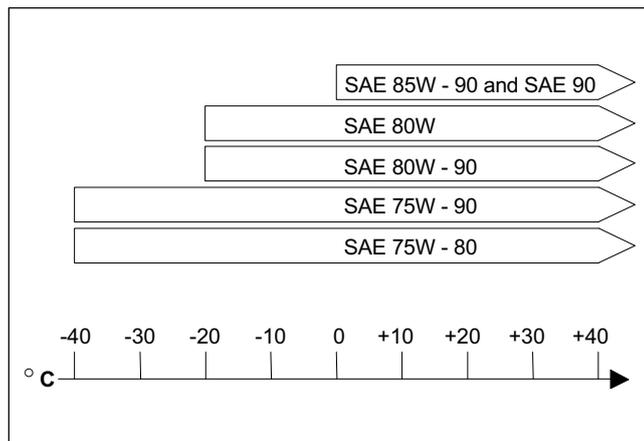
Further information about oil specifications and oil-change intervals for the gearbox, retarder and axles can be found in the chapter "Maintenance intervals" (pages 77, 85 and 86).

Service products

Gearbox, retarder and axle oils

Further requirements on gearbox, retarder and axle oils

Low-temperature limits



Miscibility

Oils that correspond to the same specifications can be mixed (for example, MAN 342 type M3 and MAN 342 type S1). When mixing various oil types (e.g. MAN 342 type M3 and MAN 342 type S1), the shortest oil-change interval applies.

It is not permitted to mix oils of different specifications (for example, MAN 342 and MAN 341).

Hydraulic oils

Steering system

City bus, intercity bus, coach and bus chassis

Steering system	Oil specification in accordance with MAN company standard
All steering systems	MAN 339 L1

Clutch

City bus, intercity bus, coach and bus chassis

Clutch unit	Ambient temperature (°C)	Oil specification in accordance with MAN company standard
Clutch unit	-35 to +75	M 3289

WARNING

Risk of damage to the clutch

Mixing or refilling with brake fluids causes significant damage to seals and hoses, which can lead to clutch unit failure.

Therefore:

- As per MAN company standard M 3289, do not mix hydraulic oil with brake fluid.

Service products

Hydraulic oils

Hydrostatic fan drive

City bus, intercity bus, coach and bus chassis

Hydrostatic fan drive	Oil specification in accordance with MAN company standard
Hydrostatic fan drive with non-adjustable hydro gear pump	M 3477 (SAE 10W-40)
Hydrostatic fan drive with adjustable hydraulic pump	M 3477 (SAE 10W-40)
Hydrostatic fan drive for engine D15 intercity bus and city bus chassis	M 3477 (SAE 10W-40)
Hydrostatic fan drive for engine D15 and E18 Lion's City type C	M 3677 (SAE 5W-30)

Wheelchair lift

City bus, intercity bus, coach

Wheelchair lift	Oil specification
Wheelchair lift EXEO I and II	Castrol Hyspin HVI 15

Refrigerants and refrigerator oils

Refrigerant

Air-conditioning system	Specification
Vehicles with diesel engine, gas engine (CNG) and electric drive	R134a
Lion's City with hybrid drive	R407c

Refrigerator oils

City, intercity bus, coach and bus chassis (without Lion's City type C with electric drive)

Refrigerant compressor	Oil spec.
BITZER	BITZER BSE55 (POE)
BOCK, Valeo	FUCHS RENISO TRITON SE 55 (POE)
hispacold	CASTROL AIRCOL SW 68 (POE)

Service products

Refrigerants and refrigerator oils

Lion's City type C with electric drive

Refrigerant compressor	Oil spec.
BOCK HG34e	FUCHS RENISO TRITON SEZ 32 (POE)
Electric refrigerant compressor for battery cooling module (cooling and heating system of the high-voltage battery)	Zerol Ester 68 hybrid



WARNING

Risk of damage to the air-conditioning system

Mixing refrigerator oils or using additives leads to damage to the refrigerant compressor and the air-conditioning system.

Therefore:

- Do not mix refrigerator oils with each other
- No additives should be mixed into the refrigerator oil or the refrigerant
- Do not use additives such as fluorescing agents or contrasting agents for leakage checks or leak tests

Solid lubricants

Trailer coupling

City bus, intercity bus, coach and bus chassis

Trailer coupling	Component	Specification	Alternative specification
Rockinger RO 100	Contact surfaces base plate and exchange plate	MAN 283 Li-P 2	white lubricating grease 622 Chesterstone
Rockinger RO 243	Coupling pin, bearing seat, automatic unit	MAN 283 Li-P 2	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 2
Rockinger RO 400, RO 430	Automatic unit	MAN 283 Li-P 2	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 2
	Coupling bolts, bearing rings, lower jaw bearing, drawbar eye (RO 400), pressure rod (RO 430)	Castrol Olista Longtime 3 EP	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 3

Service products

Solid lubricants

Steering knuckle, wishbone, pitman arm

City bus, intercity bus and city bus, intercity bus chassis

Axle	Component	Specification
Front axle VOK-07-B	Steering knuckle	Fuchs Renolit LX-OTP2
Trailing axle NOL-07-B	Steering knuckle	Fuchs Renolit LX-OTP2
Front axle VOKS-08-B	Steering knuckle, wishbone, pitman arm	MAN 283 Li-P 2

Brake camshaft

Front engine chassis city bus with drum brake

Brake camshaft	Specification
Brake camshaft with protective tube	MAN 284 Li-H 2
Brake camshaft without protective tube	MAN 283 Li-P 2

Pivoting joint

Lion's City type 18C

Pivoting joint	Component	Specification
Pivoting joint	Slewing ring, central yoke bearing	MAN 284 Li-H 2

Corrosion protection

Underbody seal, protective body-cavity coating and corrosion protection

City bus, intercity bus, coach and bus chassis

i Note

Damage (cracks, deformations, scrapes, stone damage and corrosion) to the underbody and the underbody seal and the chassis must be documented in the maintenance record.

Skeleton	Component	Specification
Underbody	Underbody (without wheel housing plates)	Underbody seal M 3068-C, DINITROL AB 429 IQ, Valvoline Tectyl 5660, DINITROL AB 810 E, M 3068-E (Gromalit) ¹
	Wheel housing plates	Underbody seal M 3068-E (Gromalit) ¹
	Lower edge of side wall	Edge protector M 3068-E (Gromalit) ¹
Cavities	Skeleton profile	Protective body cavity coating M 3082-B2/B3, Anticorit CPX 3373, Anticorit DS 329 HS, Anticorit DS 329 VS, Tectyl 210 R

¹ If Gromalit underbody seal is applied to the vehicle, this can be identified by the sticker on the last page in the maintenance record.

Service products

Battery, wiper system, tyres and rims

Battery, wiper system, tyres and rims

Battery

Battery	Specification
Acid density with fully-charged battery	1.28 g/cm ³ at 20 °C
Battery fluid	Distilled water
Terminal grease	Technical Vaseline S-743 or TL 9150-0042

Wiper system and headlight cleaning system

Only use windscreen wiper water with a suitable cleaning additive.

Do not add detergent to the windscreen wiper water, since it

- barely has an effect on diesel soot and insect contamination,
- is only effective at temperatures that are not normally attained in the windscreen wiper water and
- can cause damage to paintwork, plastic and rubber parts under certain circumstances.

When using concentrates, observe the information about the mixing ratio with tap water.

Tyres and rims

Tyres and rims	Specification
Assembly product, slip additive	M 3224

General information on maintenance intervals

Vehicle-specific units

Information on the units installed in the vehicle is available under the vehicle data in the MAN After Sales Portal.

Each unit in a vehicle has a model plate. This can also be used to identify the unit.

Specifications

Information on the operating media recommended for a specific unit by MAN Truck & Bus SE can be found in the column titled Oil specification in accordance with MAN company standard in the following tables.

If several specifications are permissible, the respective **specification written in bold** denotes the initial fill.

The assignment of engine oil to the emission standard, exhaust system and diesel fuel sulphur content can be found in the chapter "Service products" (📄 page 29).

Oil change and maintenance intervals

The maintenance work is carried out after a specified time interval or mileage, depending on which event occurs first.

The listed values are maximum values. They depend on the quality of the oil used, on the type of unit installed and on the vehicle application.

It is also relevant whether the maintenance interval calculator is switched on or switched off.

In the case of vehicles which have their service interval calculator switched on, the oil-change interval depends on the operating conditions. The indicated maximum mileage may be reduced. The relevant indication is the message in the driver's display that a maintenance service is necessary.

The currently applicable maintenance checklists must be used to carry out the maintenance work.

i Note

In vehicles from emission standard Euro 6c, it is not permitted to deactivate the service interval calculator (maintenance system in vehicle).

Maintenance intervals

General information on maintenance intervals

Shortened oil-change intervals for diesel engines

High sulphur content in diesel fuel

The oil-change intervals are shortened

The oil-change intervals are shortened when operating the vehicle with a high sulphur content in the diesel fuel.

Information on the permissible sulphur content in the diesel fuel can be found in the chapter “Service products” (☞ page 14). Information on shortened oil-change intervals can be found in this chapter (☞ page 54).

Diesel engines approved for FAME fuel and diesel fuel

The oil-change intervals are shortened for diesel engines that are approved for FAME fuel and diesel fuel.

Information on the conditions for the use of FAME fuel can be found in the chapter “Service products” (☞ page 17). Information on shortened oil-change intervals can be found in this chapter (☞ page 67).

Shortened oil-change intervals for rear axle and retarder

High temperatures

The oil-change intervals for the rear axle and retarder are reduced during vehicle operation at high temperatures.

The following is classed as operation at high temperatures:

- if the average monthly temperature in more than 2 months per year is higher than 25 °C
- or if temperatures higher than 40 °C occur on more than 7 days per year

Information about shortened oil-change intervals for the retarder can be found in this chapter (☞ page 85).

Information about shortened oil-change intervals for the rear axles can be found in this chapter (☞ page 86).

Change-over, initial fill for engine

Diesel engine	Tractor vehicle	Period	Oil specification in accordance with MAN company standard
D0836LOH80/81 Euro 6c	Coach chassis	until 31.10.2016	M 3677
		from 01.11.2016	M 3377 ¹
D0836LOH78/79/80/81/82/83/84/85 Euro 6c	City bus and city bus chassis	until 31.10.2016	M 3677
		from 01.11.2016	M 3377 ¹

- ¹ The engines initially filled with M 3377 are labelled with an appropriate sticker in the area of the oil filter housing or the oil filler neck. In the event of an oil changeover, stickers that are no longer correct must be removed if necessary or made permanently illegible.

Maintenance intervals

Diesel engines approved for diesel fuel

Diesel engines approved for diesel fuel

D08 engines

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuel	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage		
			(km)	(months)	
Euro 3 D0836LOH/LFL without/with EGR without catalytic converter	Up to 50	M 3277 , M 3377, M 3477, M 3677	45,000	12	
	51 to 1,000	M 3277 , M 3377	22,500	12	
	Over 1,000	M 3277 , M 3377	13,500	12	
Euro 4 D0836LOH with EGR, with PM catalytic converter	Up to 50	M 3677 , M 3477	45,000	12	
Euro 5 D0836LOH with EGR, with DOC	Up to 50	M 3277 , M 3377, M 3477, M 3677	45,000	12	
Euro 3, Euro 4, EEV	D0836LOH with EGR, with CRT	Up to 10	M 3677 , M 3477	45,000	12

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuel in accordance with EN 590	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
	(ppm)		(km)	(km)	(months)
Euro 6b D0836LOH66/67/72/73/74 with EGR, with SCR + CRT	Up to 10	M 3677	45,000	30,000	12
		M 3377 ¹	60,000	45,000	12
Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
	(ppm)		Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
	(ppm)		(km)	(km)	(months)
Euro 6c D0836LOH78/79/80/81/82 with EGR, with SCR + CRT	Up to 10	M 3377	60,000	45,000	12
		M 3677 ²	45,000	30,000	12
Euro 6d D0836LOH86/87 without EGR, with SCR + CRT	Up to 10	M 3377	60,000	45,000	12
		M 3677 ²	45,000	30,000	12
Euro 6e D0836LOH90/91 without EGR, with SCR + CRT	Up to 10	M 3677	60,000	45,000	12

¹ M 3377: Longlife oil upon special customer request for shortened standstill times of the diesel particulate filter and extended oil change intervals — not permissible for vehicles with maintenance and FullService contracts.

² M 3677: Fuel economy oil at special customer request for extended standstill periods of the diesel particulate filter and reduced oil-change intervals - not permissible for vehicles with maintenance and full service contracts.

Maintenance intervals

Diesel engines approved for diesel fuel

Oil specifications and oil-change intervals

Coach chassis

Diesel engine, approved for diesel fuel	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
			(km)	(months)
Euro 3 D0836LOH/LFL without/with EGR without catalytic converter	Up to 50	M 3277 , M 3377, M 3477, M 3677	60,000	12
	51 to 1,000	M 3277 , M 3377	30,000	12
	Over 1,000	M 3277 , M 3377	18,000	12
Euro 4 D0836LOH/LFL with EGR, with PM catalytic converter	Up to 50	M 3677 , M 3477	60,000	12
Euro 5 D0836LOH/LFL with EGR, with DOC	Up to 50	M 3277 , M 3377, M 3477, M 3677	60,000	12

Oil specifications and oil-change intervals

Coach chassis

Diesel engine, approved for diesel fuel in accordance with EN 590	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
			(km)	(km)	(months)
Euro 6b D0836LOH72/73 with EGR, with SCR + CRT	Up to 10	M 3677	45,000	45,000	12
		M 3377 ¹	60,000	60,000	12

Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
			(km)	(km)	(months)
Euro 6c D0836LOH80/81 with EGR, with SCR + CRT	Up to 10	M 3377	60,000	60,000	12
		M 3677 ²	45,000	45,000	12

¹ M 3377: Longlife oil upon special customer request for shortened standstill times of the diesel particulate filter and extended oil change intervals - not permissible for vehicles with maintenance and FullService contracts.

² M 3677: Fuel economy oil at special customer request for extended standstill periods of the diesel particulate filter and reduced oil-change intervals - not permissible for vehicles with maintenance and full service contracts.

Maintenance intervals

Diesel engines approved for diesel fuel

Engines D15

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage	
			Service interval calculator <u>on</u>	
	(ppm)		(km)	(months)
Euro 6d,e D1556LOH10/11/12/16/17/18 without EGR, with SCR + CRT	Up to 10	M 3677	80,000	18

D20 engines

i Note

Approvals for paraffinic diesel fuel in accordance with EN 15940 are available for D20 engines in accordance with emission standards Euro 2 to Euro 5.

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuel		Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
				(km)	(months)
Euro 3	D2066LUH/LF with EGR, without catalytic converter	Up to 50	M 3277 , M 3377, M 3477, M 3677	60,000	12
		51 to 500	M 3277 , M 3377	30,000	12
Euro 4, Euro 5	D2066LUH with EGR, with PM catalytic converter	Up to 50	M 3677 , M 3477	60,000	12
Euro 4, EEV	D2066LUH with EGR, with CRT	Up to 10	M 3677 , M 3477	60,000	12

Maintenance intervals

Diesel engines approved for diesel fuel

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuel in accordance with EN 590	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6b D2066LUH50/51/52/53 with EGR, with SCR + CRT (city bus: Solobus)	Up to 10	M 3677	60,000	45,000	12
Euro 6b D2066LUH50/51/52/53 with EGR, with SCR + CRT (city bus: articulated bus)	Up to 10	M 3677	45,000	45,000	12
Euro 6b D2066LUH50/51/52/53 with EGR, with SCR + CRT (intercity bus except A20)	Up to 10	M 3677	80,000	60,000	12

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
	(ppm)		(km)	(km)	(months)
Euro 6c D2066LUH57/58/59 with EGR, with SCR + CRT (city bus: Solobus)	Up to 10	M 3377	80,000	60,000	18
		M 3677 ¹	60,000	45,000	18
Euro 6c D2066LUH57/58/59 with EGR, with SCR + CRT (city bus: articulated bus)	Up to 10	M 3377	60,000	60,000	18
		M 3677 ¹	45,000	45,000	18
Euro 6c D2066LUH57/58/59 with EGR, with SCR + CRT (intercity bus except A20)	Up to 10	M 3377	100,000	80,000	18
		M 3677 ¹	80,000	60,000	18
Euro 6d D2066LUH63/64/65/69 with EGR, with SCR + CRT (city bus: Solobus)	Up to 10	M 3677	80,000	60,000	18
Euro 6d D2066LUH63/64/65/69 with EGR, with SCR + CRT (city bus: articulated bus)	Up to 10	M 3677	60,000	60,000	18
Euro 6d D2066LUH63/64/65/69 with EGR, with SCR + CRT (intercity bus except A20)	Up to 10	M 3677	100,000	80,000	18

¹ M 3677: Fuel economy oil at special customer request for extended standstill periods of the diesel particulate filter and reduced oil-change intervals - not permissible for vehicles with maintenance and full service contracts.

Maintenance intervals

Diesel engines approved for diesel fuel

Oil specifications and oil-change intervals

Coach

Diesel engine, approved for diesel fuel	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
			(km)	(months)
Euro 4, EEV D2066LUH with EGR, with CRT	Up to 10	M 3677, M 3477	100,000	12
Euro 4, Euro 5 D2066LUH with EGR, with PM catalytic converter	Up to 50	M 3677, M 3477	100,000	12

Jetliner (coach)

Diesel engine, approved for diesel fuel in accordance with EN 590	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6b D2066LUH52/53 with EGR, with SCR + CRT	Up to 10	M 3677	80,000	80,000	12

Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6c D2066LUH59 with EGR, with SCR + CRT	Up to 10	M 3377	100,000	100,000	18
		M 3677	80,000	80,000	18

Oil specifications and oil-change intervals
Coach and coach chassis

Diesel engine, approved for diesel fuel		Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
				(km)	(months)
Euro 3	D2066LOH/D2066LF with EGR, without catalytic converter	Up to 50	M 3277, M 3377, M 3477, M 3677	100,000	12
		51 to 500	M 3277, M 3377	50,000	12
Euro 4, Euro 5, EEV	D2066LOH with EGR, with PM catalytic converter	Up to 50	M 3677, M 3477	100,000	12
Euro 4, EEV	D2066LOH without EGR, with SCR	Up to 50	M 3277, M 3377, M 3477, M 3677	100,000	12
		51 to 1,000	M 3277, M 3377	50,000	12
		Over 1,000	M 3277, M 3377	30,000	12

Diesel engine, approved for diesel fuel in accordance with EN 590		Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage		
				Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6b	D2066LOH30/31/32 with EGR, with SCR + CRT	Up to 10	M 3677	100,000	80,000	12
			M 3377	140,000	100,000	12

Maintenance intervals

Diesel engines approved for diesel fuel

D26 engines

i Note

Approvals for paraffinic diesel fuel in compliance with EN 15940 are available for D26 engines in accordance with emission standards Euro 2 to Euro 5.

Oil specifications and oil-change intervals

Coach and coach chassis

Diesel engine, approved for diesel fuel		Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
				(km)	(months)
Euro 3	D2676LOH with EGR, without catalytic converter	Up to 50	M 3277 , M 3377, M 3477, M 3677	100,000	12
		51 to 500	M 3277 , M 3377	50,000	12
Euro 4, Euro 5, EEV	D2676LOH with EGR, with PM catalytic converter	Up to 50	M 3677 , M 3477	100,000	12
Euro 4, EEV	D2676LOH without EGR, with SCR	Up to 50	M 3277 , M 3377, M 3477, M 3677	100,000	12
		51 to 1,000	M 3277 , M 3377	50,000	12
		Over 1,000	M 3277 , M 3377	30,000	12

Oil specifications and oil-change intervals

Coach and coach chassis

Diesel engine, approved for diesel fuel in accordance with EN 590	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6b D2676LOH30/31/32 with EGR, with SCR + CRT	Up to 10	M 3677	100,000	80,000	12
		M 3377	140,000	100,000	12

Diesel engine, approved for diesel fuels in accordance with EN 590 and EN 15940	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage Service interval calculator <u>on</u>	
			(km)	(months)
Euro 6c D2676LOH35/36/37 with EGR, with SCR + CRT	Up to 10	M 3677	140,000	18
Euro 6d,e D2676LOH38/39/40/42/43/47/48/49 with EGR, with SCR + CRT	Up to 10	M 3977	140,000	18
		M 3677	140,000	18

Maintenance intervals

Diesel engines approved for diesel fuel

D28 engines

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for diesel fuel	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
			(km)	(months)
Euro 3 D2866LUH with EGR	Up to 50	M 3277 , M 3377, M 3477, M 3677	60,000	12
	51 to 500	M 3277 , M 3377	30,000	12
Euro 3, Euro 4 D2866LUH with EGR, with CRT	Up to 10	M 3677 , M 3477	60,000	12

Coach and coach chassis

Diesel engine, approved for diesel fuel	Sulphur content in diesel fuel (ppm)	Oil specification in accordance with MAN company standard	Maximum mileage	
			(km)	(months)
Euro 3 D2866LOH, D2876LOH with EGR	Up to 50	M 3277 , M 3377, M 3477, M 3677	100,000	12
	51 to 500	M 3277 , M 3377	50,000	12
Euro 3, Euro 4 D2866LOH, D2876LOH with EGR, with CRT	Up to 10	M 3677 , M 3477	100,000	12

Diesel engines approved for FAME fuel

D08 engines

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for FAME fuel in compliance with EN 14214		Annual mileage (km)	Oil specification in accordance with MAN company standard	Maximum mileage	
				(km)	(months)
Euro 3	D0836LOH without/with EGR, without catalytic converter	Up to 45,000	M 3277 , M 3377, M 3477, M 3677	20,000	12
		Over 45,000		30,000	12
Euro 4	D0836LOH with EGR, with PM catalytic converter	Up to 45,000	M 3677 , M 3477	20,000	12
		Over 45,000		30,000	12
Euro 5	D0836LOH with EGR, with DOC	Up to 45,000	M 3277 , M 3377, M 3477, M 3677	20,000	12
		Over 45,000		30,000	12

Maintenance intervals

Diesel engines approved for FAME fuel

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

i Note

Observe change-over of initial engine oil fill (☞ page 53).

Diesel engine, approved for fuels in accordance with EN 14214 and EN 590	Annual mileage (km)	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u> (km)	Service interval calculator <u>off</u> (km)	(months)
Euro 6a D0836LOH75/76/77 With EGR, with SCR + CRT	Up to 45,000	M 3677, M 3377	30,000	20,000	12
	Over 45,000		30,000	30,000	12
Euro 6c D0836LOH83/84/85 With EGR, with SCR + CRT	Up to 45,000	M 3377, M 3677	30,000	20,000	12
	Over 45,000		30,000	30,000	12
Euro 6d,e D0836LOH88/89/92/93 without EGR, with SCR + CRT	-	M 3677	20,000	17,000	12

Engines D15

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for fuels in accordance with EN 14214 and EN 590	Oil specification in accordance with MAN company standard	Maximum mileage	
		Service interval calculator on	
		(km)	(months)
Euro 6d,e D1556LOH13/14/15/19/20/21 without EGR, with SCR + CRT	M 3677	35,000	12

Maintenance intervals

Diesel engines approved for FAME fuel

D20 engines

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Diesel engine, approved for fuels in accordance with EN 14214 and EN 590	Annual mileage	Oil specification in accordance with MAN company standard	Maximum mileage		
			Service interval calculator <u>on</u>	Service interval calculator <u>off</u>	
	(km)		(km)	(km)	(months)
Euro 6a D2066LUH55/56 with EGR, with SCR + CRT	Up to 45,000	M 3677	30,000	20,000	12
	Over 45,000		30,000	30,000	12
Euro 6c D2066LUH61/62 with EGR,with SCR + CRT	Up to 45,000	M 3377, M 3677	30,000	20,000	12
	Over 45,000		30,000	30,000	12
Euro 6d D2066LUH67/68/70 with EGR, with SCR + CRT	-	M 3677	35,000	30,000	12

D26 engines

Oil specifications and oil-change intervals

Coach and coach chassis

Diesel engine, approved for fuels in accordance with EN 14214 and EN 590	Oil specification in accordance with MAN company standard	Maximum mileage	
		Service interval calculator on	
		(km)	(months)
Euro 6e D2676LOH50/51/52with EGR, with SCR + CRT	M 3677	30,000	12

Maintenance intervals

Gas engines (CNG)

Gas engines (CNG)

E18 engines

Oil specifications and oil-change intervals

Lion's City Type C

Gas engine (CNG)	Oil specification in accordance with MAN company standard	Maximum mileage	
		Service interval calculator <u>on</u>	
		(km)	(months)
Euro 6d,e E1856LOH01/02/03/04 with three-way catalytic converter	M 3677	30,000	12

E28 engines**Oil specifications and oil-change intervals****City bus, intercity bus and city bus, intercity bus chassis**

Gas engine (CNG)		Oil specification in accordance with MAN company standard	Maximum mileage	
			(km)	(months)
EEV	E2866DUH03/04 with 3-way catalytic converter	M 3677, M 3477, M 3271-1	30,000	12
		M 3271-3	45,000	12
EEV	E2876LUH01/02 with 3-way catalytic converter	M 3677, M 3477, M 3271-1	30,000	12
		M 3271-3	60,000	12
EEV	E2876LUH03/04 with three-way catalytic converter	M 3677, M 3271-3	30,000	12

Gas engine (CNG)		Oil specification in accordance with MAN company standard	Maximum mileage Maintenance interval calculator on or off	
			(km)	(months)
Euro 6c,d	E2876LUH07/08/09/10/11/12 with 3-way catalytic converter	M 3677, M 3271-3	30,000	12

Maintenance intervals

Drive unit (electric)

Drive unit (electric)

Lion's City type C with electric drive

Drive unit	Oil spec.	Maximum mileage	
		(km)	(years)
Drive unit	M 3703	-	3

Air compressor (electric)

Lion's City type C with electric drive

Air compressor	Oil spec.	Maximum mileage	
		(km)	(years)
Air compressor	Castrol Alphasyn T46 (PAO-oil), Chevron Cetus PAO 46	-	1

Maintenance intervals

Cooling system

Cooling system

Specifications and intervals

Information on miscibility of coolants can be found in the chapter "Service products" (☞ page 37).

City bus, intercity bus, coach and bus chassis (without Lion's City type C)

Emission standard	Specification in accordance with MAN company standard	Maximum mileage	
		(km)	(years)
Euro 3, Euro 4	MAN 324 type Si-OAT plus, MAN 324 type Si-OAT, MAN 324 type NF, MAN 324 type N-Arctic, MAN 324 type SNF	500,000	4
Euro 5, EEV	MAN 324 type Si-OAT plus, MAN 324 type Si-OAT, MAN 324 type NF	500,000	4
Euro 6	MAN 324 type Si-OAT plus, MAN 324 type Si-OAT	500,000	4

Lion's City Type C

Series	Specification in accordance with MAN company standard	Maximum mileage	
		(km)	(years)
Lion's City type C	MAN 324 type Si-OAT plus, MAN 324 type Si-OAT	480,000	4



WARNING

Danger of engine damage

The ability of the coolant to protect against corrosion may decrease over the course of the service life, which can lead to engine damage.

Therefore:

- Replace coolant when it turns brown or deteriorates.

Gearbox

Hydraulic gearboxes (automatic gearboxes)

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Hydraulic gearbox	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
EcoLife	MAN 339 Z14	180,000	36
	MAN 339 Z13	180,000	36
	MAN 339 Z12	120,000	24
	MAN 339 Z11	60,000	12
Ecomat	MAN 339 Z4	150,000	36
DIWA.5, DIWA.6	Shell Spirax S6 ATF VM plus ¹	180,000	36
	MAN 339 V2	120,000	36
	MAN 339 V1	60,000	24
DIWA.2, DIWA.3, DIWA.3E	MAN 339 V2	120,000	36
	MAN 339 V1	60,000	24

¹ If oil is changed over from "MAN 339 V1" or "MAN 339 V2" to "Shell Spirax S6 ATF VM PLUS", the extended oil-change interval of 180,000 km is only permitted starting with the second oil-change after changing over to "Shell Spirax S6 ATF VM Plus". Observe the maintenance instructions! In the event of an oil changeover, stickers which are no longer correct must be removed or made permanently illegible as required.

Maintenance intervals

Gearbox

Hydraulic gearboxes (automatic gearboxes)

Oil specifications and oil-change intervals

Coach and coach chassis

Hydraulic gearbox	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
EcoLife 6AP2000B	MAN 339 Z14	180,000	36
	MAN 339 Z13	180,000	36
	MAN 339 Z12	120,000	24
	MAN 339 Z11	60,000	12
EcoLife Coach 6AP2300BC	MAN 339 Z14	240,000	36
	MAN 339 Z13	240,000	36
	MAN 339 Z12	180,000	24
	MAN 339 Z11	120,000	12
EcoLife2 Coachline 6AP2520BC	MAN 339 Z14	360,000	36
	MAN 339 Z13	360,000	36
	MAN 339 Z12	240,000	24
	MAN 339 Z11	180,000	12

Oil specifications and oil-change intervals

Coach and coach chassis

Hydraulic gearbox	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
Ecomat	MAN 339 Z4	150,000	36
DIWA.5, DIWA.6	Shell Spirax S6 ATF VM plus ¹	180,000	36
	MAN 339 V2	120,000	36
	MAN 339 V1	60,000	24

¹ If oil is changed over from “MAN 339 V1” or “MAN 339 V2” to “Shell Spirax S6 ATF VM PLUS”, the extended oil-change interval of 180,000 km is only permitted starting with the second oil-change after changing over to “Shell Spirax S6 ATF VM Plus”. Observe the maintenance instructions! In the event of an oil changeover, stickers which are no longer correct must be removed or made permanently illegible as required.

Maintenance intervals

Gearbox

Manually operated gearboxes (manual gearboxes)

Oil specifications and oil-change intervals

City, intercity bus and city, intercitybus chassis

manual gearbox	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
Ecolite with intarder 6S-1901, Ecoshift with intarder 6S-1911, 6S-2111	MAN 341 Z5	360,000	36
	MAN 341 Z4	240,000	24
Ecolite without intarder Ecolite 6S-1900, 6S-1200	MAN 341 Z5	360,000	36
	MAN 341 Z4	240,000	24
	MAN 341 Z2	120,000	12
GO 210-6	MAN 341 MB	240,000	48

Manually operated gearboxes (manual gearboxes)**Oil specifications and oil-change intervals****Coach and coach chassis**

manual gearbox	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
Ecolite with intarder 6S-1901, Ecomid with intarder 8S-2101, Ecoshift with intarder 6S-1911, 6S-2111	MAN 341 Z5	540,000	36
	MAN 341 Z4	360,000	24
Ecolite without intarder 6S-1900, Ecomid without intarder 8S-2100, 9S-1310	MAN 341 Z5	540,000	36
	MAN 341 Z4	360,000	24
	MAN 341 Z2	180,000	12
GO210-6	MAN 341 MB	300,000	48

Maintenance intervals

Gearbox

MAN TipMatic (semi-automatic gearboxes)

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

MAN TipMatic	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
MAN TipMatic with intarder 12AS-2001, 12AS-2301, 12AS-2131 12TX-2611, 12TX-2811	MAN 341 Z5	360,000	36
	MAN 341 Z4	240,000	24
MAN TipMatic without intarder 12AS-2130	MAN 341 Z5	360,000	36
	MAN 341 Z4	240,000	24
	MAN 341 Z2	120,000	12

MAN TipMatic (semi-automatic gearboxes)**Oil specifications and oil-change intervals****Coach and coach chassis**

MAN TipMatic	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
MAN TipMatic with intarder 12AS-2001, 12AS-2301, 12AS-2701 12AS-2131 12TX-2611, 12TX-2811	MAN 341 Z5	540,000	36
	MAN 341 Z4	360,000	24
MAN TipMatic without intarder 12AS-1210, 12AS-2130	MAN 341 Z5	540,000	36
	MAN 341 Z4	360,000	24
	MAN 341 Z2	180,000	12

Maintenance intervals

Gearbox

Adapter and summation gearboxes

Oil specifications and oil-change intervals

Lion's City with hybrid drive

Gearbox	Oil specification	Maximum mileage	
		(km)	(months)
Adapter gearbox	MAN 341 Z5	1,000 - 2,000 km (upon review) then every 120,000	24
Summation gearbox	MAN 341 Z5 (Castrol Syntrans Z Long Life 75W-80)	1,000 - 2,000 km (upon review) then every 120,000	24

Retarder

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Retarder	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
VR 115 E	MAN 341 VR	180,000	120,000	24
	M 3277	120,000	90,000	24
VR 133, VR 120	M 3277	120,000	-	24
	MAN 341 VR	160,000	-	24

Coach and coach chassis

Retarder	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
VR 115 E	MAN 341 VR	300,000	180,000	24
	M 3277	180,000	120,000	24
VR 133	M 3277	180,000	-	24
	MAN 341 VR	240,000	-	24

Maintenance intervals

Rear axles

Rear axles

Change-over, initial fill of axle

i Note

From the 2017 edition of the maintenance record onwards, the entry concerning the initial fill on page 3 of the maintenance record is decisive.

Rear axle	Period	Oil specification in accordance with MAN company standard	
		Standard equipment	Special equipment only MAN factory fill
HY-1350	until 31.10.2016	MAN 342 S1	-
	from 01.11.2016	MAN 342 M3	MAN 342 S2
HY-1350-B	until 31.10.2016	MAN 342 S1	-
	from 01.11.2016 until 31.12.2017	MAN 342 S2	-
	from 01.01.2018	MAN 342 M3	MAN 342 S2
HY-0925	until 31.10.2016	MAN 342 M1	-
	from 01.11.2016	MAN 342 M3	-
HP-1333	until 31.10.2016	MAN 342 M1	-
	from 01.11.2016 until 31.12.2017	MAN 342 M3	-
	from 01.01.2018	MAN 342 M3	MAN 342 S2

Drop centre axles**Oil specifications and oil-change intervals****City bus, intercity bus and city bus, intercity bus chassis****i Note**

Observe the information on initial fill (☞ page 86).

Drop centre axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HONP-13100, HU-1330	ZF Ecofluid X	180,000	120,000	36
	MAN 342 S1	240,000	160,000	48
	MAN 342 M3	180,000	120,000	24
	MAN 342 M2	120,000	80,000	24
HP-1333	MAN 342 M3	180,000	120,000	24
	MAN 342 S2	180,000	120,000	36
	MAN 342 S1	180,000	120,000	36
	MAN 342 M2	125,000	80,000	24

Maintenance intervals

Rear axles

Hypoid axles

Oil specifications and oil-change intervals

City bus, intercity bus and city bus, intercity bus chassis

Note

Observe the information on initial fill (☞ page 86).

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-1350-B, HY-1350 (with MAN ventilation valve)	MAN 342 M3	150,000	100,000	24
	MAN 342 S2	180,000	120,000	36
	MAN 342 S1	180,000	120,000	36
	MAN 342 M2	120,000	80,000	24
HY-1350-B, HY-1350 (without MAN ventilation valve)	MAN 342 M3	150,000	100,000	12
	MAN 342 S2	180,000	120,000	24
	MAN 342 S1	180,000	120,000	24
	MAN 342 M2	120,000	80,000	12

Hypoid axles**Oil specifications and oil-change intervals****City bus, intercity bus and city bus, intercity bus chassis**

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-1336-B, HY-1130-B (with MAN ventilation valve)	MAN 342 S2	180,000	120,000	36
	MAN 342 M3	150,000	100,000	24
	MAN 342 S1	180,000	120,000	36
	MAN 342 M2	120,000	80,000	24
HY-1336-B, HY-1130-B (without MAN ventilation valve)	MAN 342 S2	180,000	120,000	24
	MAN 342 M3	150,000	100,000	12
	MAN 342 S1	180,000	120,000	24
	MAN 342 M2	120,000	80,000	12

Maintenance intervals

Rear axles

Hypoid axles

Oil specifications and oil-change intervals

Coach and coach chassis

i Note

Observe the information on initial fill (☞ page 86).

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-1350-B, HY-1350 (with MAN ventilation valve)	MAN 342 M3	320,000	210,000	24
	MAN 342 S2	750,000	540,000	60
	MAN 342 S1	500,000	360,000	36
	MAN 342 M2	160,000	110,000	24
HY-1350-B, HY-1350 (without MAN ventilation valve)	MAN 342 M3	200,000	130,000	12
	MAN 342 S2	320,000	210,000	24
	MAN 342 S1	320,000	210,000	24
	MAN 342 M2	160,000	110,000	12

Hypoid axles**Oil specifications and oil-change intervals****Coach and coach chassis**

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-1336-B (with MAN ventilation valve)	MAN 342 S2	500,000	360,000	36
	MAN 342 M3	320,000	210,000	24
	MAN 342 S1	500,000	360,000	36
	MAN 342 M2	160,000	110,000	24
HY-1336-B (without MAN ventilation valve)	MAN 342 S2	320,000	210,000	24
	MAN 342 M3	200,000	130,000	12
	MAN 342 S1	320,000	210,000	24
	MAN 342 M2	160,000	110,000	12

Maintenance intervals

Rear axles

Hypoid axles

Oil specifications and oil-change intervals

Coach and coach chassis

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-1130-B (with MAN ventilation valve)	MAN 342 S2	300,000	200,000	36
	MAN 342 M3	200,000	130,000	24
	MAN 342 S1	300,000	200,000	36
	MAN 342 M2	125,000	80,000	24
HY-1130-B (without MAN ventilation valve)	MAN 342 S2	200,000	130,000	24
	MAN 342 M3	180,000	120,000	12
	MAN 342 S1	200,000	130,000	24
	MAN 342 M2	125,000	80,000	12

Hypoid axles

Oil specifications and oil-change intervals

Coach chassis (front-engine chassis)

i Note

Observe the information on initial fill (☞ page 86).

Hypoid axle	Oil specification in accordance with MAN company standard	Maximum mileage		
		(km)	Use at high temperatures (km)	(months)
HY-0925 (with MAN ventilation valve)	MAN 342 M3	200,000	130,000	24
	MAN 342 S1	300,000	200,000	36
	MAN 342 S2	300,000	200,000	36
	MAN 342 M2	125,000	80,000	24
HY-0925 (without MAN ventilation valve)	MAN 342 M3	180,000	120,000	12
	MAN 342 S1	200,000	130,000	24
	MAN 342 S2	200,000	130,000	24
	MAN 342 M2	125,000	80,000	12

Maintenance intervals

Hydraulic systems

Hydraulic systems

Steering systems and clutch

Lifetime fill

The following hydraulic systems are filled with hydraulic oil for their entire service life, an oil change is only performed in case of repairs:

- Steering systems, top up oil when changing the oil filter if necessary
- Clutch unit

Hydrostatic fan drive**Oil specifications and oil-change intervals****City bus, intercity bus and city bus, intercity bus chassis**

Hydrostatic fan drive	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
Hydrostatic fan drive with non-adjustable hydro gear pump	M 3477 (SAE 10W-40)	180,000	24
Hydrostatic fan drive with adjustable hydraulic pump	M 3477 (SAE 10W-40)	60,000	12
Hydrostatic fan drive for engine D15 intercity bus and city bus chassis	M 3477 (SAE 10W-40)	240,000	36
Hydrostatic fan drive for engine D15 and E18 Lion's City type C	M 3677 (SAE 5W-30)	240,000	36

Coach and coach chassis

Hydrostatic fan drive	Oil specification in accordance with MAN company standard	Maximum mileage	
		(km)	(months)
Hydrostatic fan drive with non-adjustable hydro gear pump	M 3477 (SAE 10W-40)	240,000	24
Hydrostatic fan drive with adjustable hydraulic pump	M 3477 (SAE 10W-40)	80,000	12

Maintenance intervals

Hydraulic systems

Wheelchair lift

Oil specifications and oil-change intervals

City, intercity bus, coach

Wheelchair lift	Oil spec.	Maximum mileage	
		(km)	(months)
Wheelchair lift EXEO I and II	Castrol Hyspin HVI 15	-	12

Air-conditioning system and refrigerant compressor

Air-conditioning system

Lifetime fill

The air-conditioning systems are filled with refrigerant for their lifetime, a refrigerant change only takes place in the event of a repair.

Refrigerant compressor

Oil specifications and oil-change intervals

City, intercity bus, coach and bus chassis (without Lion's City type C with electric drive)

Refrigerant compressor	Oil spec.	Maximum mileage	
		(km)	(months)
BITZER	BITZER BSE55 (POE)	360,000	36
BOCK	FUCHS RENISO TRITON SE 55 (POE)	the first time after	
		120,000	12
		thereafter every	
		360,000	36
hispacold	CASTROL AIRCOL SW 68 (POE)	120,000	12
		thereafter	
		360,000	36

Maintenance intervals

Air-conditioning system and refrigerant compressor

Oil specifications and oil-change intervals

Lion's City type C with electric drive

Refrigerant compressor	Oil spec.	Maximum mileage	
		(km)	(years)
BOCK HG34e	FUCHS RENISO TRITON SEZ 32 (POE)	-	3
Electric refrigerant compressor for battery cooling module (cooling and heating system of the high-voltage battery)	Zerol Ester 68 hybrid	Full service life fill, an oil change is only performed in the event of repairs	

Coach and coach chassis

Refrigerant compressor	Oil spec.	Maximum mileage	
		(km)	(months)
BITZER	BITZER BSE55 (POE)	360,000	36
BOCK	FUCHS RENISO TRITON SE 55 (POE)	the first time after	
		120,000	12
		thereafter every	
		360,000	36
Valeo	FUCHS RENISO TRITON SE 55 (POE)	Full service life fill, an oil change is only performed in the event of repairs	

Greasing points

Trailer coupling

Specifications and intervals

City bus, intercity bus, coach and bus chassis

Trailer coupling	Component	Specification	Alternative specification	Maximum mileage	
				(km)	(months)
Rockinger RO 100	Contact surfaces base plate and exchange plate	MAN 283 Li-P 2	white lubricating grease 622 Chesterstone	-	12
Rockinger RO 243	Coupling pin, bearing seat, automatic unit	MAN 283 Li-P 2	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 2	-	12
Rockinger RO 400, RO 430	Automatic unit	MAN 283 Li-P 2	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 2	50,000	6
	Coupling bolts, bearing rings, lower jaw bearing, drawbar eye (RO 400), pressure rod (RO 430)	Castrol Olista Longtime 3 EP	Multi-purpose grease (lithium-12-hydroxystearate type) without solid lubricants, NLGI Class 3	50,000	6

Maintenance intervals

Greasing points

Steering knuckle, wishbone, pitman arm

Specifications and intervals

City bus, intercity bus and city bus, intercity bus chassis

Axle	Component	Specification	Maximum mileage	
			(km)	(months)
Front axle VOK-07-B	Steering knuckle	Fuchs Renolit LX-OTP2	-	12
Trailing axle NOL-07-B	Steering knuckle	Fuchs Renolit LX-OTP2	-	12
Front axle VOKS-08-B	Steering knuckle, wishbone, pitman arm	MAN 283 Li-P 2	-	12

Brake camshaft

Specifications and intervals

Front engine chassis city bus with drum brake

Brake camshaft	Specification	Maximum mileage	
		(km)	(months)
Brake camshaft with protective tube	MAN 284 Li-H 2	-	12
Brake camshaft without protective tube	MAN 283 Li-P 2	-	12

Pivoting joint**Specifications and intervals****Lion's City type 18C**

Pivoting joint	Component	Specification	Maximum mileage	
			(km)	(years)
Pivoting joint	Slewing ring, central yoke bearing	MAN 284 Li-H 2	-	2

Maintenance intervals

Corrosion protection

Corrosion protection

Skeleton

Specifications and intervals

City bus, intercity bus, coach and bus chassis

Skeleton	Component	Specification	Maximum mileage (years)
Underbody	Underbody (without wheel housing plates)	Underbody seal M 3068-C, DINITROL AB 429 IQ, Valvoline Tectyl 5660, DINITROL AB 810 E, M 3068-E (Gromalit) ¹	1
	Wheel housing plates	Underbody seal M 3068-E (Gromalit) ¹	1
	Lower edge of side wall	Edge protector M 3068-E (Gromalit) ¹	1
Cavities	Skeleton profile	Protective body-cavity coating M 3082-B2/B3, Anticorit CPX 3373, Anticorit DS 329 HS, Anticorit DS 329 VS, Tectyl 210 R	2 Annually from year 6

¹ If Gromalit underbody seal is applied to the vehicle, this can be identified by the sticker on the last page in the maintenance record.

General information about fill quantities

Engine oils

The specified fill quantity is the fill quantity in litres required for oil change. The decisive factor in obtaining the precise fill quantity is to check the oil level on the oil dipstick. Information on checking the oil level can be found in the Operator's Manual. Information on how to change the oil can be found in the Maintenance Instructions.

The top-up quantity is the quantity between MIN and MAX on the oil dipstick.

Coolants

The specified fill quantities apply for a standard mixing ratio of 50 vol. % antifreeze and anti-corrosion agent and 50 vol. % water. It is imperative that the coolant expansion vessel is filled up to the MAX marking. Information on checking the coolant level can be found in the Operator's Manual. Information on how to change the coolant can be found in the Maintenance Instructions.

Gearbox oils, retarder oils

The decisive factor in obtaining the precise fill quantity is to check the oil level. Information on checking the oil level and how to change the oil can be found in the Maintenance Instructions.

Axle oils

Especially for axles, the installation position in the vehicle must be taken into account to determine the correct oil level.

The specified fill quantities are fill quantities for the dry unit. The decisive factor in obtaining the precise fill quantity is to check the oil level. Information on checking the oil and on performing the oil change can be found in the Maintenance Instructions.

Hydraulic oils, refrigerator oils

The decisive factor in obtaining the precise fill quantity is to check the oil level. Information on checking the oil level and on performing the oil change can be found in the Maintenance Instructions.

Refrigerant

The fill quantities for the refrigerant are specified for each model series.

Meaning of "Air-conditioning system xxx with driver's workplace".

- With air conditioning in the driver's workplace

Meaning of "Air-conditioning system xxx without driver's workplace".

- Without air conditioning in the driver's workplace

Fill quantities

Engine oils

Engine oils

Engine oils for diesel engines

Diesel engine	Notes	Fill quantity (Litres)	Refill quantity (Litres)
D0836LOH Euro 3, Euro 4	Green dipstick, without/with oil filter	26.0/27.5	5.0
	Red dipstick, without/with oil filter	20.0/21.5	4.0
D0836LOH63 EEV	Green dipstick, without/with oil filter	26.0/27.5	5.0
D0836LOH Euro 5, EEV, Euro 6	Green dipstick, without/with oil filter	29.0/30.5	5.0
D0836LFL Euro 3	Green dipstick, without/with oil filter	26.0/27.5	5.0
	Red dipstick, without/with oil filter	20.0/21.5	4.0
D0836LFL Euro 4	Green dipstick, without/with oil filter	20.0/22.0	5.0
D0836LFL Euro 5	Green dipstick, without/with oil filter	19.5/21.0	5.0
D1556LOH Euro 6	Red dipstick, without/with oil filter	39.0/41.0	5.0
D2066LF Euro 3, Euro 5	Green dipstick, without/with oil filter	40.0/42.0	6.0
D20/D26 Euro 3, Euro 4, Euro 5, EEV, Euro 6	Green dipstick, without/with oil filter	40.0/42.0	6.0
D28 Euro 3, Euro 4	Green dipstick, without/with oil filter	30.0/33.0	6.0
	Red dipstick, without/with oil filter	30.0/33.0	6.0

Engine oils for gas engines (CNG)

Gas engine (CNG)	Notes	Fill quantity (Litres)	Refill quantity (Litres)
E2866DUH03/04 EEV	Red dipstick, without/with oil filter	30.0/33.0	6.0
E2876LUH01/02/03/04 EEV	Green dipstick, without/with oil filter	30.0/33.0	6.0
	Red dipstick, without/with oil filter	30.0/33.0	6.0
E2876LUH07/08/09/10 Euro 6	Green dipstick, without/with oil filter	30.0/33.0	6.0
E1856LOH01/02 Euro 6	Red dipstick, without/with oil filter	39.0/41.0	5.0

Fill quantities

Oil for drive unit (electric)

Oil for drive unit (electric)

Model series (type)	Drive unit (electric)	Fill quantity for oil change (Litres)	Fill quantity for initial fill/after repair (Litres)
Lion's City type C with electric drive	Drive unit	9.7	12.7

Air compressor oil (for electric air compressor)

Model series (type)	Electrical air compressor	Fill quantity (Litres)
Lion's City type C with electric drive	Air compressor	1.4

Fill quantities

Coolants

Coolants

Cooling and heating system for passenger area

Model series (type)	Cooling and heating system	Coolant fill quantity (Litres)
Lion's City A2x, A3x, A4x, A78 Solobus	Fill quantity without variant restriction	100.0
Lion's City A23, A40, A42, A49 articulated bus	Fill quantity without variant restriction	110.0
Lion's City type 12C, 18C, 19C diesel and CNG	Fill quantity without variant restriction	120.0
Lion's City type 12C electric	with air-conditioning system	80.0
Lion's City type 12C electric	without air-conditioning system	70.0
Lion's City type 18C electric	with air-conditioning system	112.0
Lion's City type 18C electric	without air-conditioning system	98.0
Lion's Intercity LE type 42C, 43C	Fill quantity without variant restriction	132.0
Lion's Intercity R60, R61	Fill quantity without variant restriction	70.0
Lion's Intercity R62	Fill quantity without variant restriction	50.0
Lion's Regio R12, R14	Fill quantity without variant restriction	116.0
Lion's Regio R13	Fill quantity without variant restriction	122.0

Model series (type)	Cooling and heating system	Coolant fill quantity (Litres)
Low-floor chassis A22	Fill quantity without variant restriction	34.0
Low-floor chassis A24	Fill quantity without variant restriction	50.0
Low-floor chassis A95, A96	Fill quantity without variant restriction	100.0
Low entry chassis A66	Fill quantity without variant restriction	49.4
Low entry chassis A69	Fill quantity without variant restriction	59.0
Low entry chassis RC2, RC3	Cooling system D08LOH Euro 3, Euro 5, EEV	49.4
Low entry chassis RC2, RC3	Cooling system/charge air D20LUH Euro 4, Euro 5	59.0
Low entry chassis RC2	Cooling system/charge air D08LOH Euro 6	100.0
Low entry chassis RC2	Cooling system/engine/charge air D20LUH Euro 6c	59.0
Low Entry chassis A80, A84, A94	Fill quantity without variant restriction	49.4
High-floor chassis RR8, RR9	Cooling system D08LOH Euro 3, Euro 5, EEV	49.4
High-floor chassis RR8	Cooling system/charge air D08LOH Euro 6	100.0
High-floor chassis RR8	Cooling system/charge air D20	59.0

Fill quantities

Coolants

Model series (type)	Cooling and heating system	Coolant fill quantity (Litres)
Coach chassis A67	Fill quantity without variant restriction	49.4
Coach chassis R33	Fill quantity without variant restriction	75.4
Coach chassis RR2, RR4, RR6	Cooling system D20/D26LOH Euro 6	75.4
Coach chassis RR2, RR3, RR4, RR5, RR6	Cooling system D20/D26LOH Euro 3, Euro 4	61.8
Coach chassis RR2, RR3, RR4, RR5, RR6	Cooling system D20/D26LOH Euro 4, Euro 5, EEV with SCR	75.4
Coach chassis RR2, RR4, RR5, RR6	Low-temperature cooling system D20/D26 LOH EEV	75.4
Front engine chassis (HB2, HB3, HB4, HB5)	Cooling system D08/D20	42.0
Jetliner P26, P27	Fill quantity without variant restriction	116.0
Lion's Coach R07, R08, R09, R10	Fill quantity without variant restriction	122.0
Tourliner P10, P20, P21, P22	Fill quantity without variant restriction	122.0
Skyliner P06	Fill quantity without variant restriction	81.0
Skyliner P06	Cooling system D26LOH Euro 6	59.0
Cityliner P14, P15, P16	Fill quantity without variant restriction	122.0
Starliner	Fill quantity without variant restriction	100.0

Battery cooling module (cooling and heating system of the high-voltage battery)

Model series (type)	Battery cooling module	Coolant fill quantity (Litres)
Lion's City type 12C electric	Cooling circuit of high-voltage battery	60
Lion's City type 18C electric	Cooling circuit of high-voltage battery	73

Cooling and heating system of high-voltage components (high-voltage power distributor, inverter, vehicle electrical system charging converter)

Model series (type)	Cooling and heating system	Coolant fill quantity (Litres)
Lion's City type 12C electric	Cooling circuit high-voltage components	10
Lion's City type 18C electric	Cooling circuit high-voltage components	15

Fill quantities

Gearbox oils

Gearbox oils

Hydraulic gearboxes (automatic gearboxes)

Hydraulic gearbox	Notes	Fill quantity for oil change (Litres)	Fill quantity for initial fill/after repair (Litres)
Ecolife 6AP-1200, 6AP-1400, 6AP-1600	-	24.0	38.0
Ecolife 6AP-1700, 6AP-2000, 6AP-2300, 6AP-2300BC Coach	-	24.0	42.0
Ecolife 2 Coachline 6AP-2520BC	—	32.0	50.0
Ecomat 2, Ecomat 4	-	14.0 – 17.0	30.0
DIWA.2, DIWA.3, DIWA.3E	-	21.0 – 23.0	25.0 – 28.0
DIWA.5, DIWA.6	-	24.0 – 25.0	31.0

Manual gearbox

manual gearbox	Notes/installation position	Fill quantity for oil change (Litres)	Fill quantity for initial fill/after repair (Litres)
Ecolite 6S-1900	without intarder/lying down on right	12.6	13.5
	without intarder/standing	8.0	8.5
Ecolite 6S-1901	with intarder/lying down on right heat exchanger bottom	13.5	21.5
	with intarder/lying down on right heat exchanger right	19.0	25.0
Ecolite 6S-1200	without intarder	6.8	-
Ecomid 8S-2100	without intarder	9.0	9.0
Ecomid 9S-1310	without intarder	8.8	-
Ecomid 8S-2101	with Intarder	12.0	21.0
Ecoshift 6S-1911, 6S-2111	with Intarder	18.5	21.7
S6-85	without intarder	11.5	-
GO 210-6	without retarder	13.0	-

Fill quantities

Gearbox oils

MAN TipMatic (automated manual gearbox)

MAN TipMatic	Notes/installation position	Fill quantity for oil change (Litres)	Fill quantity for initial fill/after repair (Litres)
TipMatic 12AS-2001, 12AS-2301, 12AS-2701	with intarder 2	12.0	21.0
TipMatic 12AS-2001, 12AS-2301	with intarder 3	19.0	22.5
TipMatic 12AS-2130	without intarder	11.0	12.0
TipMatic 12AS-2131	with intarder 2	12.0	21.0
	with intarder 3	17.0	23.0
TipMatic Mid 12AS-1210	without intarder	7.5	7.8
TipMatic 12TX-2611, 12TX-2811	with intarder 3	19.0	22.5

Adapter and summation gearboxes

Lion's City A37 Hybrid

Gearbox	Notes	Fill quantity (Litres)
Adapter gearbox	-	2.3 ¹
Summation gearbox	with "Oil Level" pictogram	2.9 ²

- ¹ The oil level in the inspection glass takes priority - not the specified fill quantity. The fill quantity only provides a rough indication of the amount of oil required.
- Oil level centrally in inspection window on model plate with MAN item number 36.38200-6001
 - Oil level top edge of inspection window on model plate with MAN item number 81.38200-6004
- ² Summation gearbox with "Oil Level" pictogram. The oil level in the inspection glass takes priority - not the specified fill quantity. The maximum fill quantity is reached when the oil level has reached the top edge of the round opening in the middle of the inspection glass (reflector).

Fill quantities

Retarder oils

Retarder oils

Retarder	Notes	Fill quantity for oil change (Litres)	Fill quantity for initial fill/after repair (Litres)
VR-120	-	4.5	6.5
VR-133	-	7.5	10.0 – 11.0
VR-133-2	-	6.0	9.0 – 9.5
VR-115-E	-	6.7	7.5

Axle oils

Hypoid axles

Hypoid axle	Notes	Fill quantity (Litres)
HY-1336-B	-	15.0
HY-1350-B, HY-1350	-	14.5
HY-1130-B	-	10.0
HY-0925	-	10.0

Drop centre axles

Drop centre axle	Notes	Fill quantity (Litres)
HONP 13100, -01, -02	-	18.0
HONP 13100-03, -04, -05	-	16.0
HONP 13100-06, -07, -08, -09	-	16.5
HU-1330	-	16.5
HP-1333	Fill quantities: Final drive 8.5 litres, planetary drive 2 x 2.1 litres	Total 12.7

Fill quantities

Hydraulic oils

Hydraulic oils

Steering system

Steering system	Notes	Fill quantity (Litres)
Front axle steering	-	approx. 9.5
Trailing axle electrohydraulic steering system	-	approx. 4.0

Clutch

Clutch	Notes	Fill quantity (Litres)
Clutch unit	-	approx. 2.5

Hydrostatic fan drive

Hydrostatic fan drive	Notes	Fill quantity (Litres)
Hydrostatic fan drive	Non-adjustable hydro gear pump	20.0 – 22.0
Hydrostatic fan drive	Adjustable hydraulic pump	10.0 – 12.0
Hydrostatic fan drive	for D08LOH Euro 6d,e engine	15.0
Hydrostatic fan drive	for D15 engine	14.0 – 15.0

Wheelchair lift

Wheelchair lift	Notes	Fill quantity (Litres)
EXEO	installed in stairway	approx. 0.9
EXEO	installed above front or rear axle	approx. 1.7

Fill quantities

Refrigerants and refrigerator oils

Refrigerants and refrigerator oils

Refrigerant

R134a refrigerant fill quantities for passenger area air-conditioning systems

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Centroliner 486 (Dubai)	Spheros Aerosphere World SuperTrobe	12.0
Centroliner 488 (Dubai) - air-conditioning system on the roof	Spheros Aerosphere World SuperTrobe	12.0
Centroliner 488 (Dubai) - air-conditioning system in the rear	Rear-mounted air-conditioning system with driver's workplace and lower-deck boxes	18.0
Centroliner 489 (Dubai) - air-conditioning system in the forebody	Spheros Aerosphere World SuperTrobe	12.0
Centroliner 489 (Dubai) - air-conditioning system in the afterbody	Spheros Aerosphere World SuperTrobe	10.0
A01	Webasto with driver's workplace	10.5
A01	Webasto/Thermo King without driver's workplace	10.0
A03	Webasto with driver's workplace	11.0
A04	Webasto with driver's workplace	10.5
A04	Webasto/Thermo King without driver's workplace	10.0

Fill quantities
Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
A10	Konvekta with driver's workplace	10.5
A10	Konvekta without driver's workplace	10.0
A10 with 3 doors	Webasto	9.5
A10 with 2 doors	Webasto	8.5
A11	Sütrak only driver's workplace	4.2
A11	Webasto	18.0
A13	Konvekta	12.0
Lion's City A2x, A3x, A4x Solobus	Spheros CC4ES Easysphere with driver's workplace	1.1
Lion's City A2x, A3x, A4x Solobus	Spheros Citysphere S with driver's workplace	1.1
Lion's City A2x, A3x, A4x Solobus	Spheros Citysphere without driver's workplace	0.8
Lion's City A2x, A3x, A4x Solobus	Spheros Aerosphere/Aerosphere World	9.5
Lion's City A2x, A3x, A4x Solobus	Spheros Aerosphere/Aerosphere World with driver's workplace	10.5
Lion's City A2x, A3x, A4x Solobus	Spheros REVO 320, rear position	6.0
Lion's City A2x, A3x, A4x Solobus	Spheros REVO 320, central position	6.5
Lion's City A2x, A3x, A4x Solobus	Spheros REVO 400, central position	7.5
Lion's City A2x, A3x, A4x Solobus	Spheros REVO 450, rear position	7.0
Lion's City A20, A21, A47 Solobus	Webasto electric, driver's workplace only	1.1

Fill quantities

Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Lion's City A20, A21, A47 Solobus	Webasto/Konvekta without driver's workplace	9.5
Lion's City A20, A21, A47 Solobus	Webasto/Thermo King/Konvekta with driver's workplace	10.5
Lion's City A21 (Israel) Solobus	Sütrak AC350	9.0
Lion's City A21 (Israel) Solobus	Sütrak AC353	9.0
Lion's City A21 (Israel) Solobus	Thermo King Coach RT	8.3
Lion's City A21 (Israel) Solobus	Thermo King LRT-3	9.0
Lion's City A23 articulated bus	Spheros REVO 450, 2x roof-mounted	9.0
Lion's City A23, A40, A42, A49 articulated bus	Spheros REVO 360, 2x roof-mounted	10.0
Lion's City A23 articulated bus	Webasto/Konvekta 2x roof-mounted with driver's workplace	14.0
Lion's City A23 articulated bus	Webasto integrated with driver's workplace	14.0
Lion's City A23 articulated bus	Webasto without driver's workplace	13.5
Lion's City A23 articulated bus	Konvekta P700/Spheros Aerosphere World/Thermoking Athenia S805+96, 2x roof-mounted	12.0
Lion's City A23 Israel articulated bus	Spheros 2x Aerosphere 320	24.0
Lion's City A25 Solobus	Webasto/Thermo King/Konvekta with driver's workplace	11.5
Lion's City A25 Solobus	Webasto/Thermo King/Konvekta without driver's workplace	10.5

Fill quantities
Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Lion's City A26 Solobus	Webasto/Thermo King/Konvekta with driver's workplace	11.0
Lion's City A26 Solobus	Webasto/Thermo King/Konvekta without driver's workplace	10.0
Lion's City A28 (Israel) Solobus	Sütrak AC350	9.0
Lion's City A32 Solobus	Konvekta	12.5
Lion's City A37 Solobus	Spheros with front box	11.0
Lion's City A37 (Hong Kong) Solobus	Sütrak AC350	9.8
Lion's City A37 Hybrid	(☞ page 129)	
Lion's City A39 double-decker	Konvekta HKL 1/8	21.0
Lion's City A7x Solobus	Spheros CC4E	1.1
Lion's City A78 Solobus	Spheros Aerosphere World	10.5
Lion's City A78 Solobus	Konvekta ACX 622	12.0
Lion's City type 12C Solobus	Valeo REVO 320	see Air-conditioning system refrigerant model plate
Lion's City type 12C Solobus	Valeo REVO 400	
Lion's City type 12C Solobus	Valeo REVO 450	

Fill quantities

Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Lion's City type 12C, 18C electric	Eberspächer AC136G3	see Air-conditioning system refrigerant model plate
Lion's City type 18C, 19C articulated bus	Valeo REVO 320	
Lion's City type 18C, 19C articulated bus	Valeo REVO 360	
Lion's Intercity LE type 42C, 43C	Valeo REVO 320	
Lion's Intercity LE type 42C, 43C	Valeo REVO 400	
Lion's City type C, Lion's Intercity LE	Spheros Citysphere S with driver's workplace	1.1
Lion's City type C, Lion's Intercity LE	Spheros Citysphere without driver's workplace	0.8
Centroliner N4426 double-decker	Konvekta HLK 1-5 with driver's workplace	15.5
Centroliner N4426 double-decker	Konvekta HLK 1-5 without driver's workplace	14.0
Centroliner N4421 articulated bus	Konvekta HKL 5 ARS with driver's workplace	12.0
Centroliner N4421 articulated bus	Konvekta HKL 5 ARS without driver's workplace	11.0
Centroliner N44xx Solobus	Konvekta HKL 5 ARS 4 with driver's workplace	7.0
Centroliner N44xx Solobus	Konvekta HKL 5 ARS 4 without driver's workplace	5.5
Centroliner N44xx Solobus	Sütrak AC130/AC131	5.8
Centroliner N44xx Solobus	Sütrak AC134	6.5

Fill quantities
Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Centroliner N44xx Solobus	Sütrak AC136-24 without driver's workplace	5.2
Centroliner N44xx Solobus	Sütrak AC136-32 without driver's workplace	7.7
Cityliner N1116	Konvekta HLK 2D with driver's workplace	10.5
Cityliner N1116	Konvekta HLK 2D without driver's workplace	9.0
Cityliner N1116	Sütrak A350 with driver's workplace	12.8
Cityliner N1116	Sütrak A350 without driver's workplace	11.3
Cityliner N1116	Sütrak AC250/AC251 with driver's workplace	10.5
Cityliner N1116	Sütrak AC250/AC251 without driver's workplace	9.0
Cityliner N1116	Thermal K2D with driver's workplace	9.0
Cityliner N1116	Thermal K2D without driver's workplace	7.5
Cityliner P14, P15, P16	Denso Ebac V2	5.6
Cityliner P14, P15, P16	Denso Ebac V2 with sleeper compartment	6.1
Cityliner P14, P15, P16	Konvekta ACX 639	8.7
Cityliner P14, P15, P16	Konvekta ACX 639 with sleeper compartment	9.2
Euroliner N33xx	Konvekta HLK 2E with driver's workplace	9.5
Euroliner N33xx	Konvekta HLK 2E without driver's workplace	8.0
Euroliner N33xx	Sütrak AC270 with driver's workplace	8.0
Euroliner N33xx	Sütrak AC270 without driver's workplace	6.5

Fill quantities

Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Euroliner N33xx	Sütrak AC313 with driver's workplace	6.9
Euroliner N33xx	Sütrak AC313 without driver's workplace	5.4
Euroliner N33xx	Sütrak AC353 with driver's workplace	7.9
Euroliner N33xx	Sütrak AC353 without driver's workplace	6.4
Tourliner P20, P21, P22, Trendliner P23, P24, P25	Konvekta/Aurora with driver's workplace	11.0
Tourliner P20, P21, P22, Trendliner P23, P24, P25	Spheros MAN Top2000	11.0
Lion's Star R02, R03	Thermo King cold water	4.2
Lion's Star R02, R03	Thermo King cold water new box (36.77971-9033, 36.77971-6033)	4.0
Lion's Coach R07, R08, R09	Konvekta air conditioning-system for hot/tropical countries	12.5
Lion's Coach R07, R08, R09	Konvekta/Aurora with driver's workplace	11.0
Lion's Coach R07, R08, R09	Spheros MAN Top2000	11.0
Lion's Regio R12, R13, R14	Konvekta/Aurora with driver's workplace	11.0
Lion's Regio R12, R13, R14	Spheros MAN Top2000	11.0
Lion's Intercity R60, R61	Spheros REVO 320 LIC with driver's workplace	6.5
Skyliner PBx	Konvekta HLK 1/5 with driver's workplace	16.0
Skyliner PBx	Konvekta HLK 1/5 without driver's workplace	14.0

Fill quantities
Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Skyliner PBx	Konvekta HLK 1/7 with driver's workplace and upper deck front box	20.5
Skyliner PBx	Sütrak AC40-10 without driver's workplace	14.0
Skyliner P05	Konvekta HLK 1/9 with sleeper compartment	18.0
Skyliner P05	Konvekta HLK 1/9 without sleeper compartment	17.5
Skyliner P06	Konvekta HLK 1/9 with lounge bed (Capella)	17.5
Skyliner P06	Konvekta HLK 1/9 without lounge bed (Capella)	17.0
Spaceliner N1117	Konvekta HLK 2D with driver's workplace	10.5
Spaceliner N1117	Konvekta HLK 2D without driver's workplace	9.0
Spaceliner N1117	Sütrak A350 with driver's workplace	12.8
Spaceliner N1117	Sütrak A350 without driver's workplace	11.3
Spaceliner N1117	Sütrak AC250/AC251 with driver's workplace	10.5
Spaceliner N1117	Sütrak AC250/AC251 without driver's workplace	9.0
Spaceliner N1117	Thermal K2D with driver's workplace	9.0
Spaceliner N1117	Thermal K2D without driver's workplace	7.5
Starliner N516	Konvekta HLK 2E with driver's workplace	9.5
Starliner N516	Sütrak AC260/261	10.5

Fill quantities

Refrigerants and refrigerator oils

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
Starliner P11, P12	Webasto Aerosphere World	11.5
Starliner P11, P12	Webasto Aerosphere World with sleeper compartment	12.0
Jetliner P26, P27	Spheros MAN Top2000	11.0
Jetliner P26, P27	Konvekta ACX 636-1	11.0

Quantity of refrigerant in the MAN air-conditioning systems for chassis with Göppel design

Model series (type)	Passenger area air-conditioning system	R134a refrigerant (kg)
469, A76, A66, A35	Konvekta HKL5 without air-conditioning system at front	5.0
469, A76, A66, A35	Konvekta HKL5 with air-conditioning system at front	5.5
A76, A66, A35	Webasto Aerosphere Midi without air-conditioning system at front	6.0
A76, A66, A35	Webasto Aerosphere Midi with air-conditioning system at front	6.5
A76, A66, A35	Webasto CC4ES	1.1
A25, A30	Webasto Aerosphere	10.0
469	Sütrak AC 130	7.0
496 (Bermuda)	Sütrak AC 310	6.8
A76 (Bermuda)	Sütrak AC 313	6.0

R134a refrigerant fill quantity for battery cooling module (cooling and heating system of high-voltage battery)

Model series (type)	Battery cooling module	R134a refrigerant (kg)
Lion's City type C electric	Battery cooling module	0.62

R407c refrigerant fill quantity for hybrid high-voltage air-conditioning system

Model series (type)	Passenger area air-conditioning system	R407c refrigerant (kg)
Lion's City A37 Hybrid	Thermo King Athenia E800 with driver's workplace	6.5

Fill quantities

Refrigerants and refrigerator oils

Refrigerator oils

Refrigerant compressor	Designation	Fill quantity (Litres)
BOCK	FK 40	2.0
BOCK	FK 50	2.6
BOCK	HG34e (for Lion's City type C electric)	1.3
Electrical refrigerant compressor for battery cooling module	Cooling and heating system of the high-voltage battery (for Lion's City type C electric)	0.120
BITZER	4.FC, 6.FC, 4.FR	2.5
hispacold	550 ECOICE, 660 ECOICE	2.0
Valeo	TM55, TM65	1.5
Valeo	Type Sanden 5D5 H09 for complete filling	0.150
Valeo	Type Blitzer ECH 209 for complete filling without driver's workplace	0.120
Valeo	Type Blitzer ECH 209 for complete filling with driver's workplace	0.220

List of abbreviations

Abbreviation Explanation of abbreviation

AGN	Exhaust Gas Aftertreatment
AGR	Exhaust Gas Recirculation (EGR)
ATF	A utomatic T ransmission F luid Hydraulic oil for use in hydraulic gearboxes
CNG	C ompressed N atural G as Compressed gas made from natural gas or biomethane
CRT	C ontinuously R egenerating T rap Diesel oxidising catalytic converter and diesel particulate filter
DIN	German Institute for Standardisation
DOC	D iesel O xidation C atalytic converter Diesel oxidising catalytic converter
EEV	E nhanced E nvironmentally F riendly V ehicle Emission standard for enhanced environmentally friendly vehicle
EN	European standard
FAME	F atty A cid M ethyl E ster Biodiesel fuel, made from plants
FIN	Vehicle identification no. (VIN)
GAP	Gas system test
GTL	G as to L iquid Synthetic fuel, made from natural gas
HP	Planetary rear axle
HVO	H ydrogenated V egetable O ils
HY	Hypoid rear axle
ISO	I nternational O rganization for S tandardization

Indexes

List of abbreviations

Abbreviation	Explanation of abbreviation
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PM-KAT	P articulate M atter C atalytic C onverter Diesel particulate filter with catalytic converter
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ppm	P arts p er m illion 1/1,000,000
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RME	R apeseed M ethyl E ster Biodiesel fuel, made from rapeseed oil
----------------------	--

SAE	S ociety of A utomotive E ngineers American organisation that defines industry standards
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SCR	S elective C atalytic R eduction Exhaust gas aftertreatment system with AdBlue
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