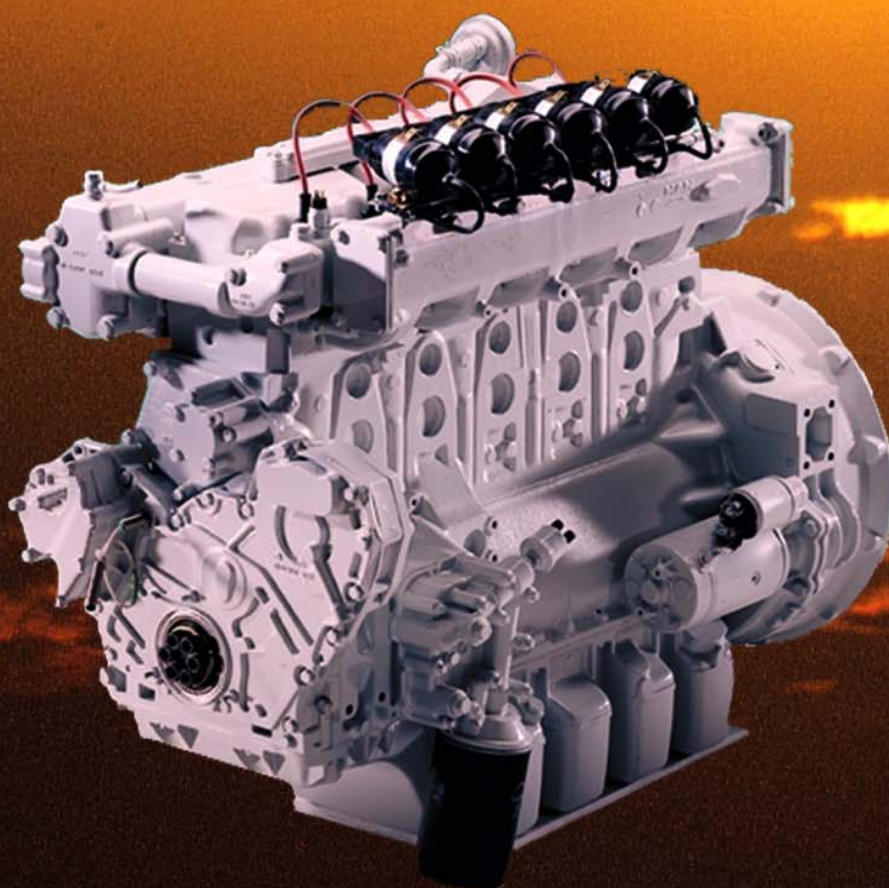


Technical information

# MAN industrial Gas engines Repair Manual



*E 0824 E 301 / E 302  
E 0826 E 301 / E 302*





## *Preface*

This Repair Manual is designed to facilitate competent repair of the engines listed herein.

The pictures and relevant descriptions show typical work that may not always be applicable to the engine in hand, which nevertheless does not mean that they are not correct.

In such cases the repair work is to be planned and carried out in a similar way.

Please note that all work for this repair manual was carried out with the engine removed.

MAN Nutzfahrzeuge Aktiengesellschaft  
Nuremberg Works

We reserve the right to make technical modifications in the course of further development.

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Gaseous fuels consist basically of methane, propane, butane, traces of higher-order hydrocarbons and of inert components such as carbon dioxide and nitrogen.

**When commissioning, starting and operating the gas engine, observe the following without fail:**

- Smoking or the use of a naked flame are prohibited.
- Leaks in the gas supply system represent an explosion risk and must be eliminated without delay.
- Fire extinguishers and other fire-fighting equipment must be kept close at hand.
- Inflammable material must not be stored in the engine room.



**What must be done in the event of a gas leak?**

- Close the shut-off tap for the gas supply.
- Turn off main switch for the electrical system.
- Cordon off danger area. Order unauthorised persons to leave the danger area.
- If gas is escaping, inform the relevant authorities without delay and make arrangements for repair work.



**What must be done if fire breaks out?**

- Alert the fire brigade.
- Assist any persons who may be in danger.
- If the fire is a pure gas fire, the escaping gas flame must not be extinguished. Cool the burning object if necessary.  
**Burning gas = controlled gas!**
- If the flames spread to the surrounding area, fight the fire with extinguishers.



## General information

**Day-to-day use of power engines and the service products necessary for running them presents no problems if the persons occupied with their operation, maintenance and care are given suitable training and think as they work.**

This brief overview summarises important instructions and is structured into areas of main concern in order to impart the knowledge necessary to prevent accidents involving injury to persons, damage to the engine or other property and harm to the environment. Additional notes are included in the operator's manual for the engine.

**Important:** If despite all safety precautions an accident occurs as a result of contact with caustic acids, penetration of fuel into the skin, scalding with hot oil, anti-freeze splashes into the eyes etc, **consult a doctor immediately!**

### 1. Instructions for preventing accidents with injury to persons

#### During commissioning, starting and operation

- Before putting the engine into operation for the first time, read the operating instructions carefully and familiarize yourself with the "critical" points. If you are unsure, ask your MAN representative.
- For reasons of safety we recommend you attach a notice to the door of the engine room prohibiting the access of unauthorized persons and that you draw the attention of the operating personal to the fact that they are responsible for the safety of persons who enter the engine room.
- The engine must be started and operated only by authorized personnel. Ensure that the engine cannot be started by unauthorized persons.
- When the engine is running, do not get too close to the rotating parts. Wear close-fitting clothing.
- Do not touch the engine with bare hands when it is warm from operation – risk of burns.
- Keep vicinity of engine, ladders and stairways free of oil and grease. Accidents caused by slipping can have serious consequences.



### During maintenance and care

- Always carry out maintenance work when the engine is switched off.  
If the engine has to be maintained while it is running, e.g. changing the elements of change-over filters, remember that there is a risk of scalding. Do not get too close to rotating parts.
- Change the oil when the engines is warm from operation.  
**Caution:**  
There is a risk of burns and scalding. Do not touch oil drain plugs or oil filters with bare hands.
- Take into account the amount of oil in the sump. Use a vessel of sufficient size to ensure that the oil will not overflow.
- Open the coolant circuit only when the engine has cooled down.  
If opening while the engine is still warm is unavoidable, comply with the instructions in the chapter entitled "Maintenance and Care" of the Operating Instructions.
- Neither tighten up nor open pipes and hoses (lube oil circuit, coolant circuit and any additional hydraulic oil circuit) during the operation.  
The fluids which flow out can cause injury.
- When using compressed air, e.g. for cleaning the radiator, wear goggles.
- Keep service products (anti-freeze) only in containers which can not be confused with drinks containers.
- Comply with the manufacturer's instructions when handling batteries.  
**Caution:**  
Accumulator acid is toxic and caustic. Battery gases are explosive.





### When carrying out checking, setting and repair work

- Checking, setting and repair work must be carried out by authorized personnel only.
- Use only tools which are in satisfactory condition. Worn open-end wrench slip, which could lead to injury.
- When the engine is hanging on a crane, no-one must be allowed to stand or pass under it. Keep lifting gear in good condition.
- When working on the electrical system disconnect the battery earth cable first. Connect it up again last in order to prevent short circuits.
- When welding comply with the "Instructions for welders".



### When working on the electronic ignition system

Compared with conventional, mechanically controlled systems, the firing power of electronic systems is markedly higher.

Electronic ignition systems operate in a voltage range which, in the event of contact with energised parts (both primary and secondary circuits), can be extremely dangerous.

In this context we refer also to VDE instructions, particularly to VDE 0104/7.67, which must be observed without fail during all work on and inspections of the ignition system.

- When working on the ignition system, always switch off the ignition. Apart from the installation of cable harnesses during commissioning, such work also includes the exchange of parts (spark plugs, ignition cables etc).





## Safety precautions for handling the engine

### 2. Regulations designed to prevent damage to engine and premature wear

Do not demand more from the engine than it is able to supply in its intended application. Detailed information on this can be found in the sales literature.

If faults occur, find the cause immediately and have it eliminated in order to prevent more serious damage.

Use only genuine MAN spare parts. MAN will accept no responsibility for damage resulting from the installation of other parts which are supposedly "just as good".

In addition to the above, note the following points:

- Never let the engine run when dry, i.e. without lube oil or coolant.
- Use only MAN-approved service products (engine oil, anti-freeze and anti-corrosion agent). Pay attention to cleanliness.
- Have the engine maintained at the specified intervals.
- Do not switch off the engine immediately when it is warm, but let it run without load for about 5 minutes so that temperature equalization can take place.
- Never put cold coolant into an overheated engine. See "Maintenance and care".
- ***Do not add so much engine oil that the oil level rises above the max. marking on the dipstick. Do not exceed the maximum permissible tilt of the engine.***  
Serious damage to the engine may result if these instructions are not adhered to.
- Always ensure that the testing and monitoring equipment (oil pressure, coolant temperature) function satisfactorily.

### 3. Regulations designed to prevent pollution

#### Engine oil and filter elements / cartridges, fuel / fuel filter

- Take old oil only to an old oil collection point.
- Take strict precautions to ensure that no oil gets into the drains or the ground. The drinking water supply could be contaminated.
- Filter elements are classed as dangerous waste and must be treated as such.

#### Coolant

- Treat undiluted anti-corrosion agent and / or anti-freeze as dangerous waste.
- When disposing of spent coolant comply with the regulations of the relevant local authorities.