Technical Information

Electronic Diesel Control
Repair Manual

EDC M(S) 5 - D 2842 LE 6..

Dear Customer

These instructions are intended to help you properly carry out repairs on the electronically controlled diesel injection system described in this document.

In writing these instructions, we have assumed that you have the necessary knowledge of control systems for working on and with the electronic diesel control.

Best regards
MAN Nutzfahrzeuge Aktiengesellschaft
Nuremberg Plant

Since our products are in continuous development, we reserve the right to make technical modifications.

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General

Important safety regulations are summarized in this quick-reference overview and arranged by topic to effectively convey the knowledge necessary to avoid accidents causing injury, damage or environmental hazard.
The engine operating manual contains further information.

Important:
Should an accident occur despite all precautionary measures, particularly one involving contact with corrosive acid, penetration of fuel under the skin, scalding by hot oil, antifreeze splashing into the eyes etc. **you must seek medical assistance immediately.**

1. Instructions for avoiding accidents likely to cause injury

Only authorized and qualified personnel are permitted to carry out inspection, adjustment and repair work

- Secure and chock vehicles to prevent the vehicle rolling

- Firmly secure units and assemblies on disassembly
- Only authorized personnel are permitted to start and operate the engine
- Do not stand too close to rotating parts while the engine is running
  Wear close-fitting working clothes

- Do not touch a hot engine with bare hands:
  Risk of burns

- Keep area surrounding engine, ladders and stairways free of oil and grease.
  Accidents caused by slipping can have serious consequences
- Only work with tools which are in good condition. Damaged or worn spanners and wrenches can slip off: Risk of injury
- Persons must not stand under an engine suspended on a crane hook. Keep lifting gear in perfect condition

- Only open coolant circuit once the engine has cooled down. Follow the instructions given under “Care and Maintenance” in the Operating Manual exactly if it is not possible to avoid opening the coolant circuit with the engine at operating temperature

- Do not tighten or loosen pipes and hoses that are under pressure (lubricant circuit, coolant circuit and any downstream hydraulic oil circuits): Risk of injury caused by liquids escaping under pressure

- Do not place hands under the fuel jet when checking injection nozzles.
  Do not inhale fuel mist
- Always disconnect battery when working on the electrical system
- Do not use rapid charger to start the engine. Rapid charging of batteries is only permitted with the positive and negative leads disconnected!
- Disconnect batteries only with the ignition turned off
- Observe manufacturer's instructions for handling batteries.
  Caution:
  Battery acid is toxic and corrosive. Battery gasses are explosive

- Only use suitable measuring instruments to **measure voltages**! The minimum input resistance of a measuring instrument should be 10 MΩ
- Only disconnect or connect wiring harness connectors on electronic control units with the **ignition turned off!**

Disconnect batteries and connect the positive lead to the negative lead such that they are electrically conductive before carrying out any electric welding work. Earth the welding set as close to the weld as possible. Do not place cables of welding set parallel to electrical lines in the vehicle.

Refer to the "Welders Code of Practice" for further accident prevention measures.

- **When carrying out repaint jobs**, electronic components may be subject to high temperatures (max. 95°C) for only very short periods; a period of up to approx. 2 hours is permissible at a max. temperature of 85°C, disconnect batteries

Limitation of liability for parts and accessories

In your own interest, we strongly recommend you use only accessories and original MAN parts expressly approved by MAN for your MAN engine. The reliability, safety and suitability of these parts and accessories have been tested specially for MAN engines. Despite us keeping a constant eye on the market, we cannot assess and be held responsible for these properties in other products, even if they bear TÜV (German testing and inspection institute) approval or any other official approval in any particular case.

Laying up or storage

Special measures must be implemented in accordance with MAN Company Standard M 3069 Part 3 if engines are to be laid up or placed into storage for more than 3 months.

Electronic diesel control EDC

General

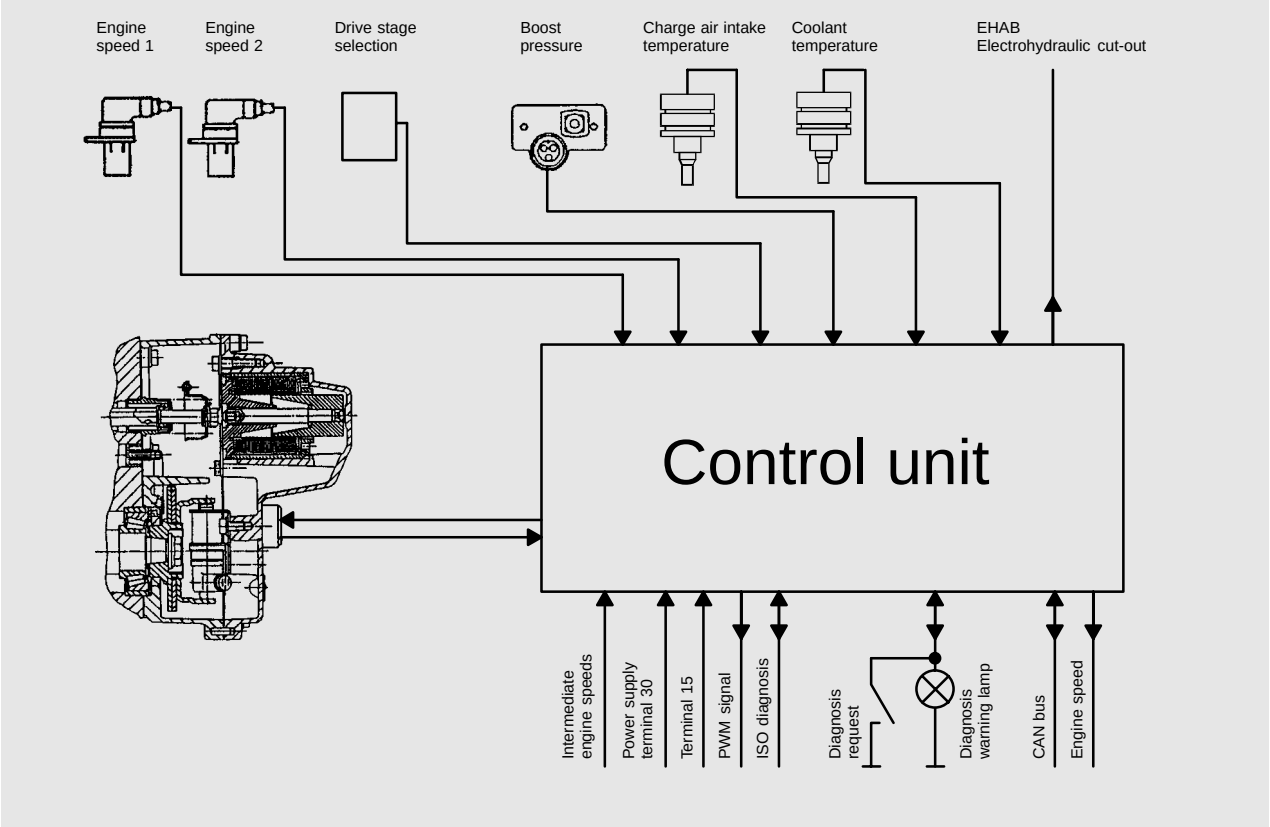
The requirements set by customers and legislation in respect of fuel consumption, exhaust emission and noise characteristics etc. on diesel engines have grown over the years and will be even more stringent in the future.

The fact that conventional mechanical injection systems have reached their performance limits has made electronically controlled fuel injection systems necessary.

Such systems increase engine efficiency, improve driving comfort and lessen the burden on the environment.

EDC (**E**lectronic **D**iesel **C**ontrol) meets these requirements.

System description EDC M(S) 5



The controller contains

– the linear solenoid
– the control rod position transducer

The linear solenoid is actuated by the electronic control unit. The control unit processes information which it receives via

– the control rod position transducer
– the drive position selection
– drive stage selection
– coolant temperature sensor
– charge-air temperature sensor
– intermediate engine speed setpoint
– and the rpm sensors.

The diagnosis request push button and the EDC indicator lamp are used in detecting faults and signalling them through a code.

An ISO interface provides a communication with the MAN-cats test and diagnostic computer.

The control unit, with its program adapted to the engine model concerned, determines the optimum setting of the control rod from all the measured values.

To ensure the vehicle can still be driven to the nearest workshop in the event of one or several sensors failing, an emergency drive function is integrated in the control unit which, depending on the situation, makes it possible to continue driving with restricted functions.

When the brakes are applied, the system operates as an intermediate engine speed controller with a cyclic irregularity (P-degree) of 0, i.e. a set intermediate engine speed is maintained exactly provided the engine develops sufficient power output for this purpose.

The idle speed control operates in the same way as the intermediate engine speed control. The idle speed is exactly maintained by means of the idle speed governor as long as the engine output is sufficient for this. The regulated idle speed can be varied within certain limits.

Starting-fuel delivery is output when either a lower start recognition speed is exceeded. The starting fuel volume and cold idle speed are limited as a function of the coolant temperature to avoid impermissible smoke emission and unnecessary revving of the engine after starting.