# Operating Instructions

Diesel engine
12 V 1600 R50

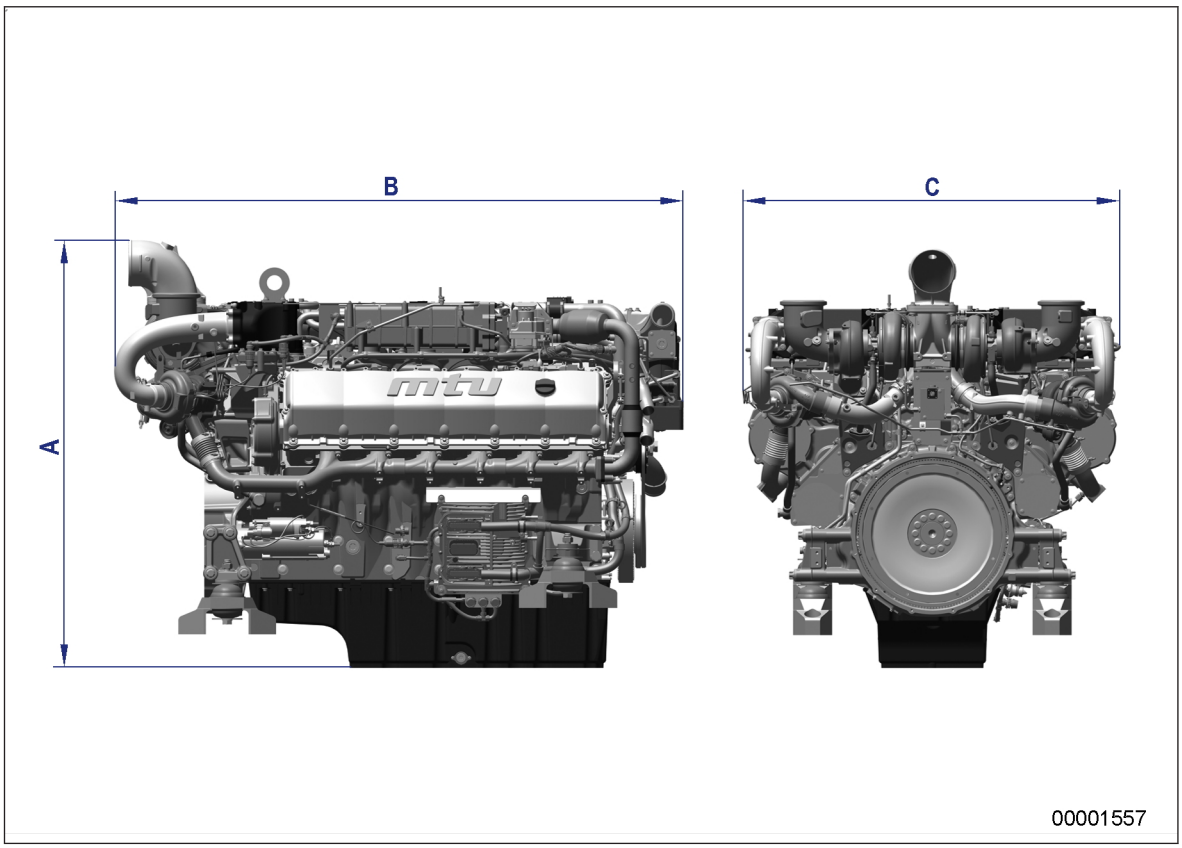
MS15025/00E

Power. Passion. Partnership.

For conducting light-beam procedures and measurement work, only the following laser devices must be used:

- Laser devices of classes 1, 2 or 3A.
- Laser devices of class 3B, which have maximum output in the visible wavelength range (400 to 700 nm), a maximum output of 5 mW, and in which the beam axis and surface are designed to prevent any risk to the eyes.

## 3.2 Engine – Main dimensions




| Item | Dimensions |
|---|---|
| Height (A) | Approx. 1401 mm |
| Length (B) | Approx. 1873 mm |
| Width (C) | Approx. 1263 mm |

# 5 Maintenance

## 5.1 Preface

### MTU maintenance concept

The following applies in the case of engines which are subject to emissions regulations:

Emissions regulations prohibit alteration, removal or addition of any mechanical or electronic component or calibration that could affect the emissions characteristics of the engine. Maintenance, replacement, or repair of emissions-relevant components, e.g. control devices, sensors, cylinder heads and exhaust flaps, can only be performed using MTU approved components or equivalents.

Failure to adhere to the maintenance instructions could result in violation of legal requirements.

The MTU Maintenance Schedules ensure the reliability and performance of MTU engines and must be complied with over the entire life cycle of the engine.the case of engines which are not subject to any emissions regulations, the maintenance intervals cited are to be regarded as guideline values.

This maintenance schedule includes preventive and on-condition maintenance.

The maintenance schedule is based on the load profile / load factor specified below. Special operating conditions and technical requirements may require additional maintenance work and/or modification of the maintenance intervals. The intervals according to which the maintenance tasks have to be carried out are specified as operating hours and time limits. The limit which occurs first is applicable.In order to be authorized to carry out the individual maintenance jobs, maintenance personnel must have achieved a level of training and qualification appropriate to the complexity of the task in hand. The various Qualification Levels QL1 to QL4 reflect the levels of training offered in MTU courses and the contents of the tool kits required:

QL1: Operational monitoring and maintenance which can be carried out during a break in operation without disassembling the engine.
QL2: Component replacement (corrective only).
QL3: Maintenance work which requires partial disassembly of the engine.
QL4: Maintenance work which requires complete disassembly of the engine.

The maintenance schedule matrix finishes after 18 years at the latest. Following this, maintenance work is to be continued at the intervals indicated.

The numbers specified in the measures list serve as reference to the required parts scope.

### Notes on maintenance

Specifications for fluids and lubricants, guideline values for their maintenance and change intervals and lists of recommended fluids and lubricants are contained in the MTU Fluids and Lubricants Specifications A001063 and in the fluids and lubricants specifications produced by the component manufacturers. They are therefore not included in the maintenance schedule (exception: deviations from the Fluids and Lubricants Specifications). All fluids and lubricants used must meet MTU specifications and be approved by the relevant component manufacturer.

Amongst other items, the operator/customer must carry out the following additional maintenance work:

- Protect components made of rubber or synthetic material from oil. Never treat them with organic detergents. Wipe with a dry cloth only.
- Fuel prefilter:
  The maintenance interval depends on how dirty the fuel is. The paper inserts in fuel prefilters must be changed every two years at the latest (Task 9998).
- Battery:
  Battery maintenance depends on the level of use and the ambient conditions. The specifications of the battery manufacturer apply.

# 7.2 Fuel System

## 7.2.1 Fuel system – Venting

### Preconditions

☑ Engine is stopped and starting disabled.

### Special tools, Material, Spare parts

| Designation / Use | Part No. | Qty. |
|---|---|---|
| Torque wrench, 4-20 Nm | F30044239 | 1 |
| Ratchet | F30027340 | 1 |

WARNING

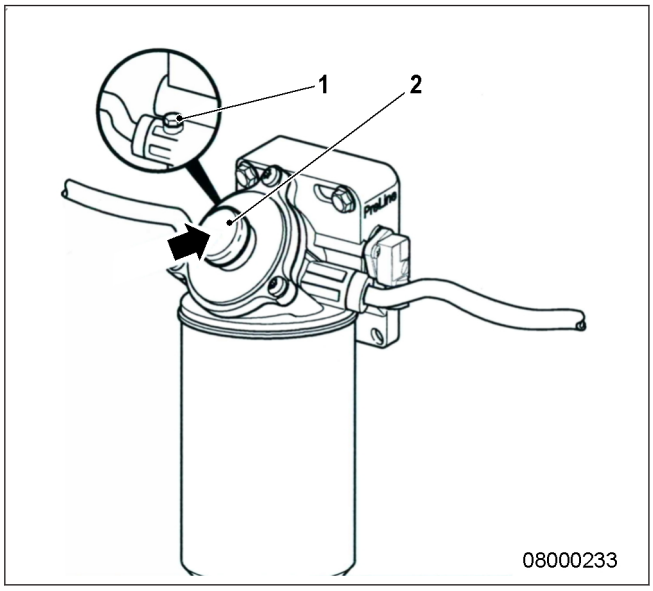
Fuels are combustible.
**Risk of fire and explosion!**
- Avoid open flames, electrical sparks and ignition sources.
- Do not smoke.

### Venting fuel system

1. Open vent plug (1).

Note: Catch emerging fuel with a suitable cloth.

2. Operate the pump with the handle (2) until bubble-free fuel emerges from the vent plug (1).




3. Close vent plug (1) and tighten with torque wrench to the specified tightening torque.

| Name | Size | Type | Lubricant | Value/Standard |
|---|---|---|---|---|
| Threaded vent plug | 12 | Tightening torque | | 6.5 Nm ±1.3 Nm |

## 7.8.3 Engine coolant – Draining

### Preconditions

☑ Engine is stopped and starting disabled.

### Special tools, Material, Spare parts

| Designation / Use | Part No. | Qty. |
|---|---|---|
| Engine coolant | | |
| Sealing ring | (→ Spare Parts Catalog) | |

WARNING

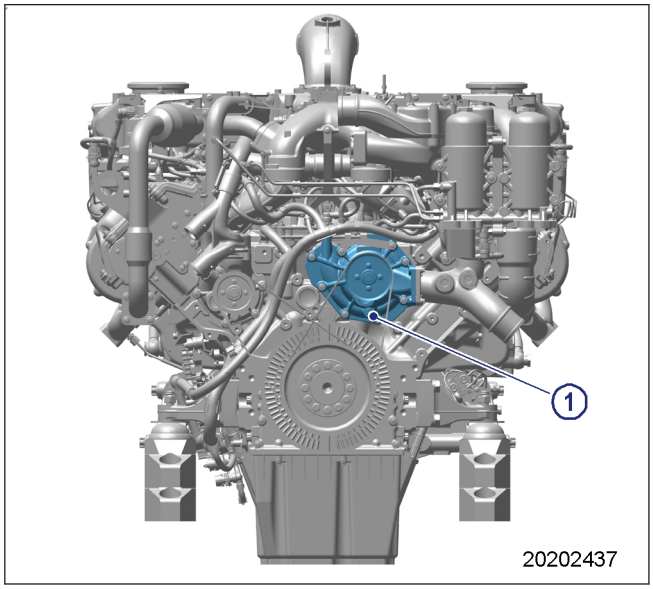
Coolant is hot and under pressure.
**Risk of injury and scalding!**
- Let the engine cool down.
- Wear protective clothing, gloves, and goggles / safety mask.

### Preparatory steps

1. Provide an appropriate container to drain the coolant into.
2. Switch off preheater, if installed.

### Engine coolant – Draining

1. Turn breather valve of filler neck on coolant expansion tank counterclockwise to first stop and allow pressure to escape.
2. Continue to turn breather valve counter-clockwise and remove.
3. Draw off precipitated corrosion inhibitor oil from the expansion tank through filler neck.
4. Open drain screw and drain off coolant at engine coolant pump (1).



## 7.9.5 Charge-air coolant pump – Relief bore check

**DANGER**

Unguarded rotating and moving engine components.
**Risk of serious injury – danger to life!**
- Take special care when working on a running engine.

**WARNING**

Engine noise above 85 dB (A).
**Risk of damage to hearing!**
- Wear ear protectors.

### Charge-air coolant pump – Relief bore check

1. Check relief bore (1) for coolant discharge.
   - Permissible coolant discharge: Up to 0.1 ml per hour respectively 100 ml per 1,000 operating hours.

Result: If discharge exceeds the specified limits, contact Service.

2. If relief bore (1) is clogged:
   - Stop engine (→ Page 28) and disable engine start.
   - Clean relief bore (1) with wire.