

Technical Documentation

Diesel Engine
12 V 4000 Gx3
16 V 4000 Gx3
Application group 3D

Maintenance Schedule
MS50004/00E



1 Preface

MTU maintenance concept

The maintenance system for MTU products is based on a preventive maintenance concept. Preventive maintenance facilitates advance planning and ensures a high level of equipment availability.

The maintenance schedule is based on the load profile / load factor specified below. The time intervals at which the maintenance work is to be carried out and the relevant checks and tasks involved are average values based on operational experience and are therefore to be regarded as guidelines only. Special operating conditions and technical requirements may require additional maintenance work and/or modification of the maintenance intervals. 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 exchange (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 normally finishes with extended component maintenance. Following this, maintenance work is to be continued at the intervals indicated.

The "Task" numbers stated in the list of jobs to be done/action to be taken indicate the relevant maintenance item. They provide a reference to the scope of parts required and appear on the labels of the appropriate replacement parts.

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 A001061 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 battery manufacturer's instructions must be obeyed.

The relevant manufacturer's instructions apply with respect to the maintenance of any components which do not appear in this maintenance schedule.

This Maintenance Schedule may include components which are not installed on your engine; these may be disregarded.

Out-of-service periods

If the engine is to remain out of service for more than 1 month, carry out engine preservation procedures in accordance with the Fluids and Lubricants Specifications, MTU Publication No. A001061.

Application group

3D

Standby operation

2 Maintenance schedule matrix

0-6.000 Operating hours

Item	Limit, years	Operating hours [h]																			
		Daily	500	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500	5.000	5.500	6.000							
Engine oil filter	2																				
Engine operation	-	X																			
Centrifugal oil filter	2		X	X	X	X	X	X	X	X	X	X	X	X							
Valve gear	-			X		X		X		X		X		X							
Fuel filter	2			X		X		X		X		X		X							
Belt drive	2			X		X		X		X		X		X							
Air filters	3							X						X							
Rubber sleeves	6							X						X							
Fuel injectors	-													X							
Combustion chambers	4													X							
Crankcase breathers	-													X							
Turbochargers	-													X							
Component maintenance	-													X							
Cylinder heads	-													X							
Extended component maintenance	18													X							

3 Maintenance tasks

Qualification level	Interval		Item	Maintenance tasks	Task
	[h]	[a]			
QL1	-	2	Engine oil filter	Fit new engine oil filters each time the engine oil is changed or, at the latest, on expiry of the time limit (given in years). .	W1008
QL1	Daily	-	Engine operation	Check engine oil level . Carry out visual inspection of engine for general condition and leaks. . Inspect intercooler drain system (if fitted). . Inspect service indicator of air filter. . Check relief bores of water pump(s). . Check for abnormal running noises, exhaust gas colour and vibration. . Drain off water and contamination from fuel prefilter (if fitted). . Check service indicator of fuel prefilter (if fitted). .	W0500 W0501 W0502 W0503 W0505 W0506 W0507 W0508
QL1	500	2	Centrifugal oil filter	Centrifugal oil filter (if fitted): Check thickness of oil residue layer, clean and fit new sleeve. .	W1009
QL1	1.000	-	Valve gear	Check valve clearance. .	W1002
QL1	1.000	2	Fuel filter	Fit new fuel filter or new fuel filter insert. .	W1001
QL1	1.000	2	Belt drive	Inspect condition of drive belts and fit new ones if necessary. Adjust tension.	W1241
QL1	3.000	3	Air filters	Fit new air filters. .	W1005
QL1	3.000	6	Rubber sleeves	Exchange all rubber sleeves.	W1250
QL1	6.000	-	Fuel injectors	Fit new fuel injectors. .	W1006
QL1	6.000	4	Combustion chambers	Inspect cylinder chambers using endoscope. .	W1011
QL1	6.000	-	Crankcase breathers	Crankcase breathers: Fit new filters or filter inserts.	W1046
QL3	6.000	-	Turbochargers	Fit new turbochargers. .	W1041
QL3	6.000	-	Component maintenance	Before starting maintenance work, drain the coolant and flush the cooling systems. Inspect rocker arms and valve bridge for wear. Insert an endoscope through the pushrod bore to visually inspect swing followers and camshaft running surfaces. . Clean air ducting. . Clean intercoolers and inspect for leakage. . Fit new high-pressure sensor in fuel system. . Check engine coolant thermostat and fit new thermal actuator. . Check charge-air coolant thermostat and fit new thermal actuator. . Inspect centrifugal oil filter for wear (if fitted). . Overhaul starter. . Inspect vibration damper .	W2000 W2001 W2002 W2003 W2004 W2006 W2007 W2009 W2010 W2011

Qualification level	Interval		Item	Maintenance tasks	Task
	[h]	[a]			
				Overhaul charge air coolant pump. . Fit new sealing materials for all components disassembled. . Overhaul engine coolant pump	W2070 W2062 W2110
QL3	6.000	-	Cylinder heads	Overhaul cylinder heads. Visually inspect piston crowns and wear pattern on cylinder liner running surfaces. .	W1063
QL4	6.000	18	Extended component maintenance	Completely disassemble the engine. Inspect engine components as per Maintenance Manual instructions and repair or fit new components as required. . Exchange all elastomeric parts and seals for new ones. . Fit new piston rings. . Fit new conrod bearings. . Fit new crankshaft bearings. . Fit new cylinder liners. . Fit new antifriction bearings for auxiliary PTOs. . Fit new high-pressure fuel pump. . Fit new fuel delivery pump. . Overhaul battery-charging generator. .	W3000 W3001 W3002 W3003 W3004 W3005 W3006 W3007 W3010 W3042