

# Maintenance plan not for Common Rail Engines



## Service on the basis of operating hours

after ... hours of operation	Maintenance service					
	M1	M2	M3	M4	M5	M6
20-60 or after commissioning	X	X				X
200	X	X	X			X
400*	X	X	X	X	X	X
600	X	X	X			X
800	X	X	X	X	X	X
1000	X	X	X			X
1200	X	X	X	X		X
1400	X	X	X			X
1600	X	X	X	X	X	X
1800	X	X	X			X
2000	X	X	X	X		X
2200	X	X	X			X
2400	X	X	X	X	X	X
2600	X	X	X			X
2800	X	X	X	X		X
3000	X	X	X			X
3200	X	X	X	X	X	X
3400	X	X	X			X
3600	X	X	X	X		X
3800	X	X	X			X
4000	X	X	X	X	X	X

\* Retighten cylinder head bolts

**In addition to the service on the basis of operating hours clocked up the following maintenance work according to chronological intervals are necessary:**

according to chronological intervals	Maintenance service							
	M1	M2	M3	M4	A1	A2	A3	M6
yearly	X	X	X	X	X			X
2 years						X		X
4 years							X	X

## Maintenance service

M1	<p><b>Checking</b></p> <ul style="list-style-type: none"> <li>● Engine exterior for loss of oil and coolant<sup>1)</sup></li> <li>● Coolant level</li> <li>● Concentration of antifreeze / anti-corrosion agents</li> <li>● Engine oil level / gearbox oil level<sup>1)</sup></li> <li>● Engine alarms</li> <li>● Functioning of instruments<sup>1)</sup></li> <li>● Coolant hoses for leaks</li> <li>● Fuel lines for leaks</li> <li>● V-belt tension, retightening if necessary V-belt(s)</li> <li>● Condition of impeller</li> <li>● Water hose clamps, pipe connections and bolts for security, retightening if necessary</li> <li>● Alignment of the shaft system (In the event of abnormal vibrations, since the elastic engine mounts may have settled.)</li> </ul>
M2	<p><b>Cleaning</b></p> <ul style="list-style-type: none"> <li>● Fuel pre-filter</li> <li>● Draining water from auxiliary fuel filter</li> </ul>

M3	<p><b>Changing</b></p> <ul style="list-style-type: none"> <li>● Fuel filter cartridges<sup>2)</sup></li> <li>● Engine oil, Works Standards 270 and 271</li> <li>● Engine oil filter cartridge</li> <li>● Filter element of crankcase breather, see page 13</li> </ul>
M4	<p><b>Changing</b></p> <ul style="list-style-type: none"> <li>● Engine oil, Works Standards 3275 and 3277</li> <li>● Engine oil filter cartridge</li> <li>● Filter element of crankcase breather, see page 13</li> <li>● Air filter</li> </ul>
M5	<p><b>Checking / Setting</b></p> <ul style="list-style-type: none"> <li>● Valve clearance</li> </ul>
M6	<p><b>Trial run</b></p> <ul style="list-style-type: none"> <li>● Engine speed test with boat under full load<sup>3)</sup></li> </ul>

1) Daily visual checks are to be carried out by the captain in the course of on-board routine jobs

2) Fuel filters need changing more often if contamination is present in the fuel system

3) Full load means: Water and fuel tanks are filled, boat equipment complete incl. dinghy

Once the respective number of operating hours has been clocked up (see page 11), the aforementioned maintenance work M1 to M6 is to be carried out by an MAN-authorized workshop.

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A1	<b>Checking / Replacing</b> <ul style="list-style-type: none"><li>● Injectors (opening pressure, tightness, spray pattern)</li></ul>
A2	<b>Changing</b> <ul style="list-style-type: none"><li>● Both valve caps on expansion tank</li></ul> <b>Cleaning</b> <ul style="list-style-type: none"><li>● Intercooler / charge-air pipes / turbocharger</li><li>● Heat exchanger (pipe cluster)</li></ul>

A3	<b>Changing</b> <ul style="list-style-type: none"><li>● Coolant</li><li>● All hoses (e.g. fuel supply and return lines, gearbox oil cooler)</li></ul>
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Jobs A1, A2 and A3 due every year or every other year must be performed irrespective of the number of operating hours clocked up at the respective time.

## Note on crankcase breather

Change the filter element ② of crankcase breather type ①. Crankcase breather type ③ is maintenance-free.

