Action code: WHEN CONVENIENT

Guiding Overhaul Intervals

Updated Tables

SL09-509/SBJ
April 2009

Concerns

Owners and operators of MAN B&W two-stroke diesel engines.
Type: ME/ME-C, ME-B and MC/MC-C

Dear Sirs

Based on the latest service experience and experience with Condition Based Overhaul (CBO), we are pleased to issue a revised version of Guiding Overhaul Intervals tables. The guiding overhaul intervals apply to both electronically controlled engines (ME types) and mechanically, controlled engines (MC types).

Please note that the intervals in the lists apply only to engines with so-called high topland pistons. High topland pistons are pistons where the topland is significantly higher than the ringland.

For engines with high topland pistons, overhauls can normally be extended even further than described in the tables, typically to more than 32,000 hours. The means to obtain and document this are described in SL07-483/HRR.

Please direct any inquiries and questions regarding tables or condition-based overhaul to our Operation Department at leo@mandiesel.com or to our Service Department at PrimeServ-cph@mandiesel.com.

Yours faithfully

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Overhaul of cylinder unit on large bore engine

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ME-B engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Cylinder liner	Bore sizes 60-50 16,000 46-35 12,000	Bore sizes 60-46 60,000 40-35 50,000	Check the overall cylinder condition through the scavenge ports at least once a month.
Piston rings	Bore sizes 60-50 16,000 46-35 12,000	Bore sizes 60-35 16,000	
Piston crown	Bore sizes 60-50 16,000 46-35 12,000	Bore sizes 60-46 60,000 40-35 50,000	Pressure test at every 2nd piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
Stuffing box	Bore sizes 60-50 16,000 46-35 12,000 Check lamellas	Bore sizes 60-50 32,000 46-35 24,000 Renew lamellas	
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and air spring: Bore sizes 60-35 First inspection 1) 6,000 Bore sizes 50-35 Subsequent inspections 2) 16,000 Bore size 60 Subsequent inspections 2) 32,000	Bore sizes 50-35 DuraSpindle exhaust valve 50,000 Bore size 60 DuraSpindle or Nimonic exhaust valve 100,000 To be obtained for DuraSpindle and Nimonic valve with reconditioning of seat and possible re-welding of disk underside	Normally, HVOF coated stems need no reconditioning. Usually only light grinding of seats is required at subsequent inspections. 1) Condition check Inspection of air spring according to instruction manual. Two or three valves to be inspected. 2) Subsequent inspection Condition check + possible complete overhaul. Max burn off rate of spindle disc underside to be estimated and calculated for lifetime of spindle. All valves to be inspected.
Main hydraulic pump	32,000	Engine lifetime	Check and replace hydrostatic bearings at overhaul. Check and replace cylinder set and piston if required.
Proportional valve for main hydraulic pump		20,000	Replace valve after 20,000 hours
Pressure relief valve for main hydraulic pumps	40,000	Engine lifetime	Replace sealings at overhaul
Exhaust valve actuator	32,000	Engine lifetime	Replace static sealing rings at overhaul.
ELFI valve	32,000	64,000	Check and replace if required
Fuel valve	8,000 - depending on fuel quality	Valve nozzle 16,000 Spindle guide 16,000	Check and replace if required
Fuel oil pressure booster	32,000 - based on engine observations	64,000 Replace or recondition	Change piston rings on hydraulic piston and suction valve at overhaul.

ME-B engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Cylinder cover		96,000	Check for burned grooves at fuel valve nozzle holes. Weld-up if required, up to 2-3 times during service life.
Starting valve	12,000	Engine lifetime	
Cylinder lubricator	24,000	Engine lifetime	Check timing and adjustment
Crosshead bearings Main bearings Crank bearings Thrust bearings	Check clearances and crankshaft deflection: once a year. Check bearing edges by wire gauges: once a year	64,000 96,000 96,000 96,000	Do not open bearings unless bearing material fragments fall out or other bearing inspection measures indicate so.
Tie rods including bracing screws	Tighten rods and screws: once a year	Engine lifetime	
Holding down bolts	Tighten: once a year	Engine lifetime	
Turbocharger	According to manufacturer's recommendations.	According to manufacturer's recommendations.	According to manufacturer's recommendations.
Air cooler(s)	Cleaning: based on engine observations	45,000 or according to manufacturer's recommendations.	Clean before differential pressure has increased 50% compared to sea trial value.
Flaps and butterfly valves in scavenge air receiver	Check movement at every scavenge port inspection.	Engine lifetime	
Various fuel and lubricating oil filters	Cleaning: based on engine observations		
Lubricating oil bottom tank	Cleaning: 32,000		Typically done at 5 years docking
Chains	Retighten chains: 3,000-4,000 - every six months	96,000	New or overhauled chains to be checked/retightened after 500, 1,500 hours.
Accumulators on HPS and HCU	N2 pressure 3,000 Rubber membranes: 32,000	Engine lifetime	Replace membranes after 5 years
Hydraulic hoses		32,000	Replace after 5 years
Angle encoder	Visual inspection: 6,000	64,000	Replace if failing
Marker sensor	Visual inspection: 6,000	64,000	Replace if failing
MPC, MOP A, MOP B	Visual inspection: 6,000	64,000	Replace if failing
Cables	Visual inspection: 6,000	96,000	Replace if failing

ME/ME-C engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Cylinder liner	Bore sizes 98-80 24,000 Bore sizes 70-50 16,000	Bore sizes 98-90 80,000 80-65 70,000 60-50 60,000	Check the overall cylinder condition through the scavenge ports at least once a month.
Piston rings	Bore sizes 98-80 24,000 Bore sizes 70-50 16,000	Bore sizes 98-80 24,000 Bore sizes 70-50 16,000	
Piston crown	Bore sizes 98-90 24,000 Bore sizes 70-50 16,000	Bore sizes 98-90 80,000 80-65 70,000 60-50 60,000	Pressure test at every 2nd piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
Stuffing box	Bore sizes 98-80 24,000 70-50 16,000 Check lamellas	32,000 32,000 Renew lamellas	
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and air spring: Bore sizes 98-50 First inspection 1) 6,000 Bore sizes 98-50 Subsequent inspections 2) 32,000	Bore sizes 98-60 Nimonic exhaust valve 100,000 To be obtained for Nimonic valve with reconditioning of seat and possible re-welding of disk underside	Normally, HVOF coated stems need no reconditioning. Usually only light grinding of seats is required at subsequent inspections. 1) Condition check Inspection of air spring according to instruction manual. Two or three valves to be inspected. 2) Subseq. Inspection Condition check + possible complete overhaul. Max burn off rate of spindle disc underside to be estimated and calculated for lifetime of spindle. All valves to be inspected.
Main hydraulic pump	32,000	Engine lifetime	Check and replace hydrostatic bearings at overhaul. Check and replace cylinder set and piston if required.
Proportional valve for main hydraulic pump		20,000	Replace valve after 20,000 hours
Pressure relief valve for main hydraulic pumps	40,000	Engine lifetime	Replace sealings at overhaul
Exhaust valve actuator	32,000	Engine lifetime	Replace static sealing rings at overhaul.
FIVA valve	32,000	64,000	Check and replace if required
Fuel valve	8,000 - depending on fuel quality	Valve nozzle 16,000 Spindle guide 16,000	Check and replace if required
Fuel oil pressure booster	32,000 - based on engine observations	64,000 Replace or recondition	Change piston rings on hydraulic piston and suction valve at overhaul.

ME/ME-C engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Cylinder cover		96,000	Check for burned grooves at fuel valve nozzle holes. Weld-up if required, up to 2-3 times during service life.
Starting valve	12,000	Engine lifetime	
Cylinder lubricator	24,000	Engine lifetime	Check timing and adjustment
Crosshead bearings Main bearings Crank bearings Thrust bearings	Check clearances and crankshaft deflection: once a year. Check bearing edges by wire gauges: once a year	64,000 96,000 96,000 96,000	Do not open bearings unless bearing material fragments fall out or other bearing inspection measures indicate so.
Tie rods including bracing screws	Tighten rods and screws: once a year	Engine lifetime	
Holding down bolts	Tighten: once a year	Engine lifetime	
Turbocharger	According to manufacturer's recommendations.	According to manufacturer's recommendations.	According to manufacturer's recommendations.
Air cooler(s)	Cleaning: based on engine observations	45,000 or according to manufacturer's recommendations	Clean before differential pressure has increased 50% compared to sea trial value.
Flaps and butterfly valves in scavenge air receiver	Check movement at every scavenge port inspection	Engine lifetime	
Various fuel and lubricating oil filters	Cleaning: based on engine observations		
Lubricating oil bottom tank	Cleaning: 32,000		Typically done at 5 years docking
Chains	Retighten chains: 3,000-4,000 - every six months	96,000	New or overhauled chains to be checked/retightened after 500, 1,500 hours.
Gear wheel drive for hydraulic pumps	First inspection: 500 Subsequent inspections: 6,000	Gear wheel: Engine lifetime Gear wheel bearings: 96,000	
Accumulators on HPS and HCU	N2 pressure: 3,000 Rubber membranes: 32,000	Engine lifetime	Replace membranes after 5 years
Hydraulic hoses		32,000	Replace after 5 years
MPC, MOP A, MOP B	Visual inspection: 6,000	64,000	Replace if failing
CCU and ACU amplifiers	Visual inspection: 6,000	64,000	Replace if failing
LVDT and LDI hydraulic pump amplifiers	Visual inspection: 6,000	64,000	Replace if failing
Fuel booster sensor	Visual inspection: 6,000	64,000	Replace if failing
Exhaust valve sensor	Visual inspection: 6,000	64,000	Replace if failing
Angle encoder	Visual inspection: 6,000	64,000	Replace if failing
Marker sensor	Visual inspection: 6,000	64,000	Replace if failing
Cables	Visual inspection: 6,000	96,000	

MC/MC-C engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Cylinder liner	Bore sizes 98-50 16,000 46-26 12,000	Bore sizes 98-90 80,000 80-70 70,000 60-50 60,000 46-35 50,000 26 40,000	Check the overall cylinder condition through the scavenge ports at least once a month.
Piston rings	Bore sizes 98-50 16,000 46-26 12,000	Bore sizes 98-50 16,000 46-26 12,000	
Piston crown	Bore sizes 98-50 16,000 46-26 12,000	Bore sizes 98-90 80,000 80-70 70,000 60-50 60,000 46-35 50,000 26 40,000	Pressure test at every 2nd piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
Stuffing box	Bore sizes 98-50 16,000 46-26 12,000 Check lamellas	Bore sizes 98-50 32,000 46-26 24,000 Renew lamellas	
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and air spring: Bore sizes 98-35 First inspection 1) 6,000 Bore sizes 50-35 Subsequent inspections 2) 16,000 Bore sizes 98-60 Subsequent inspections 2) 32,000	Bore sizes 50-35 DuraSpindle exhaust valve 50,000 Bore size 60 DuraSpindle or Nimonic exhaust valve 100,000 To be obtained for DuraSpindle and Nimonic valve with reconditioning of seat and possible re-welding of disk underside.	Normally, HVOF coated stems need no reconditioning. Usually only light grinding of seats is required at subsequent inspections. 1) Condition check Inspection of air spring according to instruction manual. Two or three valves to be inspected. 2) Subsequent inspection Condition check + possible complete overhaul. Max burn off rate of spindle disc underside to be estimated and calculated for lifetime of spindle. All valves to be inspected.
Actuator gear	Hydraulic system 32,000	64,000	
Fuel valve	8,000 - depending on fuel quality	Valve nozzle 16,000 Spindle guide 16,000	Check and replace if required
Fuel pump plunger and barrel, suction valve, puncture valve and shock absorber	16,000 - based on engine observations 8,000 For suction valve and puncture valve	Renew or recondition: 40,000	Change sealing rings on barrel, plunger, puncture valve and suction valve.
Cylinder cover		96,000	Check for burned grooves at fuel valve nozzle holes. Weld-up if required, up to 2-3 times during service life.
Starting valve, safety valve and indicator cock	12,000	Engine lifetime	

MC/MC-C engines
Guiding overhaul intervals and expected service life

Component	Overhaul interval (hours)	Expected service life (hours)	Remarks
Alpha Lubricator	Check/ Refill accumulators 8,000 Overhaul lubricators 32,000	Engine lifetime	
Crosshead bearings Main bearings Crank bearings Thrust bearings	Check clearances and crankshaft deflection: once a year. Check bearing edges by wire gauges: once a year	64,000 96,000 96,000 96,000	Do not open bearings unless bearing material fragments fall out or other bearing inspection measures indicate so.
Roller guide for fuel pump and exhaust valve	Check condition in situ: 1,500	Engine lifetime	Check running surfaces and free rotation of roller.
Chains	Tighten chains: 3,000-4,000 - every six months	96,000	New or overhauled chains to be checked/retightened after 500, 1,500 hours.
Chain wheels and rubber guide bars	Visual inspection: 3,000-4,000	Chain wheels: 96,000 Guide bars: 32,000	First inspections and retightenings after 500, 1,000 and 1,500 hours in total service.
Reversing and regulating gear	Check moving parts: 3,000-4,000	Engine lifetime	Pneumatic/hydraulic governor: Oil change every 4,000 hours.
Tie rods including bracing screws	Tighten rods and screws: once a year	Engine lifetime	
Holding down bolts	Tighten: once a year	Engine lifetime	
Turbocharger	According to manufacturer's recommendations.	According to manufacturer's recommendations.	According to manufacturer's recommendations.
Air cooler(s)	Cleaning: based on engine observations	45,000	Clean before differential pressure has increased 50% compared to sea trial value.
Flaps and butterfly valves in scavenge air receiver	Check movement at every scavenge port inspection.	Engine lifetime.	
Various fuel and lubricating oil filters. Camshaft filters and TCS filters, if any	Cleaning: based on engine observations		
Lubricating oil bottom tank	Cleaning: 32,000		Typically done at 5 years docking