

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](mailto:leo@mandiesel.com) or to our Service Department at [PrimeServ-cph@mandiesel.com](mailto:PrimeServ-cph@mandiesel.com).

Yours faithfully

  
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Overhaul of cylinder unit on large bore engine

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<b>ME-B engines</b>					
<b>Guiding overhaul intervals and expected service life</b>					
<b>Component</b>	<b>Overhaul interval (hours)</b>		<b>Expected service life (hours)</b>		<b>Remarks</b>
Cylinder liner	Bore sizes		Bore sizes		Check the overall cylinder condition through the scavenge ports at least once a month.
	60-50	16,000	60-46	60,000	
	46-35	12,000	40-35	50,000	
Piston rings	Bore sizes		Bore sizes		
	60-50	16,000	60-35	16,000	
	46-35	12,000			
Piston crown	Bore sizes		Bore sizes		Pressure test at every 2 <sup>nd</sup> piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
	60-50	16,000	60-46	60,000	
	46-35	12,000	40-35	50,000	
Stuffing box	Bore sizes		Bore sizes		
	60-50	16,000	60-50	32,000	
	46-35	12,000	46-35	24,000	
	Check lamellas		Renew lamellas		
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and air spring:		Bore sizes		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.
	Bore sizes		50-35		
	60-35		DuraSpindle exhaust valve 50,000		
	First inspection 1)	6,000	Bore size 60		
Bore sizes		DuraSpindle or		100,000	
50-35		Nimonic exhaust valve			
Subsequent inspections 2)		16,000			
Bore size		60			
Subsequent inspections 2)		32,000			
		To be obtained for DuraSpindle and Nimonic valve with reconditioning of seat and possible re-welding of disk underside			
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	Valve nozzle 16,000		Check and replace if required
	- depending on fuel quality		Spindle guide 16,000		
Fuel oil pressure booster		32,000	64,000		Change piston rings on hydraulic piston and suction valve at overhaul.
- based on engine observations		Replace or recondition			



## 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 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.
	Bore sizes 70-50 16,000		
Piston rings	Bore sizes 98-80 24,000	Bore sizes 98-80 24,000	
	Bore sizes 70-50 16,000	Bore sizes 70-50 16,000	
Piston crown	Bore sizes 98-90 24,000	Bore sizes 98-90 80,000 80-65 70,000 60-50 60,000	Pressure test at every 2 <sup>nd</sup> piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
	Bore sizes 70-50 16,000		
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 98-60 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.
	Bore sizes 98-50 Subsequent inspections 2) 32,000		
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	Check and replace if required
		Spindle guide 16,000	
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	Check clearances and crankshaft deflection: once a year. Check bearing edges by wire gauges: once a year	64,000	Do not open bearings unless bearing material fragments fall out or other bearing inspection measures indicate so.
Main bearings		96,000	
Crank bearings		96,000	
Thrust bearings		96,000	
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 46-26	16,000	Check the overall cylinder condition through the scavenge ports at least once a month.
		80,000	
		70,000	
		60,000	
		50,000	
		40,000	
Piston rings	Bore sizes 98-50 46-26	16,000	
		12,000	
		12,000	
Piston crown	Bore sizes 98-50 46-26	16,000	Pressure test at every 2 <sup>nd</sup> piston overhaul, recondition/rechrome when required (typically every 24-32,000 hours). Piston crown can be reconditioned by welding-up twice.
		12,000	
		80,000	
		70,000	
		60,000	
		40,000	
Stuffing box	Bore sizes 98-50 46-26	16,000	
		12,000	
		32,000	
		24,000	
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and air spring:  Bore sizes 98-35 First inspection 1)  Bore sizes 50-35 Subsequent inspections 2)  Bore sizes 98-60 Subsequent inspections 2)	6,000	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.
		16,000	
		50,000	
		100,000	
Actuator gear	Hydraulic system 32,000	64,000	
Fuel valve	8,000 - depending on fuel quality	16,000	Check and replace if required
		16,000	
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	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