Dear Sirs

Based on the latest service experience and experience with condition based overhaul (CBO), we are pleased to issue a revised version of our Guiding Overhaul Intervals table. The guiding overhaul intervals apply to MC-S types.

However, experience and feedback from various power plants indicate that time between overhaul (TBO) is more frequently used rather than CBO due to generally limited downtime.

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

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

Yours faithfully

lihar Jehras

Mikael C Jensen Vice President, Engineering

Stig B Jakobsen Senior Manager, Operation

Action code: WHEN CONVENIENT

Guiding Overhaul Intervals Updated Tables

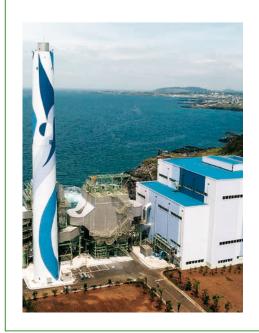
SL10-533/TBO May 2010

Concerns

Owners and operators of B&W two-stroke stationary diesel engines.

Types: K98MC-S K60MC-S K90MC-S K80MC-S





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MC-S engines Guiding overhaul intervals and expected service life

Component	Overhaul interval	(hours)	Expected service life	(hours)	Remarks
Cylinder liner	Bore sizes 98-50 35	8,000-16,000 8,000-12,000	Bore sizes 98-90 80 60-50 35	70,000 60,000 50,000 50,000	Sludge cleaning min. every 1,000 hrs. Max. internal wear: 0.4-0.8% of nominal cylinder liner diameter.
Piston rings	Bore sizes 98-50 35	8,000-16,000 8,000-12,000	Bore sizes 98-50 35	16,000 12,000	
Piston crown	Bore sizes 98-50 35	8,000-16,000 8,000-12,000	Bore sizes 98-90 80 60-50 35	70,000 60,000 50,000 50,000	Pressure test at every 2 nd piston overhaul, recondition/rechrome when required (typically every 16-24,000 hours). Piston crown can be recondi- tioned by welding-up twice.
Stuffing box	Bore sizes 98-50 35	8,000-16,000 8,000-12,000 Check lamellas	Bore sizes 98-50 35 Rene	32,000 24,000 ew lamellas	Lamellas renewed after 8-16,000 hrs. Generally performed during pis- ton overhaul. However, special tools are supplied for internal engine over- haul without withdrawal of piston.
Exhaust valve spindle and bottom piece (cage)	Inspection of seat and Bore sizes 98-35 First inspection 1) Bore sizes 50-35 Subsequent inspection Bore sizes 98-60 Subsequent inspection	8,000 ns 2) 16,000	Bore sizes 50-35 DuraSpindle exhaust valve Bore size 98-60 DuraSpindle or Nimonic exhaust valve To be obtained for DuraSpin Nimonic valve with recondi seat and possible re-weldir underside.	tioning of	 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 Bio fuel (TAN >6)	- depending	8,000 g on fuel quality	Valve nozzle (12,000) Spindle guide (12,000)	16,000 16,000	Check and replace if required
Fuel pump plunger and barrel, suction valve, puncture valve and shock absorber	- based on engine observations 8,000		Renew or recondition: Bio fuel (TAN >6)	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 and indicator cock		12,000	Engine lifetime		

MC-S engines Guiding overhaul intervals and expected service life							
Component	Overhaul interval (hours)	Expected service life (hours)	Remarks				
Alpha Lubricator	Check/ Refill accumulators8,000Overhaul lubricators32,000	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 ro- tation 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 rub- ber guide bars	Visual inspection: 3,000-4,000	Chain wheels:96,000Guide bars:32,000	First inspections and retightenings after 500, 1,000 and 1,500 hours in total service.				
Regulating gear	Check moving parts: 3,000-4,000	Engine lifetime	Pneumatic/hydraulic governor: Oil change every 4,000 hours.				
Tie rods including brac- ing 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) 1st stage 2nd stage	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 lubri- cating oil filters. Camshaft filters and TCS filters, if any	Cleaning: based on engine observations						
Lubricating oil bottom tank	Cleaning: 32,000		Typically done every four years dur- ing major overhaul.				