



PrimeServ Piraeus

Technical Service Team
Dry-dock of ME engines



MAN PrimeServ



Introduction

PrimeServ Piraeus Technical Service Team

We welcome you to the MAN family: We want you to perform your engine at its best. As OEM, it is our highest aim to always find the best solution for more availability, safety and efficiency. To ensure that, PrimeServ Piraeus offers a lot of high quality products and services. Furthermore, we always want to be close to you: With this useful booklet, we want to be by your side and show you our services regarding the Dry-Docks of ME-C and ME-B engines.

MAN Energy Solutions can provide you with the knowledge and expertise needed on all engine types, designs and licensees. The dry-docking guide gives valuable input to the execution of your 5-year plan.

MAN Energy Solutions is acknowledged worldwide as the engine designer of choice for bulk carriers, tankers and container vessels of all capacities and sizes. Our customers value the longevity, reliability and high quality of our low-speed engine designs. The Technical Service team located in Piraeus is available to support you with technical assistance on all aspects of your engine's performance.

Save MAN resources and time:

By letting MAN PrimeServ Piraeus perform your dry-dock, you save a significant on-board work load and delegate responsibility to MAN Energy Solutions to ensure your engine's performance optimization.

Service jobs for Main Engines (ME-C and ME-B) during dry-dock

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Maintenance of Hydraulic Cylinder Unit (HCU)

All-important components

Description

Fuel oil pressure booster overhaul

- Cleaning
- Renewal of seals
- Suction valves and throttle valves inspection and replacement - if necessary
- Plungers and Top Cover renewal if necessary
- Drain position's check (action to be performed during trials)

Exhaust valve actuators overhaul

- Cleaning
- Renewal of seals
- Testing of non-return valves
- Inspection of all sliding surfaces

ELFI /FIVA valve on-board overhaul

- Cleaning
- Renewal of seals
- Evaluation of condition for all sliding surfaces using endoscopic camera
- Endoscopic inspection of the proportional valve (replacement as per running hours)
- Cabling inspection and correction as per MAN recommendations
- Jiggling inspection through HCU events log
- Function test of HCU, both for fuel injection and exhaust valve operation
- Calibration of feedback sensor - if necessary

Accumulators' overhaul

- Inspection of thread, membrane and relevant sealing ring replacement
- Nitrogen pressure check and adjustment
- Charging with Nitrogen - if necessary

Lubricators' overhaul

- Cleaning
- Mechanical and electrical inspections
- Renewal of Solenoid valves, O-rings, sealing rings, non-return valves and feedback sensors
- Inspection of Lubricating quills injection - Verification of Cylinder Lubricators proper operation through scavenge space for each cylinder
- Check of cylinder lubrication slow down function
- Evaluation of running surfaces of internal parts (plungers, actuating piston etc.)

Benefits – Targets

- Maintain your engine's reliability
- Our experienced engineers are able to carry out a complete evaluation of your engine's HCU with a minimum expenditure of time
- The check-up will provide you with detailed results about the operation of each component of your engine's HCU
- End-up with targeted recommendations



Hydraulic Cylinder Unit (HCU)

Maintenance of Hydraulic Power Supply (HPS)

The driving power of your engine

Description

- Replacement of proportional valves (@20.000hrs)
- Replacement of high pressure flexible hoses (@32.000hrs)
- Accumulators' overhaul
- Engine driven pumps' function test and calibration of swash plate feedback sensor
- Operational inspection of system's pressure relief valves
- Adjustment of start-up pumps' pressure relief valves - if necessary
- Testing of hydraulic pressure build-up time
- Trace and rectification of any possible leaks
- Checking of Startup pump's remote / manual operation mode

Benefits – Targets

- Optimizes the operation of your HPS- the driving power of your engine
- Ensures proper and trouble free operation of all the hydraulic system of ME Engines according to MAN specifications
- Hydraulic system's integrity



Hydraulic Power Supply (HPS)

Engine Control System (ECS) Inspection

Taking care of your engine's brain

Description

- Visual inspection of the cabling
- Inspection of MPC cabinets and their proper isolation from the external environment
- Inspection of junction boxes and their proper isolation from the external environment
- Inspection of power distributor channel
- Inspection of Local Operation Panel
- Inspection of Auxiliary Blower remote functionality
- Inspection of PMI system
- Inspection of Tacho and amplifiers' cabling and termination
- Inspection of start-up pumps' remote functionality

Benefits – Targets

- It is essential for an ME-C/ME-B engine that all cabling & electronic components are inspected in order to ensure safe operation of the vessel. The engine, which is electronically controlled, consists of lots of equipment and network cables and communicates huge amount of control data signals
- Sensitivity of electronic components requires thorough inspection, care and maintenance. It is recommended that all boxes and cabinets of electronic components are properly sealed from the external environment, preventing dust and humidity from affecting the proper operation of electronics
- Secure engine's proper operation and avoidance of electrical/electronic related alarms



Multi Purpose Controller (MPC)



Chain Drive Inspection

Reliable and safe engine operation

Description

- Chain drive visually inspected
- Inspection of chain condition
- Check of rollers freely movement
- Inspection of gear case
- Inspection of all sprockets and gears, measurements to be taken - if necessary
- Inspection of guide bars
- Check of tightening
- Check of oil injectors
- Measurement of chain's length
- Inspection of step-up gear

Benefits – Targets

- Overall inspection and evaluation of the chain drive system
- Recommendations according to MAN guidelines and your engine's specific data



Chain

Safety system, UPS and Tacho System Inspection

Optimizing engine performance

Inspection and function test of safety system

Description

- Testing of slow down and shut down alarms

Inspection of UPS system and insulation

Description

- Check of insulation level in between UPS and Ship's ground
- Handling of low insulation and electrical noise issues and rectification of any abnormalities – where possible

Maintenance and Inspection of Tacho System

Description

- Check Encoders Adjustment, verifying the proper triggering angle at 0°, 45°, 90°, 135°, visually and through Tacho Function Test while turning the engine with the turning gear
- Inspection of Reference Sensor at the flywheel and clearance measurement
- Inspection of working condition of both amplifier boxes, amplifier test
- General inspection of the Tacho system for loose bolts and screws
- Preparation of ready to plug MSA back-up signal



Angle encoder

Benefits – Targets

- Optimized timing of your engine with significant results in performance and consumption
- Recommendations and guidelines passed to the crew for proper arrangement and adjustment of the Tacho system for future use and reference
- Secure proper operation of UPS system and insulation

Sea Trials

We are with you

Check the engine condition prior to start:

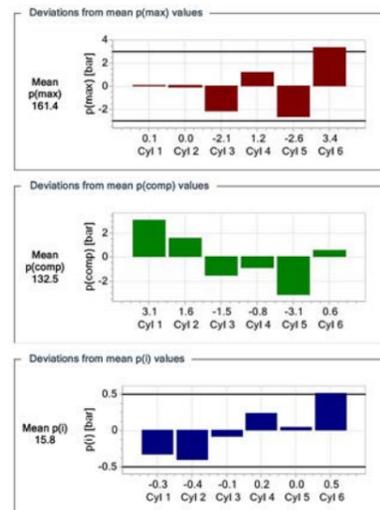
- Starting test in Local, ECR and Bridge including slow turn and air run function
- Monitoring of all signal values in CoCoS-EDS program
- Adjustment of fuel quality offset
- Tacho Function Test
- Adjustments on/through PMI - if necessary

Start the engine:

- TDC calibration (requires extensive running of M/E above 50% MCR Load)
- Balancing of the engine, performance adjustments
- Test on different loads and performance evaluation

Benefits – Targets

- Optimized engine setting will result in reduced operating costs, better performance, more efficient operation
- Guidelines passed to the crew for proper balancing of the engine
- Cylinder lubrication recommendations according to MAN Service Letters



Sea trials, Performance adjustments and evaluation



Service report:

Upon finalization of dry-dock project, a comprehensive report of the jobs carried out is provided, including recommendations based on large service experience of MAN. The final report is an objective and documented analysis giving you the actual picture of the engine and its condition. The report explains any issues and, where required, recommends possible improvements and spare parts.



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