MAN Energy Solutions
PrimeServ Omnicare

Pre-inspection report MET axial turbocharger

Valid for all axial MET turbochargers (MET-SC/SD/SE/SEII/MA/MB)

Ship / Plant

IMO number:

Customer name:

Engine type:

TC type:

Engine serial no.:

TC serial no.:

Operating hours:

Classification:

Date commision:

Background of pre-inspection before dry-docking or a major overhaul

MET axial turbochargers are usually operated in such a way that major overhaul services are carried out during the vessels' dry-docking period.
Unfortunately, it happens too often that during the major overhaul unexpected damages or wear on parts which are exposed to exhaust gases are discovered, e.g. turbine blades, nozzle and gas outlet guide.
As those spare parts are not contained in the major overhaul kit C1 & C2, this may lead to prolonged delivery times, un-budgeted costs as well as delays in dry-dock.

To avoid such unexpected findings and possible delays, we recommend a pre-inspection of the turbocharger turbine side 4-3 months ahead of the scheduled dry-docking or the major overhaul.

This inspection can be offered by PrimeServ Omnicare and their MET-authorized workshops (ARA).
However, it can also be carried out by the vessels' crew.

For this reason, PrimeServ Omnicare has prepared an inspection report which guides through the required inspections and measurements.
As a service to our customers, PS Omnicare will evaluate the returned reports for inspection carried out by the crew.
Based on the findings we will endorse the condition as well as provide recommendations for the period to the scheduled dry-docking, respectively major overhaul.
Furthermore, based on the report, an offer for the correct quantity of the required spare parts can be made and the delivery will take place well before the dry-docking.

The following information is required for the evaluation

1. Several high-resolution photographs of turbocharger condition on turbine side
2. Status of contamination, e.g. oil, soot, carbon
3. Condition of turbine blades, e.g. damages, wear
4. Condition of nozzle vanes, e.g. damages, wear, cracks
5. High-resolution photograph of turbocharger serial number plate
6. Total running hours of main engine TC
7. Mention if any previous overhauls or repairs have been done on the turbocharger

Photograph of TC serial number plate

Major overhaul schedule

Turbocharger frame size	33-42	48-53	60-71	83-90
Service Interval	20-25K	22-27K	25-30K	30-35K

Example photographs of worn or damaged parts

Damaged nozzle vanes

Reduced thickness or area of nozzle vanes

Damaged turbine blades

Worn turbine blade tips

Worn gas outlet guide

Work sequence

The inspection must include the following components:

- Turbine blades (part 61)
- Nozzle (part 22)
- Gas outlet guide (part 23)
- Clearance "L"
- Thrust clearance "H"
- Wear "B"

1. **Dismantling of the gas inlet inner casing (part no. 26)**
   ! Refer to the Instruction Manual "Section 4 Disassembly and Re-assembly".
   The section number may change by turbocharger type or version of manual. Please always check the specific on-board manual!

2. **Safely rest the gas inlet inner casing with nozzle in order to have good access for inspection and photographs.**

Once the gas inlet inner casing is removed from the turbocharger, the nozzle, turbine blades and gas outlet guide are easy to inspect.

3. Take high resolution photographs of different position of the nozzle and upload below in the apropriate field.

Nozzle total view

Nozzle top view

Nozzle port view

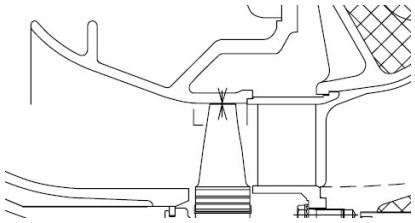
Nozzle bottom view

Nozzle starboard view

Nozzle additional view

4. Measure the clearance “L” between the tips of the turbine blades and gas outlet guide with feeler gauges at four positions.

Clearance "L" in mm



! Refer to the Instruction Manual "Section 6 Attached Diagrams and Tables" and "Section 5 Parts Inspection and Cleaning"
The section number may change by turbocharger type or version of manual. Please always check the specific on-board manual!

Top

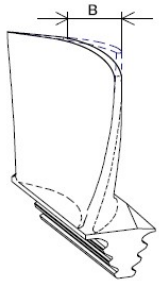
Starboard

Bottom

Port

5. Measure the turbine blade wear "B" at four positions.

Blade wear "B" in mm



! Refer to the Instruction Manual ""Section 5 Parts Inspection and Cleaning"
The section number may change by turbocharger type or version of manual. Please always check the specific on-board manual!

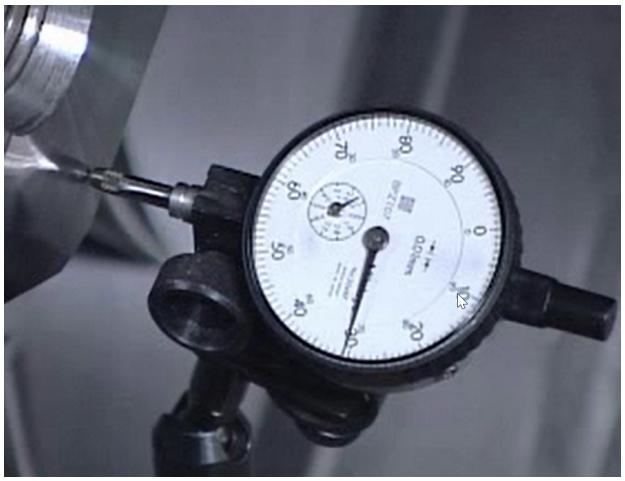
Top

Starboard

Bottom

Port

6. Measure the trust bearing clearance "H"



To take a correct measurement give the rotor at least ten turns to ensure that the thrust bearing is not full of lube oil.
Attach the dial gauge axial to the turbine disc.
! Refer to the Instruction Manual "Section 4 Disassembly and Re-assembly".
The section number may change by turbocharger type or version of manual. Please always check the specific on-board manual!

Thrust bearing clearance "H" in mm

7. Take high-resolution photographs of different positions of the turbine wheel, turbine blades and gas outlet guide and upload into the appropriate field below

Turbine blade total view

Turbine blade top view

Turbine blade port view

Turbine blade starboard view

Turbine blade bottom view

8. Installing of gas inlet inner casing (part no. 26) together with nozzle (part no. 22)

! Refer to the Instruction Manual "Section 4 Disassembly and Re-assembly".
The section number may change by turbocharger type or version of manual. Please always check the specific on-board manual!

Date:

Signature:

Rank: