

# **RULES FOR PREVENTIVE MACHINERY MAINTENANCE SYSTEMS**

**Rules for Preventive Machinery Maintenance Systems**

**2015 AMENDMENT NO.1**

Rule No.32      8th May 2015

Resolved by Technical Committee on 2nd February 2015

Approved by Board of Directors on 23rd February 2015

Rule No.32 8th May 2015

# AMENDMENT TO THE RULES FOR PREVENTIVE MACHINERY MAINTENANCE SYSTEMS

“Rules for preventive machinery maintenance systems” has been partly amended as follows:

## Chapter 3 PREVENTIVE MACHINERY MAINTENANCE SYSTEMS

Table 3.1 has been amended as follows.

Table 3.1 Main Propulsion Diesel Engines (and Gearing)

Monitored Variables	Remarks
Temperature	
Cylinder cooling water outlets for each cylinder	<u>cooling water common outlets for cylinders when individual stop valves are not provided for each cylinder.</u>
Piston <del>cooling water/oil</del> coolant outlets for each cylinder	<u>for crosshead engines.</u>
Fuel valve <del>cooling water/oil</del> coolant outlets	
L.O. inlets	
<u>L.O. camshaft inlets</u>	<u>for crosshead engines with independent L.O. systems.</u>
Thrust bearings or L.O. <u>thrust bearing</u> outlets	<u>for engines with thrust bearings.</u>
<u>L.O. turbocharger bearing outlets</u>	<u>when it is not possible to measure the relevant temperature, continuous monitoring of inlet pressures and inlet temperatures in combination with bearing inspections conducted at specified intervals deemed appropriate by Society, etc. may be accepted as an alternative measure.</u>
<del>L.O. r</del> Reduction gear <del>L.O.</del> inlets	<del>Not required in cases where L.O. systems are integrated with propulsion engine L.O. systems</del> <u>for engines with independent L.O. systems.</u>
F.O. injection pump inlets	or viscosity, applicable in cases where viscosity control of F.O. is performed
Exhaust gas outlets for each cylinder, <del>or average temperature deviations of each cylinder</del>	<u>not required for trunk piston engines of max. continuous power not exceeding 500kW/cylinder</u>
<u>Exhaust gas deviation for cylinder outlets</u>	
<u>Exhaust gas in turbocharger inlets</u>	
<u>Exhaust gas in turbocharger outlets</u>	
<u>Air in Scavenge air boxes</u>	<del>applicable to two cycle engines</del> <u>for crosshead engines (fire sensors may be accepted as an alternative)</u>
Air cooler air outlets	applicable when automatic temperature control devices are provided
Pressure	
Cylinder cooling water inlets	<del>or flow</del>
Piston <del>cooling water</del> coolant inlets	<del>or flow</del> <u>for crosshead engines</u>
Fuel valve <del>cooling water/oil</del> coolant inlets	<del>or flow</del>
<del>Piston cooling oil inlets</del>	<del>or flow; however, not required in cases where L.O. systems are integrated with propulsion engine L.O. systems</del>
<u>L.O. main bearing and thrust bearing inlets</u>	
<u>L.O. crosshead bearing inlets</u>	<u>for crosshead engines with independent L.O. systems</u>
<u>L.O. camshaft inlets</u>	
Pressure differences between L.O. strainer inlets and outlets	

<del>Turboblower</del> L.O. turbocharger inlets	<del>Not required in cases where L.O. systems are integrated with propulsion engine L.O. systems</del> for independent L.O. systems
<del>Reduction gear</del> L.O. <u>reduction gear</u> inlets	
F.O. injection pump inlets	
<u>Common accumulator fuel oil pressure</u>	for electronically-controlled diesel engines (only when they have common accumulators)
<u>Common accumulators or high pressure pipe hydraulic oil pressure</u>	for electronically-controlled diesel engines
Starting air engine inlets	Not required in cases where indicators are provided to show whether intermediate valves or automatic starting valves are open or closed
Cooling sea water	<del>or flow</del>
<u>Low temperature cooling water</u>	when central cooling systems are adopted
	Others
<u>Oily contamination of cylinder cooling water</u>	when cylinder cooling water is used in F.O. or L.O. heat exchangers
<u>Piston coolant flow rate for cylinder outlets</u>	for crosshead engines Non-flows may be accepted. Other alternative means may be accepted when it is impracticable to monitor piston coolant flows due to engine design.
Flow in each cylinder lubricator outlet	non-flows may be accepted
<u>Scavenge air receiver water levels</u>	alternative means may be accepted
Oil mist concentrations in crankcases	or bearing temperatures; however, not required for engines with maximum continuous outputs less than 2,250kW and cylinder diameters of 300mm or less

Table 3.2 has been amended as follows.

Table 3.2 Main Propulsion Turbines (and gearing condensers)

Monitored Variables	Remarks
Temperature	
L.O. inlets	
Rotor bearings or L.O. outlets	
Rotor thrust bearings or L.O. outlets	
Reduction gear bearings or L.O. outlets	
Thrust bearings or L.O. outlets	
Pressure	
L.O. inlets	
Main condenser vacuums	
Gland steam	
Cooling sea water	or flow
Others	
Levels in main condensers	Applied in cases where main condensers are situated on the same horizontal plane as turbines
Rotor vibrations or casing vibrations	sensors for safety systems may be used
Rotor axial displacements	

Table 3.3 has been amended as follows.

Table 3.3 Prime Movers Driving Generators

Monitored Variables	Remarks
Diesel engines for generators	
Temperature	
L.O. inlets	
Cooling water or air outlets	<del>or cooling water inlet pressures (or flow)</del>
Exhaust gas for each turboblower inlet or each cylinder outlet	Required for each cylinder outlet for engines with max. continuous power exceeding 500kW/cylinder
F.O. injection pump inlets	or viscosity, applied in cases where viscosity control of F.O. is performed
Pressure	
L.O. inlets	
<u>Common accumulators fuel oil pressure</u>	<u>for electronically-controlled diesel engines (only when they have common accumulators)</u>
<u>Common accumulators or high pressure pipe hydraulic oil pressure</u>	<u>for electronically-controlled diesel engines</u>
Cooling water inlets	or flow, or high temperature of cooling water outlets
<u>Starting air</u>	
Other	
Oil mist concentrations in crankcases	or bearing temperatures; however, not required for engines with maximum continuous outputs less than 2,250kW and cylinder diameters of 300mm or less
Steam turbines for generators	
Temperature	
L.O. inlets	
Pressure	
L.O. inlets	
Steam inlets	In the cases of steam turbine ships, applied in cases where extracted steam is used
Exhaust steam	

#### EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 8 May 2015.
2. Notwithstanding the amendments to the Rules, the current requirements may apply to preventive machinery maintenance systems whose application for installations registration is submitted to the Society before the effective date.