



**Grindrod Ship Management, a division of Grindrod Shipping Pte. Ltd.**

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To : As per distribution list

Our Ref : HSEQ

From : Technical

Date : 20 October 2020

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**MAN ME-B9 Electronic Main Engines Mark 9 and above  
MAN MC-C Main Engines Mark 8 and below  
Main Engine Running in, Inspections, Oil Sampling/consumption**

Dear Chief Engineer

In light of the recent engine component failures, we have enhanced our approach to meet the challenges faced by the varying quality of VLSFO supplied around the world.

To mitigate the problem of premature wear on liners, pistons and ring packs caused by the lack of lubricity and the corrosive tendency of these fuels, we have adopted enhanced measures to monitor the condition of the engine components.

The collated information collected will help us to make informed decisions based on actual condition and trends that we observe, to prevent premature failures. All matters pertaining to Main Engine liner wear, running in, piston ring gap wear, fuel issues, cylinder lubricating issues and related matters are to be addressed to Rennie Govender [rennieg@grindrodshipping.com](mailto:rennieg@grindrodshipping.com), Projects Manager, copied to the SM and [technical@grindrodshipping.com](mailto:technical@grindrodshipping.com). Rennie can be called on his mobile number at anytime for emergency assistance.

MAN has made reference to Tech bulletin SL2014 -587: although Grindrod Shipping needs to follow running in procedures etc. described in this bulletin, the bulletin was issued in 2014 when the BN40 was an approved oil to use. MAN then issued SL2019-671, where in their introduction they indicate that this bulletin is for both FO and distillate fuels which is MGO, and on the doc the BN 40 was still allowed. When the engines started showing signs of accelerated wear in 2020, MAN withdrew the NOL(NO OBJECTION LETTER) for all suppliers of the BN40 oil. So **for MEB engines only MCL100 from Lukoil** is an approved oil for now, whether on VLSFO or VLSMGO.

In light of the guidance below, you need to make reference to the following MAN tech bulletins:

SL2014-587 - running in procedures

SL2019-671 - cylinder oils update for LS fuels

SL2019-694 - Cylinder oils oils

SL2018-659 – Cermet rings



Please be informed that the Mark 9 and above engines that fall under Category II, ie Northberwick / Bosch Hoek / Gleneagles / Okudogo / Prestwick / Swinley Forrest / Wentworth / Hirono will follow below table.

**Table 1: Category II cylinder oils\***

Company	Category II cylinder oils		
	140 BN	100 BN	40 BN <sup>1</sup>
Castrol	Cyltech 140	Cyltech 100	
Chevron	Taro Ultra 140	Taro Ultra 100	
ExxonMobil	Mobilgard 5145	Mobilgard 5100	
Gulf Oil Marine		Gulfsea Cylcare 50100S	
JXTG Nippon Oil & Energy		Marine C1005	
Lukoil	Navigo 140 MCL	Navigo 100 MCL	
Shell	Shell Alexia 140	Shell Alexia 100	
Sinopec		Sinopec Marine Cylinder Oil 50100	
Total Lubmarine	Talusia HR 140	Talusia Universal 100	

<sup>1</sup> Ask your lube oil supplier whether there is a Cat. II 40 BN available.

\* Category II cylinder oils applicable for all engines and recommended for MAN B&W two-stroke engines Mark 9 and higher. Examples of international cylinder oils for which an NOL has been granted Cat. II status by MAN Energy Solutions.

All other MAN 2 stroke engines which fall under Category II in our fleet will follow below table.

**Table 2: Category I cylinder oils\*\***

Company	Cylinder oils			
	140 BN	100 BN	70 BN	40 BN
Castrol	Cyltech 140 *	Cyltech 100 *	Cyltech 70	Cyltech 40SX Cyltech 40
Chevron	Taro Ultra 140 *	Taro Ultra 100 *	Taro Ultra 70	Taro Ultra 40
ExxonMobil	Mobilgard 5145 *	Mobilgard 5100 *	Mobilgard 570	Mobilgard 540
Gulf Oil Marine	Gulfsea cylcare 50140X1	Gulfsea Cylcare 50100S *	Gulfsea Cylcare DCA 5070S	Gulfsea Cylcare DCA 5040S
JXTG Nippon Oil & Energy		Marine C1005 *	Marine C705	Marine 405Z
Lukoil	Navigo 140 MCL *	Navigo 100 MCL *	Navigo 70 MCL AW	Navigo MCL Extra
Shell	Shell Alexia 140 *	Shell Alexia 100 *	Shell Alexia 70	Shell Alexia 40
Sinopec	Sinopec Marine Cylinder Oil 50140	Sinopec Marine Cylinder Oil 50100 *	Sinopec Marine Cylinder Oil 5070S	Sinopec Marine Cylinder Oil 5040
SK Lubricants	SK Supermar Cyl 140	SK Supermar Cyl 100	SK Supermar Cyl 70 Plus	SK Supermar Cyl 40
Total Lubmarine	Talusia HR 140 *	Talusia Universal 100 * Talusia Optima	Talusia HR 70	Talusia LS 40

\* Cylinder oils marked with a \* have Cat. II status. See Table 1, Category II cylinder oils

\*\* Category I cylinder oils applicable for MAN B&W two-stroke engines Mark 8 and lower. Examples of international cylinder oils with an NOL from MAN Energy Solutions.

## **ENGINE CALIBRATION KITS –**

These are to be supplied as standard testing equipment to all our vessels. Please ensure a requisition is placed in BASSNet (if not already on board) for the following:

1. Thickness Gauge, to be used to measure thickness of cermet coating on rings in service
  - A456CFSS1-ELCOMETER A456 COATING THICKNESS GAUGE STD.UNIT
  - T456CF1S-ELCOMETER A456 FERROUS STD. F1 PROBE
2. PMI Calibration kit



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3. Tribolron Fe test kit – these kits produce an instant result of iron levels in the scavenge drainage, in addition to our CSA samples being landed for testing
4. Tribomar BN test kit – these do on board tests for BN, water etc.
5. Tribomar CSA kit – under piston scavenge drain samples for analysis ashore

### **UNDER PISTON INSPECTIONS**

This inspection is to be done monthly as a planned routine.

This inspection will also be done as per below running in procedures if major work has been performed on the engine.

This inspection is to be recorded on Form 6.6.6.2, with clear close up pictures. The monthly routine has been added to BASSNet as a monthly scheduled job.

The 3 Monthly routine also includes entering the air side of the scavenge to conduct the same inspection as carried out monthly from the fuel side and has now also been included into BASSNet.

Under piston drain oil will be sampled and sent for analysis as Tribomar CSA samples. This sample is tested for Fe, water and BN levels by our contracted testing company Maritec.

These inspections are to be carried out at times when a new batch of fuel is bunkered, and the inspection is to be done at least 48hrs after commencing use this fuel. The C/E is to discuss the plan with the SM who will notify IVS Operations.

If any of these inspections are not able to be performed on planned schedules, the SM must be contacted for advice.

### **RUNNING IN PROCEDURES**

These to be discussed with all the engineers on board. The ER is to be manned at all times during running in.

No matter what running in is being performed, the following needs to be done

- Set the MOP to Running in mode, this must be 'ON'
- Set adjustment factor to 1 for the unit to be run in
- Running in to be set to 1.7g or to the last running in feed if only the rings were renewed
- Minimum feed rate to adjusted to 1.0g

The Master is to inform any pilot aboard that the main engine was worked on and running in, and hard movements are to be avoided.



Step 1 - 50% load for first 5 hours on 1.7g feed

Stop and inspect the under piston spaces as per agreed reporting form 6.6.6.2. If any problems noticed, call SM to discuss. If all is in good condition, take a set of close up pictures of the components, box up the covers, restart the engine and go back to last speed and oil feed before you stopped for the inspection. Send photos and the report to the SM and call him to discuss your findings. In collaboration with the SM and designated Projects Manager, the vessel will receive an email to advise what to action, if any is required.

Step 2 - 50% + 2%, and 1,5g feed for next 100 hours

Decrease feed to 1.5g/kwhr, and increase load by 2% every hour for next 11-16 hours until you reach a total of 5 + 11-16 = 16-21 hrs. This will theoretically bring you to 85% load. If, due to weather, the ship needs to alter course to keep a steady load as much as possible, then it must be done with the permission of Chartering. A load of 75% in this case run over 4 hours is also considered as final running in. Once at 85% load again stop the engine and inspect the under pistons of all six units. If all is in good condition, take a set of close up pictures of the components, box up the covers, restart the engine and go back to last speed and oil feed before you stopped for the inspection. Send photos and the report to the SM and call him to discuss your findings. In collaboration with the SM and designated Projects Manager, the vessel will receive an email to advise what to action, if any is required.

If all is good, you can bring up the revs/load to Masters requirements. Keep the oil feed rate at 1.5g/kwhr for the remainder of the next 100hrs, then stop again and follow same procedures as above with below settings.

Step 3 - next 100 hrs; 1.3 g/kWh

Ensure you stop after each 100 hours, inspect, take photos and send to the SM for advice.

Step 4 - next 100 hrs; 1.1 g/kWh

Ensure you stop after each 100 hrs, inspect, take photos and send to the SM for advice.

Step 5 - next 100 hrs; 1.00 g/kWh

Ensure you stop after each 100 hrs, inspect, take pics and send to the SM for advice.

When reaching the setting of 1.00 g/kWh, the Manual would recommend to only reduce with steps of 0.02 g/kWh every 100 hrs, not going below 0.80 g/kWh.

**Grindrod Ship Management will not be doing this. The IVS Fleet will maintain**



**the consumption at 1.00 g/kWh Minimum for all MAN engines**

MAN has recommended:

1. The 16 hour load-up, applies from 50% until maximum rated load. This means if you wish to achieve maximum output, you can increase starting from 50% with increase around 3% load per hour. If you wish to increase to only 75%, this would then take around 8 hrs with the same 3% per hour. If you then keep 75% load for the next 8 hrs, the breaking in period will be regarded as completed. We do not recommend this.
2. Max load refers to engine rated maximum as per test bed. Please use the sea trials load sheet to determine MCR
3. Running in should not be suspended. In case of emergency, you must of course choose vessels safety first, but this might have negative effect on the combustion parts. The running in must/should be followed to archive best result.
4. Use BN100 oil as this is part of Category II, Other oils may be allowed with office permission after consultation with MAN/Lukoil.
5. Please see Form 6.6.6.2 guidelines that you need to assess the photos you will be taking at each step. Please find examples on the left of good quality reports and on the right a report that the Office would not be able to interpret.



Correct and closeup of all rings



Photo taken too far away for the detail required to





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<p>Correct magnification to establish ring's performance </p>	<p>Nothing can be made of the ring's performance – no magnification. </p>

Regards

Rennie Govender  
Project Manager

p.p.

**DISTRIBUTION**

All Masters  
Ship Managers  
Marine Superintendent  
Marine Manager SHEQ Manager  
Crewing Manager


### Cermet Coating condition overview 3.1


**Introduction**


In contrast to Alu-coat, which is a running-in coating, cermet coating is regarded as a near-lifetime piston ring coating meaning that it will last approximately the same lifetime as the piston ring. Cermet coating will protect against cylinder liner scuffing and will provide increased piston ring wear protection under harsh cylinder conditions, e.g. in corrosive environments and engine operation on fuel containing no or little sulphur. If the cermet coating is damaged during operation of the engine, it will be a permanent condition, only changing slowly with the slow wearing-down of the cermet coating.


During service, including sea trial, more severe peeling off can be accepted, including puncture of the Cermet coated piston ring. However, if puncture or other damage to the Cermet coated piston ring is established as the reason for cylinder deterioration, the piston is recommended pulled at first given opportunity.


Please see below overview of the different cermet coating conditions with corresponding action codes.

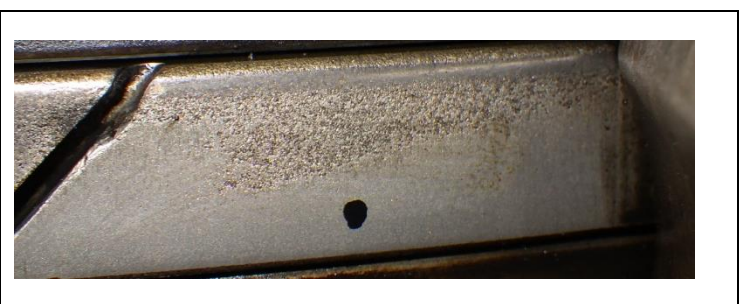
<p><b>Title: (Id: 3.1.1)</b> Cermet coated piston ring, good condition</p>	
<p><b>Description:</b> Cermet coated piston ring in good condition, with a smooth running surface and rounded edges</p>	
<p><b>Action code: No action</b> No action is required</p>	

<p><b>Title: (Id: 3.1.2)</b> Cermet coating, vertical cracks</p>	
<p><b>Description:</b> Visual vertical cracks found on the piston ring face.</p>	
<p><b>Action code: No action</b> No action is required</p>	

<p><b>Title: (Id: 3.1.3)</b> Cermet coating, vertical &amp; horizontal cracks</p>	
<p><b>Description:</b> Visual vertical &amp; horizontal cracks found on the piston ring face.</p>	
<p><b>Action code: Monitor the condition</b> Monitor the piston ring condition. If the cermet coating starts to peel-off in minor spots, action is required. Please go to <b>Id 3.1.5</b></p>	

<p><b>Title: (Id: 3.1.4)</b> Cermet coating minor damage</p>	
<p><b>Description:</b> Minor peeling-off</p>	
<p><b>Action code: Monitor the condition</b> No action is required</p>	

<p><b>Title: (Id: 3.1.5)</b> Cermet coating peeling off in spots</p>	
<p><b>Description:</b> The cermet coating is peeling off, in minor pieces. Vertical and horizontal cracks are found on the remaining piston ring surface.</p>	
<p><b>Action code: At first Opportunity</b> - Increase the lubrication to a minimum of 1.2g/kWh - Replace the piston ring at first opportunity.</p>	

<p><b>Title: (Id: 3.1.6)</b> Cermet coating is almost worn off</p>	
<p><b>Description:</b> On the top part of the piston ring, it is seen that the cermet coating is close to be worn off.</p>	
<p><b>Action code: At first opportunity</b> Overhaul and replace the piston rings in order to ensure cermet coating on the entire ring circumference</p>	

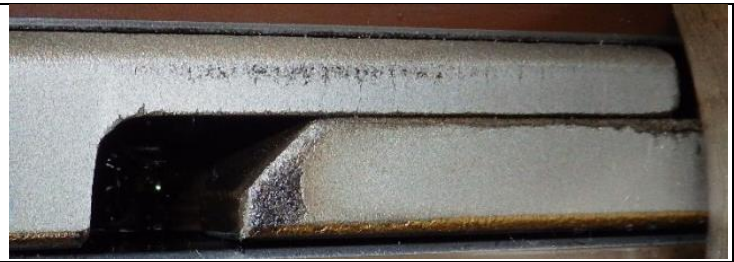
<p><b>Title: (Id 3.1.7)</b> Cermet peeling off at CL-Groove arear (Elephant skin)</p>	
<p><b>Description:</b> The cermet coating around the CL-groove has elephant skin</p>	
<p><b>Action code: No Action</b> No action is required</p>	



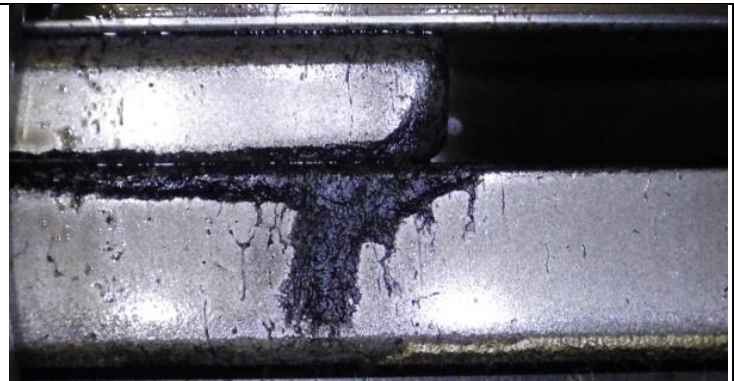
<p><b>Title: (Id 3.1.8)</b> Cermet coating peeling off at CL-Groove</p>
<p><b>Description:</b> Cermet Coating peeling-off at the CL groove</p>
<p><b>Action code: No action</b> No action is required</p>



<p><b>Title: (Id 3.1.9)</b> Cermet coating peeling off at the lock (Minor)</p>
<p><b>Description:</b> Cermet Coating peeling-off at the finger lock</p>
<p><b>Action code: No action</b> No action is required</p>



<p><b>Title: (Id 3.1.10)</b> Cermet peeling off at lock area</p>
<p><b>Description:</b> Cermet coating is peeling off on the lower finger lock</p>
<p><b>Action code: Monitor the condition</b></p> <ul style="list-style-type: none"> <li>- If the peeling off goes through the piston ring, actions is needed. <i>Please see ID 3.1.11</i></li> </ul>



<p><b>Title: (Id 3.1.11)</b> Cermet coating peeling off at lock area</p>
<p><b>Description:</b> Cermet coating is peeling off the finger lock puncturing the piston ring lock</p>
<p><b>Action code: Monitor the condition</b></p> <ul style="list-style-type: none"> <li>- If deposit is building up on the ring land as a consequence of the punctured piston ring, replacement of the piston ring is recommended.</li> </ul>

