

Action code: WHEN CONVENIENT

Regular operation of the SCR system to maintain correct functionality

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Concerns

Owners and operators of MAN B&W two-stroke marine diesel engines.
Type: MC/MC-C and ME/ME-C

Summary

It is important to maintain the functionality of the SCR system when it is not used frequently.

Dear Sir or Madam

Many vessels do not operate regularly in Tier III areas, and this means that there are also many SCR systems that are not being operated frequently. Over time, this may lead to sticking valves and/or malfunctioning parts. This Service Letter underlines the importance of maintaining the functionality of the SCR system in order to minimise the risk of failure when the system is eventually needed.

If you have any questions or inquiries regarding this Service Letter, contact our Operation Department at Operation2S@man-es.com.

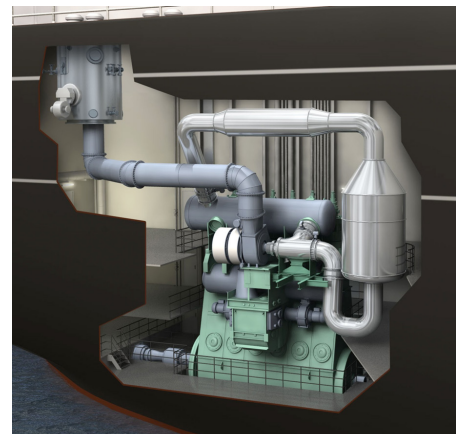
Yours faithfully



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Recommendation for maintaining SCR functionality

If it is not possible to start up and run the SCR system for long enough to confirm its proper NO_x reduction, we recommend exercising the SCR valves once a month to confirm their functionality. Furthermore, the bucket test described later on this page should be carried out regularly to confirm that the dosing system is in good working order.

Testing the SCR valves monthly**SW version 1909-1.5 and newer:**

- Stop the engine and auxiliary blowers.
- Select Chief mode.
- Select SCR mode Stop/Failure, and then SCR mode Manual.
- Via the main operating panel (MOP), the Reactor Bypass Valve (RBV), the Reactor Throttle Valve (RTV), and the Cylinder Bypass Valve (CBV) can now be moved between 0-100% (where 100% means fully open). The Reactor Sealing Valve (RSV) can only be Opened or Closed as this is not a proportional valve.
- Confirm the actual valve position locally. Recommended fully opening and closing times for the valves are approximately 10 seconds.
- The valve control can also be done locally on the SiPart during the same preconditions, and the MOP readings should then be confirmed with the SiPart value and the actual valve position.
- Remember to set the SCR mode back to Stop or Auto.

SW version 1811-2.1 and older:

- Stop the engine and auxiliary blowers.
- Select Chief mode.
- Select valve mode Manual on the valve screen when in SCR mode Stop or Failure.
- Via the MOP, the RBV, RTV and CBV can now be moved between 0-100% (where 100% means fully open). The RSV can only be Opened or Closed as this is not a proportional valve.
- The actual valve position should be confirmed locally. Recommended fully opening and closing times for the valves are approximately 10 seconds.
- The valve control can also be done locally on the SiPart during the same preconditions, and the MOP readings should then be confirmed with the SiPart value and the actual valve position.
- Remember to set the valve mode back to Auto.

Testing the dosing system by means of monthly bucket test**SW version 1909-1.5 and newer:**

- Follow the instructions for the six-monthly bucket test

with the exemption that there is no need to measure the urea flow and compare the feedback (FB) flow with the setpoint (SP). However, note that the nozzle must still be removed from the reactor to prevent the urea from clogging or destroying the catalyst elements.

SW version 1811-2.1 and older:

- Follow the instructions for the six-monthly bucket test with the exemption that there is no need to measure the urea flow and compare the FB flow with the SP. However, note that the nozzle still needs to be removed from the reactor to prevent the urea from clogging or destroying the catalyst elements.

Every six months:**SW version 1909-1.5 and newer:**

- Stop the engine and auxiliary blowers and insert the injection nozzle into a waste bucket. Remember to wear personal safety equipment (goggles and gloves).
- Select Chief mode.
- First select SCR mode Stop, then select SCR mode Manual and use the Manual Reducing Agent Flow SP to deliver "X" l/h, where X is chosen by the crew.
- Wait until the reducing agent flow on the injection nozzle is stable, usually a few minutes.
- Switch to a measurement bucket or another suitable container and start counting for "Y" time. The longer the test is carried out at each flow, the more precise and reliable the documented flow will be.
- Switch to a waste bucket and stop counting, and stop Manual dosing.
- Compare the amount actually delivered to the dosing system SP using the "Z" volume in the measurement bucket.
- During the bucket test, it is recommended to monitor that the reducing agent FB flow follows the given SP either in CoCoS or on the SCR MOP channel screens.
- The recorded result must be within +/- 3% of the desired flow.
- Remember to reset the SCR mode back to Auto.

SW version 1811-2.1 and older:

- Stop the engine and auxiliary blowers and insert the injection nozzle into a waste bucket.
- Select Chief mode.
- In the Maintenance System View I/O Test Tab select the SCRCU and change its mode to Test.
- Select Ch. No. 70 when the node on the multi-purpose controller (MPC) has rebooted.
- Set the electrical value to "W" mA corresponding to deliver "X" l/h. Use the linear I/O scaling to calculate the conversion, where 0 l/h is 4 mA and 20 mA is dosing system specific.

- Wait until the reducing agent flow on the injection nozzle is stable, usually a few minutes.
- Switch to a measurement bucket or another suitable container and start counting for "Y" time. The longer the test is carried out at each flow, the more precise and reliable the documented flow will be.
- Switch to a waste bucket, stop counting, and finally set the electrical value to 4 mA to stop dosing.
- Compare the amount actually delivered to the dosing system SP using the "Z" volume in the measurement bucket.
- The recorded result must be within +/- 3% of the desired flow.
- Remember to reset the SCRCU mode back to normal.

Testing of temperature and dp sensors:

- The SCR system temperature and NO_x sensors are constantly monitored, and action is only needed in the event of an alarm.
- Differential pressure (dp) sensors in the SCR system must have the copper pipes dismantled and cleaned if the dp-RTV value is different from 0 at engine stop or from 0.02–0.3 during Tier II running. dp-SCR pipes must be cleaned if the value exceeds 120 mbar.