

Typical malfunctions of BWMS

ClassNK MCD
as of November 2022

BWMS Method	Mulfunction cases	Cause	Handling and controling methods
Common	High differential pressure of ballast water filters due to muddy waters causing filter clogging. The BWMS may be forced to shut down.	High turbidity of ambient water	Take action as specified in the manual, such as manual backwashing. Adjust the flow rate of the ballasting so that the differential pressure does not exceed the specified value. If the BWMS is repeatedly started and stopped without proper backwashing procedures, a sudden pressure increase may cause filter damage.
	Malfunction of BWMS-related parts	Damag of parts. Life span of consumable parts.	Replace parts according to the manual. Comply with items that require periodic inspections. Keep spare parts on board according to the manufacturer's recommendations.
	Malfunction of control valves	Malfunction due to long-term use	Replace the control valve. Check the manual, as it may be possible to solve the problem by having the crews calibrate it. Comply with items that require periodic inspections.
	Damage to parts due to additional start-up of ballast pumps	Sudden flow/pressure increasing during treatment flow adjustment	Replace parts. Check the prohibitions during operation as stipulated in the manual.
	Clogging of the TRO sampling li	Contamination of foreign substances	Clean the sampling line. Perform periodic cleaning according to the manual or manufacturer's recommendations. When discharging cargo hold bilge water or cleaning water, the TRO sampling valve should be closed, and if possible, immediately afterwards treated ballast water should be passed through for flushing, since cargo residues may enter through the common ballast and bilge pipes.
UV	Decrease in UV transmittance dur to muddy waters	High turbidity of ambient water	Adjust the flow rate of the ballasting to ensure that the UV transmittance is above the specified value.
	Damage to UV lamps	Damage due to foreign substances in piping and tanks	Replace damaged UV lamps. If there are two or more UV units and one of them is operable, ballast water management with one system may be permitted by the Flag administration.. Thoroughly flush the piping and clean the tank when the BWMS is installed as a measure against initial failure.
	Fuse blown of UV reactor	Omission of cooling process, temperature rise in reactor due to idling operation during de-ballasting	Replace parts. Check the prohibitions specified in the manual for proper operation. Pay attention to the remaining tank volume during de-ballasting operation, and take care to avoid idling operation.
Electrolysis	Low salinity in freshwater and brackish water	Low salinity of ambient water	Follow the manual and manufacturer's instructions. If it is expected that frequent operation at fresh and brackish water ports, consider optional modifications to allow mixing operation to ensure the specified salinity by mixing with seawater.

Chemical injection	Diaphragm damage on disinfectant pump	Pump inlet/outlet valve shutoffs	Replace parts. Keep the pump inlet valve open. Follow manufacturer-specific instructions.
	Blockage of disinfectant line	No post-treatment after BWMS operation	Clean the piping. Perform post-treatment operations for each operation according to the manual.
	TRO value does not increase during ballasting operation	Deterioration of disinfectant, failure of TRO analyzer	Replace the disinfectant. Since the storage life of disinfectants depends on the storage temperature, liquid disinfectants should be transferred to the storage tank immediately after delivery in order to prevent deterioration. To avoid mixing with old disinfectants, drain the residue from the tank before introducing a new disinfectant. Check and adjust the operation of the TRO meter.