

Emergency Condition Operation

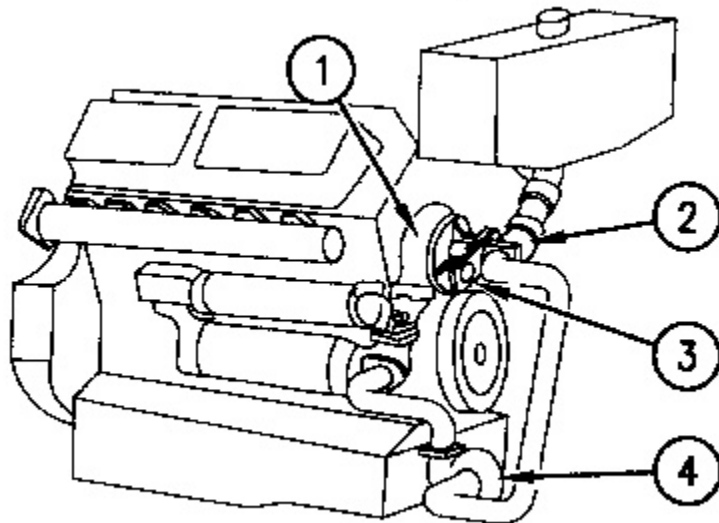
Certain worldwide marine classifications societies require seagoing propulsion engines to be equipped in order to allow continuous operation if the engine water pump(s) or oil pump should fail. If the vessel is not equipped with independently driven standby pumps, complete replacement pumps should be carried as spare parts.

These procedures are for emergency conditions ONLY.

Jacket Water Pump Failure

If the engine jacket water pump should fail, fresh water can be supplied to the engine jacket using the emergency water system. Refer to LEBM3001, 3400 Marine Engine Performance, for information about jacket water system performance.

For Engines Equipped With the 5N-8623 Emergency Water Connection Group



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Jacket water pump (1), 5N-8624 Elbow (2), 5N-8625 Plate (3) shown in the emergency operating position, and Emergency Pump (4).

1. Stop the engine. If the jacket water pump has failed, the pump does NOT need to be removed.
2. Provide some means for collecting the coolant that will spill during the procedure.
3. Remove the four bolts from 5N-8624 Elbow (2).
4. Re-align 5N-8625 Plate (3). Line the bolt holes up so that the solid portion of the plate covers the jacket water pump inlet. The plate hole should be exposed.
5. Install Elbow (2) in the original position.
6. Start and prime emergency pump (4). Allow air to escape from the emergency cooling system lines.

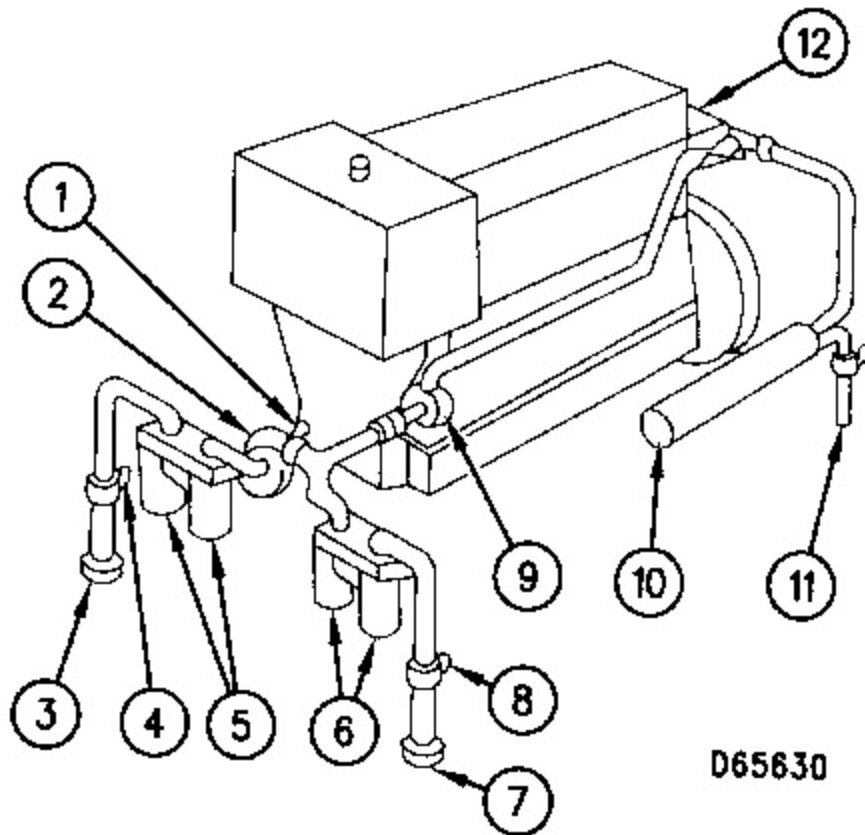
7. Check the coolant level in the expansion tank. Add coolant if necessary.
8. Start the engine. Engage the marine gear and operate the vessel at normal speed.
9. Monitor the coolant water temperature.

NOTE: If the engine jacket water coolant is lost (i.e. water line rupture or leak) and an insufficient supply of fresh water is available to replenish the cooling system, raw/sea water may be pumped through the engine.

- a. Stop the engine and make the necessary water pump and lines connections to pump raw/sea water into the jacket water system and back to the source.
- b. Remove the temperature regulating thermostats from the regulator housing and install housing cover.
- c. Start and prime the emergency pump.
- d. Start the engine. Engage the marine gear. Operate the engine at the lowest speed for the existing weather conditions.
- e. Maintain the engine temperatures as low as possible to minimize deposits in the engine and minimize corrosion of the engine components. Have the engine jacket water system completely disassembled, cleaned and inspected after reaching port. Replace all parts which are corroded or damaged.

Raw/Sea Water Pump Failure

The raw/sea water pump circulates sea or fresh water through the engine jacket water heat exchanger. If the raw/sea water pump should fail, follow the procedure below to continue engine operation.



Shut off valve-normally closed (1), emergency raw/sea water pump (2), emergency raw/sea water inlet (3), inlet valve-normally closed (4), emergency raw/sea water strainers (5), normal operation raw/sea water strainers (6), normal operation raw/sea water inlet (7), inlet valve-normally open (8), raw/sea water pump (9), jacket water heat exchanger (10), raw/sea water outlet (11), and aftercooler (12).

1. Stop the engine. If the shaft bearing has failed, the pump does NOT need to be removed.
2. Close inlet valve (8) to raw/sea water strainers (6) and raw/sea water pump (9).
3. Open inlet valve (4) to emergency raw/sea water pump (2). Start and prime the pump.
4. Start the engine. Engage the marine gear and continue operation at normal speed.

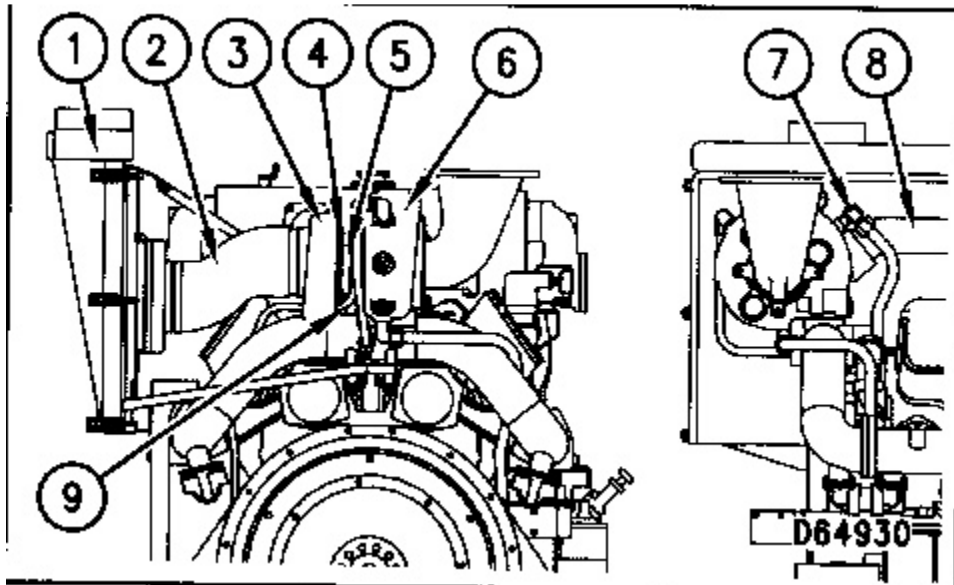
Engine Lube Oil Pump Failure

If the engine lube oil pump fails, the oil pressure will drop and the engine jacket water temperature gauge reading will be above normal. The applicable engine shutoff controls (if equipped) will stop the engine. Refer to the following procedure to use the emergency lube oil pump.

1. Place the marine gear in the NEUTRAL position. Stop the engine (if the engine is still running).
2. Measure the engine oil level. Ensure the oil level is between the ADD and FULL marks on the dipstick. Add oil if necessary.

3. Reset the oil pressure shutoff control (if equipped). Be sure that the oil pressure shutoff control RESET is in the RUN position to enable engine starting.
4. Start the emergency standby lube oil pump. Observe the oil pressure gauge
5. Start the engine. Engage the marine gear and operate the vessel at normal speed.

Turbocharger Failure



Air cleaner (1), turbocharger air inlet hose (2), compressor (3), clamp (4), cartridge (5), turbine housing (6), oil supply line (7), aftercooler air inlet hose (8), and oil drain line (9).

1. Remove air cleaner (1) and turbocharger air inlet hose (2).
2. Remove oil supply line (7) from the top of cartridge (5). Remove oil supply line (7) from the cylinder block. Plug the oil supply opening in the cylinder block.
3. Remove oil drain line (9) from the bottom of cartridge (5). Remove oil drain line (9) from the flywheel housing. Plug the oil drain opening in the flywheel housing.
4. Remove the bolts from the flange to aftercooler air inlet hose (8).
5. Remove clamp (4) while supporting compressor (3) and aftercooler air inlet hose (8). Remove aftercooler air inlet hose (8), compressor (3) and cartridge (5) as a unit.

WARNING

DO NOT allow exhaust gas to discharge into engine room. Vent the exhaust to the outside and be sure venting systems are correctly installed and operating. Diesel engine exhaust contains products of combustion which may be harmful to your health.