MERCURY MerCruiser

Service Bulletin

Bulletin No. 2004-06

Circulate to: ☐ Sales Manager ☐ Accounting ☑ Service Manager ☑ Technician ☑ Parts Manager

Gen III Cool Fuel Module Diagnostics

Models Affected

Application	Model	Serial Number
MCM	496 Mag	0W060000 and above
All Bravo	5.0L MPI	0W060000 and above
All Bravo	350 Mag MPI	0W060000 and above
All Bravo	6.2L MPI	0W060000 and above
MIE	8.1L (all)	0W090000 and above
MIE	350 Mag MPI	0M398372 and above
MIE	6.2L MPI	0M398395 and above

Situation

A new generation of the MerCruiser fuel cooling system has been developed and released into production. The Generation III Cool Fuel System incorporates many design elements. The following information is provided for maintenance and troubleshooting of the Generation III Cool Fuel Module. Upon completion of these tests, if a problem exists, replace the complete Cool Fuel Module assembly.

Changing Water Separating Fuel Filter Element

⚠ WARNING

Avoid Fire or Explosion: The fuel injection system is pressurized during operation. Use care when removing the water separating fuel filter. Allow the engine to cool down before attempting to remove the water separating fuel filter in the following procedure.

⚠ WARNING

Be careful when changing the water separating fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Ensure the ignition key is "OFF". Do not smoke or allow spark or open flame in the area when changing the fuel filter. Wipe up any spilled fuel immediately.

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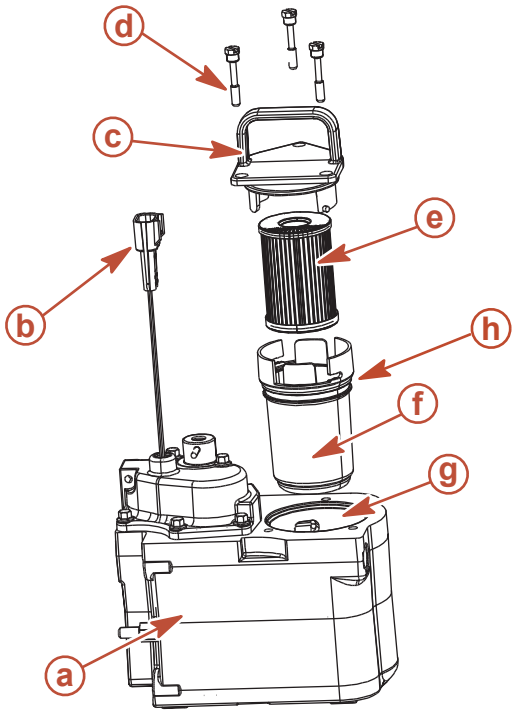
⚠ WARNING

Ensure that no fuel leaks exist before closing the engine hatch.

1. Allow the engine to cool down.

NOTE: *Mercury MerCruiser recommends that the engine be shut off for 12 hours prior to filter removal.*

2. Disconnect the Cool Fuel Module harness from the engine wiring harness.
3. Turn the key switch to the start position and allow the starter to operate for 5 seconds to relieve fuel system pressure.
4. Turn key switch to off position.
5. Loosen each filter assembly retaining screw until the screw is disengaged from the Cool Fuel Module. Do not remove the filter assembly retaining screws from the filter cap.



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a - Cool Fuel Module
b - Cool Fuel Module harness
c - Filter cup
d - Filter assembly retaining screw
e - Fuel filter element
f - Filter cup
g - Cool Fuel Module filter reservoir
h - O-ring

6. Unseat the filter assembly by grasping the filter assembly handle and pulling upward. Do not remove the filter assembly from the Cool Fuel Module at this time.
7. Allow any fuel that may be in the filter assembly to drain out through the bottom of the filter assembly and into the Cool Fuel Module filter reservoir.
8. Remove the filter cup from the filter cap by grasping the filter cap and rotating it in a clockwise direction while holding the filter cup stationary.

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9. Remove the used water separating fuel filter element from the filter cup, place it in a clean, approved container.
10. Dispose of any water or debris that may be in the filter cup.
11. Install a new water separating fuel filter element into the filter cup. Push the element into the cup until completely seated.
12. Install new O-ring on the filter cup.
13. Attach the filter cap to the filter cup by grasping the filter cap and rotating it in a counter clockwise direction while holding the filter cup stationary, until the filter cap locks securely into place.
14. Install the fuel filter assembly slowly into the Cool Fuel Module to prevent spilling fuel, and align the screws retained in the filter cap with the screw holes in the Cool Fuel Module. Tighten the filter assembly retaining screws until hand tight.
15. Ensure that the filter cap is firmly seated against the Cool Fuel Module and torque each filter assembly retaining screw.

Description	Nm	lb. in.	lb. ft.
Filter assembly retaining screw	6	53	

16. Reconnect the Cool Fuel Module harness to the engine wiring harness.
17. Supply cooling water to the engine.
18. Properly ventilate the engine compartment.

⚠ WARNING

Avoid serious injury or death due to FIRE or EXPLOSION. Ensure that the engine compartment is well ventilated and that no gasoline vapors are present to prevent the possibility of a FIRE or EXPLOSION.

⚠ WARNING

Ensure that no fuel leaks exist before closing the engine hatch.

19. Start the engine. Check for gasoline leaks around the fuel filter assembly. If leaks exist, stop the engine immediately. Recheck the filter installation, clean spilled fuel and properly ventilate the engine compartment. Correct the leak.

Electrical

1. Disconnect the electrical connector at the Cool Fuel Module.
2. Connect a Digital Volt / Ohm Meter (DVOM) to the engine side of the electrical connector.
3. Turn the ignition switch to the run position.
4. Verify that there is 12 volt battery (+) power going to the Cool Fuel Module. If voltage is less than 11.5 vdc, find and correct the voltage drop or no voltage condition.

NOTE: *The fuel pump relay will only remain active for 2-3 seconds while the key is in the RUN position.*

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Checking Fuel Pressure

1. Connect a fuel pressure gauge to the shrader valve on the fuel rail.
2. Cycle key switch 2-3 times (OFF to RUN position) at 3 second intervals to reach maximum pressure.
3. Verify that the pressure is within specification.
4. If pressure exceeds 44 psi (303 kPa):
   a. Replace the Cool Fuel Module.
5. If pressure is equal to or less than 40 psi (276 kPa):
   a. Use a tee fitting and connect a vacuum gauge to the fuel inlet side of the Cool Fuel Module. Do not remove the fuel inlet fitting adapter.
   b. Relieve the fuel pressure in the fuel rail. Refer to section 2A for fuel pressure relief procedure.
   c. Cycle the key switch 2-3 times (OFF to RUN position) at 3 second intervals to reach maximum pressure.
   d. Verify that the vacuum from the fuel source is within specification. If the vacuum exceeds 2 in. Hg (7 kPa) , excessive fuel restriction exists. Correct the fuel restriction before proceeding.
   e. With the vessel secured to the dock and the engine running in neutral, restrict the fuel supply and verify that the Cool Fuel Module has the ability to cause a vacuum reading of 11 in. Hg (37 kPa) or greater. If the vacuum reading is less than 11 in. Hg (37 kPa) with the fuel supply restricted, replace the Cool Fuel Module.

In-Water Test

1. With a vacuum gauge and a fuel pressure gauge in place, operate the boat throughout the RPM range and record the pressure and vacuum readings.
2. If the fuel the supply vacuum reading is greater than 2 in. Hg (7 kPa) , find and correct the fuel supply restriction.
3. If the fuel supply vacuum is within specification and the fuel pressure is less than 40 psi (276 kPa), replace the Cool Fuel Module.

IMPORTANT: It will be necessary to sea-trial the boat following repairs to be sure that the pressure and the fuel system vacuum remain within specification throughout the RPM range.

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