

TO: SERVICE MANAGER  MECHANICS   
PARTS MANAGER

## NOTICE

**This is a copy of a Service Bulletin being sent to all boat builders. We wanted to make you aware of this new engine compartment requirement also.**

## Engine Compartment Temperature

### Models

MCM Hi-Performance Stern Drive Engines: All models.

### Engine Compartment

Over the last several years, boat builders have designed the engine compartments to be quieter. The most common material used to deaden the engine sound is some type of insulation material. Very little, if any, attention is given to the air temperature that is inside this engine compartment while the engine is running or after a period of time after the engine is shut off (heat soak). Normally, the quieter the engine compartment is, the more insulation material used which results in less air space inside. The less air space inside the engine compartment, the hotter the inside air temperature. Also, restrictions in the fuel supply line or an over restrictive anti-siphon valve can increase the chances of vapor locking.

### Problems Caused By Hot Engine Compartments

The most common problem that boat operators experience because of too much heat build-up inside of engine compartments is vapor locking. The engine doesn't want to restart after it has been shut off for a short period of time. If it does restart, the engine quits when given the throttle to get the boat up on plane or to pull up a water skier. Fuels containing alcohol and the newer "reformulated gasolines" (see oem service bulletin 95-2) will cause vapor locking complaints to increase.

### SAE J1223 Specification For Marine Carburetors

"The carburetor shall be capable of operation throughout an ambient (air temperature) range from +20° to +176° F (-7° to +80° C) without failure."

Carburetors, throttle body injection (TBI) units and components for multi-port EFI systems used by MerCruiser and Mercury Hi-Performance meet this specification.

Measured air temperature inside of engine compartments have been reported by dealers to be in excess of 200° F (82° C). Temperatures this high and higher have been measured in boats by MerCruiser personnel also. What the long term affect to fuel system components running at these excessive temperatures is not known at this time.

### Future MerCruiser Engine Compartment Requirement

Effective January 1, 1996, the following requirement will be enacted.

Under the hottest outside air temperature condition that the boat will be operated at, the air temperature inside the engine compartment, measured at the flame arrestor, shall not exceed 176° F (80° C). Also, the temperature of the fuel being supplied to the engine shall not exceed 110° F (43° C) at any location between the fuel tank and the engine's fuel pump.

## Testing Procedure

1. The boat being tested shall be a standard production boat fitted as it would be for delivery to a dealer.
2. Temperature test meter used shall be of the type that can be read without opening the engine cover.
3. During the test, in step 4, engine compartments are to remain closed. No outside air is to be forced into the engine compartment during the test and the bilge blower should not be running.
4. Engine Running and Heat Soak Test:
  - a. Use 1 meter and 2 or 3 thermal couples. One thermal couple at the flame arrestor, the second thermal couple measuring the inlet fuel temperature at the fuel pump. If the fuel supply line between the tank and the fuel pump is at any point higher than the fuel pump inside the engine compartment, the temperature of the fuel at the highest point will have to be measured also.
  - b. Start engine to warm it up. After engine is at its normal operating temperature, run engine at 1500 RPM (in neutral gear) for 15 minutes. Record both temperature readings at 5 minute intervals.
  - c. After 15 minutes running at 1500 RPM, shut engine off and continue to record both temperature readings at 5 minute intervals for the next 45 minute heat soak test.
  - d. After the 45 minute heat soak test, start engine and idle (in neutral gear) for 20 minutes. Continue to record both temperature readings at 5 minute intervals.
5. If the temperature at either location exceeds specifications, the engine compartment will need ventilation added until both temperatures remain below these specifications.