

Circulate to:  Sales Manager  Accounting  Service Manager  Technician  Parts Manager

## Fuel Supply Module (FSM) Priming Procedure

### Models Affected

Models Covered	Serial Number Or Year
75–115 FourStroke	2B095049 and Above
150 FourStroke	1B905505 and above
200–300 L6 Verado	2B144123 and above
350, 400R	2B141124 and above

### Scope

Worldwide

### Situation

Trapped air in the fuel system will cause the engine to run rough until the air is completely purged from the fuel system. A brief, rough running condition due to air in the fuel system can occur when an engine is installed and then initially started, or restarted after running out of fuel.

On **75–115 FourStroke models only**, a rough running condition will cause an alarm (six beeps) and will record an EST1 or EST2 output fault in the ECM. EST1 and EST2 output faults will become inactive when the engine begins to idle smoothly. These faults are captured in the ECM's freeze frame buffers and should be cleared from the data history using CDS G3.

**NOTE:** An air leak within the inlet (boat) side of the fuel system will introduce additional air into the engine's fuel system. Air leaks within the boat side of the fuel system must be corrected prior to performing a successful fuel system priming procedure.

Use the following procedures to purge air from the engine's fuel system when the engine is installed and prepared for delivery. These procedures should also be utilized after fuel system repairs.

## Fuel Supply Module Priming Procedure

The fuel supply module (FSM) is not vented to the ambient air. The air trapped in the FSM, fuel lines, and fuel rail, will be slightly compressed during the initial ignition key-on with a dry or drained fuel system. Additional key-on events under these conditions, will not compress the air further to finish the priming of the FSM. Excessive number of key-on events may eventually damage the fuel pumps. The volume of air trapped in the FSM must be purged to prime the fuel system. This can be achieved by connecting a tool to the fuel rail Schrader valve fitting to quickly purge the system into an approved container, or by cranking the engine.

## Priming the FSM with a Fuel Pressure Gauge

The use of a purge tool for priming the FSM is the preferred method, but is not always practical. The objective is to purge the air entrained in the fuel system through a purge tool connected to the fuel rail Schrader valve test port. During the key-on, opening the Schrader valve will allow the air to be purged from the FSM and fuel rail. This method should be used on vessels where the fuel inlet system to the outboard is restrictive, has an anti-siphon valve, or holds a relatively large volume of fuel because of a long fuel supply line or water separating fuel filter. If a primer bulb is installed, it can be used during the priming event to shorten the amount of time required to start the engine.

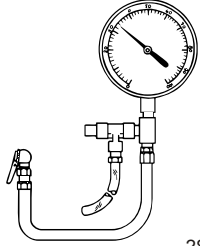
1. Verify the engine is in a level vertical position.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

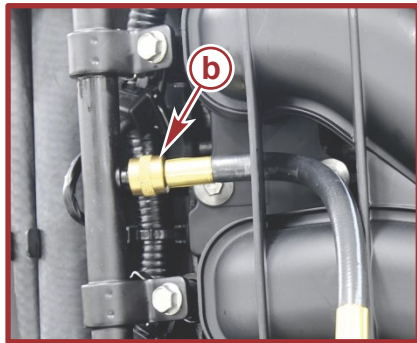
This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.

## Fuel Supply Module (FSM) Priming Procedure

2. Verify the vessel fuel supply line is connected to the outboard fuel system inlet fitting.
3. Connect a fuel pressure gauge to the fuel rail Schrader valve.

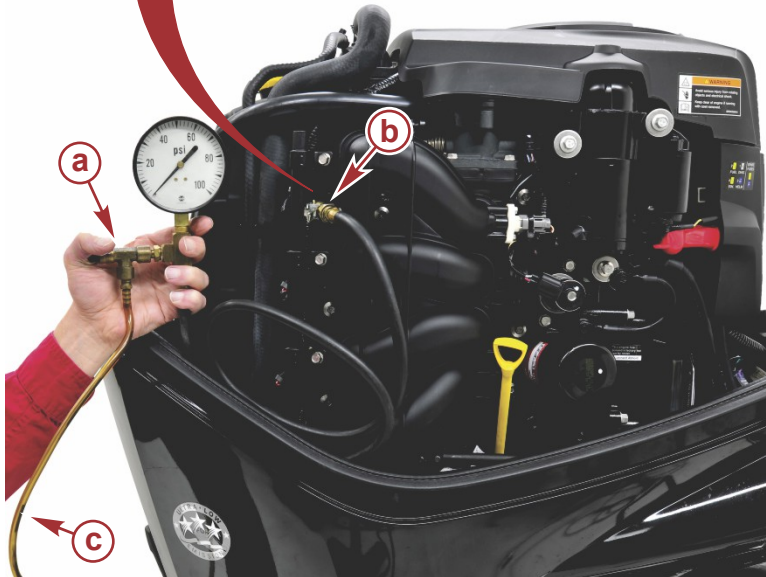
Fuel Pressure Gauge Kit	91-881833A03
 2807	Tests the fuel pump pressure; can be used to relieve fuel pressure.

4. Secure the fuel pressure gauge purge hose into an appropriate fuel container to collect excess fuel.
5. Open the fuel pressure gauge purge valve and turn the ignition key on. The fuel pumps will run for approximately three to five seconds.



### Priming the FSM with a fuel pressure gauge

- a - Fuel pressure gauge purge valve
- b - Schrader valve
- c - Fuel pressure gauge purge hose (to appropriate container)



6. Turn the ignition key off and then on. The fuel pumps will run for approximately three to five seconds. Continue this ignition key cycle until the purged fuel is relatively clear of air bubbles.  
**NOTE:** If the outboard fuel system does not prime within 15 key on events, check for leaks in the fuel supply line to the outboard. Repair as needed. If no leak is found, the fuel supply system to the outboard may be too restrictive. Correct the condition and try again.
7. Remove the fuel pressure gauge.
8. Turn the ignition key on. When the fuel pumps stop running, start the engine. The engine may not start on the first attempt. The engine will run rough at idle for up to two minutes while the residual air is purged from the fuel system.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.

## Priming Procedure—Without Purging the FSM

The use of a purge tool for priming the FSM is the preferred method, but is not always practical. When the vessel fuel system is void of fuel volume, it can be primed without the use of a purge tool. The objective is to purge the air entrained in the fuel system through the fuel injectors during engine cranking to allow fuel to enter the fuel module. This method can be used on vessels where the fuel inlet system to the outboard is less restrictive and holds a relatively small volume of fuel; a short fuel supply line, no water separating fuel filter, or when the water separating fuel filter is already primed. If a primer bulb is installed, it can be used during the priming event to shorten the amount of time required to start the engine.

1. Verify that the engine is in a level vertical position.
2. Verify that the vessel fuel supply line is connected to the outboard fuel system inlet fitting.
3. Turn the ignition key on. The fuel pumps will run for approximately three to five seconds.
4. Turn the ignition key to the start position and release the key. The ECM controls the activation of the starter. The starter may continue cranking for up to eight seconds.

**NOTE:** *When priming a drained fuel system, residual fuel may cause the engine to flare and stall which shortens the engine cranking event.*

5. Continue with the ignition key on and start sequence until the engine continues to run.  
**IMPORTANT: Prevent starter damage by allowing the starter motor to cool for 20 to 30 seconds between full eight second crank events. Limit the number of events to a maximum of 10 full eight second cranking events.**
6. Once the engine starts, it may run rough at idle for up to two minutes while the residual air is purged from the fuel system.
7. If the fuel system will not prime within 10 full eight second cranking events, use the previous procedure **Priming the FSM with a Fuel Pressure Gauge** to prime the fuel system.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.