

CLEARING TROUBLE CODES

To clear stored trouble codes with CodeMate use the following procedure:

- 1) Follow the steps described in "Connecting CodeMate" to install it onto the engine's Data Link Connector.
- 2) Turn the ignition key ON but DO NOT start the engine (Key ON - Engine Off).
- 3) Place the CodeMate's test switch in the ON position. This action puts the EFI system into Service Mode
- 4) Move the throttle, while in neutral, from 0% to 100% then back to 0%
- 5) Turn the ignition key OFF for 5 seconds.
- 6) Perform the "Reading Stored Trouble Codes" procedure to verify that the codes have been cleared.
- 7) When complete, turn the ignition key OFF and disconnect the CodeMate tool.

Note: Always be sure that the engine's battery is fully charged before attempting the above procedure. A low battery may impair the ECM's ability to clear its stored trouble codes.

BASE SPARK TIMING FUNCTION

As a result of its ability to place the EFI system in Service Mode and also hold the Ignition Spark Advance to a fixed value during this mode, the CodeMate tool provides a technician with a convenient method of setting the engine's Base Spark Timing. The procedure requires the use of an appropriate timing light as well as adherence to the manufacturer's recommended steps for this service. Please refer to the manufacturer's service manual for details on performing this procedure.

Rinda Technologies Inc.
4563 N. Elston Ave.
Chicago, IL 60630 USA
Tel: (773) 736-6633 Fax: (773) 736-2950
www.rinda.com

CodeMate

Marine ECM Trouble Code Tool

P/N 94008



The marine Engine Control Module (ECM) continually checks the integrity of its sensors and controls. When a problem is detected a Diagnostic Trouble Code (DTC) is set and retained in the ECM's computer memory. These stored trouble codes are intended to assist a service technician in diagnosing engine and control system problems.

This CodeMate tool provides a service technician with 3 separate diagnostic functions. It can be used as a Malfunction Indicator Lamp (MIL), a trouble code display & erase tool and a base spark timing tool.

CONNECTING CODEMATE

- 1) Turn the engine's ignition switch to the OFF position (engine not running).
- 2) Locate the engine's Data Link Connector (DLC).
- 3) Place CodeMate tool's test switch in the OFF position and plug the unit into the Data Link Connector. Be sure to slide the CodeMate tool completely into the data connector so that the connector's locking tab clicks into place. With this accomplished the CodeMate unit is now properly connected.

MALFUNCTION INDICATOR

With the CodeMate unit plugged into the Data Link Connector and its test switch set to the OFF position, the tool will function as a Malfunction Indicator. During engine operation this function informs the service technician that a problem has occurred and that the vehicle should be brought in for service as soon as possible.

When used in this mode of operation the CodeMate's light will turn ON when the **ignition key is ON** and the **engine is NOT running**. This functions as a "bulb test" to make sure the tool's light is operational. When the engine is started the CodeMate's light will turn OFF under normal conditions.

Indication of a persistent problem:

During engine operation, if the CodeMate's light continually remains ON, it indicates that a ***persistent*** problem is present and a Diagnostic Trouble Code has been stored in the ECM's memory.

Indication of an intermittent problem:

If, during engine operation, the light turns ON for a brief period of time (10 seconds or more) and then turns OFF, it indicates that an ***intermittent*** problem has occurred and that a Diagnostic Trouble Code has been stored in the ECM's memory.

READING TROUBLE CODES

CodeMate is capable of reading trouble codes that are stored in the ECM's computer memory. As described in the preceding section, trouble codes are stored when the ECM detects an ***intermittent*** or ***persistent*** problem related to the EFI system. Trouble code read-out should be performed with the ignition **Key ON** and the **Engine OFF**. Use the following steps to read trouble codes.

- 1) Follow the steps described in "Connecting CodeMate" to install it onto the engine's Data Link Connector.
- 2) Turn the ignition key ON but DO NOT start the engine. (Key ON - Engine OFF)
- 3) Place the CodeMate's test switch in the ON position. This action puts the EFI system into *Service Mode*.
- 4) Observe the sequence of flashes on the CodeMate's indicator light.
- 5) When complete, turn the ignition key OFF and disconnect the CodeMate.

Note: *Trouble codes are conveyed by counting flashes on CodeMate's light. Flash sequences represent individual digits of a 2-digit trouble code. For example: 3 quick flashes, a "pause", followed by 4 quick flashes and then a "long pause" would represent digits 3 and 4, therefore indicating Code 34.*

Upon the initial activation of the CodeMate's test switch, the indicator light should flash Code 12 three times consecutively. This Code 12 sequence consists of a "**Flash, pause, Flash-Flash, long pause**" and is repeated two more times for a total of three readouts.

Code 12 indicates that the ECM's diagnostic capabilities are working. Following the Code 12 sequence (Code 12 displayed 3 times), any stored trouble codes will be displayed in a similar manner.

GM Marine EFI Trouble Codes

Code	Description
13	Oxygen Sensor Inactive
14	Coolant Sensor Voltage High (cold)
15	Coolant Sensor Voltage Low (hot)
21	Throttle Position Sensor Voltage High
22	Throttle Position Sensor Voltage Low
23	Manifold Air Temp Sensor High (cold)
24	Speed Sensor Inactive (if installed)
25	Manifold Air Temp Sensor Low (hot)
31	Governor Not Tracking
32	EGR Valve Not Tracking (if installed)
33	Manifold Absolute Pressure Sensor High
34	Manifold Absolute Pressure Sensor Low
41	Electronic Spark Timing Open Circuit
42	Electronic Spark Timing Grounded Circuit
43	Electronic Spark Control Detects Continuous Knock
44	Electronic Spark Control Cannot Detect Knock
45	Coil Driver Fault
51	ECM Calibration Checksum Error
52	ECM Hardware Failure
54	Oxygen Sensor Lean
55	Oxygen Sensor Rich
61	Fuel Pressure Sensor High
62	Fuel Pressure Sensor Low
81	(multiple causes, use scan tool to determine cause)