

**Engine Management and Emission System Code
reader**

Star Tester

For Ford EECIV/EFI Systems

**Notes revised and expanded by Norman Farmer
(GERALD-TVR) 2012**

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Diagnostics connector is normally found close to the ECU in the rats nest of wiring under the glove box.

Tester has two connectors as there are at least two different types of connector fitted to the cars

Type 1 appears to be fitted to later cars and the additional connector is left fitted to star tester



The black connector is for diagnostics and the redcap is removed by pressing a clip on the bottom of the connector at the back, white connector is for octane adjust

Type 2 appears to be fitted to earlier cars and additional connector on the Star Tester needs to be removed



Diagnostics connector is under black cover, red cover is for octane adjust

***IT IS ESSENTIAL THAT YOU CONFIRM WHICH IS THE
DIAGNOSTICS CONNECTOR BY CHECKING THE COLOUR OF THE
WIRES
THEY SHOULD BE BROWN, BROWN/GREEN AND BLUE/GREEN***

Section 1

General Information

The new STAR-Tester is a Combination of FAST CODE / SLOW CODE reader tester for use on FORD EEC IV/EFI systems. It has a built-in memory, which eliminates the need for the technician to watch the display as codes are received.

Selecting the Mode

Switch off vehicle ignition. Select mode of operation. Place square red switch in HOLD position. Switch on the Star Tester. The display will briefly show "88" before showing "00".

With square red switch in position TEST, the display will show ":00", and with the slider switch on the right hand side in position FAST, the display shows "-:00".

Completion of this self—test routine indicates the Star Tester is now ready for use.

Method of Operation

For details of individual vehicle testing-, please refer to the appropriate workshop manuals, which are in SLOW codes.

NOTE: FAST codes are 100 times faster.

Memory

The STAR—Tester stores in its memory all codes it receives. Once the self test has been completed, the STAR-Tester will retain any codes received until it is turned off or until the square red switch is released and then put back to TEST.

To read the codes in the STAR-Tester memory, release the square red switch and push the MR (Memory Recall) button. For each push a code will be displayed in the order received, beginning with "00". When all codes have been recalled and the M.R. button is pushed again, it will repeat the information until the STAR-Tester is turned off. All information stored in the memory will be erased when the Tester is switched off.

Low Battery Indicator

A low battery is indicated by "LO BAT" in the display. Whenever this indication is displayed, stop the test. Switch off vehicle and STAR—Tester. Change internal 9 V battery in the STAR—Tester and repeat the test.

Connection to the vehicle

A connection of the STAR—Tester to the vehicle can either be made just by using only the cable, or by means of cable plus adaptors 0133230 or 0133231, depending on car model and model year: A special adaptor for use of the STAR— Tester on US—vehicles is available under tool number 2907.

To fully utilize the self test procedures must be carried out in full. The self test procedures are broken down into three separate sequences. Each must be completed before continuing on with the next. Following the procedures rigidly will ensure any system malfunction will be found.

The three test procedures are:

Engine off tests

Continuous code tests

Engine running tests

Due to the advanced self test capability of the module, the self test procedures are more detailed than those for previous EEC IV system tests. Therefore the format of the procedures has been revised to provide a more detailed description of the actions needed to be performed by the technician.

Star Testers are fitted with a switch for fast/slow operation. Ensure switch is in the slow position when performing these procedures.

Section 2

Engine Off Self Test Procedures

This checks sensors and actuators in the rest position and also provides a 'wiggle' test for locating possible wiring or connector faults

(If the low battery indicator is displayed replace batteries immediately and repeat the complete self test procedure)

	Self Test procedure	Step Explanation and Detail
1	Disconnect octane and idle adjust wires if grounded Ensure air conditioning is off Select neutral and ensure handbrake is fully applied	
2	Connect the Star Tester Switch on the tester by depressing the ON/OFF button Depress the 2 digit button, depress the Slow button, depress MEM/TEST button	Self test output socket is a 3 pin plug located in the loom ear the ECU Ensure the low battery warning is not displayed Code TEST symbol should be displayed which indicates the tester is ready to accept test information from the EEC IV module
3	Switch on the vehicle ignition (DO NOT CRANK ENGINE)	With the ignition on the EEC IV module will enter the self test sequence after a short pause whilst the module is being activated
4	Observe and RECORD codes displayed, code 11 or fault codes will be displayed	The EEC IV module will 'look' for normal engine 'off' sensor readings and the state of various input switches, Any out of limit value will result in a fault code being logged by the EEC IV. The EEC IV will then emit a series of codes which will be displayed on the tester. Any codes given will then be repeated once. However, should a single fault or no fault be detected the code will stay displayed on the tester, but the LED will flash indicating that the code is being repeated. Codes given indicate faults on the system at the time of testing. A code 11 indicates no faults detected.
5	Code 10 will now be displayed 'Wiggle' wiring and connectors whilst observing the LED to check for possible wiring or connector faults	Indicates the module has now entered the 'wiggle' test mode If LED flashes this indicates a fault. Note location of wiring or connector faults.

6	<p>Switch off vehicle ignition</p> <p>Depress MEM/TEST button</p> <p>Switch off tester but DO NOT disconnect tester</p>	
7	<p>Rectify any faults detected, refer to page10.</p> <p>Proceed to continuous self test after all faults corrected</p>	<p>Rectify any fault codes recorded in steps 4 or 5. Refer to page11 for appropriate corrective action. Once faults have been rectified repeat complete self test procedures.</p>

Section 3

Continuous Code Self Test Procedure

Checks for normal running values.

	Self Test procedure	Step Explanation and Detail
1	<p>Start Engine</p> <p>Switch on the tester by depressing the ON/OFF button</p> <p>Depress the 2 digit button, depress the Slow button and wait approx 4 seconds depress MEM/TEST button</p>	<p>Ensure the low battery warning is not displayed</p> <p>Code TEST symbol should be displayed which indicates the tester is ready to accept test information from the EEC IV module</p>
2	<p>Observe and RECORD codes displayed, code 11 or fault codes will be displayed</p>	<p>The EEC IV module will 'look' at sensor readings and the state of various input switches, Any out of limit value will result in a fault code being logged by the EEC IV. The EEC IV will then emit a series of codes which will be displayed on the tester. Any codes given will then be repeated once. However, should a single fault or no fault be detected the code will stay displayed on the tester, but the LED will flash indicating that the code is being repeated. Codes given indicate faults on the system at the time of testing. A code 11 indicates no faults detected.</p>
3	<p>Depress MEM/TEST button</p> <p>Switch off tester</p> <p>Switch off vehicle ignition</p> <p>but DO NOT disconnect tester</p>	
4	<p>Rectify any faults detected, refer to page 10.</p> <p>Proceed to continuous self test after all faults corrected</p>	<p>Rectify any fault codes recorded in steps 4 or 5. Refer to page 11 for appropriate corrective action. Once faults have been rectified repeat complete self test procedures.</p>

Section 4

Engine Running Self Test Procedure

	Self Test procedure	Step Explanation and Detail
1	<p>Switch on the tester by depressing the ON/OFF button</p> <p>Depress the 2 digit button, depress the Slow button and wait approx 4 seconds depress MEM/TEST button</p>	<p>Ensure the low battery warning is not displayed</p> <p>Code TEST symbol should be displayed which indicates the tester is ready to accept test information from the EEC IV module</p>
2	Switch on ignition, wait for three seconds and start engine	Pause is necessary to ensure that the EEC IV module has initialized
3	Code 50 should be displayed	Code 50 confirms that the module is European specification
4	<p>A series of code MAY be given</p> <p>If faults codes are given, switch off tester, depress MEM/TEST button and switch off engine. Rectify any codes given and repeat complete engine running test procedure.</p>	Any codes displayed at this stage indicated that the EEC IV module has detected that the engine coolant is not hot enough, transmission is not in neutral or air conditioning is on. If a fault is detected the module will not continue with dynamic checks.
5	Engine speed will then increase	The increase in engine speed is caused by the EEC IV module entering dynamic test sequence. This checks system switches and inputs for engine running limits. The EEC IV controlled actuators are checked by simulating various conditions and comparing the actuator responses against programmed parameters. Any faults detected are logged by the EEC IV module to be displayed later by the tester.
6	Code 10 will then be given – Blip throttle as soon as Code 10 is displayed	When code 10 is given this is an instruction to blip the throttle. When the throttle is depressed the EEC IV module must detect that engine speed has exceeded 3,000 rpm
7	<p>A code 44 MAY be displayed, if so depress MEM/TEST, switch off tester and engine. Return to step 1 and repeat complete engine running self test procedure.</p> <p>If code 44 is not displayed continue self test procedure</p>	Code 44 indicates that the module has not detected a sufficient change in engine speed
8	Code 11 or fault codes are displayed	Codes displayed are faults which have occurred at any time during test procedure.
9	Rectify any faults detected in step 8. If faults are detected depress MEM/TEST button on front of tester and switch off tester.	Refer to page 11 for appropriate corrective action. Repeat complete engine running self test procedure

	If no faults are detected code 11 is displayed continue to step	
10	<p>Code 60 should then be displayed</p> <p>Check and adjust ignition timing if necessary. If code 70 is displayed before ignition timing is set continue to step 11 and then repeat the complete engine running self test procedure to obtain code 60.</p> <p>If necessary hold throttle slightly open using a feeler gauge to adjust/check timing</p>	<p>The EEC IV has locked ignition timing and idle speed control valve to preset values. No compensation of ignition timing or idle speed will take place. Basic ignition timing must be set in this mode.</p> <p>Code 70 is displayed when the EEC IV has unlocked the code 60, code 60 is only retained for 10 minutes approximately to prevent damage to the engine</p>
11	<p>Switch off engine</p> <p>Depress MEM/TEST</p> <p>Switch of and remove tester.</p> <p>Reconnect octane adjust and/or idle adjust wires if necessary.</p>	

Section 5

Fault Code Listings

Pinpoint Checks for Service Codes

Up to three different codes may be displayed for the same component system. These codes provide more specific failure mode information which is solely used to validate the system operation during manufacture. Therefore the in service repair procedures may, in some circumstances, be the same for different codes eg Codes 23 and 33.

Code	Fault Indicated	Action
10	Command code	Wiggle test/blip throttle
11	System pass	If fault still present carry out fuel checks
12	Vane air meter (No 1)	Refer to page 14
13	Engine coolant temperature sensor	Refer to page 15
14	Vane air temperature sensor	Refer to page 19
15	Throttle position sensor	Refer to page 16
16	Vane air meter (No 2)	If code 16 is the only code given in the engine running self test check base idle speed as described on page 28. If more codes are given refer to page 17
18	Battery voltage low	Check charging system and battery, if no fault found fit new EEC IV module
21	Ignition signal erratic	Refer to page 18
22	Vane air meter (No 1)	Refer to page 19
23	Engine coolant temperature sensor	Refer to page 21
24	Vane air temperature sensor	Refer to page 19
25	Throttle position sensor	Refer to page 22
26	Vane air meter (No 2)	Refer to page 17
31	ROM/RAM failure	Carry out breakout box checks, refer to page ??
32	Vane air meter (No 1)	Refer to page 19
33	Engine coolant temperature sensor	Refer to page 21
34	Vane air temperature sensor	Refer to page 19
35	Throttle position sensor	Refer to page 22
36	Vane air meter (No 2)	Refer to page 17
41	Vane air meter (No 1)	Refer to page 14
42	Vane air meter (No 2)	Refer to page 17
43	Throttle position sensor	Refer to page 22
44	Blip test not performed	Repeat self test procedure
45	Vehicle Speed Sensor	Refer to test 35 in the breakout box procedure

46	Idle speed control valve failure	Refer to page 33
47	Low idle speed during test	Refer to page 33, carry out fuel checks, refer to page ??
50	European module fitted	No action required
51	Air conditioning on	Switch air conditioning off and repeat self test
52	Vehicle in drive during test	Select neutral/park and repeat self tests
53	Octane adjust grounded	Disconnect adjustment wire and repeat self test/check wiring refer to page ??
54	Octane adjust grounded	Disconnect adjustment wire and repeat self test check wiring refer to page ??
55	Idle speed adjust grounded	Disconnect adjustment wire and repeat self test check wiring refer to page ??
57	Throttle moved during test	Repeat self test procedure
60	Service set mode	Check and adjust ignition timing if necessary
67	Fuel Rail temperature Switch	Refer to page 24
70	Out of service set	