Computers and Control Systems: Pinpoint Tests

Test A: No Start

PINPOINT TEST A: NO START

No Start	A

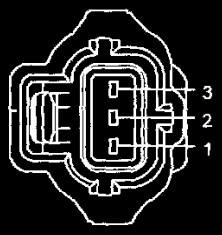
⚠ WARNING: Stop this test at the first sign of a fuel leak and repair as required.
No open flame. No smoking during fuel delivery checks.
Failure to follow these instructions may result in personal injury.

This pinpoint test is intended to diagnose the following:

- spark (as related to electronic engine control)
- powertrain control module (PCM) (12A650)

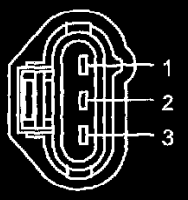
Throttle Position (TP) Sensor Connector

A



A0077554

B



A0077555

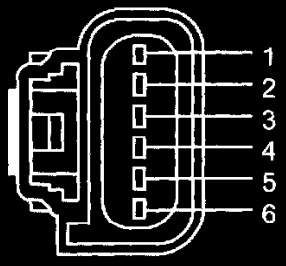
Vehicle	Connector	Pin	Circuit
Escape 2.3L, Focus, Mariner 2.3L, Ranger 2.3L	A	1 3	SIGRTN VREF
All other vehicles	B	3 1	SIGRTN VREF

Warning And Connectors

No Start	A

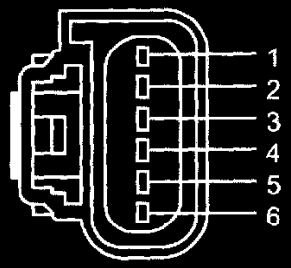
Electronic Throttle Body Throttle Position Sensor (ETBTPS) Connector

A



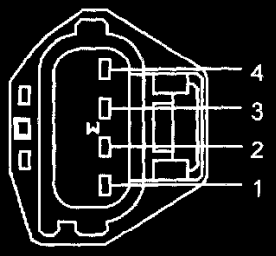
A0077520

B



A0094772

C



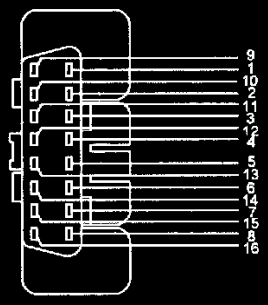
A0077519

Vehicle	Connector	Pin	Circuit
F-150 4.2L	A	2 3	ETCRTN ETCREF
Five Hundred, Freestyle, Fusion 3.0L, Milan 3.0L, Montego, Zephyr	B	4 5	ETCRTN ETCREF
Fusion 2.3L, Milan 2.3L	B	3 5	ETCRTN ETCREF
All other vehicles	C	3 2	ETCRTN ETCREF

Electronic Throttle Body Throttle Position Sensor (ETBTPS) Connector

No Start	A

Data Link Connector (DLC)



A0077513

Pin	Circuit
13	FEPS (Flash EEPROM Programming Signal)

Test Step		Results / Action to Take
A1	ATTEMPT TO CRANK THE ENGINE	
	Note: Verify the inertia fuel shutoff (IFS) switch is set (button pushed in). Refer to the Owner's Literature for location. • **Does the engine crank?**	**Yes** GO to **A2**. **No** REFER to Starting System.
A2	IDENTIFY THE TYPE OF NO START	
	Note: The purpose of this test step is to identify intermittent no starts in order to determine the proper repair procedure. • **Does the vehicle start?**	**Yes** The vehicle has an intermittent no start. GO to Pinpoint Test Z. **No** GO to **A3**.
A3	DETERMINE THE THROTTLE TYPE	
	• **Is vehicle equipped with electronic throttle control?**	**Yes** GO to **A5**. **No** GO to **A4**.

Data Link Connector (DLC) And A1-A3

No Start	A

Test Step	Results / Action to Take
A4 **CHECK THE VREF VOLTAGE TO TP SENSOR** • Key in OFF position. • TP Sensor connector disconnected. • Key ON, engine OFF. • Measure the voltage between: (+) TP Sensor Connector, Harness Side: VREF (-) TP Sensor Connector, Harness Side: SIGRTN • **Is the voltage between 4.5 - 5.5 V?**	**Yes** GO to **A6**. **No** GO to Pinpoint Test C.
A5 **CHECK VREF VOLTAGE TO ETBTPS SENSOR** • Key in OFF position. • ETBTPS connector disconnected. • Key ON, engine OFF. • Measure the voltage between: (+) ETBTPS Connector, Harness Side: ETCREF (-) ETBTPS Connector, Harness Side: ETCRTN • **Is the voltage between 4.5 - 5.5 V?**	**Yes** GO to **A6**. **No** GO to Pinpoint Test C.
A6 **CHECK THE FLASH EEPROM PROGRAMMING SIGNAL (FEPS) CIRCUIT FOR A SHORT TO VOLTAGE IN THE HARNESS** • Key in OFF position. • TP Sensor connector connected. • ETBTPS connector connected. • Key ON, engine OFF. • Measure the voltage between: (+) DLC, Harness Side: FEPS - Pin 13 (-) Vehicle Battery: Negative terminal • **Is the voltage greater than 9 V?**	**Yes** REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test. **No** GO to **A7**.
A7 **CHECK THE RPM IN THE PCM** **Note:** The diagnostic tool must be connected to a reliable voltage source that is powered with the key in the START position (such as directly to the vehicle battery). Also verify that the vehicle battery is fully charged. **Note:** Normal engine cranking speed is between 150 RPM and 350 RPM. • Access the PCM and monitor the RPM PID. • Crank the engine while viewing the RPM PID. • **Is the RPM between 150 RPM - 350 RPM?**	**Yes** GO to **A8**. **No** For base engine concerns, REFER to Engine. For all others, GO to **JD2**.

No Start — A

Test Step		Results / Action to Take
A8	**CHECK THE PCM DRIVER SIGNAL TO THE COILS**	
	Note: Test lamp bulb filament wattages vary widely. The intensity and duration of blinking depends on the test lamp being used. • Connect a test lamp between B+ and each coil driver circuit at the harness connector. • Crank the engine. • **Does the test lamp blink consistently for each coil driver (1 blink per engine revolution)?**	**Yes** GO to **A9.** **No** For Coil-on-plug (COP) ignition testing GO to **JB2.** For Coil pack ignition testing GO to **JC2.**
A9	**CHECK THE FUEL PRESSURE**	
	⚠ **WARNING: The fuel system remains pressurized when the engine is not running. To prevent injury or fire, use caution when working on the fuel system.** **Refer to the fuel system WARNING information at the beginning of Pinpoint Test HC.** ***Failure to follow these instructions may result in personal injury.*** **Note:** For vehicles not equipped with a fuel rail Schrader valve, a T-adapter with hoses must be installed on the fuel rail before proceeding with this test. **Note:** While activating the fuel pump on an electronic returnless fuel system a brief pressure spike may occur. • Key in OFF position. • Relieve the fuel pressure. Refer to Fuel Delivery and Air Induction for the Fuel System Pressure Release procedure. • Connect the fuel pressure gauge to the Schrader valve using the appropriate fuel pressure test hose and adaptor. • Key ON, engine OFF. • Enter output test mode. Refer to Diagnostic Methods, Output Test Mode (OTM). • Activate the fuel pump to obtain maximum fuel pressure. • **Is the fuel pressure within specification (refer to the fuel pressure chart in Pinpoint Test HC)?**	**Yes** GO to **A10.** **No** GO to Pinpoint Test HC.
A10	**CHECK THE FUEL PRESSURE LEAKDOWN**	
	• Key ON, engine OFF. • Enter output test mode. Refer to Diagnostic Methods, Output Test Mode (OTM). • Activate the fuel pump to obtain maximum fuel pressure. • Exit output test mode. • Monitor the fuel pressure. • Verify the fuel pressure remains within 34 kPa (5 psi) of the maximum pressure for 1 minute after turning the pump off. • **Does fuel pressure remain within 34 kPa (5 psi)?**	**Yes** GO to **A11.** **No** GO to Pinpoint Test HC.

No Start

A

Test Step		Results / Action to Take
A11	**CHECK THE FUEL INJECTORS FOR VOLTAGE**	
	Note: A no start condition typically exists only if greater than half of the fuel injectors are without voltage. Check at least 2 fuel injectors, 1 on each bank on V type engines. • Key in OFF position. • Disconnect 2 fuel injectors. • Key ON, engine OFF. • Measure the VPWR voltage at each fuel injector harness connector. • **Is the voltage greater than 10 volts?**	**Yes** GO to **A12**. **No** REPAIR the VPWR circuit. CLEAR the DTCs. REPEAT the self-test.
A12	**CHECK THE FUEL INJECTORS' ABILITY TO DELIVER FUEL**	
	• Cycle the key several times to charge the fuel system. • IFS switch disconnected. • Monitor the fuel pressure gauge while cranking the engine for at least 5 seconds. • **Is there a pressure drop greater than 34 kPa (5 psi) while cranking the engine?**	**Yes** The electronic engine control (EEC) system is not the cause of the no start. The concern is elsewhere. RETURN to Symptom Charts for further direction. **No** GO to **A13**.
A13	**CHECK FOR CORRECT PCM OPERATION**	
	• Disconnect all the PCM connectors. • Visually inspect for: — pushed out pins — corrosion • Connect all the PCM connectors and make sure they seat correctly. • Carry out the PCM self-test and verify the concern is still present. • **Is the concern still present?**	**Yes** INSTALL a new PCM. REFER to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM). **No** The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.