Computers and Control Systems: Pinpoint Tests

Test A: No Start

PINPOINT TEST A: NO START

No Start	A

Note

This pinpoint test is intended to diagnose the following:

- Spark (As related to Electronic Engine Control).
- Powertrain Control Module (PCM) (12a650).

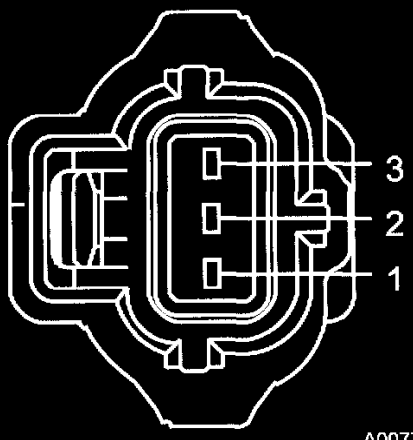
Warning

STOP THIS TEST AT THE FIRST SIGN OF A FUEL LEAK AND SERVICE AS REQUIRED.

No open flame - No smoking during fuel delivery checks.

Throttle position (TP) Sensor Connector

A



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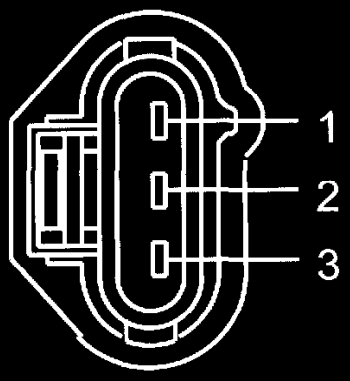
B



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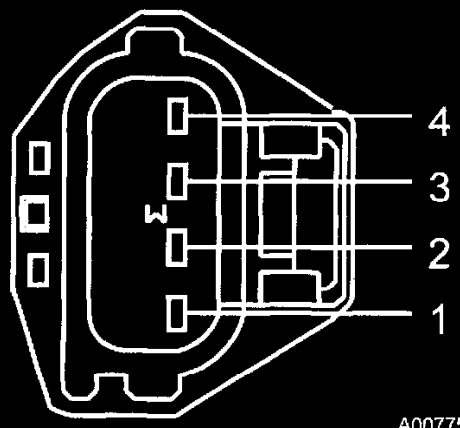
Note, Warning And Connectors

No Start	A

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

Electronic Throttle Body TPS (ETBTPS) Sensor Connector



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Circuit	Pin
ETCRTN (Electronic Throttle Control Return)	3
ETCREF (ETCREF (Electronic Throttle Control Reference Voltage to TP))	2

Test Steps		Results →	Action to Take
A1	CHECK PASSIVE ANTI-THEFT SYSTEM (SECURE LOCK)		
	• Verify anti-theft system status. • **Is the system activated?**	Yes →	REFER to Antitheft and Alarm Systems.
		No →	GO to **A2**.

Connector And Test A1

No Start — A

Test Steps		Results →	Action to Take
A2	ATTEMPT TO CRANK ENGINE		
	Note: Verify inertia fuel shutoff (IFS) switch is set (button pushed in). REFER to Owner Guide for location. • **Does the engine crank?**	Yes → No →	KEY OFF. GO to **A3**. KEY OFF. REFER to Starting Systems.
A3	IDENTIFY 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 → No →	KEY OFF. Vehicle is an intermittent No Start. GO to **Z2**. KEY OFF. GO to **A4**.
A4	DETERMINE THROTTLE TYPE		
	• **Is vehicle equipped with Electronic Throttle Control?**	Yes → No →	GO to **A6**. GO to **A5**.
A5	CHECK VREF VOLTAGE TO TP SENSOR		
	• 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 V - 5.5 V?**	Yes → No →	KEY OFF. RECONNECT TP sensor. GO to **A7**. KEY OFF. GO to **C1**.
A6	CHECK VREF VOLTAGE TO ETC SENSOR		
	• ETBTPS Sensor connector disconnected. • Key ON Engine OFF. • Measure the Voltage between: (+)ETBTPS Sensor Connector, Harness Side: ETCREF - Pin 2 (-)ETBTPS Sensor Connector, Harness Side: ETCRTN - Pin 3 • **Is the Voltage between 4 V - 5.5 V?**	Yes → No →	KEY OFF. Reconnect ETC. GO to **A7**. KEY OFF. GO to **C1**.

Test A2-A6

No Start — A

Test Steps	Results →	Action to Take
A7 CHECK FLASH EPROM POWER SUPPLY (FEPS) CIRCUIT FOR SHORT TO POWER IN HARNESS		
• Key ON Engine OFF. • Measure the Voltage between: (+)DLC Connector, Harness Side: FEPS (-)Vehicle battery: Negative post • **Is the Voltage above 9 V?**	Yes →	KEY OFF. REPAIR short circuit to PWR. **For Coil On Plug ignition testing:** GO to **A16**.
	No →	KEY OFF. GO to **A8**.
A8 CHECK PCM DRIVER TO COILS		
• Connect test lamp between B+ and each coil driver circuit at the harness connector. • Crank the engine. Note: Test lamp bulb filament wattages vary widely. Intensity and duration of blinking will depend upon test lamp being used. • **Does the test lamp blink consistently (one blink per engine revolution)?**	Yes →	KEY OFF. GO to **A9**.
	No →	KEY OFF. GO to **JD1**.
A9 CHECK RPM IN THE PCM		
Note: The scan tool must be connected to a reliable power 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. • Access the PCM-RPM PID using a scan tool. • Crank engine while viewing RPM PID. • **Is the RPM between 150 RPM - 350 RPM?**	Yes →	KEY OFF. **For Coil On Plug ignition testing:** GO to **JB1**. **For Coil Pack ignition testing:** GO to **JC1**. **For Dedicated NGV vehicles that do not require ignition testing:** GO to **A12**. **For All Other vehicles that do not require ignition testing:** GO to **A10**.
	No →	KEY OFF. GO to **JD2**.

No Start — A

	Test Steps	Results →	Action to Take
A10	CHECK FUEL PRESSURE		
	WARNING: THE FUEL SYSTEM WILL REMAIN PRESSURIZED WHEN THE ENGINE IS NOT RUNNING. TO PREVENT INJURY OR FIRE, USE CAUTION WHEN WORKING ON THE FUEL SYSTEM. **FOR ADDITIONAL INFORMATION, REFER TO THE WARNING TEXT FOUND AT THE BEGINNING OF PINPOINT TEST HC.** • Relieve fuel pressure. • Connect fuel pressure gauge to the Schrader valve using the appropriate fuel pressure test hose and adaptor. • Scan Tool Connected. • Key ON Engine OFF. • Enter Output Test Mode (refer to *). • Activate the fuel pump to obtain maximum fuel pressure. • **Is the fuel pressure within specification (use fuel pressure chart in Pinpoint Test HC)?**	Yes →	KEY OFF. GO to **A11**.
		No →	KEY OFF. GO to **HC1**.
A11	CHECK FUEL PRESSURE LEAKDOWN		
	• Scan Tool Connected. • Key ON Engine OFF. • Enter Output Test Mode (refer to *). • Activate the fuel pump to obtain maximum fuel pressure. • Exit Output Test Mode. • Verify Fuel pressure remains within 34 kPa (5 PSI) of the maximum pressure for 1 minute after turning pump off. • **Does fuel pressure remain within 34 kPa (5 PSI)?**	Yes →	KEY OFF. GO to **A12**.
		No →	KEY OFF. GO to **HC1**.
A12	CHECK FUEL INJECTORS FOR VPWR		
	• CHECK at least 2 fuel injectors, one on each bank on V type engines. A no start condition can exist only if greater than half of the fuel injectors are without VPWR. • Disconnect two fuel injectors. • Key ON Engine OFF. • Measure VPWR voltage at the each fuel injector harness connector. • **Is the voltage greater than 10.5 volts?**	Yes →	KEY OFF. **For Dedicated NGV** GO to **A14**. **For Gasoline** GO to **A13**.
		No →	KEY OFF. REPAIR VPWR circuit.

* Diagnostic Methods

No Start — A

Test Steps		Results →	Action to Take
A13	CHECK FUEL INJECTORS ABILITY TO DELIVER FUEL		
	• Cycle key several times to charge fuel system. • Locate and activate the fuel inertia switch to disable fuel pump. • Monitor 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 → No →	KEY OFF. The Electronic Engine Control system is not the cause of the no start. Concern is elsewhere. RETURN to Symptom Charts for further direction. KEY OFF. REPLACE PCM (refer to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM)).
A14	CHECK FUEL PRESSURE		
	WARNING: BEFORE SERVICING OR REPLACING ANY COMPONENTS IN THE FUEL SYSTEM, REDUCE THE POSSIBILITY OF INJURY OR FIRE BY FOLLOWING DIRECTIONS IN PINPOINT TEST HB WARNING, CAUTION, AND HANDLING. • Key ON Engine OFF. • Access the PCM-FRP PID using a scan tool. • Record fuel pressure. • **Is the fuel pressure within specification (use fuel pressure chart in Pinpoint Test HC)?**	Yes → No →	GO to **A15**. GO to **HB1**.
A15	CHECK INJECTOR SIGNAL FROM NATURAL GAS MODULE		
	Note: This test requires a standard 12V test lamp. A properly operating system will show a dim glow. • Connect a non-powered test lamp between the injector signal circuit and VPWR circuit pin at the injector harness. • Crank the engine. • **Does the test lamp have a dim glow while cranking?**	Yes → No →	GO to **HB1**. GO to **HA16**.
A16	CHECK PCM DRIVER TO COILS		
	• Connect test lamp between B+ and each coil driver circuit at the harness connector. • Crank the engine. • **Does the test lamp blink consistently (one blink per engine revolution)?**	Yes → No →	GO to **A9**. GO to **JD1**.