Computers and Control Systems: Pinpoint Tests
Test JD: Crankshaft Position (CKP) Sensor

Crankshaft Position (CKP) Sensor	JD

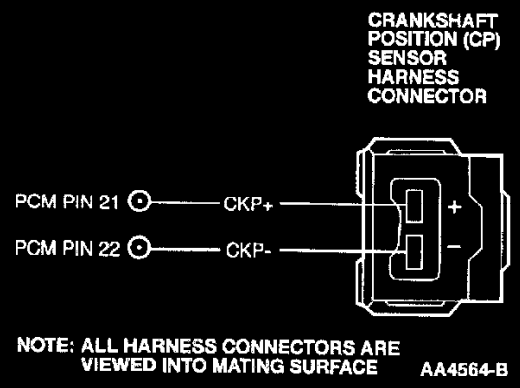
Note

This pinpoint test is intended to diagnose the following:

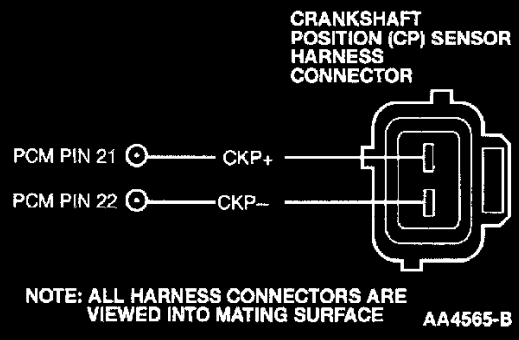
- Crankshaft position (CKP) sensor (6C315)
- Harness Circuits: CKP(+) and CKP(-)
- Powertrain control module (PCM) (12A650)

Pinpoint Test Schematics and Connectors

2.0L (2V) Escort, 4.0L SOHC Explorer



Escort (4V), 2.0L Cougar, Ranger 2.3L

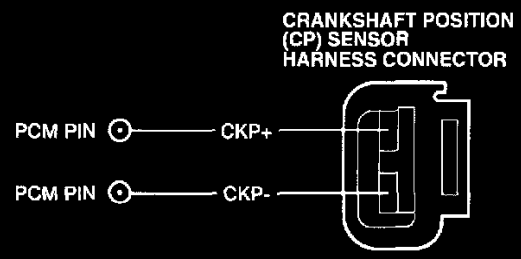


Note, Schematics and Connectors

Crankshaft Position (CKP) Sensor

JD

2.0L (2V) Focus, LS6, Explorer/Mountaineer, Expedition/Navigator, Ranger 3.0L



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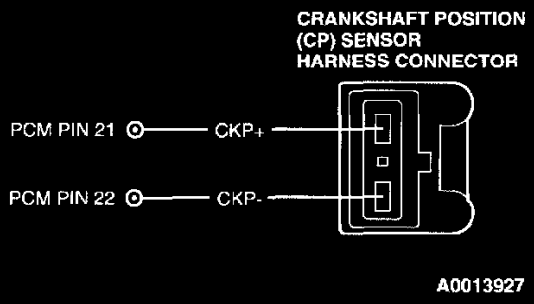
PCM CONNECTOR PIN NUMBERS

PCM TYPE	CKP(+)	CKP(-)
104	21	22
122	30	40
150	55	56

2.0L (4V) Focus



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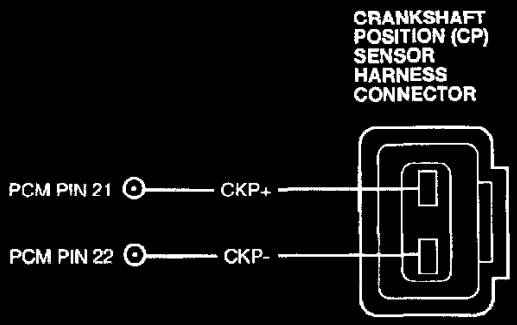
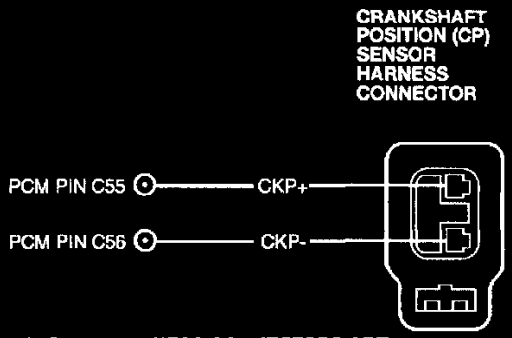
2.5L Cougar



NOTE: ALL HARNESS CONNECTORS ARE VIEWED INTO MATING SURFACE

AA4566-B

LS8, Thunderbird



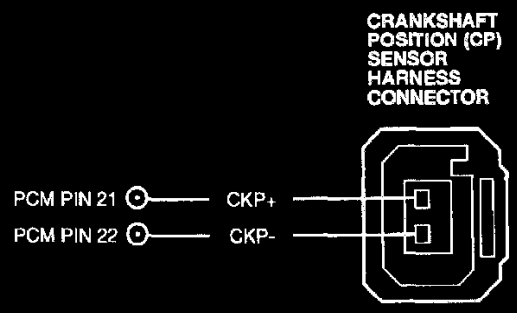
NOTE: ALL HARNESS CONNECTORS ARE VIEWED INTO MATING SURFACE

AA4567-B

Test Schematic

Crankshaft Position (CKP) Sensor — JD

All Others



NOTE: ALL HARNESS CONNECTORS ARE VIEWED INTO MATING SURFACE AA4568-B

Test Steps	Results →	Action to Take
JD1 CHECK CKP(+) CKP(-) CONTINUITY Note: Refer to the PCM connector pin numbers in the beginning of this Pinpoint Test. • Disconnect the CKP sensor and PCM. • Measure resistance of CKP(+) and CKP(-) circuits between the PCM harness connector and the CKP harness connector. • **Is resistance greater than 5 ohms?**	Yes → No →	REPAIR open circuit. GO to **JD2**.
JD2 CHECK FOR CKP(+) BIAS VOLTAGE FAULT • Reconnect the PCM. • Key on, engine off. • Measure voltage between CKP(+) at the CKP harness connector and battery negative post. • Key off. • **Was voltage greater than 1.0 volt but less than 2.0 volts?**	Yes → No →	GO to **JD3**. Bias fault. GO to **JD19**.
JD3 CHECK FOR CKP(-) BIAS VOLTAGE FAULT • Key on, engine off. • Measure voltage between CKP(-) circuit at the CKP harness connector and battery negative post. • **Was voltage between 1.0 and 2.0 volts?**	Yes → No →	KEY OFF. GO to **JD10**. Bias fault. GO to **JD4**.
JD4 DETERMINE IF BIAS HIGH OR BIAS LOW FAULT • **Was bias voltage reading in test step JD3 less than 1.0 volt?**	Yes → No →	Bias low fault. GO to **JD5**. Bias high fault. GO to **JD6**.

Schematic, Test JD1 - JD4

Crankshaft Position (CKP) Sensor — JD

	Test Steps	Results →	Action to Take
JD5	CHECK CKP(-) CIRCUIT FOR SHORT TO GROUND IN HARNESS		
	• Disconnect PCM. • Measure resistance of CKP(-) circuit at the PCM harness connector and battery negative post. • **Is each resistance greater than 10K ohms?**	Yes → No →	REPLACE PCM (refer to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM). REPAIR short circuit.
JD6	CHECK CKP(-) CIRCUIT FOR SHORT TO POWER IN HARNESS		
	• Disconnect PCM. • Key on, engine off. • Measure voltage of CKP(-) circuit at the PCM harness connector and battery negative post. • **Is voltage less than 0.5 volt?**	Yes → No →	REPLACE PCM (refer to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM). REPAIR short circuit.
JD10	CHECK CKP SENSOR AMPLITUDE AT PCM		
	• Key off. • Reconnect CKP sensor. • Disconnect PCM. • Measure voltage between CKP(+) and CKP(-) at the PCM harness connector when cranking engine. • **Was settled ac voltage reading greater than 0.4 volt?**	Yes → No →	CKP circuit is OK. GO to **JD11**. Amplitude fault. GO to **JD12**.
JD11	CHECK CKP(+) CIRCUIT FOR SHORT TO GROUND AT SENSOR		
	• Measure resistance between CKP(+) and battery negative post. • **Is the resistance greater than 10K ohms?**	Yes → No →	GO to **JB1**. GO to **JD17**.
JD12	CHECK CKP CIRCUIT RESISTANCE FOR AMPLITUDE FAULT		
	• Measure resistance between CKP(+) and CKP(-) at the PCM harness connector. • **Is resistance between 290 and 800 ohms (900 and 1300 for LS6/LS8)?**	Yes → No →	GO to **JD16**. GO to **JD13**.
JD13	DETERMINE IF RESISTANCE HIGH OR RESISTANCE LOW FAULT		
	• **Was the resistance from test step JD12 less than 290 ohms?**	Yes → No →	Low resistance fault. GO to **JD14**. REPLACE CKP sensor and RESET KAM (5 minute battery disconnect).
JD14	CHECK CKP(+) FOR SHORT TO CKP(-)		
	• Disconnect CKP sensor. • Measure resistance between the CKP(+) and CKP(-) at the harness connector. • **Is resistance less than 5 ohms?**	Yes → No →	REPAIR short. REPLACE CKP sensor and RESET KAM (5 minute battery disconnect).

Crankshaft Position (CKP) Sensor — JD

Test Steps	Results →	Action to Take
JD16 CHECK CKP SENSOR AND PULSE WHEEL		
• Check pulse wheel and CKP sensor visually for damage. • **Is CKP sensor and pulse wheel OK?**	Yes →	REPLACE CKP sensor and RESET KAM (5minutes battery disconnect).
	No →	REPAIR or REPLACE damaged parts.
JD17 CHECK FOR OPEN OR SHORT IN PCM		
• Disconnect the CKP sensor and connect the PCM. • Key off. • Measure the resistance between the CKP(+) and CKP(-) at the CKP harness connector. • **Is the resistance between 16K and 24K ohms?**	Yes →	GO to **JD18**.
	No →	REPLACE the PCM.
JD18 CHECK CKP(+) CIRCUIT FOR SHORT TO CKP(-) CIRCUIT IN HARNESS		
• Disconnect PCM. • Measure resistance between CKP(+) and CKP(-) at the PCM harness connector. • **Is resistance greater than 1000 ohms?**	Yes →	REPLACE CKP sensor and RESET KAM (5minutes battery disconnect).
	No →	REPAIR short circuit.
JD19 DETERMINE IF BIAS VOLTAGE HIGH OR BIAS VOLTAGE LOW FAULT		
• **Was bias voltage reading in test step JD2 less than 1.0 volt?**	Yes →	Low bias voltage fault. GO to **JD20**.
	No →	High bias voltage fault. GO to **JD21**.
JD20 CHECK CKP(+) CIRCUIT FOR SHORT TO GROUND IN HARNESS		
• Disconnect PCM. • Measure resistance between CKP(+) and battery negative post. • **Is resistance greater than 10K ohms?**	Yes →	REPLACE PCM (refer to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).
	No →	REPAIR short circuit.
JD21 CHECK CKP(+) CIRCUIT FOR SHORT TO POWER IN HARNESS		
• Disconnect PCM. • Key on, engine off. • Measure voltage of CKP(+) and battery negative post. • **Is voltage less than 0.5 volt?**	Yes →	REPLACE PCM (refer to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM).
	No →	REPAIR short circuit.

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Test Steps		Results →	Action to Take
JD22	P1336 CONTINIOUS MEMORY CODE: CHECK CKP CIRCUIT HARNESS Shield Ground		
	Note: The shield must be grounded at one end (near the PCM) only. • Key off. • Reconnect PCM. • Measure the resistance between battery negative and shield of CKP harness. • **Is resistance less than 5 ohms?**	Yes →	The CKP circuit is not the source of electrical noise. GO to Pinpoint Test HD
		No →	REPAIR open circuit or poor ground connection.