

Last Modified: 8-26-2022	6.11:8.1.0	Doc ID: RM000000TCW05ZX
Model Year Start: 2008	Model: RX400H	Prod Date Range: [08/2007 -]
Title: 3MZ-FE ENGINE CONTROL SYSTEM: SFI SYSTEM: P0335; Crankshaft Position Sensor "A" Circuit; 2008 MY RX400H [08/2007 -]		

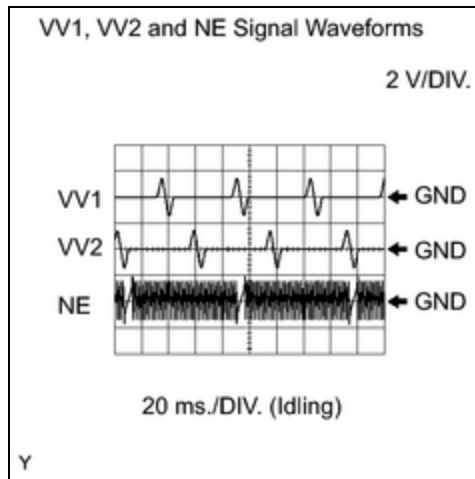
DTC	P0335	Crankshaft Position Sensor "A" Circuit
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DESCRIPTION

The crankshaft position sensor (NE signal) consists of a magnet, iron core and pickup coil.

The NE signal plate (crankshaft position sensor plate) has 34 teeth and is installed on the crankshaft. The NE signal sensor generates 34 signals for each engine revolution. This sensor monitors a plate (timing rotor) located on the crankshaft timing pulley and is used by the ECM (Included in HV control ECU) to detect crankshaft angle and engine speed (RPM/NE). As the crankshaft timing pulley rotates through an engine revolution, this sensor communicates the rotation of the NE signal plate as a pulse signal to the ECM. Based on the signal, the ECM controls fuel injection time and ignition timing.

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
P0335	No CKP sensor signal to ECM (Included in HV control ECU) while engine running (Engine rotating signal from HV control ECU) (2 trip detection logic)	<ul style="list-style-type: none"> • Open or short in CKP sensor circuit • CKP sensor • CKP sensor plate • HV control ECU



Reference: Inspection using an oscilloscope.

HINT:

- The correct waveform is as shown.
- VV1+ and VV2+ stand for the VVT sensor signal, and NE+ stands for the CKP sensor signal.

ITEM	CONTENT
Terminals	VV1+ - NE- VV2+ - NE- NE+ - NE-
Equipment Settings	5 V/DIV., 20 ms./DIV.
Conditions	Cranking or idling

MONITOR DESCRIPTION

If there is no signal from the crankshaft position sensor despite the engine revolving, the ECM (Included in HV control ECU) interprets this as a malfunction of the sensor.

If the malfunction is not repaired successfully, these DTCs are set 10 seconds after the engine is next started.

MONITOR STRATEGY

Related DTCs	P0335: CKP sensor range check or rationality
Required Sensors/Components (Main)	Crankshaft Position (CKP) sensor
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	4.7 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

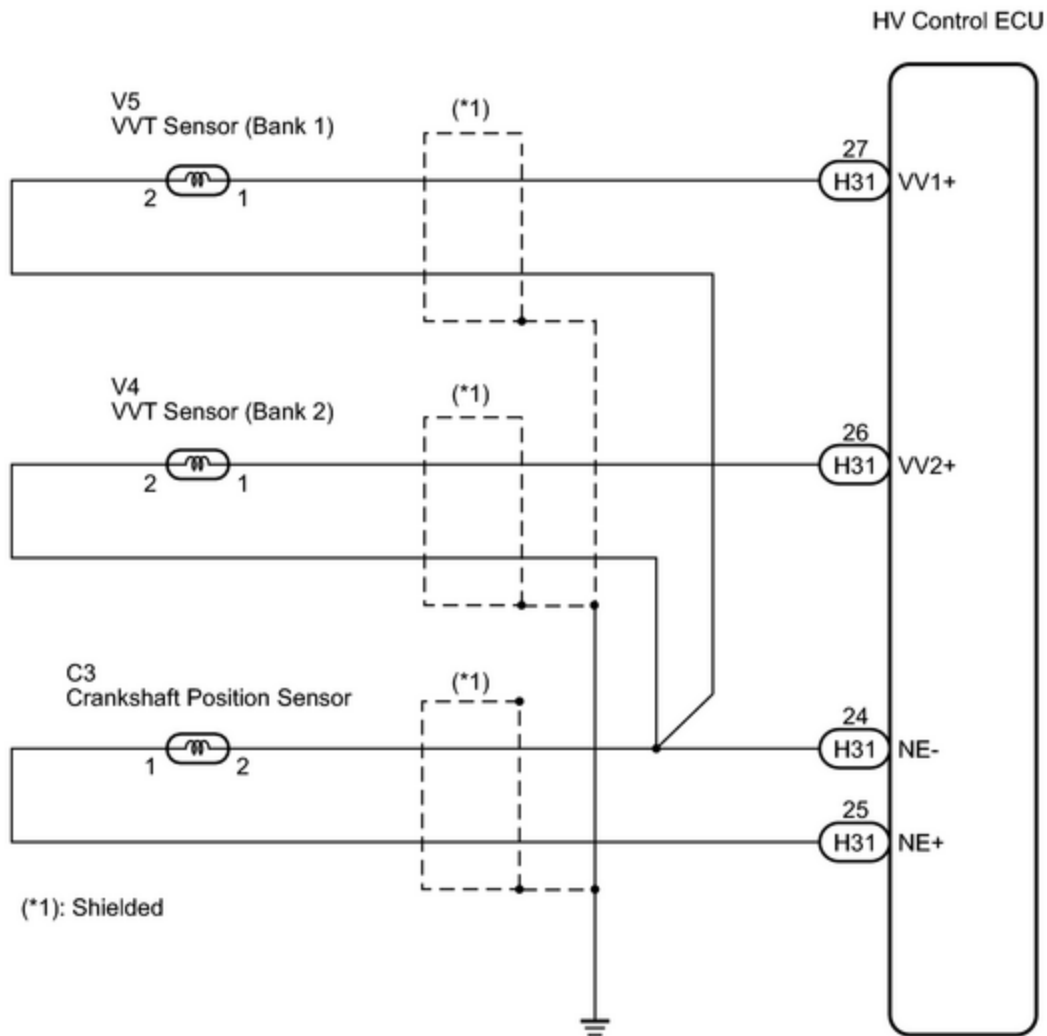
TYPICAL ENABLING CONDITIONS

Ignition switch	ON
Engine rotating signal from HV control ECU	Engine running

TYPICAL MALFUNCTION THRESHOLDS

Sensor signal	No signal
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WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If no problem is found by this diagnostic troubleshoot procedure, troubleshoot the engine mechanical system.
- Check the engine speed. The engine speed can be checked by using Techstream. To check, follow the operation below:
 - a. Connect Techstream to the DLC3.
 - b. Put the engine in inspection mode INFO.
 - c. Start the engine.
 - d. Turn the tester ON.
 - e. Enter the following menus: Powertrain / Engine and ECT / Data List / Engine Speed.

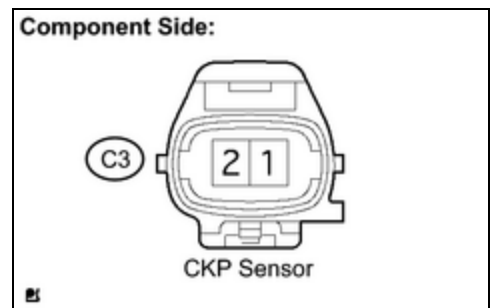
The engine speed may be indicated as zero despite the engine revolving normally. This is caused by a lack of NE signals from the crankshaft position (CKP) sensor. Alternatively, the engine speed may be indicated as lower than the actual engine speed, if the CKP sensor output voltage is insufficient.

- Read freeze frame data using Techstream. The ECM (Included in HV control ECU) records vehicle and driving condition information as freeze frame data the moment a DTC is stored. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was LEAN or RICH, and other data from the time the malfunction occurred.

PROCEDURE

1. INSPECT CRANKSHAFT POSITION SENSOR

- (a) Disconnect the C3 crankshaft position (CKP) sensor connector.



(b) Measure the resistance between terminals 1 and 2.

Standard resistance:

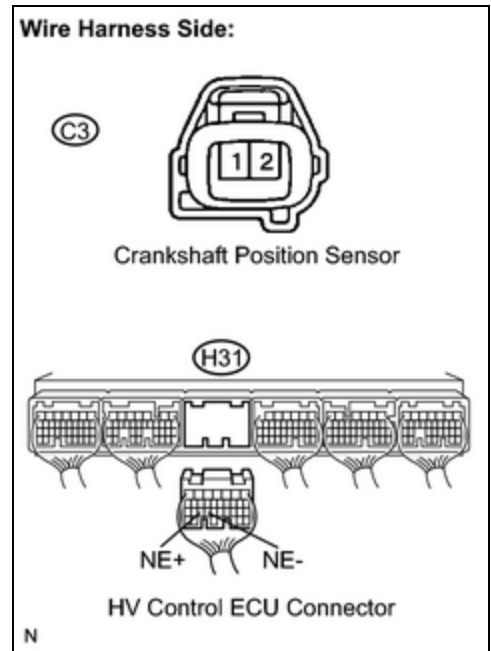
TESTER CONNECTION	SPECIFIED CONDITION
1 - 2	1,850 to 2,450 Ω at 20°C (68°F)

(c) Reconnect the CKP sensor connector.

NG ▶ REPLACE CRANKSHAFT POSITION SENSOR

OK

2.	CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - HV CONTROL ECU)
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(a) Disconnect the C3 CKP sensor connector.

(b) Disconnect the H31 HV control ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard resistance (Check for open):

TESTER CONNECTION	SPECIFIED CONDITION
C3-1 - NE+ (H31-25)	Below 1 Ω

TESTER CONNECTION

SPECIFIED CONDITION

C3-2 - NE- (H31-24)

Below 1 Ω

Standard resistance (Check for short):

TESTER CONNECTION

SPECIFIED CONDITION

C3-1 or NE+ (H31-25) - Body ground

10 k Ω or higher

C3-2 or NE- (H31-24) - Body ground

10 k Ω or higher

(d) Reconnect the HV control ECU connector.

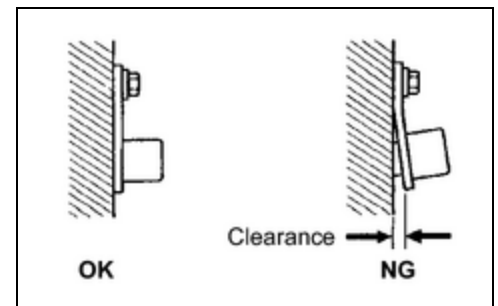
(e) Reconnect the CKP sensor connector.

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR**OK****3. CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)**

(a) Check the CKP sensor installation.

OK:

Sensor is installed correctly.

**NG** ► TIGHTEN SENSOR**OK****4. CHECK CRANKSHAFT POSITION SENSOR PLATE (TEETH OF SENSOR PLATE)**

(a) Check the teeth of the sensor plate.

OK:

Sensor plate does not have any crack or deformation.

NG ► REPLACE CRANKSHAFT POSITION SENSOR PLATE**OK** ► REPLACE HV CONTROL ECU