

Subject: ENGINE CRANKS NO START	Bulletin No: 01-048/06
	Last Issued: 11/17/2005

BULLETIN NOTE

- This bulletin supersedes the previous bulletin 01-004/05, issued 12/01/2005. The DESCRIPTION, REPAIR PROCEDURE, PART(S) INFORMATION and WARRANTY INFORMATION sections has been changed.
- This TSB applies only to verified customer complaints. If Emission Recall 4206F has **NOT** been completed, perform this Service Bulletin first, then complete Emission Recall 4206F.

APPLICABLE MODEL(S) / VINS

2004-2007 RX-8

DESCRIPTION

Some vehicles may experience difficulty starting (cranks no start). This may occur after driving the vehicle a short distance without engine reaching normal operating temperature. Examples: starting a vehicle and moving it to wash it, engine stall due to mis-application of clutch then restart. This commonly occurs at port facilities or dealer lots where vehicles are frequently started cold, moved for short distances and then turned off. This concern may also occur due to low cranking RPM during engine starting.

A cranks, no start condition may be caused by fuel flooding resulting in either fouled spark plugs or lower than normal compression. Carefully follow REPAIR PROCEDURE "A" and refer to VIN application to determine necessary repair action.

NOTE:

- After repairs, provide customers with CUSTOMER INFORMATION on the last page of this bulletin (for customers to try after a "CRANKS, NO START" condition, before towing to dealership).

REPAIR PROCEDURE "A"

1. Inspect battery.

Some vehicles will require battery replacement depending on VIN / production range, and / or visual identification. 2005 and later Model Year vehicles **DO NOT** require battery replacement unless battery fails testing. Use the inspection procedure below to determine if battery replacement is necessary.

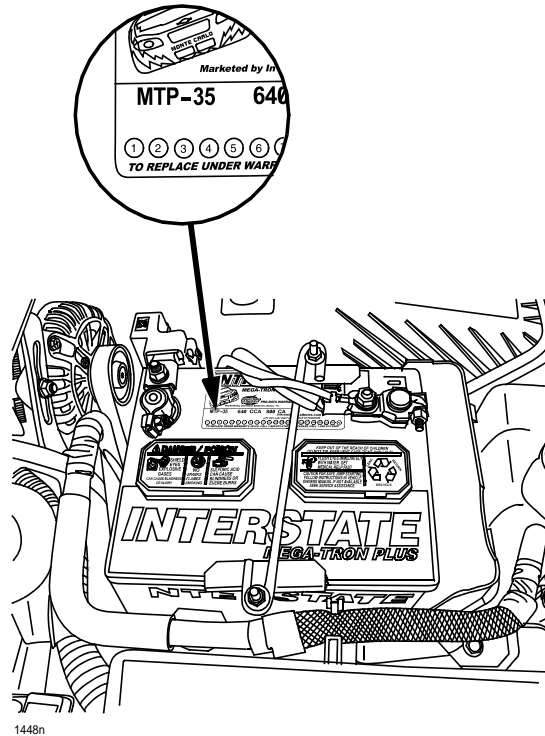
a. Is the vehicle built after June 1, 2004 (starting with VIN JM1FE17*****139714)

- YES – Battery type is OK (Panasonic JIS 75D23L), go to STEP 2.
- NO – Battery inspection is required, proceed to STEP 1b.

b. Remove battery cover and inspect battery label. The following batteries are approved and DO NOT require replacement. If the vehicle's battery type matches one of the following descriptions, proceed to STEP 2.

- OEM Panasonic battery JIS specification "75D23L"
- Mazda Genuine replacement battery part number 0000-80-6535-WB

- Interstate brand "MTP35" battery.
 - If the vehicle's battery type matches one of the following descriptions, proceed to STEP 2.
 - If the vehicles battery type does not match the above descriptions, replace with Mazda Genuine replacement battery # 0000-80-6535-WB. Proceed to STEP 3 after battery replacement.



NOTE:

- Dark current reading fluctuates with PATS light.

2. Verify battery is fully charged and charge if necessary. If battery charge is low, check for dark current (back-up current) draw. Revised max current draw is 40-50 MA.

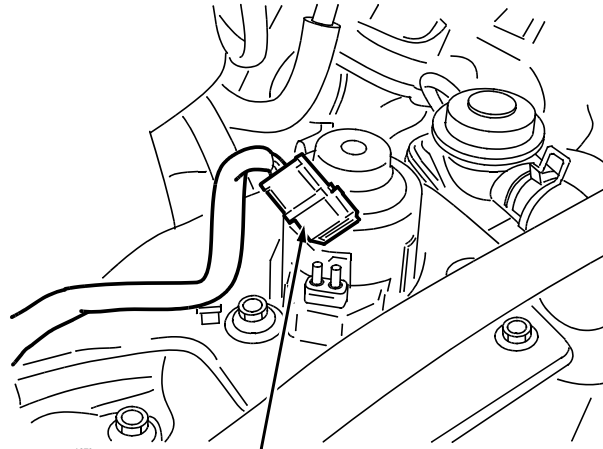
NOTE:

- Hard/no start concerns may be caused by lower than specification cranking compression at engine start. Charge and inspect vehicle battery, replace with 0000-80-6535-WB if necessary. If battery replacement is necessary, make sure to order through the Mazda parts system. DO NOT place orders through Interstate directly. Also, inspect battery for correct part number (0000-80-6535-WB) and CCA rating (640) before installation. It is not necessary to test batteries, and / or attach Midtronics printout to the repair order when battery is replaced that is not on the approved list of batteries in STEP 1b. For warranty reimbursement of batteries listed under STEP 1b, Midtronics printout indicating battery failure must be attached to repair order and readings must be documented on warranty claim.

3. Disconnect the secondary air injection pump electrical connector (B1-04).

NOTE:

- This will protect the catalytic converter by preventing rapid light off due to unburned fuel purging from the engine in the following steps.



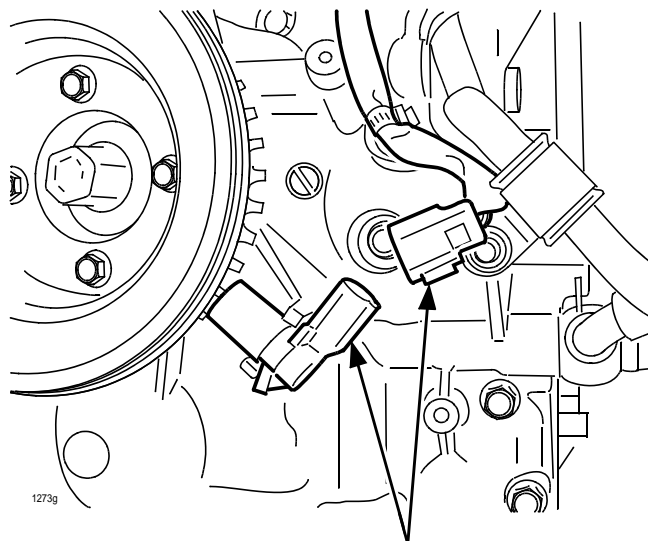
SECONDARY
AIR INJECTION PUMP
CONNECTOR (B1-04)

CAUTION:

- The following steps will force un-burnt fuel from the combustion chambers through the spark plug holes. Use caution not to create sparks or other sources of ignition during these steps. Perform this procedure in a well ventilated area.
4. Remove all 4 spark plugs from the engine. See workshop manual section 01-18 SPARK PLUG REMOVAL / INSTALLATION.
 5. Disconnect Eccentric Shaft Position Sensor (ESPS) B1-27.

NOTE:

- This will cut fuel injection and spark while performing the procedure.



DISCONNECT ECCENTRIC
SHAFT POSITION SENSOR

6. Place cloth near spark plug holes to absorb fuel residue.
7. Crank the engine until all fuel is purged from spark plug holes. (Do not crank engine longer than 10 seconds. If more than 10 seconds is required, wait 5 seconds in between cranking.) Perform this procedure in a well ventilated area.
8. Connect ESPS connector B1-27.
9. Install revised spark plugs.
10. Go to ENGINE STARTER INSPECTION / IDENTIFICATION on to determine if engine starter replacement is necessary.
11. Attempt to start engine without depressing accelerator pedal.
 - If the engine starts, go to STEP 12.
 - If engine fails to start, the engine compression may be lower than specification due to poor sealing. Go to REPAIR PROCEDURE "B".
12. Keep engine running between 1500-2000 RPM until engine speed has stabilized. Maintain this engine speed until all smoke has dissipated and / or engine has come to full operating temperature.

NOTE:

- Do not race the engine, this may cause catalyst damage.

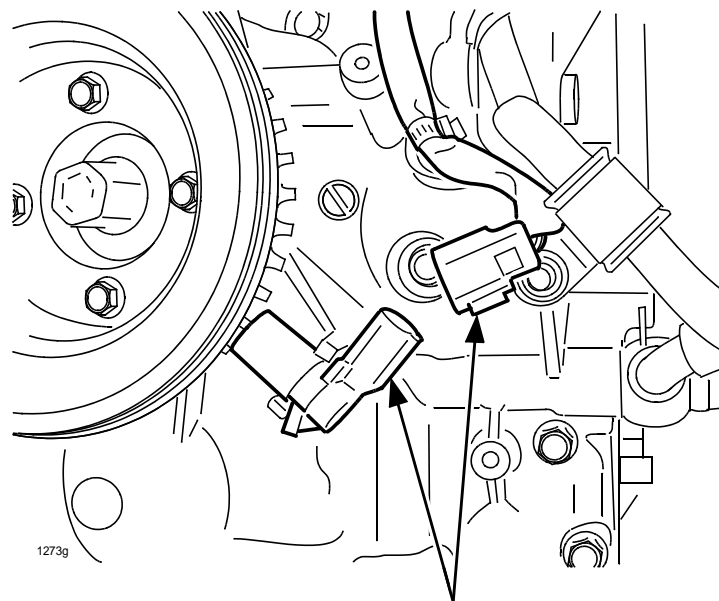
13. Shut engine off.
14. Connect the secondary air injection pump connector B1-04.
15. Erase all DTCs and confirm repairs.

REPAIR PROCEDURE "B"

1. Disconnect Eccentric Shaft Position Sensor (ESPS) B1-27.

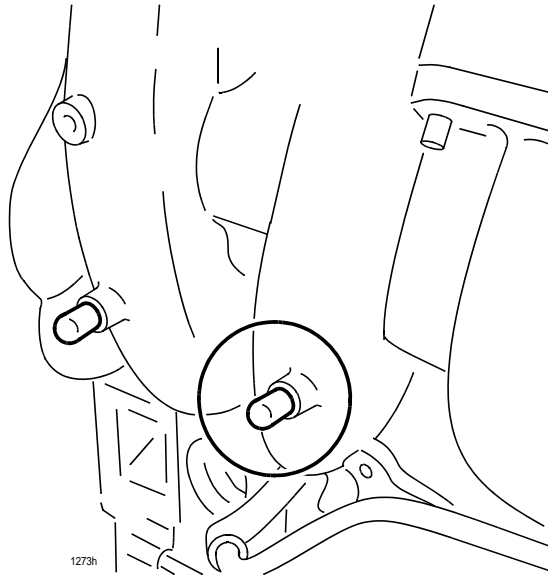
NOTE:

- This will cut fuel injection & spark while performing the procedure.



DISCONNECT ECCENTRIC
SHAFT POSITION SENSOR

2. Remove the front vacuum plug from the passenger side of the lower intake manifold.



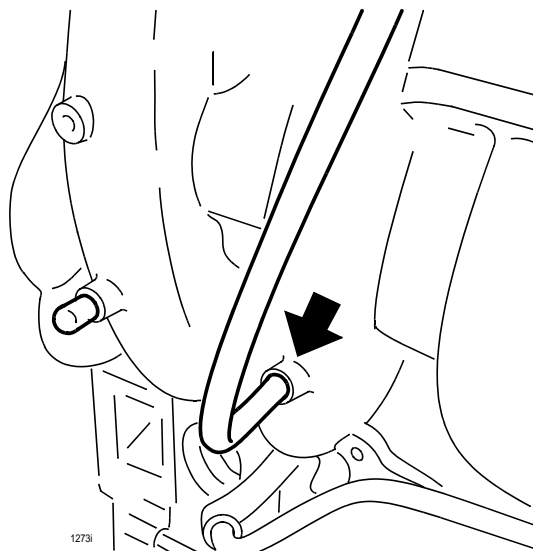
NOTE:

- 2006 model year and later vehicles have vacuum hoses attached to these ports for the PCV system. Disconnect these hoses from the lower intake manifold ports one at a time when performing this procedure. These hoses do not need to be plugged once disconnected.

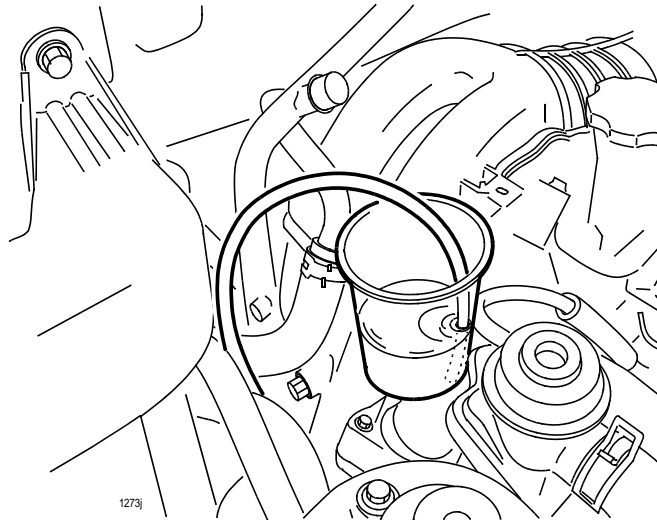
3. Fabricate a vacuum line (About 2 feet in length) & attach to front vacuum port as shown in the illustration.

CAUTION:

- DO NOT attempt to service both vacuum ports at the same time. Perform procedure for front port, then perform procedure for rear port.



4. Add 10-15cc's of 5W-20 **engine oil** to a small container.
5. Insert vacuum line into the bottom of the container.



6. Crank over engine until all oil is drawn into the intake manifold. (Do not depress accelerator pedal during this step.)

NOTE:

- If oil cannot be drawn into engine due to low vacuum, add oil through leading spark plug holes, or use a syringe & inject through vacuum lines & into the intake manifold. Add 10-15cc's of 5W-20 engine oil to each rotor.
7. Reinstall leading spark plug if removed during STEP 6.
 - On 2004-2005, disconnect vacuum line from intake manifold & reinstall vacuum plug.
 - On 2006 model year and later, disconnect vacuum line from intake manifold and reinstall PCV vacuum line.
 8. Repeat STEPS 2-7 for rear vacuum port.
 9. Connect ESPS connector B1-27.
 10. Attempt to start engine without depressing accelerator pedal.
 - If engine starts, proceed to STEP 12 in REPAIR PROCEDURE "A".
 - If engine fails to start, check engine compression & follow diagnosis according to workshop manual section 01-03 NO.6 CRANKS NORMALLY BUT WILL NOT START.

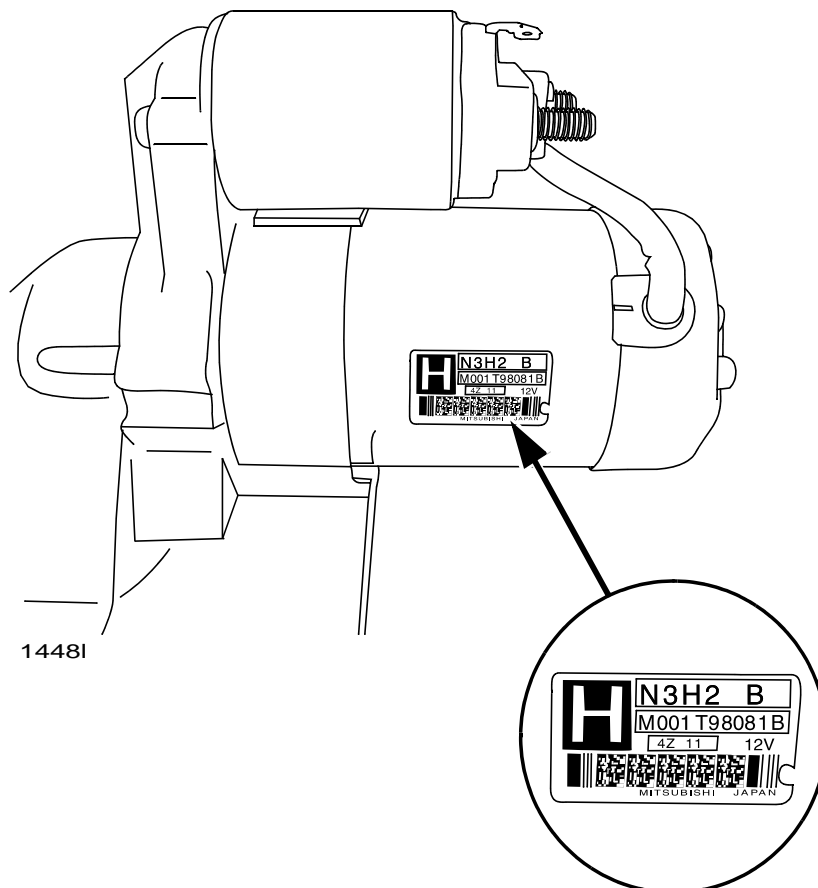
ENGINE STARTER INSPECTION / IDENTIFICATION

Some vehicles will require engine starter replacement depending on VIN / production range, and / or visual identification. Use the inspection procedure below to determine if starter replacement is necessary.

AUTOMATIC TRANSMISSION VEHICLES:

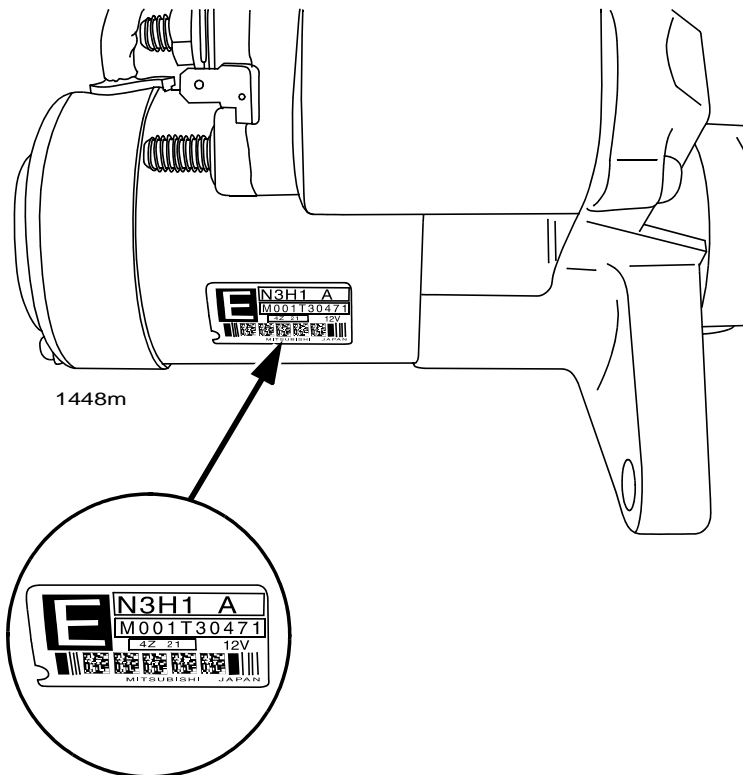
1. Is the VIN at or below JM1FE17N* ** 148961?
 - NO – Starter replacement is not necessary, go to STEP 11 in REPAIR PROCEDURE “A”.
 - YES – Go to STEP 2.
2. Inspect vehicle’s starter label to determine starter type. Starter label can be seen under hood on driver’s side.
 - If label indicates “N3H2 A”, replace starter. See workshop manual section 01-19 STARTER REMOVAL / INSTALLATION. After starter replacement, go to STEP 11 in REPAIR PROCEDURE “A”.
 - If label indicates “N3H2 B”, “N3Z2” or later, do not replace starter, go to STEP 11 in REPAIR PROCEDURE “A”.

AUTOMATIC TRANSMISSION



MANUAL TRANSMISSION VEHICLES:

1. Is the VIN at or below JM1FE173*** ** 150745?
 - NO – Starter replacement is not necessary, go to STEP 11 in REPAIR PROCEDURE “A”.
 - YES – Go to STEP 2.
2. Inspect vehicle’s starter label to determine starter type. Starter label can be seen with vehicle on hoist and using a mirror.
 - If label indicates “N3H1”, replace starter. See workshop manual section 01-19 STARTER REMOVAL / INSTALLATION. After starter replacement, go to STEP 11 in REPAIR PROCEDURE “A”.
 - If label indicates “N3H1 A”, “N3Z1” or later, do not replace starter, go to STEP 11 in REPAIR PROCEDURE “A”.

MANUAL TRANSMISSION**CAUTION:**

- When installing the new starter, use care that the starter terminals “B” and “S” and related wire harness do not come in contact with the heat shield. Clearance between the heat shield and the terminals should be as follow:
 - 10mm between corner of heat shield and White “B” terminal cover.
 - 15mm between heat shield and Black “S” terminal connector.
- If clearance is not as specified, bend heat shield as necessary. Ensure that after bending heat shield at least 10mm clearance is present between bent section of heat shield and vehicle body.
- **USE CARE THAT THE BLACK “S” TERMINAL CONNECTOR DOES NOT COME IN CONTACT WITH HEAT SHIELD AFTER INSTALLATION.**

PART(S) INFORMATION

NOTE:

- When vehicles experience a engine cranks but does not start concern due to fuel flooding, Mazda recommends the use of the optional "HOT" type leading spark plugs (NGK RE6C-L). The optional "HOT" type spark plug retains more heat which may prevent fouling of spark plugs when the engine is started during cold ambient temperatures. Continue to use the standard spark plug set (N3Y3-18-S30) when spark plug replacement is necessary for vehicle concerns other than no start due to fuel flooding. EXAMPLE: Scheduled maintenance replacement interval, engine misfire, etc....

Part Number	Description	Qty.	Notes
N3Z2-18-400	4 AT Starter	1	For AT vehicles
N3Z1-18-400	6 MT Starter	1	For MT vehicles
N3Y9-18-110	Leading spark plug	2	Leading spark plug, heat range 6
0000-18-N3Y1	Trailing spark plug	2	Standard trailing spark plug, heat range 9
0000-80-6535-WB	Battery	1	640 CCA, for 2004 vehicles with VINs below 139714

WARRANTY INFORMATION

NOTE:

- This warranty information applies only to verified customer complaints on vehicles eligible for warranty repair. Refer to the Warranty Wizard for warranty term information.
- Additional diagnostic time cannot be claimed for this repair.
- Complete Required Repairs must be entered on a Single Warranty Claim.

	Repair Procedure "A"	Repair Procedures "A" + "B"
Warranty Type	A	A
Symptom Code	02	02
Damage Code	93	93
Part Number Main Cause	N3H2-02-200 (Short Engine AT) N3H3-02-200 (Short Engine MT)	N3H2-02-200 (Short Engine AT) N3H3-02-200 (Short Engine MT)
Part Quantity	0	0
Related Part Number	-	-
Part Quantity	0	0
Operation Number	XXB479R1	XXB479R2
Labor Hours	0.3 Hrs. (Max. actual time)	0.5 Hrs. (Max. actual time)

Engine Starter / Spark Plug Replacement

	Automatic Transmission		Manual Transmission	
	Before VIN 148961 Starter & Plugs*	After VIN 148960 Plugs Only	Before VIN 150745 Starter & Plugs*	After VIN 150744 Plugs Only
Related Part Number	N3Z2-18-400	N3Y9-18-110	N3Z1-18-400	N3Y9-18-110
Part Quantity	1	2	1	2
Labor Operation	XXB046R7	XXB046R1	XXB046R8	XXB046R1
Labor Hours	0.8 Hrs. (SRT)	0.4 Hrs. (SRT)	0.7 Hrs. (SRT)	0.4 Hrs. (SRT)

* - Applies only to vehicles without previous starter replacement history.

Additional Labor And Parts If Required	Battery Replacement
Related Part Number	0000-80-6535-WB
Part Quantity	1
Labor Operation	XXB046R4
Labor Hours	0.2 Hrs. (SRT)

CUSTOMER INFORMATION

NOTE:

- After repairs, provide customers with a copy of this page to try during a “CRANKS, NO START” condition. If necessary, fax or scan and e-mail this page to customers who are experiencing a crank/no start condition in the field, before towing to dealership.

WARMING THE ENGINE

The Mazda RENESIS Rotary Engine provides exceptional performance dynamics and reduces exhaust emissions, allowing the RX-8 to meet the strict Tier 2 emissions classification in the U.S. Mazda achieved this in part by the design of the engine ports and adopting a sequential dynamic air intake system. Because of its unique design, it is important to warm up the engine before shutting it off. Ideally, the engine coolant temperature gauge needle should reach the middle of the normal operating range before shutting off the engine.

ROTARY ENGINE STARTING TIPS

Repeated 1 to 2 second cranking duration may cause excessive flooding and further aggravate an already present no-start condition. Mazda recommends cranking the engine for the maximum duration of 8 seconds when trying to start the vehicle during a no-start condition.

DE-CHOKING PROCEDURE WHEN ENGINE CRANKS BUT DOES NOT START

If the engine does not start, try the following procedure to start the engine using the de-choke mode. Failure to do so may aggravate the no start condition.

Cranking Tips

- Attempt to start the engine up to 3 times.
 - Allow engine to crank a maximum of 8 seconds when attempting to start.
 - Allow minimum of 3 seconds between cranking sessions. If the starter motor is not allowed to cool between cranking sessions, the starter may spin too slow to start the engine.
1. Depress and hold the accelerator pedal to the floor and crank the engine for 7-8 seconds. (This will clean out any unburned fuel from the combustion chamber)
 2. Release the ignition key to stop cranking and wait 3 seconds.
 3. Release the accelerator pedal and start the engine. If the engine starts while performing Step 1, the engine will rev up. Immediately release the ignition key to stop cranking and remove your foot from the accelerator pedal.
 - Do not keep holding the ignition switch in the START position over 10 seconds if the engine does not start. This may result in a weakened or dead battery.
 - Avoid racing the engine or sudden take off right after starting the engine.
 - If the engine still fails to start following the De-choking procedure, have your vehicle inspected by your Mazda Dealer.