

Service Information

Mazda Motor Corporation

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Category C	Repair Guidance	Ref. No. R078/11	Page 1 of 9
Coverage ☐ Distributor only ☒ Please inform your dealers		Date Issued October 11, 2011	
Please convey this information to your ☐ Director ☒ General Manager ☒ Warranty Dept. ☒ Parts Dept. ☒ Training Dept. ☒ Field Rep.		Date Revised	
Applicable Model RX-8 (SE)		Applicable Countries or Specifications Europe	

Subject: Engine Cranks No Start

DESCRIPTION

Some vehicles may experience difficulty starting (cranks no start).

A cranks, no start condition 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.

A cranks, no start condition may be caused either by fuel flooded spark plugs or lower than normal compression due to apex seals locked into rotor groove from carbon accumulation.

MASS PRODUCTION CHANGE

Dry coat application area on rotor surface has been expanded.

BEGINNING VIN & DATE OF MODIFICATION

JMZ SE ***** 149369

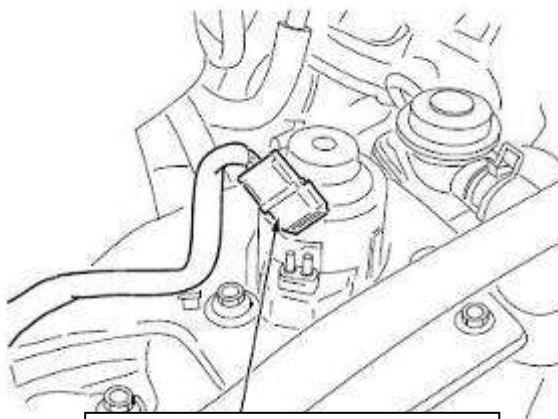
September 20, 2007

REPAIR PROCEDURE

PROCEDURE "A"

1. Verify concern by attempting to start engine.
 - If engine starts, return vehicle to customer.
 - If engine fails to start, go to STEP 2.
2. Disconnect the secondary air injection pump electrical connector (B1-04).

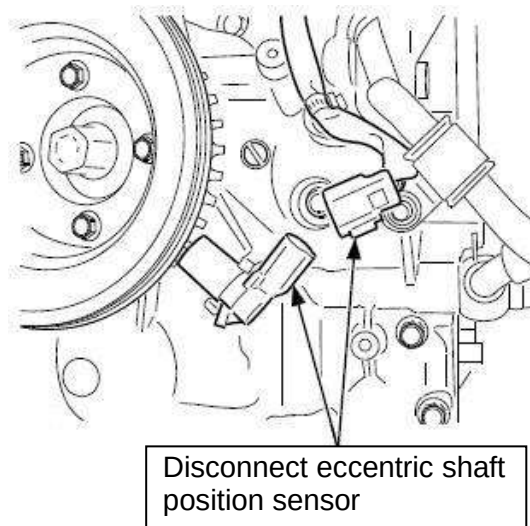
This will protect the catalytic converter by preventing rapid light off due to unburned fuel purging from the engine in the following steps.



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.

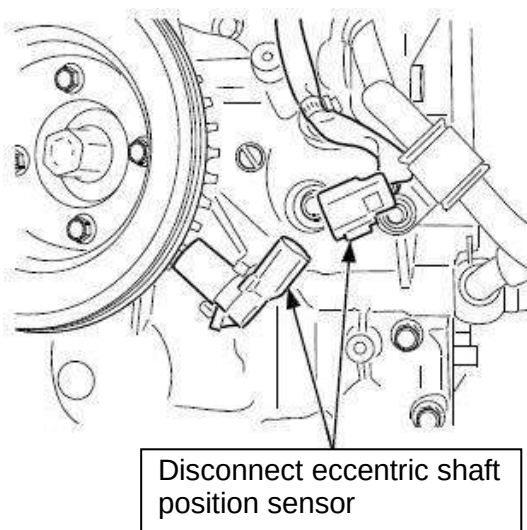
3. Remove all 4 spark plugs from the engine. Refer to workshop manual SPARK PLUG REMOVAL / INSTALLATION.
4. Disconnect Eccentric Shaft Position Sensor (ESPS) B1-27 connector.
This will cut fuel injection and spark while performing the procedure.



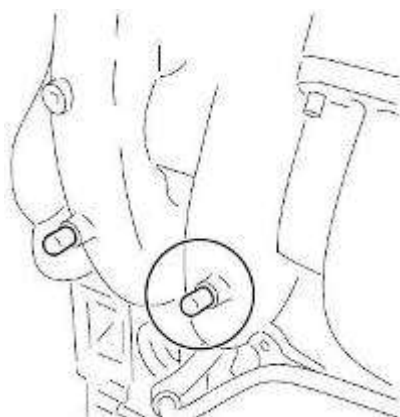
5. Place cloth near spark plug holes to absorb fuel residue.
6. Crank the engine until all fuel is purged from spark plug holes. (Do not crank engine longer than 10 seconds. If more than 10 seconds is required, wait 5 seconds in between cranking.) Perform this procedure in a well ventilated area.
7. Connect ESPS connector B1-27.
8. Install new spark plugs.
9. Attempt to start engine without depressing accelerator pedal.
 - If the engine starts, go to STEP 10.
 - If engine fails to start, the engine compression may be lower than specification. Go to PROCEDURE "B" on the next page.
10. 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.
11. Shut engine off.
12. Connect the secondary air injection pump connector B1-04.
13. Erase all DTCs and confirm repairs.

PROCEDURE "B"

1. Disconnect Eccentric Shaft Position Sensor (ESPS) B1-27 connector.
This will cut fuel injection & spark while performing the procedure.

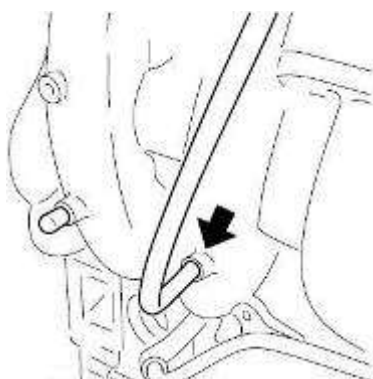


2. Remove the front vacuum plug or PCV vacuum hose from the passenger side of the lower intake manifold.

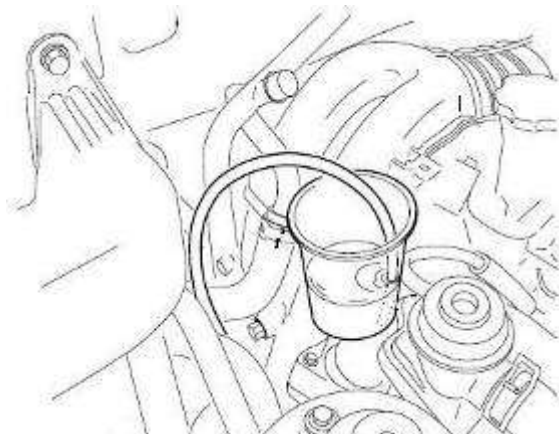


Note: Some vehicles have PCV vacuum hoses attached to these ports for the PCV system. Disconnect these hoses from the lower intake manifold ports one at a time when performing this procedure. These hoses do not need to be plugged once disconnected.

3. Fabricate a vacuum line (About 60cm in length) and 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 approximately 30 cm³ 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 and inject through vacuum lines & into the intake manifold.
Add approximately 30 cm³ of 5W-20 of engine oil to each rotor.
7. Reinstall leading spark plug if removed during STEP 6. Disconnect vacuum line from intake manifold and reinstall vacuum plug / PCV vacuum line.
8. Repeat STEPS 2-7 for rear vacuum port.
9. Connect ESPS connector B1-27.
Caution: If the engine starts during next step, DO NOT race the engine, this may cause catalyst damage.
10. Attempt to start engine without depressing accelerator pedal.
 - **If engine starts**, 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.
Turn engine off and proceed to CARBON REMOVAL PROCEDURE.
 - **If engine fails to start**, check engine compression. Refer to Workshop Manual "COMPRESSION INSPECTION". If engine compression is OK, follow diagnosis according to Workshop Manual (Troubleshooting) "NO.6 CRANKS NORMALLY BUT WILL NOT START."

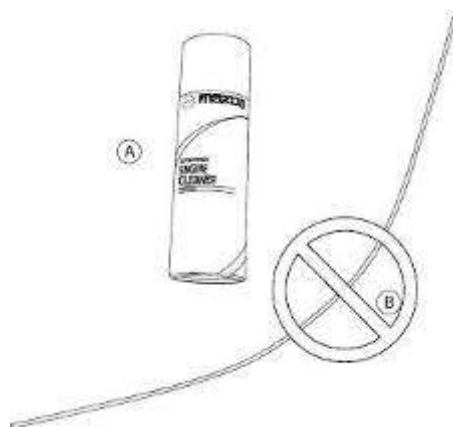
CARBON REMOVAL PROCEDURE

WARNING:

- PLEASE USE CAUTION WHEN USING ENGINE CLEANER.
- WEAR EYE PROTECTION AND GLOVES WHEN HANDLING.
- ENGINE CLEANER IS FLAMMABLE.

Note:

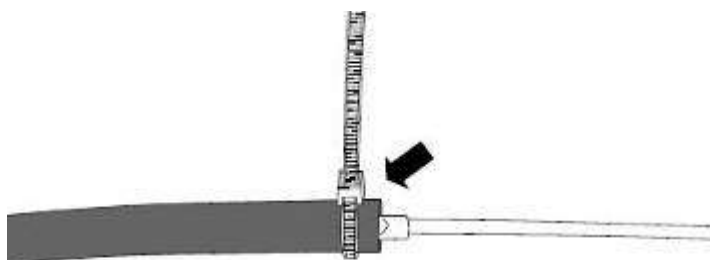
- It is **NECESSARY** to perform CARBON REMOVAL when PROCEDURE "B" is performed. If vehicle started when performing PROCEDURE "A", it is **NOT NECESSARY** to perform CARBON REMOVAL.
 - An assistant may be necessary while performing this procedure.
 - Approximately half a can of engine cleaner will be used per vehicle during this repair.
1. Cleaner kit comes with engine cleaner (A) and engine cleaner spray hose (B). Engine cleaner spray hose (B) is not used for this procedure and can be discarded. The can of engine cleaner (A) will have a red plastic spray tube attached to it. This red spray tube will be used for this procedure.



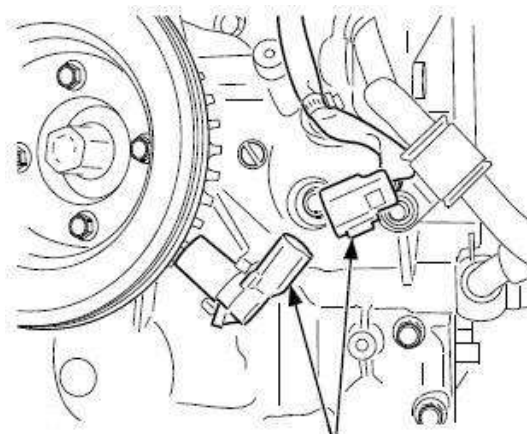
2. Cut a piece of electrical tape 5cm long and wrap around the end of the red spray tube.



3. Cut a length of 3mm inner diameter vacuum hose (obtained locally) to 70cm. Insert tape wrapped end of red spray tube into vacuum hose and use a tie wrap to hold in place.

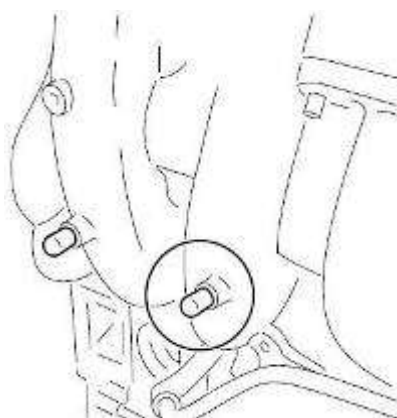


4. Disconnect Eccentric Shaft Position Sensor (ESPS) B1-27 connector. This will cut fuel injection and spark while performing the procedure.



Disconnect eccentric shaft position sensor

5. Remove the front vacuum plug or PCV vacuum hose from the passenger side of the lower intake manifold.

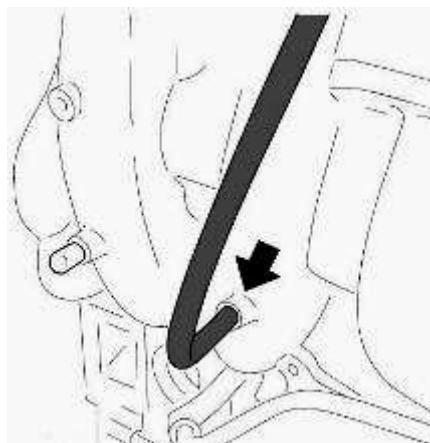


Note: Some vehicles have PCV vacuum hoses attached to these ports for the PCV system. Disconnect these hoses from the lower intake manifold ports one at a time when performing this procedure. These hoses do not need to be plugged once disconnected.

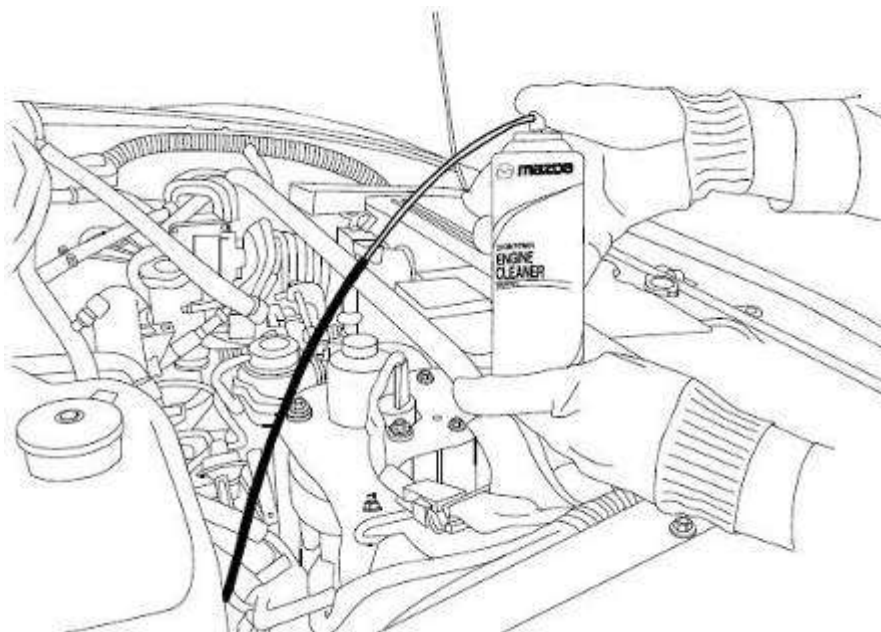
Caution: DO NOT attempt to service both vacuum ports at the same time. Perform procedure for front port, then perform procedure for rear port.

6. Attach the vacuum hose end into front port nipple.

Note: Ensure the vacuum hose is securely connected to the nipples to prevent the hose from becoming detached while spraying engine cleaner.

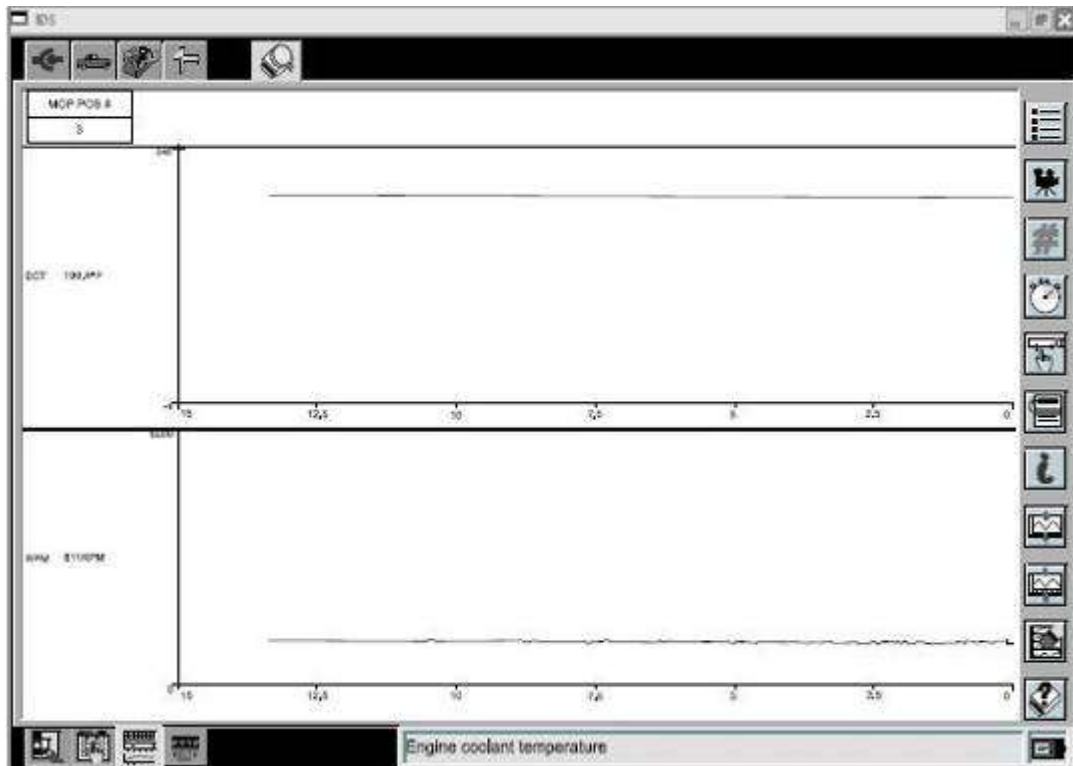


7. Attach the red spray hose end into the spray nozzle of the engine cleaner. Use care not to push down on the nozzle when inserting to prevent the can from spray cleaner.

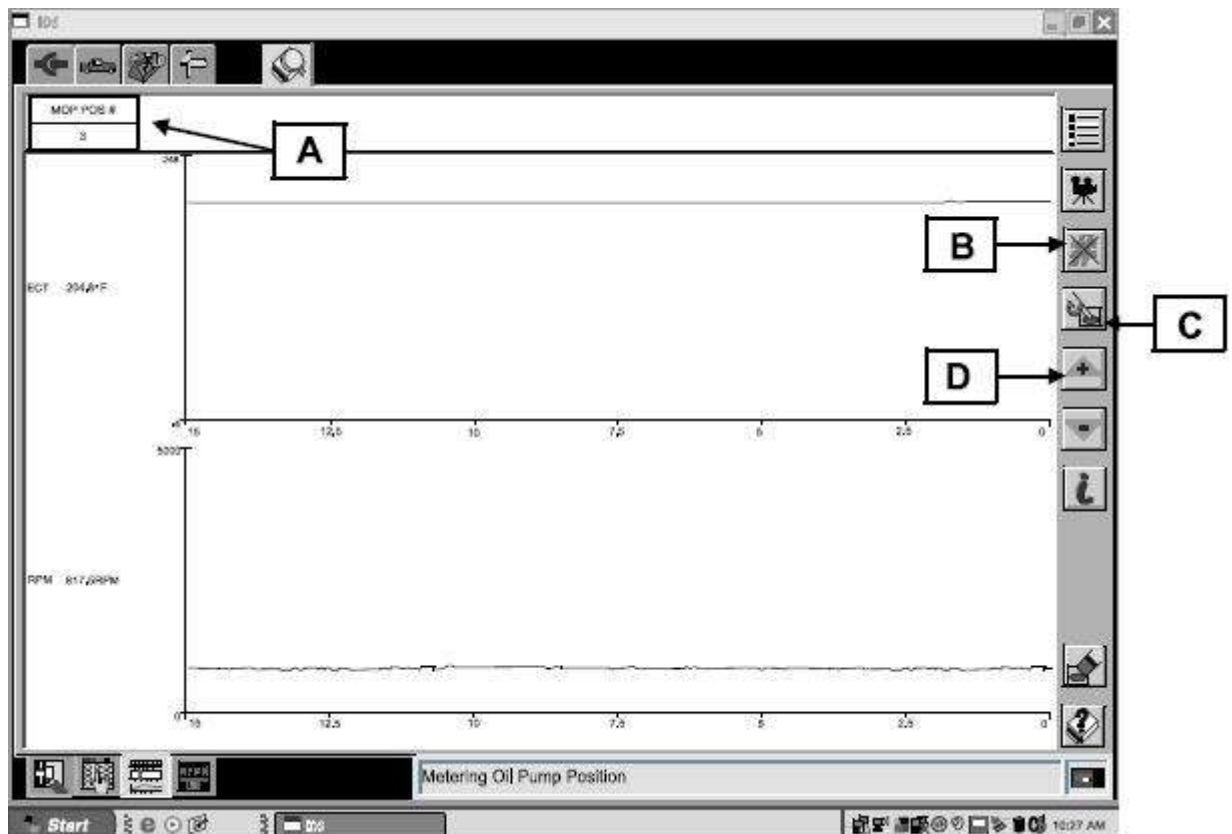


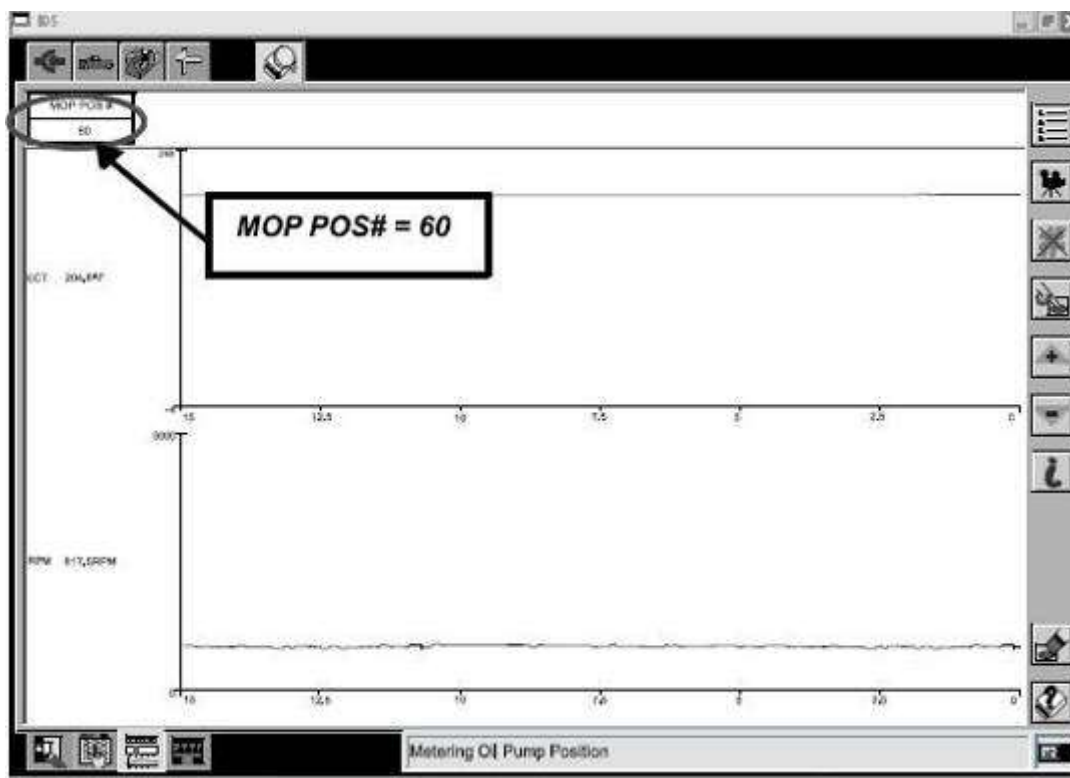
8. Have an assistant crank the engine. While cranking the engine, simultaneously depress the spray nozzle of the engine cleaner for duration of 10 seconds. After 10 seconds, stop spraying and cranking at the same time. DO NOT depress accelerator pedal while cranking.
9. Wait a minimum of 30 seconds and repeat STEP 8 for the same port.
10. Remove the vacuum hose from the lower intake manifold nipple.
11. Reconnect PCV vacuum hose or install vacuum plug to front nipple.
12. Repeat STEPS 5-11 for rear nipple.
13. Allow the engine cleaner to soak for 1 to 2 hour before starting engine.
Note: Make sure to observe the soaking time. Either longer or shorter soaking time will lose effectiveness of the cleaning.
14. Connect ESPS connector B1-27.
15. Attempt to start engine without depressing accelerator pedal.
16. 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.
Caution: Do not race the engine during warm-up, this may cause catalyst damage.
17. Rev engine from idle speed up to 6,000 RPM, then release throttle immediately until RPM returns to idle speed.
18. Repeat 20 times with vehicle in Park (AT) or neutral (MT).
19. Connect M-MDS to vehicle and ID vehicle.
20. Using DATALOGGER, select MOP POS#
21. Perform METERING OIL PUMP (MOP) simulation test.

22. Using DATALOGGER, select MOP POS# and RPM.



- A. Click on MOP POS# PID.
- B. Click on “#” symbol.
- C. Click “finger” symbol.
- D. Click on “+ arrow up” symbol until MOP POS# indicates “60”.





23. Allow engine to idle for 15 minutes with MOP POS # at step 60. Make sure transmission is in NEUTRAL or PARK and all loads OFF (AC, blower etc.), do not touch accelerator pedal during this time or test will abort.
24. Tap accelerator pedal after the 15 minutes have elapsed to abort test. MOP POS# will drop from step #60.
25. Turn engine off.
26. Connect the secondary air injection pump connector B1-04.
27. Erase all DTCs and confirm repairs.

PART INFORMATION

Part Number	Part Name	Q'ty	Remark
0000-77-A86	Engine cleaner	1	Sufficient for 2 engine cleanings.
****-18-S30*	Spark plug set	1	Set of 4 spark plugs. Refer to EPC to find appropriate part number.

Labor Hours

Procedure "A": 0.5 Hrs (Max. actual time)
 Procedure "A" + "B": 1.6 Hrs (Max. actual time)

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 Technical Service Dept.
 Mazda Motor Corporation