Service Bulletin

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Mazda North American Operations Irvine, CA 92618-2922



Subject:

ject:	ect: ROUGH IDLE WITH MIL ON AND DTC P0015 / P0524		01-023/15
		Last Issued:	09/28/2015

BULLETIN NOTE

- This bulletin supersedes the previous bulletins 01-009/14 issued on 04/07/14 and 09/03/14, 01-003/13 issued on 01/16/13 and 01-028/12 issued on 12/18/12. The APPLICABLE MODEL(S)/VINS, REPAIR PRO-CEDURE, PARTS INFORMATION and WARRANTY INFORMATION have been revised.
- Changes are noted below in Red beside the change bar.

APPLICABLE MODEL(S)/VINS

2012-2016 Mazda3 SKYACTIV

2013-2016 CX-5 SKYACTIV

2014-2016 Mazda6 SKYACTIV

DESCRIPTION

Some vehicles may experience a rough idle with the MIL on and DTC P0015 / P0524 stored in memory.

- P0015:00 Exhaust CMP timing over-retarded
- P0524:00 Engine oil pressure too low

This is caused by a drop in engine oil pressure due to a piece of foreign object stuck on the oil pump pressure relief valve or OCV. The temporary entry of the foreign object triggers a MIL illumination, but rough idle will not be produced until a later time.

Customers having this concern should have their vehicle repaired using the following flow charts and repair procedure.

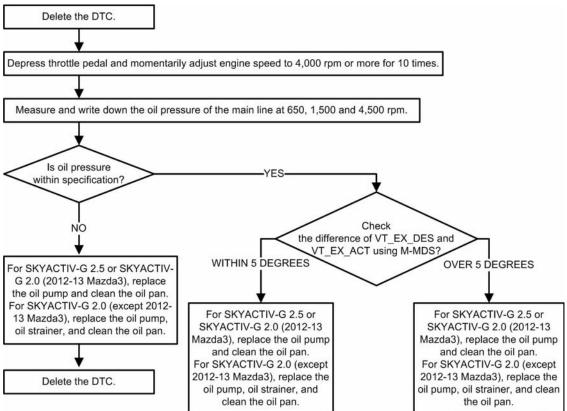
Page 1 of 6

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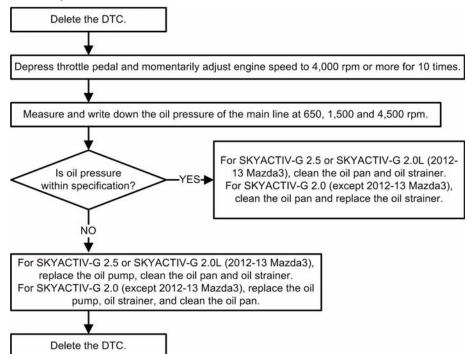
Bulletin No: 01-023/15	Last Issued: 09/28/2015
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FLOWCHARTS

Only P0015 is stored:



P0015 and P0524 or only P0524 is stored:



REPAIR PROCEDURE

1. Verify customer concern.

Only P0015 is stored:

1. Delete the DTC.

- 2. Depress the throttle pedal and momentarily adjust the engine speed to 4,000 rpm or more for 10 times.
- 3. Measure the main line oil pressure at 650 rpm, 1,500 rpm and 4,500 rpm. Refer to MS3 online instructions or Workshop Manual section 01-11 OIL PRESSURE INSPECTION.
 - a. Connect M-MDS to monitor ECT, OIL_TEMP and RPM.
 - b. Start the engine and turn off all electrical loads such as A/C, headlights, etc.
 - c. Warm up the engine until ECT and OIL_TEMP reach 90 °C (194 °F) or more.
 - d. Turn off all electrical loads such as A/C and headlights.
 - e. Wait until RPM on IDS becomes stable at 650 rpm. DO NOT read RPM on the tachometer in the vehicle.
 - f. Measure and write down the main oil line pressure at 650 rpm, 1,500 rpm and 4,500 rpm.

RPM	Normal oil pressure	
650	50 kpa (7 psi) or more	
1,500	110-175 kpa (16.0 - 25.3 psi)	
4,500	300-430 kpa (43.6 - 62.3 psi)	

• If Abnormal oil pressure is observed:

1a) For SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3), replace the oil pump and clean the bottom of the oil pan with a clean cloth. Refer to MS3 online instructions or Workshop Manual section 01-11 OIL PAN REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].

1b) For SKYACTIV-G 2.0 (except 2012-13 Mazda3), replace the oil pump, oil strainer, and clean the bottom of the oil pan with a clean cloth. Refer to MS3 online instructions or Workshop Manual section 01-11 OIL PAN REMOVAL/INSTALLATION [SKYACTIV-G 2.0].

NOTE: The removal procedure for the oil pump in the Workshop Manual has been changed. For 2.0L (except 2014-2016 Mazda3), it is no longer necessary to remove the front cover when following the new procedure.

2) Erase any DTC's.

- 3) Replace the engine oil.
- **NOTE:** There is no need to replace the oil filter, SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3) oil strainer (including gasket), or oil pan.

• If Normal oil pressure is observed:

1) Verify that the difference of VT_EX_DES (Exhaust valve opening angle - target) and VT_EX-ACT (Exhaust valve opening angle - actual) is within 5 degrees (between 1,500 rpm and 2,000 rpm) using M-MDS.

• Within 5 degrees:

1a) For SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3), clean the bottom of the oil pan (with a clean cloth) and the oil strainer.

1b) For SKYACTIV-G 2.0 (except 2012-13 Mazda3), replace the oil strainer, and clean the bottom of the oil pan (with a clean cloth).

2) Replace the engine oil.

NOTE: There is no need to replace the oil filter, SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3) oil strainer (including gasket), or oil pan.

• Over 5 degrees:

1) Replace the oil control valve (OCV).

2a) For SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3), clean the bottom of the oil pan (with a clean cloth) and the oil strainer.

2b) For SKYACTIV-G 2.0 (except 2012-13 Mazda3), replace the oil strainer, and clean the bottom of the oil pan (with a clean cloth).

3) Replace the engine oil.

NOTE: There is no need to replace the oil filter, SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3) oil strainer (including gasket), or oil pan.

4. Verify repair.

P0015 and P0524 or only P0524 is stored:

- 1. Delete the DTC.
- 2. Depress the throttle pedal and momentarily adjust the engine speed to 4,000 rpm or more for 10 times.
- 3. Measure the main line oil pressure at 650 rpm, 1,500 rpm and 4,500 rpm. Refer to MS3 online instructions or Workshop Manual section 01-11 OIL PRESSURE INSPECTION.
 - a. Connect M-MDS to monitor ECT, OIL_TEMP and RPM.
 - b. Start the engine and turn off all electrical loads such as A/C, headlights, etc.
 - c. Warm up the engine until ECT and OIL_TEMP reach 90 °C (194 °F) or more.
 - d. Turn off all electrical loads such as A/C and headlights.
 - e. Wait until RPM on IDS becomes stable at 650 rpm. DO NOT read RPM on the tachometer in the vehicle.
 - f. Measure and write down the main oil line pressure at 650 rpm, 1,500 rpm and 4,500 rpm.

RPM	Normal oil pressure	
650	50 kpa (7 psi) or more	
1,500	110-175 kpa (16.0 - 25.3 psi)	
4,500	300-430 kpa (43.6 - 62.3 psi)	

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• If Abnormal oil pressure is observed:

1a) For SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3), replace the oil pump, clean the bottom of the oil pan (with a clean cloth), and the oil strainer. Refer to MS3 online instructions or Workshop Manual section 01-11 OIL PUMP REMOVAL/INSTALLATION.

1b) For SKYACTIV-G 2.0 (except 2012-13 Mazda3), replace the oil pump, oil strainer, and clean the bottom of the oil pan (with a clean cloth).

NOTE: The removal procedure for the oil pump in the Workshop Manual has been changed. For 2.0L (except 2014-16 Mazda3), it is no longer necessary to remove the front cover when following the new procedure.

2) Erase any DTCs.

3 Replace the engine oil.

NOTE: There is no need to replace the oil filter, SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3) oil strainer (including gasket), or oil pan.

If Normal oil pressure is observed:

1a) For SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3), clean the bottom of the oil pan (with a clean cloth) and the oil strainer.

1b) For SKYACTIV-G 2.0 (except 2012-13 Mazda3), replace the oil strainer, and clean the bottom of the oil pan (with a clean cloth).

2) Replace the engine oil.

- **NOTE:** There is no need to replace the oil filter, SKYACTIV-G 2.5 or SKYACTIV-G 2.0 (2012-13 Mazda3) oil strainer (including gasket), or oil pan.
- 4. Verify repair.

PART(S) INFORMATION

Part Number	Description	Qty.	Notes
PE01-14-100	Oil Pump (2.0L)	1	When replacing oil pump
PY01-14-100	Oil Pump (2.5L)	1	When replacing oil pump
PE01-14-420	Oil Control Valve (OCV)	1	When replacing OCV
PE01-10-235	Head Cover Gasket (2.0L)	1	When replacing oil pump or OCV
PY01-10-235	Head Cover Gasket (2.5L)	1	When replacing oil pump or OCV
PE01-12-257	O-Ring	1	When replacing oil pump
9956-41-400	Gasket	1	When cleaning oil pan
PEDD-14-240	Oil Strainer	1	For 2014-16 SKYACTIV-G 2.0L only (except 2012-13 Mazda3)

WARRANTY INFORMATION

NOTE:

- This warranty information applies only to verified customer complaints on vehicles eligible for warranty repair.
- This repair will be covered under Mazda's Powertrain Limited Warranty term.
- Additional diagnostic time cannot be claimed for this repair.

When replacing the OCV and cleaning the oil pan:

Warranty Type	А
Symptom Code	6X
Damage Code	9W
DTC	P0015
Part Number Main Cause	PE01-14-420
Quantity	1
Operation Number / Labor Hours	XXK68ARX / 1.8 Hrs.

When replacing the oil pump and cleaning the oil pan:

	SKYACTIV 2.0L	SKYACTIV 2.5L	
Warranty Type	A	A	
Symptom Code	6X		
Damage Code	9W		
DTC	P0015 or P0524		
Part Number Main Cause	PE01-14-100 or PY01-14-100		
Quantity	1		
Operation Number	XXK68BRX		
Labor Hours	1.7 Hrs. (except 2014-16 Mazda3) 3.9 Hrs. (2014-16 Mazda3)	4.0 Hrs.	

When cleaning the oil pan only:

	Except Mazda6	Mazda6	
Warranty Type	A		
Symptom Code	6X		
Damage Code	9W		
DTC	P0015 or P0524		
Part Number Main Cause	PE01-14-100 or PY01-14-100		
Quantity	0		
Operation Number	XXK68CRX		
Labor Hours	1.4 Hrs	1.5 Hrs	