

Group:	Service Manual Update
Bulletin No.:	SB-15-003
Issue Date:	1/9/2015

S E R V I C E I N F O R M A T I O N B U L L E T I N

**Subject: CORRECTION OF WORKSHOP MANUAL FOR HINO 2015MY
(REVISION OF TROUBLESHOOTING PROCEDURE FOR THE DTC P0421)**

The following is to inform you of the above caption. This service data should be attached to the relevant pages of the workshop manuals for maintenance and to use for servicing.

RELEVANT MODEL:

HINO 238, 258, 268, 338, 358

CONTENTS:

Troubleshooting information and Inspection procedure of the DTC/ P0421 were revised.

RELEVANT MANUALS:

MODEL	MANUAL No.	CHAPTER	DTC
USA 2015MY	S7-UNAE11A	ENGINE CONTROL SYSTEM	P0421

SERVICE INFORMATION BULLETIN

DTC: P0421

EN01H16F01030F03001074

P0421: Determination of ATC deterioration INFORMATION

1. Technical description

<Description of malfunction>

- If post injection is performed normally but the ATC (oxidation catalyst) is not generating heat, the engine ECU detects abnormality as ATC functional deterioration.

2. DTC set condition

(1) DTC detection condition

During DPR active regeneration

Vehicle speed: 0 km/h

Maintain the following conditions for 52 sec or longer

- Engine speed: 700 r/min or higher, 1,000 r/min or lower
- Fuel injection quantity: 40 mm³/st. or less
- Engine speed fluctuation: 157 r/min/sec or lower
- Fuel injection quantity variation: 39 mm³/st./sec or less
- Post-injection quantity: 15 mm³/st. or more
- Ambient temperature: -10 °C {14 °F} or higher
- ATC inlet temperature: 300 °C {572 °F} or higher
- Fuel pressure variation: 188 MPa/sec or less
- Supply pump target current: 1,200 mA or higher, 2,000 mA or lower

(2) Judgement criteria

Both of the following conditions must be met.

- DOC inlet temperature – DOC inlet temperature calculated value < 57 °C{135 °F}
- Δ Fuel supply pump target drive current (Post injection deactivated – Post injection activated)
 - > 15 mA (at a post-injection quantity of 10 mm³/st.)
 - > 20 mA (at a post-injection quantity of 15 mm³/st.)
 - > 25 mA (at a post-injection quantity of 20 mm³/st.)

3. Reset condition

- Immediately after normal status is resumed

4. Indication, warning or system control regulation when the DTC is set.

- MIL: ON
- SVS light: OFF

5. Symptoms on the vehicle when the DTC is set

<Symptoms on the vehicle due to backup control (fail safe function)>

- –

<Symptoms on the vehicle due to malfunction>

- –

6. Pre-inspection work

- Check that the battery voltage is in the normal range.

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7. After-inspection work

- Clear all past DTCs.
- After starting the DPR automatic regeneration, form the DTC detection condition.
- Check that no DTC is detected after test drive.

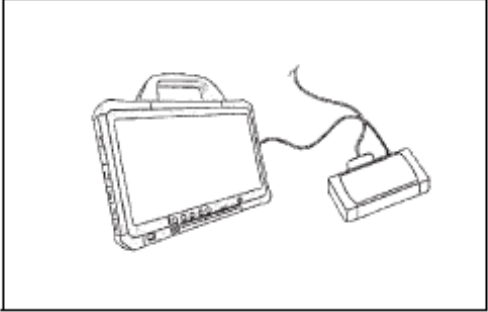
8. Estimated failure factors

- ATC deterioration caused by use of low-grade fuel
- Maladjustment of the exhaust brake.
- Leak of exhaust gas from the pipe.
- ATC inlet exhaust gas temperature sensor malfunction.
- DOC inlet exhaust gas temperature sensor malfunction.

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INSPECTION PROCEDURE: P0421

1 Check the DTC detected [HINO DX II]



GAPH16FD10300459

1. Set the starter switch to the "LOCK" position.
2. Connect the diagnostic system (HINO DX II) to the vehicle.
3. Set the starter switch to the "ON" position.
4. Select [Engine] on the screen of HINO DX II and check if the DTC P0421 has been detected.

Has any DTC related to P0421 been detected?

YES

NO

Go to diagnosis procedure of the related DTC.
After repair, go to step 2.

Go to step 2.

2 Inspect the exhaust leaks from the pipe line.

1. Check that the pipe line has no looseness of flange on pipe breakage.

Was any failure found?

YES

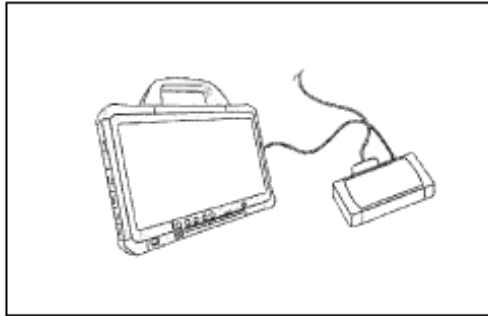
NO

Repair or replace the faulty part.
Perform "After-inspection work" of INFORMATION section.

Go to step 3.

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3 Inspect the exhaust brake valve [HINO DX II]



SAPH15FD10300460

1. Warm up the engine. (Coolant temperature: 80 °C {176 °F} or more)
2. Turn OFF the devices that place load on the engine, such as the air conditioner.
<Inspection procedure>
 - (1) Select [Engine] on the screen of HINO DX II .
 - (2) Select [Data monitor Setting] and [Active test Setting].
 - (3) Select [Target rpm] from [Active test Setting] and set the engine revolution to 980 r/min.
 - (4) Select [Injection quantity] from [Data monitor Setting].
 - (5) Turn ON/OFF the exhaust brake switch, and check the difference between the injection quantity of the injector while the exhaust brake is working and the injection quantity when the exhaust brake is not actuated.

Measurement conditions	Standard values
<ul style="list-style-type: none"> • Engine revolution: 980 r/min • Engine coolant temperature: 80 °C {176 °F} or more • Turn OFF the air conditioner, and other devices that place load on the engine. 	10 – 18 mm ³ /st

Do the measurements meet the standard value? (There shall be a change in the injection quantity between while the exhaust brake is working and when it is not actuated.)

YES

Go to step 4.

NO

Adjust the butterfly opening of the exhaust brake.
Perform "After-inspection work" of INFORMATION section.

4 Inspect the exhaust gas temperature sensor 1 (ATC upstream) connector

1. Check the connection of the exhaust gas temperature sensor 1 (ATC upstream) connector (looseness and poor contact).

Was any failure found?

YES

Connect securely, repair if needed.
Go to step 5.

NO

Go to step 5.

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5 Inspect the exhaust gas temperature sensor 1 (ATC upstream)

1. Check the installation of the exhaust gas temperature sensor 1 (ATC upstream).
2. Make sure there is no dirt, damage or clogging in the sensing unit of the exhaust gas temperature sensor 1 (ATC upstream).

Was any failure found?

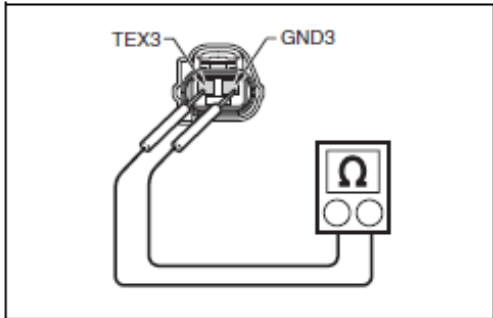
YES

Clean the sensing unit and install it properly. If damaged, replace the exhaust gas temperature sensor 1 (ATC upstream). Go to step 6.

NO

Go to step 6.

6 Inspect the exhaust gas temperature sensor 1 (ATC upstream) unit



SAPH16FD10300461

1. Set the starter switch to the "LOCK" position.
2. Disconnect the exhaust gas temperature sensor 1 (ATC upstream) connector.
3. Use the electrical tester to measure the resistance between the terminals of the exhaust gas temperature sensor 1 (ATC upstream).

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Exhaust gas temperature sensor 1 (ATC upstream) TEX3 – GND3	20 °C {68 °F): 13.7 – 29.8 kΩ
		50 °C {122 °F): 7.13 – 13.7 kΩ
		80 °C {176 °F): 4.1 – 7.13 kΩ

Do the measurements meet the standard value?

YES

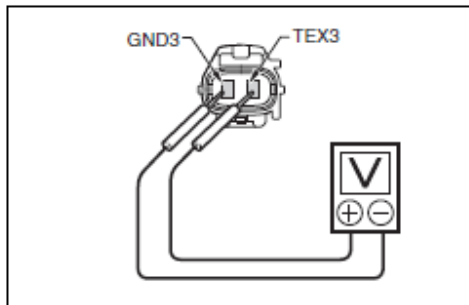
Go to step 7.

NO

Replace the exhaust gas temperature sensor 1 (ATC upstream). Go to step 7.

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7 Inspect the sensor power supply



1. Set the starter switch to the "ON" position.
2. Use the electrical tester to measure the voltage between the terminals of the exhaust gas temperature sensor 1 (ATC upstream) vehicle-side connector.

Measurement conditions	Tester connections	Standard values
Starter switch: ON	Exhaust gas temperature sensor 1 (ATC upstream) vehicle-side connector TEX3 – GND3	4.5 – 5.5 V

Do the measurements meet the standard value?

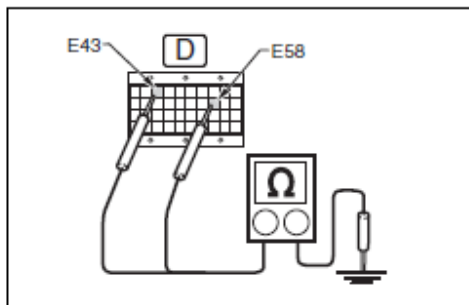
YES

Go to step 10.
If any failure was found at the step 4 - 6, perform "After-inspection work" of INFORMATION section.

NO

Go to step 8.

8 Inspect for short-circuit of the exhaust gas temperature sensor 1 (ATC upstream) harness



1. Set the starter switch to the "LOCK" position.
2. Connect the signal check harness to the engine ECU. (Do not connect harness to the ECU.)
3. Use the electrical tester to measure the resistance between the terminals of the engine ECU and ground.

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Engine ECU (signal check harness) EXT+ (E43) – Ground AG5 (E58) – Ground	$\infty \Omega$

Do the measurements meet the standard value?

YES

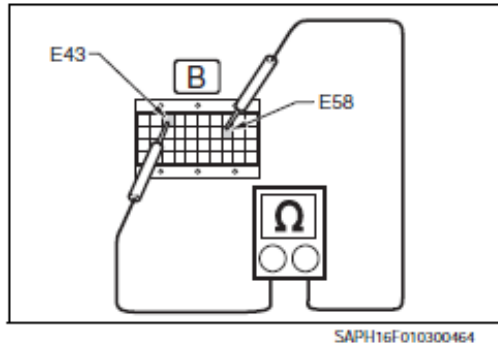
Go to step 9.

NO

Repair or replace the harness.
Go to step 9.

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9 Inspect disconnection of the exhaust gas temperature sensor 1 (ATC upstream) harness



1. Connect the exhaust gas temperature sensor 1 (ATC upstream) connector.
2. Use the electrical tester to measure the resistance between the terminals of the engine ECU (signal check harness).

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Engine ECU (signal check harness) EXT+ (E43) – AG5 (E58)	20 °C (68 °F): 13.7 – 29.8 kΩ 50 °C (122 °F): 7.13 – 13.7 kΩ 80 °C (176 °F): 4.1 – 7.13 kΩ

Do the measurements meet the standard value?

YES

Go to step 10.
If any failure was found at the step 4 - 8, perform "After-inspection work" of INFORMATION section.

NO

Repair or replace the harness.
Perform "After-inspection work" of INFORMATION section.

10 Inspect the exhaust gas temperature sensor 2 (DOC inlet) connector

1. Check the connection of the exhaust gas temperature sensor 2 (DOC inlet) connector (looseness and poor contact).

Was any failure found?

YES

Connect securely, repair if needed.
Go to step 11.

NO

Go to step 11.

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11 Inspect the exhaust gas temperature sensor 2 (DOC inlet)

1. Check the installation of the exhaust gas temperature sensor 2 (DOC inlet).
2. Make sure there is no dirt, damage or clogging in the sensing unit of the exhaust gas temperature sensor 2 (DOC inlet).

Was any failure found?

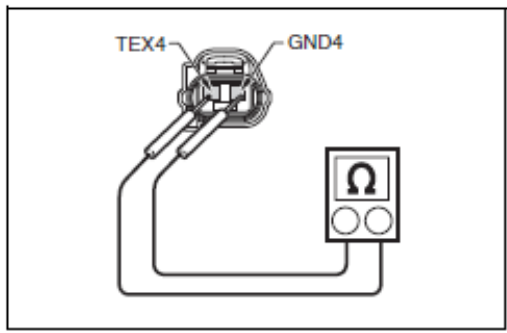
YES

Clean the sensing unit and install it properly. If damaged, replace the exhaust gas temperature sensor 2 (DOC inlet). Go to step 12.

NO

Go to step 12.

12 Inspect the exhaust gas temperature sensor 2 (DOC inlet) unit



1. Set the starter switch to the "LOCK" position.
2. Disconnect the exhaust gas temperature sensor 2 (DOC inlet) connector.
3. Use the electrical tester to measure the resistance between the terminals of the exhaust gas temperature sensor 2 (DOC inlet).

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Exhaust gas temperature sensor 2 (DOC inlet) TEX4 – GND4	20 °C {68 °F): 13.7 – 29.8 kΩ 50 °C {122 °F): 7.13 – 13.7 kΩ 80 °C {176 °F): 4.1 – 7.13 kΩ

Do the measurements meet the standard value?

YES

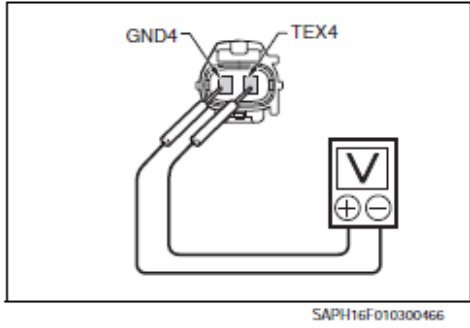
Go to step 13.

NO

Replace the exhaust gas temperature sensor 2 (DOC inlet). Go to step 13.

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13 Inspect the sensor power supply



1. Set the starter switch to the "ON" position.
2. Use the electrical tester to measure the voltage between the terminals of the exhaust gas temperature sensor 2 (DOC inlet) vehicle-side connector.

Measurement conditions	Tester connections	Standard values
Starter switch: ON	Exhaust gas temperature sensor 2 (DOC inlet) vehicle-side connector TEX4 – GND4	4.5 – 5.5 V

Do the measurements meet the standard value?

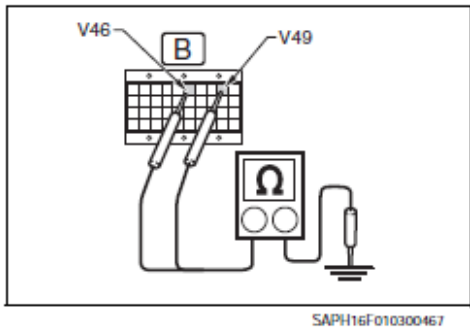
YES

NO

Go to step 16.
If any failure was found at the step 10 - 12, perform "After-inspection work" of INFORMATION section.

Go to step 14.

14 Inspect for short-circuit of the exhaust gas temperature sensor 2 (DOC inlet) harness



1. Set the starter switch to the "LOCK" position.
2. Connect the signal check harness to the engine ECU. (Do not connect harness to the ECU.)
3. Use the electrical tester to measure the resistance between the terminals of the engine ECU and ground.

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Engine ECU (signal check harness) ET2+ (V49) – Ground AGD3 (V46) – Ground	$\infty \Omega$

Do the measurements meet the standard value?

YES

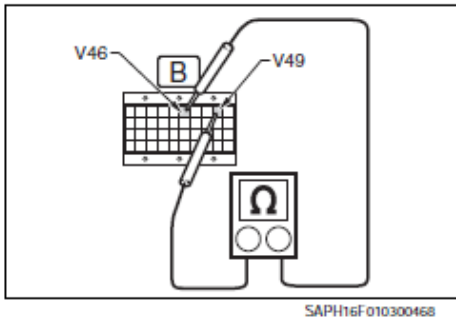
NO

Go to step 15.

Repair or replace the harness.
Go to step 15.

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15 Inspect disconnection of the exhaust gas temperature sensor 2 (DOC inlet) harness



1. Connect the exhaust gas temperature sensor 2 (DOC inlet) connector.
2. Use the electrical tester to measure the resistance between the terminals of the engine ECU (signal check harness).

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Engine ECU (signal check harness) ET2+ (V49) – AGD3 (V46)	20 °C {68 °F}: 13.7 – 29.8 kΩ 50 °C {122 °F}: 7.13 – 13.7 kΩ 80 °C {176 °F}: 4.1 – 7.13 kΩ

Do the measurements meet the standard value?

YES

Go to step 16.
If any failure was found at the step 10 - 14, perform "After-inspection work" of INFORMATION section.

NO

Repair or replace the harness.
Perform "After-inspection work" of INFORMATION section.

16 Inspect fuel

1. Open the fuel cap and check fuel for abnormality (in color and smell).

Was any failure found?

YES

Replace the fuel with good quality fuel.
Perform "After-inspection work" of INFORMATION section.

NO

Go to step 17.

17 Replace the ATC

1. Replace the ATC.
2. Perform "After-inspection work" of INFORMATION section.

Has DTC P0421 been detected?

YES

Go to diagnosis procedure of P0148.

NO

Procedure completed.