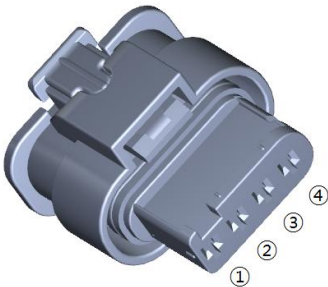


Fault Code	Fault Name
P00BC	MAF Plausibility Low Fault

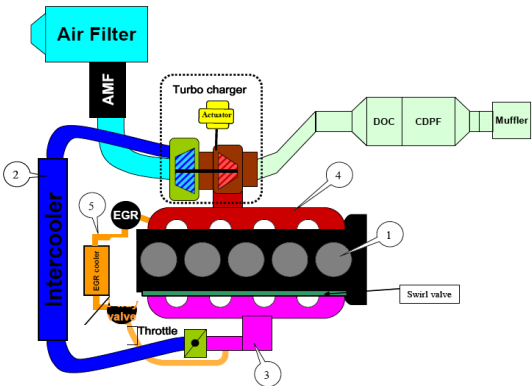
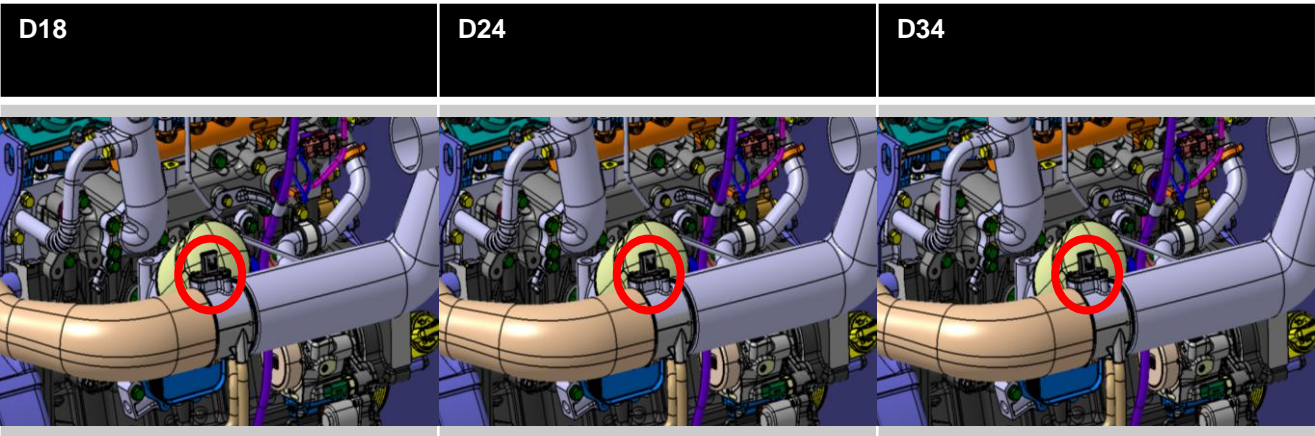
1) Overview

CODE	REASON	EFFECT
E000132-00	Intake air path leakage MAF sensor drift damage of MAF sensor	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is within the threshold, fault code is cleared.

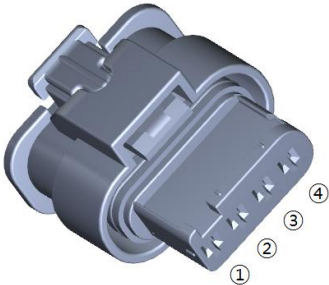
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P00BD is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check the intake hose between air filter and turbocharger compressor? Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step4
4	Check the intake hose between turbocharger compressor outlet and intercooler. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step5
5	Check the intake hose between intercooler and intake manifold. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step7
6	Fix the leakage or change the hose. After fix the leakage, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Call Hot line

Fault Code	Fault Name
P00BD	MAF Plausibility High Fault

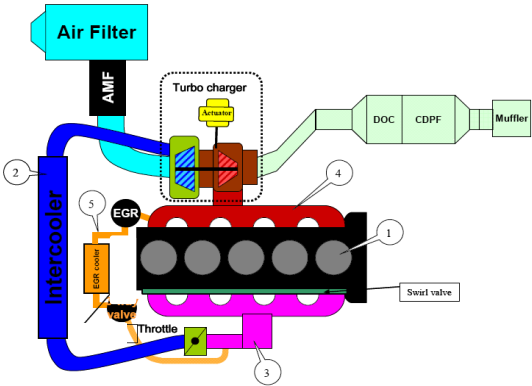
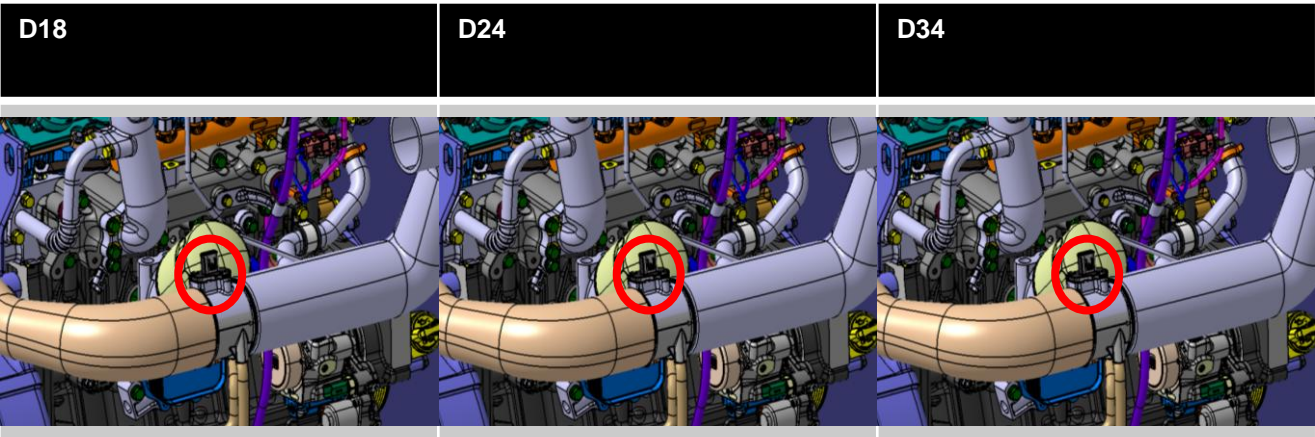
1) Overview

CODE	REASON	EFFECT
E000132-00	Intake air path leakage MAF sensor drift damage of MAF sensor	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is within the threshold, fault code is cleared.

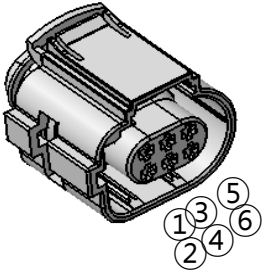
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P00BD is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check the intake hose between air filter and turbocharger compressor? Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step4
4	Check the intake hose between turbocharger compressor outlet and intercooler. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step5
5	Check the intake hose between intercooler and intake manifold. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step7
6	Fix the leakage or change the hose. After fix the leakage, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Call Hot line

Fault Code	Fault Name
P0C17	EGR Close Position Learning Drift Fault

1) Overview

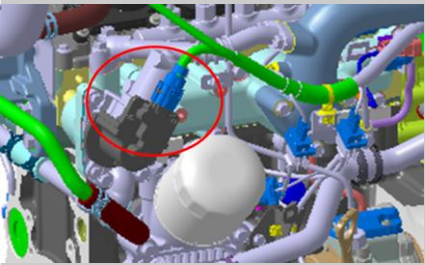
CODE	REASON	EFFECT
E000027-20	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



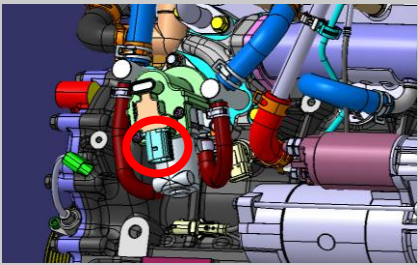
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

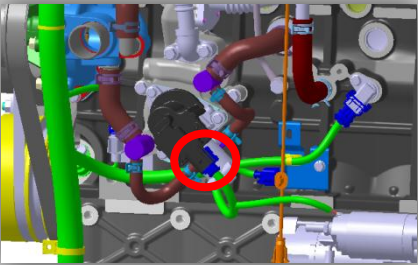
D18

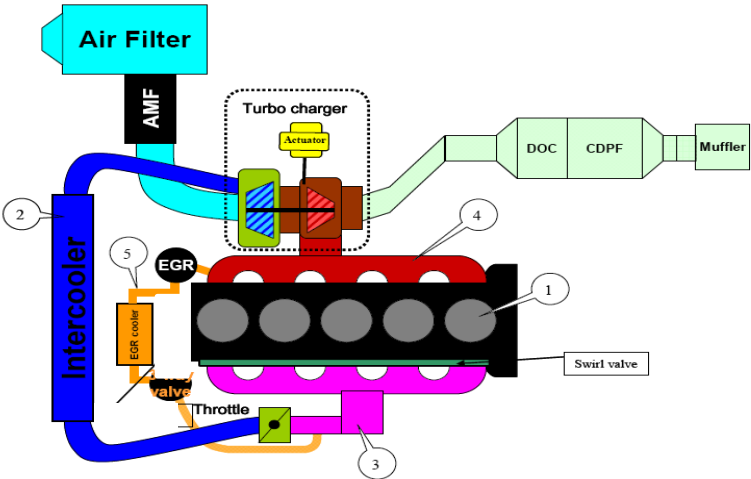


D24



D34





3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the EGR position control has an electrical error then fault code is arisen

5) Condition for Clearing the Fault Code

The EGR control is normal operating

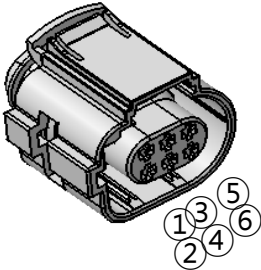
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0C17 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P0C18	EGR Close Position Learning Range Fault

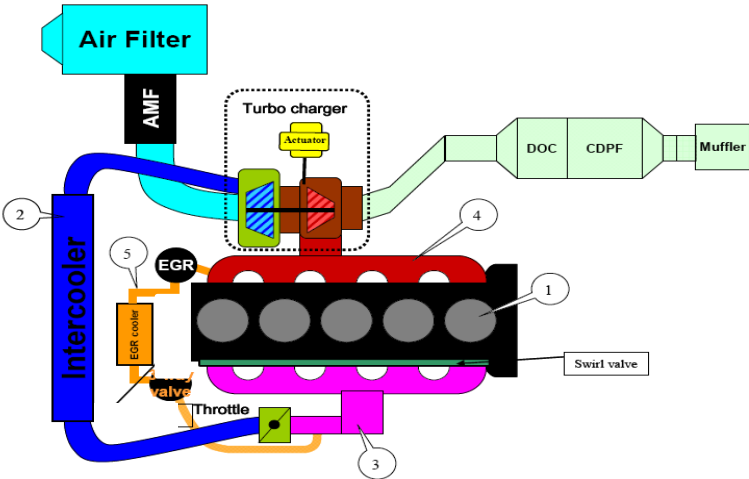
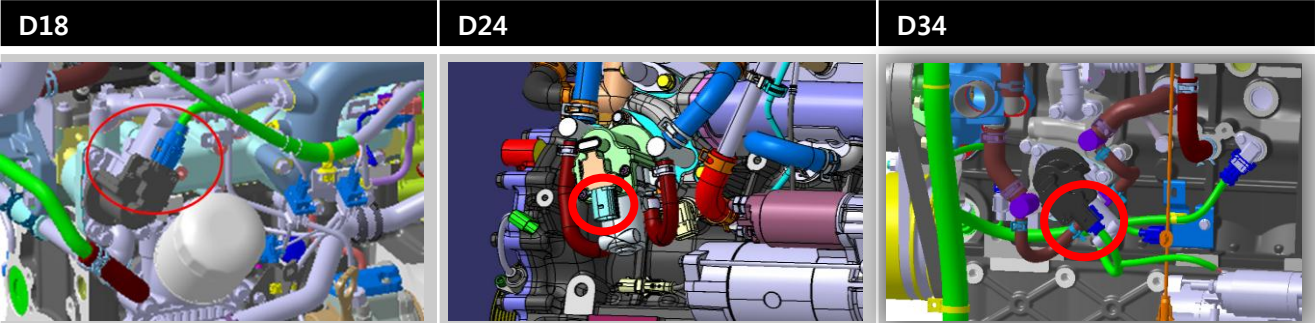
1) Overview

CODE	REASON	EFFECT
E000027-30	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the EGR position control has an electrical error then fault code is arisen

5) Condition for Clearing the Fault Code

The EGR control is normal operating

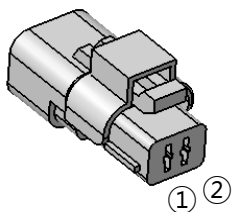
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0C18 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P0001	Inlet Metering Current Feedback EX & IMV drive fault

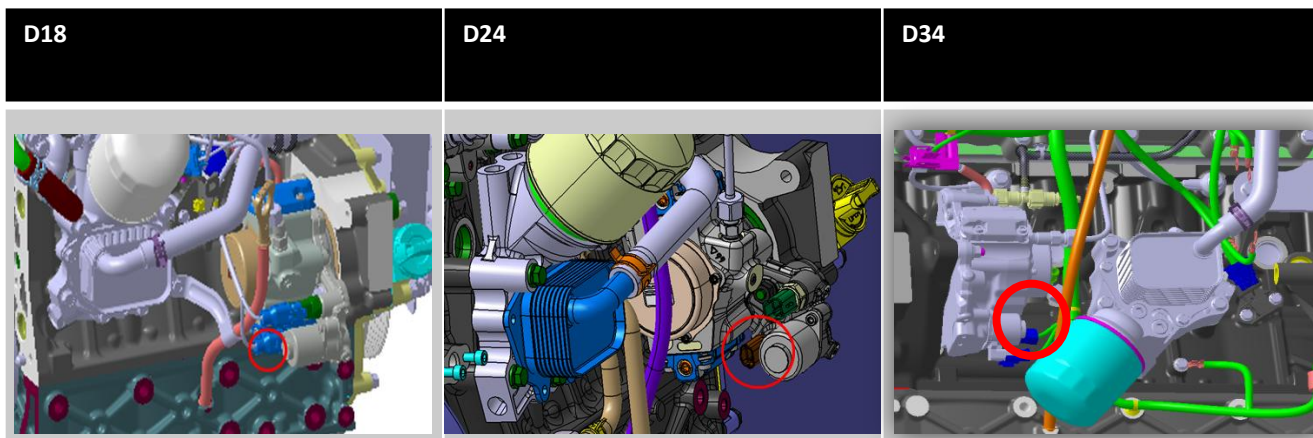
1) Overview

CODE	REASON	EFFECT
P0001 Blink 221	High Pressure Pump - Inlet Metering Valve electrical fault and IMV drive fault (electrical)	CE lamp Flash Torque Reduction



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

IMV abnormal control during Engine Running

4) Condition for Setting the Fault Code

IMV valve control is disabled

5) Condition for Clearing the Fault Code

IMV valve control is operating normally

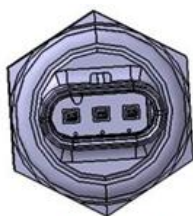
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0001 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check the IMV wire harness? Connection problem? (pin to pin)		Do necessary repair	Step4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 degC)		Change IMV	Step7
7	Perform IMV Valve test? (Test not applicable)		Call Hot-line	Change IMV

Fault Code	Fault Name
P01C3	Fuel filter pressure sensor OC/SCB/SCG Fault

1) Overview

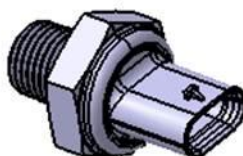
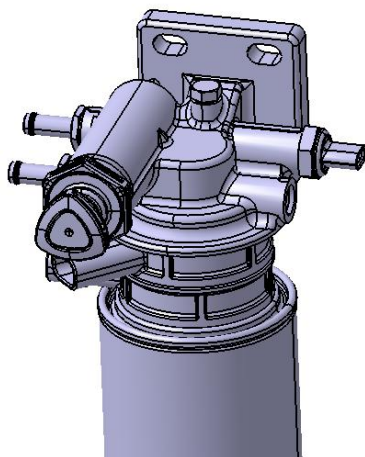
CODE	REASON	EFFECT
E001382-31	Electrical problem Connection problem Sensor problem	CE lamp Flashing Torque Reduction Lv1



① ② ③

No	ECU Pin	Description
1	166	Supply(+5V)
2	144	Ground
3	108	Fuel filter pressure sensor signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The sensor signal of fuel filter pressure is less/above than a threshold

5) Condition for Clearing the Fault Code

The sensor signal of fuel filter pressure is in normal operation range

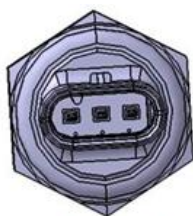
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P01C3 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check ECU connection Connection problem?		Do necessary re pair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Do necessary re pair	Step 6
6	Change sensor. Fault code is cleared?		O.K	Call Hot-line

Fault Code	Fault Name
P01C4	Fuel filter pressure sensor feedback low

1) Overview

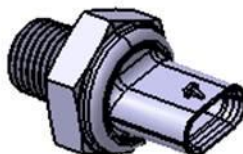
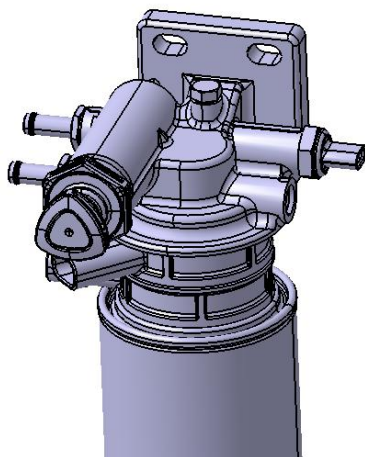
CODE	REASON	EFFECT
E001382-07	Fuel filter sensor problem Fuel filter problem	CE lamp Flashing Torque Reduction Lv1



① ② ③

No	ECU Pin	Description
1	166	Supply(+5V)
2	144	Ground
3	108	Fuel filter pressure sensor signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The sensor signal of fuel filter pressure is less than a threshold

5) Condition for Clearing the Fault Code

The sensor signal of fuel filter pressure is greater or equal to a threshold

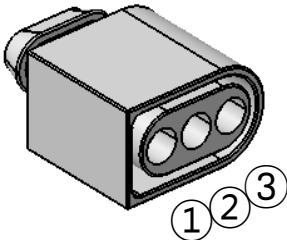
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P01C4 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check ECU connection Connection problem?		Do necessary re pair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Do necessary re pair	Step 6
6	Change fuel filter. Start engine and keep engine running state. For the diagnosis, engine has to be in running state with warm up condition more than 10 minutes. Fault code is cleared?		O.K	Call Hot-line

Fault Code	Fault Name
P0002	Rail Pressure Control Fault (IMV only)

1) Overview

CODE	REASON	EFFECT
E000157-21	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location

D18

D24

D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the resistance of IMV is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the resistance of IMV is within the threshold during restricted condition, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0002 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump with DOOSAN A.S support. Fault code is cleared?		O.K	Call Hot line

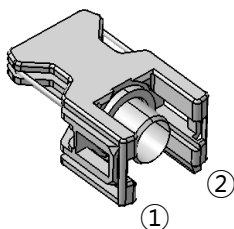
B

Step	Inspection	Standard Value	YES	NO
1	P0002 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P02A2/P02A3	Injector Minimum Drive Pulse Drift Fault (Cylinder #3)

1) Overview

CODE	REASON	EFFECT
E000653-31	Injector of cylinder #3 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #3 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #3 injector is within the threshold during restricted condition, fault code is cleared

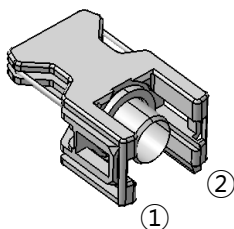
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02A3 is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P02A3	Injector Minimum Drive Pulse Drift Fault (Cylinder #3)

1) Overview

CODE	REASON	EFFECT
E000653-31	Injector of cylinder #3 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #3 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #3 injector is within the threshold during restricted condition, fault code is cleared

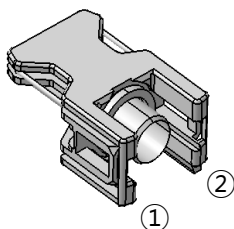
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02A3 is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P02A6/P02A7	Injector Minimum Drive Pulse Drift Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-31	Injector of cylinder #4 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #4 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #4 injector is within the threshold during restricted condition, fault code is cleared

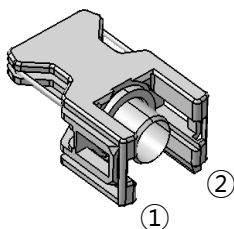
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02A7 is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P02A7	Injector Minimum Drive Pulse Drift Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-31	Injector of cylinder #4 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #4 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #4 injector is within the threshold during restricted condition, fault code is cleared

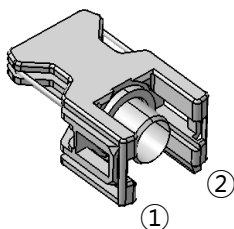
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02A7 is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P02EE	Injector Short Fault (Cylinder #1)

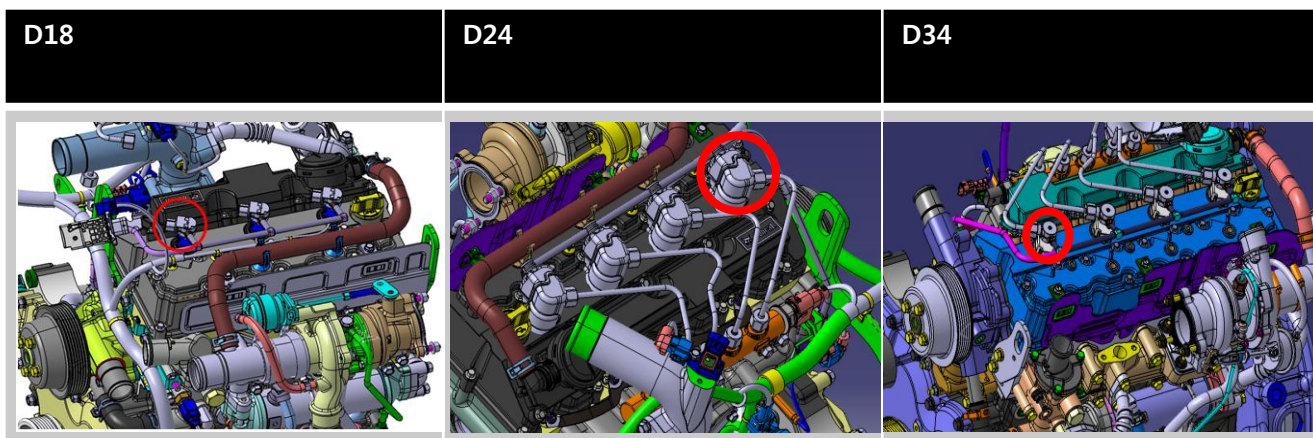
1) Overview

CODE	REASON	EFFECT
E000651-06	Electrical problem Connection problem Injector problem	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #1 is shorted

5) Condition for Clearing the Fault Code

The injector of cylinder #1 is restored.

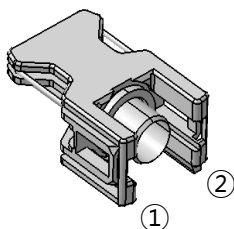
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0201 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector ($0.4\Omega \sim 1\Omega$)		Step 7	Change injector
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step 14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix Intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step 16
16	Check continuity and electrical insulation. Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P02EF	Injector Short Fault (Cylinder #2)

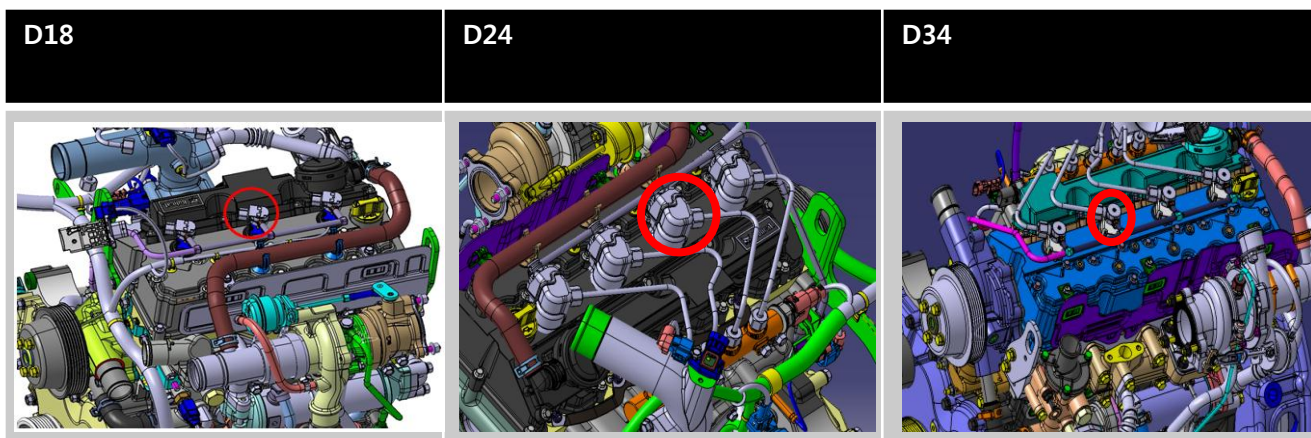
1) Overview

CODE	REASON	EFFECT
E000652-06	Electrical problem Connection problem Injector problem	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #2 is shorted

5) Condition for Clearing the Fault Code

The injector of cylinder #2 is restored.

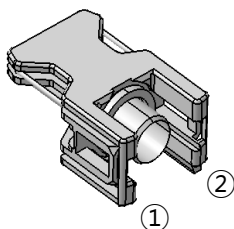
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02EF is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector ($0.4\Omega \sim 1\Omega$)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P02F0	Injector Short Fault (Cylinder #3)

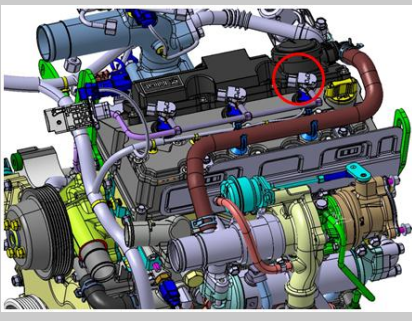
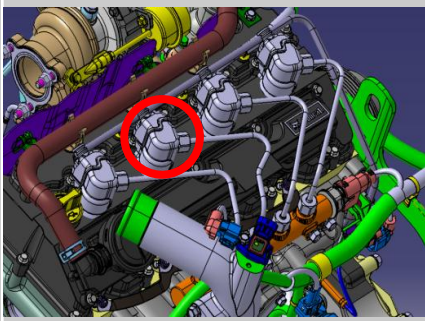
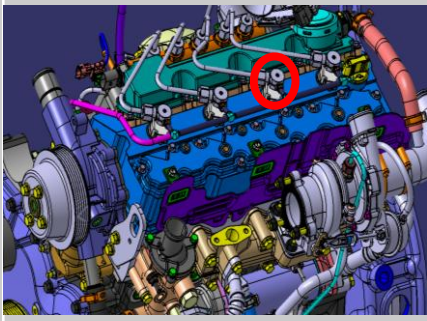
1) Overview

CODE	REASON	EFFECT
E000653-06	Injector of cylinder #3 short circuit	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #3 is shorted

5) Condition for Clearing the Fault Code

The injector of cylinder #3 is restored

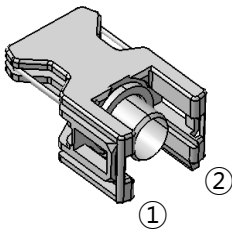
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02F0 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P02F1	Injector Short Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-06	Injector of cylinder#4 short circuit	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #4 is shorted

5) Condition for Clearing the Fault Code

The injector of cylinder #4 is restored

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02F1 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group
(Just EGR related faults are detected by ECU but DCU can detect also)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (Dosing fault)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (UREA(DEF) quality fault)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (Tampering)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group
(Repeat offense)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (UREA(DEF) tank warning)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (UREA(DEF) tank level very low (warning escalation))

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (UREA(DEF) tank return error)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P2BXX	SCR Inducement Fault

1) Overview

CODE	REASON	EFFECT
E005246-XX	DCU faults	Depend on the each inducement group

2) Location

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the DCU detect the fault which is in the inducement group (UREA(DEF) tank level empty)

5) Condition for Clearing the Fault Code

The error is healed when the DCU fault is cleared

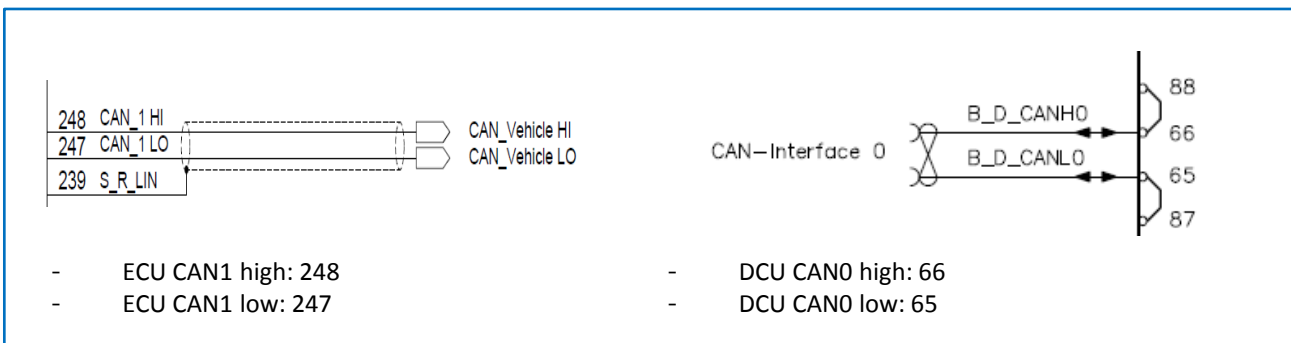
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BXX is occurred on diagnostic tool?		Step2	
2	Check the DCU fault Is there a fault?		Do necessary repair	Call Hot-line

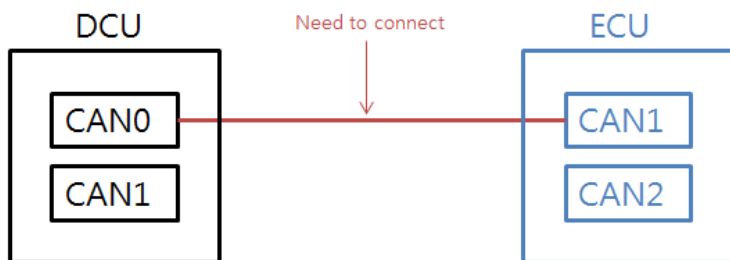
Fault Code	Fault Name
P2BD0	ECU-DCU Connection Fault

1) Overview

CODE	REASON	EFFECT
E005246-19	Network problem ECU-DCU connection problem	CE lamp Flashing Torque Reduction Lv1



2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

The error is reported if the CAN message can't receive from DCU because of bad connection between ECU and DCU

5) Condition for Clearing the Fault Code

The error is healed when the connection between ECU and DCU is normal

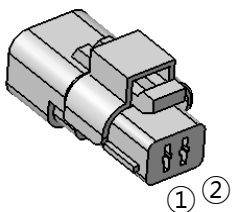
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2BD0 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check ECU-DCU connection Connection problem?		Do necessary re pair	Step 4
4	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 5
5	Check Network Network problem?		Do necessary re pair	Call Hot-line

Fault Code	Fault Name
P0003	IMV Current Feedback Low Fault

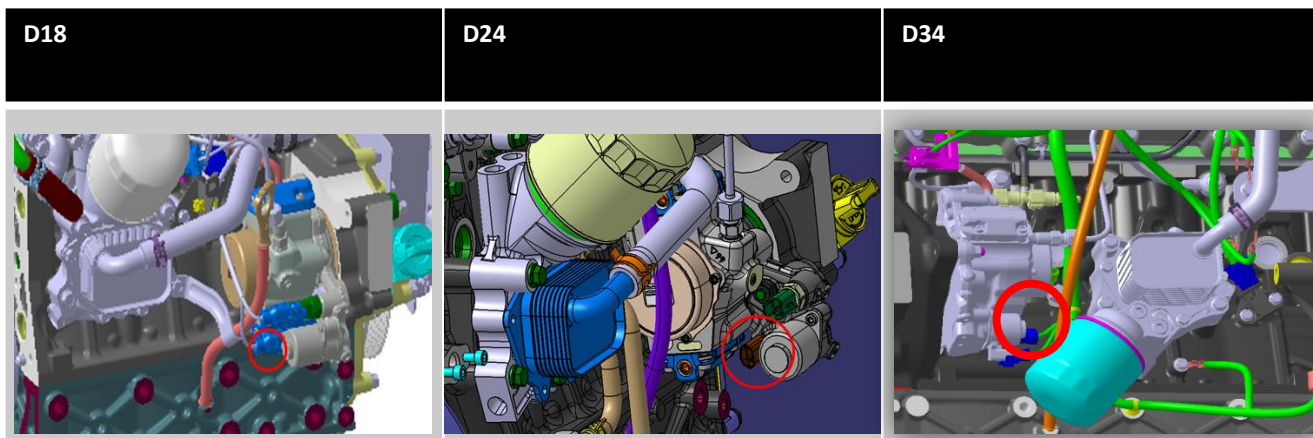
1) Overview

CODE	REASON	EFFECT
E001076-04	Electrical problem Connection problem Resistance problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the resistance of IMV is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the resistance of IMV is within the threshold during restricted condition, fault code is cleared

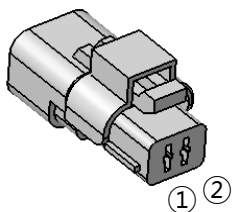
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0003 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV Valve test? (Test not applicable) IMV is Buzzing		Call Hot-Line	Change IMV

Fault Code	Fault Name
P0004	IMV Current Feedback High Fault

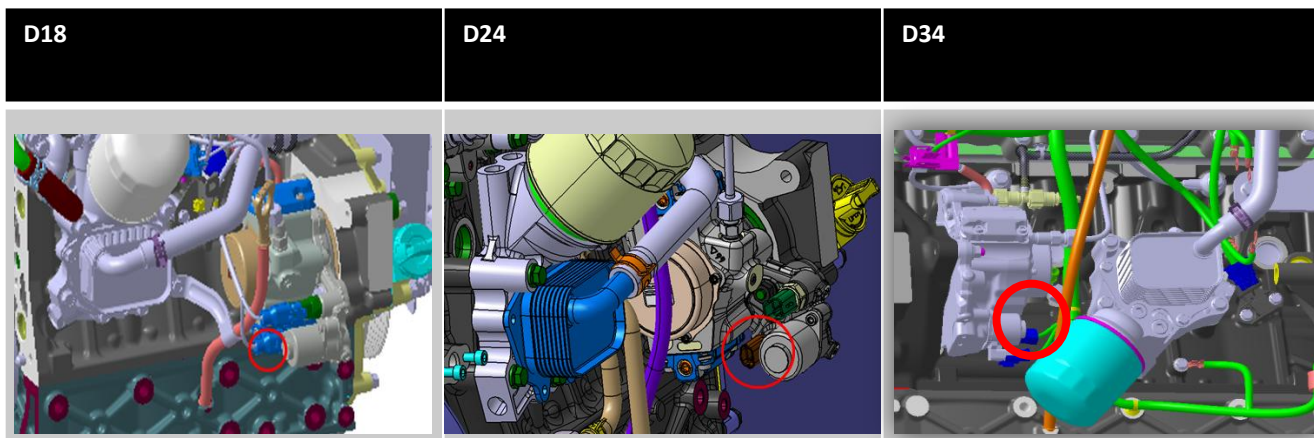
1) Overview

CODE	REASON	EFFECT
E001076-03	Electrical problem Connection problem Resistance problem	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the resistance of IMV is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the resistance of IMV is within the threshold during restricted condition, fault code is cleared.

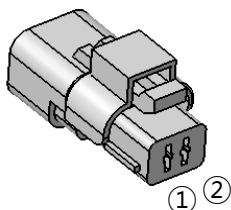
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0004 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV Valve test? (Test not applicable) IMV is Buzzing		Call Hot-Line	Change IMV

Fault Code	Fault Name
P0006	Rail Pressure Control Fault (Trim Low)

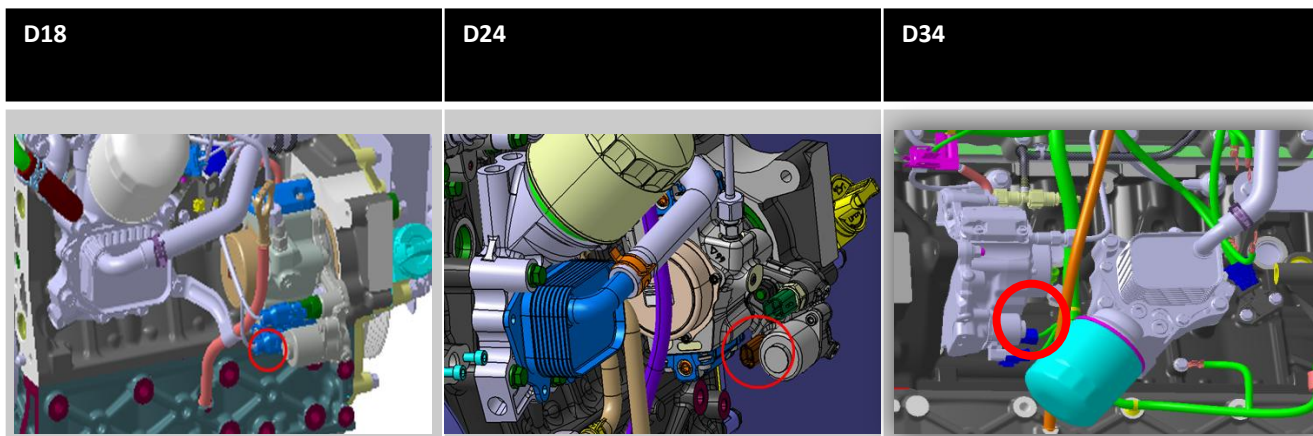
1) Overview

CODE	REASON	EFFECT
E001076-03	Electrical problem Connection problem Resistance problem	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

the resistance of IMV trim value is low than threshold, fault code is raised

5) Condition for Clearing the Fault Code

If the resistance of IMV trim value is within the threshold, fault code is cleared.

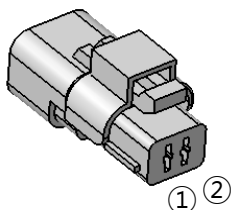
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0006 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV buzzing test? (Test not applicable) IMV is Buzzing		Call Hot-Line	Change IMV

Fault Code	Fault Name
P0007	Rail Pressure Control Fault (Trim High)

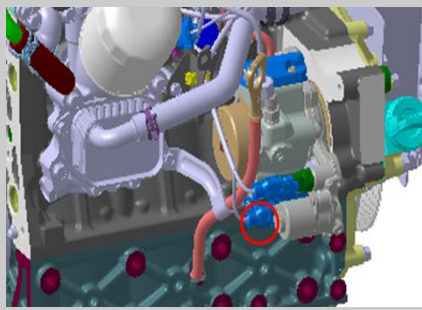
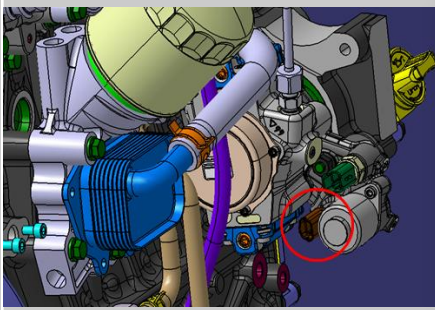
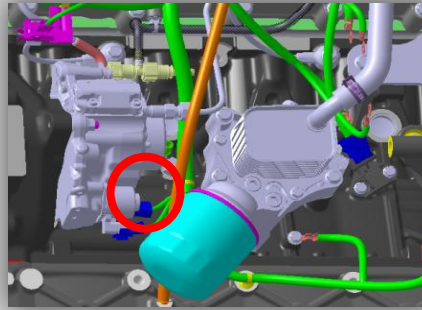
1) Overview

CODE	REASON	EFFECT
E001076-03	Electrical problem Connection problem Resistance problem	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the resistance of IMV trim value is higher than threshold, fault code is raised.

5) Condition for Clearing the Fault Code

If the resistance of IMV trim value is within the threshold, fault code is cleared

6) Check list

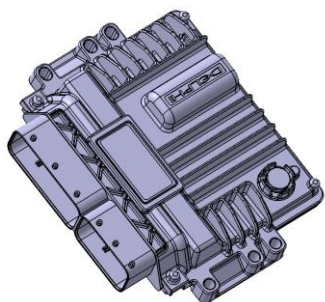
Step	Inspection	Standard Value	YES	NO
1	P0007 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV buzzing test? (Test not applicable) IMV is Buzzing		Call Hot-Line	Change IMV

Fault Code	Fault Name
P061B, P1219 P16XX	ECU Safety Monitoring Fault

1) Overview

CODE	REASON	EFFECT
E001221-XX	ECU problem	CE lamp ON Torque Reduction Lv0

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

ECU internal chipset has a problem

5) Condition for Clearing the Fault Code

ECU internal chipset problem is restored.

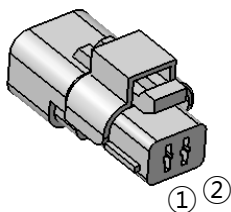
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P061B/P1219/P16XX is occurred on diagnostic tool?		Step2	O.K
2	Are there any other faults ? Please check other faults before you check P061B/P1219/P16XX		Step3	Step3
3	Clear all DTC and re-flash ECU with latest ECU MAP		Step4	

Fault Code	Fault Name
P025A	IMV Drive OC Fault

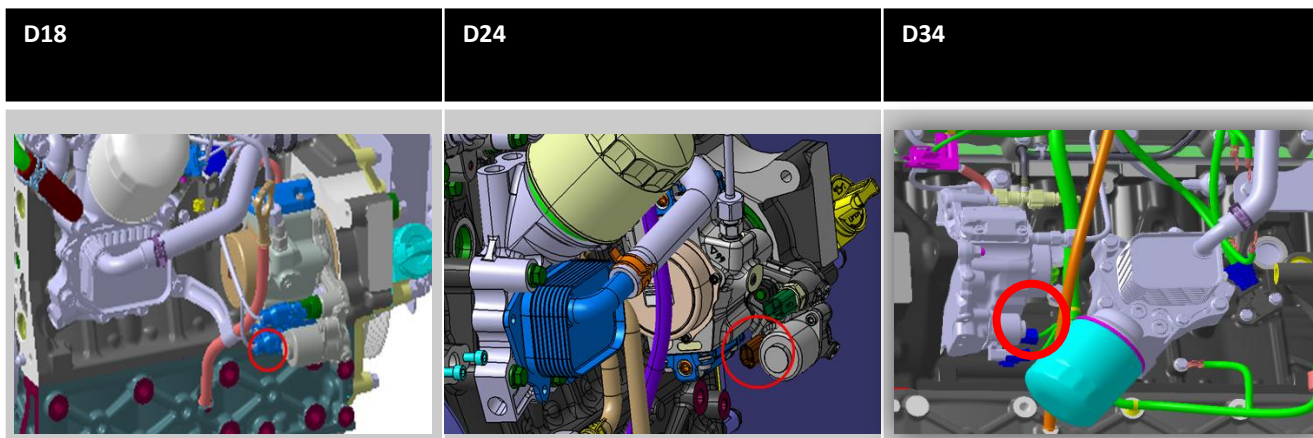
1) Overview

CODE	REASON	EFFECT
E004082-05	Electrical problem Connection problem Resistance problem Failure of IMV	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the IMV signal is opened, fault code is raised

5) Condition for Clearing the Fault Code

If the fault condition is restored, fault code is cleared

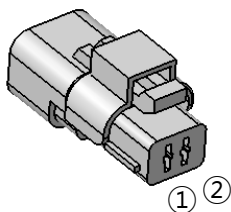
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P025A is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV buzzing test? (Test not applicable) IMV is buzzing?		Call Hot-Line	Change IMV

Fault Code	Fault Name
P025C	IMV Drive SCG Fault

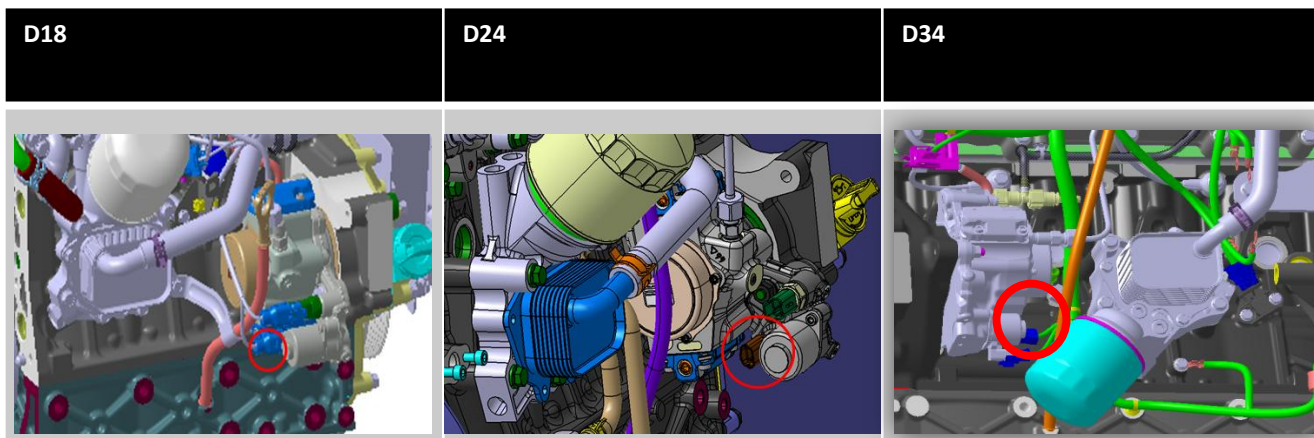
1) Overview

CODE	REASON	EFFECT
E004082-04	Electrical problem Connection problem Resistance problem Failure of IMV	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the IMV signal is shorted to ground, fault code is raised

5) Condition for Clearing the Fault Code

If the fault condition is restored, fault code is cleared

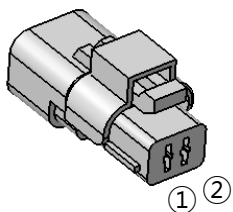
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P025C is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV buzzing test? (Test not applicable) IMV is buzzing?		Call Hot-Line	Change IMV

Fault Code	Fault Name
P025D	IMV Drive SCB Fault

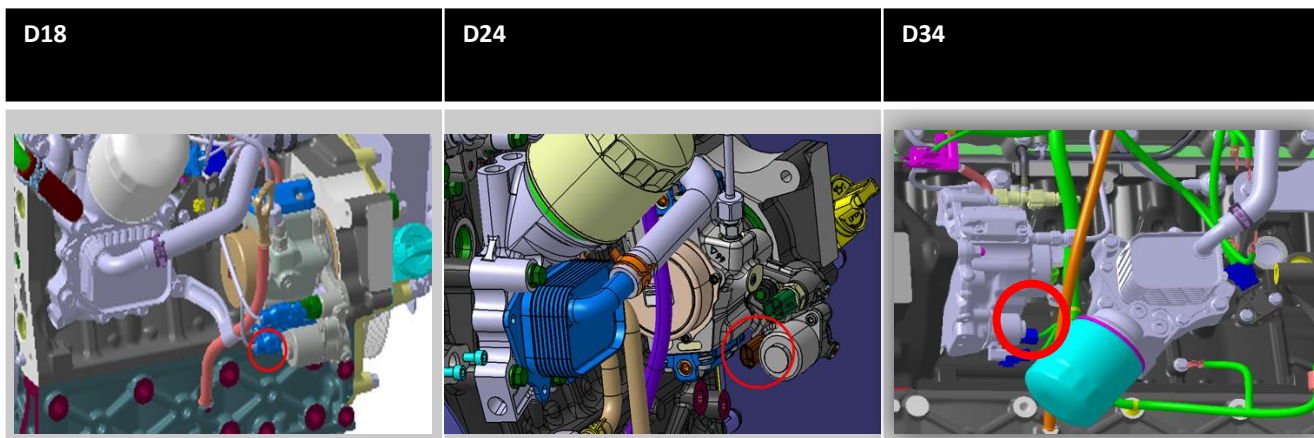
1) Overview

CODE	REASON	EFFECT
E004082-03	Electrical problem Connection problem Resistance problem Failure of IMV	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the IMV signal is shorted to battery, fault code is raised

5) Condition for Clearing the Fault Code

If the fault condition is restored, fault code is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P025D is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the IMV connection Connection problem? (pin to pin)		Do necessary repair	Step 4
4	Check the ECU Connection. Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation. Electrical problem?		Fix wire harness	Step 6
6	Measure IMV electrical resistance? (around 5.3 Ω at 20 deg C) Resistance problem?		Change IMV	Step 7
7	Perform IMV buzzing test? (Test not applicable) IMV is buzzing?		Call Hot-Line	Change IMV

Fault Code	Fault Name
P25BA	DeSox Switch OC/Stuck Fault

1) Overview

CODE	REASON	EFFECT
E003696-05 E003696-07	Electrical problem Connection problem Switch problem	CE lamp ON

No	ECU Pin	Description
1	137	VREF3 (5V)
2	114	Regen-Start
3	120	Switch Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

DeSOx switch voltage is open or stuck

4) Condition for Clearing the Fault Code

DeSOx switch voltage is normal

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P25BA is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P25BB	DeSox Switch SCG Fault

1) Overview

CODE	REASON	EFFECT
E003696-04	Electrical problem Connection problem Switch problem	CE lamp ON

No	ECU Pin	Description
1	137	VREF3 (5V)
2	114	Regen-Start
3	120	Switch Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

DeSOx switch voltage is less than minimum operation range

4) Condition for Clearing the Fault Code

DeSOx switch voltage is in operation range

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P25BB is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P25BC	DeSox Switch SCB Fault

1) Overview

CODE	REASON	EFFECT
E003696-03	Electrical problem Connection problem Switch problem	CE lamp ON

No	ECU Pin	Description
1	137	VREF3 (5V)
2	114	Regen-Start
3	120	Switch Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

DeSOx switch voltage is more than maximum operation range

4) Condition for Clearing the Fault Code

DeSOx switch voltage is in operation range

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P25BC is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

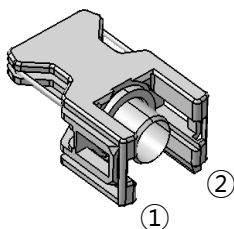
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0120 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P029A, P029B	Injector Minimum Drive Pulse Drift Fault (Cylinder #1)

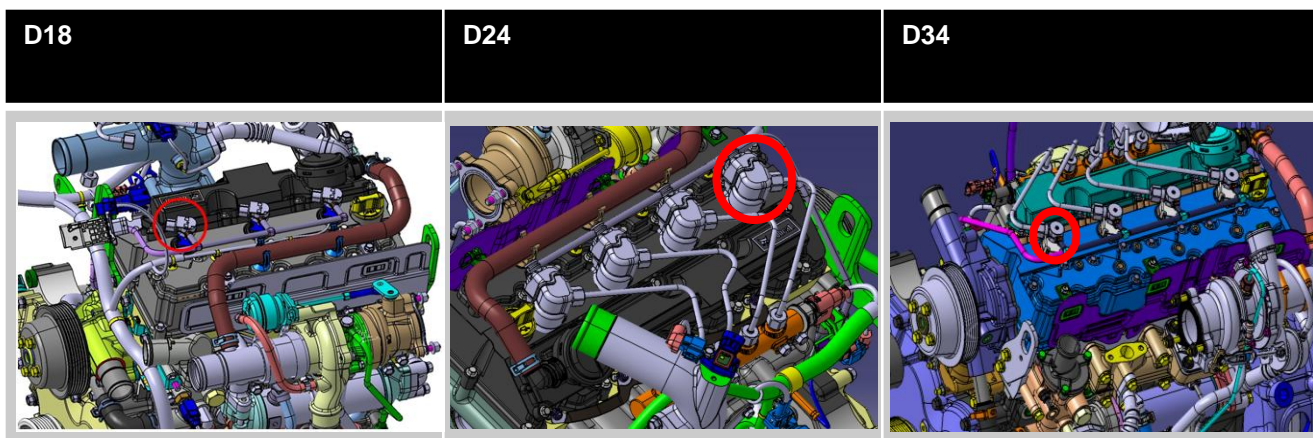
1) Overview

CODE	REASON	EFFECT
E000651-31	Connection problem Software problem	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #1 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #1 injector is within the threshold during restricted condition, fault code is cleared.

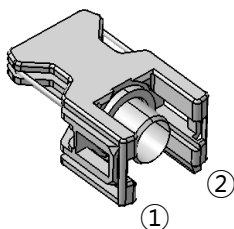
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P029A/P029B is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P029B	Injector Minimum Drive Pulse Drift Fault (Cylinder #1)

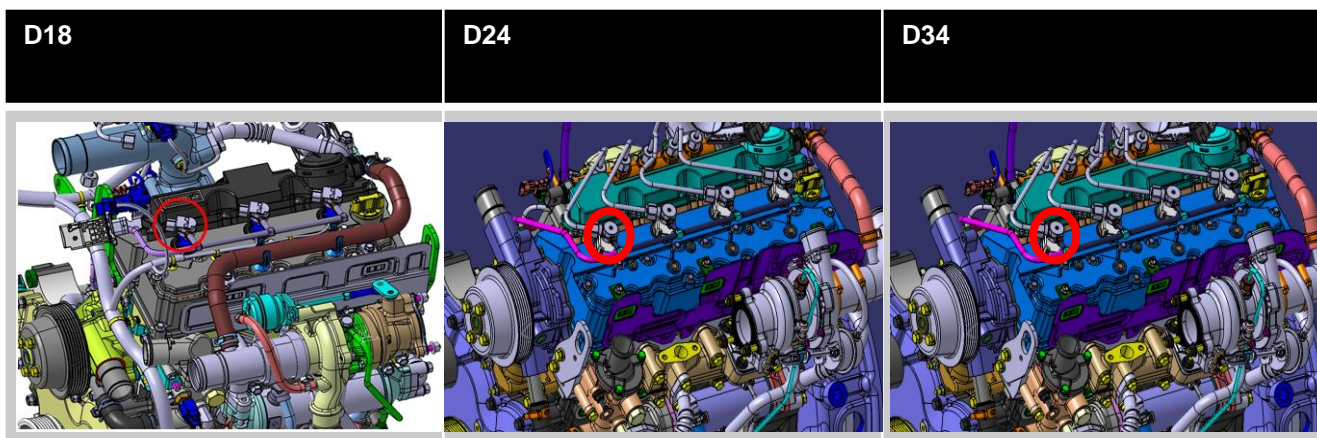
1) Overview

CODE	REASON	EFFECT
E000651-31	Connection problem Software problem	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #1 injector is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #1 injector is within the threshold during restricted condition, fault code is cleared

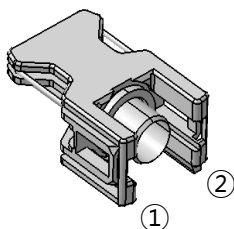
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P029B is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P029E/P029F	Injector Minimum Drive Pulse Drift Fault (Cylinder #2)

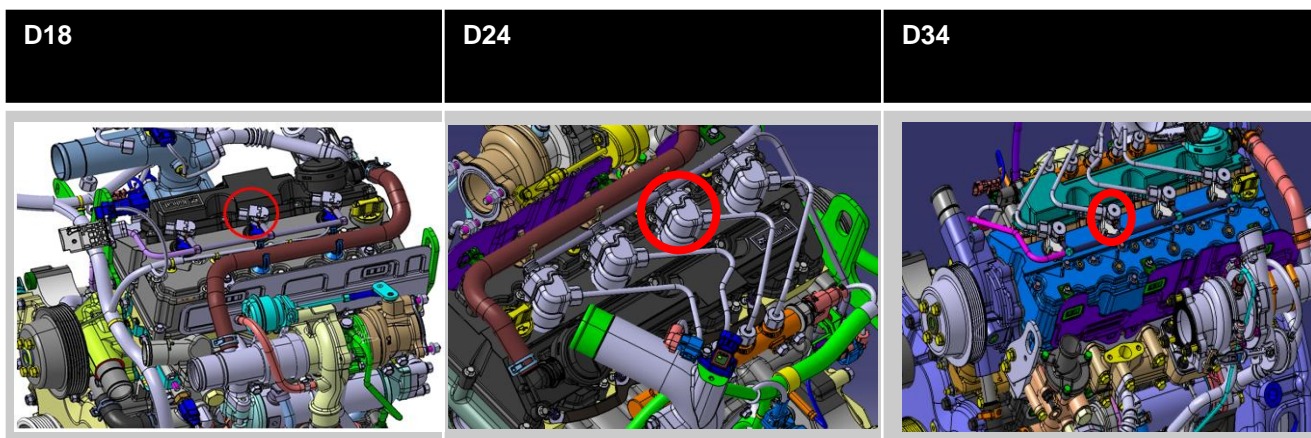
1) Overview

CODE	REASON	EFFECT
E000652-31	Injector of cylinder #2 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #2 injector is out of the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #2 injector is within the threshold during restricted condition, fault code is cleared

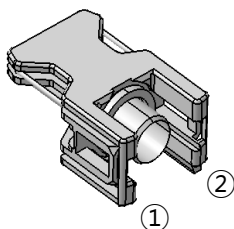
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P029E/P029F is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P029F	Injector Minimum Drive Pulse Drift Fault (Cylinder #2)

1) Overview

CODE	REASON	EFFECT
E000652-31	Injector of cylinder #2 MDP absolute below the minimum limit	CE lamp ON Low idle RPM increase



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #2 injector is out of the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the MDP (Minimum Driving Pulse) of cylinder #2 injector is within the threshold during restricted condition, fault code is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P029F is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check if new software that solves this problem is available or if SW is up to date. Upgrade possible?		Re flash SW Re Write I2C	Step 4
4	Check that individual injector corrections (I2C) are correctly entered in ECU. Check particularly position and value Problem of I2C?		Re Write I2C	Step5
5	Check accelerometer connection and screwing torque. Mandatory: Check particularly ground shield connection of accelerometer Connection problem?		Do necessary	Call Hot line

Fault Code	Fault Name
P037E	Glow Plug Feedback OC/SCG Fault

1) Overview

CODE	REASON	EFFECT
E005324-04	Electrical problem Connection problem Glow plug problem	CE lamp ON

No	ECU Pin	Description
1	179	Glow Plug Feedback

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Glow plug feedback wire is opened or shorted to ground

4) Condition for Clearing the Fault Code

Glow plug feedback wire problem is restored

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P037E is occurred on diagnostic tool?		Step 2	
2	Battery fault present?		Change the Battery	Step 3
3	Check glow plug connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P037F	Glow Plug Feedback SCB Fault

1) Overview

CODE	REASON	EFFECT
E005324-03	Electrical problem Connection problem Glow plug problem	CE lamp ON

No	ECU Pin	Description
1	179	Glow Plug Feedback

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Glow plug feedback wire is shorted to battery

4) Condition for Clearing the Fault Code

Glow plug feedback wire problem is restored

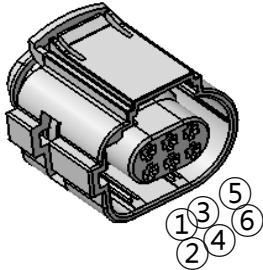
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P037F is occurred on diagnostic tool?		Step 2	
2	Battery fault present?		Change the Battery	Step 3
3	Check glow plug connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P046D	EGR Position Sensor Noise Fault

1) Overview

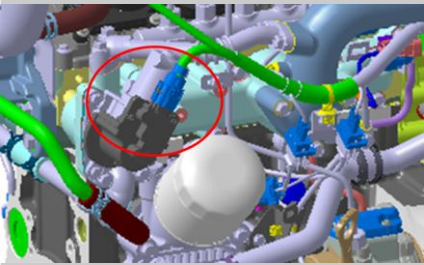
CODE	REASON	EFFECT
E000027-10	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



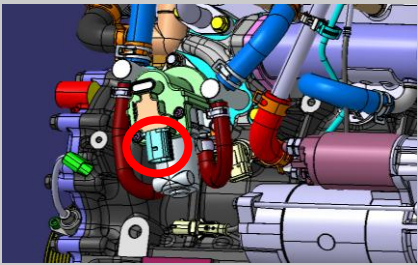
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

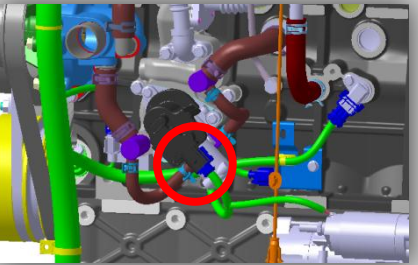
D18

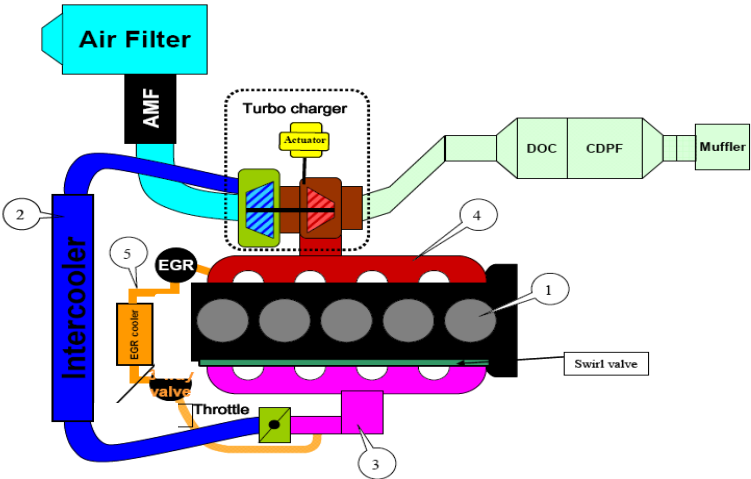


D24



D34





3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

There is not EGR sensor fault and there is a noise spike on the sensor signal.

(Noise detect : If the absolute difference, comparing the raw actual position to low pass filtered position value, exceeds calibration value (4.6V).

5) Condition for Clearing the Fault Code

The noise spike is restored.

6) Check list

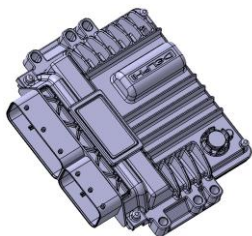
Step	Inspection	Standard Value	YES	NO
1	P046D is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P060B	Analog To Digital Convertor Fault

1) Overview

CODE	REASON	EFFECT
E000629-12	Electrical problem ECU problem	CE lamp Flashing Engine will be stopped

2) Location



3) Condition for Running Diagnostic

Key on

4) Condition for Setting the Fault Code

When the ECU memory Code has corrupted

5) Condition for Clearing the Fault Code

When the ECU memory has no error

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P060B is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch.		Step 3	
3	Other fault present?		Step 7	Step 4
4	Visually check ECU pins and counterparts in wiring harness Electrical problem?		Do necessary repair	Step 5
5	Check conformity of ground connection of vehicle chassis / Electrical problem?		Do necessary repair	Step 6
6	Connection conform Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P060D	Pedal position performance out of range

1) Overview

CODE	REASON	EFFECT
P060D Blink 432	If pedal position sensor has electrical problem or ECU has a problem.	CE lamp ON Torque Reduction

No	ECU Pin	Description
1	224	VREF1 PPS1, (5V)
2	225	Accelerator Pedal Position Sensor 1
3	226	PPS1 Return
4	229	VREF2 PPS2, (5V)
5	213	Accelerator Pedal Position Sensor2
6	214	PPS2 Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

If the difference between values of dual track pedal is less than a calibration

4) Condition for Clearing the Fault Code

If the difference between values of dual track pedal is in a calibration range

5) Check list

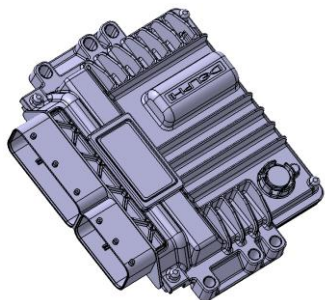
Step	Inspection	Standard Value	YES	NO
1	P060D is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P061B, P1219 P16XX	ECU Safety Monitoring Fault

1) Overview

CODE	REASON	EFFECT
E001221-XX	ECU problem	CE lamp ON Torque Reduction Lv0

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

ECU internal chipset has a problem

5) Condition for Clearing the Fault Code

ECU internal chipset problem is restored.

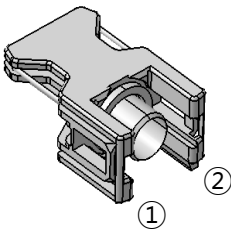
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P061B/P1219/P16XX is occurred on diagnostic tool?		Call Hot-line	

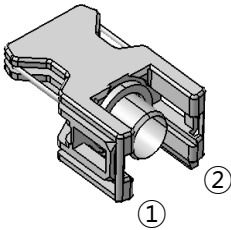
Fault Code	Fault Name
P062D	Injector Bank 1 SCB/SCG/SPI Fault

1) Overview

CODE	REASON	EFFECT
E001612-03 E001612-04 E001612-11	Injector bank #1 has shorted to ground or battery Or SPI (Serial Peripheral Interface) fault	CE lamp Flashing Low idle RPM increase (SPI fault - CE lamp ON Torque Reduction Lv0)



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18

D24

D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector bank 0 high side driver feedback voltage is constantly monitored.

If the voltage is lower/higher than the calibrated threshold, then the fault is set. Or SPI (Serial Peripheral Interface) has a problem

5) Condition for Clearing the Fault Code

The injector bank 0 high side driver feedback voltage is constantly monitored. If the voltage is inside the calibrated threshold range, then the fault is cleared.

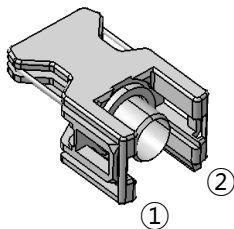
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0602D is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check injector connections corresponding to fault bank Connection problem?		Do necessary repair	Step4
4	Disconnect injectors and key on Problem still present?		Step5	Step7
5	Check ECU Connection Connection problem?		Do necessary repair	Step6
6	Clear fault then key off then reconnect ONE injector then key on Problem back?		Step 7	Step 8
7	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU		Step 8	
8	Iterate previous step on all injectors Try another injector (STEP 5) Problem back?		Step 7	Step 8
9	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

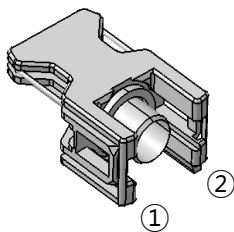
Fault Code	Fault Name
P062E	Injector Bank 2 SCB/SCG/SPI Fault

1) Overview

CODE	REASON	EFFECT
E001613-03 E001613-04 E001613-11	Injector bank #2 has shorted to ground or battery Or SPI (Serial Peripheral Interface) fault	CE lamp Flashing Low idle RPM increase (SPI fault - CE lamp ON Torque Reduction Lv0)

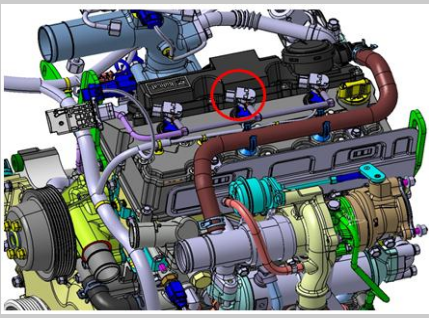
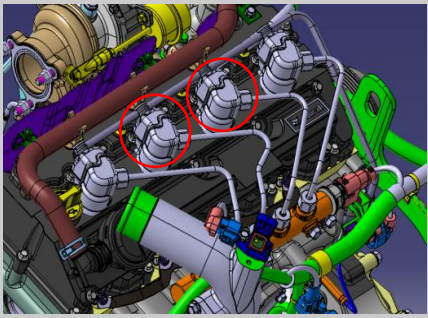
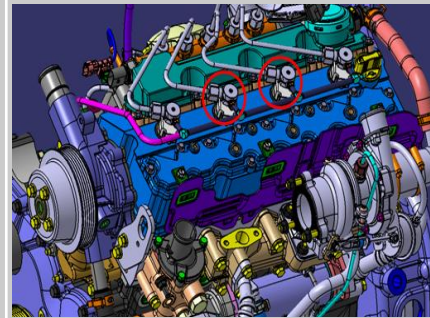


No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector bank 1 high side driver feedback voltage is constantly monitored.

If the voltage is lower/higher than the calibrated threshold, then the fault is set.

Or SPI (Serial Peripheral Interface) has a problem

5) Condition for Clearing the Fault Code

The injector bank 1 high side driver feedback voltage is constantly monitored.

If the voltage is inside the calibrated threshold range, then the fault is cleared

6) Check list

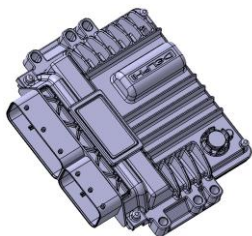
Step	Inspection	Standard Value	YES	NO
1	P062E is occurred on diagnostic tool?		Step2	
2	After let the machine is in safety area and turn-off the key switch.		Step3	
3	Check injector connections corresponding to fault bank Connection problem?		Do necessary repair	Step4
4	Disconnect injectors and key on Problem still present?		Step5	Step7
5	Check ECU Connection Connection problem?		Do necessary repair	Step6
6	Clear fault then key off then reconnect ONE injector then key on Problem back?		Step 7	Step 8
7	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU		Step 8	
8	Iterate previous step on all injectors Try another injector (STEP 5) Problem back?		Step 7	Step 8
9	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P062F	ECU Non-volatile Memory Fault

1) Overview

CODE	REASON	EFFECT
E000630-31	Data storage fault Non Volatile Memory	CE lamp Flashing Torque Reduction Lv1

2) Location



3) Condition for Running Diagnostic

Key on

4) Condition for Setting the Fault Code

If the ECU NVM memory is corrupted, then the fault is set

5) Condition for Clearing the Fault Code

If the ECU NVM memory has no error, then the fault is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P062F is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch.		Step 3	
3	Other fault present?		Step 7	Step 4
4	Visually check ECU pins and counterparts in wiring harness Electrical problem?		Do necessary repair	Step 5
5	Check conformity of ground connection of vehicle chassis Electrical problem?		Do necessary repair	Step 6
6	Connection conform Problem still present?		Call Hot-line	Problem solved

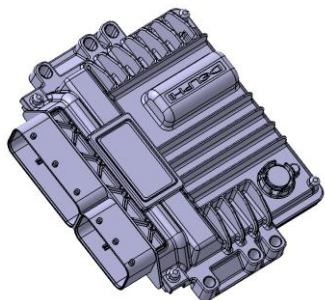
Fault Code	Fault Name
P068A	Main Relay Drop Fault

1) Overview

CODE	REASON	EFFECT
E001485-11	Electrical problem Connection problem Relay problem	CE lamp ON

No	ECU Pin	Description
1	201	Protected Battery
2	203	Protected Battery
3	205	Protected Battery
4	202	Power Ground
5	204	Power Ground
6	206	Power Ground

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If main relay status to be low state.

If abnormal shutdown happened by battery disconnection.

5) Condition for Clearing the Fault Code

When normal shutdown happened and main relay is operating normally.

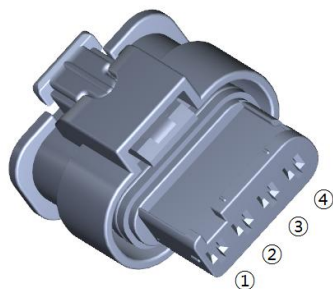
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P068A is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform relay test routine Test OK?		Call Hot-line	Step 4
4	Check relay connection Connection problem?		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 7
7	Change relay (run ISO cycle) ISO cycle OK?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0070	Inlet Air Temperature Count Ex Fault

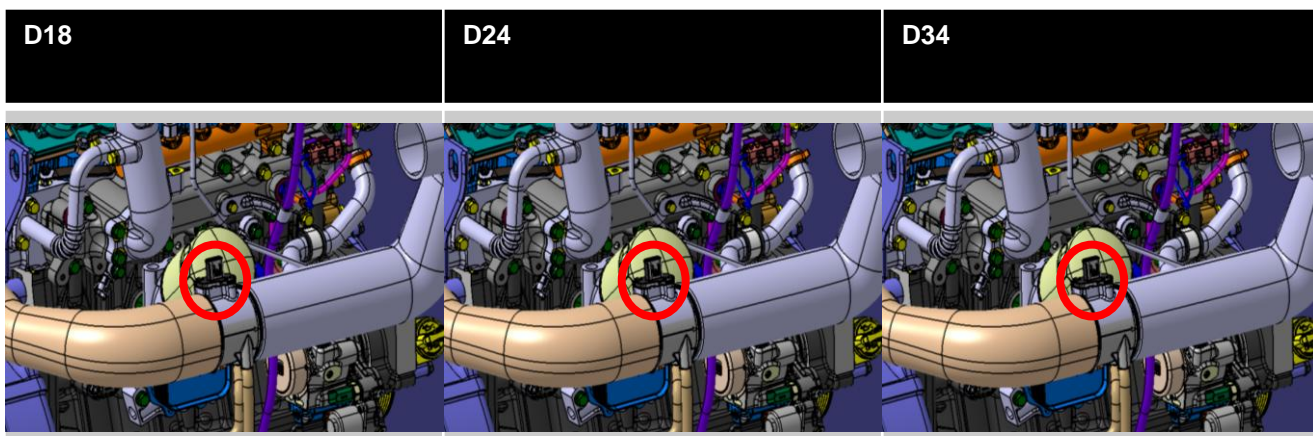
1) Overview

CODE	REASON	EFFECT
P0070 Blink 321	Inlet Air Temperature Sensor Value corrupted by ADC Error	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	235	Air Inlet Temperature, analogue signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	228	Air Mass Flow Sensor, frequency signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If there is an ADC or Vext fault is set

5) Condition for Clearing the Fault Code

The ADC or Vext fault is restored.

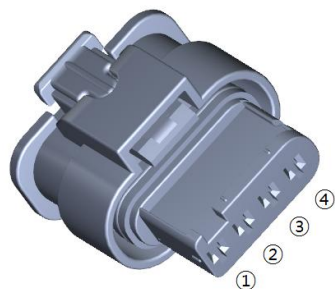
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0070 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0072	Inlet Air Temperature Sensor Low Fault

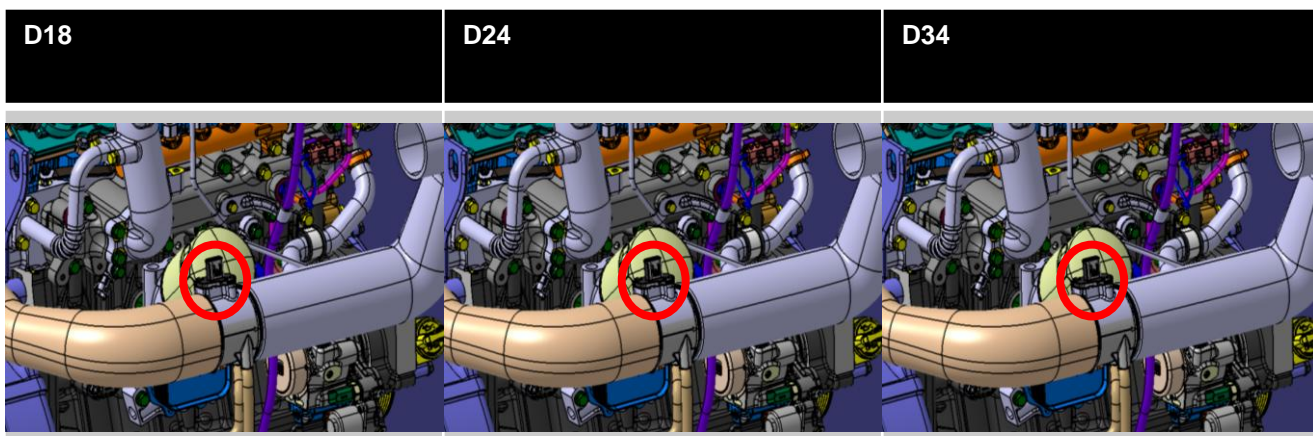
1) Overview

CODE	REASON	EFFECT
E000172-04 P0072	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Inlet air temperature signal value is less than minimum operation temperature

5) Condition for Clearing the Fault Code

Inlet Air temperature signal value is in operation range

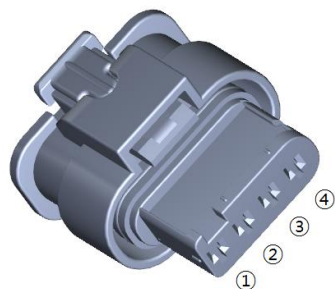
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0072 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0073	Inlet Air Temperature Sensor High Fault

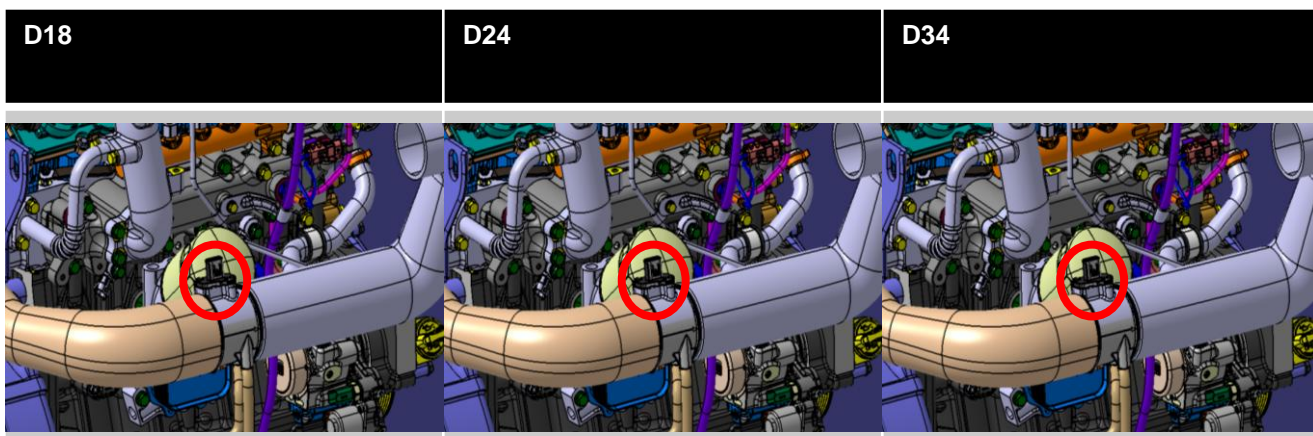
1) Overview

CODE	REASON	EFFECT
E000172-03 P0073	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Inlet Air temperature signal value is more than maximum operation temperature

5) Condition for Clearing the Fault Code

Coolant temperature signal value is in operation range

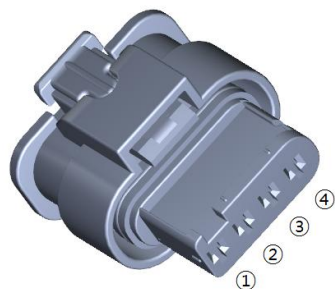
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0073 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0074	Inlet Air Temperature Gradient Fault

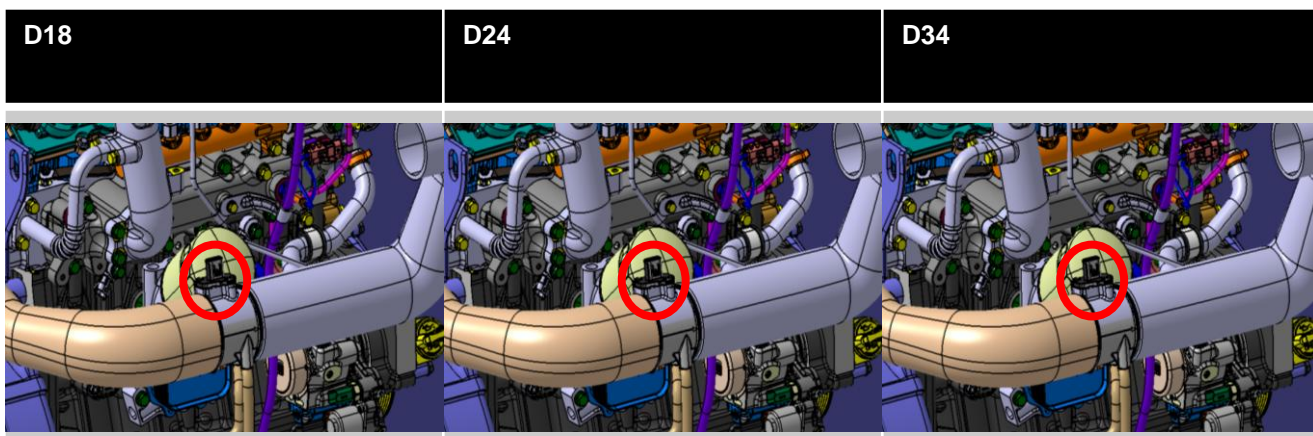
1) Overview

CODE	REASON	EFFECT
E000172-02	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Inlet Air Temperature Sensor signal gradient exceeds a threshold

5) Condition for Clearing the Fault Code

Inlet Air Temperature Sensor signal gradient in a threshold.

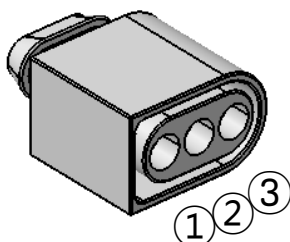
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0074 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0087	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

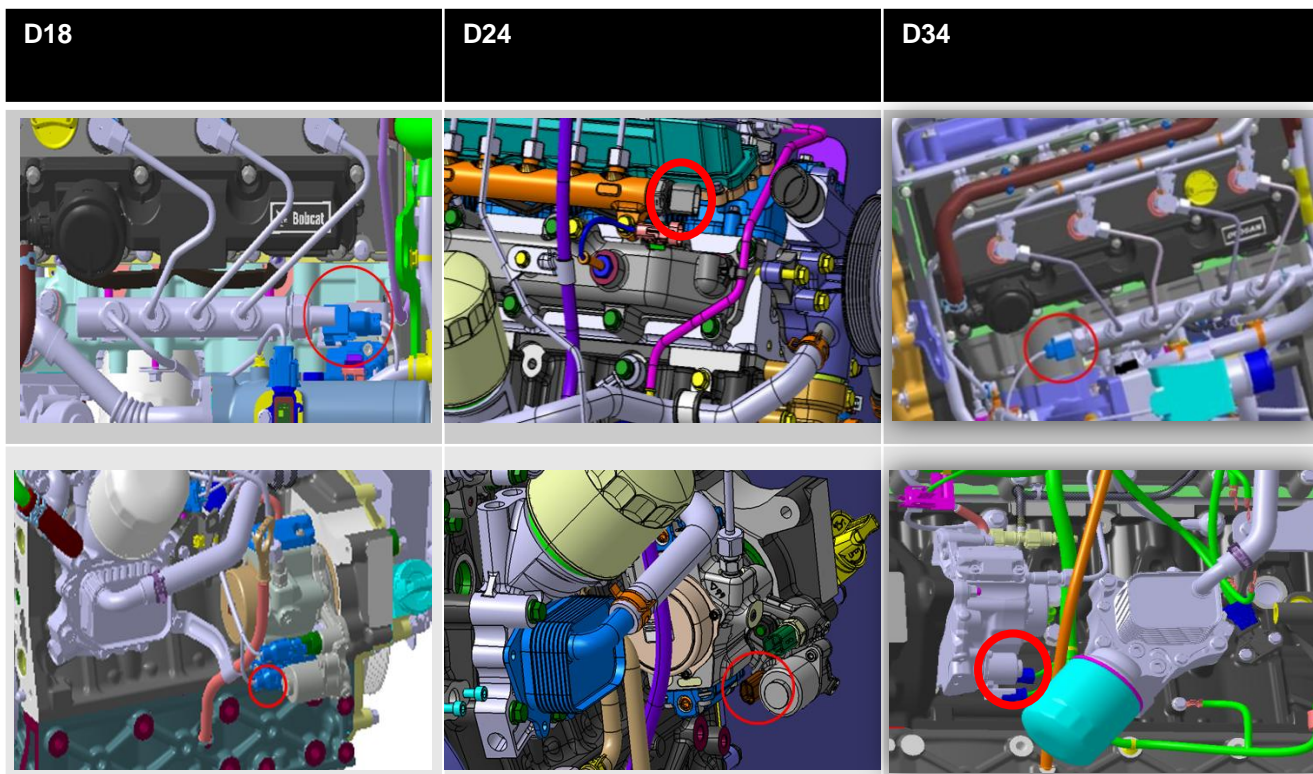
1) Overview

CODE	REASON	EFFECT
E000157-10	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Failure of rail filling LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuitry)problem.(leakage etc)	CE lamp ON



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If rail filling time is longer than threshold, fault code is raised.

5) Condition for Clearing the Fault Code

If Rail filling time is within the threshold, fault code is cleared.

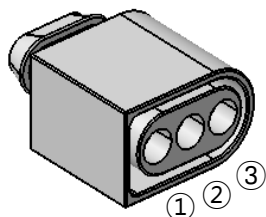
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0087 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
7	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0088	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

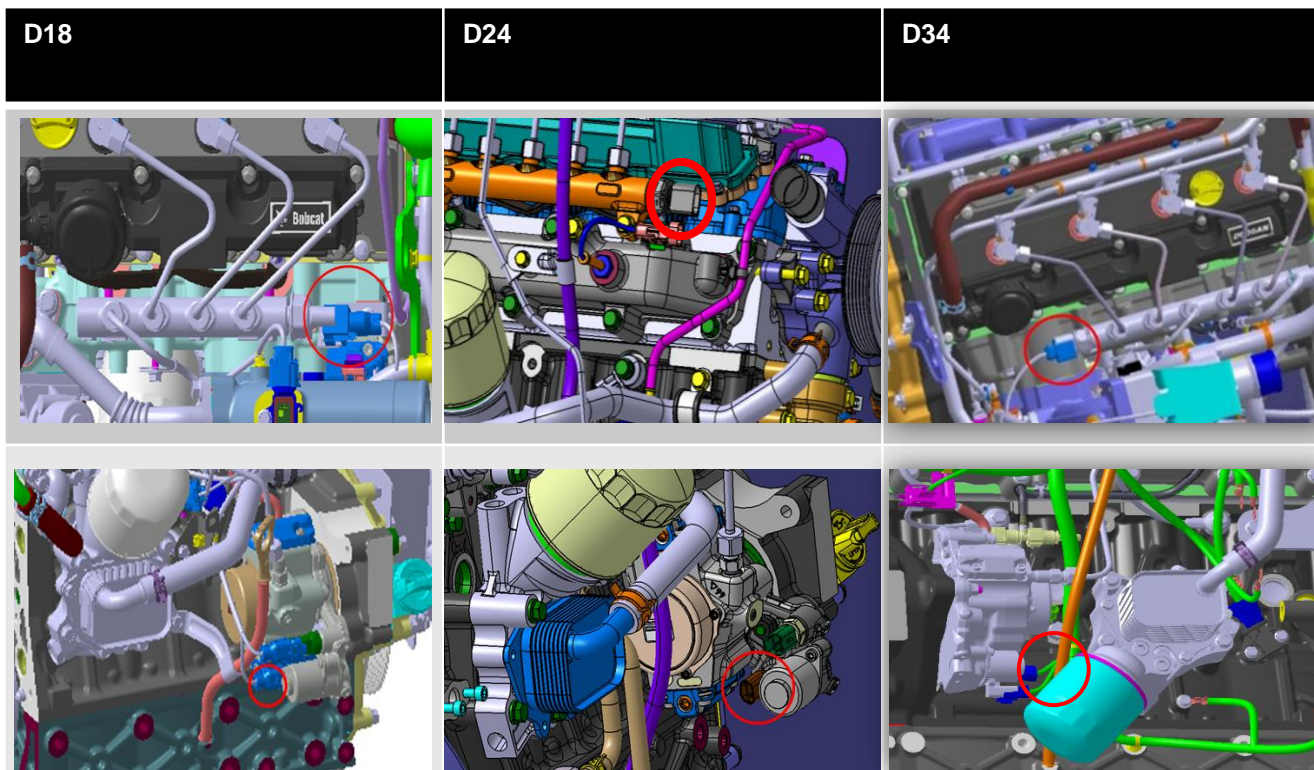
1) Overview

CODE	REASON	EFFECT
E000094-11	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuitry)problem.(leakage etc)	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold during restricted condition, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0088 is occurred on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line. (Low pressure circuit & high pressure circuit) Is there any leakage or blocking of fuel? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Step7
6	Change the injector which has a fault as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump with DOOSAN A.S support. Fault code is cleared?		O.K	Call Hot line

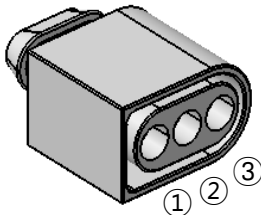
B

Step	Inspection	Standard Value	YES	NO
1	P0088 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0089	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

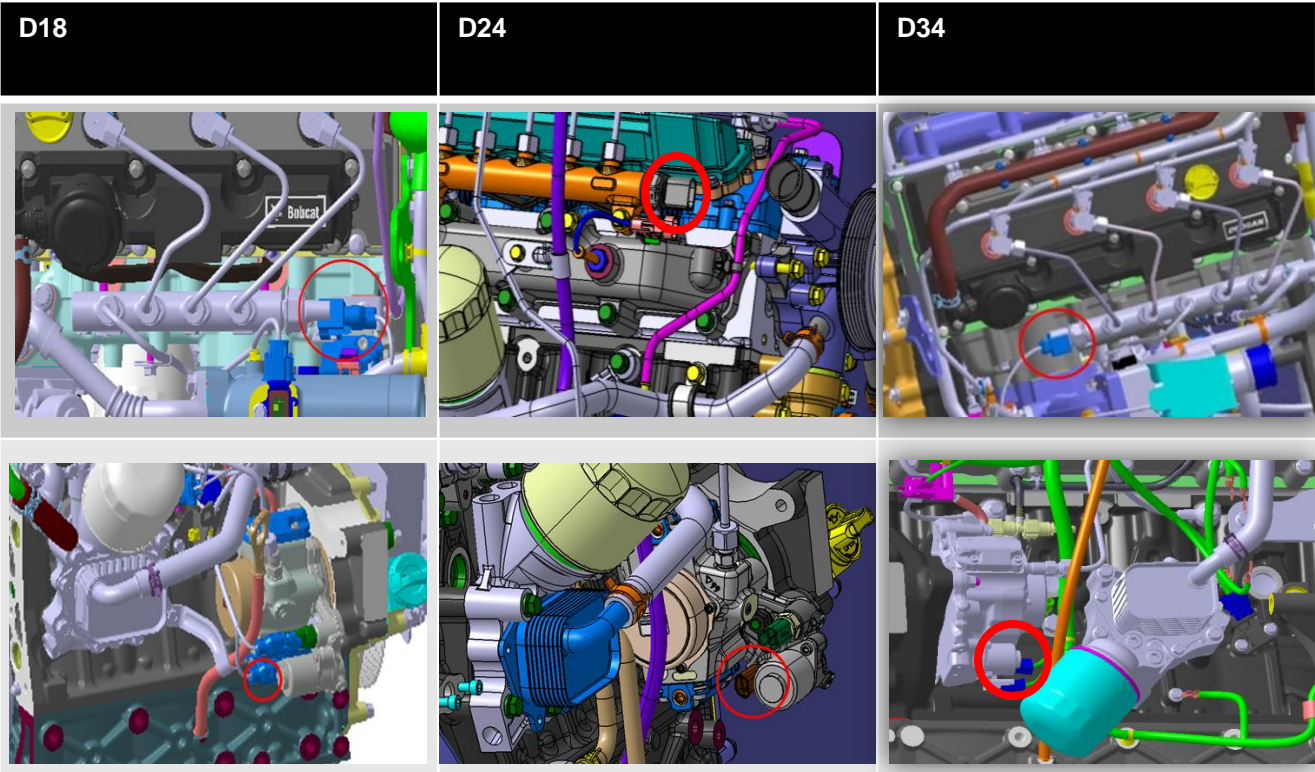
1) Overview

CODE	REASON	EFFECT
E000094-16	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuitry)problem.(leakage etc)	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold during restricted condition, fault code is cleared

6) Check list

<A>

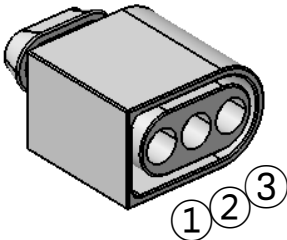
Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line. (Low pressure circuit & high pressure circuit) Is there any leakage or blocking of fuel? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared? (Information : Don't run the engine without fuel filter)		O.K	Step6
5	Please do visual inspection rail pressure sensor connector and related wire. Are there any water inside connector or faulty wire of rail pressure sensor?		Step6	Step7
6	Please fix the faulty wire or clean the water. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step7	Step8
8	Change the injector which has a fault as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step9
9	Change the ECU as a new one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step10
10	Change the high pressure pump with DOOSAN A.S support. Fault code is cleared?		O.K	Call Hot line

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
7	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0089	Rail Pressure Control Fault (Rail Discharge)

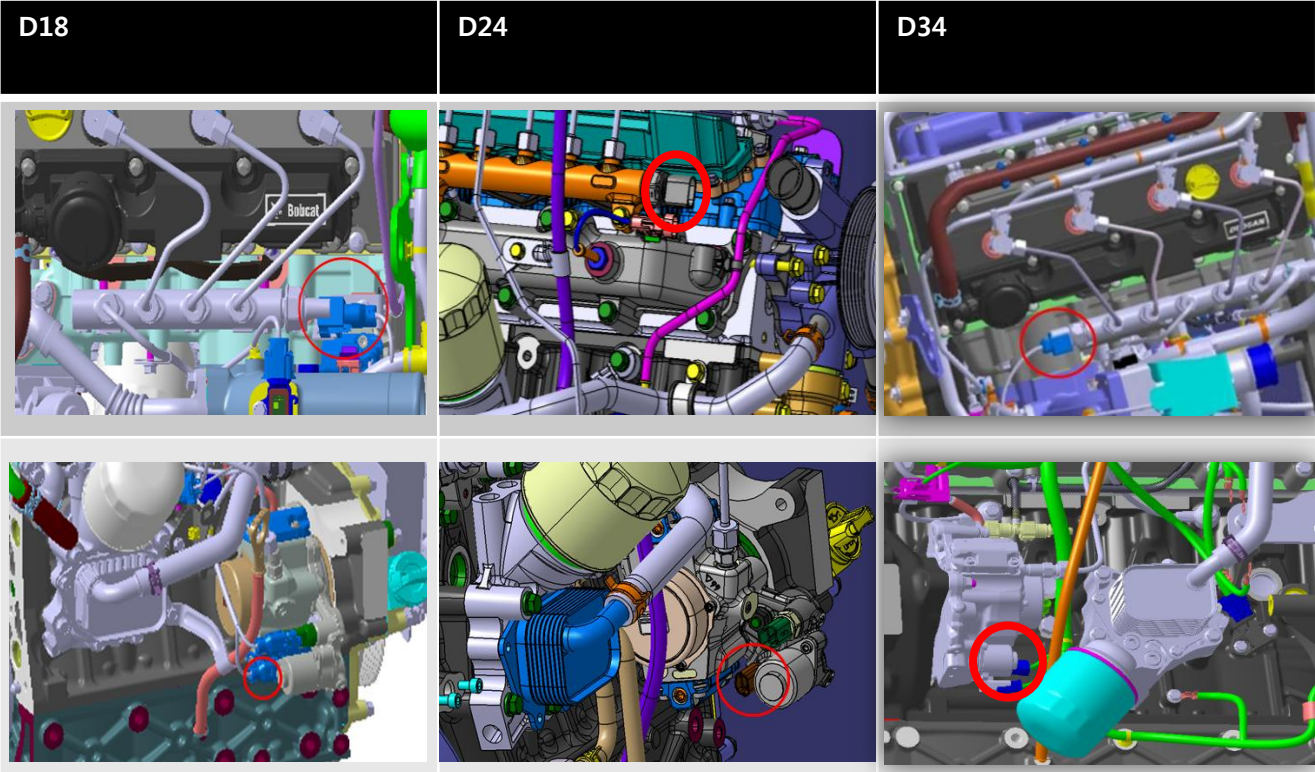
1) Overview

CODE	REASON	EFFECT
E000157-22	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuity)problem.(leakage etc)	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold during restricted condition, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line. (Low pressure circuit & high pressure circuit) Is there any leakage or blocking of fuel? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step6
5	Please do visual inspection rail pressure sensor connector and related wire. Are there any water inside connector or faulty wire of rail pressure sensor?		Step6	Step7
6	Please fix the faulty wire or clean the water. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step7	Step8
	Change the injector which has a fault as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step9
	Change the ECU as a new one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step10
	Change the high pressure pump with DOOSAN A.S support. Fault code is cleared?		O.K	Call Hot line

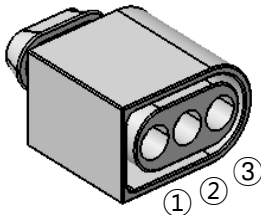
B

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0089	Rail Pressure Control Stability Negative Fault

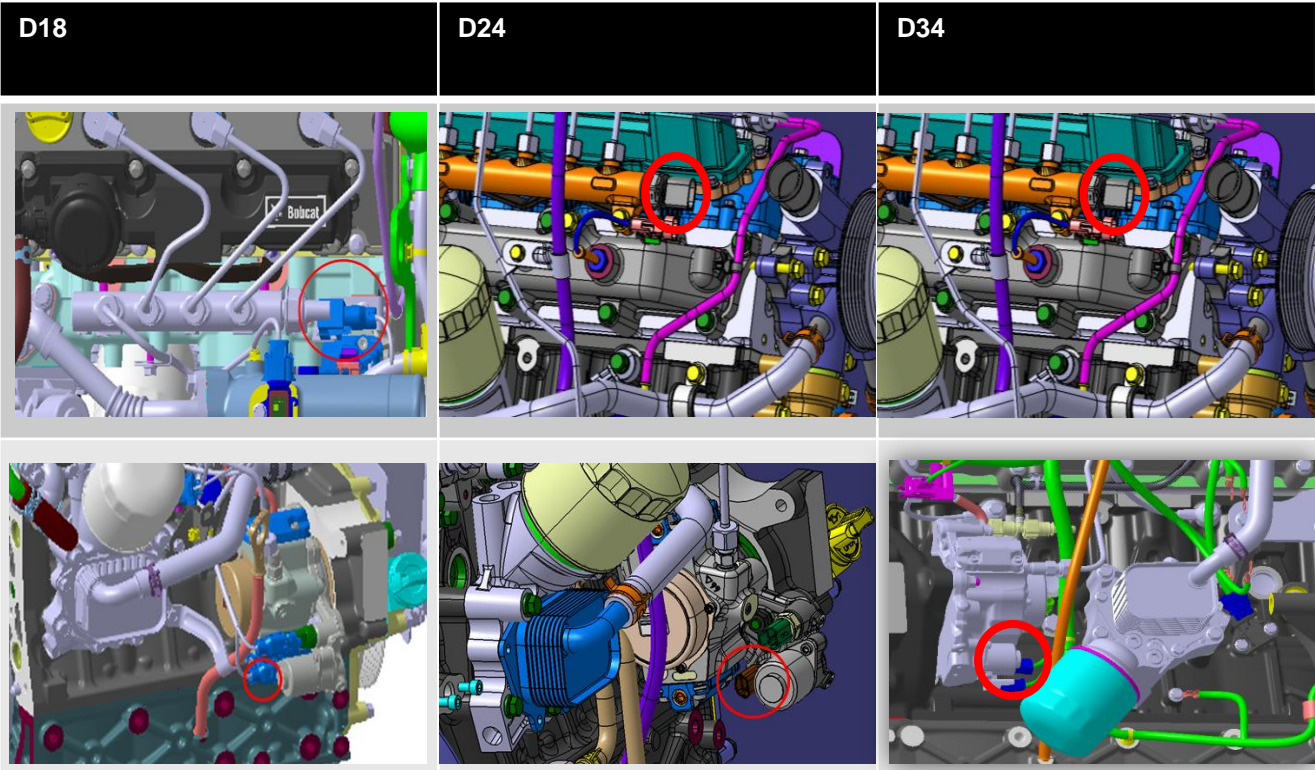
1) Overview

CODE	REASON	EFFECT
E000094-16	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuitry)problem.(leakage etc)	



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the measured rail pressure error is lower than the negative threshold then the fault is set

5) Condition for Clearing the Fault Code

If the measured rail pressure error is within the negative threshold

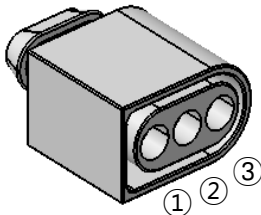
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
7	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0089	Rail Pressure Control Stability Positive Fault

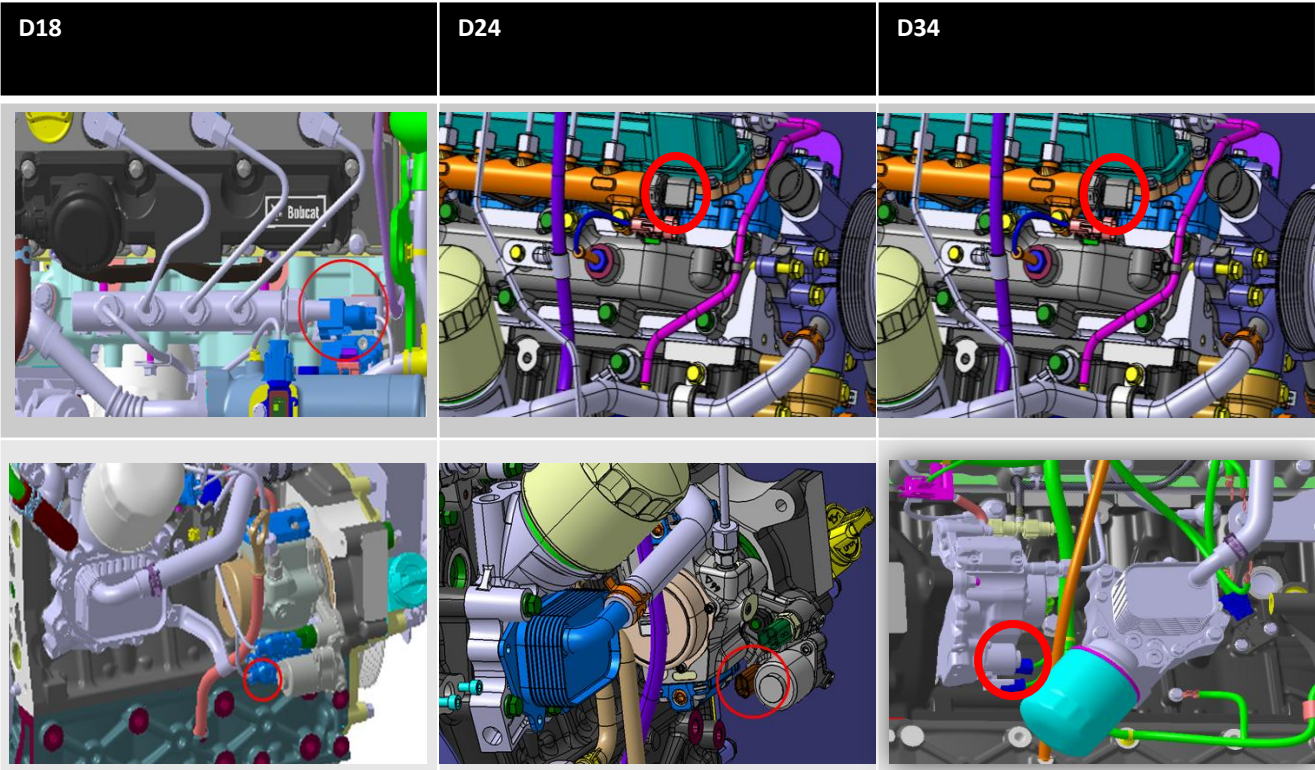
1) Overview

CODE	REASON	EFFECT
E000094-16	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuity)problem.(leakage etc)	



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the measured rail pressure error is lower than the positive threshold then the fault is set

5) Condition for Clearing the Fault Code

If the measured rail pressure error is within the positive threshold

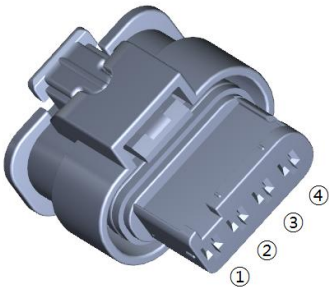
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
7	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0101	AMF Plausibility low or high fault

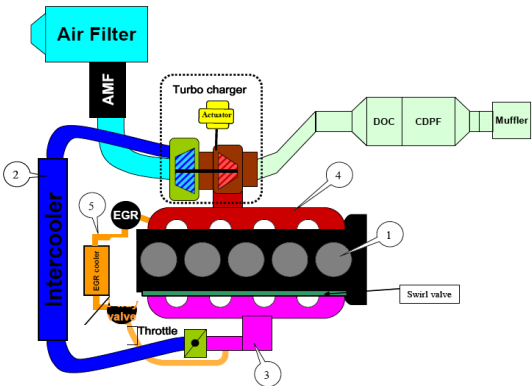
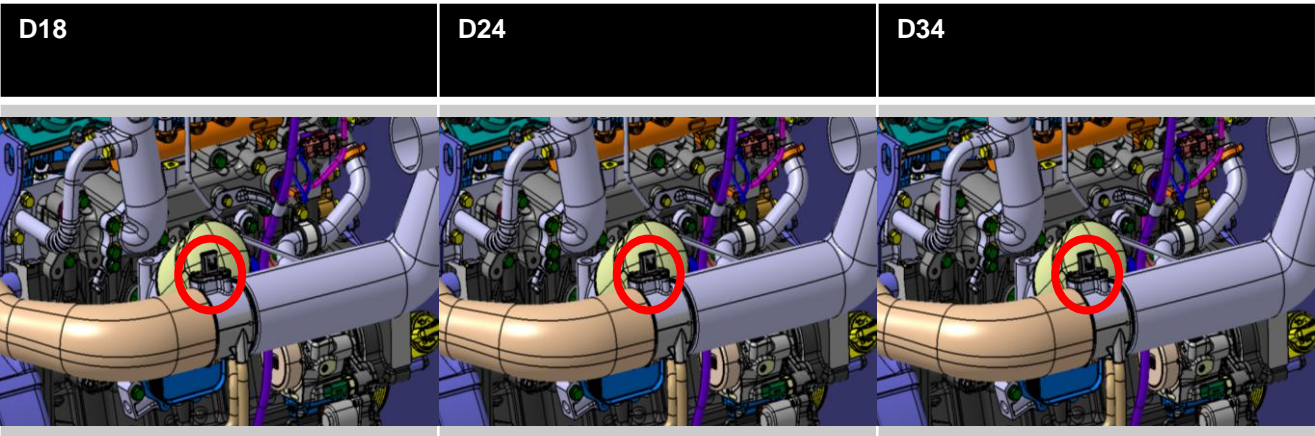
1) Overview

CODE	REASON	EFFECT
P0101 Blink 351	Intake air path leakage, MAF sensor drift, damage of MAF sensor	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	235	Air Inlet Temperature, analogue signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	228	Air Mass Flow Sensor, frequency signal

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder is within the threshold, fault code is cleared.

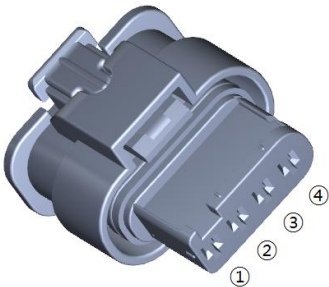
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0101 is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check the intake hose between air filter and turbocharger compressor? Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step4
4	Check the intake hose between turbocharger compressor outlet and intercooler. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step5
5	Check the intake hose between intercooler and intake manifold. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step7
6	Fix the leakage or change the hose. After fix the leakage, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		O.K	Call Hot line

Fault Code	Fault Name
P0102	MAF sensor Low Fault

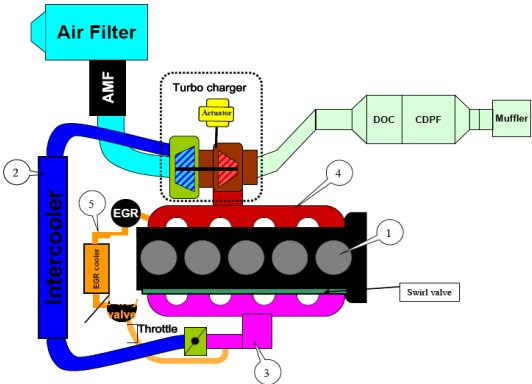
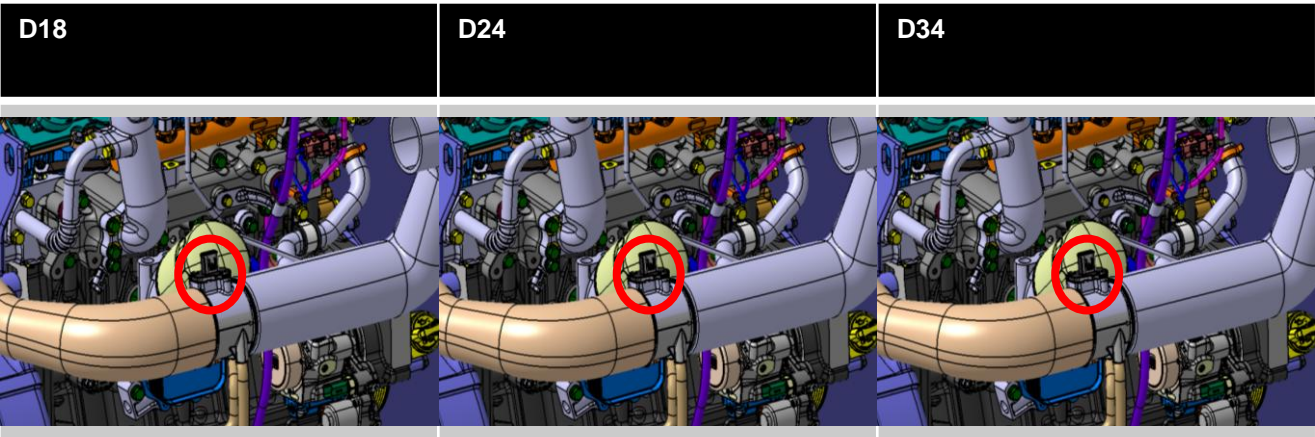
1) Overview

CODE	REASON	EFFECT
E000132-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Air mass flow value is less than minimum operation frequency

5) Condition for Clearing the Fault Code

Air mass flow value is in operation range

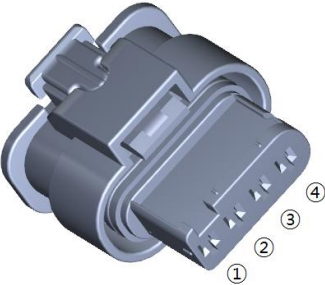
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0102 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0103	MAF sensor High Fault

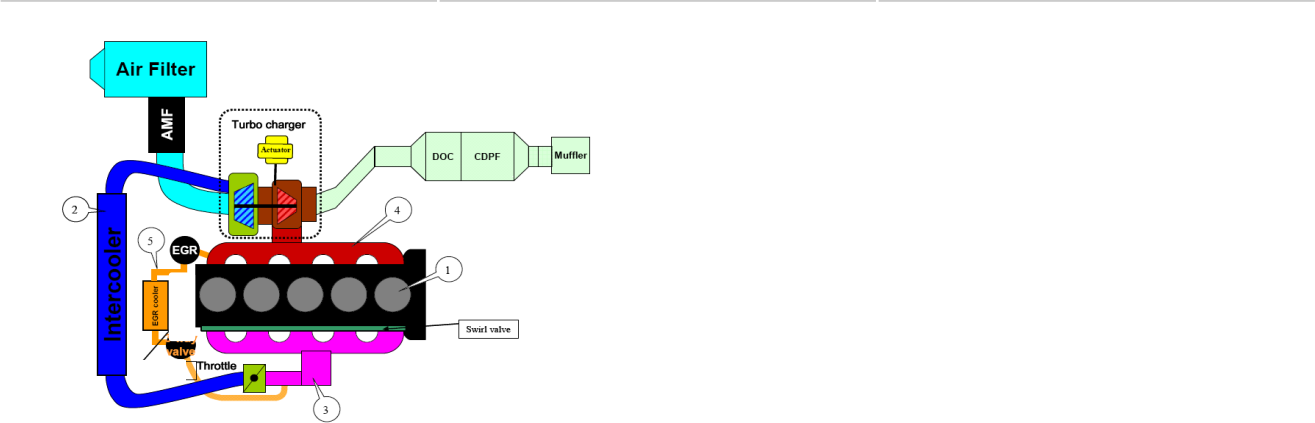
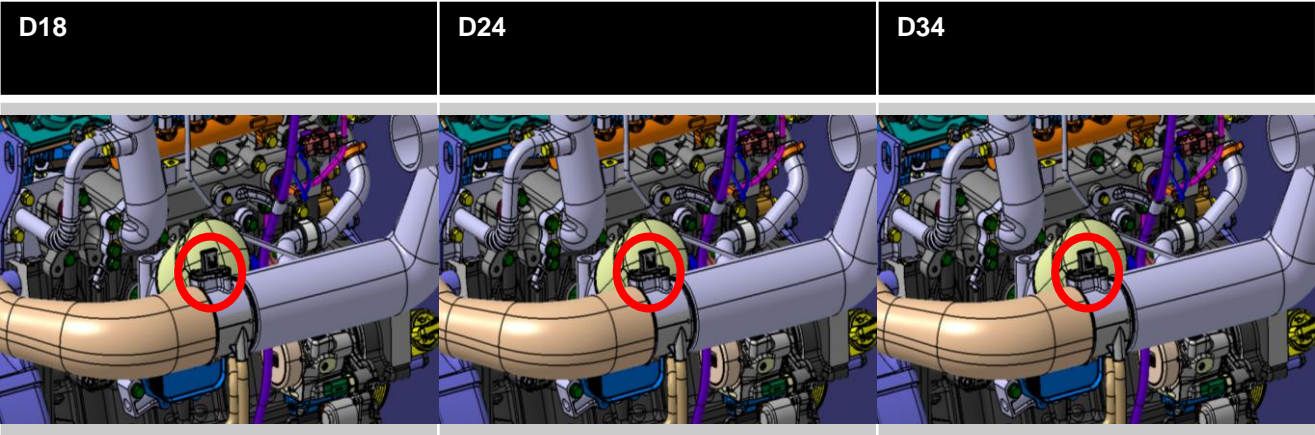
1) Overview

CODE	REASON	EFFECT
E000132-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	228	Air Mass Flow Sensor, frequency signal
2	137	Supply Voltage (5V)
3	120	TMAF Sensor Return
4	235	Air Inlet Temperature, analogue signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Air mass flow value is more than maximum operation frequency

5) Condition for Clearing the Fault Code

Air mass flow value is in operation range

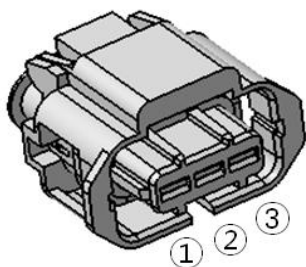
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0103 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0105	MAP sensor fault_EX

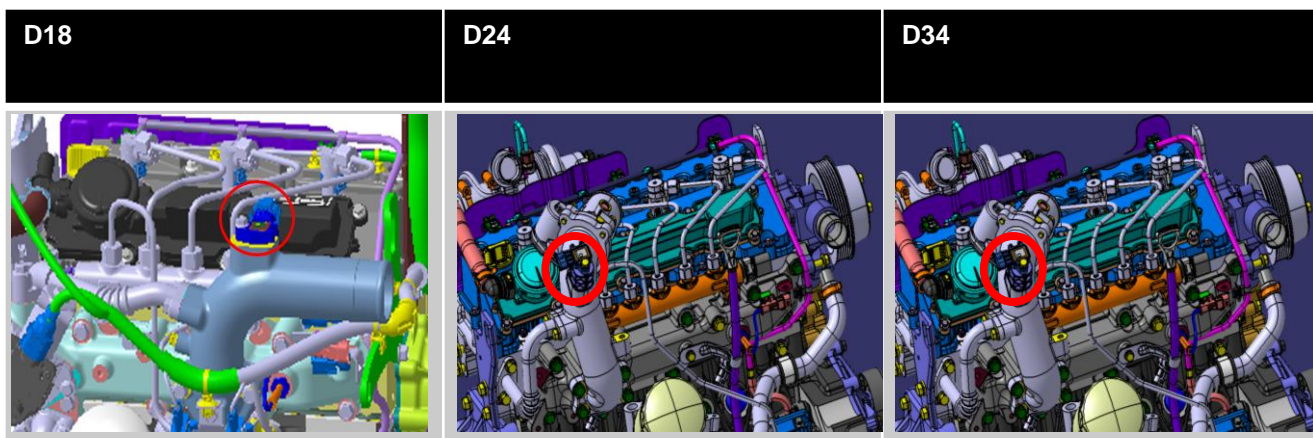
1) Overview

CODE	REASON	EFFECT
P0105 Blink 343	MAP Sensor electrical level Fault	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	161	VREF2, INPRES
2	167	INPRES Return GND
3	112	Intake Manifold Pressure Sensor

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If there is an ADC or Vext fault is set

5) Condition for Clearing the Fault Code

The ADC or Vext fault is restored

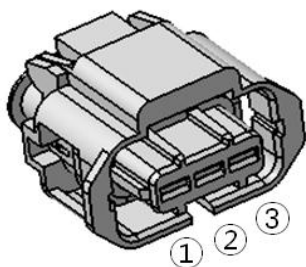
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0105 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line
7	P0105 is occurred on diagnostic tool?		Step 2	
8	After let the machine be in safety area and turn-off the key switch		Step 3	

Fault Code	Fault Name
P0107	Manifold Pressure sensor electrical low fault

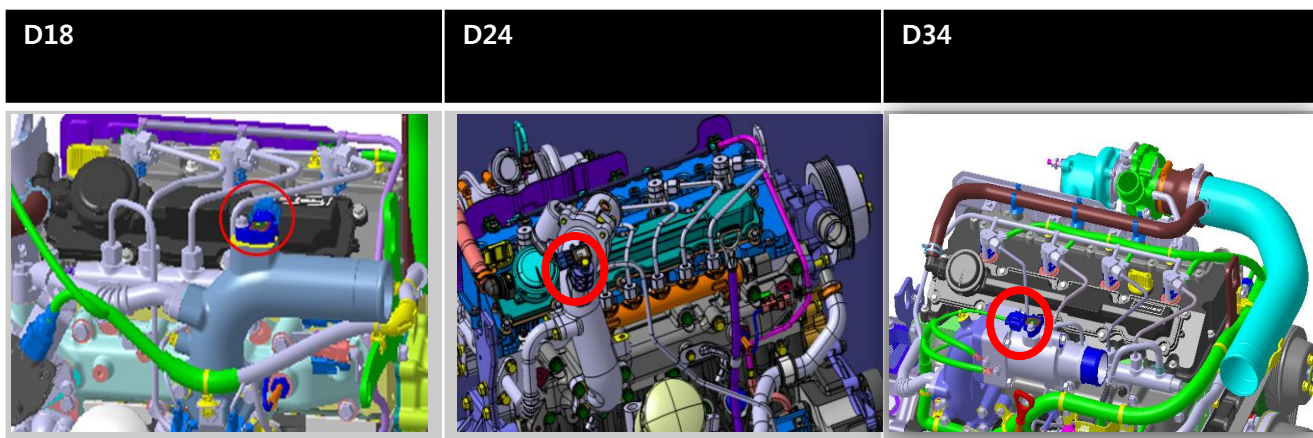
1) Overview

CODE	REASON	EFFECT
E000106-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	161	VREF2, INPRES
2	167	INPRES Return GND
3	112	Intake Manifold Pressure Sensor

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Manifold pressure sensor value is more than minimum operation pressure

5) Condition for Clearing the Fault Code

Manifold pressure sensor value is in operation range

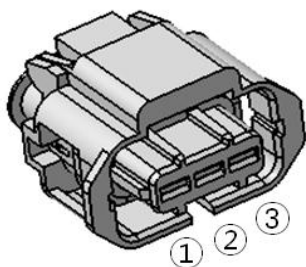
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0107 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0108	Manifold Pressure Sensor High Fault

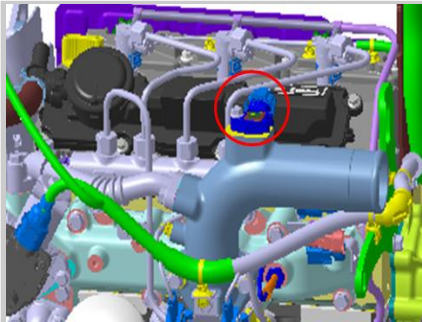
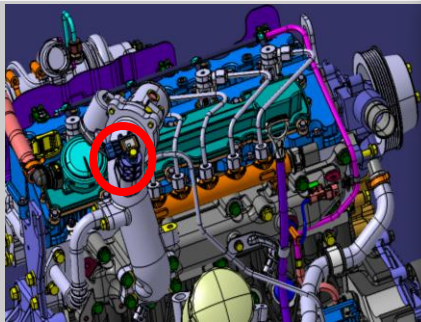
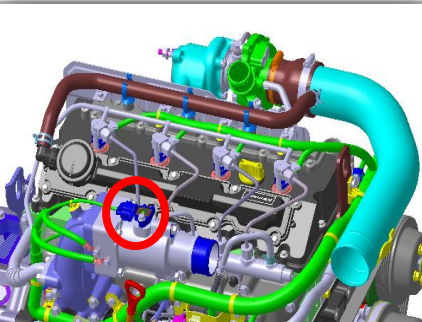
1) Overview

CODE	REASON	EFFECT
E000106-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	161	VREF2, INPRES
2	167	INPRES Return GND
3	112	Intake Manifold Pressure Sensor

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Manifold pressure sensor value is more than maximum operation pressure

5) Condition for Clearing the Fault Code

Manifold pressure sensor value is in operation range

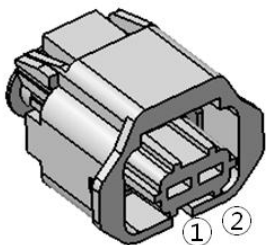
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0108 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0110	T2 temp sensor fault

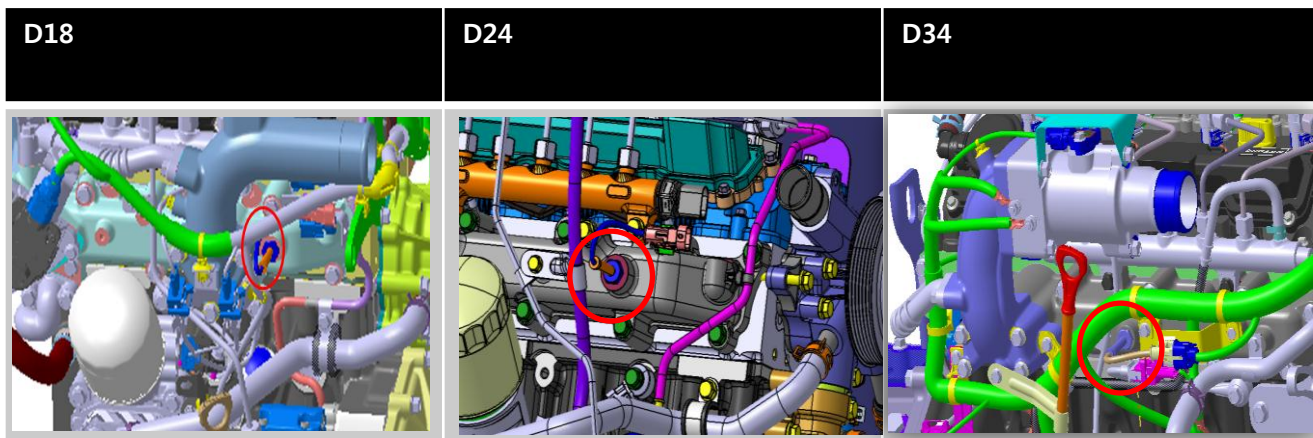
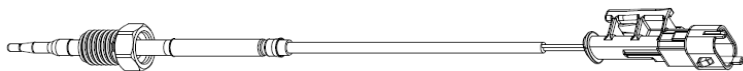
1) Overview

CODE	REASON	EFFECT
P0110 Blink 322	T2 temp sensor electrical level Fault	CE lamp ON



No	ECU Pin	Description
1	169	Inlet Boost Temperature, Return
2	194	Inlet Boost Temperature, Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If there is any AD converter error is detected

5) Condition for Clearing the Fault Code

The ADC fault is restored

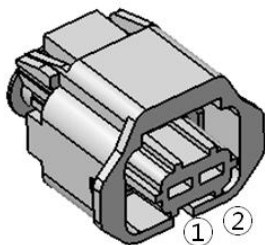
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0110 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0111	Intake Manifold Temperature Plausibility Fault

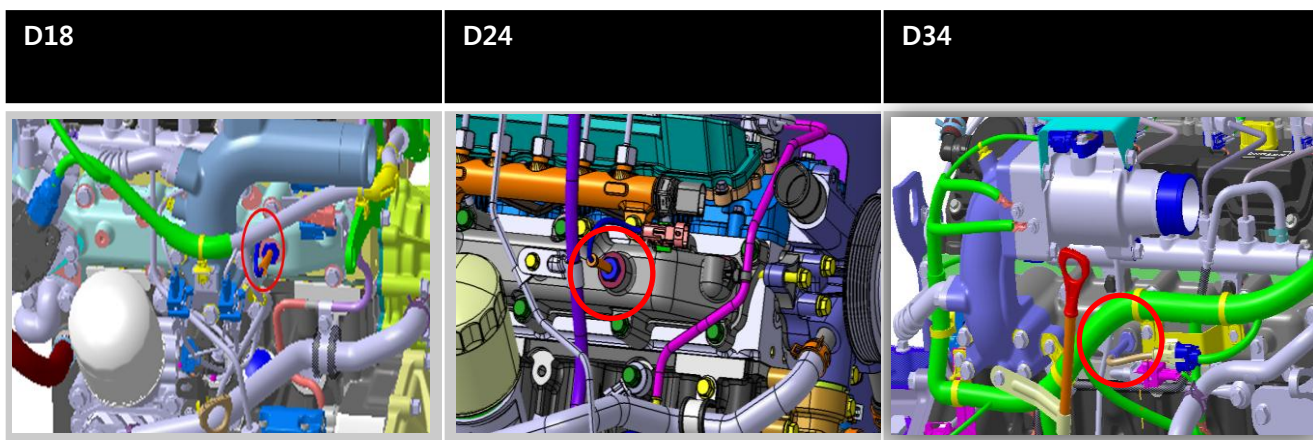
1) Overview

CODE	REASON	EFFECT
E000105-02	Leakage Electrical problem Connection problem Sensor problem	



No	ECU Pin	Description
1	169	Inlet Boost Temperature, Return
2	194	Inlet Boost Temperature, Signal

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If this temperature is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If this temperature is within the threshold during restricted condition, fault code is cleared

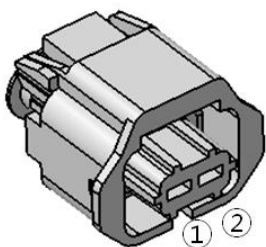
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0111 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Please do visual inspection between air filter and t2 temperature sensor location. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Change the sensor as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Call Hot line

Fault Code	Fault Name
P0112	Intake Manifold Temperature Sensor Low Fault

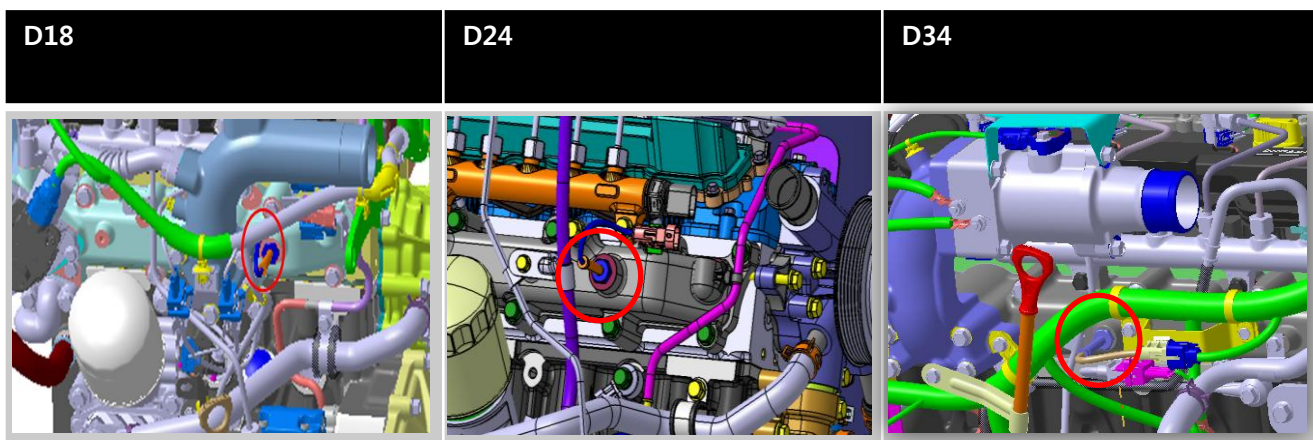
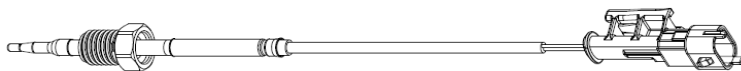
1) Overview

CODE	REASON	EFFECT
E000105-04	Electrical problem Connection problem Sensor problem	CE lamp ON LV0



No	ECU Pin	Description
1	169	Inlet Boost Temperature, Return
2	194	Inlet Boost Temperature, Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

This temperature sensor value is less than minimum operation temperature

5) Condition for Clearing the Fault Code

This temperature sensor value is in operation range

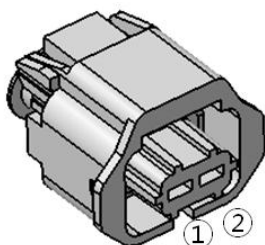
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0112 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0113	Intake Manifold Temperature sensor high fault

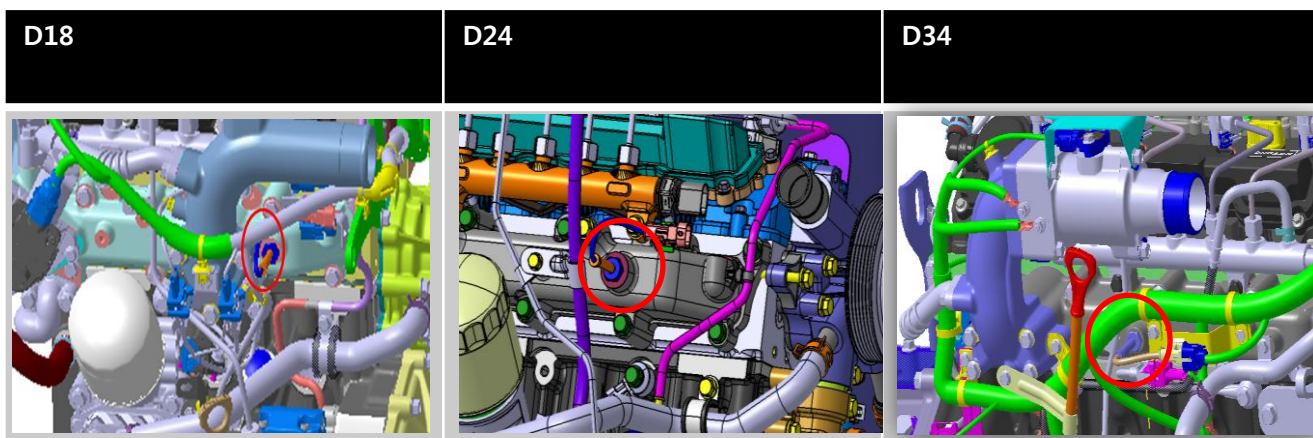
1) Overview

CODE	REASON	EFFECT
E000105-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	169	Inlet Boost Temperature, Return
2	194	Inlet Boost Temperature, Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

T2 temperature sensor value is more than maximum operation temperature

5) Condition for Clearing the Fault Code

T2 temperature sensor value is in operation range

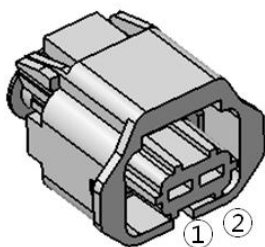
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0113 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0114	Intake Manifold Temperature Sensor Noise Fault

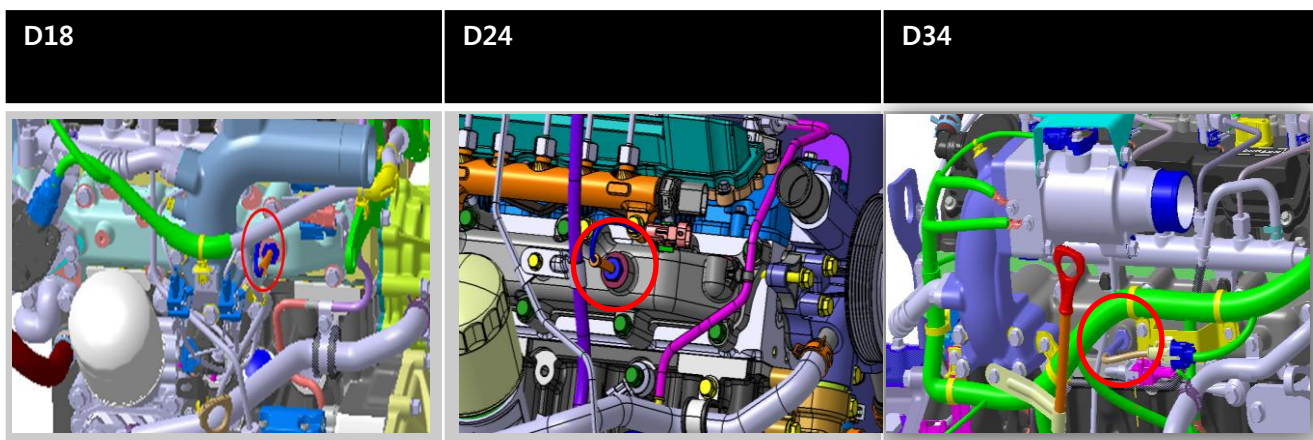
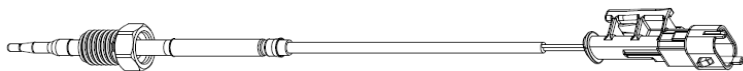
1) Overview

CODE	REASON	EFFECT
E000105-10	Electrical problem Connection problem Sensor problem Noise	CE lamp ON LV0



No	ECU Pin	Description
1	169	Inlet Boost Temperature, Return
2	194	Inlet Boost Temperature, Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

There is not sensor fault and there is a noise spike on the sensor signal.

(Noise detect: If the absolute difference, comparing the raw actual temp to low pass filtered temp value, exceeds calibration value

5) Condition for Clearing the Fault Code

The noise spike is restored

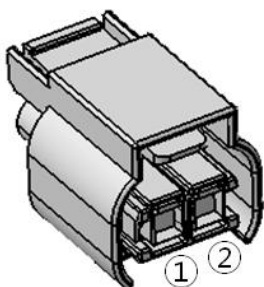
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0114 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0116	Coolant Temperature Plausibility Fault

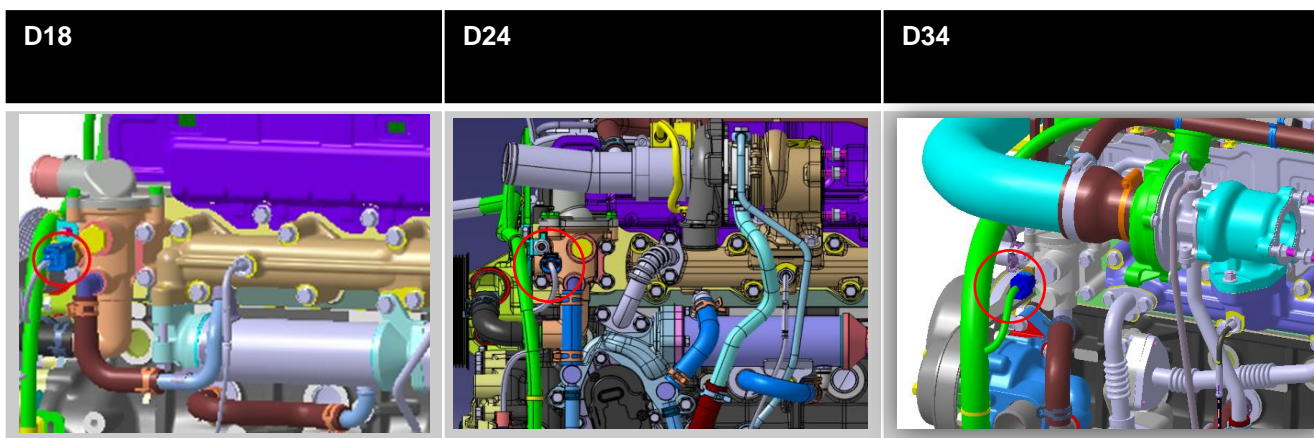
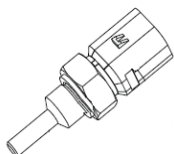
1) Overview

CODE	REASON	EFFECT
E000110-02	Thermostat problem(broken or normally open), Connection problem Sensor problem	



No	ECU Pin	Description
1	145	Coolant Temperature Return
2	109	Coolant Temperature Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the coolant temperature is increased more than the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the coolant temperature is increased higher than the threshold during restricted condition, fault code is cleared

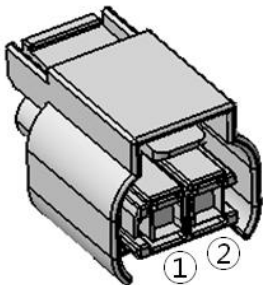
6) Check list

Step	Inspection	Standard Value	YES	NO
	P0116 is occurred on diagnostic tool?		Step2	O.K
	After let the machine be in safety area and turn-off the key switch		Step3	
	Check the thermostat. Is the thermostat broken? For example thermostat is always wide open.		Step5	Step4
4	Change the coolant temperature sensor. Start the engine and set the RPM in high idle, 10 minutes. After that set the RPM in low idle, fault code is cleared and torque limit is deactivated?		O.K	Call DOOSAN Hot line
5	Change the thermostat as a normal one. Start the engine and set the RPM in high idle, 10 minutes. After that set the RPM in low idle, fault code is cleared and torque limit is deactivated?		O.K	Call Hot line

Fault Code	Fault Name
P0117	Coolant Temperature Sensor Low Fault

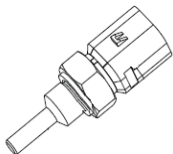
1) Overview

CODE	REASON	EFFECT
E000110-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv1



No	ECU Pin	Description
1	145	Coolant Temperature Return
2	109	Coolant Temperature Sensor

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Coolant temperature signal value is less than minimum operation temperature

5) Condition for Clearing the Fault Code

Coolant temperature signal value is in operation range

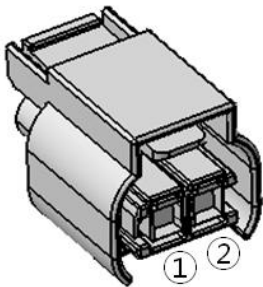
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0117 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0118	Coolant Temperature Sensor High Fault

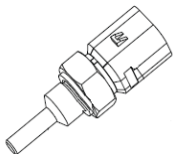
1) Overview

CODE	REASON	EFFECT
E000110-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv1



No	ECU Pin	Description
1	145	Coolant Temperature Return
2	109	Coolant Temperature Sensor

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Coolant temperature signal value is more than maximum operation temperature

5) Condition for Clearing the Fault Code

Coolant temperature signal value is in operation range

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0118 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0120	Pedal Position Sensor 1 Fault

1) Overview

CODE	REASON	EFFECT
E000091-29	Electrical problem Connection problem Sensor supply problem Accelerator / position sensor problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	224	VREF1 PPS1, (5V)
2	225	Accelerator Pedal Position Sensor 1
3	226	PPS1 Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

If the pedal position sensor 1 value is out of calibration range

4) Condition for Clearing the Fault Code

If the pedal position sensor 1 value is in the calibration range

5) Check list

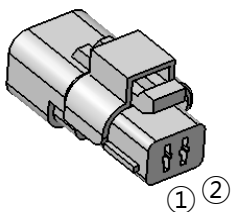
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0120 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0181	Fuel Temperature Gradient Fault

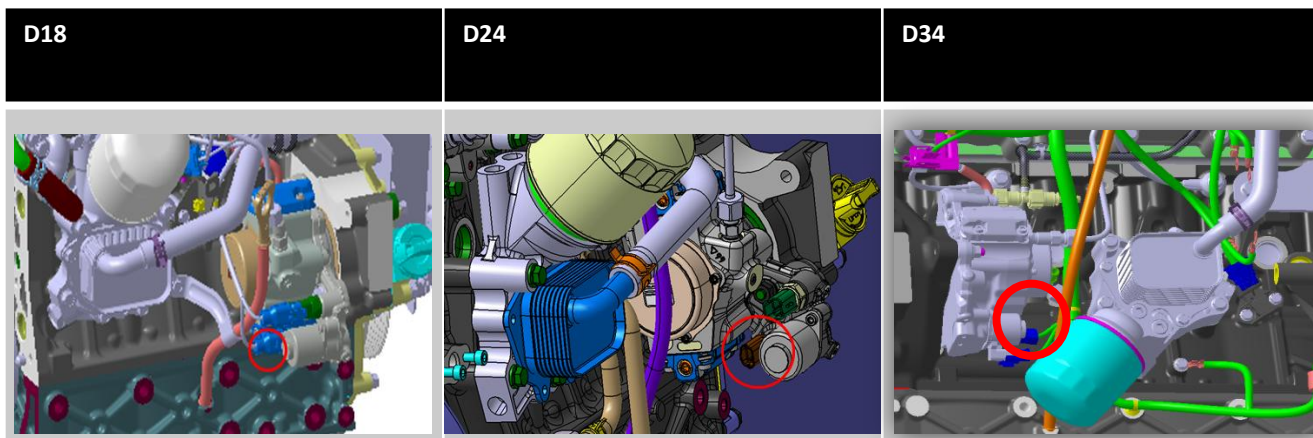
1) Overview

CODE	REASON	EFFECT
E000174-02	Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	146	Sensor Return GND
2	110	Fuel Temperature Sensor

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Fuel temperature signal has an electric noise or abnormal signal deviation.

5) Condition for Clearing the Fault Code

Fuel temperature signal value has no noise and normal physical deviation

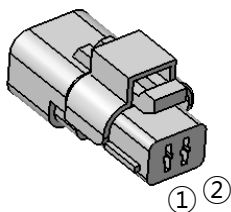
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0181 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0182	Fuel Temperature Sensor Low Fault

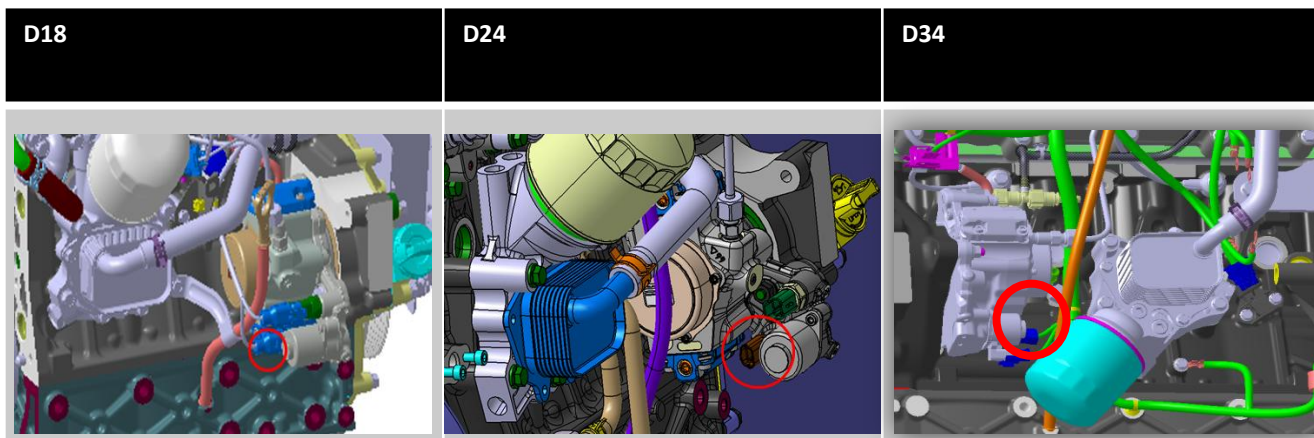
1) Overview

CODE	REASON	EFFECT
E000174-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	146	Sensor Return GND
2	110	Fuel Temperature Sensor

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Fuel temperature value is less than minimum operation position .

5) Condition for Clearing the Fault Code

Fuel temperature value is in operation range

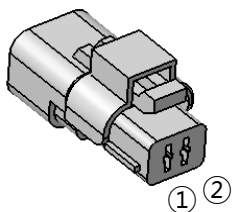
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0182 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0183	Fuel Temperature Sensor High Fault

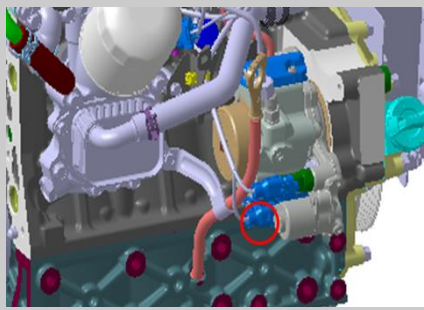
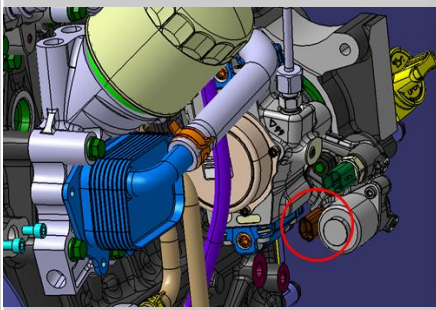
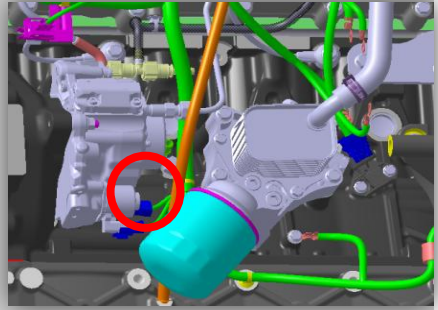
1) Overview

CODE	REASON	EFFECT
E000174-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	146	Sensor Return GND
2	110	Fuel Temperature Sensor

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Fuel temperature value is more than maximum operation position.

5) Condition for Clearing the Fault Code

Fuel temperature value is in operation range

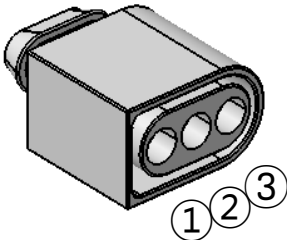
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0183 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0190	Rail Pressure Sensor Gradient Fault

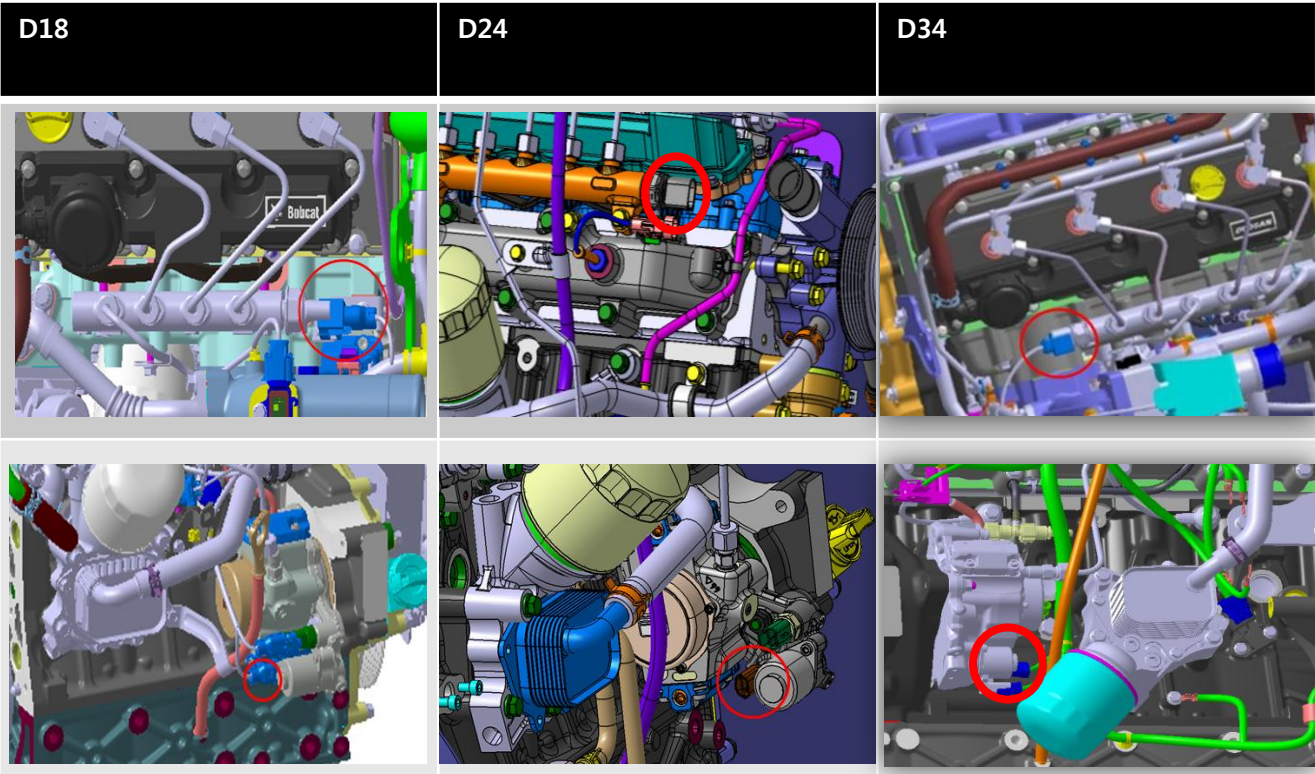
1) Overview

CODE	REASON	EFFECT
E000157-02	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuity)problem.(leakage etc)	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold during restricted condition, fault code is cleared

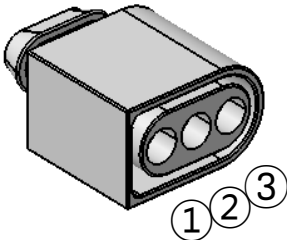
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0190 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	This fault could be caused by pushing vehicle while engine is off. Vehicle been pushed?		Clear fault. Poor detection	Step 3
4	VEXT fault present?		Step 5	Step 6
5	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
6	Check sensor connection Connection problem?		Do necessary repair	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 10
9	Change sensor + rail Problem still present?		Call Hot-line	

Fault Code	Fault Name
P0191	Rail Pressure Sensor Drift Fault

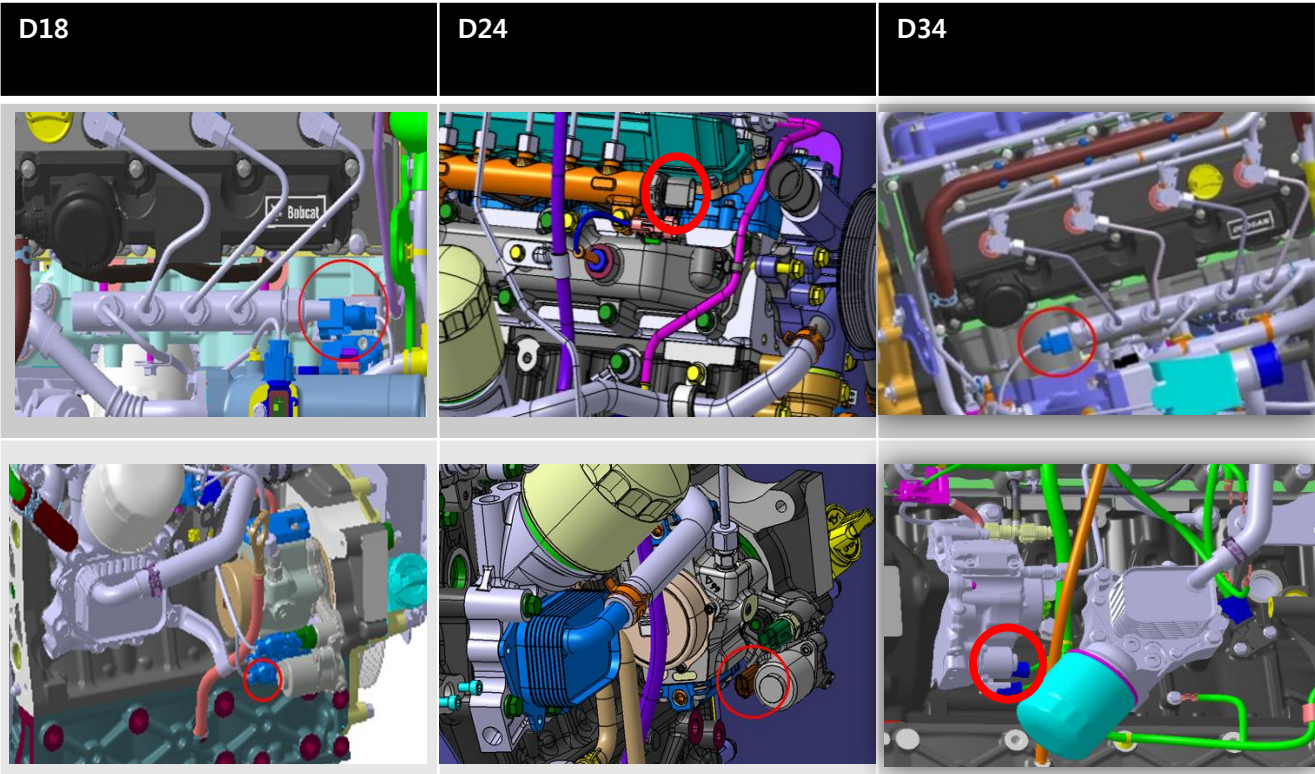
1) Overview

CODE	REASON	EFFECT
E000157-11	Faulty IMV (sticking,leaking etc), Faulty rail pressure sensor. (Aged or malfunction) Faulty Injector LPC(Low pressure circuit)problem. (leakage, fuel is not supplied due to some reason.) HPC(High pressure circuity)problem.(leakage etc)	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold during restricted condition, fault code is cleared

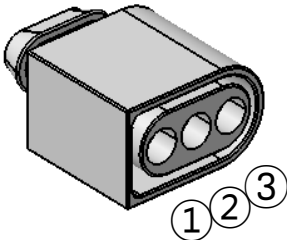
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0191 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	This fault could be caused by pushing vehicle while engine is off. Vehicle been pushed?		Clear fault. Poor detection	Step 3
4	VEXT fault present?		Step 5	Step 6
5	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
6	Check sensor connection Connection problem?		Do necessary repair	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 10
9	Change sensor + rail Problem still present?		Call Hot-line	

Fault Code	Fault Name
P0192	Rail Pressure Sensor Low Fault

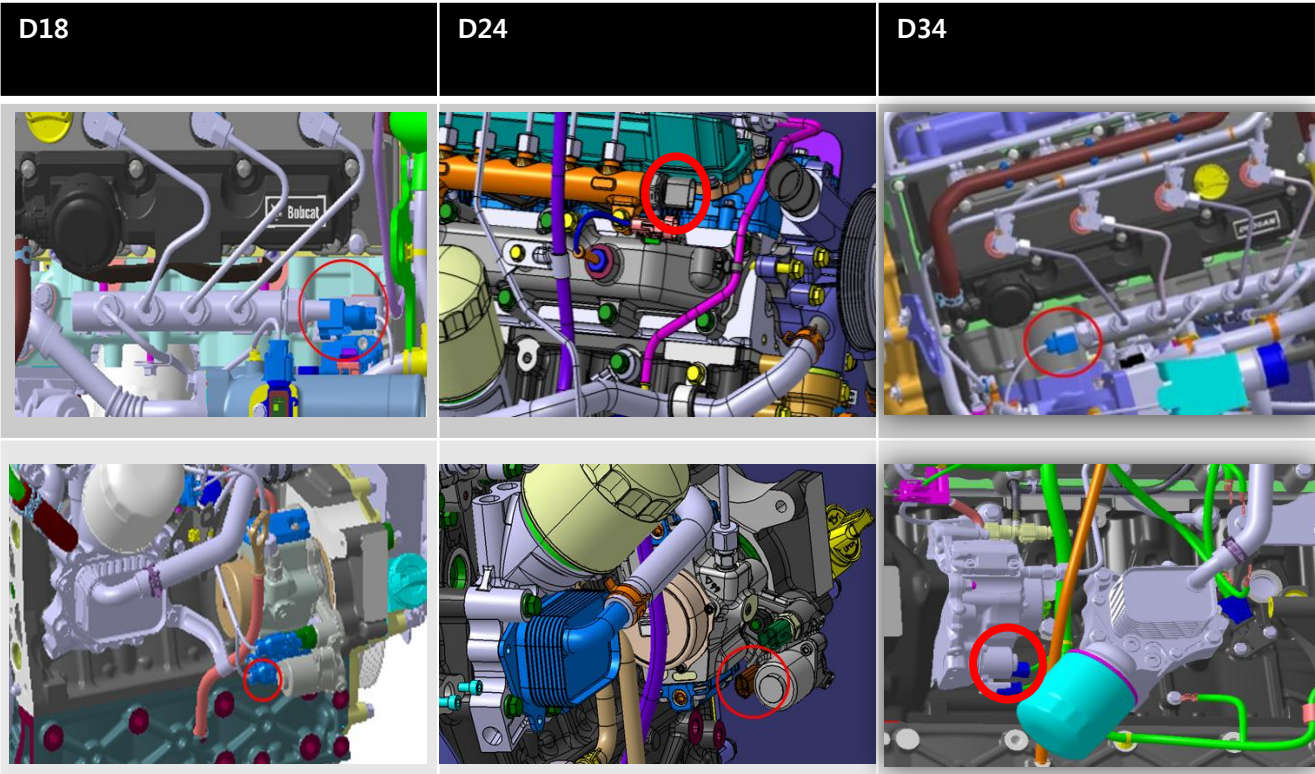
1) Overview

CODE	REASON	EFFECT
E000157-04	Electrical problem Connection problem Sensor problem Abnormally vehicle be pushed	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold

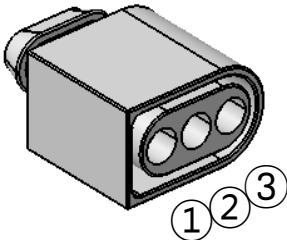
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0192 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	This fault could be caused by pushing vehicle while engine is off. Vehicle been pushed?		Clear fault. Poor detection	Step 3
4	VEXT fault present?		Step 5	Step 6
5	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
6	Check sensor connection Connection problem?		Do necessary repair	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 10
9	Change sensor + rail Problem still present?		Call Hot-line	

Fault Code	Fault Name
P0193	Rail Pressure Sensor High Fault

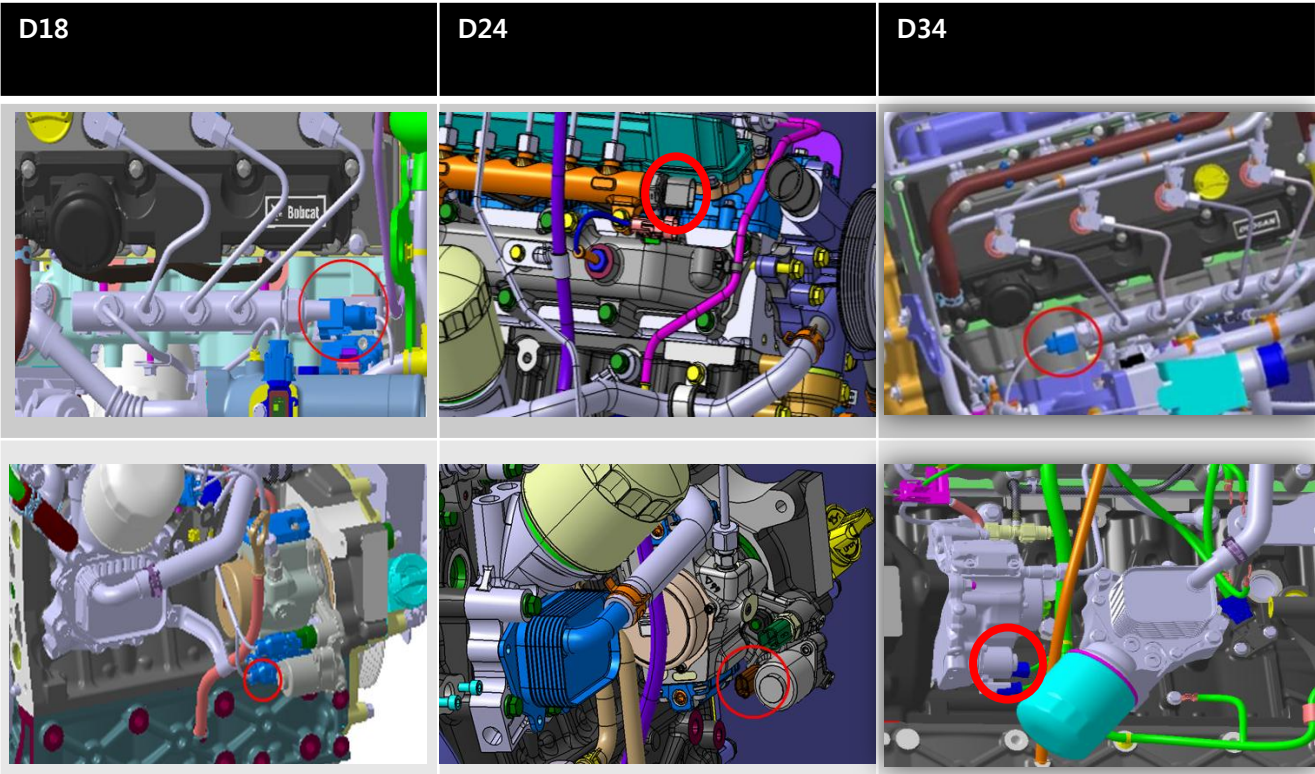
1) Overview

CODE	REASON	EFFECT
E000157-03	Electrical problem Connection problem Sensor problem Abnormally vehicle be pushed	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	138	VREF1 Rail Pressure Sensor
2	119	Rail Pressure Sensor Return
3	135	Rail Pressure Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the feedback rail pressure of rail pressure sensor is out of the threshold

5) Condition for Clearing the Fault Code

If the feedback rail pressure of rail pressure is within the threshold

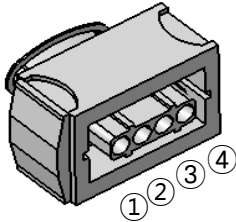
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0193 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	This fault could be caused by pushing vehicle while engine is off. Vehicle been pushed?		Clear fault. Poor detection	Step 3
4	VEXT fault present?		Step 5	Step 6
5	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
6	Check sensor connection Connection problem?		Do necessary repair	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 10
9	Change sensor + rail Problem still present?		Call Hot-line	

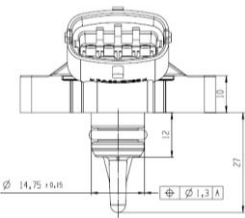
Fault Code	Fault Name
P0195	Oil temperature Sensor Fault

1) Overview

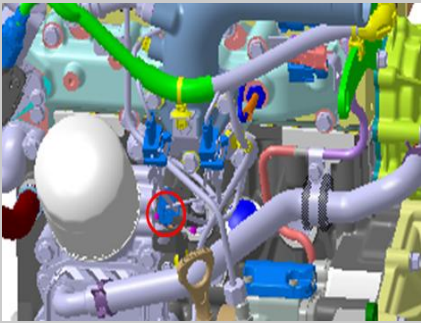
CODE	REASON	EFFECT
E000175-31	Electrical problem Connection problem Sensor problem Sensor supply voltage problem	CE lamp ON Torque Reduction Lv0

	No	ECU Pin	Description
	1	148	Engine Oil Pressure & Temp Return GND
	2	104	Engine Oil Temperature Sensor
	3	165	VREF3, Engine Oil Pressure
	4	111	Engine Oil Pressure Sensor

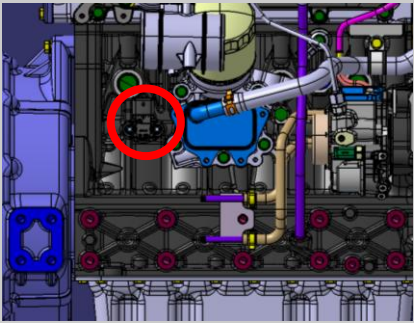
2) Location



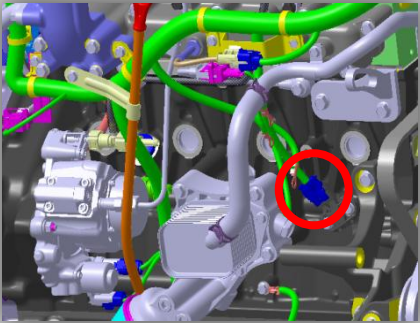
D18



D24



D34



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Oil temperature signal value is out of operation range

5) Condition for Clearing the Fault Code

Oil temperature signal value is in operation range

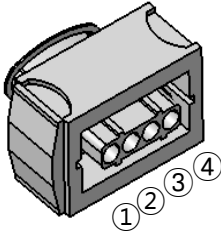
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0195 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

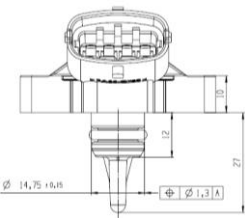
Fault Code	Fault Name
P0196	Oil Temperature Plausibility Fault

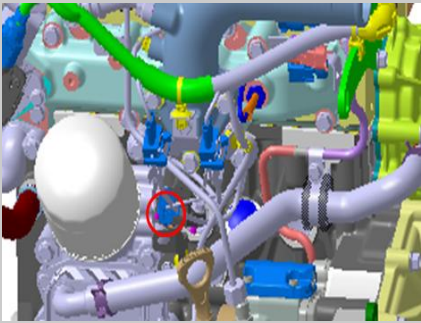
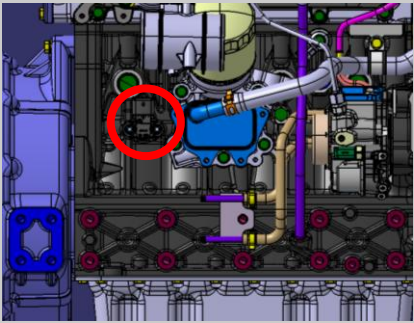
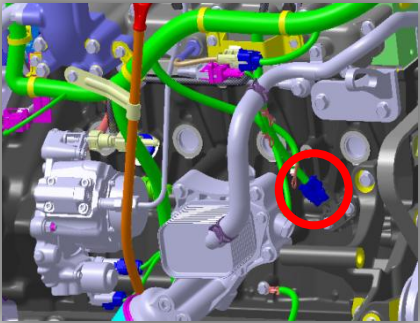
1) Overview

CODE	REASON	EFFECT
E000175-02	Sensor problem, Oil passage problem.	No

	No	ECU Pin	Description
	1	148	Engine Oil Pressure & Temp Return GND
	2	104	Engine Oil Temperature Sensor
	3	165	VREF3, Engine Oil Pressure
	4	111	Engine Oil Pressure Sensor

2) Location



D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the oil temperature is increased more than the threshold during restricted condition, fault code is raised.

5) Condition for Clearing the Fault Code

If the oil temperature is increased higher than the threshold during restricted condition, fault code is cleared

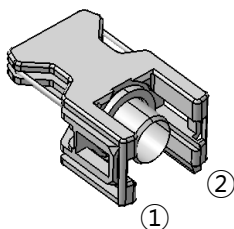
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0196 is raised on machine dashboard?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Change the oil temperature sensor. Start the engine and set the RPM in high idle, 10 minutes. After that set the RPM in low idle, fault code is cleared and torque limit is deactivated?		O.K	Call Hot line

Fault Code	Fault Name
P0201	Injector Open Fault (Cylinder #1)

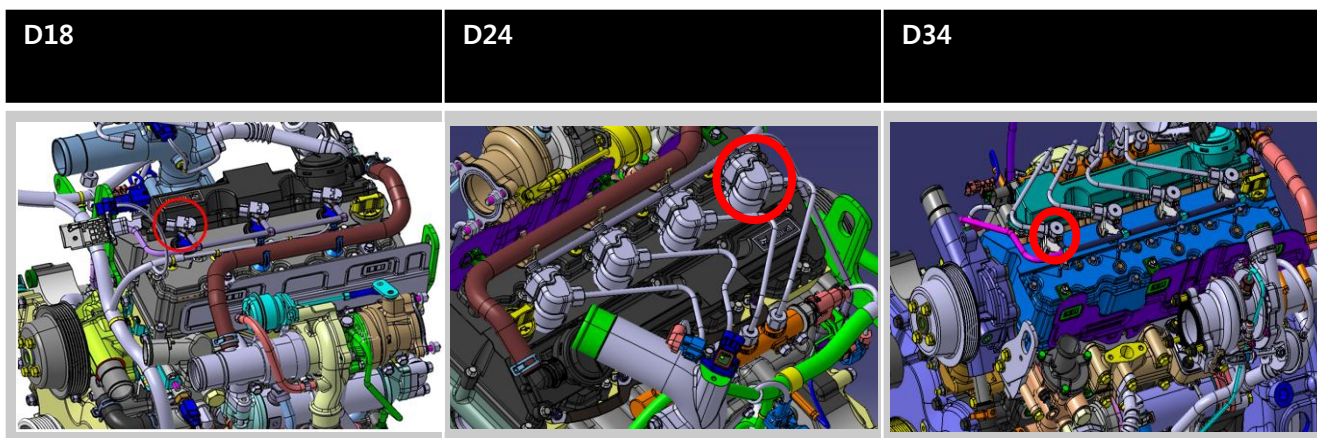
1) Overview

CODE	REASON	EFFECT
E000651-05	Electrical problem Connection problem Injector problem	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #1 is opened

5) Condition for Clearing the Fault Code

The injector of cylinder #1 is restored.

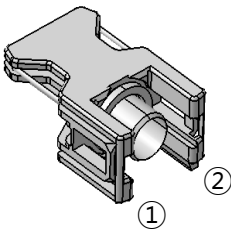
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P02EE is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P0202	Injector Open Fault (Cylinder #2)

1) Overview

CODE	REASON	EFFECT
E000652-05	Electrical problem Connection problem Injector problem	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #2 is opened

5) Condition for Clearing the Fault Code

The injector of cylinder #2 is restored.

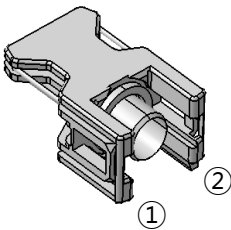
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0202 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P0203	Injector Open Fault (Cylinder #3)

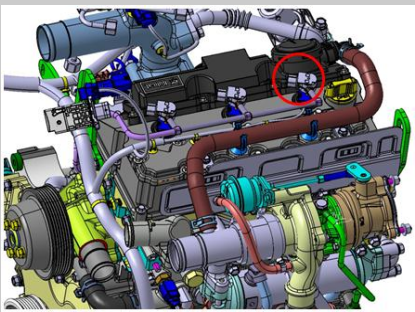
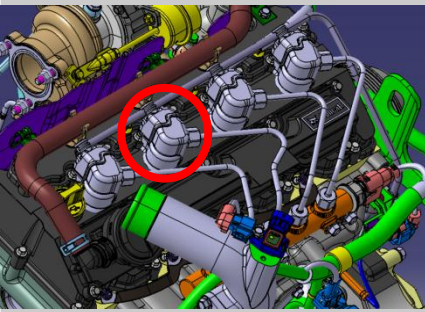
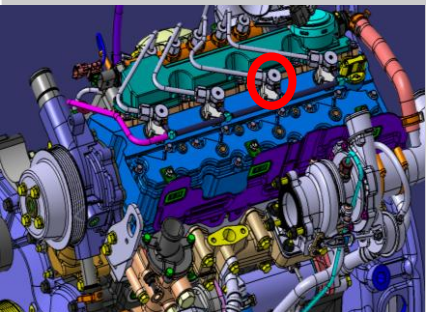
1) Overview

CODE	REASON	EFFECT
E000653-05	Injector of cylinder #3 open circuit	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #3 is opened

5) Condition for Clearing the Fault Code

The injector of cylinder #3 is restored

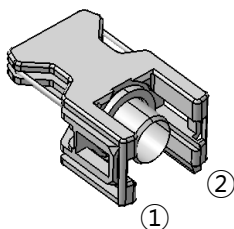
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0203 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P0204	Injector Open Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-05	Injector of cylinder#4 open circuit	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #4 is opened.

5) Condition for Clearing the Fault Code

The injector of cylinder #4 is restored

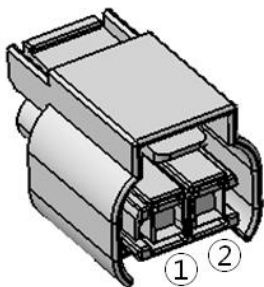
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0204 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test?		Step 4	Call Hot-line
4	Fault Check open Circuit?		Step 5	Step 11
5	Check injector Connection Connection problem?		Do necessary repair	Step 6
6	Check resistance of injector (0.4Ω~ 1Ω)		Step 7	Change injector
7	Swap connection between 2 injectors if harness enables it.		Change injector	Step 8
8	Check continuity and electrical insulation. Electrical problem?		Do necessary repair	Step 9
9	Check ECU Connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line
11	Fault Check short Circuit?		Step 12	
12	Check injector Connection Connection problem?		Do necessary repair	Step 13
13	Disconnect injector. Fault disappeared?		Change injector	Step14
14	If an intermediate engine connector is present, disconnect it. Fault disappeared?		Fix intermediate engine harness	Step 15
15	Short circuit before injector. Check ECU connection. Connection problem?		Do necessary repair	Step16
16	Check continuity and electrical insulation. Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P0217	Coolant high temperature Fault

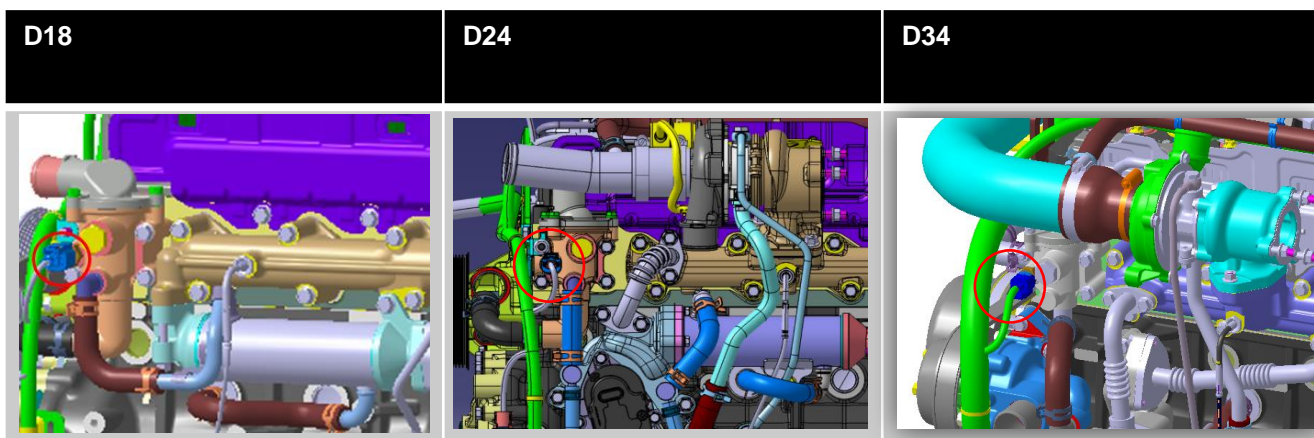
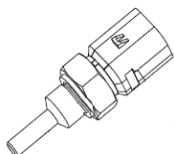
1) Overview

CODE	REASON	EFFECT
E000110-15	Coolant is over heated and not cool down properly Thermostat problem(broken or normally open) Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	145	Coolant Temperature Return
2	109	Coolant Temperature Sensor

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the coolant temperature is increased more than the threshold during restricted condition, fault code is raised

5) Condition for Clearing the Fault Code

If the coolant temperature is below the threshold, fault code is cleared.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0217 is occurred on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Check coolant system. - the level of coolant in the supplementary tank. If the level is too low, refill the coolant. If you open the radiator cap, make sure that the engine and radiator are cooled. - State of connection between cooler and coolant hose, cooling fan belt. (Information : With very hot condition, this fault can be occurred without any engine trouble.)		OK	Step4
4	Check the thermostat. Is the thermostat broken? For example thermostat is always wide open.		Step6	Step5
5	Change the coolant temperature sensor. Start the engine and set the RPM in high idle, 10 minutes. After that set the RPM in low idle, fault code is cleared and torque limit is deactivated?		O.K	Call Hot line
6	Change the thermostat as a normal one. Start the engine and set the RPM in high idle, 10 minutes. After that set the RPM in low idle, fault code is cleared and torque limit is deactivated?		O.K	Call Hot line

Fault Code	Fault Name
P0220	Pedal position sensor 2 fault

1) Overview

CODE	REASON	EFFECT
P0220 Blink 432	If pedal position sensor 2 has electrical problem	CE lamp ON Torque Reduction

No	ECU Pin	Description
1	224	VREF1 PPS1, (5V)
2	225	Accelerator Pedal Position Sensor 1
3	226	PPS1 Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

If the pedal position sensor 1 value is out of calibration range

4) Condition for Clearing the Fault Code

If the pedal position sensor 1 value is in the calibration range

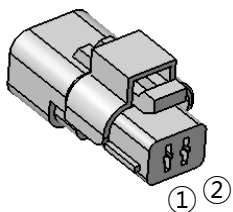
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0220 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0251	Rail Pressure Control Fault (Trim Drift)

1) Overview

CODE	REASON	EFFECT
E001076-31	Faulty IMV. Fault with IMV wiring or connectors. ECU fault (IMV driver/processing within ECU). Faulty ECU live or ground. Fault with ECU wiring or connectors	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If IMV PWM demand is out of range, fault code is raised

5) Condition for Clearing the Fault Code

If IMV PWM demand is in the range, fault code is cleared

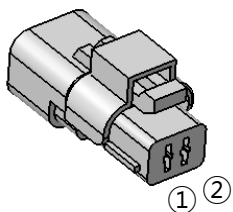
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0251 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0252	Rail Pressure Control PWM Fault

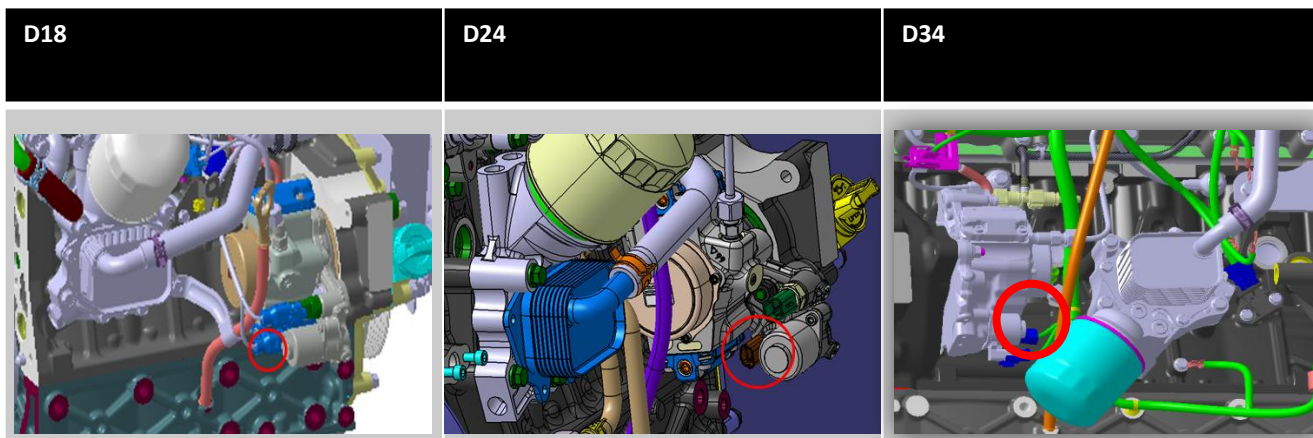
1) Overview

CODE	REASON	EFFECT
E001076-20	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If IMV PWM demand is larger than threshold, fault code is raised

5) Condition for Clearing the Fault Code

If IMV PWM demand is within the threshold, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0252 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call DOOSAN Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump Fault code is cleared?		O.K	Call Hot line

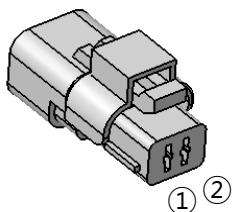
B

Step	Inspection	Standard Value	YES	NO
1	P0252 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0253	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

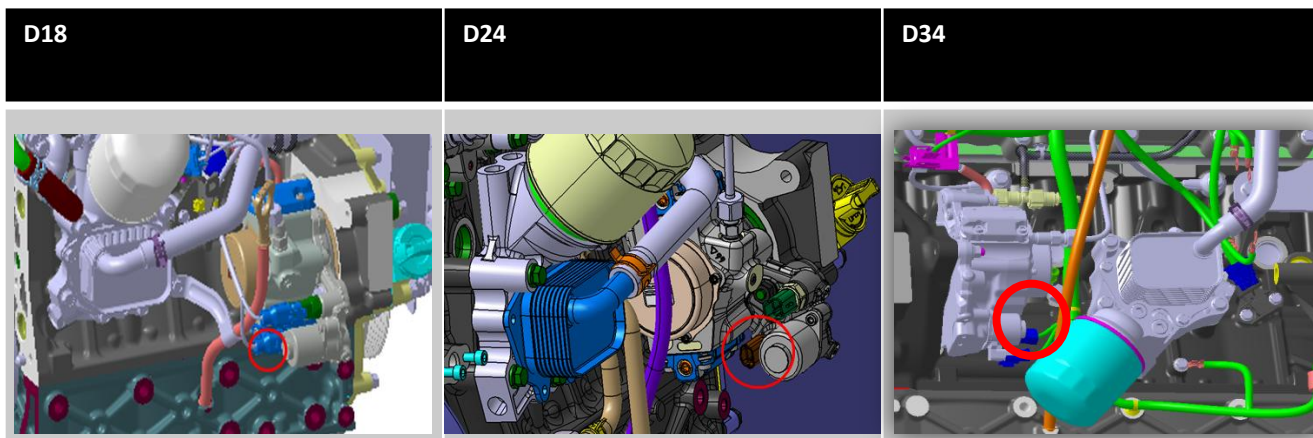
1) Overview

CODE	REASON	EFFECT
E001076-17	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the current of IMV trim value is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

If the current of IMV trim value is within the threshold, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0253 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call DOOSAN Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump Fault code is cleared?		O.K	Call Hot line

B

Step	Inspection	Standard Value	YES	NO
1	P0253 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P253A	PTO/Cruise Control Circuit Plausibility fault

1) Overview

CODE	REASON	EFFECT
E000527-09	Electrical problem Connection problem Switch problem	

No	ECU Pin	Description
1	223	VREF3 (5V)
2	215	PTO/Cruise Control Input
3	234	Return

2) Location

3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

PTO Cruise Control circuit is faulty

5) Condition for Clearing the Fault Code

PTO Cruise Control circuit is normal

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P253A is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Step 7
7	Check PTO/Cruise control switch		Fix switch	Call Hot-line

Fault Code	Fault Name
P253E	PTO/Cruise Control Circuit Switch Stuck fault

1) Overview

CODE	REASON	EFFECT
E000527-07	Electrical problem Connection problem Switch problem	

No	ECU Pin	Description
1	223	VREF3 (5V)
2	215	PTO/Cruise Control Input
3	234	Return

2) Location

3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

PTO Cruise Control circuit is faulty

5) Condition for Clearing the Fault Code

PTO Cruise Control circuit is normal

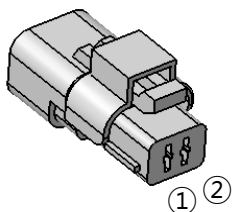
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P253E is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Step 7
7	Check PTO/Cruise control switch		Fix switch	Call Hot-line

Fault Code	Fault Name
P0254	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

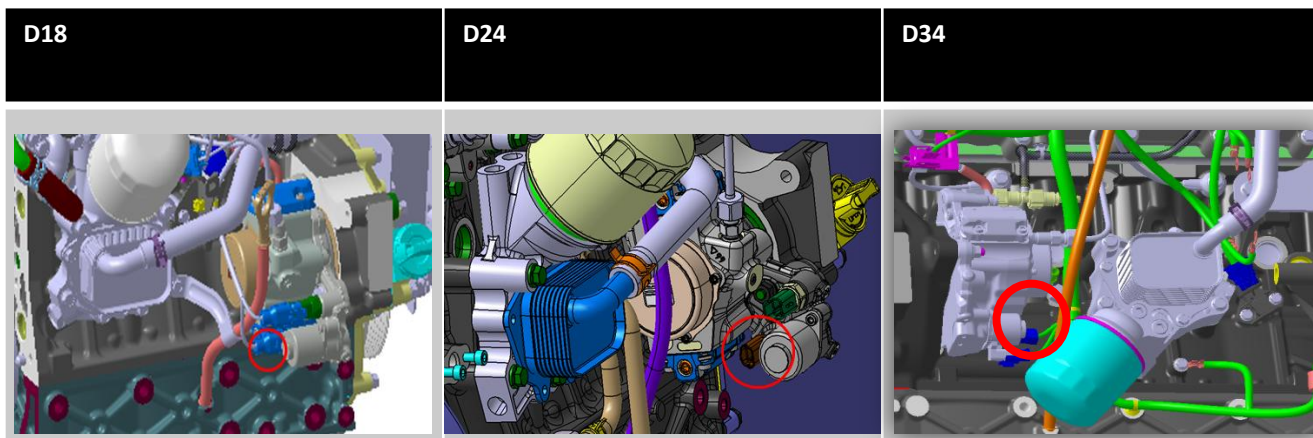
1) Overview

CODE	REASON	EFFECT
E001076-16	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the current of IMV trim value is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

If the current of IMV trim value is within the threshold, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0254 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call DOOSAN Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump Fault code is cleared?		O.K	Call Hot line

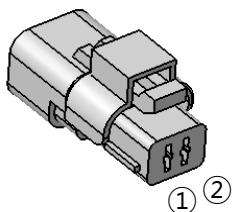
B

Step	Inspection	Standard Value	YES	NO
1	P0089 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0258	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

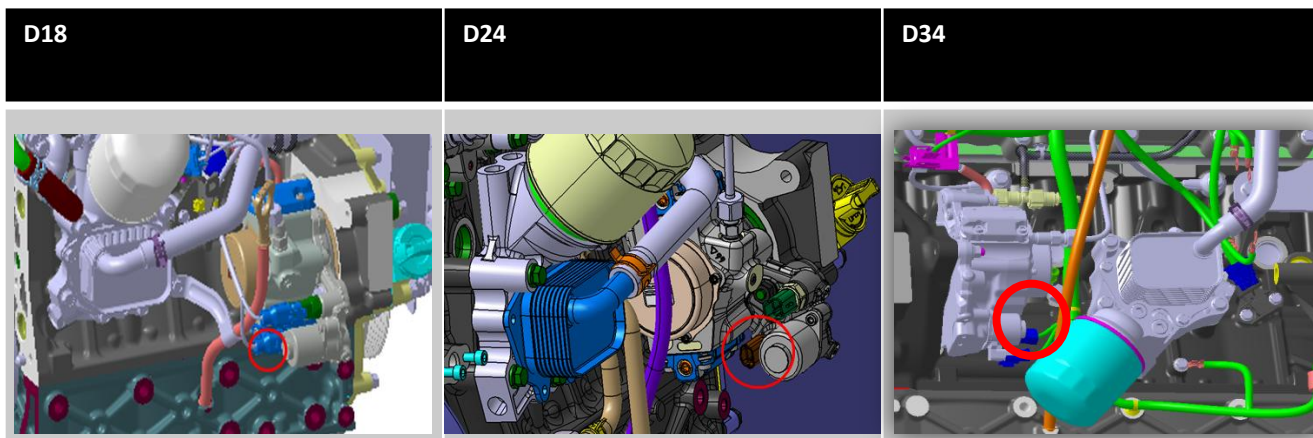
1) Overview

CODE	REASON	EFFECT
E001076-18	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the current of IMV trim value is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

If the current of IMV trim value is within the threshold, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0258 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call DOOSAN Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump Fault code is cleared?		O.K	Call Hot line

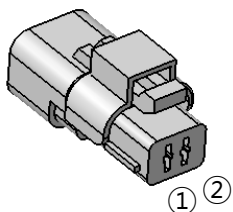
B

Step	Inspection	Standard Value	YES	NO
1	P0258 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P0259	Rail Pressure Build-up Fault - Check fuel line, wiring harness and IMV

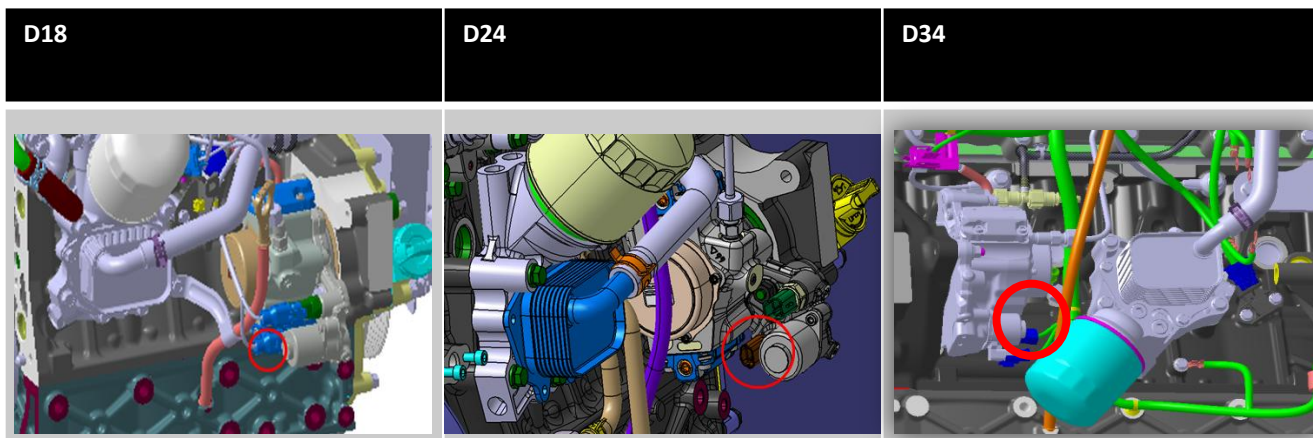
1) Overview

CODE	REASON	EFFECT
E001076-15	Faulty injector (sticking, coking, leaking etc), Injector wiring problem, Faulty IMV	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	177	Inlet Metering Valve PWM
2	-	Pbatt

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

If the current of IMV trim value is out of the threshold, fault code is raised

5) Condition for Clearing the Fault Code

If the current of IMV trim value is within the threshold, fault code is cleared

6) Check list

A

Step	Inspection	Standard Value	YES	NO
1	P0259 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all fuel line & electric wire of injector. (Low pressure circuit & high pressure circuit) Is there any leakage or wire problem? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step5
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		O.K	Step5
5	Please do the Shut off test & Run up test for detecting which injector has fault or not. Do you find faulty injector?		Step6	Call DOOSAN Hot line
6	Change the faulty injector as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step7
7	Change the high pressure pump with DOOSAN A.S support. Fault code is cleared?		O.K	Call Hot line

B

Step	Inspection	Standard Value	YES	NO
1	P00259 is occurred on diagnostic tool?		Step 2	
2	Fault of type IMV or rail pressure sensor?		First, fix the corresponding fault	Step 3
3	DTC link to High Pressure control?		Step 4	No problem
4	Check that: *fuel feed circuit is in good condition *there is diesel fuel present in the system *there is no air (no bubbles or emulsion in the pipes) *there is enough fuel pressure in inlet pump *there are no high pressure circuit leaks *there is diesel fuel of the correct quality and type Low pressure circuit faulty?		Repair the low pressure circuit	Step 5
5	According to engine start or not, different tests are to be done. Does engine start?		Step 6	Step 7
6	Perform "DYNAMIC IMV TEST" Faulty IMV?		Replace IMV	Step 8
	Perform "STATIC INJECTOR BACKLEAK TEST" Carry out the "tube test: Result?		Replace corresponding injector(s)	Replace HP pump
8	Perform "DYNAMIC INJECTOR BACKLEAK TEST" Backleak above limit?		Replace corresponding injector(s)	Step 9
9	Perform "PUMP PRESSURE BUILD CAPACITY" This test need specific equipment "hydraulic-T" Result?		End	Replace HP pump

Fault Code	Fault Name
P260A	PTO/Cruise Control Circuit fault

1) Overview

CODE	REASON	EFFECT
E000596-11	Electrical problem Connection problem Switch problem	

No	ECU Pin	Description
1	223	VREF3 (5V)
2	215	PTO/Cruise Control Input
3	234	Return

2) Location

3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

PTO Cruise Control circuit is faulty

5) Condition for Clearing the Fault Code

PTO Cruise Control circuit is normal

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P260A is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness. Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harnesses	Call Hot-line

Fault Code	Fault Name
P260B	PTO/Cruise Control Circuit Low fault

1) Overview

CODE	REASON	EFFECT
E000596-04	Electrical problem Connection problem Switch problem	

No	ECU Pin	Description
1	223	VREF3 (5V)
2	215	PTO/Cruise Control Input
3	234	Return

2) Location

3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

PTO Cruise Control circuit is faulty

5) Condition for Clearing the Fault Code

PTO Cruise Control circuit is normal

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P260B is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness. Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P260C	PTO/Cruise Control Circuit High fault

1) Overview

CODE	REASON	EFFECT
E000596-03	Electrical problem Connection problem Switch problem	

No	ECU Pin	Description
1	223	VREF3 (5V)
2	215	PTO/Cruise Control Input
3	234	Return

2) Location

3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

PTO Cruise Control circuit is faulty

5) Condition for Clearing the Fault Code

PTO Cruise Control circuit is normal

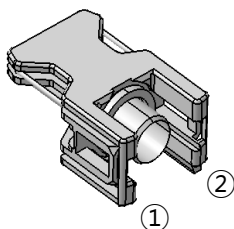
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P260C is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness. Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0261	Harness Resistance Low Fault (Cylinder #1)

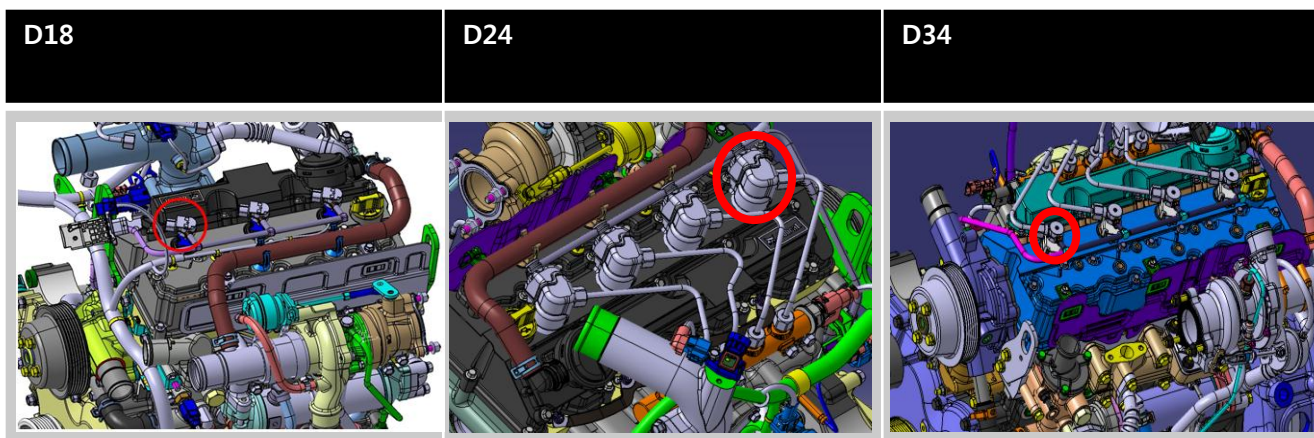
1) Overview

CODE	REASON	EFFECT
E000651-21	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #1 wiring resistance is below the range

5) Condition for Clearing the Fault Code

The injector of cylinder #1 wiring resistance it in a range

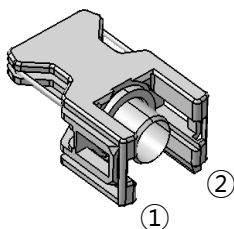
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0261 is occurred on diagnostic tool?		Step 2	
2	Perform injector buzzing test Test addible?		Call Hot-line	Step 3
3	Key off and check injector connection Connection problem?		Do necessary re pair	Step 4
4	Disconnect injector Fault disappeared?		Step 8	Step 5
5	If an intermediate engine connector is present, disconnect it Fault disappeared?		Fix intermediate engine harness	Step 6
6	Short circuit before injector. Check ECU connection Connection problem?		Do necessary re pair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
8	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU			

Fault Code	Fault Name
P0262	Harness Resistance High Fault (Cylinder #1)

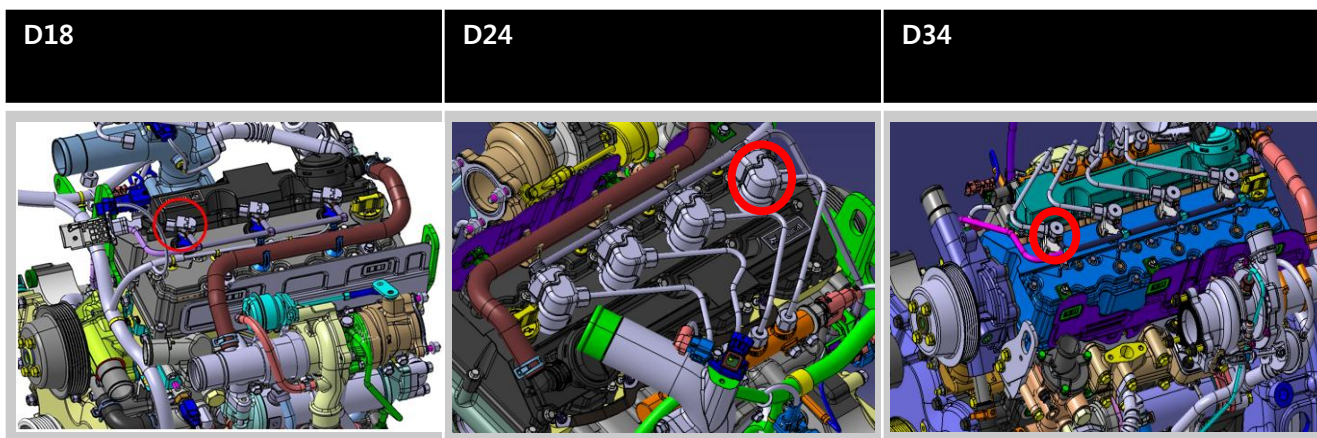
1) Overview

CODE	REASON	EFFECT
E000651-20	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	126	Fuel Injector LSD1A
2	127	Fuel Injector HSD1A

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #1 wiring resistance is above the range.

5) Condition for Clearing the Fault Code

The injector of cylinder #1 wiring resistance it in a range

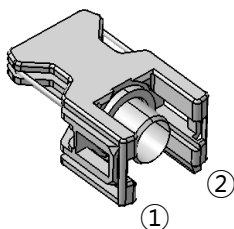
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0262 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test Test addible?		Call Hot-line	Step 4
4	Key off and check injector connection Connection problem?		Do necessary repair	Step 5
5	Check resistance of injector. For solenoid, it should be less than 1Ω For Piezzo, it should be around 1MΩ and should settle within some 10s. Resistance incorrect?		Step 11	Step 6
6	Swap connection between 2 injectors if harness enable it Same problem still present?		Step 11	Step 7
7	Check continuity and electrical insulation Electrical problem?		Do necessary repair	Step 8
8	If intermediate engine connector is present, check it electrically Electrical problem?		Do necessary repair	Step 9
9	Check ECU connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
11	Change injector. Mandatory: update Individual Corrections (taking care of its position)			

Fault Code	Fault Name
P0264	Harness Resistance Low Fault (Cylinder #2)

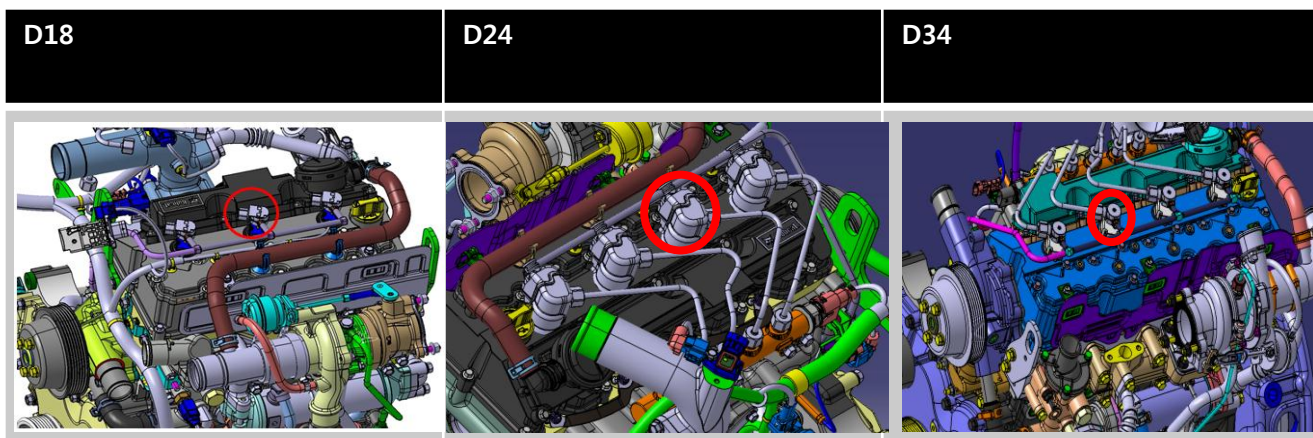
1) Overview

CODE	REASON	EFFECT
E000652-21	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #2 wiring resistance is below the range

5) Condition for Clearing the Fault Code

The injector of cylinder #2 wiring resistance it in a range

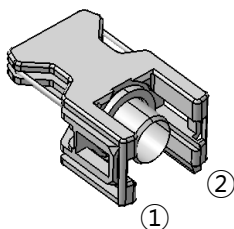
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0264 is occurred on diagnostic tool?		Step 2	
2	Perform injector buzzing test Test addible?		Call Hot-line	Step 3
3	Key off and check injector connection Connection problem?		Do necessary re pair	Step 4
4	Disconnect injector Fault disappeared?		Step 8	Step 5
5	If an intermediate engine connector is present, disconnect it Fault disappeared?		Fix intermediate engine harness	Step 6
6	Short circuit before injector. Check ECU connection Connection problem?		Do necessary re pair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
8	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU			

Fault Code	Fault Name
P0265	Harness Resistance High Fault (Cylinder #2)

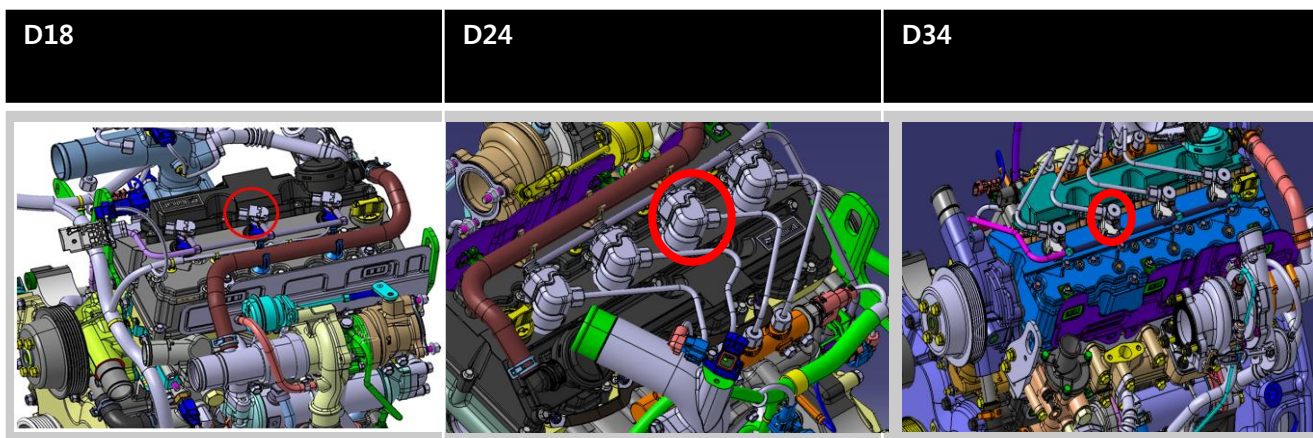
1) Overview

CODE	REASON	EFFECT
E000652-20	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	174	Fuel Injector LSD2B
2	150	Fuel Injector HSD2B

2) Location



3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #2 wiring resistance is above the range

5) Condition for Clearing the Fault Code

The injector of cylinder #2 wiring resistance it in a range.

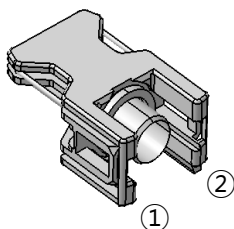
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0265 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test Test addible?		Call Hot-line	Step 4
4	Key off and check injector connection Connection problem?		Do necessary repair	Step 5
5	Check resistance of injector. For solenoid, it should be less than 1Ω For Piezzo, it should be around 1MΩ and should settle within some 10s. Resistance incorrect?		Step 11	Step 6
6	Swap connection between 2 injectors if harness enable it Same problem still present?		Step 11	Step 7
7	Check continuity and electrical insulation Electrical problem?		Do necessary repair	Step 8
8	If intermediate engine connector is present, check it electrically Electrical problem?		Do necessary repair	Step 9
9	Check ECU connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
11	Change injector. Mandatory: update Individual Corrections (taking care of its position)			

Fault Code	Fault Name
P0267	Harness Resistance Low Fault (Cylinder #3)

1) Overview

CODE	REASON	EFFECT
E000653-21	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #3 wiring resistance is below the range

5) Condition for Clearing the Fault Code

The injector of cylinder #3 wiring resistance it in a range

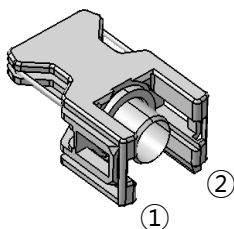
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0267 is occurred on diagnostic tool?		Step 2	
2	Perform injector buzzing test Test addible?		Call Hot-line	Step 3
3	Key off and check injector connection Connection problem?		Do necessary re pair	Step 4
4	Disconnect injector Fault disappeared?		Step 8	Step 5
5	If an intermediate engine connector is present, disconnect it Fault disappeared?		Fix intermediate engine harness	Step 6
6	Short circuit before injector. Check ECU connection Connection problem?		Do necessary re pair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
8	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU			

Fault Code	Fault Name
P0268	Harness Resistance High Fault (Cylinder #3)

1) Overview

CODE	REASON	EFFECT
E000653-20	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	175	Fuel Injector LSD1B
2	151	Fuel Injector HSD1B

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #3 wiring resistance is above the range

5) Condition for Clearing the Fault Code

The injector of cylinder #3 wiring resistance it in a range

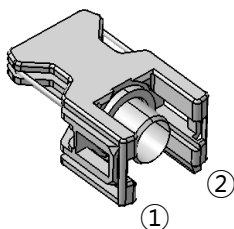
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0268 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test Test addible?		Call Hot-line	Step 4
4	Key off and check injector connection Connection problem?		Do necessary repair	Step 5
5	Check resistance of injector. For solenoid, it should be less than 1Ω For Piezzo, it should be around 1MΩ and should settle within some 10s. Resistance incorrect?		Step 11	Step 6
6	Swap connection between 2 injectors if harness enable it Same problem still present?		Step 11	Step 7
7	Check continuity and electrical insulation Electrical problem?		Do necessary repair	Step 8
8	If intermediate engine connector is present, check it electrically Electrical problem?		Do necessary repair	Step 9
9	Check ECU connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
11	Change injector. Mandatory: update Individual Corrections (taking care of its position)			

Fault Code	Fault Name
P0270	Harness Resistance Low Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-21	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #4 wiring resistance is below the range.

5) Condition for Clearing the Fault Code

The injector of cylinder #4 wiring resistance it in a range

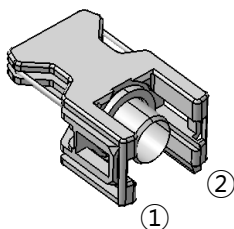
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0270 is occurred on diagnostic tool?		Step 2	
2	Perform injector buzzing test Test addible?		Call Hot-line	Step 3
3	Key off and check injector connection Connection problem?		Do necessary re pair	Step 4
4	Disconnect injector Fault disappeared?		Step 8	Step 5
5	If an intermediate engine connector is present, disconnect it Fault disappeared?		Fix intermediate engine harness	Step 6
6	Short circuit before injector. Check ECU connection Connection problem?		Do necessary re pair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
8	Change corresponding injector Do not forget to write new Individual Injector Correction to ECU			

Fault Code	Fault Name
P0271	Harness Resistance High Fault (Cylinder #4)

1) Overview

CODE	REASON	EFFECT
E000654-20	Electrical problem Connection problem Wiring fault	No



No	ECU Pin	Description
1	125	Fuel Injector LSD2A
2	103	Fuel Injector HSD2A

2) Location

D18	D24	D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

The injector of cylinder #4 wiring resistance is above the range.

5) Condition for Clearing the Fault Code

The injector of cylinder #4 wiring resistance is in a range

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0271 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform injector buzzing test Test addible?		Call Hot-line	Step 4
4	Key off and check injector connection Connection problem?		Do necessary repair	Step 5
5	Check resistance of injector. For solenoid, it should be less than 1Ω For Piezzo, it should be around 1MΩ and should settle within some 10s. Resistance incorrect?		Step 11	Step 6
6	Swap connection between 2 injectors if harness enable it Same problem still present?		Step 11	Step 7
7	Check continuity and electrical insulation Electrical problem?		Do necessary repair	Step 8
8	If intermediate engine connector is present, check it electrically Electrical problem?		Do necessary repair	Step 9
9	Check ECU connection Connection problem?		Do necessary repair	Step 10
10	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line
11	Change injector. Mandatory: update Individual Corrections (taking care of its position)			

Fault Code	Fault Name
P0325	Accelerometer Sensor 0 Fault

1) Overview

CODE	REASON	EFFECT
E000731-20	Electrical problem Connection problem Sensor problem	No

No	ECU Pin	Description
1	131	Engine Block Accelerometer #1
2	130	Engine Block Accelerometer Return
3	128	Engine Block Accelerometer Screen

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Accelerometer 0 is opened or shorted to ground

4) Condition for Clearing the Fault Code

Accelerometer 0 problem is restored

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0325 is occurred on diagnostic tool?		Step 2	
2	VEXT fault present?		Step 3	Step 4
3	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
4	Check sensor connection Connection problem?		Do necessary repair	Step 5
5	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 6
6	Check ECU connection Connection problem?		Do necessary repair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0330	Accelerometer Sensor 1 Fault

1) Overview

CODE	REASON	EFFECT
E000731-21	Electrical problem Connection problem Sensor problem	No

No	ECU Pin	Description
1	131	Engine Block Accelerometer #1
2	130	Engine Block Accelerometer Return
3	128	Engine Block Accelerometer Screen

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Accelerometer 1 is opened or shorted to ground

4) Condition for Clearing the Fault Code

Accelerometer 1 problem is restored

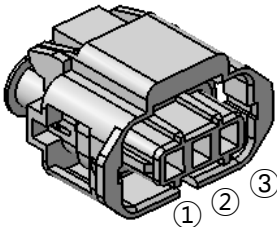
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0330 is occurred on diagnostic tool?		Step 2	
2	VEXT fault present?		Step 3	Step 4
3	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
4	Check sensor connection Connection problem?		Do necessary repair	Step 5
5	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 6
6	Check ECU connection Connection problem?		Do necessary repair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0335	Crank Signal Over-speed Fault

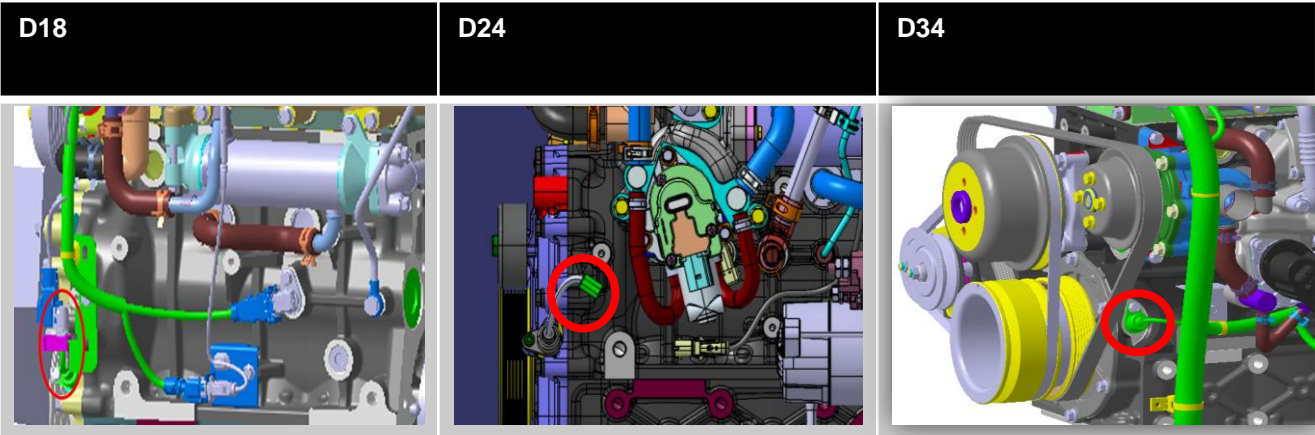
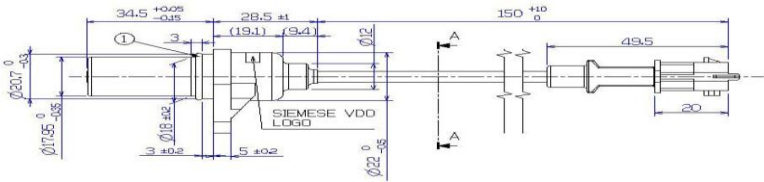
1) Overview

CODE	REASON	EFFECT
E000636-11	<p>Sensor connection problem</p> <p>Wiring fault.</p> <p>Fault with trigger wheel.</p> <p>Fault with crank signal processing in ECU.</p> <p>Faulty ECU live or ground.</p> <p>Fault with ECU wiring or connectors</p>	<p>CE lamp ON</p> <p>Low idle RPM increase</p>



No	ECU Pin	Description
1	136	Crank Sensor Neg
2	160	Crank Sensor Pos
3	-	Not used

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Crank sensor signal is out of range

5) Condition for Clearing the Fault Code

Crank sensor signal is in a range

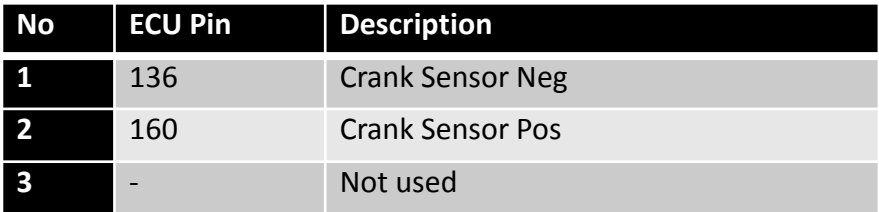
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0335 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Change Hall effect or VR sensor	Step 7
7	New sensor connected Problem still present?		Change APS target wheel	Step 8
8	New target wheel fitted Problem still present?		Call Hot-line	Problem solved

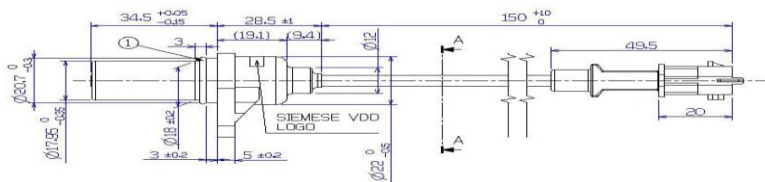
Crank Signal Gap Fault

1) Overview

CE lamp ON
Torque Reduction Lv0
Low idle RPM increase



2) Location

A 3D CAD model of a complex mechanical assembly, likely a pump or engine component. The model features various parts in different colors: grey, yellow, blue, red, and green. A red circle highlights a specific green bolt or fastener on the right side of the assembly. The assembly is mounted on a grey base plate.

3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Crank sensor signal is abnormal deviation

5) Condition for Clearing the Fault Code

Crank sensor signal is normal

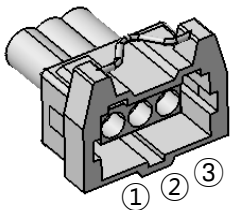
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0339 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Change Hall effect or VR sensor	Step 7
7	New sensor connected Problem still present?		Change APS target wheel	Step 8
8	New target wheel fitted Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0340	Cam signal last learnt value is outside of limits

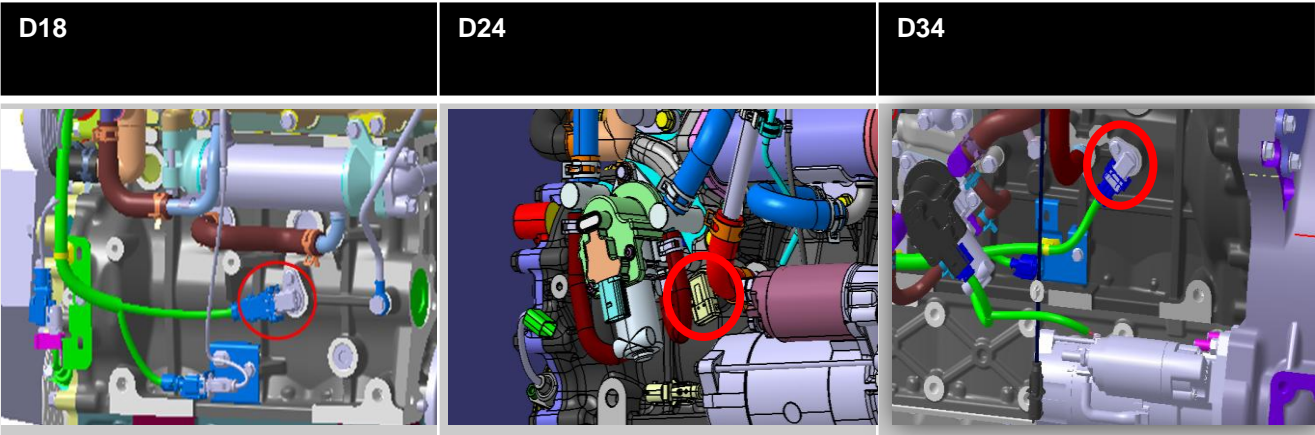
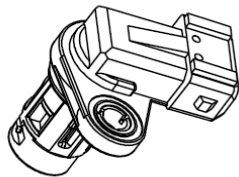
1) Overview

CODE	REASON	EFFECT
E000637-30	Sensor connection problem wiring fault Fault with cam trigger wheel Fault with cam wheel signal processing in ECU Faulty ECU live or ground Fault with ECU wiring or connectors Engine fault causing camshaft speed variation	Low idle RPM increase



No	ECU Pin	Description
1	-	Pbatt
2	159	CAM Shaft Position Sensor
3	147	CAM Shaft Position Sensor Return

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Cam sensor learning is failed

5) Condition for Clearing the Fault Code

Cam sensor learning is succeed

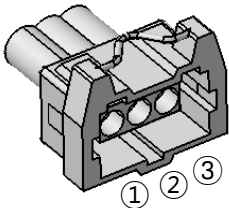
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0340 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Visually check sensor Sensor problem?		Change sensor	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Do necessary re pair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 8
8	Check Cam target wheel Target wheel problem?		Change target wheel	Step 9
9	Check distribution Distribution problem?		Fix distribution	Call Hot-line

Fault Code	Fault Name
P0341	Cam signal drift higher than threshold

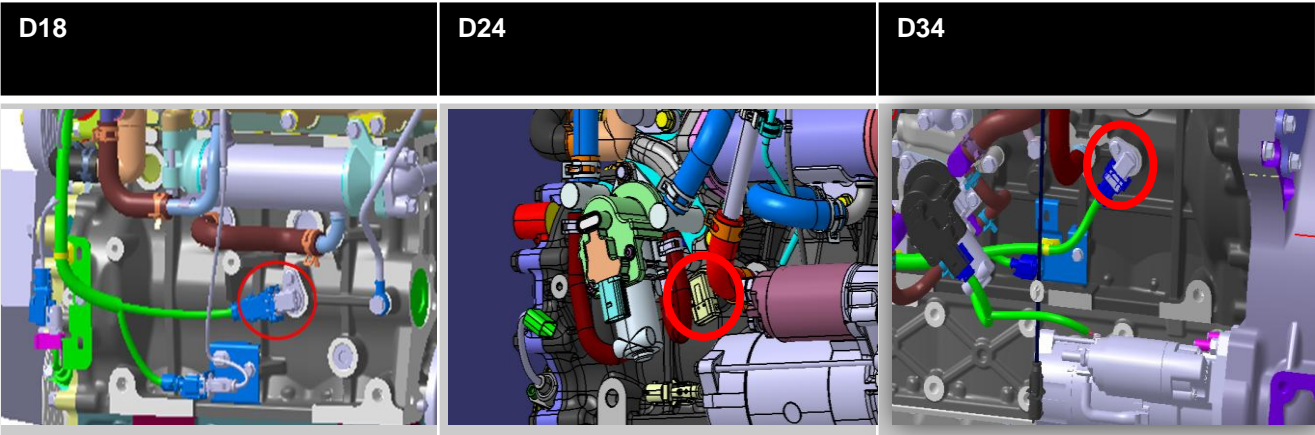
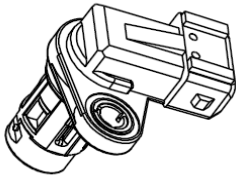
1) Overview

CODE	REASON	EFFECT
E000637-20	Sensor connection problem wiring fault Fault with cam trigger wheel Fault with cam wheel signal processing in ECU Faulty ECU live or ground Fault with ECU wiring or connectors Engine fault causing camshaft speed variation	Low idle RPM increase



No	ECU Pin	Description
1	-	Pbatt
2	159	CAM Shaft Position Sensor
3	147	CAM Shaft Position Sensor Return

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Cam sensor signal is out of range

5) Condition for Clearing the Fault Code

Cam sensor signal is coming normally

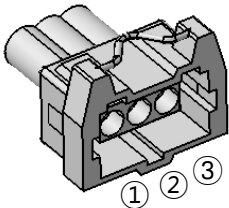
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0341 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Visually check sensor Sensor problem?		Change sensor	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Do necessary repair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 8
8	Check Cam target wheel Target wheel problem?		Change target wheel	Step 9
9	Check distribution Distribution problem?		Fix distribution	Call Hot-line

Fault Code	Fault Name
P0342	Cam signal lost (no cam signal seen in 2 crank rotations)

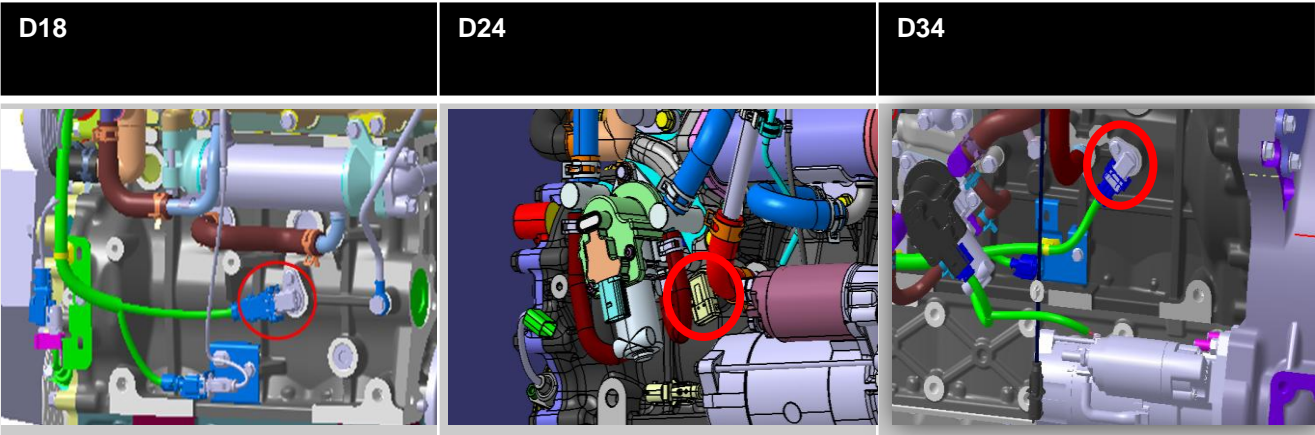
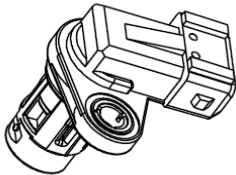
1) Overview

CODE	REASON	EFFECT
E000637-08	Sensor connection problem wiring fault Fault with cam trigger wheel Fault with cam wheel signal processing in ECU Faulty ECU live or ground Fault with ECU wiring or connectors Engine fault causing camshaft speed variation	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	-	Pbatt
2	159	CAM Shaft Position Sensor
3	147	CAM Shaft Position Sensor Return

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Cam sensor signal is missed

5) Condition for Clearing the Fault Code

Cam sensor signal is coming normally

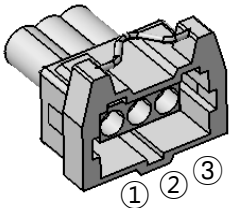
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0342 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Visually check sensor Sensor problem?		Change sensor	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Do necessary repair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 8
8	Check Cam target wheel Target wheel problem?		Change target wheel	Step 9
9	Check distribution Distribution problem?		Fix distribution	Call Hot-line

Fault Code	Fault Name
P0344	Cam Signal Missing Fault

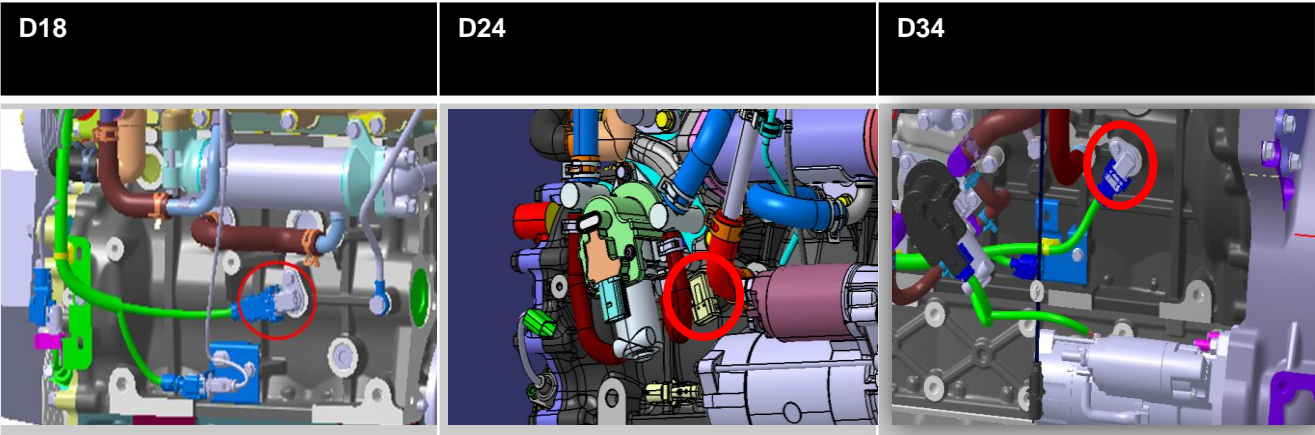
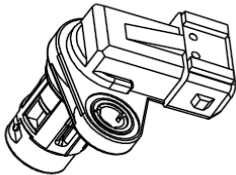
1) Overview

CODE	REASON	EFFECT
E000637-02	Sensor connection problem wiring fault Fault with cam trigger wheel Fault with cam wheel signal processing in ECU Faulty ECU live or ground Fault with ECU wiring or connectors Engine fault causing camshaft speed variation.	CE lamp ON Torque Reduction Lv0 Low idle RPM increase



No	ECU Pin	Description
1	-	Pbatt
2	159	CAM Shaft Position Sensor
3	147	CAM Shaft Position Sensor Return

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Cam sensor signal is missed

5) Condition for Clearing the Fault Code

Cam sensor signal is coming normally

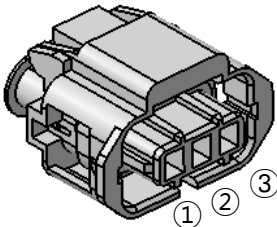
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0344 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Visually check sensor Sensor problem?		Change sensor	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Do necessary repair	Step 7
7	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 8
8	Check Cam target wheel Target wheel problem?		Change target wheel	Step 9
9	Check distribution Distribution problem?		Fix distribution	Call Hot-line

Fault Code	Fault Name
P0371	Crank Signal Early Fault

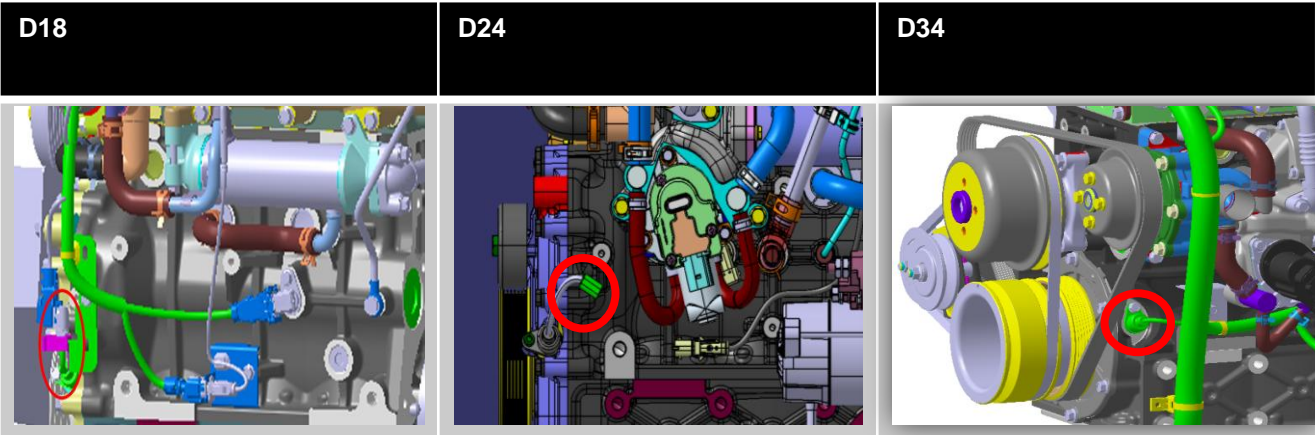
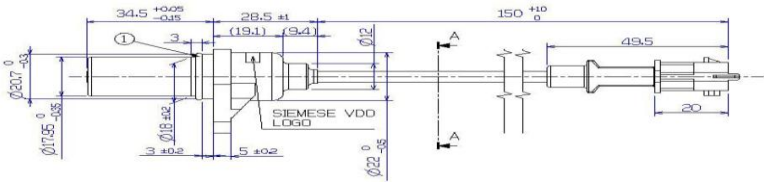
1) Overview

CODE	REASON	EFFECT
E000636-00	<p>Sensor connection problem</p> <p>Wiring fault.</p> <p>Fault with trigger wheel.</p> <p>Fault with crank signal processing in ECU.</p> <p>Faulty ECU live or ground.</p> <p>Fault with ECU wiring or connectors</p>	Low idle RPM increase



No	ECU Pin	Description
1	136	Crank Sensor Neg
2	160	Crank Sensor Pos
3	-	Not used

2) Location



3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Crank sensor signal is abnormal deviation

5) Condition for Clearing the Fault Code

Crank sensor signal is normal

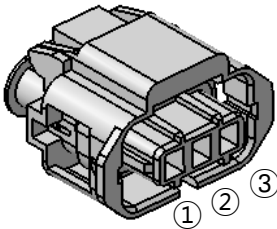
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0371 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Change Hall effect or VR sensor	Step 7
7	New sensor connected Problem still present?		Change APS target wheel	Step 8
8	New target wheel fitted Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0372	Crank Signal Missing Fault

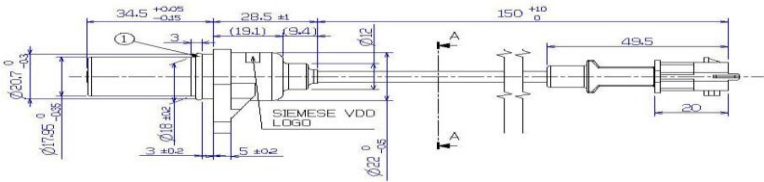
1) Overview

CODE	REASON	EFFECT
E000636-02	<p>Sensor connection problem</p> <p>Wiring fault.</p> <p>Fault with trigger wheel.</p> <p>Fault with crank signal processing in ECU.</p> <p>Faulty ECU live or ground.</p> <p>Fault with ECU wiring or connectors</p>	<p>CE lamp ON</p> <p>Torque Reduction Lv0</p> <p>Low idle RPM increase</p>



No	ECU Pin	Description
1	136	Crank Sensor Neg
2	160	Crank Sensor Pos
3	-	Not used

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Crank sensor signal is missed

5) Condition for Clearing the Fault Code

Crank sensor signal is coming as normally

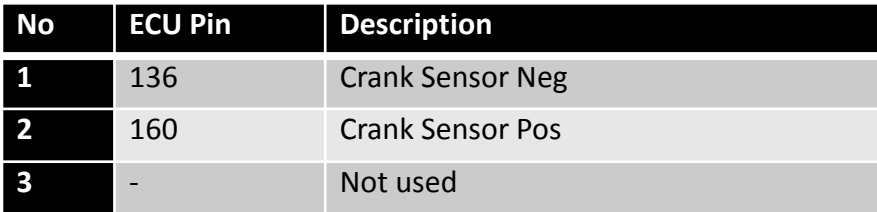
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0372 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Change Hall effect or VR sensor	Step 7
7	New sensor connected Problem still present?		Change APS target wheel	Step 8
8	New target wheel fitted Problem still present?		Call Hot-line	Problem solved

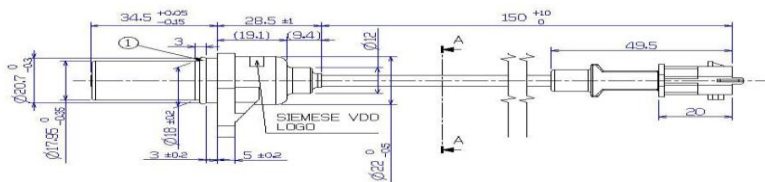
Crank Signal Lost Fault

1) Overview

CE lamp ON
Torque Reduction Lv0
Low idle RPM increase



2) Location

A 3D CAD model of a complex mechanical assembly. The model features various components including a large grey pulley with a yellow center, a yellow cylindrical part, and a green vertical pipe. A red circle highlights a specific green bolt or fastener on the assembly.

3) Condition for Running Diagnostic

Since cranking phase

4) Condition for Setting the Fault Code

Crank sensor signal is missed

5) Condition for Clearing the Fault Code

Crank sensor signal is coming as normally

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0374 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	If scope available, display CAM and Crank signals on the scope Signals not conform to template?		Change Hall effect or VR sensor	Step 7
7	New sensor connected Problem still present?		Change APS target wheel	Step 8
8	New target wheel fitted Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0380	Glow Plug Relay OC Fault

1) Overview

CODE	REASON	EFFECT
E000676-05	Electrical problem Connection problem Relay problem	CE lamp ON

No	ECU Pin	Description
1	256	Glow Plug Relay driver

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Glow plug relay is not connected (open)

4) Condition for Clearing the Fault Code

Glow plug relay problem is restored

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0380 is occurred on diagnostic tool?		Step 2	
2	Perform relay test routine Test OK?		Call Hot-line	Step 3
3	Check relay connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	Change relay (run ISO cycle) ISO cycle OK?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0381	Glow Plug Lamp Fault (SC2G / OC)

1) Overview

CODE	REASON	EFFECT
E000987-04 E000987-05	Electrical problem Connection problem Relay problem	No

No	ECU Pin	Description
1	241	Glow Lamp LSD

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

CE Lamp LSD wiring is shorted to ground (E000987-04) or opened (E000987-05)

4) Condition for Clearing the Fault Code

CE Lamp LSD wiring problem is restored

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0381 is occurred on diagnostic tool?		Step 2	
2	Check battery voltage at Key-on Battery problem?		Change battery	Step 3
3	Check battery connection Battery connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0383	Glow Plug Relay SCG Fault

1) Overview

CODE	REASON	EFFECT
E000676-04	Electrical problem Connection problem Relay problem	CE lamp ON

No	ECU Pin	Description
1	256	Glow Plug Relay driver

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Glow plug relay is connected to ground (SC2G)

4) Condition for Clearing the Fault Code

Glow plug relay problem is restored

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0383 is occurred on diagnostic tool?		Step 2	
2	Perform relay test routine Test OK?		Call Hot-line	Step 3
3	Check relay connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	Change relay (run ISO cycle) ISO cycle OK?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0384	Glow Plug Relay SCB Fault

1) Overview

CODE	REASON	EFFECT
E000676-03	Electrical problem Connection problem Relay problem	CE lamp ON

No	ECU Pin	Description
1	256	Glow Plug Relay driver

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Glow plug relay connected to battery (SC2V)

4) Condition for Clearing the Fault Code

Glow plug relay problem is restored

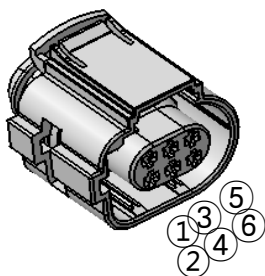
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0384 is occurred on diagnostic tool?		Step 2	
2	Perform relay test routine Test OK?		Call Hot-line	Step 3
3	Check relay connection Connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	Change relay (run ISO cycle) ISO cycle OK?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0400	EGR Air Plausibility Fault

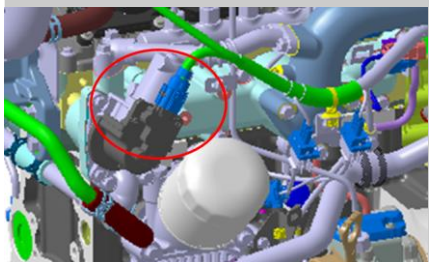
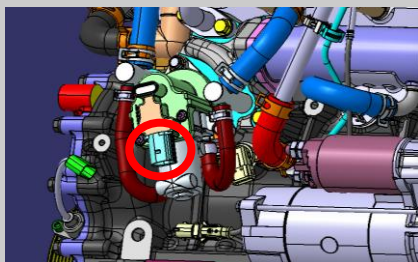
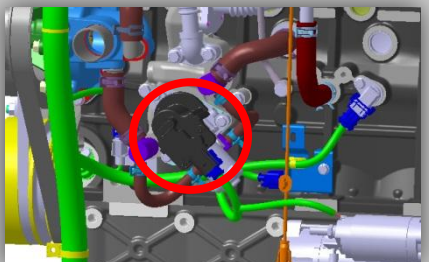
1) Overview

CODE	REASON	EFFECT
E002791-07	EGR air path leakage, blocked MAF sensor drift, damage of MAF sensor, Intake manifold pressure drift, Intake manifold temperature sensor drift	-



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is out of the threshold, fault code is raised.

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is within the threshold, fault code is cleared.

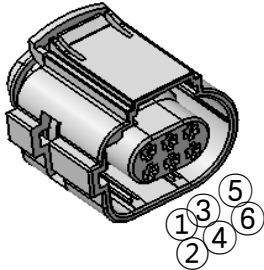
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0400 is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Check the EGR pipe between exhaust manifold and EGR valve? Is there any leakage? Or blocked line ? If you cannot find with your eyes, You can check leakage/blocked line during engine running in machine stationary condition.		Step6	Step4
4	Check EGR pipe between EGR cooler and intake manifold. Is there any leakage? Or Blocked line ? If you cannot find with your eyes, You can check leakage/blocked line during engine running in machine stationary condition.		Step6	Step5
5	Is there any fault code related intake manifold pressure sensor, intake manifold temperature sensor? If yes, fix the fault based on its troubleshooting guide.		Fix the fault based on its troubleshooting guide	Step7
6	Fix the leakage/blocked line or change the pipe. After fix, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 60 seconds. Fault code is cleared?		Problem solved	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0401	EGR control fault (airflow error too low)

1) Overview

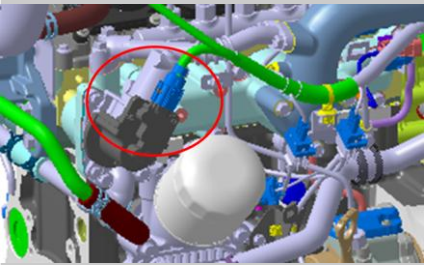
CODE	REASON	EFFECT
E000027-01	EGR air path leakage, MAF sensor drift, damage of MAF sensor, Intake manifold pressure drift, Intake manifold temperature sensor drift	CE lamp ON Torque Reduction Lv0



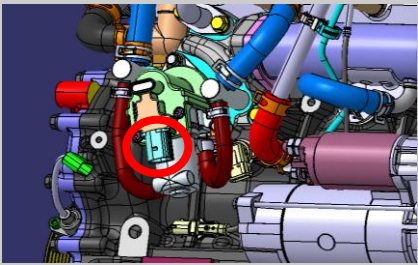
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

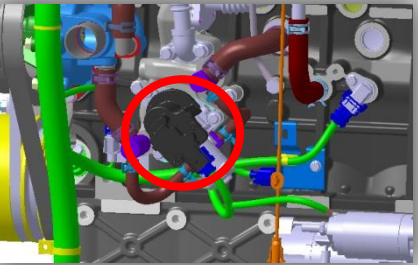
D18

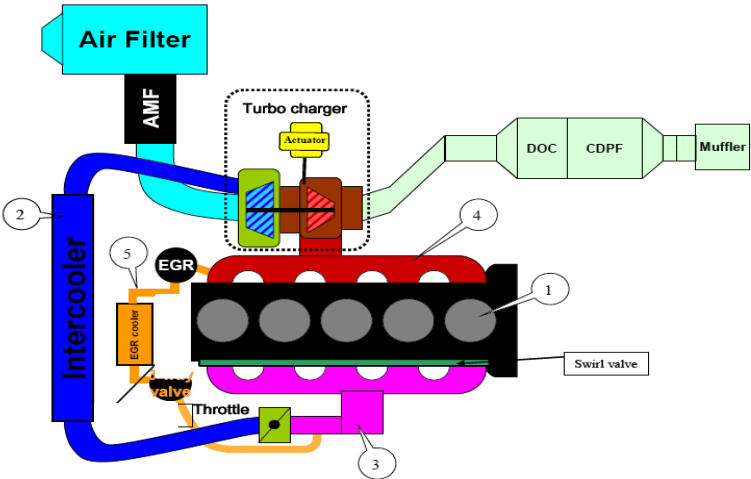


D24



D34





3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is out of the threshold, fault code is raised.

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is within the threshold, fault code is cleared.

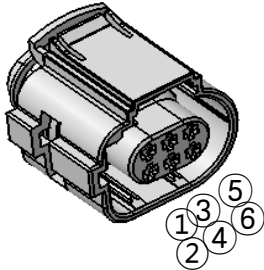
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0401 is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Check the EGR pipe between exhaust manifold and EGR valve? Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step4
4	Check EGR pipe between EGR cooler and intake manifold. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step5
5	Is there any fault code related intake manifold pressure sensor, intake manifold temperature sensor? If yes, fix the fault based on its troubleshooting guide.		Fix the fault based on its troubleshooting guide	Step7
6	Fix the leakage or change the pipe. After fix the leakage, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 60 seconds. Fault code is cleared?		Problem solved	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0402	EGR control fault (airflow error too high)

1) Overview

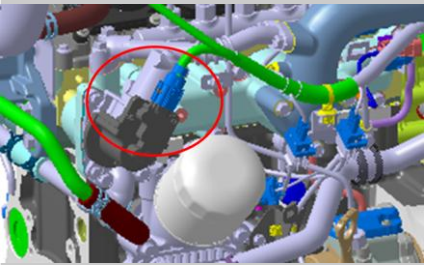
CODE	REASON	EFFECT
E000027-00	EGR air path leakage, MAF sensor drift, damage of MAF sensor, Intake manifold pressure drift, Intake manifold temperature sensor drift	CE lamp ON Torque Reduction Lv0



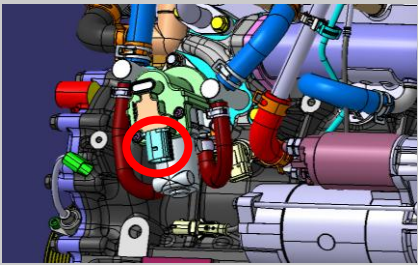
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

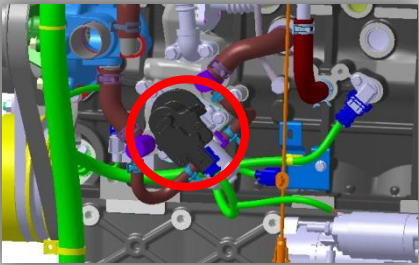
D18

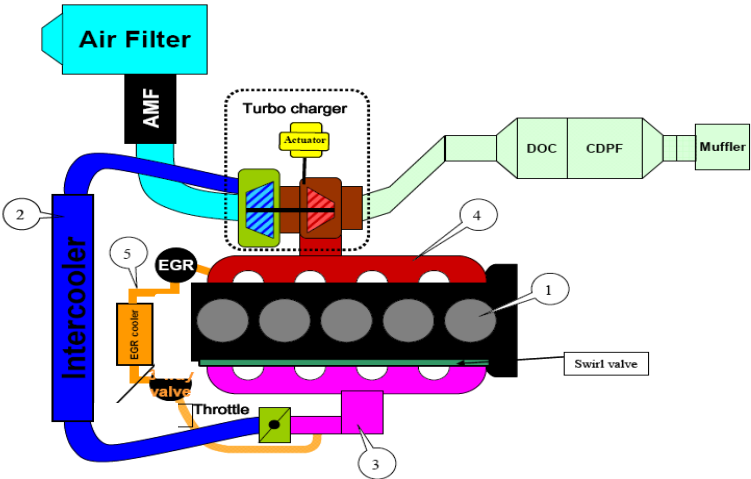


D24



D34





3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is out of the threshold, fault code is raised.

5) Condition for Clearing the Fault Code

Air mass difference between air flow meter and calculated air flow into the cylinder with EGR enable condition is within the threshold, fault code is cleared.

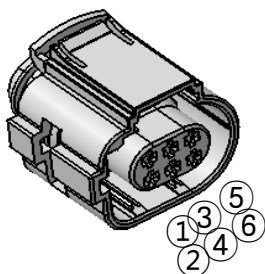
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0402 is raised on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Check the EGR pipe between exhaust manifold and EGR valve? Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step4
4	Check EGR pipe between EGR cooler and intake manifold. Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step6	Step5
5	Is there any fault code related intake manifold pressure sensor, intake manifold temperature sensor? If yes, fix the fault based on its troubleshooting guide.		Fix the fault based on its troubleshooting guide	Step7
6	Fix the leakage or change the pipe. After fix the leakage, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 60 seconds. Fault code is cleared?		Problem solved	Step7
7	Change the air flow meter sensor(MAF) After change the MAF, start the engine and change the RPM from low idle to high idle. Please keep the RPM as high idle at least 30 seconds. Fault code is cleared?		Problem solved	Call Hot-line

Fault Code	Fault Name
P0403	EGR H-bridge Driver OC/SC2G/SC2Vbatt

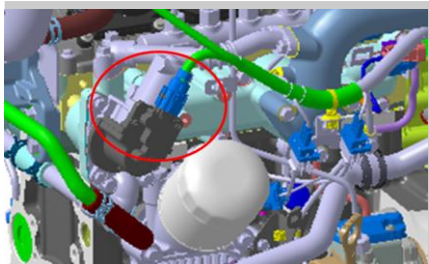
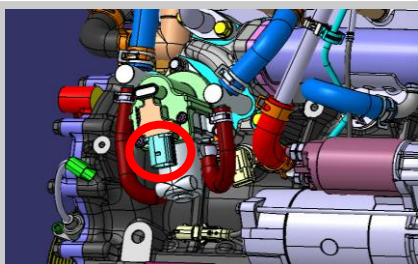
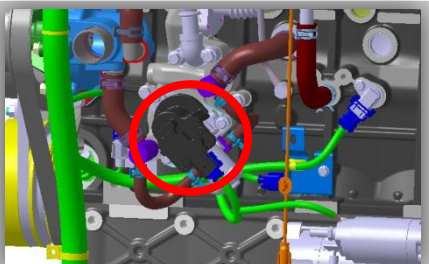
1) Overview

CODE	REASON	EFFECT
P0403 Blink 231	OC/SC2G/SC2Vbatt was generated in EGR H-bridge Driver	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the pins of EGR H-bridge have been shorted to battery then fault code is arisen.

5) Condition for Clearing the Fault Code

The open circuit, short to battery and short to ground status are removed

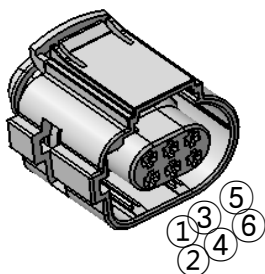
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0403 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check sensor resistance(checking it is coherent with vehicle conditions) if applicable Resistance problem?		Change Sensor	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0404	EGR Position Control Fault

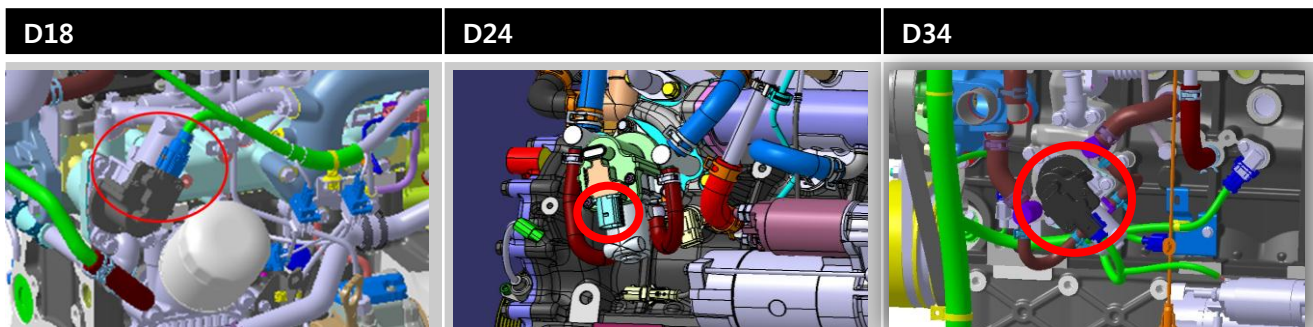
1) Overview

CODE	REASON	EFFECT
E002791-08	EGR valve control fault	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

EGR valve is not operating as normally.

5) Condition for Clearing the Fault Code

EGR valve is operating as normally.

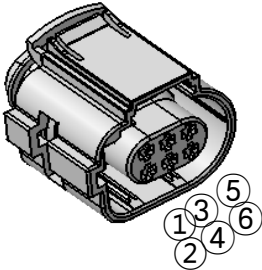
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0404 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P0406	EGR actuator position feedback signal high fault

1) Overview

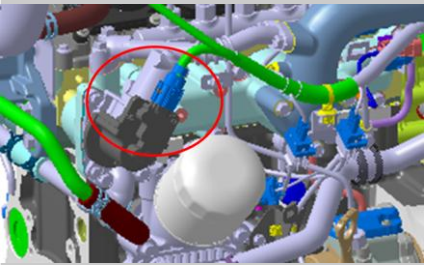
CODE	REASON	EFFECT
E000027-03	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



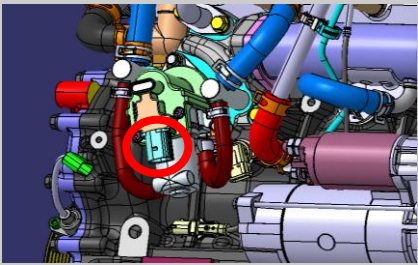
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

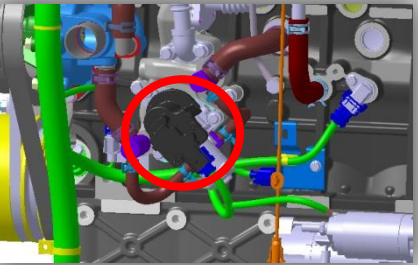
D18

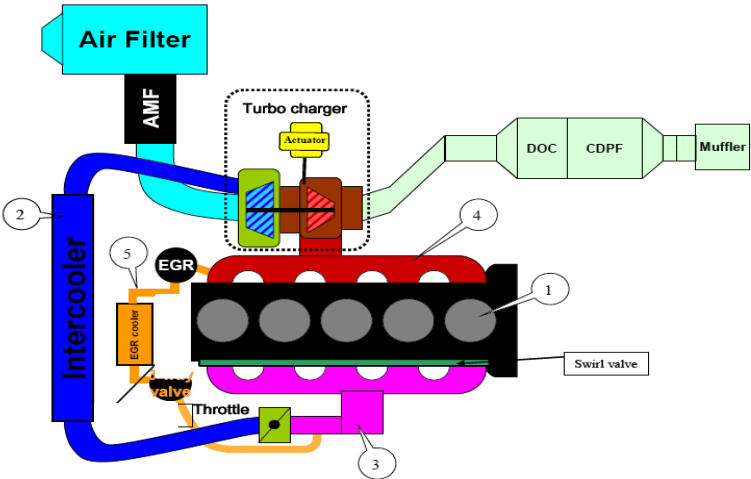


D24



D34





3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

EGR Feedback Position value is more than maximum operation range

5) Condition for Clearing the Fault Code

EGR Feedback Position value is in operation range

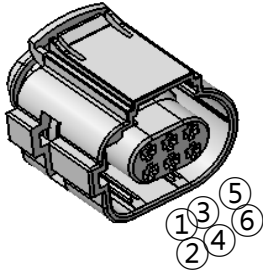
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0406 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P0407	EGR actuator position feedback signal low fault

1) Overview

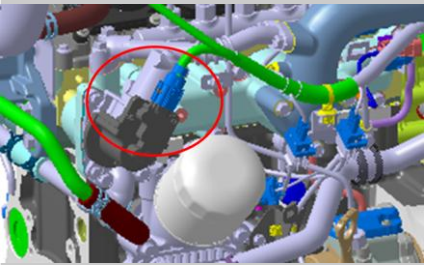
CODE	REASON	EFFECT
E000027-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



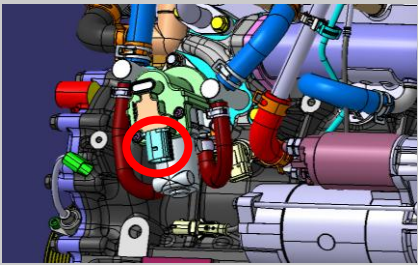
No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

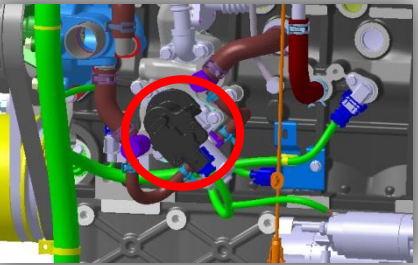
D18

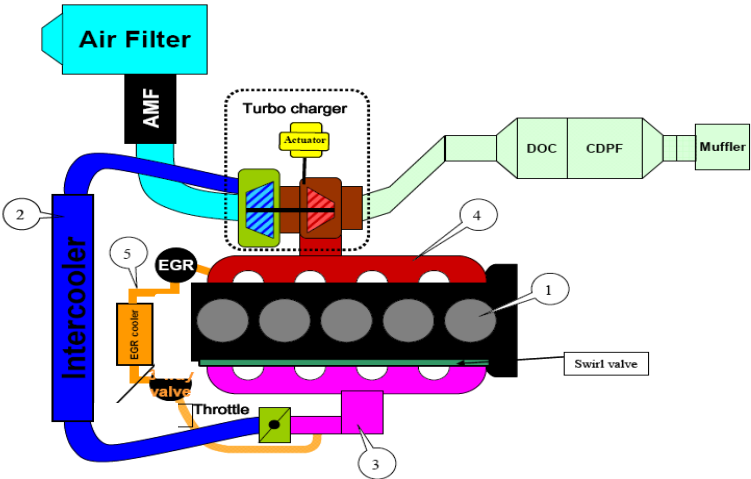


D24



D34





3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

EGR Feedback Position value is more than maximum operation range

5) Condition for Clearing the Fault Code

EGR Feedback Position value is in operation range

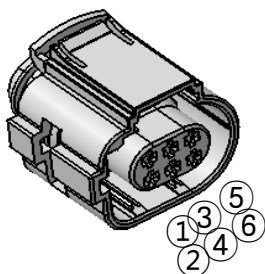
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0407 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check air inlet circuit: *Valve state *Depression circuit *Vacuum value pump *Open solenoid valve *Vanne state *Air inlet valve functionality		Step 4	
4	Check connection of the valve Check that the supply voltage is correct Check that the valve position can reach MIN to MAX position (0% to 100%) If applicable, launch a learning of EGR position Problem of connection / supply / position?		Do necessary repair	Problem solved

Fault Code	Fault Name
P0409	EGR feedback Position Ex Fault

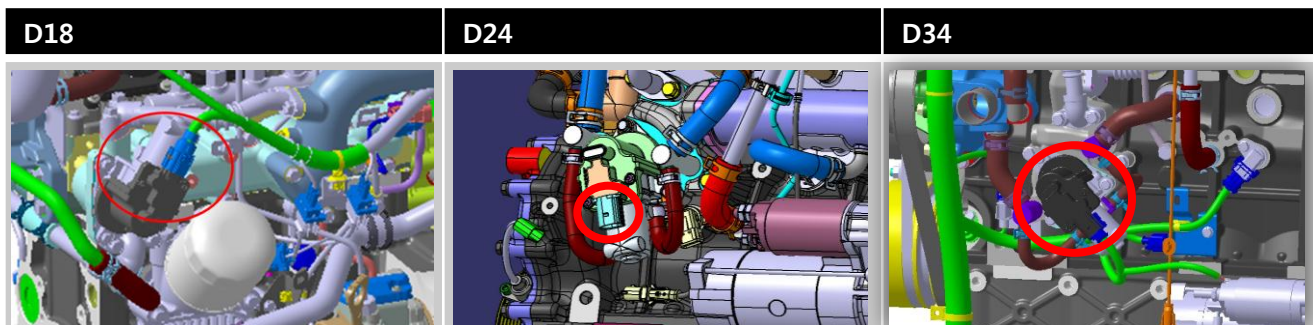
1) Overview

CODE	REASON	EFFECT
P0404 Blink 232	EGR valve control fault	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

EGR valve is not operating as normally

5) Condition for Clearing the Fault Code

EGR valve is operating as normally.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0404 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0421	DOC Exothermal Efficiency Fault

1) Overview

CODE	REASON	EFFECT
U00173-01	DOC exothermal efficiency low, Injector problem etc	

2) Location



3) Condition for Running Diagnostic

After engine running & DeSOx is activated

4) Condition for Setting the Fault Code

If calculated DOC efficiency is out of the threshold during DeSOx, fault code is raised

5) Condition for Clearing the Fault Code

If calculated DOC efficiency is within the threshold during DeSOx, fault code is cleared

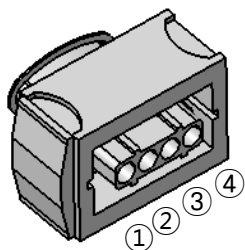
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0421 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Please enable service DeSOx by switch in machine stationary condition. Is the fault cleared?		O.K	Step4
4	Is there any leakage in the exhaust pipe? If yes, please fix the leakage. Please enable service DeSOx by switch in machine stationary condition. Is the fault cleared?		O.K	Step5
5	Please change the DOC. Please enable service DeSOx by switch in machine stationary condition. Is the fault cleared?		O.K	Call Hot line

Fault Code	Fault Name
P0522	Oil Pressure Sensor Low Fault

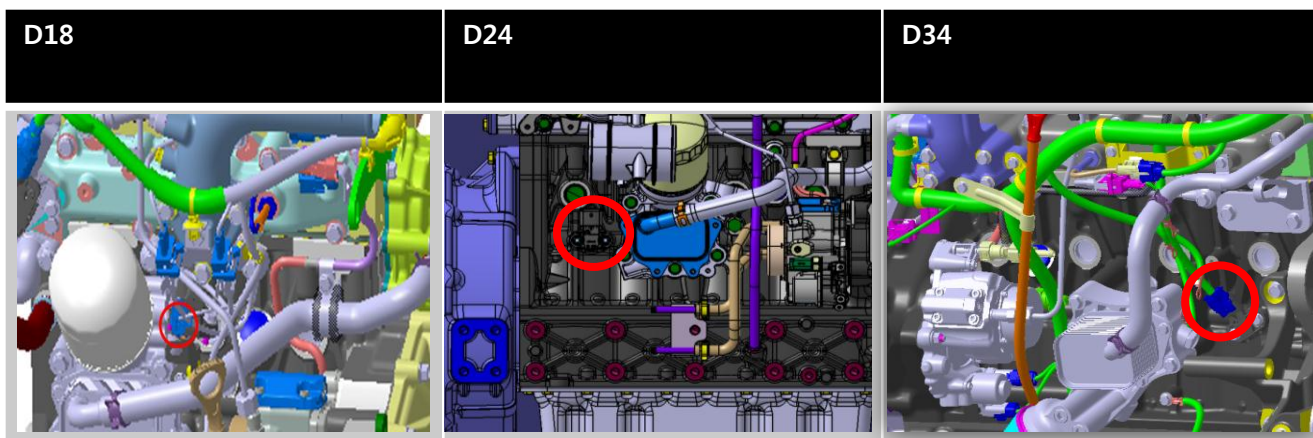
1) Overview

CODE	REASON	EFFECT
E000100-04	Sensor supply voltage problem Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	148	Engine Oil Pressure & Temp Return GND
2	104	Engine Oil Temperature Sensor
3	165	VREF3, Engine Oil Pressure
4	111	Engine Oil Pressure Sensor

2) Location



3) Condition for Running Diagnostic

After engine run

4) Condition for Setting the Fault Code

Oil pressure sensor value is more than minimum operation pressure or At engine run, Oil pressure sensor value is more than minimum calibration range

5) Condition for Clearing the Fault Code

Oil pressure sensor value is in the operation range or
At engine run, Oil pressure sensor value is in calibration range

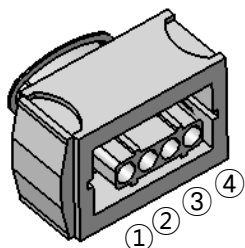
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0522 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0523	Oil Pressure Sensor High Fault

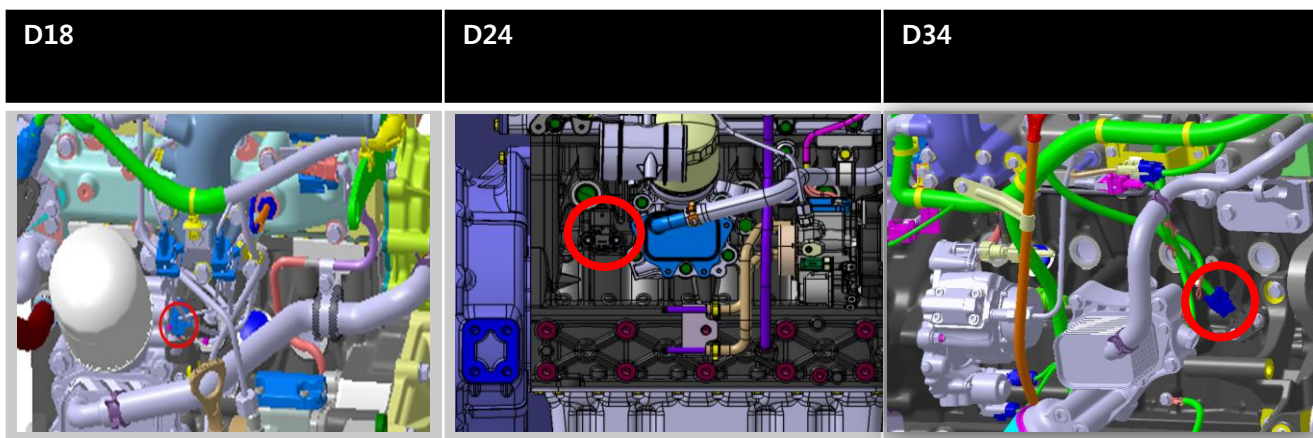
1) Overview

CODE	REASON	EFFECT
E000100-03	Sensor supply voltage problem Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	148	Engine Oil Pressure & Temp Return GND
2	104	Engine Oil Temperature Sensor
3	165	VREF3, Engine Oil Pressure
4	111	Engine Oil Pressure Sensor

2) Location



3) Condition for Running Diagnostic

After engine run

4) Condition for Setting the Fault Code

Oil pressure sensor value is more than maximum operation pressure or At engine run, Oil pressure sensor value is more than maximum calibration range

5) Condition for Clearing the Fault Code

Oil pressure sensor value is in the operation range or
 At engine run, Oil pressure sensor value is in calibration range

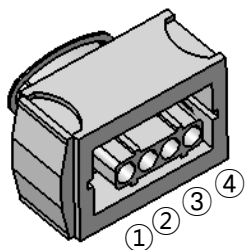
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0523 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0524	Oil Pressure Low Fault

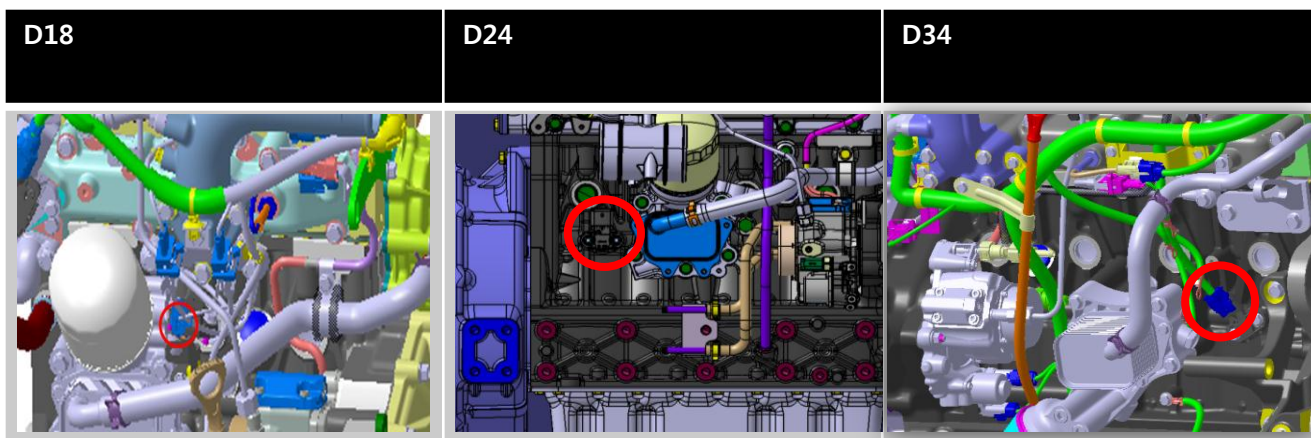
1) Overview

CODE	REASON	EFFECT
E000100-01	Oil pressure is below the threshold value in main gallery of engine cylinder block During engine running.	CE lamp Flashing Torque Reduction Lv1 Delay engine stop



No	ECU Pin	Description
1	148	Engine Oil Pressure & Temp Return GND
2	104	Engine Oil Temperature Sensor
3	165	VREF3, Engine Oil Pressure
4	111	Engine Oil Pressure Sensor

2) Location



3) Condition for Running Diagnostic

After engine run

4) Condition for Setting the Fault Code

After engine run, oil pressure sensor value is below the threshold value

5) Condition for Clearing the Fault Code

After engine run, oil pressure sensor value is within the normal range, fault is cleared

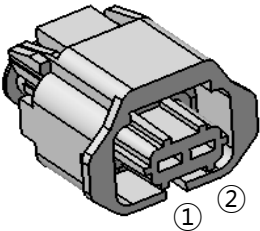
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0524 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check the engine oil level in the oil pan. Oil level is within the specification?		Step 4	Step 6
4	Check the engine oil leakage in oil path. Is there any leakage?		Call Hot-line	Step 5
5	Oil pump damage or oil filter blocked or oil path blocked or oil sensor drift can be suspected.		Call Hot-line	
6	Refill the engine oil and start the engine. Keep low idle during 3minutes. The same fault code is happened from low idle to high idle?		Step 4	Fault is cleared

Fault Code	Fault Name
P0544	Turbine In Temperature Mother & ADC Fault

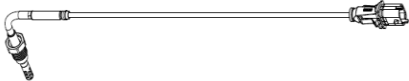
1) Overview

CODE	REASON	EFFECT
P0544 Blink 323	Turbine In Temperature Sensor fault	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Turbine in temperature signal value is out of operation range.

If there is an ADC or Vext fault is set

5) Condition for Clearing the Fault Code

Turbine in temperature signal value is in operation range.

The ADC or Vext fault is restored.

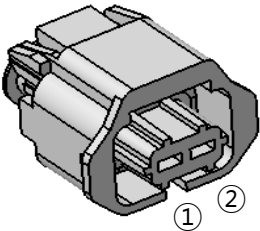
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0544 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P0545	Turbine In Temperature Sensor Low Fault

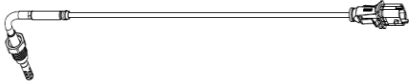
1) Overview

CODE	REASON	EFFECT
E001180-04	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Turbine in temperature signal value is lower than minimum operation range

5) Condition for Clearing the Fault Code

Turbine in temperature signal value is in operation range

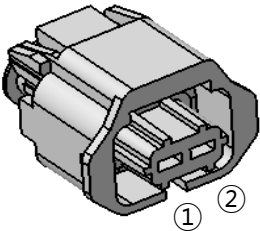
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0545 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0546	Turbine In Temperature Sensor High Fault

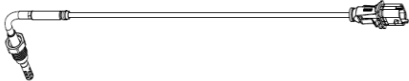
1) Overview

CODE	REASON	EFFECT
E001180-3	Electrical problem Connection problem Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Turbine in temperature signal value is more than maximum operation range

5) Condition for Clearing the Fault Code

Turbine in temperature signal value is in operation range

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0546 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P0562	Battery voltage Low Fault

1) Overview

CODE	REASON	EFFECT
E000168-04	Battery terminal problem Connection problem Battery charge circuit problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	201	Protected Battery
2	203	Protected Battery
3	205	Protected Battery
4	202	Power Ground
5	204	Power Ground
6	206	Power Ground

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Battery voltage is less than minimum operation voltage

4) Condition for Clearing the Fault Code

Battery voltage is in operation range (9V~16V)

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0562 is occurred on diagnostic tool?		Step 2	
2	Check battery voltage at Key On Battery problem?		Charge battery	Step 3
3	Check the battery terminals, tightening the lugs, absence of oxidation, absence of consumers (with an Ohm-meter) Battery connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check resistance between vehicle chassis ground and ECU ground Resistance too high?		Fix ECU ground	Step 6
6	Check battery charge circuit Charge circuit problem?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P0563	Battery Voltage High Fault

1) Overview

CODE	REASON	EFFECT
E000168-03	Battery terminal problem Connection problem Battery charge circuit problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	201	Protected Battery
2	203	Protected Battery
3	205	Protected Battery
4	202	Power Ground
5	204	Power Ground
6	206	Power Ground

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Battery voltage is more than maximum operation voltage

4) Condition for Clearing the Fault Code

Battery voltage is in operation range (9V~16V)

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P0563 is occurred on diagnostic tool?		Step 2	
2	Check battery voltage at Key On Battery problem?		Charge battery	Step 3
3	Check the battery terminals, tightening the lugs, absence of oxidation, absence of consumers (with an Ohm-meter) Battery connection problem?		Do necessary repair	Step 4
4	Check ECU connection Connection problem?		Do necessary repair	Step 5
5	Check resistance between vehicle chassis ground and ECU ground Resistance too high?		Fix ECU ground	Step 6
6	Check battery charge circuit Charge circuit problem?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
P0602	Injector Code Program Fault

1) Overview

CODE	REASON	EFFECT
E000630-11	Injector C2I data is not matched or corrupted	CE lamp ON Torque Reduction Lv1 Limp-home mode

2) Condition for Running Diagnostic

Key on

3) Condition for Setting the Fault Code

If the C2I data of ECU is not matched with each injector

4) Condition for Clearing the Fault Code

If the C2I data of ECU is matched with each injector

5) Check list

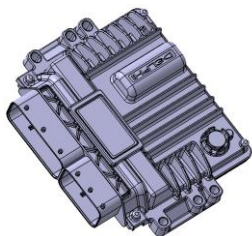
Step	Inspection	Standard Value	YES	NO
1	P0602 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Re-Write (Cxl), respecting power down and up delay and taking care of injector position. Then erase faults Fault disappeared?		Problem solved	Step4
4	Check power relay operation. Relay not operation?		Fix relay or wiring	step5
5	Check ECU connection. Connection problem?		Do necessary repair	step6
6	Check continuity and electrical insulation Electrical problem?		Fix Harness	Call Hot-line

Fault Code	Fault Name
P0603	ECU Memory Fault (Data / Cal Integrity)

1) Overview

CODE	REASON	EFFECT
E000630-23	ECU Memory Data integrity Error	CE lamp Flashing

2) Location



3) Condition for Running Diagnostic

Key on

4) Condition for Setting the Fault Code

When the ECU memory data has corrupted

5) Condition for Clearing the Fault Code

When the ECU memory has no error

6) Check list

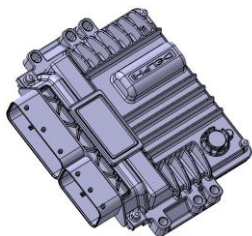
Step	Inspection	Standard Value	YES	NO
1	P0603 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch.		Step 3	
3	Other fault present?		Step 7	Step 4
4	Visually check ECU pins and counterparts in wiring harness Electrical problem?		Do necessary repair	Step 5
5	Check conformity of ground connection of vehicle chassis Electrical problem?		Do necessary repair	Step 6
6	Connection conform Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0604	ECU Memory Fault (RAM Integrity)

1) Overview

CODE	REASON	EFFECT
E000630-24	ECU Memory RAM integrity Error	CE lamp Flashing

2) Location



3) Condition for Running Diagnostic

Key on

4) Condition for Setting the Fault Code

When the ECU memory RAM has corrupted

5) Condition for Clearing the Fault Code

When the ECU memory has no error

6) Check list

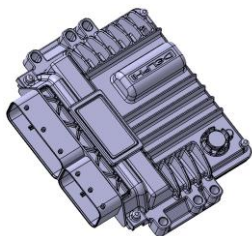
Step	Inspection	Standard Value	YES	NO
1	P0604 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch.		Step 3	
3	Other fault present?		Step 7	Step 4
4	Visually check ECU pins and counterparts in wiring harness Electrical problem?		Do necessary repair	Step 5
5	Check conformity of ground connection of vehicle chassis Electrical problem?		Do necessary repair	Step 6
6	Connection conform Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P0605	ECU Memory Fault (Code Integrity)

1) Overview

CODE	REASON	EFFECT
E000630-25	ECU Memory Code integrity Error	CE lamp Flashing

2) Location



3) Condition for Running Diagnostic

Key on

4) Condition for Setting the Fault Code

When the ECU memory Code has corrupted

5) Condition for Clearing the Fault Code

When the ECU memory has no error

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0605 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch.		Step 3	
3	Other fault present?		Step 7	Step 4
4	Visually check ECU pins and counterparts in wiring harness Electrical problem?		Do necessary repair	Step 5
5	Check conformity of ground connection of vehicle chassis Electrical problem?		Do necessary repair	Step 6
6	Connection conform Problem still present?		Call Hot-line	Problem solved

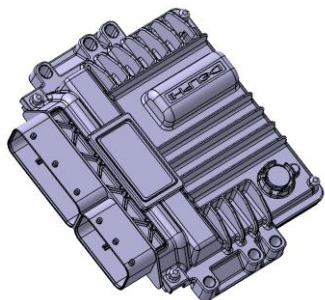
Fault Code	Fault Name
P0641	5V Sensor Supply #1 Fault

1) Overview

CODE	REASON	EFFECT
E003509-11	ECU sensor supply voltage(Vext1) Fault	CE lamp Flashing Torque Reduction Lv0 Engine will be stopped

No	ECU Pin	Description
1		VREF1(Voltage)

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If VREF voltage from ECU is not in normal range, then the fault is set

5) Condition for Clearing the Fault Code

If VREF voltage from ECU is in normal range, then the fault is cleared.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0641 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	DTC of all corresponding sensors connection to this sensor supply voltage (Vext)?		Step4	Step5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Call Hot-Line	Problem solved

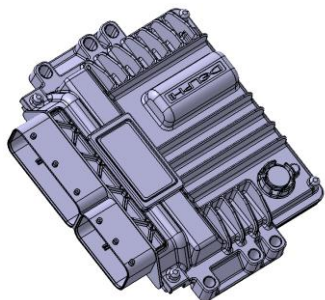
Fault Code	Fault Name
P0651	5V Sensor Supply #2 Fault

1) Overview

CODE	REASON	EFFECT
E003510-11	ECU sensor supply voltage(Vext2) Fault	CE lamp Flashing Torque Reduction Lv0 Engine will be stopped

No	ECU Pin	Description
1		VREF1(Voltage)

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If VREF voltage from ECU is not in normal range, then the fault is set

5) Condition for Clearing the Fault Code

If VREF voltage from ECU is in normal range, then the fault is cleared.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0651 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	DTC of all corresponding sensors connection to this sensor supply voltage (Vext)?		Step4	Step5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Call Hot-Line	Problem solved

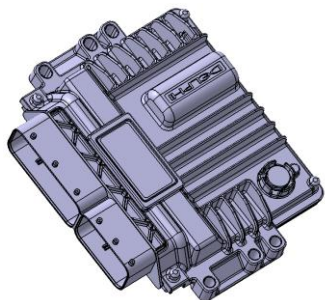
Fault Code	Fault Name
P0685	Main Relay Stuck Fault

1) Overview

CODE	REASON	EFFECT
E001485-07	Electrical problem Connection problem Relay problem	CE lamp ON

No	ECU Pin	Description
1	201	Protected Battery
2	203	Protected Battery
3	205	Protected Battery
4	202	Power Ground
5	204	Power Ground
6	206	Power Ground

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If main relay status to be low state.

If abnormal shutdown happened by battery disconnection

5) Condition for Clearing the Fault Code

When normal shutdown happened and main relay is operating normally.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0685 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Perform relay test routine Test OK?		Call Hot-line	Step 4
4	Check relay connection Connection problem?		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 7
7	Change relay (run ISO cycle) ISO cycle OK?		Problem solved	Call Hot-line

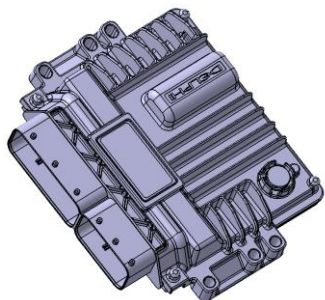
Fault Code	Fault Name
P0697	5V Auxiliary Sensor Supply Fault

1) Overview

CODE	REASON	EFFECT
E003511-11	ECU sensor supply voltage(Vext2) AUX Fault	CE lamp Flashing Torque Reduction Lv0 Engine will be stopped

No	ECU Pin	Description
1		VREF1(Voltage)

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If VREF voltage from ECU is not in normal range, then the fault is set

5) Condition for Clearing the Fault Code

If VREF voltage from ECU is in normal range, then the fault is cleared.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P0697 is occurred on diagnostic tool?		Step2	
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	DTC of all corresponding sensors connection to this sensor supply voltage (Vext)?		Step4	Step5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Call Hot-Line	Problem solved

Fault Code	Fault Name
P0711	Transmission Oil Temperature Fault

1) Overview

CODE	REASON	EFFECT
E000177-15	Transmission oil temperature is too high	CE lamp ON Torque Reduction Lv0

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

Transmission oil temperature is above the operation range

4) Condition for Clearing the Fault Code

Transmission oil temperature is in operation range

5) Check list

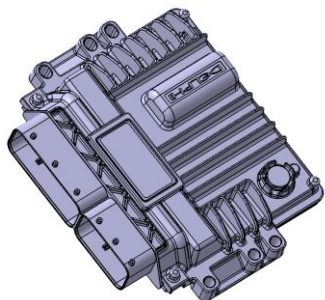
Step	Inspection	Standard Value	YES	NO
1	P0711 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check transmission oil temperature Temp is too high?		Do necessary reset	Call Hot-line

Fault Code	Fault Name
P061B, P1219 P16XX	ECU Safety Monitoring Fault

1) Overview

CODE	REASON	EFFECT
E001221-XX	ECU problem	CE lamp ON Torque Reduction Lv0

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

ECU internal chipset has a problem

5) Condition for Clearing the Fault Code

ECU internal chipset problem is restored.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P061B/P1219/P16XX is occurred on diagnostic tool?		Call Hot-line	

Fault Code	Fault Name
P1650	Check Engine Lamp Fault (SC2G / OC)

1) Overview

CODE	REASON	EFFECT
E000987-04 E000987-05	Electrical problem Connection problem Relay problem	No

No	ECU Pin	Description
1	242	CE Lamp LSD

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

CE Lamp LSD wiring is shorted to ground (E000987-04) or opened (E000987-05)

4) Condition for Clearing the Fault Code

CE Lamp LSD wiring problem is restored

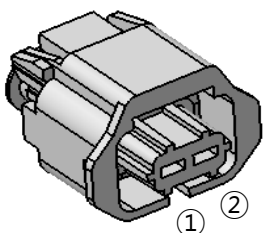
5) Check list

Step	Inspection	Standard Value	YES	NO
1	P1650 is occurred on diagnostic tool?		Step 2	
2	Check battery voltage at Key-on Battery problem?		Change battery	Step 3
3	Check battery connection Battery connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P2080	Turbine In Temperature Plausibility Fault

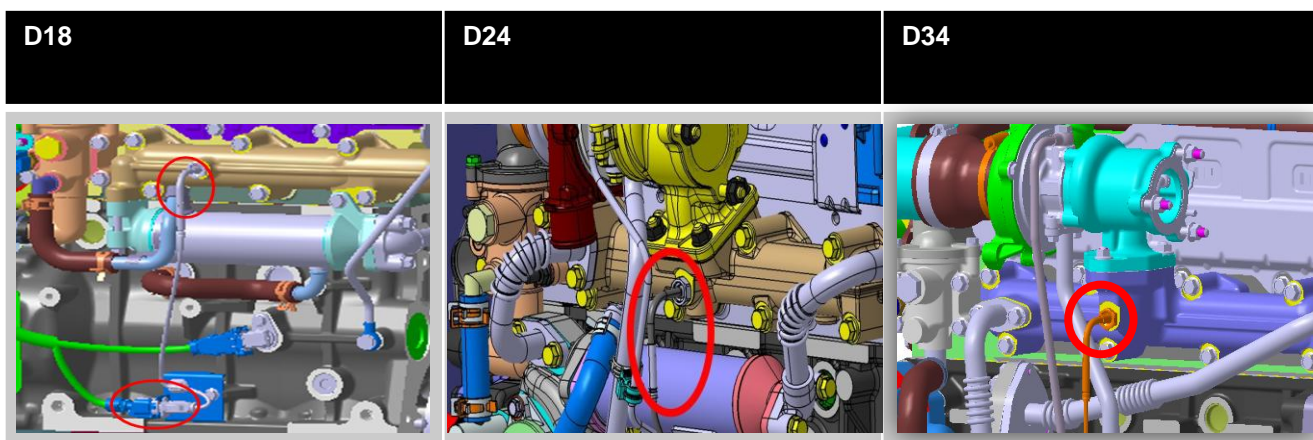
1) Overview

CODE	REASON	EFFECT
E001180-02	Leakage Electrical problem Connection problem Sensor problem	



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



3) Condition for Running Diagnostic

During engine running & DPF regeneration is activated

4) Condition for Setting the Fault Code

If the turbine in temperature is out of the threshold (over mechanical limit), fault code is raised

5) Condition for Clearing the Fault Code

If the turbine in temperature is within the threshold (within mechanical limit), fault code is cleared

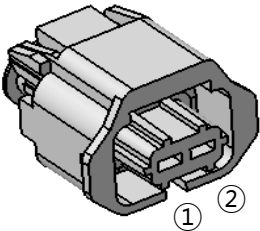
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2080 is raised on machine dashboard?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch.		Step3	
3	Please do visual inspection throughout all air path. (From air cleaner to exhaust manifold including EGR passage, MAP sensor and air heater etc.) Is there any leakage or damaged parts? If you cannot find with your eyes, You can check leakage during engine running in machine stationary condition.		Step4	Step6
4	Please fix the leakage or damaged parts. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 10 minutes. Fault code is cleared?		Step5	Step6
5	Change the turbine in temperature sensor as a normal one. Start the engine and set the RPM in high idle at least 10 minutes. Fault code is cleared?		O.K	Step6

Fault Code	Fault Name
P2081	Turbine In Temperature Sensor Noise Fault

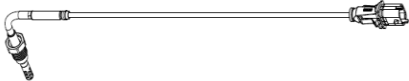
1) Overview

CODE	REASON	EFFECT
E001180-10	Electrical problem Connection problem Sensor problem Noise	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

During engine running

4) Condition for Setting the Fault Code

There is not turbine in temp sensor fault and there is a noise spike on the sensor signal.

(Noise detect: If the absolute difference, comparing the raw actual temp to low pass filtered temp value, exceeds calibration value).

5) Condition for Clearing the Fault Code

The noise spike is restored

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2081 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness		Step 5	
5	Check sensor connection Connection problem?		Do necessary repair	Step 6
6	Check sensor resistance (checking it is coherent with vehicle conditions) if applicable. Resistance problem?		Change sensor	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P2120	Hand Pedal position sensor 1 fault

1) Overview

CODE	REASON	EFFECT
E000029-29	Electrical problem Connection problem Sensor supply problem Accelerator / position sensor problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	162	VREF3 PPS3, (5V)
2	117	Accelerator Hand Pedal Position Sensor 1
3	121	PPS3 Return

2) Location

3) Condition for Running Diagnostic

Key on and engine run

4) Condition for Setting the Fault Code

If the pedal position sensor 1 value is out of calibration range

5) Condition for Clearing the Fault Code

If the pedal position sensor 1 value is in the calibration range

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2120 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2121	Hand Pedal position performance fault

1) Overview

CODE	REASON	EFFECT
E000029-31	Electrical problem Connection problem Sensor supply problem Accelerator / position sensor problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	162	VREF3 PPS3, (5V)
2	117	Accelerator Hand Pedal Position Sensor 1
3	121	PPS3 Return
4	222	VREF4 PPS4, (5V)
5	208	Accelerator Hand Pedal Position Sensor 2
6	220	PPS4 Return

2) Location

3) Condition for Running Diagnostic

Key on and engine run

4) Condition for Setting the Fault Code

If the hand pedal position sensor 1& 2 value is out of calibration range or
If ECU sensor supplies voltage has a problem

5) Condition for Clearing the Fault Code

If the above all fault condition is restored

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2121 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2125	Hand Pedal position sensor 2 fault

1) Overview

CODE	REASON	EFFECT
E000029-30	Electrical problem Connection problem Sensor supply problem Accelerator / position sensor problem	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	222	VREF4 PPS4, (5V)
2	208	Accelerator Hand Pedal Position Sensor 2
3	220	PPS4 Return

2) Location

3) Condition for Running Diagnostic

Key on and engine run

4) Condition for Setting the Fault Code

If the pedal position sensor 2 value is out of calibration range

5) Condition for Clearing the Fault Code

If the pedal position sensor 2 value is in the calibration range

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2125 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2135	Pedal Position Sensor 1,2 Correlation Fault

1) Overview

CODE	REASON	EFFECT
E000091-11	The difference between linearized values of the 2 tracks is less than a calibration value.	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	224	VREF1 PPS1, (5V)
2	225	Accelerator Pedal Position Sensor 1
3	226	PPS1 Return
4	229	VREF2 PPS2, (5V)
5	213	Accelerator Pedal Position Sensor2
6	214	PPS2 Return

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

If the difference between values of dual track pedal is less than a calibration

4) Condition for Clearing the Fault Code

If the difference between values of dual track pedal is in a calibration range

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P2135 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext: Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2138	Hand Pedal position sensor correlation fault

1) Overview

CODE	REASON	EFFECT
E000029-11	The difference between linearized values of the 2 tracks is less than a calibration value.	CE lamp ON Torque Reduction Lv0

No	ECU Pin	Description
1	162	VREF3 PPS3, (5V)
2	117	Accelerator Hand Pedal Position Sensor 1
3	121	PPS3 Return
4	222	VREF4 PPS4, (5V)
5	208	Accelerator Hand Pedal Position Sensor 2
6	220	PPS4 Return

2) Location

3) Condition for Running Diagnostic

Key on and engine run

4) Condition for Setting the Fault Code

If the difference between values of dual track pedal is less than a calibration

5) Condition for Clearing the Fault Code

If the difference between values of dual track pedal is in a calibration range

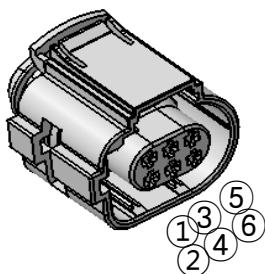
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2138 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2143	EGR H-Bridge Driver OC Fault

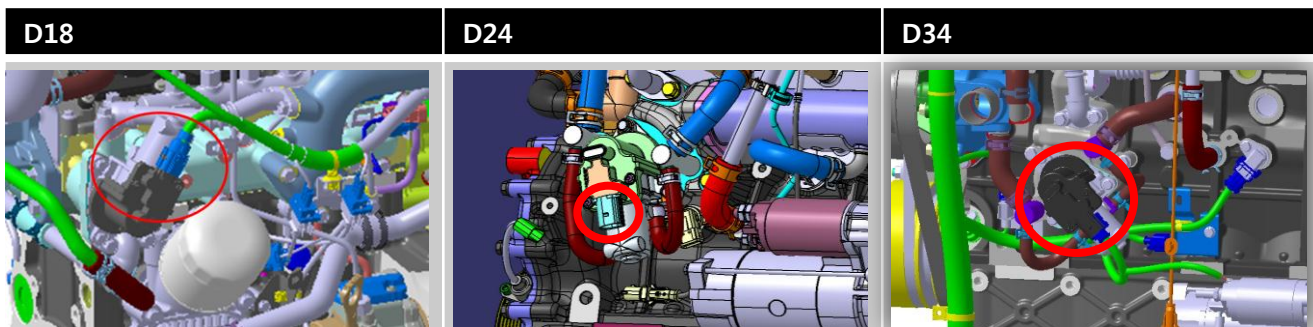
1) Overview

CODE	REASON	EFFECT
E002791-04	EGR H-bridge Driver is shorted to ground	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the pins of EGR H-bridge have been opened then fault code is arisen

5) Condition for Clearing the Fault Code

The fault status is removed

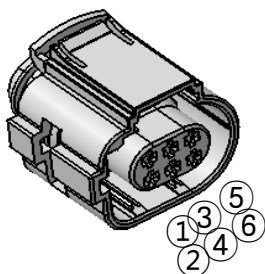
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2143 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2144	EGR H-Bridge Driver SCG Fault

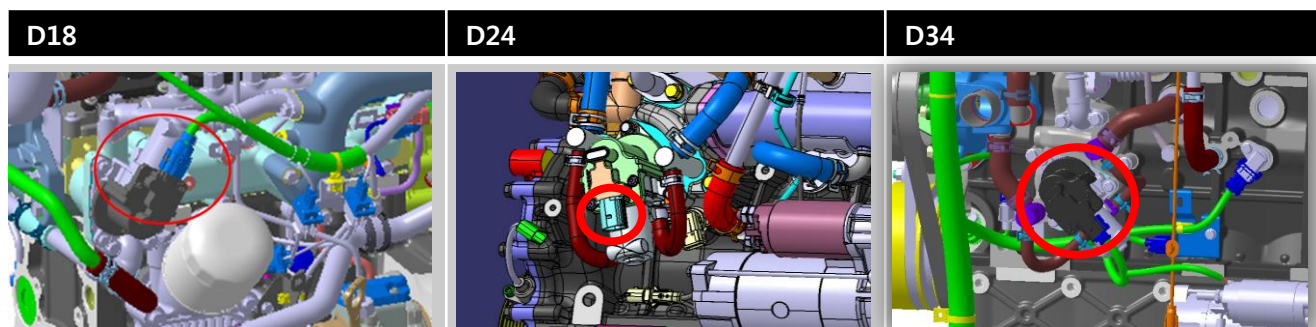
1) Overview

CODE	REASON	EFFECT
E002791-04	EGR H-bridge Driver is shorted to ground	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the pins of EGR H-bridge have been shorted to ground then fault code is arisen

5) Condition for Clearing the Fault Code

The fault status is removed

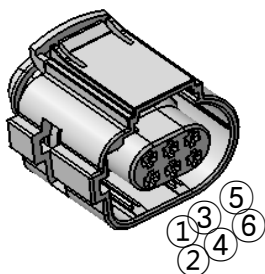
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2144 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2145	EGR H-Bridge Driver SCB Fault

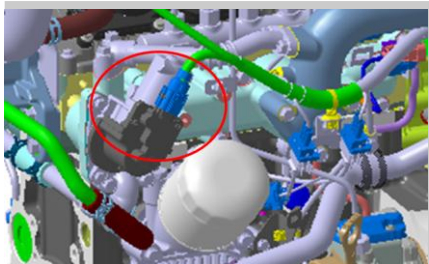
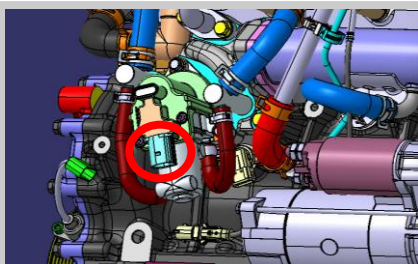
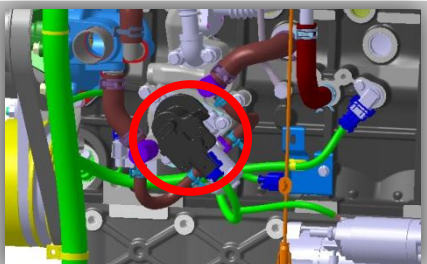
1) Overview

CODE	REASON	EFFECT
E002791-03	EGR H-bridge Driver is shorted to battery	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	193	EGR (H-Bridge Neg)
2	164	EGR, VREF3
3	-	Not used
4	172	EGR Sensor Return GND
5	192	EGR (H-Bridge Pos)
6	116	EGR Position Sensor Signal

2) Location

D18	D24	D34
		

3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If the pins of EGR H-bridge have been shorted to battery then fault code is arisen.

5) Condition for Clearing the Fault Code

The fault status is removed

6) Check list

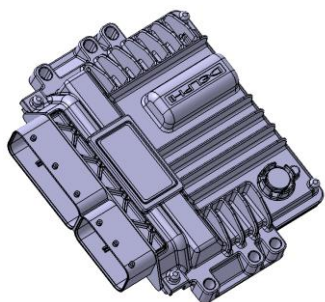
Step	Inspection	Standard Value	YES	NO
1	P2145 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	VEXT fault present?		Step 4	Step 5
4	Problem with one of these sensors causing loss of Vext : Disconnect sensors one by one checking if fault disappear to find which one is faulty. If None is found faulty, check short circuit and isolation of Vext lines on the harness			
5	Connection conform Problem still present?		Do necessary repair	Step 6
6	Visually check device Device problem?		Change device	Step 7
7	Check ECU connection Connection problem?		Do necessary repair	Step 8
8	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 9
9	Change device Problem still present?		Call Hot-line	Problem solved

Fault Code	Fault Name
P2226	Atmospheric Pressure Ex

1) Overview

CODE	REASON	EFFECT
P2226 Blink 421	Atmospheric Pressure sensor electrical level Fault.	CE lamp ON Torque Reduction

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If there is any AD converter error is detected

5) Condition for Clearing the Fault Code

The ADC fault is restored.

6) Check list

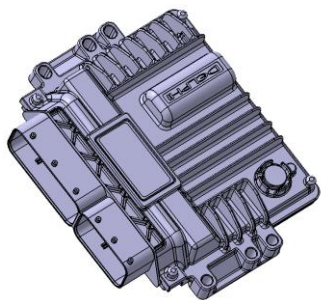
Step	Inspection	Standard Value	YES	NO
1	P2226 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check ECU connection Connection problem?		Do necessary repair	Step 4
4	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P2228	Atmospheric Sensor Low Fault

1) Overview

CODE	REASON	EFFECT
E000108-04	ECU problem Atmospheric pressure sensor problem	CE lamp ON Torque Reduction Lv0

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Atmospheric Pressure value is more than Maximum operation pressure

5) Condition for Clearing the Fault Code

Atmospheric Pressure value is in operation pressure

6) Check list

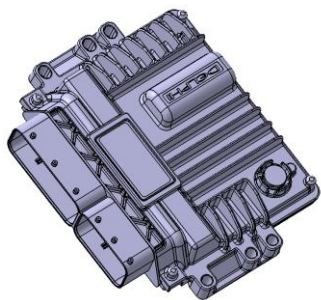
Step	Inspection	Standard Value	YES	NO
1	P2228 is occurred on diagnostic tool?		Call Hot-line	

Fault Code	Fault Name
P2229	Atmospheric Sensor High Fault

1) Overview

CODE	REASON	EFFECT
E000108-03	ECU problem Atmospheric pressure sensor problem	CE lamp ON Torque Reduction Lv0

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Atmospheric Pressure value is more than Maximum operation pressure

5) Condition for Clearing the Fault Code

Atmospheric Pressure value is in operation pressure

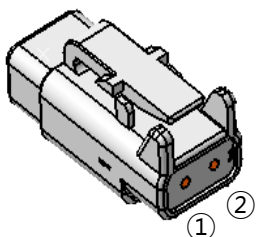
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2229 is occurred on diagnostic tool?		Call Hot-line	

Fault Code	Fault Name
P2264	Water In Fuel Feedback Set/Ex fault

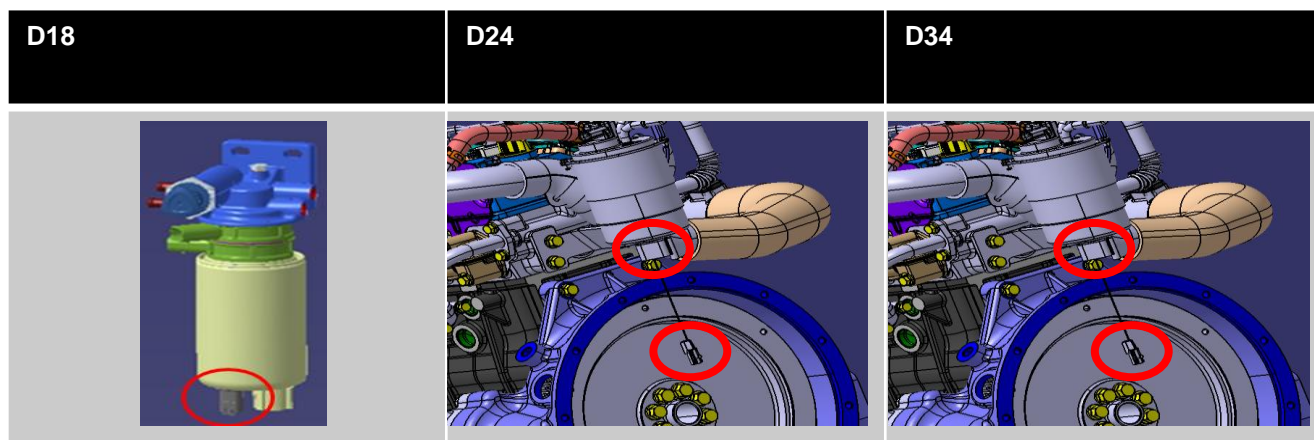
1) Overview

CODE	REASON	EFFECT
P2264 Blink 352	Water in Fuel sensor electrical level Fault.	CE lamp ON Torque Reduction



No	ECU Pin	Description
1	209	Water In Fuel Sensor
2	234	WIF Return

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If there is any AD converter error is detected.

If there is any WIF electrical error is detected

5) Condition for Clearing the Fault Code

The ADC fault is restored.

WIF electrical error is removed.

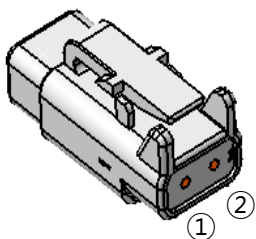
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2264 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary re pair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary re pair	Step 5
5	Check ECU connection Connection problem?		Do necessary re pair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P2266	Water In Fuel Sensor SCG Fault

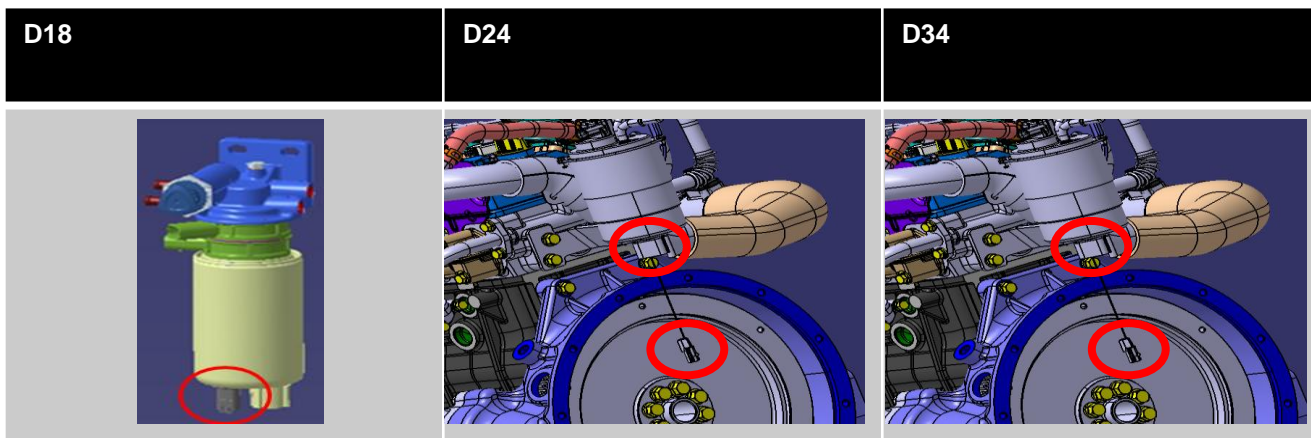
1) Overview

CODE	REASON	EFFECT
E000097-04	Electrical problem Connection problem Sensor problem	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	209	Water In Fuel Sensor
2	234	WIF Return

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Water in Fuel Feedback value is less than maximum operation position

5) Condition for Clearing the Fault Code

Water in Fuel Feedback value is in operation range

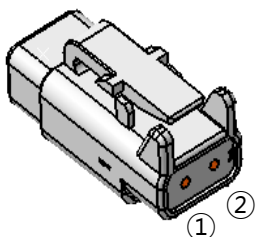
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2266 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Empty filter to remove water		Step 4	
4	Water presence?		Problem solved	Step 5
5	Check presence of electrical default on water sensor. Electrical problem?		Do necessary repair	Step 6
6	Check water sensor connection. Connection problem?		Do necessary repair	Step 7
7	Check water sensor variables Resistance problem?		Change water sensor	Step 8
8	Check ECU connection Connection problem?		Do necessary repair	Step 9
9	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P2267	Water In Fuel Sensor OC/SCB Fault

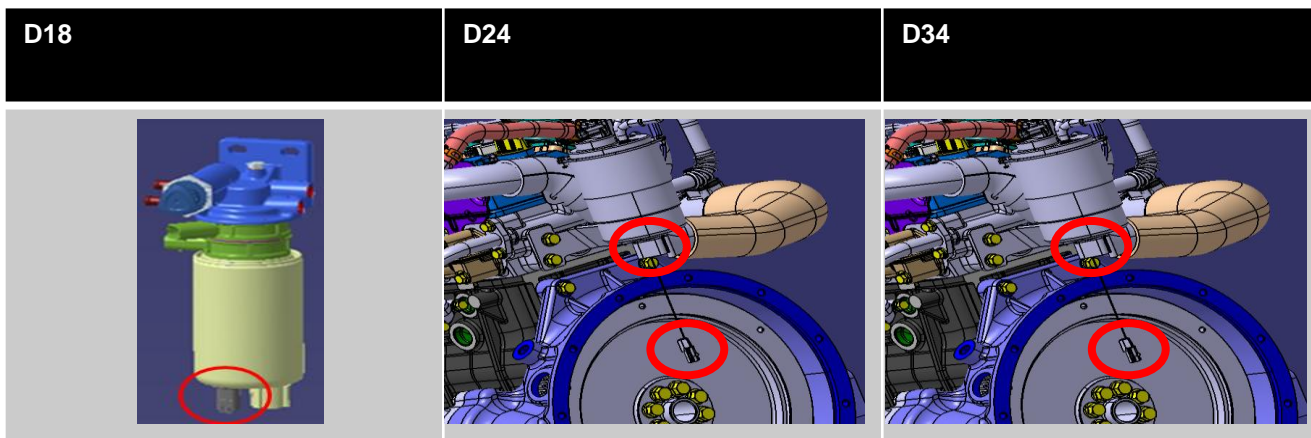
1) Overview

CODE	REASON	EFFECT
E000097-03	Electrical problem Connection problem Sensor problem	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	209	Water In Fuel Sensor
2	234	WIF Return

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

Water in Fuel Feedback value is less than maximum operation position

5) Condition for Clearing the Fault Code

Water in Fuel Feedback value is in operation range

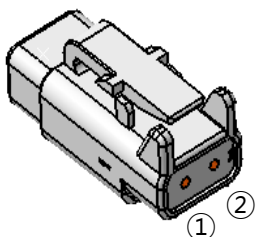
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2267 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Empty filter to remove water		Step 4	
4	Water presence?		Problem solved	Step 5
5	Check presence of electrical default on water sensor. Electrical problem?		Do necessary repair	Step 6
6	Check water sensor connection. Connection problem?		Do necessary repair	Step 7
7	Check water sensor variables Resistance problem?		Change water sensor	Step 8
8	Check ECU connection Connection problem?		Do necessary repair	Step 9
9	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P2269	Water In Fuel Detected Fault

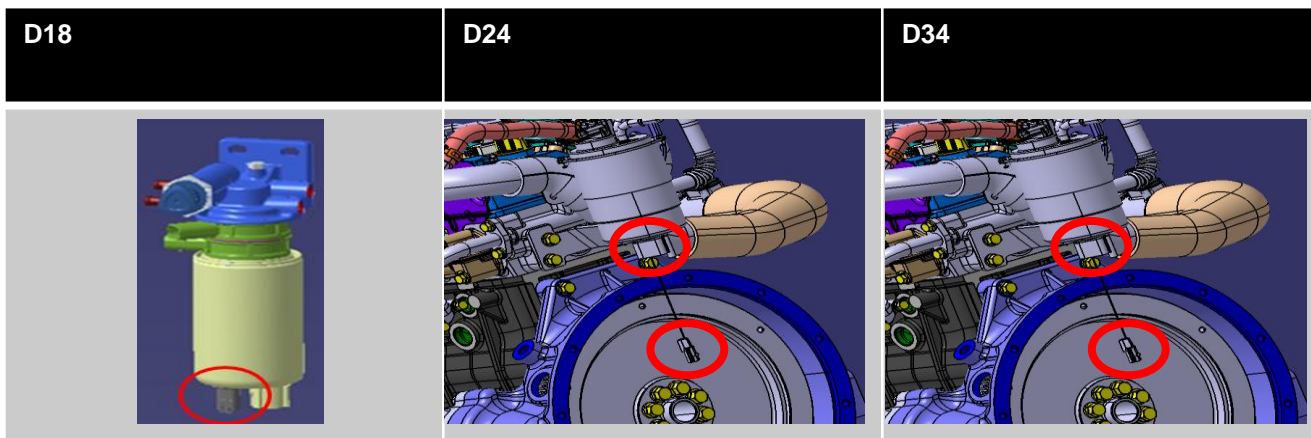
1) Overview

CODE	REASON	EFFECT
E000097-31	Electrical problem Connection problem Sensor problem Water in fuel state	CE lamp Flashing Torque Reduction Lv1



No	ECU Pin	Description
1	209	Water In Fuel Sensor
2	234	WIF Return

2) Location



3) Condition for Running Diagnostic

Key on or engine run

4) Condition for Setting the Fault Code

If there is water in fuel

5) Condition for Clearing the Fault Code

Water in fuel is removed

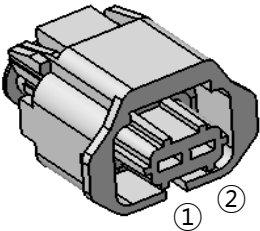
6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2269 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Empty filter to remove water		Step 4	
4	Water presence?		Problem solved	Step 5
5	Check presence of electrical default on water sensor. Electrical problem?		Do necessary repair	Step 6
6	Check water sensor connection. Connection problem?		Do necessary repair	Step 7
7	Check water sensor variables Resistance problem?		Change water sensor	Step 8
8	Check ECU connection Connection problem?		Do necessary repair	Step 9
9	Check continuity and electrical insulation Electrical problem?		Fix harness	Call Hot-line

Fault Code	Fault Name
P2428	Exhaust Over Temperature Fault

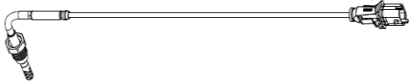
1) Overview

CODE	REASON	EFFECT
E000173-00	Leakage Sensor problem	CE lamp ON Torque Reduction Lv0



No	ECU Pin	Description
1	123	Exhaust gas temp 2 (Pre-Turbo), Return
2	106	Exhaust gas temp 2 (Pre-Turbo), Signal

2) Location



D18

D24

D34

3) Condition for Running Diagnostic

During engine running & DPF regeneration is activated

4) Condition for Setting the Fault Code

If the turbine in temperature is out of the threshold (over mechanical limit), fault code is raised

5) Condition for Clearing the Fault Code

If the turbine in temperature is within the threshold (within mechanical limit), fault code is cleared

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2428 is raised on diagnostic tool?		Step2	O.K
2	After let the machine be in safety area and turn-off the key switch		Step3	
3	Please do visual inspections between air-filter and exhaust manifold (throughout all air path). Is there any leakage? If you cannot find with your eyes, You can check leakage during engine running with high idle in machine stationary condition. You have to record IN_Turbine_in_temp with high idle condition.		Step4	Step6
4	Please fix the leakage. After fix the problem, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 3 minutes. Please record IN_Turbine_in_temp with high idle condition. IN_Turbine_in_temp gets lower after fixing the leakage? Fault code is cleared?		Step5	Step6
5	Operate the machine what you want to do and please check IN_Turbine_in_temp. Fault code is not occurred again?		O.K	Step6
6	Please check the pressure drop after air filter. Is there any clogging or blocking air filter with dust? If pressure drop is out of spec [-5kPa] with rated power , please change the air filter cartridge. After change the air filter cartridge, start the engine and change the RPM from low idle to high idle. Please keep the RPM as a high idle at least 3 minutes. Please record IN_Turbine_in_temp with high idle condition. IN_Turbine_in_temp gets lower after changing the cartridge? Fault code is cleared?		Step5	Call Hot line
7	P2428 is raised on diagnostic tool?		Step2	O.K
8	After let the machine be in safety area and turn-off the key switch		Step3	

Fault Code	Fault Name
P2463	Service DeSOx Needed Fault

1) Overview

CODE	REASON	EFFECT
E000081-07	DeSOx problem	Torque Reduction Lv2

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

If the DeSOx can't be performed correctly

4) Condition for Clearing the Fault Code

If the DeSOx can be performed correctly

5) Check list

Step	Inspection	Standard Value	YES	NO
1	P2463 is occurred on diagnostic tool?		Step 2	
2	Press the DeSox switch		Problem solved	Call Hot-line

Fault Code	Fault Name
P2544	Multi torque switch ADC fault

1) Overview

CODE	REASON	EFFECT
P2544 Blink 433	Multi torque switch has electrical problem (ADC, noise)	CE lamp ON

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

If there is any AD converter error is detected

5) Condition for Clearing the Fault Code

The ADC fault is restored.

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2544 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check switch connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P2546	Multi torque switch Lo fault

1) Overview

CODE	REASON	EFFECT
P2546 Blink 433	Multi torque switch is shorted to battery	CE lamp ON

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

Multi torque switch voltage is less than minimum operation range (SC2G)

5) Condition for Clearing the Fault Code

Multi torque switch voltage is in operation range .

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2546 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
P2547	Multi torque switch Hi fault

1) Overview

CODE	REASON	EFFECT
P2547 Blink 433	Multi torque switch is shorted to battery	CE lamp ON

2) Location



3) Condition for Running Diagnostic

Key ON or Engine Run

4) Condition for Setting the Fault Code

Multi torque switch voltage is more than maximum operation range (SC2V)

5) Condition for Clearing the Fault Code

Multi torque switch voltage is in operation range .

6) Check list

Step	Inspection	Standard Value	YES	NO
1	P2547 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check sensor connection Connection problem?		Do necessary repair	Step 4
4	Check the wire harness? Connection problem? (pin to pin)		Do necessary repair	Step 5
5	Check ECU connection Connection problem?		Do necessary repair	Step 6
6	Check continuity and electrical isolation Electrical problem?		Fix wire harness	Call Hot-line

Fault Code	Fault Name
U0100	CAN communication error: CAN bus confirmed off

1) Overview

CODE	REASON	EFFECT
E000639-19	Electrical problem Connection problem Network problem	CE lamp ON Delay engine stop

No	ECU Pin	Description
1	248	CAN Hi
2	247	CAN Lo

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

CAN Bus OFF

4) Condition for Clearing the Fault Code

CAN Bus Repair

5) Check list

Step	Inspection	Standard Value	YES	NO
1	U0100 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check ECU connection Connection problem?		Do necessary repair	Step 4
4	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 5
5	Check Network Network problem?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
U0140	J1939 CAN Pedal Fault

1) Overview

CODE	REASON	EFFECT
E000091-19	Electrical problem Connection problem Network problem	CE lamp Flashing Limp-home mode

No	ECU Pin	Description
1	248	CAN Hi
2	247	CAN Lo

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

J1939 EEC2 message is not coming during specific time threshold

4) Condition for Clearing the Fault Code

J1939 EEC2 message is coming as normally

5) Check list

Step	Inspection	Standard Value	YES	NO
1	U0140 is happened on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check ECU connection Connection problem?		Do necessary repair	Step 3
4	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 4
5	Check Network Network problem?		Do necessary repair	Call Hot-line

Fault Code	Fault Name
U0140	Timeout of CM1 (Service DeSOx Switch)

1) Overview

CODE	REASON	EFFECT
E000639-19	Electrical problem Connection problem Service DeSOx switch problem Network problem	CE lamp Flashing Torque Reduction Lv1

No	ECU Pin	Description
1	248	CAN Hi
2	247	CAN Lo

2) Condition for Running Diagnostic

Key on or engine run

3) Condition for Setting the Fault Code

When no one receives the transmitted frame within the time duration

4) Condition for Clearing the Fault Code

When someone receives the transmitted frame within the time duration

5) Check list

Step	Inspection	Standard Value	YES	NO
1	U0140 is occurred on diagnostic tool?		Step 2	
2	After let the machine be in safety area and turn-off the key switch		Step 3	
3	Check ECU connection Connection problem?		Do necessary repair	Step 4
4	Check service DeSOx switch Switch problem?		Do necessary repair	Step 5
5	Check continuity and electrical insulation Electrical problem?		Fix harness	Step 6
6	Check Network Network problem?		Do necessary repair	Call Hot-line