DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P110A	High HFM OBD diagnosis signal	- Air mass flow value from HFM is higher than air mass temperature and other control values. - Check the ECU wiring harness (open and poor contact). - Actual air mass flow vs. output voltages • -20 kg/h: 0.47 V • 0 kg/h: 0.99 V • 10 kg/h: 1.2226 ~ 1.2398 V • 15 kg/h: 1.3552 ~ 1.3778 V • 30 kg/h: 1.6783 ~ 1.7146 V • 60 kg/h: 2.1619 ~ 2.2057 V • 120 kg/h: 2.7215 ~ 2.7762 V • 250 kg/h: 3.4388 ~ 3.5037 V • 370 kg/h: 3.8796 ~ 3.9511 V • 480 kg/h: 4.1945 ~ 4.2683 V • 640 kg/h: 4.5667 ~ 4.6469 V - Replace the ECU if required.						o
P110B	Low HFM OBD diagnosis signal	- Air mass flow value from HFM is lower than air mass temperature and other control values. - Check the air cleaner condition and intake air leakage. - Check the ECU wiring harness (open and poor contact). - Actual air mass flow vs. output voltages • -20 kg/h: 0.47 V • 0 kg/h: 0.99 V • 10 kg/h: 1.2226 ~ 1.2398 V • 15 kg/h: 1.3552 ~ 1.3778 V • 30 kg/h: 1.6783 ~ 1.7146 V • 60 kg/h: 2.1619 ~ 2.2057 V • 120 kg/h: 2.7215 ~ 2.7762 V • 250 kg/h: 3.4388 ~ 3.5037 V • 370 kg/h: 3.8796 ~ 3.9511 V • 480 kg/h: 4.1945 ~ 4.2683 V • 640 kg/h: 4.5667 ~ 4.6469 V - Replace the ECU if required.						o

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1115	Coolant Temperature Sensor Malfunction	- Implausible values of coolant temperature (If the temperature is below the limits values after warm up). - If Fuel temperature is invalid, the previous coolant temperature is retained. - Check the supply voltage to sensor. - Actual air temp. vs. Resistance • 20°C: 2449 Ω • 50°C: 826.3 Ω • 80°C: 321.4 Ω • 100°C: 112.9 Ω - Check the wiring harness (open, short and poor contact). - Visually check the sensor and replace if required. - Check the thermostat, water pump radiator related coolant route (thermostat stuck). - Replace the ECU if required.						
P1120	Accelerator Pedal Sensor #1 Malfunction	- The potentiometer 1 is not plausible with potentiometer 2. - Check the supply voltage to sensor. - Check the wiring harness. - Check the accelerator pedal module. - Check the ECU wiring harness. - Replace the ECU if required.	o					o
P1121	Accelerator Pedal Sensor #2 Malfunction	- The potentiometer 1 is not plausible with potentiometer 2. - Check the supply voltage to sensor. - Check the wiring harness. - Check the accelerator pedal module. - Check the ECU wiring harness. - Replace the ECU if required.	o					o
P1122	Accelerator Pedal Sensor Malfunction (Limp Home Mode)	- When triggering limp home mode. - Check the supply voltage to sensor. - Check the wiring harness. - Check the accelerator pedal module. - Check the ECU wiring harness. - Replace the ECU if required.					o	o
P1123	Accelerator Pedal Sensor Malfunction (Torque Mode)	- When triggering reduced torque mode. - Check the supply voltage to sensor. - Check the wiring harness. - Check the accelerator pedal module. - Check the ECU wiring harness. - Replace the ECU if required	o					o

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1124	Accelerator Pedal Sensor Malfunction - Stuck	- The accelerator pedal sensor is stuck. - Check the brake switch wiring harness and operations. - Check the accelerator pedal operations. - Check the accelerator pedal module. - Check the ECU wiring harness. - Replace the ECU if required.					o	o
P1148	Accelerometer (Knock Sensor) Learning Fault	- Check if the MDP is successful. - Check the accelerometer (knock sensor) sensor and wiring harness. - Replace the ECU if required.		o				
P1149	Too High Water Level in Fuel Filter	- Drain the water from fuel filter.		o				
P1149	Excessive water in fuel filter	- Drain water from the fuel filter.		o	Fuel warning lamp: OFF Water separator warning lamp ON			
P1170	Torque Trim Fault - High	- Refer to P0372.						
P1171	#1 Injector MDP Malfunction	- The #1 injector MDP is faulty. - Replace the injector and perform C2I/C3I coding again.						
P1172	#2 Injector MDP Malfunction	- The #2 injector MDP is faulty. - Replace the injector and perform C2I/C3I coding again.						
P1173	#3 Injector MDP Malfunction	- The #3 injector MDP is faulty. - Replace the injector and perform C2I/C3I coding again.						
P1174	#4 Injector MDP Malfunction	- The #4 injector MDP is faulty. - Replace the injector and perform C2I/C3I coding again.						
P1175	#5 Injector MDP Malfunction	- The #5 injector MDP is faulty. - Replace the injector and perform C2I/C3I coding again.						
P1190	Fuel Rail Pressure Sensor Initial Signal Fault	- The rail pressure sensor initial values are higher or lower than specified values with the ignition “ON”. • Maximum sensing values: 90 bar (Short) • Minimum sensing values: - 90 bar (Open) - Check the supply voltage to sensor. • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the sensor and ECU wiring harness. • Check the fuel rails and high pressure pipes for leaks. - Check the fuel rail pressure sensor. - Replace the ECU if required.	o					o

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1191	Pressure Build Up - Too Slow	- The pressure build up during cranking is too slow. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel lines. • Check the fuel level in fuel tank. • Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o
P1192	Fuel Rail Pressure Sensor Initial Signal Fault - Low	- The rail pressure sensor initial values are lower than specified values with the ignition “ON”. • Minimum sensing values: - 90 bar (Open) - Check the supply voltage to sensor. • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the sensor and ECU wiring harness. • Check the fuel rails and high pressure pipes for leaks. - Check the fuel rail pressure sensor. - Replace the ECU if required.	o					o

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1193	Fuel Rail Pressure Sensor Initial Signal Fault - High	- The rail pressure sensor initial values are higher than specified values with the ignition "ON". • Maximum sensing values: 90 bar (Short) - Check the supply voltage to sensor. • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the sensor and ECU wiring harness. • Check the fuel rails and high pressure pipes for leaks. - Check the fuel rail pressure sensor. - Replace the ECU if required.	o					o
P1201	Injector #1 Circuit Short	- Injector #1 circuit malfunction: Short. • If the trouble recurs with the injector removed, replace the injector. Perform C2I/C3I coding and check again. • If the trouble does not recur, check the wiring harness between the injector and ECU. - Replace the ECU if required.						
P1202	Injector #2 Circuit Short	- Injector #2 circuit malfunction: Short. • If the trouble recurs with the injector removed, replace the injector. Perform C2I/C3I coding and check again. • If the trouble does not recur, check the wiring harness between the injector and ECU. - Replace the ECU if required.						
P1203	Injector #3 Circuit Short	- Injector #3 circuit malfunction: Short. • If the trouble recurs with the injector removed, replace the injector. Perform C2I/C3I coding and check again. • If the trouble does not recur, check the wiring harness between the injector and ECU. - Replace the ECU if required.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1204	Injector #4 Circuit Short	- Injector #4 circuit malfunction: Short. • If the trouble recurs with the injector removed, replace the injector. Perform C2I/C3I coding and check again. • If the trouble does not recur, check the wiring harness between the injector and ECU. - Replace the ECU if required.						
P1205	Injector #5 Circuit Short	- Injector #5 circuit malfunction: Short. • If the trouble recurs with the injector removed, replace the injector. Perform C2I/C3I coding and check again. • If the trouble does not recur, check the wiring harness between the injector and ECU. - Replace the ECU if required.						
P1234	VGT Operation Fault (High)	- The boost pressure control is faulty. - Check the air intake system. - Check the supply voltage to sensor. - Check the wiring harness and the ECU wiring harness. - Replace the ECU if required.	o					
P1235	VGT Operation Fault	- The boost pressure control is faulty. - Check the air intake system. - Check the supply voltage to sensor. - Check the wiring harness and the ECU wiring harness. - Replace the ECU if required.	o					o
P1252	Too High IMV Pressure	- The rail pressure is excessively high. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1253	Minimum Rail Pressure Control Malfunction (IMV Fault)	- Rail pressure faults: Too low - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the high pressure fuel lines, fuel rails and high pressure pipes for leaks. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel pressure lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o
P1254	Maximum Rail Pressure Control Malfunction (IMV Fault)	- Rail pressure faults: Too high - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the high pressure fuel lines, fuel rails and high pressure pipes for leaks. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel pressure lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1256	Too Small Transfer Pressure Fuel in Rail Pressure System	- Rail pressure fault: IMV current trim too high, drift. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel pressure lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o
P1257	Too Large Transfer Pressure Fuel in Rail Pressure System	- Rail pressure fault: IMV current trim too high, drift. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel pressure lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1258	Too Small High Pressure Fuel in Rail Pressure System	- Rail pressure fault: IMV current trim too high, drift. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o
P1259	Too Large High Pressure Fuel in Rail Pressure System	- Rail pressure fault: IMV current trim too high, drift. - Check the IMV wiring harness. - Check the ECU wiring harness. - Check the rail pressure sensor. • Supply voltage: 5 ± 0.1 V • Output voltage at 1600 bar: 4.055 ± 0.125 V • Output voltage at atmospheric pressure: 0.5 ± 0.04 V - Check the transfer pressure fuel lines. • Check the fuel level in fuel tank. Check the fuel system for air influx. • Check the fuel filter specification. - Check the high pressure fuel system. • Check the fuel rails and high pressure pipes for leaks. - Check the IMV resistance: 5.44 Ω • When out of specified value: replace high pressure pump and IMV - Replace the ECU if required.						o

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1260	Too high IMV Driving Current	- Abnormal rail pressure, IMV CURRENT TRIM TOO HIGH, DRIFT - Check the IMV wiring harnesses. - Check the ECU wiring harnesses. • Check ECU's pin A76 for open and short. - Check the Rail pressure sensor. • Supply voltage: 5 ± 0.1V • Output voltage at 1600 bar: 4.055 ± 0.125V • Output voltage at atmospheric pressure: 0.5 ± 0.04V - Check low-pressure fuel system. • Check fuel in fuel reservoir and air penetration. • Check fuel filter's specification. - Check high-pressure fuel system. • Check fuel rail and high-pressure pipe for leaks. - Check IMV's resistance (5.44 Ω). • If the resistance is out of specification, replace the high-pressure pump and IMV.						o
P1286	Low Resistance for Injector #1 wiring harness	- Out of range about wiring harness resistance for Injector #1. • Low: Less than 0.150 Ω (injector circuit open) - Check the injector #1 wiring harness and electric isolation. - Check the injector #1 wiring harness for open circuit. • If the pin in injector #1 is defective, replace injector #1 and perform C2I/C3I coding, then check again. • If the pin in injector #1 is not defective, check the ECU wiring harness. - Replace the ECU if required.						
P1287	High Resistance for Injector #1 wiring harness	- Out of range about wiring harness resistance for Injector #1. • High: More than 0.573 Ω (injector circuit short) - Check the injector #1 wiring harness and electric isolation. - Check the injector #1 wiring harness for short circuit. • If the trouble still exists after removing the injector connector, replace injector #1 and perform C2I/C3I coding, then check again. • If the trouble is fixed after removing the injector connector, check the wiring harness between ECU and injector. - Replace the ECU if required.						

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1288	Low Resistance for Injector #2 wiring harness	- Out of range about wiring harness resistance for Injector #2. • Low: Less than 0.150 Ω (injector circuit open) - Check the injector #2 wiring harness and electric isolation. - Check the injector #2 wiring harness for open circuit. • If the pin in injector #2 is defective, replace injector #2 and perform C2I/C3I coding, then check again. • If the pin in injector #2 is not defective, check the ECU wiring harness. - Replace the ECU if required.						
P1289	High Resistance for Injector #2 wiring harness	- Out of range about wiring harness resistance for Injector #2. • High: More than 0.573 Ω (injector circuit short) - Check the injector #2 wiring harness and electric isolation. - Check the injector #2 wiring harness for short circuit. • If the trouble still exists after removing the injector connector, replace injector #2 and perform C2I/C3I coding, then check again. • If the trouble is fixed after removing the injector connector, check the wiring harness between ECU and injector. - Replace the ECU if required.						
P1290	Low Resistance for Injector #3 wiring harness	- Out of range about wiring harness resistance for Injector #3. • Low: Less than 0.150 Ω (injector circuit open) - Check the injector #3 wiring harness and electric isolation. - Check the injector #3 wiring harness for open circuit. • If the pin in injector #3 is defective, replace injector #3 and perform C2I/C3I coding, then check again. • If the pin in injector #3 is not defective, check the ECU wiring harness. - Replace the ECU if required.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1291	High Resistance for Injector #3 wiring harness	- Out of range about wiring harness resistance for Injector #3. • High: More than 0.573 Ω (injector circuit short) - Check the injector #3 wiring harness and electric isolation. - Check the injector #3 wiring harness for short circuit. • If the trouble still exists after removing the injector connector, replace injector #3 and perform C2I/C3I coding, then check again. • If the trouble is fixed after removing the injector connector, check the wiring harness between ECU and injector. - Replace the ECU if required.						
P1292	Low Resistance for Injector #4 wiring harness	- Out of range about wiring harness resistance for Injector #4. • Low: Less than 0.150 Ω (injector circuit open) - Check the injector #4 wiring harness and electric isolation. - Check the injector #4 wiring harness for open circuit. • If the pin in injector #4 is defective, replace injector #4 and perform C2I/C3I coding, then check again. • If the pin in injector #4 is not defective, check the ECU wiring harness. - Replace the ECU if required.						
P1293	High Resistance for Injector #4 wiring harness	- Out of range about wiring harness resistance for Injector #4. • High: More than 0.573 Ω (injector circuit short) - Check the injector #4 wiring harness and electric isolation. - Check the injector #4 wiring harness for short circuit. • If the trouble still exists after removing the injector connector, replace injector #4 and perform C2I/C3I coding, then check again. • If the trouble is fixed after removing the injector connector, check the wiring harness between ECU and injector. - Replace the ECU if required.						

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1294	Low Resistance for Injector #5 wiring harness	- Out of range about wiring harness resistance for Injector #5. • Low: Less than 0.150 Ω (injector circuit open) - Check the injector #5 wiring harness and electric isolation. - Check the injector #5 wiring harness for open circuit. • If the pin in injector #5 is defective, replace injector #5 and perform C2I/C3I coding, then check again. • If the pin in injector #5 is not defective, check the ECU wiring harness. - Replace the ECU if required.						
P1295	High Resistance for Injector #5 wiring harness	- Out of range about wiring harness resistance for Injector #5. • High: More than 0.573 Ω (injector circuit short) - Check the injector #5 wiring harness and electric isolation. - Check the injector #5 wiring harness for short circuit. • If the trouble still exists after removing the injector connector, replace injector #5 and perform C2I/C3I coding, then check again. • If the trouble is fixed after removing the injector connector, check the wiring harness between ECU and injector. - Replace the ECU if required.						
P1405	EGR Solenoid Valve Malfunction - Short to ground	- Out of range about EGR gas: High. • EGR controller circuit: Open or short to ground - Check the EGR actuator wiring harness. - Check the supply voltage to EGR solenoid valve. - Check the EGR solenoid valve. - Check the EGR valve for stick. - Check the resistance of EGR actuator: 15.4 Ω. - Check the ECU wiring harness for open and short.		o				
P1406	EGR Solenoid Valve Malfunction - Short to +Batt	- Out of range about EGR gas: Low. • EGR controller circuit: Short to battery - Check the EGR actuator wiring harness. - Check the supply voltage to EGR solenoid valve. - Check the EGR solenoid valve. - Check the EGR valve for stick. - Check the resistance of EGR actuator: 15.4 Ω - Check the ECU wiring harness for open and short.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1407	Faulty EGR Close Position	- Causes • The EGR position is not closed when EGR is not operated within 50 seconds with the engine idling. - Check pin for the followings: • EEGR #1: Valve power (Main relay) • EEGR #2: Sensor (Reference voltage) ..... ECU #A33 • EEGR #4: Sensor (Ground) ..... ECU #A09 • EEGR #5: Valve drive (PWM) ..... ECU #A48 • EEGR #6: Sensor (Signal) ..... ECU #A82 - Actions • Check EEGR valve and sensor wiring. • Visually check the unit and replace if necessary. • Refer to DTCs (P0407 and P0408).						o
P1407	Throttle Valve Vacuum Modulator - Open/Short	- The vacuum modulator of throttle valve has an electrical problem. - The electric circuit has an open circuit. - The electric circuit has a short circuit to ground. - The electric circuit has a short circuit to battery.						
P1408	Poor EGR valve closing position (learn value not agreed)	- See P1407.						
P1409	EGR Valve Circuit Short	- Check pin for the followings: • The EEGR valve wiring is open. • EEGR Pin #1: Power(Main Relay) • EEGR Pin #5: ECU Pin #A48 - Actions • Check EEGR valve wiring. • Visually check the unit and replace if necessary. • Refer to DTCs (P0407 and P0408).						
P1430	CDPF - Soot Accumulated Over the Limit	- The recycling mode cannot be activated. - The pressure is over 23 Kpa for over 960 seconds due to the resistance by soot. - When the engine CHECK warning lamp flashes, drive the vehicle at over 50 km/h for 20 minutes so that the soot in CDPF is combusted.						Flashing

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1432	Torque Reduction Mode	- Operating condition : When the amount of soot is over the specified range (P1430 error stored) and the recycling mode cannot be operated (related error occurred), the torque reduction mode is activated so that the driver let the system inspected as soon as possible. - In operation: torque reduction, engine CHECK warning lamp ON						o
P1480	Condenser Fan #1 Circuit Malfunction - Open	- Condenser fan #1: Open - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1481	Condenser Fan #1 Circuit Malfunction - Short	- Condenser fan #1: Short - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1482	Condenser Fan #1 Circuit Malfunction - Short to Ground	- Condenser fan #1: Short to ground. - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1500	Vehicle Speed Fault	- The vehicle speed signal through CAN communication is faulty. - Check the CAN communication line for open and short. - Check the ABS/ESP and TCU communication lines. - Check the ECU wiring harness. - Replace the ECU if required.						
P1501	Faulty Variant Coding (Vehicle Speed)	- If the vehicle sensor coding is set to YES (for vehicle with ABS), the vehicle speed input is faulty when the vehicle speed is below 15 km/h with the engine running at 1,600 rpm. - If the vehicle sensor coding is set to NO (for vehicle with CAN and ABS/ESP), the corresponding DTC is not shown. - Check the vehicle speed sensor coding.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1503	Faulty Vehicle Speed Sensor Input	- If the vehicle sensor coding is set to YES (for vehicle with ABS), the amount of pulses of the speed pulse ring for vehicle speed detection is more than the specified value. - Specified pulse: 52 pulses/rev. - Check the vehicle speed sensor coding.						
P1526	Condenser Fan #2 Circuit Malfunction - Open	- Condenser fan #2: Open - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1527	Condenser Fan #2 Circuit Malfunction - Short	- Condenser fan #2: Short - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1528	Condenser Fan #2 Circuit Malfunction - Short to Ground	- Condenser fan #2: Short to ground - Check the relay and relay wiring harness. - Check the ECU wiring harness for open and short. - If the forced operation is not available after replacing the relay, replace the ECU.						
P1530	#1 Heater Operating Circuit - Open	- #1 heater circuit malfunction: Open. - Check the wiring harness for open. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						
P1531	#1 Heater Operating Circuit - Short	- #1 heater circuit malfunction: Short. - Check the wiring harness for short. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1532	#1 Heater operating circuit - Short to Ground	- #1 heater circuit malfunction: Short to ground. - Check the wiring harness for short. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						
P1534	#2 Heater Operating Circuit - Open	- #2 heater circuit malfunction: Open. - Check the wiring harness for open. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						
P1535	#2 Heater Operating Circuit - Short	- #2 heater circuit malfunction: Short. - Check the wiring harness for short. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						
P1536	#2 Heater Operating Circuit - Short to Ground	- #2 heater circuit malfunction: Short to ground. - Check the wiring harness for short. - Check the heater relay operations. - If the forced operation is not available, replace the ECU. - Check the ECU wiring and replace the ECU if required.						
P1540	Air Conditioner Operating Circuit Fault - Open	- Check the air conditioner sensors and wiring harnesses. - Check the ECU wiring harness. - Check the ECU if required.						
P1541	Air Conditioner Operating Circuit Fault - Short	- Check the air conditioner sensors and wiring harnesses. - Check the ECU wiring harness. - Check the ECU if required.						
P1542	Air Conditioner Operating Circuit Fault - Short to Ground	- Check the air conditioner sensors and wiring harnesses. - Check the ECU wiring harness. - Check the ECU if required.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1564	Auto Cruise Switch Fault (power)	- Applied to vehicle with auto cruise, occurred due to coding error for vehicle without auto cruise - Auto cruise switch SPEC • Reference voltage: 5V (ECU Pin #B11) • Switch signal: ECU Pin #B15 • Switch GND: ECU Pin #B16 • Switch signal voltage level * Resistance when accelerating: 220Ω ± 1% * Resistance when decelerating: 560Ω ± 1% * Resumed resistance: 1200Ω ± 1% * Resistance with switch OFF: 75Ω ± 1%						
P1565	Auto Cruise Switch Malfunction (Acceleration)	- The auto cruise accelerator switch or related wiring is malfunctioning.						
P1566	Auto Cruise Switch Malfunction (OFF)	- The auto cruise OFF switch or related wiring is malfunctioning.						
P1567	Auto Cruise Switch Malfunction (Return)	- The auto cruise switch or related wiring is malfunctioning.						
P1568	Auto Cruise Switch Fault (when accelerating)	- Auto cruise switch fault (accelerating)						
P1568	Auto Cruise Switch Malfunction (Deceleration)	- The auto cruise decelerator switch or related wiring is malfunctioning.						
P1569	Auto Cruise Switch Fault (when decelerating)	- Auto cruise switch fault (decelerating)						
P1569	Auto Cruise Switch Malfunction (Safety)	- The auto cruise safety switch or related wiring is malfunctioning.						
P1570	Auto Cruise Switch Fault (Signal)	- Applied to vehicle with auto cruise, occurred due to coding error for vehicle without auto cruise - Auto cruise switch SPEC • Reference voltage: 5V (ECU Pin #B11) • Switch signal: ECU Pin #B15 • Switch GND: ECU Pin #B16 • Switch signal voltage level * Resistance when accelerating: 220Ω ± 1% * Resistance when decelerating: 560Ω ± 1% * Resumed resistance: 1200Ω ± 1% * Resistance with switch OFF: 75Ω ± 1%						

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1571	Brake Lamp Signal Fault	- The brake pedal switch is faulty. • Brake pedal switch: Normal Close (NC) • Light switch: Normal Open (NO) • When operating the brake pedal switch, one signal (NO) is sent to auto cruise and the other (NC) is sent to brake lamp. - Check the brake pedal switch wiring harness. - Check the supply voltage to brake pedal switch (12 V). - Check the brake pedal switch for contact. - Check the ECU wiring harness (open, short, poor contact). - Replace the ECU if required.						
P1572	Brake Lamp Signal Fault	- The brake pedal switch or light switch is faulty. • Brake pedal switch: Normal Close (NC) • Light switch: Normal Open (NO) • When operating the brake pedal switch, one signal (NO) is sent to auto cruise and the other (NC) is sent to brake lamp. - Check the brake pedal and light switch wiring harness. - Check the supply voltage to brake pedal and light switch (12 V). - Check the brake pedal and light switch for contact. - Check the ECU wiring harness (open, short, poor contact). - Replace the ECU if required.						
P1573	Auto Cruise Switch Fault (short)	- Applied to vehicle with auto cruise, occurred due to coding error for vehicle without auto cruise - Auto cruise switch SPEC • Reference voltage: 5V (ECU Pin #B11) • Switch signal: ECU Pin #B15 • Switch GND: ECU Pin #B16 • Switch signal voltage level * Resistance when accelerating: 220Ω ± 1% * Resistance when decelerating: 560Ω ± 1% * Resumed resistance: 1200Ω ± 1% * Resistance with switch OFF: 75Ω ± 1%						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1578	Auto Cruise Switch Fault (Circuit Short)	- Applied to vehicle with auto cruise, occurred due to coding error for vehicle without auto cruise - Auto cruise switch SPEC • Reference voltage: 5V (ECU Pin #B11) • Switch signal: ECU Pin #B15 • Switch GND: ECU Pin #B16 • Switch signal voltage level * Resistance when accelerating: 220Ω ± 1% * Resistance when decelerating: 560Ω ± 1% * Resumed resistance: 1200Ω ± 1% * Resistance with switch OFF: 75Ω ± 1%						
P1600	ECU Shut Down Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						O
P1601	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						O
P1602	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						O
P1603	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						
P1604	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						
P1605	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						
P1606	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1607	ECU Injector Cut Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						O
P1608	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.						O
P1614	ECU C2I/C3I/MDP Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O
P1615	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O
P1616	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O
P1620	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O
P1621	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O
P1622	ECU Fault	- The ECU is defective. - Check the chassis ground wiring harness. - Check the ECU. - Replace the ECU if required.					O	O

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P162D (former P1612)	Injector Bank #1 Malfunction - High Voltage 4-cylinder engine : 1nd and 4rd cylinders 5-cylinder engine : 1nd, 4rd and 3rd cylinders	- Malfunction of injector (#1, #4, #3) circuit (High): Short to Ground or to Battery. - Operating voltage: 6 ~ 18 V - Check the injector bank #1: Short and poor contact - Check if the trouble recurs with the injectors removed and the ignition key "OFF". • If recurred, check the injector and ECU wiring harness. - Check if the trouble recurs while installing the injectors one by one with the ignition key "ON". • If recurred, replace the injector (perform C2I/C3I coding after replacement). • Check the other injectors with same manner. - Check the ECU wiring harness. - Replace the ECU if required.						o
P162E (former P1619)	Injector Bank #2 Malfunction - High Voltage 4-cylinder engine : 2nd and 3rd cylinders 5-cylinder engine : 2nd and 5rd cylinders	- Malfunction of injector (#2, #5) circuit (High): Short to Ground or to Battery. - Operating voltage: 6 ~ 18 V - Check the injector bank #2: Short and poor contact - Check if the trouble recurs with the injectors removed and the ignition key "OFF". • If recurred, check the injector and ECU wiring harness. - Check if the trouble recurs while installing the injectors one by one with the ignition key "ON". • If recurred, replace the injector (perform C2I/C3I coding after replacement). • Check the other injectors with same manner. - Check the ECU wiring harness. - Replace the ECU if required.						o

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1630	Wrong response from Immobilizer (refer to immobilizer section)	- The invalid key is inserted or no communication between transponder and immobilizer (no response from transponder). - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna and transponder for damage. - Replace the ECU if required.						
P1631	Immobilizer Fault (refer to immobilizer section)	- The immobilizer is not operating. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna and transponder for damage. - Replace the ECU if required.						
P1632	Immobilizer Fault (refer to immobilizer section)	- No response from immobilizer. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna and transponder for damage. - Replace the ECU if required.						
P1633	Immobilizer Fault (refer to immobilizer section)	- No key coding. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna and transponder for damage. - Replace the ECU if required.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1634	Immobilizer Fault (refer to immobilizer section)	- No response from immobilizer. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna. - Replace the ECU if required.						
P1635	No response from Immobilizer (refer to immobilizer section)	- No response from immobilizer. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna. - Replace the ECU if required.						
P1636	Immobilizer Fault (refer to immobilizer section)	- Severe trouble is not defined. - Perform the immobilizer coding again. - Check the ECU wiring harness. - Check the immobilizer unit for open and short or check the supply voltage. - Check the immobilizer antenna and transponder for damage. - Replace the ECU if required.						
P1650	AMF OBD Short to GND	- Short to GND						
P1657	Engine Mount Control Malfunction (Open)	- The wiring for engine mount level control is malfunctioning. - Standard level: - Operating condition:						
P1658	Engine Mount Control Malfunction (Short to B+)	- The wiring for engine mount level control is short to battery. - ECU pin No. 23, relay control - Engine speed : Over 1,200 rpm (30 km/h for vehicle speed)						
P1659	Engine Mount Control Malfunction (Short to GND)	- The wiring for engine mount level control is short to ground. - ECU pin No. 23, relay control - Engine speed : Over 1,200 rpm (30 km/h for vehicle speed)						

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1671	#3 Glow Plug Fault - Short	- The glow plug circuit is short. - Check the communication line between ECU and each glow plug. - Check each glow plug wiring harness. - Check the resistance of each glow plug: below 1 Ω - Check each glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1671	#3 Glow Plug - Short Circuit (Applied for D27DT engine, Not applied for AQGS model)	D27DT: Preheat control relay - The glow plug has an short circuit. - Check the communication line between ECU and glow plug. - Check the glow plug wiring. - Check the resistance of glow plug. - Check the relay of glow plug. - Check the ECU wiring harness. - Replace the ECU if required. D27DTP: AQGS unit - NGK glow module (AQGS: Advanced Quick Glowing System) - Its condition is sent to ECU through CAN after detected by AQGS. - The AQGS has an electrical problem. - Diagnosis criteria of AQGS • Plug short circuit: voltage > 6V, current = 0A • Plug short circuit (GND): voltage = 0V • Plug short circuit (batt.): voltage = battery voltage • FET malfunction, FET short circuit (GND): voltage = 0V, current = 0A • Input voltage fault: 6V < input voltage < 16V • Communication fault: Abnormal data for over 1 second - Actions • Check the glow plug for malfunction (measuring its resistance). • Check the connector and wiring. • Visually check the glow plug. • Replace the glow plug if required. • Check the CAN line. • Check the IG1 power. • Check the battery power.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1672	#4 Glow Plug Fault - Short	- The glow plug circuit is short. - Check the communication line between ECU and each glow plug. - Check each glow plug wiring harness. - Check the resistance of each glow plug: below 1 Ω - Check each glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1672	#4 Glow Plug - Short Circuit (Applied for D27DT engine, Not applied for AQGS model)	D27DT: Preheat control relay - The glow plug has an short circuit. - Check the communication line between ECU and glow plug. - Check the glow plug wiring. - Check the resistance of glow plug. - Check the relay of glow plug. - Check the ECU wiring harness. - Replace the ECU if required. D27DTP: AQGS unit - NGK glow module (AQGS: Advanced Quick Glowing System) - Its condition is sent to ECU through CAN after detected by AQGS. - The AQGS has an electrical problem. - Diagnosis criteria of AQGS • Plug short circuit: voltage > 6V, current = 0A • Plug short circuit (GND): voltage = 0V • Plug short circuit (batt.): voltage = battery voltage • FET malfunction, FET short circuit (GND): voltage = 0V, current = 0A • Input voltage fault: 6V < input voltage < 16V • Communication fault: Abnormal data for over 1 second - Actions • Check the glow plug for malfunction (measuring its resistance). • Check the connector and wiring. • Visually check the glow plug. • Replace the glow plug if required. • Check the CAN line. • Check the IG1 power. • Check the battery power.						

Modification basis	
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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1673	#5 Glow Plug Fault - Short	- The glow plug circuit is short. - Check the communication line between ECU and each glow plug. - Check each glow plug wiring harness. - Check the resistance of each glow plug: below 1Ω - Check each glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1673	#5 Glow Plug - Short Circuit (Applied for D27DT engine, Not applied for AQGS model)	D27DT: Preheat control relay - The glow plug has an short circuit. - Check the communication line between ECU and glow plug. - Check the glow plug wiring. - Check the resistance of glow plug. - Check the relay of glow plug. - Check the ECU wiring harness. - Replace the ECU if required. D27DTP: AQGS unit - NGK glow module (AQGS: Advanced Quick Glowing System) - Its condition is sent to ECU through CAN after detected by AQGS. - The AQGS has an electrical problem. - Diagnosis criteria of AQGS • Plug short circuit: voltage > 6V, current = 0A • Plug short circuit (GND): voltage = 0V • Plug short circuit (batt.): voltage = battery voltage • FET malfunction, FET short circuit (GND): voltage = 0V, current = 0A • Input voltage fault: 6V < input voltage < 16V • Communication fault: Abnormal data for over 1 second - Actions • Check the glow plug for malfunction (measuring its resistance). • Check the connector and wiring. • Visually check the glow plug. • Replace the glow plug if required. • Check the CAN line. • Check the IG1 power. • Check the battery power.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1674	#1 Glow Plug Fault - Short	- The glow plug circuit is short. - Check the communication line between ECU and each glow plug. - Check each glow plug wiring harness. - Check the resistance of each glow plug: below 1 Ω. - Check each glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1674	#1 Glow Plug - Short Circuit (Applied for D27DT engine, Not applied for AQGS model)	D27DT: Preheat control relay - The glow plug has an short circuit. - Check the communication line between ECU and glow plug. - Check the glow plug wiring. - Check the resistance of glow plug. - Check the relay of glow plug. - Check the ECU wiring harness. - Replace the ECU if required. D27DTP: AQGS unit - NGK glow module (AQGS: Advanced Quick Glowing System) - Its condition is sent to ECU through CAN after detected by AQGS. - The AQGS has an electrical problem. - Diagnosis criteria of AQGS –Plug short circuit: voltage > 6V, current = 0A –Plug short circuit (GND): voltage = 0V –Plug short circuit (batt.): voltage = battery voltage –FET malfunction, FET short circuit (GND): voltage = 0V, current = 0A –Input voltage fault: 6V < input voltage < 16V –Communication fault: Abnormal data for over 1 second - Actions –Check the glow plug for malfunction (measuring its resistance). –Check the connector and wiring. –Visually check the glow plug. –Replace the glow plug if required. –Check the CAN line. –Check the IG1 power. –Check the battery power.						

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DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1675	#2 Glow Plug Fault - Short	- The glow plug circuit is short. - Check the communication line between ECU and each glow plug. - Check each glow plug wiring harness. - Check the resistance of each glow plug: below 1 Ω - Check each glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1675	#2 Glow Plug - Short Circuit (Applied for D27DT engine, Not applied for AQGS model)	D27DT: Preheat control relay - The glow plug has an short circuit. - Check the communication line between ECU and glow plug. - Check the glow plug wiring. - Check the resistance of glow plug. - Check the relay of glow plug. - Check the ECU wiring harness. - Replace the ECU if required. D27DTP: AQGS unit - NGK glow module (AQGS: Advanced Quick Glowing System) - Its condition is sent to ECU through CAN after detected by AQGS. - The AQGS has an electrical problem. - Diagnosis criteria of AQGS –Plug short circuit: voltage > 6V, current = 0A –Plug short circuit (GND): voltage = 0V –Plug short circuit (batt.): voltage = battery voltage –FET malfunction, FET short circuit (GND): voltage = 0V, current = 0A –Input voltage fault: 6V < input voltage < 16V –Communication fault: Abnormal data for over 1 second - Actions –Check the glow plug for malfunction (measuring its resistance). –Check the connector and wiring. –Visually check the glow plug. –Replace the glow plug if required. –Check the CAN line. –Check the IG1 power. –Check the battery power.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P1676	Glow Plug Communication Fault	- The communication between ECU and glow plug is faulty. - Check the communication line between ECU and glow plug. - Check the glow plug wiring harness. - Check the resistance of glow plug: below 1 Ω. - Check the glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1677	Glow Plug Controller Fault	- The communication between ECU and glow plug is faulty. - Check the communication line between ECU and glow plug. - Check the glow plug wiring harness. - Check the resistance of glow plug: below 1Ω. - Check the glow plug relay. - Check the ECU wiring harness. - Replace the ECU if required.						
P1678	Glow Plug Malfunction - Open	- Glow plug circuit malfunction: Open. - Check the glow plug wiring harness for open. - Check the glow plug relay operations. - Check the glow plug power supply. - Check the ECU wiring and replace the ECU if required.						
P1679	Glow Plug Malfunction - Short	- Glow plug circuit malfunction: Short. - Check the glow plug wiring harness for open. - Check the glow plug relay operations. - Check the glow plug power supply. - Check the ECU wiring and replace the ECU if required.						
P1680	Glow Plug Malfunction - Short to Ground	- Glow plug circuit malfunction: Short to ground. - Check the glow plug wiring harness for open. - Check the glow plug relay operations. - Check the glow plug power supply. - Check the ECU wiring and replace the ECU if required.						

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<table>
<tr><th>DTC</th><th>Trouble</th><th>Help</th><th>Torque Reduc-tion (max.50%)</th><th>Torque Reduc-tion (max.20%)</th><th>Delayed Engine Stop</th><th>Immedi-ately Engine Stop</th><th>Limp Home Mode</th><th>Engine Check Warning Lamp</th></tr>
<tr><td>P1683</td><td>Defective CAN communiction of glow plug controller</td><td>- No GCU CAN signal
- Details: refer to P2673.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>P2031</td><td>Front exhaust gas temperature sensor - faulty voltage supply</td><td>- The supplied voltage of the front exhaust gas temperature sensor is out of the specified range.
- Check the ECU terminal No. A30 for connecting the front exhaust gas temperature sensor as well as the sensor terminal No. 1.</td><td></td><td></td><td></td><td></td><td></td><td>O</td></tr>
<tr><td>P2032</td><td>Front exhaust gas temperature sensor - low signal</td><td>- The signal value from the front exhaust gas temperature sensor is below the specified range.
- Check the ECU terminal No. A06 and A30 for connecting the front exhaust gas temperature sensor as well as the sensor terminal No. 1 and 2.
<table>
<tr><th>CDPF temperature (°C)</th><th>Resistance (Ω)</th></tr>
<tr><td>-40</td><td>169.18</td></tr>
<tr><td>-20</td><td>184.64</td></tr>
<tr><td>0</td><td>200.0</td></tr>
<tr><td>25</td><td>219.07</td></tr>
<tr><td>50</td><td>237.99</td></tr>
<tr><td>100</td><td>275.4</td></tr>
<tr><td>150</td><td>312.2</td></tr>
<tr><td>200</td><td>348.5</td></tr>
<tr><td>250</td><td>384.1</td></tr>
<tr><td>300</td><td>419.2</td></tr>
<tr><td>350</td><td>453.7</td></tr>
<tr><td>400</td><td>487.6</td></tr>
<tr><td>450</td><td>520.9</td></tr>
<tr><td>500</td><td>553.6</td></tr>
<tr><td>600</td><td>617.3</td></tr>
<tr><td>700</td><td>678.7</td></tr>
<tr><td>800</td><td>737.7</td></tr>
<tr><td>830</td><td>754.9</td></tr>
<tr><td></td><td>766.3</td></tr>
</table></td><td></td><td></td><td></td><td></td><td></td><td>O</td></tr>
</table>

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<tr><th>DTC</th><th>Trouble</th><th>Help</th><th>Torque Reduc-tion (max.50%)</th><th>Torque Reduc-tion (max.20%)</th><th>Delayed Engine Stop</th><th>Immedi-ately Engine Stop</th><th>Limp Home Mode</th><th>Engine Check Warning Lamp</th></tr>
<tr><td>P2033</td><td>Front exhaust gas temperature sensor - high signal</td><td>- The signal value from the front exhaust gas temperature sensor is over the specified range.
- Check the ECU terminal No. A06 and A30 for connecting the front exhaust gas temperature sensor as well as the sensor terminal No. 1 and 2.
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</table></td><td></td><td></td><td></td><td></td><td></td><td>O</td></tr>
<tr><td>P2080</td><td>Front exhaust gas temperature sensor - faulty signal</td><td>- The signal value from the front exhaust gas temperature sensor is over the specified range.
- See P2032 and P2033 for more information and inspection.</td><td></td><td></td><td></td><td></td><td></td><td>O</td></tr>
</table>

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<table>
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<tr><td>P2081</td><td>Front exhaust gas temperature sensor - Abnormal response</td><td>- The value difference between the front exhaust gas temperature sensor on the exhaust manifold and the rear exhaust gas temperature sensor on the CDPF is out of the specified range.
- Measure the resistance of the exhaust gas temperature sensors by temperature and the supplied voltage.
- Check the ECU terminal No. A06 and A30 for connecting the front exhaust gas temperature sensor as well as the sensor terminal No. 1 and 2.
- Check the ECU terminal No. A23 and A42 for connecting the rear exhaust gas temperature sensor as well as the sensor terminal No. 1 and 2.
<table>
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<tr><td>400</td><td>487.6</td></tr>
<tr><td>450</td><td>520.9</td></tr>
<tr><td>500</td><td>553.6</td></tr>
<tr><td>600</td><td>617.3</td></tr>
<tr><td>700</td><td>678.7</td></tr>
<tr><td>800</td><td>737.7</td></tr>
<tr><td>830</td><td>754.9</td></tr>
<tr><td>850</td><td>766.3</td></tr>
</table></td><td></td><td></td><td></td><td></td><td></td><td>o</td></tr>
<tr><td>P2100</td><td>Throttle Drive Circuit Short</td><td>- Perform the diagnosis when the ignition is turned on.
- Defective intake throttle drive circuit (ECU pin #A75, A77)
- Check pin (refer to P213C).
- Sensor specification: Refer to P213C.
- Actions
• Check the throttle valve and sensor wiring harnesses.
• Visually check the unit and replace if necessary.</td><td></td><td>o</td><td></td><td></td><td></td><td></td></tr>
</table>

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P2101	Throttle Drive Ground Short	- Perform the diagnosis when the ignition is turned on. - Defective intake throttle drive circuit (ECU pin #A75, A77) - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		O				
P2102	Throttle Drive Short	- Perform the diagnosis when the ignition is turned on. - Defective intake throttle drive circuit (ECU pin #A75, A77) - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		O				
P2103	Throttle Drive Battery Short	- Perform the diagnosis when the ignition is turned on. - Defective intake throttle drive circuit (ECU pin #A75, A77) - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		O				
P2104	Throttle Drive Overheat	- Perform the diagnosis when the ignition is turned on. - Defective intake throttle drive circuit (ECU pin #A75, A77) - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		O				

Modification basis	
Application basis	
Affected VIN	

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P213B	Abnormal Throttle Control	- Causes • The difference between throttle position demand (MAP) and throttle position feedback signal is out of +5% or -13%. - Defective throttle control (P213B) - Defective throttle signal (P213C, P213D) - Defective throttle drive (P2103, P2101, P2102, P2104, P2100) - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		o				
P213C	Low Throttle Signal	- Causes • The throttle valve position sensor signal is stuck low. - Check pin for the followings: • Throttle valve #1: sensor (Power) ..... ECU #A20 • Throttle valve #2: sensor (Signal) ..... ECU #A22 • Throttle valve #3: sensor (GND) ..... ECU #A81 • Throttle valve #4: valve (Positive) ..... ECU #A75 • Throttle valve #5: valve (Positive) ..... ECU #A77 - Sensor & Motor SPEC • Motor * Power: 12 V * Max. current : 6.8A (Normal: 3.6 ~ 0.2) * Motor resistance: 4.3Ω • Sensor * Power: 5 V - Actions • Check the throttle valve and sensor wiring harnesses. (The signal output of throttle valve is below than 0.24 V.) • Visually check the unit and replace if necessary.		o				
P213D	High Throttle Signal	- Causes • The throttle valve position sensor signal is stuck high. - Check pin (refer to P213C). - Sensor specification: Refer to P213C. - Actions • Check the throttle valve and sensor wiring harnesses. • Visually check the unit and replace if necessary.		o				

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P213E	Abnormal power to throttle position sensor * Torque reduced by 30 % for K2006 engine	See P213C.		o				
P213F	Throttle position sensor malfunction * Torque reduced by 30 % for K2006 engine	See P213C.		o				
P2428	Exhaust gas temperature sensor (T3) - high value (over 830°C for over 10 sec.)	- If the value of the exhaust gas temperature sensor on CDPF is over 830°C for over 10 seconds, the corresponding DTC is generated to protect the CDPF system. - Check the front exhaust gas temperature sensor.		- Perform the forced regeneration with SCAN-100. - Replace the T3 sensor. - Check the muffler (in case of power drop).				o
P2429	Exhaust gas temperature sensor (T3) (over 850°C for over 2 sec.)	- If the value of the exhaust gas temperature sensor on CDPF is over 850°C for 2 seconds, the corresponding DTC is generated to protect the CDPF system. - Check the front exhaust gas temperature sensor.		- Perform the forced regeneration with SCAN-100. - Replace the T3 sensor. - Check the muffler (in case of power drop).				o
P242F	Change Interval for CDPF Filter - Warning	- The vehicle is driven for approx. 500,000 km (CDPF change interval).						o
P2452	Differential pressure sensor - faulty voltage supply	- The power supplied to the differential pressure sensor is abnormal. - Check the ECU wiring harness (open circuit and poor contact). • Check the output voltage at ECU pin No. A05. • Check the supplied power between the ECU pin No. A05 and sensor terminal No. 3.						o
P2453	Differential pressure sensor - input signal fault (front and rear input ports installed reversely)	- The hose for the differential pressure sensor and the pipe for CDPF are reversely connected.						o
P2454	Differential pressure sensor - low output value	- The ECU detects that the pressure difference between the front and rear input ports of differential pressure sensor is lower than the ECU mapping value.		- Check the differential pressure sensor connector.				o
P2455	Differential pressure sensor - high output value	- The ECU detects that the pressure difference between the front and rear input ports of differential pressure sensor is higher than the ECU mapping value.		- Check the differential pressure sensor connector.				o

Modification basis	
Application basis	
Affected VIN	

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P2456	Differential pressure sensor - input signal fault (clogging)	- Damaged or clogged differential pressure sensor input port and hoses - The differential pressure sensor assembly is integrated with the hose and pipe and is connected to the CDPF connecting pipe. Therefore, check if these hoses and pipes are clogged or damaged.						
P2458	CDPF - Pressure Leakage	- There is pressure leakage at front or rear side of CDPF. - The pressure is dropped below -15 Kpa for over 10 seconds due to soot.						O
P2459	Regeneration mode - overtime	- When CDPF regeneration process is performed due to the pressure difference between the front and rear of the differential pressure sensor, the post injection period is increased if the temperature value from the rear exhaust gas temperature sensor is low. On the other hand, if the the temperature value from the rear exhaust gas temperature sensor is high, the post injection period is shortened. If the exhaust gas temperature is low due to slow driving, etc. during CDPF regeneration, the regeneration process cannot be completed (if the initial 5 regeneration processes took over 1200 seconds at vehicle speed below 100 km). - If this occurs repeatedly and the exhaust gas is not regenerated, an excessive amount of soot may be accumulated. - If a DTC related to this problem is generated, clear it and drive the vehicle at 50-60 km/h for approx. 15-20 minutes to complete the regeneration process. - If the same DTC is still present, check the rear exhaust gas temperature sensor electrically.			- Check the differential pressure sensor. - Replace the DPF.			O

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P2671	#3 Glow Plug Short (Battery)	- NGK glow module (AQGS: Advanced Quick Glowing System) - It is detected by AQGS which then sends the message to ECU through CAN. - The electrical problem is occurred in AQGS. - Diagnosis criteria in AQGS • Plug short: voltage > 6V, current = 0A • Plug short (GND): voltage = 0V • Plug short (battery): voltage = Battery voltage • FET defective, FET short (GND): voltage = 0V, current = 0A • Abnormal input voltage: 6V < input voltage < 16V • Abnormal communication: Communication error for over 1 sec., abnormal data - Actions • Check glow plug for defect (measure the resistance of unit). • Check the connector and wiring harnesses. • Visually check the unit. • Replace the unit if necessary. • Check the CAN line. • Check the IG1 voltage. • Check the battery voltage.						
P2672	#4 Glow Plug Short (Battery)	- NGK glow module (AQGS: Advanced Quick Glowing System) - It is detected by AQGS which then sends the message to ECU through CAN. - The electrical problem is occurred in AQGS. - Diagnosis criteria in AQGS • Plug short: voltage > 6V, current = 0A • Plug short (GND): voltage = 0V • Plug short (battery): voltage = Battery voltage • FET defective, FET short (GND): voltage = 0V, current = 0A • Abnormal input voltage: 6V < input voltage < 16V • Abnormal communication: Communication error for over 1 sec., abnormal data - Actions • Check glow plug for defect (measure the resistance of unit). • Check the connector and wiring harnesses. • Visually check the unit. • Replace the unit if necessary. • Check the CAN line. • Check the IG1 voltage. • Check the battery voltage.						

Modification basis	
Application basis	
Affected VIN	

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P2673	#5 Glow Plug Short (Battery)	- NGK glow module (AQGS: Advanced Quick Glowing System) - It is detected by AQGS which then sends the message to ECU through CAN. - The electrical problem is occurred in AQGS. - Diagnosis criteria in AQGS • Plug short: voltage > 6V, current = 0A • Plug short (GND): voltage = 0V • Plug short (battery): voltage = Battery voltage • FET defective, FET short (GND): voltage = 0V, current = 0A • Abnormal input voltage: 6V < input voltage < 16V • Abnormal communication: Communication error for over 1 sec., abnormal data - Actions • Check glow plug for defect (measure the resistance of unit). • Check the connector and wiring harnesses. • Visually check the unit. • Replace the unit if necessary. • Check the CAN line. • Check the IG1 voltage. • Check the battery voltage.						
P2674	#1 Glow Plug Short (Battery)	- NGK glow module (AQGS: Advanced Quick Glowing System) - It is detected by AQGS which then sends the message to ECU through CAN. - The electrical problem is occurred in AQGS. - Diagnosis criteria in AQGS • Plug short: voltage > 6V, current = 0A • Plug short (GND): voltage = 0V • Plug short (battery): voltage = Battery voltage • FET defective, FET short (GND): voltage = 0V, current = 0A • Abnormal input voltage: 6V < input voltage < 16V • Abnormal communication: Communication error for over 1 sec., abnormal data - Actions • Check glow plug for defect (measure the resistance of unit). • Check the connector and wiring harnesses. • Visually check the unit. • Replace the unit if necessary. • Check the CAN line. • Check the IG1 voltage. • Check the battery voltage.						

DTC	Trouble	Help	Torque Reduction (max.50%)	Torque Reduction (max.20%)	Delayed Engine Stop	Immediately Engine Stop	Limp Home Mode	Engine Check Warning Lamp
P2675	#2 Glow Plug Short (Battery)	- NGK glow module (AQGS: Advanced Quick Glowing System) - It is detected by AQGS which then sends the message to ECU through CAN. - The electrical problem is occurred in AQGS. - Diagnosis criteria in AQGS • Plug short: voltage > 6V, current = 0A • Plug short (GND): voltage = 0V • Plug short (battery): voltage = Battery voltage • FET defective, FET short (GND): voltage = 0V, current = 0A • Abnormal input voltage: 6V < input voltage < 16V • Abnormal communication: Communication error for over 1 sec., abnormal data - Actions • Check glow plug for defect (measure the resistance of unit). • Check the connector and wiring harnesses. • Visually check the unit. • Replace the unit if necessary. • Check the CAN line. • Check the IG1 voltage. • Check the battery voltage.						
P3040	ECU Internal Malfunction	- The internal sector of ECU is malfunctioning.						
P3041	ECU Internal Malfunction	- The internal sector of ECU is malfunctioning.						

Modification basis	
Application basis	
Affected VIN	