

ДЛЯ ПОДГОТОВКИ [Нажмите здесь](#)

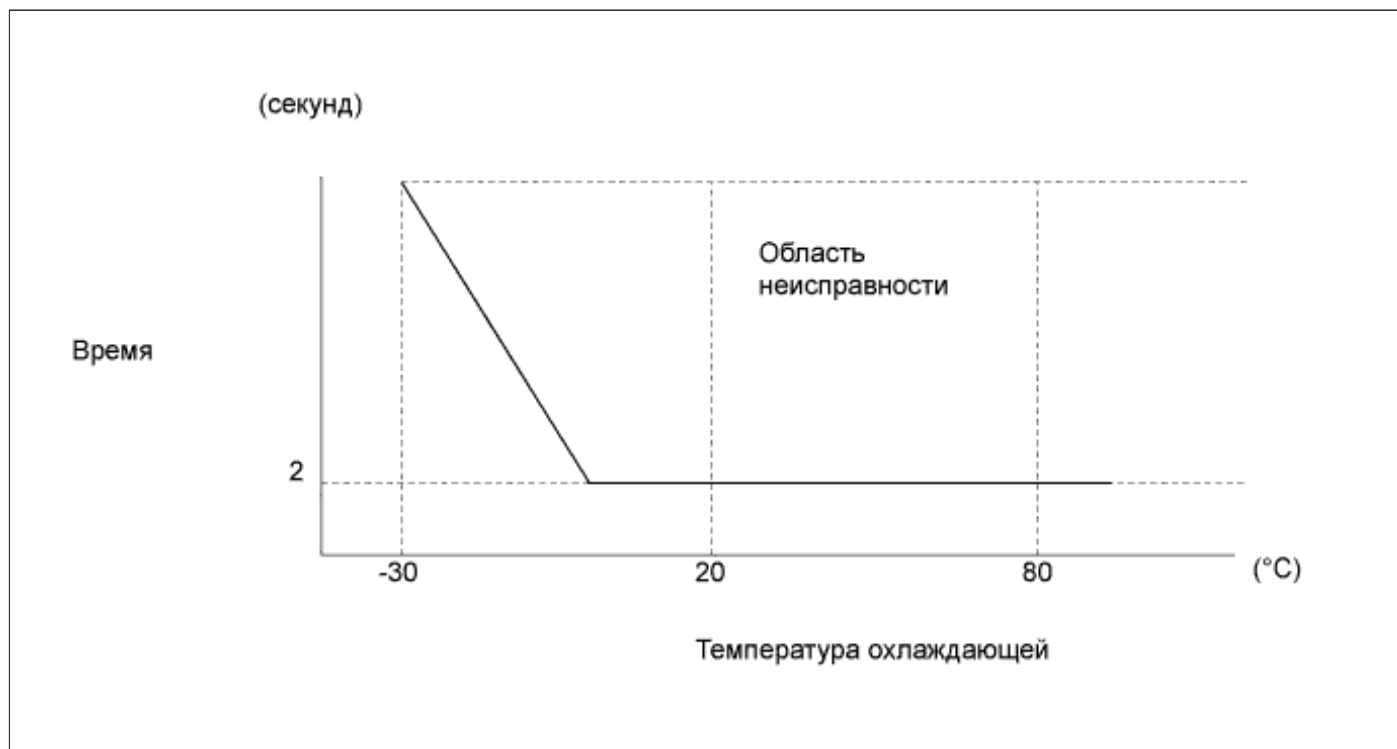
DESCRIPTION

This DTC is stored when the engine does not start even though the STA signal is input or when the engine takes a long time to start, and when the engine speed is low or the engine stalls just after the engine starts.

Using the GTS, the conditions present when the DTC was stored can be confirmed by referring to the freeze frame data. Freeze frame data records engine conditions when a malfunction occurs. This information can be useful when troubleshooting.

It is necessary to check if the vehicle ran out of fuel before performing troubleshooting, as this DTC is also stored when there is engine starting trouble due to running out of fuel.

DTC No.	DTC Detection Condition	Trouble Area
P1604	<p>Either of the following conditions is met (1 trip detection logic):</p> <ul style="list-style-type: none"> • The engine speed is less than 500 rpm with the STA signal on for a certain amount of time (refer to the illustration below). • After the engine starts (engine speed is 500 rpm or higher), the engine speed drops to 200 rpm or less within approximately 2 seconds. 	<ul style="list-style-type: none"> • Engine assembly (excess friction, compression loss) • Starter assembly • Crankshaft position sensor • VVT sensor • Engine coolant temperature sensor • Fuel pump • Fuel pump control system • Fuel line (fuel filter, pipes and hoses) • Fuel injector assembly • Throttle body with motor assembly • Fuel pressure regulator • Battery • Drive plate and ring gear sub-assembly • Spark plug • Ignition coil assembly circuit • Intake system • Camshaft timing oil control valve assembly • Mass air flow meter sub-assembly • Air fuel ratio sensor • Valve timing • Fuel • Purge VSV • Intake valve • Engine immobiliser system • ECM



WIRING DIAGRAM

Refer to DTC P0351 for the ignition coil circuit (See page [Нажмите здесь](#)).

Refer to DTC P0443 for the purge VSV circuit (See page [Нажмите здесь](#)).

Refer to DTC P2195 for the air fuel ratio sensor circuit (See page [Нажмите здесь](#)).

Refer to Fuel Pump Control Circuit (See page [Нажмите здесь](#)).

Refer to Fuel Injector Circuit (See page [Нажмите здесь](#)).

INSPECTION PROCEDURE

УКАЗАНИЕ:

- **In contrast to normal malfunction diagnosis for components, circuits and systems, DTC P1604 is used to determine the malfunctioning area from the problem symptoms and freeze frame data when the user mentions problems such as starting difficulty.**
As the DTC can be stored as a result of certain user actions, even if the DTC is output, if the customer makes no mention of problems, clear the DTC without performing any troubleshooting and return the vehicle to the customer.
- **If any other DTCs are output, perform troubleshooting for those DTCs first.**
- **When the Data List item "Immobiliser Fuel Cut" is ON, the engine cannot be started.**
- **Read freeze frame data using the GTS. Freeze frame data records engine conditions when a malfunction occurs. This information can be useful when troubleshooting.**
- **When confirming the freeze frame data, be sure to check all 5 sets of freeze frame data (See page [Нажмите здесь](#)).**
- **When confirming the freeze frame data, if there are multiple items related to the cause of the malfunction, perform troubleshooting for all related items.**
- **Try to start the vehicle under the conditions recorded in the freeze frame data which were present when the malfunction occurred. Confirm the data at this time and compare it with the freeze frame data.**
- **If the malfunction does not reoccur, carefully check the vehicle conditions from when the malfunction occurred using freeze frame data.**

- When performing inspections, jiggle the relevant wire harnesses and connectors in an attempt to reproduce malfunctions that do not always occur.
- If the same inspection or replacement procedure appears 2 times when performing an inspection procedure, it is not necessary to repeat the procedure the second time.

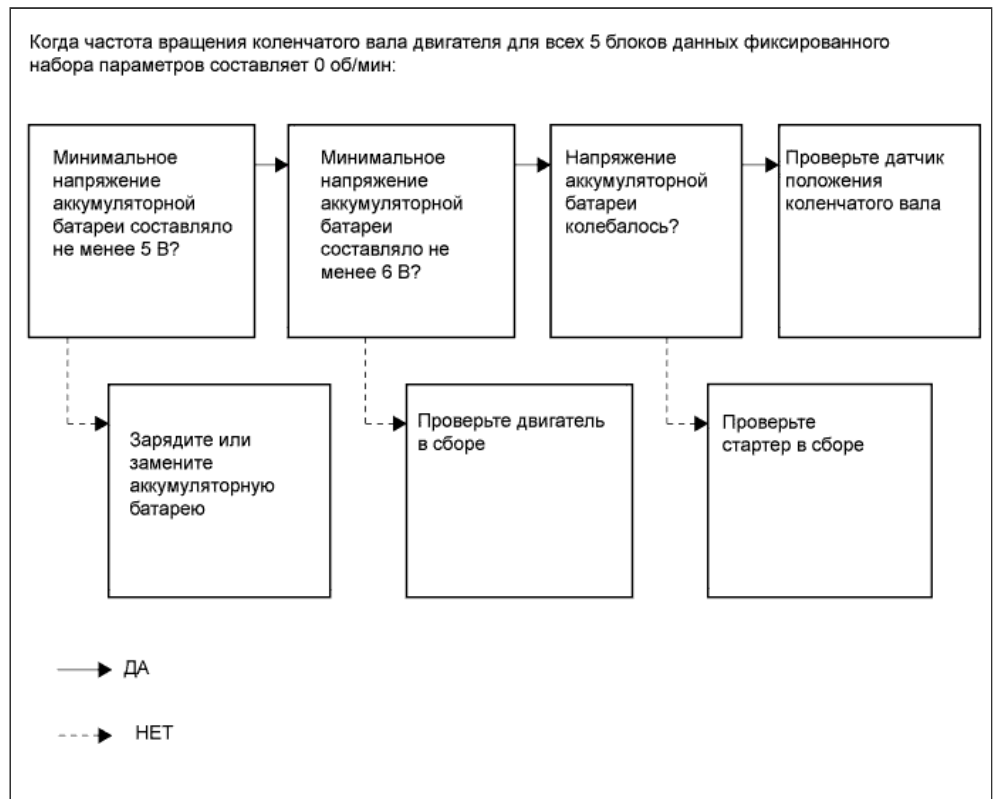
Malfunction Recurrence and Inspection Areas

- a. Freeze frame data exists, but the malfunction (starting difficulty) has not reoccurred and the malfunction conditions are unknown.
- i. The engine speed recorded in the freeze frame data is 0 rpm (the engine does not crank).

УКАЗАНИЕ:

One of the following problems may be present: battery depletion, excess engine friction, a starter malfunction or a crankshaft position sensor malfunction.

- If the battery voltage is less than 6 V during cranking, there is a high probability that engine friction is abnormal.
- If the battery voltage drops to 5 V or less when starting the engine, the battery may be malfunctioning.
- If the battery voltage fluctuates while cranking the engine, it can be concluded that cranking is being performed. When the engine speed is 0 rpm, the crankshaft position sensor and/or an ECM may be malfunctioning.



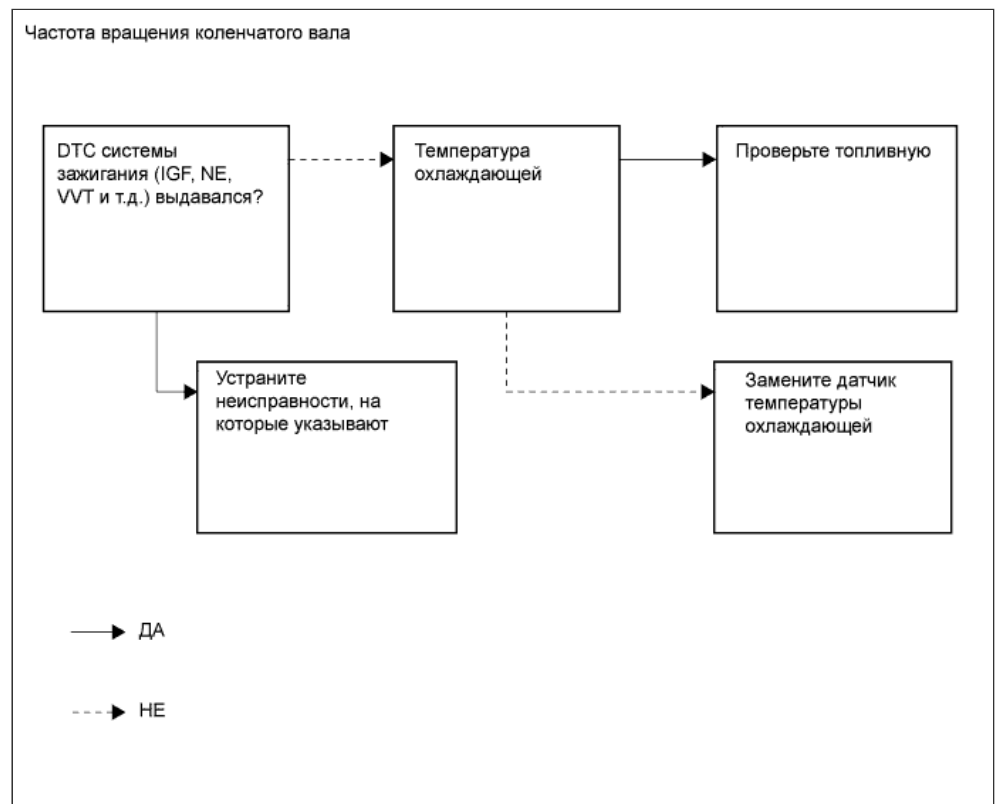
- ii. All engine speeds recorded in the freeze frame data are between 60 and 250

rpm (the engine cranks but there is no combustion).

УКАЗАНИЕ:

If the engine speed is between 60 and 250 rpm (no initial combustion), there may be a wiring problem or a complete failure of an ignition or fuel system part.

- Due to an engine coolant temperature sensor malfunction, the fuel injection volume is extremely high or low and the engine may not be able to start.

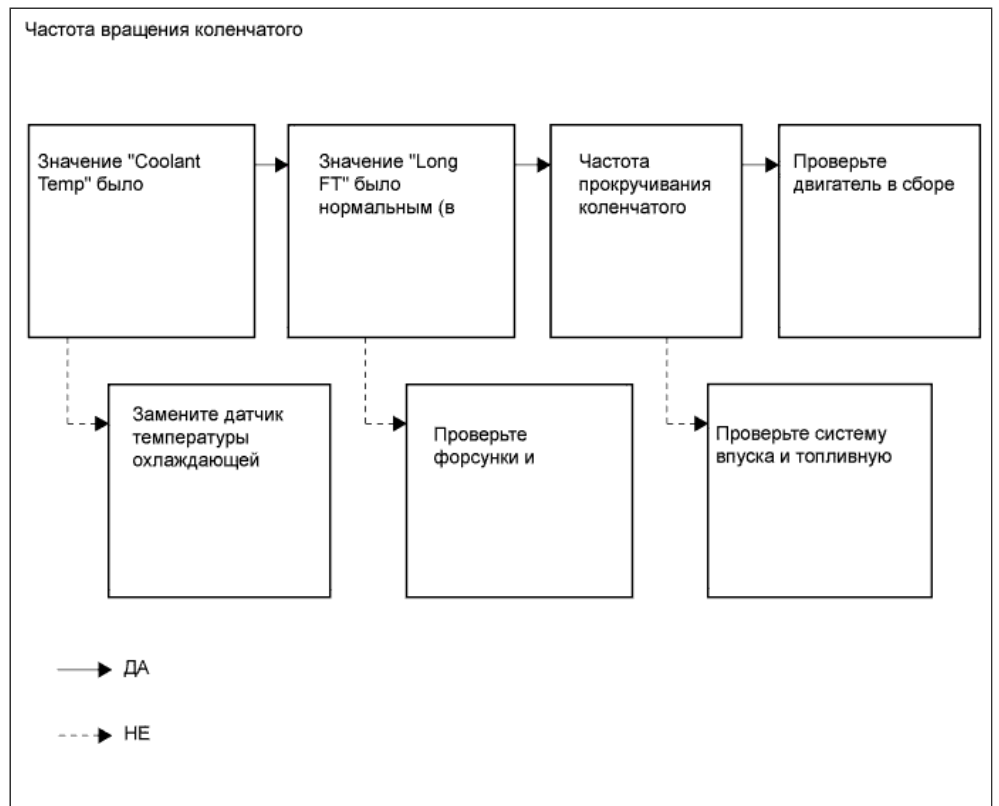


- iii. The engine speed recorded in the freeze frame data is 250 rpm or higher (the initial combustion and starter turn off timing is too late).

УКАЗАНИЕ:

If the engine speed is 250 rpm or higher (combustion occurs but the initial combustion and starter turnoff timing is too late), the fuel injection volume is often incorrect (too low or too high) and determining the cause of the malfunction is often difficult.

- Due to an engine coolant temperature sensor malfunction, the fuel injection volume is extremely high or low and engine starting trouble may occur.
- If Long FT is incorrect, there may be a fuel supply problem due to the injectors or fuel pump being clogged, etc.
- If the engine cranking speed is too high, compression loss may have occurred due to carbon interfering with the valve operation.



b. When the malfunction (starting difficulty) can be reproduced, or malfunction conditions are known, perform the following inspections ("Problem symptoms" and "Systems to inspect").

i. Problem symptoms

1. The engine does not crank.

УКАЗАНИЕ:

The starter is normal if a noise that indicates the starter pinion gear is extending is heard. The battery may be fully depleted or there may be excess engine friction.

2. The engine cranking speed is abnormal.

УКАЗАНИЕ:

If the engine cranking speed is too high (for example, 300 rpm or higher with no combustion), compression loss may have occurred because carbon interfered with valve operation, etc.

3. There is no initial combustion.

УКАЗАНИЕ:

If there is no initial combustion, there is probably a wiring problem or an ignition or fuel system part malfunction.

4. The engine stalls after starter turn off.

УКАЗАНИЕ:

If the engine stalls after starter turn off, the air fuel ratio may be incorrect or the VVT may have a problem returning.

5. The initial combustion and starter turn off occur late.

УКАЗАНИЕ:

If the initial combustion and starter turn off occur late, the fuel injection volume is probably incorrect (too low or too high).

УКАЗАНИЕ:

Causes of fuel system malfunctions according to conditions present at the time of the malfunction.

- **When 2 to 3 minutes have elapsed after stopping the engine: Fuel pressure loss due to the pressure regulator failing to maintain the fuel pressure.**
- **When 15 to 120 minutes have elapsed after stopping the engine: Problem with injector fuel seal.**
- **When a long time has elapsed after stopping the engine: Pressure regulator is stuck open.**

ii. Systems to inspect

1. Intake system
2. Ignition system
3. Fuel system

INSPECTION FLOW

a. Freeze frame data exists, but the malfunction (starting difficulty) has not reoccurred and the malfunction conditions are unknown.

Freeze Frame Data Item	Result	Suspected Area	Procedure
Engine Speed	0 rpm (no engine cranking at all)	<ul style="list-style-type: none"> • Battery fully depleted • Engine assembly (excess friction) • Starter assembly • Engine immobiliser system • Crankshaft position sensor • ECM 	4 to 9
	60 to 250 rpm (engine cranks but no initial combustion*1)	<ul style="list-style-type: none"> • Fuel pump control system • Ignition system • Engine coolant temperature sensor • Fuel injection system 	10 to 14
	250 rpm or higher (combustion occurs but initial combustion and	<ul style="list-style-type: none"> • Engine assembly (compression loss) • Fuel injection 	15 to 23

starter turn off*2 occur late)	system	
	<ul style="list-style-type: none"> Fuel pump control system 	

УКАЗАНИЕ:

- *1: First combustion after cranking begins.**
- *2: Condition when engine speed increases and starter can be turned off.**

b. When the malfunction (starting difficulty) can be reproduced, or when malfunction conditions are known.

i. Problem symptoms

Problem Symptom	Suspected Area	Suspected Component	Procedure
The engine does not crank	Battery malfunction	<ul style="list-style-type: none"> Battery fully depleted 	26 to 31
	Starting system	<ul style="list-style-type: none"> Starter assembly (includes pinion gear wear or tooth damage) Starting system 	
	Engine assembly	<ul style="list-style-type: none"> Engine assembly (excess friction) Drive plate and ring gear sub-assembly wear or tooth damage 	
Cranking speed too low	Battery malfunction	<ul style="list-style-type: none"> Battery fully depleted 	32 to 34
	Starting system	<ul style="list-style-type: none"> Starter assembly 	
	Engine assembly	<ul style="list-style-type: none"> Engine assembly (excess friction) 	
Cranking speed too high	Engine assembly	<ul style="list-style-type: none"> Engine assembly (compression loss) 	
There is no initial combustion	Fuel supply problem	<ul style="list-style-type: none"> Cannot maintain pressure due to pressure regulator malfunction Fuel injector assembly leak Fuel leak from fuel line Fuel pump control system Fuel pump 	35 to 48
	Ignition system malfunction	<ul style="list-style-type: none"> Spark plug Crankshaft position sensor Ignition coil assembly 	
		<ul style="list-style-type: none"> Intake system 	

Engine stalls after starter turn off	Air suction	connections	49 to 54
	Deposits in throttle body with motor assembly	<ul style="list-style-type: none"> • Throttle body with motor assembly 	
	VVT valve does not return properly	<ul style="list-style-type: none"> • Camshaft timing oil control valve assembly 	
	Mass air flow meter sub-assembly malfunction	<ul style="list-style-type: none"> • Mass air flow meter sub-assembly 	
The initial combustion and starter turn off occur late	Engine coolant temperature sensor malfunction	<ul style="list-style-type: none"> • Engine coolant temperature sensor 	55 to 68
	Mass air flow meter sub-assembly malfunction	<ul style="list-style-type: none"> • Mass air flow meter sub-assembly 	
	Abnormal air fuel ratio learning value	<ul style="list-style-type: none"> • Air fuel ratio sensor 	
	Deviation from fuel injection characteristics	<ul style="list-style-type: none"> • Fuel injector assembly 	
	Wet-fouled or dry-fouled spark plug	<ul style="list-style-type: none"> • Spark plug 	
	Lack of fuel pressure	<ul style="list-style-type: none"> • Pressure regulator • Fuel pump • Fuel pump control system 	

ii. Systems to inspect

Troubleshooting by System	Suspected Area	Suspected Component	Procedure
Fuel system troubleshooting A	Abnormal air fuel ratio learning value	<ul style="list-style-type: none"> • Fuel injector assembly 	87 to 94 95 to 102
	Rough idling	<ul style="list-style-type: none"> • Crankshaft position sensor 	
	Abnormal fuel pressure	<ul style="list-style-type: none"> • Fuel • Fuel leak from fuel line • Fuel pump • Pressure regulator 	
Fuel system troubleshooting	Abnormal concentration of HC in	<ul style="list-style-type: none"> • Purge VSV system • Fuel injector 	103 to 105

B	surge tank	assembly	
Fuel system troubleshooting C	Injection signal system malfunction	<ul style="list-style-type: none"> Fuel injector assembly Crankshaft position sensor VVT sensor ECM 	70 to 74
Intake system troubleshooting	Difference between ISC target value and opening angle when idling	<ul style="list-style-type: none"> Engine assembly (compression loss) Valve timing Engine coolant temperature sensor ECM 	84 to 86 106 to 108
Ignition system troubleshooting	Crankshaft position sensor and/or VVT sensor signal malfunction	<ul style="list-style-type: none"> Crankshaft position sensor system (including sensor installation) VVT sensor system (including sensor installation) ECM 	75 to 83 109 to 117

ПРИМЕЧАНИЕ:

- **Inspect the fuses for circuits related to this system before performing the following inspection procedure.**
- **After turning the engine switch off, waiting time may be required before disconnecting the cable from the negative (-) battery terminal. Therefore, make sure to read the disconnecting the cable from the negative (-) battery terminal notices before proceeding with work (See page [Нажмите здесь](#)).**

1.CHECK ANY OTHER DTCS OUTPUT AND RECORD FREEZE FRAME DATA (IN ADDITION TO DTC P1604)

- Connect the GTS to the DLC3.
- Turn the engine switch on (IG).
- Turn the GTS on.
- Enter the following menus: Powertrain / Engine and ECT / Trouble Codes.
- Read the DTCs and record the Freeze Frame Data.

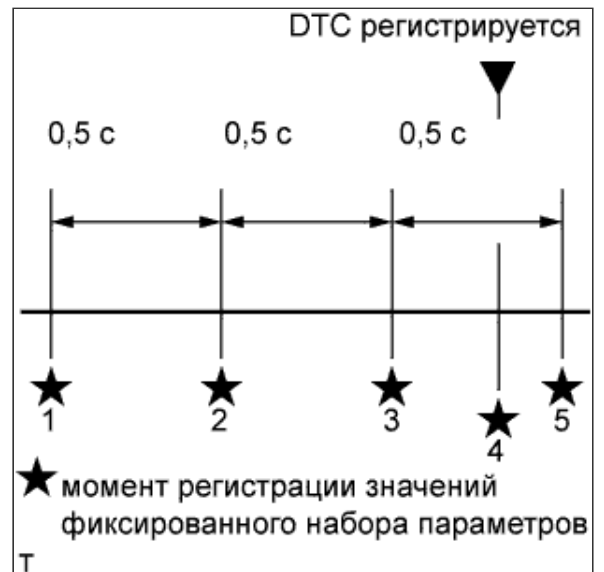
УКАЗАНИЕ:

- **This freeze frame data shows the actual engine conditions when engine starting trouble**

- occurred.
- When confirming the freeze frame data, be sure to check all 5 data sets of freeze frame data.
 - The fourth set of freeze frame data is the data recorded when the DTC is stored.

Result

Result	Proceed to
DTC P1604 is output	A
DTC P1604 and other DTCs are output	B



B

GO TO DTC CHART ([Нажмите здесь](#))

A

2.CHECK ENGINE IMMOBILISER SYSTEM

- Connect the GTS to the DLC3.
- Turn the engine switch on (IG).
- Turn the GTS on.
- Enter the following menus: Powertrain / Engine and ECT / Data List / Primary / Immobiliser Fuel Cut.
- Read the value displayed on the GTS.

OK:

Immobiliser Fuel Cut is OFF.

УКАЗАНИЕ:

If the engine is cranked immediately after reconnecting the battery cable (key verification for engine immobiliser system not completed), the engine cannot be started. Key verification needs to wait for several seconds after turning the engine switch on (IG).

NG

REPAIR ENGINE IMMOBILISER SYSTEM ([Нажмите здесь](#))

OK

3.CHECK MALFUNCTION CONDITION

- Confirm the problem symptoms.

Result

Result	Proceed to
Freeze frame data exists, but the starting difficulty cannot be reproduced and it is unknown what kind of starting difficulty occurred	A
The problem symptoms can be reproduced, or the malfunction conditions are known	B

B

[Перейдите к шагу 25](#)

A

4.READ FREEZE FRAME DATA

- Connect the GTS to the DLC3.
- Turn the engine switch on (IG).
- Using the GTS, confirm the vehicle conditions recorded in the freeze frame data which were present when the DTC was stored (See page [Нажмите здесь](#)).

Result

Freeze Frame Data Item		Suspected Area	Proceed to
Engine Speed	Battery Voltage		
All 5 sets of freeze frame data are 0 rpm (no engine cranking at all)	Minimum voltage is less than 5 V	Battery fully depleted	A
	Minimum voltage is 5 V or higher	<ul style="list-style-type: none"> Starter assembly malfunction Crankshaft position sensor system Excess engine friction ECM 	B
60 to 250 rpm (engine cranks but no initial combustion)	-	<ul style="list-style-type: none"> Fuel pump control system Ignition system Engine coolant temperature sensor Fuel injection system 	C
250 rpm or higher (combustion occurs but initial combustion and starter turn off occur late)	-	<ul style="list-style-type: none"> Engine assembly Engine coolant temperature sensor Fuel injection system Fuel pump control system 	D

Freeze Frame Data Item		Suspected Area	Proceed to
Low Rev for Eng Start			
		<ul style="list-style-type: none"> Intake system connections Throttle body with motor assembly 	

ON exists	<ul style="list-style-type: none"> • Camshaft timing oil control valve assembly • Mass air flow meter sub-assembly 	E
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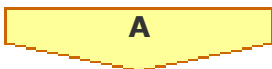
УКАЗАНИЕ:

When DTC P1604 is stored, either "Engine Start Hesitation"*1 or "Low Rev for Eng Start"*2 in the Freeze Frame Data will be ON. If "Low Rev for Eng Start" is ON, proceed to E.

*1: This value turns ON when the engine speed does not reach a certain value for a certain period of time when starting the engine.

*2: This value turns ON when the engine stalls immediately after starting the engine. If "Low Rev for Eng Start" is ON, as there is a possibility that the low engine speed or engine stall was caused by the user, confirm the following freeze frame data items.

- Immobiliser Fuel Cut
- Engine Speed (Starter Off)
- Shift SW Status (R, D Range)



CHARGE OR REPLACE BATTERY

5.READ FREEZE FRAME DATA

- Connect the GTS to the DLC3.
- Turn the engine switch on (IG).
- Using the GTS, confirm the vehicle conditions recorded in the freeze frame data which were present when the DTC was stored (See page [Нажмите здесь](#)).

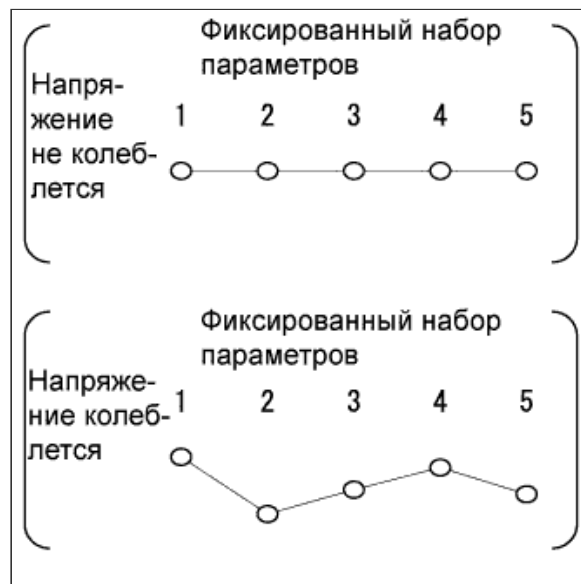
Result

Freeze Frame Data Item	Result	Suspected Area	Proceed to
Battery Voltage	Minimum voltage is 6 V or higher and voltage does not fluctuate*1	Starter system	A
	Minimum voltage is 6 V or higher and voltage fluctuates*2,	<ul style="list-style-type: none"> • Crankshaft position sensor system • ECM 	B

	*3		
	Minimum voltage is 5 to 6 V*4	<ul style="list-style-type: none"> • Excess engine friction • Battery fully depleted 	C

УКАЗАНИЕ:

- ***1: The 5 sets of freeze frame data show approximately the same battery voltage.**
- ***2: The 5 sets of freeze frame data show different battery voltages.**
- ***3: If the voltage fluctuates, it can be determined that cranking is being performed. When the engine speed is 0 rpm, the crankshaft position sensor system and/or the ECM may be malfunctioning.**
- ***4: There may be excess engine friction. Make sure that the crankshaft rotates smoothly when turning it by hand. Excess engine friction may have occurred**



temporarily. Remove the cylinder head cover and oil pan, and check for foreign matter such as iron fragments. If there is a malfunction or signs of a malfunction present, perform a detailed inspection by disassembling all the parts.

B

[Перейдите к шагу 6](#)

C

CHECK AND REPAIR ENGINE ASSEMBLY OR BATTERY

A

CHECK STARTER SIGNAL CIRCUIT ([Нажмите здесь](#))

6.CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- Check the tightening and installation condition of the crankshaft position sensor bolt.
- Check the connection of the crankshaft position sensor connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR

OK

7.INSPECT CRANKSHAFT POSITION SENSOR

- a. Disconnect the crankshaft position sensor connector.
- b. Check for oil on the connector terminals.

OK:

No oil on the terminals.

NG

REPLACE CRANKSHAFT POSITION SENSOR ([Нажмите здесь](#))

OK

8.CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)

- a. Check the harnesses and connectors, referring to DTC P0335 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

9.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

10.READ FREEZE FRAME DATA

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).

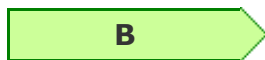
- c. Using the GTS, confirm the vehicle conditions recorded in the freeze frame data which were present when the DTC was stored (See page [Нажмите здесь](#)).

Result

Freeze Frame Data Item			Suspected Area	Proceed to
Coolant Temp, Intake Air	Coolant Temp	Fuel Pump Duty		
Difference between Coolant Temp and Intake Air is 10°C (18°F) or more*1	Coolant Temp is 125°C (257°F) or higher, or less than outside temperature*3 by 15°C (27°F) or more	-	Engine coolant temperature sensor	A
	Other than above	All 5 sets of freeze frame data are higher than 0%	-	B
		At least 1 of the 5 sets of freeze frame data is 0%	Fuel pump control system	C
Difference between Coolant Temp and Intake Air is less than 10°C (18°F)*2	-	At least 1 of the 5 sets of freeze frame data is 0%	Fuel pump control system	C
		All 5 sets of freeze frame data are higher than 0%	-	B

УКАЗАНИЕ:

- ***1: A long time had not elapsed after stopping the engine.**
- ***2: A long time had elapsed after stopping the engine.**
- ***3: Use an actual outside temperature estimated from the Initial Intake Air, Ambient Temp for A/C, and (if possible) the weather when the DTC was detected.**



[Перейдите к шагу 11](#)



CHECK FUEL PUMP CONTROL CIRCUIT ([Нажмите здесь](#))



REPLACE ENGINE COOLANT TEMPERATURE SENSOR ([Нажмите здесь](#))

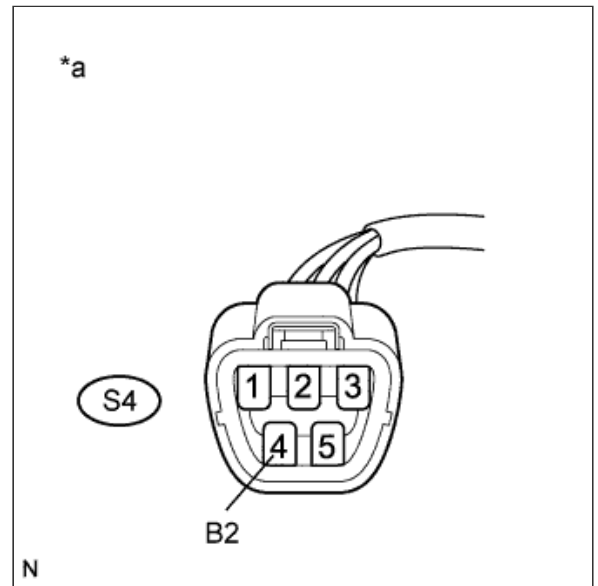
11.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.

- b. Disconnect the fuel sender gauge connector.
- c. Turn the engine switch on (IG).
- d. Turn the GTS on.
- e. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- f. Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
S4-2 (B2) - Body ground	Active Test is being performed	11 to 14 V



Text in Illustration

*a	Front view of wire harness connector (to Fuel Pump)
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УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Make sure there is not an excessive amount of force applied to the wire harness.

NG

CHECK FUEL PUMP CONTROL CIRCUIT ([Нажмите здесь](#))

OK

12.CHECK TERMINAL VOLTAGE (POWER SOURCE OF FUEL INJECTOR ASSEMBLY)

- a. Check the harnesses and connectors, referring to DTC P0300 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Make sure there is not an excessive amount of force applied to the wire harness.

NG

CHECK FUEL INJECTOR CIRCUIT ([Нажмите здесь](#))

OK

13.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for fuel leakage from the fuel pipes.

Result

Result	Proceed to
Fuel leakage or signs of fuel leakage are present	A
No fuel leakage or signs of fuel leakage	B

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **When performing the Active Test, if there is no operating noise from the fuel pump, the fuel pump system may be malfunctioning.**
- **Check if the vehicle ran out of fuel, as engine starting trouble due to running out of fuel is also detected.**

B

[Перейдите к шагу 14](#)

A

REPAIR OR REPLACE FUEL LINE

14.CHECK FUEL SYSTEM

- a. Check for foreign matter such as iron particles around the fuel pump (fuel pump, fuel pump filter and inside the fuel tank), and for signs that the fuel pump was stuck.

Result

Result	Proceed to
There is foreign matter or signs that fuel pump was stuck	A
There is no foreign matter and no signs that fuel pump was stuck	B

УКАЗАНИЕ:

If there is foreign matter such as iron particles on the fuel pump, fuel filter or fuel tank, remove the foreign matter.

B

[Перейдите к шагу 24](#)

A

REPAIR OR REPLACE FUEL SYSTEM

15.READ FREEZE FRAME DATA

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Using the GTS, confirm the vehicle conditions recorded in the freeze frame data which were present when the DTC was stored (See page [Нажмите здесь](#)).

Result

Freeze Frame Data Item				Suspected Area	Proceed to
Coolant Temp, Intake Air	Coolant Temp	Long FT #1, Long FT #2	Engine Speed		
Difference between Coolant Temp and Intake Air is 10°C (18°F) or more	Coolant Temp is 125°C (257°F) or higher, or less than outside temperature*2 by 15°C (27°F) or more	-	-	Engine coolant temperature sensor	A
	Other than above	-15% or less, or +15% or higher	-	<ul style="list-style-type: none"> Fuel pump control system Fuel injector assembly 	B
		-15 to +15%	Minimum speed is 300 rpm or higher*1	Engine assembly	C
			Minimum speed is less than 300 rpm	<ul style="list-style-type: none"> Fuel system Intake air system 	D
Difference between Coolant Temp and Intake Air is less than 10°C (18°F)	-	-15% or less, or +15% or higher	-	<ul style="list-style-type: none"> Fuel pump control system Fuel injector assembly 	B
		-15 to +15%	Minimum speed is 300 rpm or higher*1	Engine assembly	C
			Minimum speed is less than 300 rpm	<ul style="list-style-type: none"> Fuel system Intake air 	D

УКАЗАНИЕ:

- *1: Compression loss may have occurred in the engine assembly.
- *2: Use an actual outside temperature estimated from the Initial Intake Air, Ambient Temp for A/C, and (if possible) the weather when the DTC was detected.

B[Перейдите к шагу 16](#)**C****CHECK AND REPAIR ENGINE ASSEMBLY****D**[Перейдите к шагу 18](#)**A****REPLACE ENGINE COOLANT TEMPERATURE SENSOR ([Нажмите здесь](#))****16.INSPECT FUEL INJECTOR ASSEMBLY**

- a. Check that no carbon is stuck to the fuel injector assembly.

OK:**No carbon present.****NG****REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))****OK****17.CHECK FUEL SYSTEM**

- a. Check for foreign matter such as iron particles around the fuel pump (fuel pump, fuel pump filter and inside the fuel tank), and for signs that the fuel pump was stuck.

Result

Result	Proceed to
There is foreign matter or signs that fuel pump was stuck	A
There is no foreign matter and no signs that fuel pump was stuck	B

УКАЗАНИЕ:

If there is foreign matter such as iron particles on the fuel pump, fuel filter or fuel tank, remove the foreign matter.

B[Перейдите к шагу 24](#)**A**

REPAIR OR REPLACE FUEL SYSTEM

18.READ FREEZE FRAME DATA

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Using the GTS, confirm the vehicle conditions recorded in the freeze frame data which were present when the DTC was stored (See page [Нажмите здесь](#)).

Result

Freeze Frame Data Item	Result	Suspected Area	Proceed to
Coolant Temp	Engine coolant temperature is 40°C (104°F) or less*1	Pressure regulator	A
	Engine coolant temperature is 40 to 90°C (104 to 194°F)*2	Fuel injector assembly	B
	Engine coolant temperature is 90°C (194°F) or higher*3	Pressure regulator	A

УКАЗАНИЕ:

*1: If the engine coolant temperature is 40°C [104°F] or less (after stopping the engine and the vehicle is not driven for a long period of time), the pressure regulator may be stuck open. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

*2: If the engine coolant temperature is 40 to 90°C [104 to 194°F] (15 to 120 minutes have passed after stopping the engine), there may be fuel leaking from a fuel injector assembly.

*3: If the engine coolant temperature is 90°C [194°F] or higher (2 to 5 minutes have passed after stopping the engine), there may be a problem with the pressure regulator failing to maintain the fuel pressure. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

B

[Перейдите к шагу 20](#)

A

19.CHECK FUEL PRESSURE

УКАЗАНИЕ:

For the fuel pressure inspection, refer to the following procedures (See page [Нажмите здесь](#)).

- a. Attach a fuel pressure gauge and check the fuel pressure after stopping the engine.

Standard:

147 kPa (1.5 kgf/cm², 21psi) or higher (5 minutes after stopping the engine)

УКАЗАНИЕ:

If the engine cannot be started, read the values after cranking the engine.

Result

Result	Proceed to
Abnormal	A
Normal	B

B[Перейдите к шагу 24](#)**A**

REPLACE FUEL PRESSURE REGULATOR ([Нажмите здесь](#))

20.INSPECT FUEL INJECTOR ASSEMBLY

- a. Clean the inside of the surge tank with compressed air.
- b. After stopping the engine, measure the HC concentration inside the surge tank for 15 minutes.

Result

Result	Proceed to
4000 ppm or higher	A
Less than 4000 ppm	B

УКАЗАНИЕ:

If the concentration is 4000 ppm or higher, a fuel injector assembly may have a sealing problem.

B[Перейдите к шагу 22](#)**A****21.INSPECT FUEL INJECTOR ASSEMBLY**

- a. Inspect the fuel injector assemblies (See page [Нажмите здесь](#)).

NG

REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))

OK**22.INSPECT THROTTLE BODY WITH MOTOR ASSEMBLY**

- a. Check if carbon is in the air flow passage.

Result

Result	Proceed to
No carbon present	A
Carbon in passage	B

B

CLEAN OR REPLACE THROTTLE BODY WITH MOTOR ASSEMBLY ([Нажмите здесь](#))

A

23.CHECK INTAKE SYSTEM

- a. Check the intake system for vacuum leaks (See page [Нажмите здесь](#)).

OK:

No leaks in intake system.

NG

REPAIR OR REPLACE INTAKE SYSTEM

OK

24.PERFORM SIMULATION TEST

- a. Check if the engine can be started.

Result

Result	Proceed to
Engine cannot be started	A
Engine can be started	B

B

END

A

25.CONFIRM PROBLEM SYMPTOM

- a. Confirm the problem symptoms.

УКАЗАНИЕ:

The problem symptoms below can be determined by reading the freeze frame data.

Result

Problem Symptom	Suspected Area	Proceed to
-----------------	----------------	------------

The engine does not crank	<ul style="list-style-type: none"> • Battery fully depleted • Starter assembly (includes pinion gear wear or teeth damage) • Starter system • Engine assembly (excess friction) • Drive plate and ring gear sub-assembly wear or teeth damage 	A
Abnormal cranking speed	<ul style="list-style-type: none"> • Battery fully depleted • Starter assembly • Engine assembly (excess friction, compression loss) 	B
There is no initial combustion (combustion does not occur even once)*1	<ul style="list-style-type: none"> • Pressure regulator fuel pressure maintenance • Fuel injector assembly leak • Fuel leak from fuel line • Fuel pump control system • Fuel pump • Spark plug • Crankshaft position sensor system • Ignition coil assembly system 	C
The engine stalls after starter turn off (engine stalls immediately after the first time the engine speed increases)*2	<ul style="list-style-type: none"> • Intake system connections • Throttle body with motor assembly • Camshaft timing oil control valve assembly • Mass air flow meter sub-assembly system 	D
The initial combustion and starter turn off occur late*3	<ul style="list-style-type: none"> • Engine coolant temperature sensor • Mass air flow meter sub-assembly • Air fuel ratio sensor • Heated oxygen sensor • Fuel injector assembly • Spark plug • Pressure regulator • Fuel pump • Fuel pump control system 	E

УКАЗАНИЕ:

- **If there is hesitation (cranking speed is slow and combustion occurs before passing TDC) during the initial cranking period, the battery charge may be insufficient or the starter may be malfunctioning.**
- ***1: If there is no initial combustion, a wire harness may be malfunctioning, or the ignition or fuel system may be malfunctioning.**
- ***2: If the engine stalls after starter turn off, the air fuel ratio may be incorrect or the camshaft timing oil control valve assembly may have a problem returning.**
- ***3: If the initial combustion and starter turn off occur late, the fuel injection volume may be incorrect (too low or too high).**

B	<u>Перейдите к шагу 32</u>
C	<u>Перейдите к шагу 35</u>
D	<u>Перейдите к шагу 49</u>
E	<u>Перейдите к шагу 50</u>

E[Перейдите к шагу 55](#)**A****26.PERFORM SIMULATION TEST**

- a. When cranking the engine, check for a noise indicating that the starter pinion gear is extending, and check that the starter pinion gear is not spinning freely.

Result

Problem Symptom	Suspected Area	Proceed to
A noise indicating that the starter pinion gear is extending is heard and the starter pinion gear is not spinning freely.*1	<ul style="list-style-type: none"> • Battery • Excess engine friction • Starter assembly 	A
A noise indicating that the starter pinion gear is extending is heard but the starter pinion gear is spinning freely.	<ul style="list-style-type: none"> • Drive plate and ring gear sub-assembly • Starter assembly 	B
A noise indicating that the starter pinion gear is extending is not heard.	<ul style="list-style-type: none"> • Battery • Starter assembly • Starter system 	C

УКАЗАНИЕ:

*1: The battery may be fully depleted or there may be excess engine friction.

B[Перейдите к шагу 29](#)**C**[Перейдите к шагу 30](#)**A****27.INSPECT BATTERY**

- a. Inspect the battery (See page [Нажмите здесь](#)).

NG**CHARGE OR REPLACE BATTERY****OK****28.CHECK ENGINE ASSEMBLY**

- a. Check that the crankshaft rotates smoothly when rotating it by hand.

OK:

Crankshaft rotates smoothly.

УКАЗАНИЕ:

Excess engine friction may have occurred temporarily. Remove the cylinder head cover and oil pan, and check for foreign matter such as iron fragments. If there is a malfunction or signs of a malfunction present, perform a detailed inspection by disassembling all the parts.

NG

REPAIR OR REPLACE ENGINE ASSEMBLY

OK

INSPECT STARTER ASSEMBLY ([Нажмите здесь](#))

29.INSPECT STARTER ASSEMBLY (STARTER PINION GEAR)

- a. Remove the starter assembly (See page [Нажмите здесь](#)).
- b. Check for starter pinion gear wear and damage.

OK:

There is no wear or damage.

NG

REPLACE STARTER ASSEMBLY ([Нажмите здесь](#))

OK

REPLACE DRIVE PLATE AND RING GEAR SUB-ASSEMBLY ([Нажмите здесь](#))

30.INSPECT BATTERY

- a. Inspect the battery (See page [Нажмите здесь](#)).

NG

CHARGE OR REPLACE BATTERY

OK

31.INSPECT STARTER ASSEMBLY

- a. Inspect the starter assembly (See page [Нажмите здесь](#)).

NG

REPLACE STARTER ASSEMBLY ([Нажмите здесь](#))

OK

CHECK STARTER SIGNAL CIRCUIT ([Нажмите здесь](#))

32.PERFORM SIMULATION TEST

- a. Check the cranking speed.

Result

Problem Symptom	Suspected Area	Proceed to
Cranking speed is slow (100 rpm or less)	<ul style="list-style-type: none">• Battery• Starter assembly• Excess engine friction	A
Cranking speed is fast (300 rpm or higher)*1	Engine compression loss	B

УКАЗАНИЕ:

*1: If the cranking speed is fast, there may be compression loss.

B

CHECK AND REPAIR ENGINE ASSEMBLY

A

33.INSPECT BATTERY

- a. Inspect the battery (See page [Нажмите здесь](#)).

NG

CHARGE OR REPLACE BATTERY

OK

34.CHECK ENGINE ASSEMBLY

- a. Check that the crankshaft rotates smoothly when rotating it by hand.

OK:

Crankshaft rotates smoothly.

УКАЗАНИЕ:

Excess engine friction may have occurred temporarily. Remove the cylinder head cover and oil pan, and check for foreign matter such as iron fragments. If there is a malfunction or signs of a malfunction present, perform a detailed inspection by disassembling all the parts.

NG

CHECK AND REPAIR ENGINE ASSEMBLY

OK

INSPECT STARTER ASSEMBLY ([Нажмите здесь](#))

35.INSPECT FUEL INJECTOR ASSEMBLY

- a. Using a sound scope or screwdriver, check for an injector operating sound while cranking the engine.

OK:

Fuel injector assembly operating sound is heard.

NG

[Перейдите к шагу 47](#)

OK

36.CHECK FUEL PRESSURE

- a. Check the fuel pressure (See page [Нажмите здесь](#)).

NG

[Перейдите к шагу 45](#)

OK

37.CHECK SPARK PLUG AND SPARK

- a. Check for sparks (See page [Нажмите здесь](#)).

NG

[Перейдите к шагу 41](#)

OK

38.CONFIRM VEHICLE CONDITION

- a. Confirm the conditions present when the malfunction occurred based on the customer problem analysis.

Result

Problem Symptom	Suspected Area	Proceed to
When the engine is stopped and a long time has passed, engine starting trouble occurs*1	Pressure regulator is stuck open	A
When the engine is stopped and approximately 15 to 120 minutes have passed, engine starting trouble occurs*2	Fuel injector assembly leak	B
When the engine is stopped and		

approximately 2 to 3 minutes have passed, engine starting trouble occurs*3	Failure to maintain fuel pressure by pressure regulator	A
Condition other than above, or there is an inconsistency in the conditions present when engine starting trouble occurs	-	C*4

УКАЗАНИЕ:

*1: The pressure regulator may be stuck open. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

*2: Fuel may be leaking from a fuel injector assembly.

*3: The pressure regulator may not be able to maintain the fuel pressure. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

*4: From step 69, perform fuel system troubleshooting C (steps 70 to 74).



[Перейдите к шагу 40](#)



[Перейдите к шагу 69](#)



39.CHECK FUEL PRESSURE

УКАЗАНИЕ:

For the fuel pressure inspection, refer to the following procedures (See page [Нажмите здесь](#)).

- a. Attach a fuel pressure gauge and check the fuel pressure after stopping the engine.

Standard:

147 kPa (1.5 kgf/cm², 21 psi) or higher (5 minutes after stopping the engine)

Result

Result	Proceed to
Abnormal	A
Normal	B*1

УКАЗАНИЕ:

- If the engine cannot be started, read the values after cranking the engine.
- *1: From step 69, perform fuel system troubleshooting C (steps 70 to 74).



[Перейдите к шагу 69](#)



A

REPLACE FUEL PRESSURE REGULATOR ([Нажмите здесь](#))

40.INSPECT FUEL INJECTOR ASSEMBLY

- a. Clean the inside of the surge tank with compressed air.
- b. After stopping the engine, measure the HC concentration inside the surge tank for 15 minutes.

Result

Result	Proceed to
4000 ppm or higher	A
Less than 4000 ppm	B*1

УКАЗАНИЕ:

- If the concentration is 4000 ppm or higher, a fuel injector assembly may have a sealing problem.
- *1: From step 69, perform fuel system troubleshooting C (steps 70 to 74).

B

[Перейдите к шагу 69](#)

A

REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))

41.INSPECT SPARK PLUG

- a. Inspect the spark plugs (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

Even if the spark plug of only one cylinder is malfunctioning, replace the spark plugs of all cylinders.

NG

REPLACE SPARK PLUG ([Нажмите здесь](#))

OK

42.READ VALUE USING GTS (ENGINE SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Primary / Engine Speed.

- e. Start the engine.
- f. While running the engine, read the [Engine Speed] value.

OK:

A value that matches the actual engine speed is constantly output.

УКАЗАНИЕ:

- **Check the engine speed using a line graph.**
- **If the engine cannot be started, check the engine speed while cranking the engine.**
- **If the engine speed is 0 rpm, the crankshaft position sensor may have an open or short circuit.**

NG

CHECK CRANKSHAFT POSITION SENSOR CIRCUIT ([Нажмите здесь](#))

OK

43.CHECK TERMINAL VOLTAGE (POWER SOURCE OF IGNITION COIL ASSEMBLY)

- a. Check the harnesses and connectors, referring to DTC P0351 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

CHECK IGNITION COIL POWER SOURCE CIRCUIT ([Нажмите здесь](#))

OK

44.CHECK HARNESS AND CONNECTOR (IGNITION COIL ASSEMBLY - ECM)

- a. Check the harnesses and connectors, referring to DTC P0351 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**
- **If the wire harness is normal, after replacing the ignition coil assembly, check if engine starting trouble occurs again. If engine starting trouble occurs again, proceed to step 69 and perform troubleshooting for the ignition system (steps 75 to 83).**

NG

REPAIR OR REPLACE HARNESS OR

OK

REPLACE IGNITION COIL ASSEMBLY ([Нажмите здесь](#))

45.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for an operating sound from the fuel pump.

OK:

Control the Fuel Pump / Speed	Specified Condition
ON	Operating sound heard
OFF	Operating sound not heard

УКАЗАНИЕ:

Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.

NG

CHECK FUEL PUMP CONTROL CIRCUIT
([Нажмите здесь](#))

OK

46.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for fuel leakage from the fuel pipes.

Result

Result	Proceed to
Fuel leakage or signs of fuel leakage are present	A
No fuel leakage or signs of fuel leakage	B

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Check if the vehicle ran out of fuel, as engine starting trouble due to running out of fuel is also detected.
- If there are no fuel leaks, after inspecting the fuel pump control system, check if engine starting trouble occurs again. If engine starting trouble occurs again, proceed to step 69 and perform fuel system troubleshooting C (steps 70 to 74).

B

CHECK FUEL PUMP CONTROL CIRCUIT
([Нажмите здесь](#))

A

REPAIR OR REPLACE FUEL LINE

47.READ VALUE USING GTS (ENGINE SPEED)

- Connect the GTS to the DLC3.
- Turn the engine switch on (IG).
- Turn the GTS on.
- Enter the following menus: Powertrain / Engine and ECT / Data List / Primary / Engine Speed.
- Start the engine.
- While running the engine, read the [Engine Speed] value.

OK:

A value that matches the actual engine speed is constantly output.

УКАЗАНИЕ:

- Check the engine speed using a line graph.
- If the engine cannot be started, check the engine speed while cranking the engine.
- If the engine speed is 0 rpm, the crankshaft position sensor may have an open or short circuit.

NG

REPLACE CRANKSHAFT POSITION SENSOR
([Нажмите здесь](#))

OK

48.CHECK TERMINAL VOLTAGE (POWER SOURCE OF FUEL INJECTOR ASSEMBLY)

- Check the harnesses and connectors, referring to DTC P0300 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Make sure there is not an excessive amount of force applied to the wire harness.

NG

CHECK FUEL INJECTOR CIRCUIT
([Нажмите здесь](#))

OK

REPLACE ECM ([Нажмите здесь](#))

49.INSPECT MASS AIR FLOW METER SUB-ASSEMBLY

- a. Inspect the mass air flow meter sub-assembly (See page [Нажмите здесь](#)).

NG

[Перейдите к шагу 54](#)

OK

50.CHECK INTAKE SYSTEM

- a. Check for air leakage in the intake system (vacuum hose disconnection, cracks, damaged gaskets, etc.) (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- If the accelerator pedal is released after racing the engine, the inspection is easier to perform because the vacuum inside the intake air surge tank assembly increases and the air suction noise becomes louder.
- If Short FT #1, Short FT #2, Long FT #1 and Long FT #2 are largely different from the normal values (differ by more than 15%) when idling (intake air volume is small) and almost the same as the normal values when racing the engine (for example, when maintaining a speed of 3000 rpm) (intake air volume is high), air leakage may be present.

ОК:

There is no air leakage.

NG

REPAIR OR REPLACE INTAKE SYSTEM

OK

51.INSPECT THROTTLE BODY WITH MOTOR ASSEMBLY

- a. Disconnect the throttle body with motor assembly connector.

УКАЗАНИЕ:

When the connector is disconnected, the vehicle enters fail-safe mode and the

throttle valve opening angle is 4 to 7°.

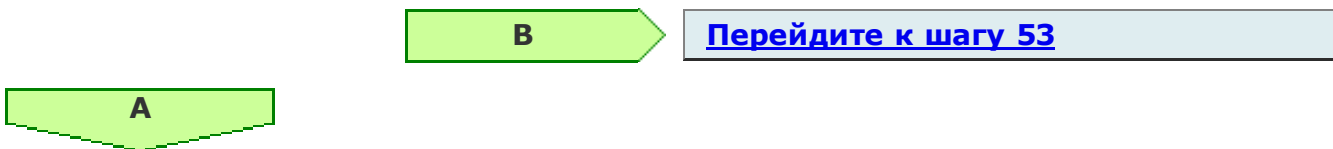
- b. Crank the engine and check that it starts.

Result

Result	Proceed to
Engine starts	A
Engine does not start	B

УКАЗАНИЕ:

When this inspection is performed, the MIL may illuminate. After finishing the inspection, check and clear DTCs (See page [Нажмите здесь](#)).

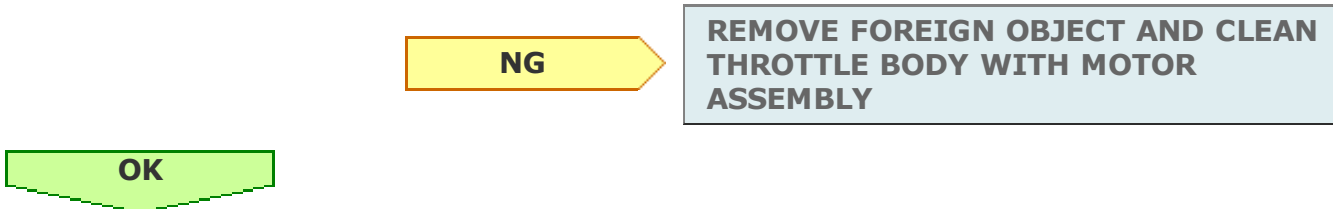


52.INSPECT THROTTLE BODY WITH MOTOR ASSEMBLY

- a. Check if carbon is in the air flow passage.

OK:

No carbon present.



53.PERFORM ACTIVE TEST USING GTS (OPERATE CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY)

- a. Operate the VVT system through the Active Test, and check if the VVT system is operating normally.
- Perform the Active Test, referring to DTC P0011 inspection procedure (VVT system for intake side) (See page [Нажмите здесь](#)).
 - Perform the Active Test, referring to DTC P0014 inspection procedure (VVT system for exhaust side) (See page [Нажмите здесь](#)).

Result

Result	Proceed to
NG	A
OK	B*1

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always**

occur.

- When the results of the inspection using the Active Test are normal but the valve operating noise is abnormal, check the valve for any signs of problems.
- If the camshaft timing oil control valve assembly (for intake side or exhaust side) is stuck at the advanced side, the valve overlap increases and combustion worsens due to the internal EGR which may cause rough idle or cause the engine to stall.
- *1: From step 69, perform intake system troubleshooting (steps 84 to 86). If engine starting trouble still occurs, perform fuel system troubleshooting A (steps 87 to 94).

B

[Перейдите к шагу 69](#)

A

REPLACE CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY (FOR INTAKE OR EXHAUST SIDE) ([Нажмите здесь](#))

54.CHECK HARNESS AND CONNECTOR (MASS AIR FLOW METER SUB-ASSEMBLY - ECM)

- a. Check the harnesses and connectors, referring to DTC P0102 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Make sure there is not an excessive amount of force applied to the wire harness.
- If the wire harness is normal, after replacing the mass air flow meter sub-assembly, check if engine starting trouble occurs again. If engine starting trouble occurs again, proceed to step 69 and perform intake system troubleshooting (steps 84 to 86). If engine starting trouble still occurs, perform fuel system troubleshooting A (steps 87 to 94).

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE MASS AIR FLOW METER SUB-ASSEMBLY ([Нажмите здесь](#))

55.INSPECT ENGINE COOLANT TEMPERATURE SENSOR

- a. Inspect the engine coolant temperature sensor (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

If the engine coolant temperature sensor is malfunctioning, after replacing it, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps

103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

NG

REPLACE ENGINE COOLANT TEMPERATURE SENSOR ([Нажмите здесь](#))

OK

56.CHECK HARNESS AND CONNECTOR (ENGINE COOLANT TEMPERATURE SENSOR - ECM)

- a. Check the harnesses and connectors, referring to DTC P0115 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.
- Make sure there is not an excessive amount of force applied to the wire harness.
- If the wire harness or connector is malfunctioning, after replacing or repairing it, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

57.INSPECT MASS AIR FLOW METER SUB-ASSEMBLY

- a. Inspect the mass air flow meter sub-assembly (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

If the mass air flow meter sub-assembly is malfunctioning, after replacing it, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

NG

REPLACE MASS AIR FLOW METER SUB-ASSEMBLY ([Нажмите здесь](#))

OK

58.CHECK HARNESS AND CONNECTOR (MASS AIR FLOW METER SUB-ASSEMBLY - ECM)

- a. Check the harnesses and connectors, referring to DTC P0102 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**
- **If the wire harness or connector is malfunctioning, after replacing or repairing it, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

59.READ VALUE USING GTS

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl AF Control / Long FT #1, Long FT #2 and Atmosphere Pressure.

Result

Data List Item	Result	Suspected Area	Proceed to
Long FT #1, Long FT #2	+25% or higher, or less than -25%	<ul style="list-style-type: none"> • Air fuel ratio sensor • Heated oxygen sensor • Mass air flow meter sub-assembly • Fuel injector assembly • ECM 	A
Atmosphere Pressure	80 kPa(abs) [600 mmHg(abs)] or less [when altitude is 0 m (0 ft)]		
Both Data List items listed above	Values are other than above	-	B

В[Перейдите к шагу 63](#)**А****60.PERFORM SIMULATION TEST**

- Remove the EFI and ETCS fuses from the engine room relay block and junction block.
- After 60 seconds or more elapse, install the EFI and ETCS fuses.
- Check if the engine can be started.

Result

Result	Proceed to
Engine can be started	A
Engine cannot be started	B

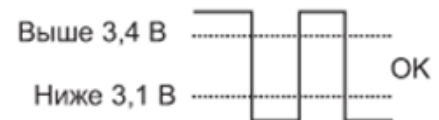
В[Перейдите к шагу 63](#)**А****61.INSPECT AIR FUEL RATIO SENSOR**

- Connect the GTS to the DLC3.
- Start the engine.
- Turn the GTS on.
- Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl AF Control / Fuel System Status #1 and Fuel System Status #2.
- Confirm that Fuel System Status #1 and Fuel System Status #2 are CL.
- Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl AF Control / AF Lambda B1S1 and AF Lambda B2S1.
- Confirm that AF Lambda B1S1 and AF Lambda B2S1 are within the range of 0.95 to 1.05 when idling.
- Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Injection Volume for A/F Sensor / Ptrl AF Control / AFS Voltage B1S1 or AFS Voltage B2S1.
- Read the output voltage from the air fuel ratio sensor when increasing and decreasing the fuel injection volume.

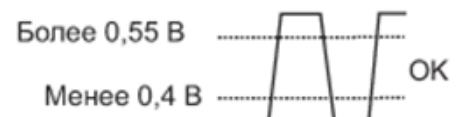
Объем впрыска топлива



Выходное напряжение датчика состава топливовоздушной смеси



Выходное напряжение подогреваемого кислородного датчика



Standard:

GTS Display	Injection Volume	Specified Condition
AFS Voltage B1S1 AFS Voltage B2S1	+12.5%	Air fuel ratio sensor output voltage is below 3.1 V
	-12.5%	Air fuel ratio sensor output voltage is higher than 3.4 V

УКАЗАНИЕ:

- The air fuel ratio sensor has an output delay of a few seconds and the heated oxygen sensor has a maximum output delay of approximately 20 seconds.
- If the air fuel ratio sensor is malfunctioning, after replacing it, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

NG

REPLACE AIR FUEL RATIO SENSOR
([Нажмите здесь](#))

OK

62.PERFORM SIMULATION TEST

- a. Check if the idle speed is stable after starting the engine.

OK:

Idle speed is stable.

УКАЗАНИЕ:

- After replacing the fuel injector assembly or mass air flow meter sub-assembly, check if engine starting trouble occurs again. If engine starting trouble occurs, replace the ECM. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

REPLACE FUEL INJECTOR ASSEMBLY

NG

([Нажмите здесь](#))

OK

REPLACE MASS AIR FLOW METER SUB-ASSEMBLY ([Нажмите здесь](#))

63.CHECK FUEL PRESSURE

- a. Check the fuel pressure (See page).

NG

[Перейдите к шагу 68](#)

OK

64.INSPECT SPARK PLUG

- a. Inspect the spark plugs (See page [Нажмите здесь](#)).

Result

Result	Proceed to
All cylinders are normal	A
One cylinder is abnormal*1	B
All cylinders are abnormal*2, *3	C

УКАЗАНИЕ:

- ***1:** If one cylinder is abnormal, replace the spark plug of that cylinder and inspect the ignition and fuel system for that cylinder. After performing repairs, check if engine starting trouble occurs again. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.
- ***2:** If all cylinders are abnormal, replace the spark plugs of all cylinders and check if engine starting trouble occurs again. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.
- ***3:** Engine starting trouble may occur if the vehicle is driven extremely short distances repeatedly.

B

REPLACE SPARK PLUG (ABNORMAL CYLINDER) ([Нажмите здесь](#))

C

REPLACE SPARK PLUG (ALL CYLINDER) ([Нажмите здесь](#))

A

65.CONFIRM VEHICLE CONDITION

- a. Confirm the conditions present when the malfunction occurred based on the customer problem analysis.

Result

Problem Symptom	Suspected Area	Proceed to
When the engine is stopped and a long time has passed, engine starting trouble occurs*1	Pressure regulator is stuck open	A
When the engine is stopped and approximately 15 to 120 minutes have passed, engine starting trouble occurs*2	Fuel injector assembly leak	B
When the engine is stopped and approximately 2 to 3 minutes have passed, engine starting trouble occurs*3	Failure to maintain fuel pressure by pressure regulator	A
Condition other than above, or there is an inconsistency in the conditions present when engine starting trouble occurs	-	C*4

УКАЗАНИЕ:

*1: The pressure regulator may be stuck open. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

*2: Fuel may be leaking from a fuel injector assembly.

*3: The pressure regulator may not be able to maintain the fuel pressure. Attach a fuel pressure gauge and check the ability to maintain fuel pressure after stopping the engine.

*4: From step 69, perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

B

[Перейдите к шагу 67](#)

C

[Перейдите к шагу 69](#)

A

66.CHECK FUEL PRESSURE

УКАЗАНИЕ:

For the fuel pressure inspection, refer to the following procedures (See page [Нажмите здесь](#)).

- a. Attach a fuel pressure gauge and check the fuel pressure after stopping the engine.

Standard:

147 kPa (1.5 kgf/cm², 21 psi) or higher (5 minutes after stopping the engine).

Result

Result	Proceed to
Abnormal	A
Normal	B*1

УКАЗАНИЕ:

- If the engine cannot be started, read the values after cranking the engine.
- *1: From step 69, perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

B

[Перейдите к шагу 69](#)

A

REPLACE FUEL PRESSURE REGULATOR ([Нажмите здесь](#))

67.INSPECT FUEL INJECTOR ASSEMBLY

- a. Clean the inside of the surge tank with compressed air.
- b. After stopping the engine, measure the HC concentration inside the surge tank for 15 minutes.

Result

Result	Proceed to
4000 ppm or higher	A
Less than 4000 ppm	B*1

УКАЗАНИЕ:

- If the concentration is 4000 ppm or higher, a fuel injector may have a sealing problem.
- *1: From step 69, perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

B

[Перейдите к шагу 69](#)

A

REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))

68.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

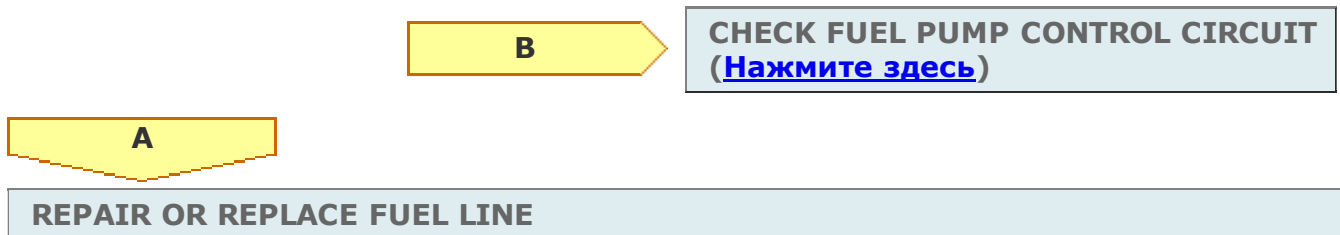
- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for fuel leakage from the fuel pipes.

Result

Result	Proceed to
Fuel leakage or signs of fuel leakage are present	A
No fuel leakage or signs of fuel leakage	B

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Check if the vehicle ran out of fuel, as engine starting trouble due to running out of fuel is also detected.**
- **If there are no fuel leaks, after inspecting the fuel pump control system, check if engine starting trouble occurs again. If engine starting trouble still occurs, proceed to step 69 and perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.**



69.CHECK MALFUNCTION CONDITION

- a. If the malfunction could not be identified during the inspection in steps 38, 39, 40 and 46, perform fuel system troubleshooting C (steps 70 to 74).

Result

Performed Step	Troubleshooting by System	Procedure	Proceed to
Steps 38, 39, 40 and 46	Fuel system troubleshooting C	70 to 74	A

- b. If the malfunction could not be identified during the inspection in step 44, perform ignition system troubleshooting (steps 75 to 83).

Result

Performed Step	Troubleshooting by System	Procedure	Proceed to

Step 44	Ignition system troubleshooting	75 to 83	B
---------	---------------------------------	----------	---

- c. If the malfunction could not be identified during the inspection in steps 53 and 54, perform intake air system troubleshooting (steps 84 to 86). If engine starting trouble still occurs, perform fuel system troubleshooting A (steps 87 to 94).

Result

Performed Step	Troubleshooting by System	Procedure	Proceed to
Step 53 and 54	Intake air system troubleshooting	84 to 86	C
	Fuel system troubleshooting A	87 to 94	

- d. If the malfunction could not be identified during the inspection in steps 55, 56, 57, 58, 61, 62, 64, 65, 66, 67 and 68, perform fuel system troubleshooting A (steps 95 to 102), fuel system troubleshooting B (steps 103 to 105), intake air system troubleshooting (steps 106 to 108), and ignition system troubleshooting (steps 109 to 117), in that order.

Result

Performed Step	Troubleshooting by System	Procedure	Proceed to
Steps 55, 56, 57, 58, 61, 62, 64, 65, 66, 67 and 68	Fuel system troubleshooting A	95 to 102	D
	Fuel system troubleshooting B	103 to 105	
	Intake air system troubleshooting	106 to 108	
	Ignition system troubleshooting	109 to 117	

B → [Перейдите к шагу 75](#)

C → [Перейдите к шагу 84](#)

D → [Перейдите к шагу 95](#)

A

70.INSPECT FUEL INJECTOR ASSEMBLY

- a. Inspect the fuel injector assemblies (See page [Нажмите здесь](#)).

NG → REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))

OK

71.CHECK TERMINAL VOLTAGE (POWER SOURCE OF FUEL INJECTOR ASSEMBLY)

- a. Check the harnesses and connectors, referring to DTC P0300 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

CHECK FUEL INJECTOR CIRCUIT
([Нажмите здесь](#))

OK

72.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 73](#)

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

73.REPLACE VVT SENSOR (FOR INTAKE SIDE)

- a. Replace the VVT sensor (for intake side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 74](#)

OK

END (VVT SENSOR (FOR INTAKE SIDE) IS DEFECTIVE)

74.REPLACE VVT SENSOR (FOR EXHAUST SIDE)

- a. Replace the VVT sensor (for exhaust side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (VVT SENSOR (FOR EXHAUST SIDE) IS DEFECTIVE)

75.CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- a. Check the tightening and installation condition of the crankshaft position sensor bolt.
- b. Check the connection of the crankshaft position sensor connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR

OK

76.CHECK SENSOR INSTALLATION (VVT SENSOR (FOR INTAKE SIDE))

- a. Check the tightening and installation condition of the VVT sensor (for intake side) bolt.
- b. Check the connection of the VVT sensor (for intake side) connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR (FOR INTAKE SIDE)

OK

77.CHECK SENSOR INSTALLATION (VVT SENSOR (FOR EXHAUST SIDE))

- a. Check the tightening and installation condition of the VVT sensor (for exhaust side) bolt.
- b. Check the connection of the VVT sensor (for exhaust side) connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR (FOR EXHAUST SIDE)

OK

78.CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)

- a. Check the harnesses and connectors, referring to DTC P0335 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

79.CHECK HARNESS AND CONNECTOR (VVT SENSOR (FOR INTAKE SIDE) - ECM)

- a. Check the harnesses and connectors, referring to DTC P0340 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

80.CHECK HARNESS AND CONNECTOR (VVT SENSOR (FOR EXHAUST SIDE) - ECM)

- a. Check the harnesses and connectors, referring to DTC P0365 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

81.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).

- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 82](#)

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

82.REPLACE VVT SENSOR (FOR INTAKE SIDE)

- a. Replace the VVT sensor (for intake side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 83](#)

OK

END (VVT SENSOR (FOR INTAKE SIDE) IS DEFECTIVE)

83.REPLACE VVT SENSOR (FOR EXHAUST SIDE)

- a. Replace the VVT sensor (for exhaust side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (VVT SENSOR (FOR EXHAUST SIDE) IS DEFECTIVE)

84.READ VALUE USING GTS (ISC LEARNING VALUE)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl Throttle / ISC Learning Value.
- e. Start the engine and warm it up until the engine coolant temperature stabilizes with

the A/C switch and all the accessory switches off.

Result

Data List Item	Result	Suspected Area	Proceed to
ISC Learning Value	(Engine displacement (liters) x 0.9) or higher	<ul style="list-style-type: none"> • Valve timing • Compression 	A
	Less than (engine displacement (liters) x 0.9)	-	B

B

[Перейдите к шагу 86](#)

A

85.CHECK CYLINDER COMPRESSION PRESSURE

- a. Check the compression (See page [Нажмите здесь](#)).

NG

CHECK AND REPAIR ENGINE ASSEMBLY

OK

CHECK VALVE TIMING ([Нажмите здесь](#))

86.INSPECT ENGINE COOLANT TEMPERATURE SENSOR

- a. Inspect the engine coolant temperature sensor (See page [Нажмите здесь](#)).

NG

REPLACE ENGINE COOLANT TEMPERATURE SENSOR ([Нажмите здесь](#))

OK

87.CHECK FUEL PRESSURE

УКАЗАНИЕ:

For the fuel pressure inspection, refer to the following procedures (See page [Нажмите здесь](#)).

- a. Attach a fuel pressure gauge and check the fuel pressure when cranking the engine and after stopping the engine.

Standard:

Vehicle State	Specified Condition

Cranking engine	380 kPa (3.9 kgf/cm ² , 55 psi) to 420 kPa (4.3 kgf/cm ² , 62 psi)
5 minutes after stopping engine	147 kPa (1.5 kgf/cm ² , 21 psi) or higher

NG

[Перейдите к шагу 93](#)

OK

88.READ VALUE USING GTS (LONG FT #1 AND LONG FT #2)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl AF Control / Long FT #1 and Long FT #2.

Result

Data List Item	Result	Suspected Area	Proceed to
Long FT #1, Long FT #2	-15 to +15%	<ul style="list-style-type: none"> • Wire harness or connector • Fuel 	A
	+15% or higher, or less than -15%	Fuel injector assembly	B

B

REPLACE FUEL INJECTOR ASSEMBLY
([Нажмите здесь](#))

A

89.PERFORM SIMULATION TEST

- a. Check if the idle speed after starting the engine is currently stable and has always been stable in the past.

Result

Problem Symptom	Suspected Area	Proceed to
Current unstable idle speed or history of unstable idling speed	Crankshaft position sensor system	A
All current and past idle speeds are stable	Fuel	B

УКАЗАНИЕ:

Through the customer problem analysis, confirm the fuel being used and the location at which the fuel was added to check if the malfunction is caused by the fuel in the vehicle.

B

REPLACE FUEL

A

90.CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- a. Check the tightening and installation condition of the crankshaft position sensor bolt.
- b. Check the connection of the crankshaft position sensor connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR

OK

91.CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)

- a. Check the harnesses and connectors, referring to DTC P0335 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

92.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

93.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for fuel leakage from the fuel pipes.

Result

Result	Proceed to
Fuel leakage or signs of fuel leakage are present	A
No fuel leakage or signs of fuel leakage	B

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **When performing the Active Test, if there is no operating noise from the fuel pump, the fuel pump system may be malfunctioning.**
- **Check if the vehicle ran out of fuel, as engine starting trouble due to running out of fuel is also detected.**

B

[Перейдите к шагу 94](#)

A

REPAIR OR REPLACE FUEL LINE

94.INSPECT FUEL PUMP

- a. Inspect the fuel pump (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Make sure there is no foreign matter such as iron particles on the fuel pump and no signs that the fuel pump was stuck.**
- **Make sure the internal connector is securely connected.**
- **Make sure the fuel pump filter is not clogged.**

NG

REPLACE FUEL PUMP ([Нажмите здесь](#))

OK

REPLACE FUEL PRESSURE REGULATOR ([Нажмите здесь](#))

95.CHECK FUEL PRESSURE

УКАЗАНИЕ:

For the fuel pressure inspection, refer to the following procedures (See page [Нажмите здесь](#)).

- a. Attach a fuel pressure gauge and check the fuel pressure after stopping the engine.

Standard:

147 kPa (1.5 kgf/cm², 21 psi) or higher (5 minutes after stopping the engine).

УКАЗАНИЕ:

If the engine cannot be started, read the values after cranking the engine.

NG

[Перейдите к шагу 101](#)

OK

96.READ VALUE USING GTS (LONG FT #1 AND LONG FT #2)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl AF Control / Long FT #1 and Long FT #2.

Result

Data List Item	Result	Suspected Area	Proceed to
Long FT #1, Long FT #2	-15 to +15%	<ul style="list-style-type: none">• Wire harness or connector• Fuel	A
	+15% or higher, or less than -15%	Fuel injector assembly	B

B

REPLACE FUEL INJECTOR ASSEMBLY
([Нажмите здесь](#))

A

97.PERFORM SIMULATION TEST

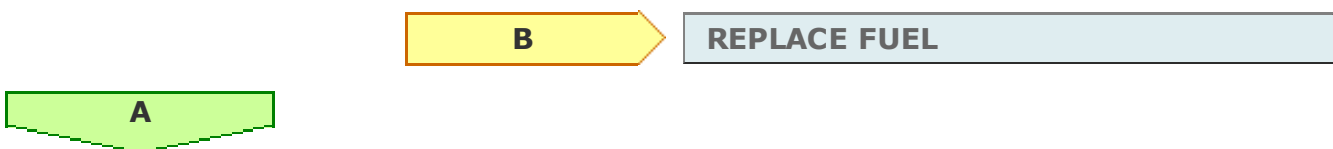
- a. Check if the idle speed after starting the engine is currently stable and has always been stable in the past.

Result

Problem Symptom	Suspected Area	Proceed to
Current unstable idle speed or history of unstable idling speed	Crankshaft position sensor system	A
All current and past idle speeds are stable	Fuel	B

УКАЗАНИЕ:

Through the customer problem analysis, confirm the fuel being used and the location at which the fuel was added to check if the malfunction is caused by the fuel in the vehicle.

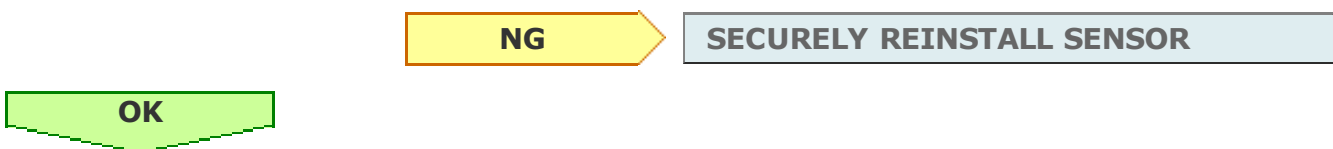


98.CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- Check the tightening and installation condition of the crankshaft position sensor bolt.
- Check the connection of the crankshaft position sensor connector.

OK:

Sensor is installed correctly.

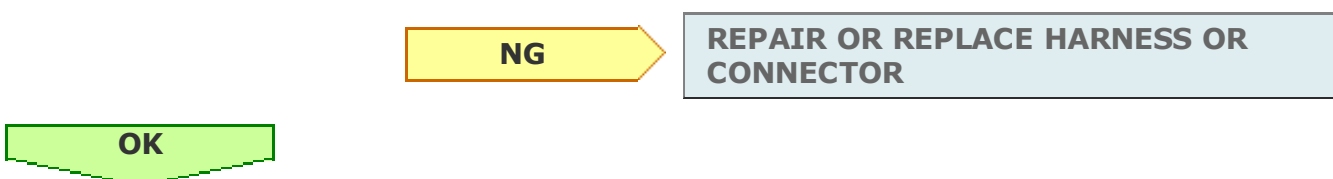


99.CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)

- Check the harnesses and connectors, referring to DTC P0335 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**



100.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

101.PERFORM ACTIVE TEST USING GTS (CONTROL THE FUEL PUMP / SPEED)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Fuel Pump / Speed.
- e. When performing the Active Test, check for fuel leakage from the fuel pipes.

Result

Result	Proceed to
Fuel leakage or signs of fuel leakage are present	A
No fuel leakage or signs of fuel leakage	B

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **When performing the Active Test, if there is no operating noise from the fuel pump, the fuel pump system may be malfunctioning.**
- **Check if the vehicle ran out of fuel, as engine starting trouble due to running out of fuel is also detected.**

B

[Перейдите к шагу 102](#)

A

REPAIR OR REPLACE FUEL LINE

102.INSPECT FUEL PUMP

- a. Inspect the fuel pump (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Make sure there is no foreign matter such as iron particles on the fuel pump and no signs that the fuel pump was stuck.**

- Make sure the internal connector is securely connected.
- Make sure the fuel pump filter is not clogged.

NG

REPLACE FUEL PUMP ([Нажмите здесь](#))

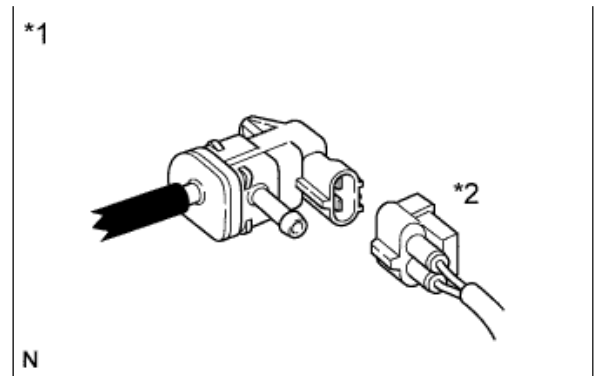
OK

103.CHECK PURGE VSV

- a. Disconnect the fuel vapor feed hose assembly (on the canister side) of the purge VSV.

Text in Illustration

*1	Purge VSV
*2	Purge VSV Connector



- b. Start the engine.
- c. Idle the engine.
- d. Disconnect the connector of the purge VSV.
- e. Check if air flows through the purge VSV.

OK:

Air does not flow.

УКАЗАНИЕ:

When this inspection is performed, the MIL may illuminate. After finishing the inspection, check and clear DTCs (See page [Нажмите здесь](#)).

NG

INSPECT PURGE VSV ([Нажмите здесь](#))

OK

104.INSPECT FUEL INJECTOR ASSEMBLY

- a. Clean the inside of the surge tank with compressed air.
- b. After stopping the engine, measure the HC concentration inside the surge tank for 15 minutes.

Result

Result	Proceed to
4000 ppm or higher	A

Less than 4000 ppm

B

УКАЗАНИЕ:

If the concentration is 4000 ppm or higher, a fuel injector assembly may have a sealing problem.

B

[Перейдите к шагу 105](#)

A

REPLACE FUEL INJECTOR ASSEMBLY ([Нажмите здесь](#))

105.CHECK INTAKE VALVE

- a. Check if carbon is on the intake valves.

Result

Result	Proceed to
Carbon present	A
No carbon present	B

B

[Перейдите к шагу 106](#)

A

CLEAN INTAKE VALVE

106.READ VALUE USING GTS (ISC LEARNING VALUE)

- a. Connect the GTS to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the GTS on.
- d. Enter the following menus: Powertrain / Engine and ECT / Data List / Ptrl Throttle / ISC Learning Value.
- e. Start the engine and warm it up until the engine coolant temperature stabilizes with the A/C switch and all the accessory switches off.

Result

Data List Item	Result	Suspected Area	Proceed to
ISC Learning Value	(Engine displacement (liters) x 0.9) or more	<ul style="list-style-type: none">• Valve timing• Compression	A
	Less than (engine displacement	-	B

(liters) x 0.9

B

[Перейдите к шагу 108](#)

A

107.CHECK CYLINDER COMPRESSION PRESSURE

- a. Check the compression (See page [Нажмите здесь](#)).

NG

CHECK AND REPAIR ENGINE ASSEMBLY

OK

CHECK VALVE TIMING ([Нажмите здесь](#))

108.INSPECT ENGINE COOLANT TEMPERATURE SENSOR

- a. Inspect the engine coolant temperature sensor (See page [Нажмите здесь](#)).

NG

REPLACE ENGINE COOLANT TEMPERATURE SENSOR ([Нажмите здесь](#))

OK

109.CHECK SENSOR INSTALLATION (CRANKSHAFT POSITION SENSOR)

- a. Check the tightening and installation condition of the crankshaft position sensor bolt.
- b. Check the connection of the crankshaft position sensor connector.

OK:
Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR

OK

110.CHECK SENSOR INSTALLATION (VVT SENSOR (FOR INTAKE SIDE))

- a. Check the tightening and installation condition of the VVT sensor (for intake side) bolt.
- b. Check the connection of the VVT sensor (for intake side) connector.

OK:
Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR (FOR INTAKE SIDE)

OK

111.CHECK SENSOR INSTALLATION (VVT SENSOR (FOR EXHAUST SIDE))

- a. Check the tightening and installation condition of the VVT sensor (for exhaust side) bolt.
- b. Check the connection of the VVT sensor (for exhaust side) connector.

OK:

Sensor is installed correctly.

NG

SECURELY REINSTALL SENSOR (FOR EXHAUST SIDE)

OK

112.CHECK HARNESS AND CONNECTOR (CRANKSHAFT POSITION SENSOR - ECM)

- a. Check the harnesses and connectors, referring to DTC P0335 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

113.CHECK HARNESS AND CONNECTOR (VVT SENSOR (FOR INTAKE SIDE) - ECM)

- a. Check the harnesses and connectors, referring to DTC P0340 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR

CONNECTOR

OK

114.CHECK HARNESS AND CONNECTOR (VVT SENSOR (FOR EXHAUST SIDE) - ECM)

- a. Check the harnesses and connectors, referring to DTC P0365 inspection procedure (See page [Нажмите здесь](#)).

УКАЗАНИЕ:

- **Jiggle the wire harness and connector to increase the likelihood of detecting malfunctions that do not always occur.**
- **Make sure there is not an excessive amount of force applied to the wire harness.**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

115.REPLACE CRANKSHAFT POSITION SENSOR

- a. Replace the crankshaft position sensor (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 116](#)

OK

END (CRANKSHAFT POSITION SENSOR IS DEFECTIVE)

116.REPLACE VVT SENSOR (FOR INTAKE SIDE)

- a. Replace the VVT sensor (for intake side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

[Перейдите к шагу 117](#)

OK

END (VVT SENSOR (FOR INTAKE SIDE) IS DEFECTIVE)

117.REPLACE VVT SENSOR (FOR EXHAUST SIDE)

- a. Replace the VVT sensor (for exhaust side) (See page [Нажмите здесь](#)).
- b. Check the engine start operation.

OK:

Malfunction has been repaired successfully.

NG

REPLACE ECM ([Нажмите здесь](#))

OK

END (VVT SENSOR (FOR EXHAUST SIDE) IS DEFECTIVE)