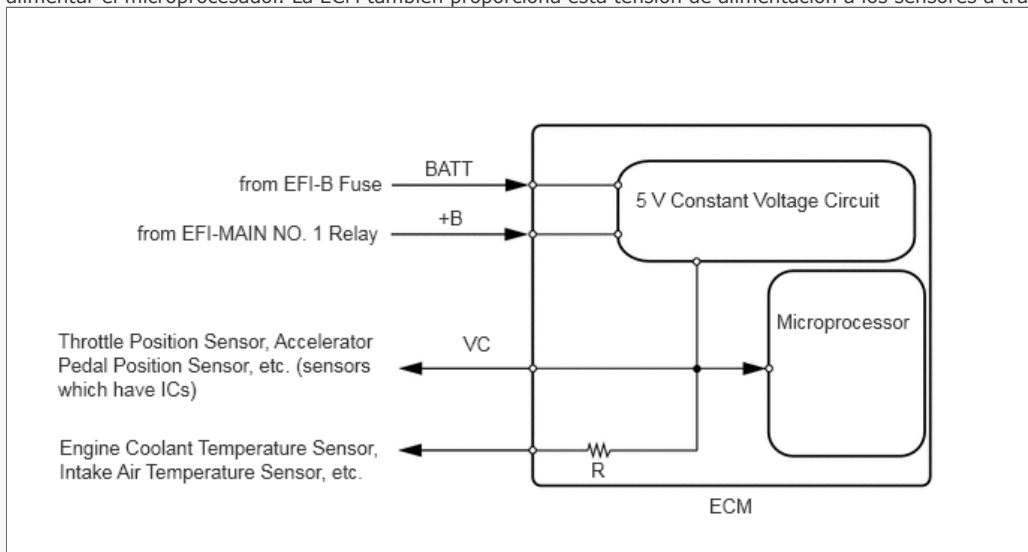


Sistema de control de motor ECD 1GD-FTV (para i-ART) Circuito de salida VC

DESCRIPCIÓN

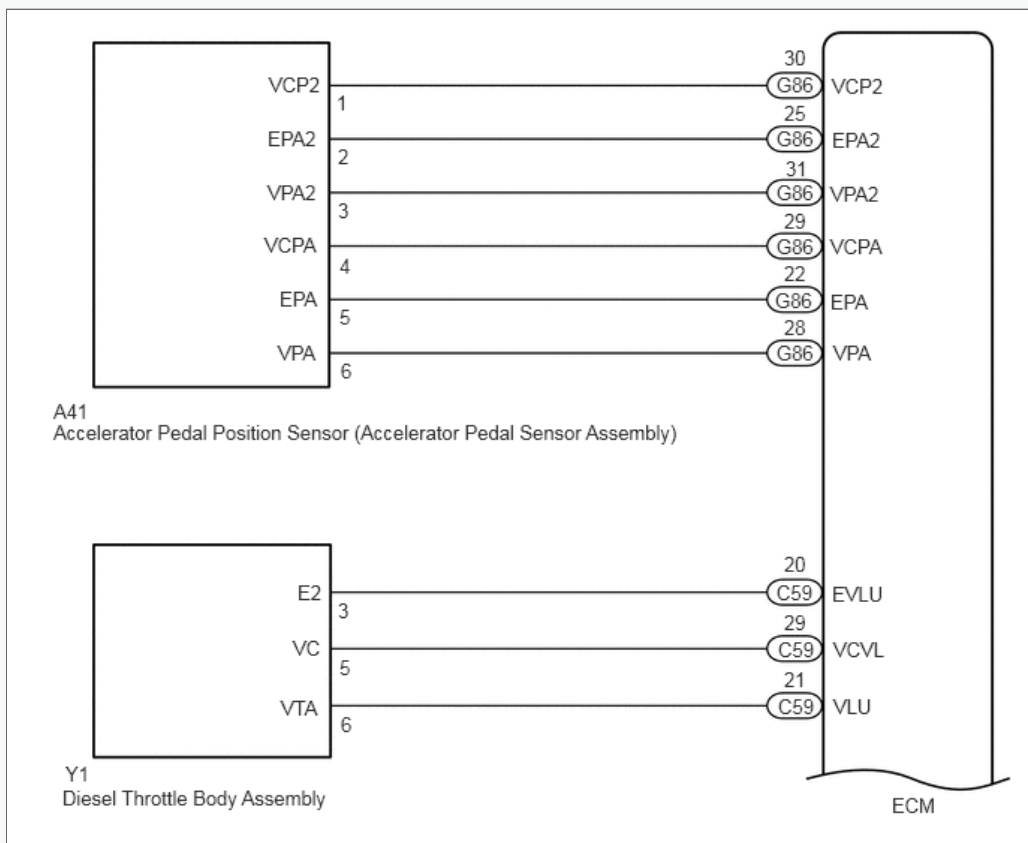
La ECM genera constantemente una tensión de alimentación de 5 V a partir de la tensión de la batería suministrada al terminal +B (BATT) para alimentar el microprocesador. La ECM también proporciona esta tensión de alimentación a los sensores a través del circuito de salida VC.

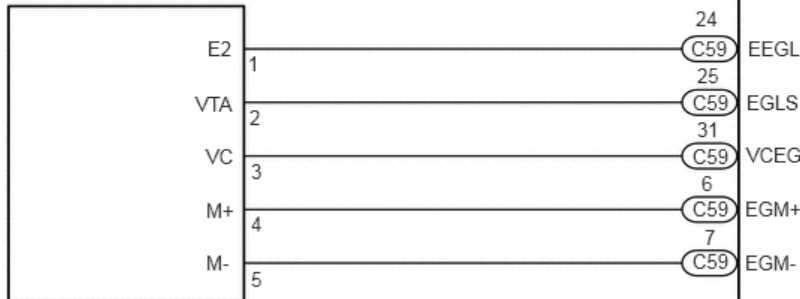


Cuando el circuito VC sufre un cortocircuito, la CPU de la ECM y los sensores alimentados a través de dicho circuito se desactivan por falta de suministro eléctrico. En estas condiciones, el sistema no arrancará.

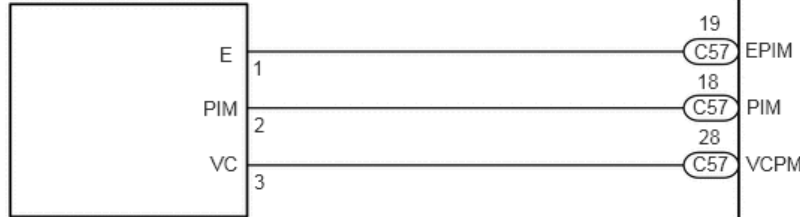
DIAGRAMA DE CABLEADO

- Diagrama del circuito de alimentación de la ECM.
Haga clic aquí: Sistema de motor/híbrido > CONTROL DEL MOTOR 1GD-FTV > SISTEMA ECD (para i-ART) > Circuito de alimentación de la ECM
- Circuito de fuente de alimentación VC

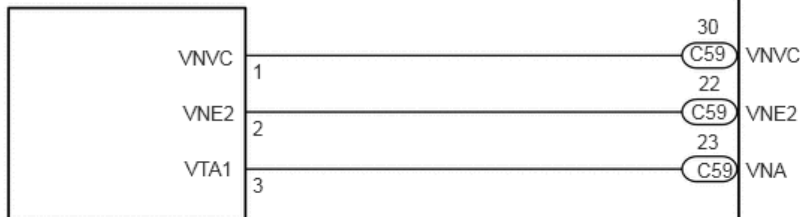




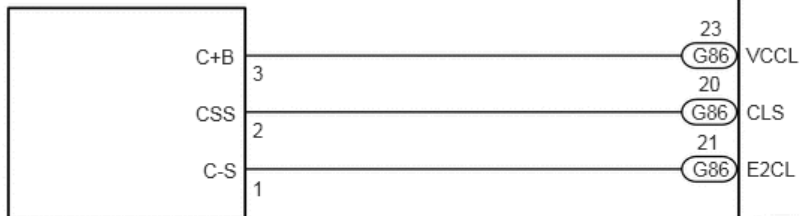
C95
Electric EGR Control Valve Assembly



C89
Manifold Absolute Pressure Sensor

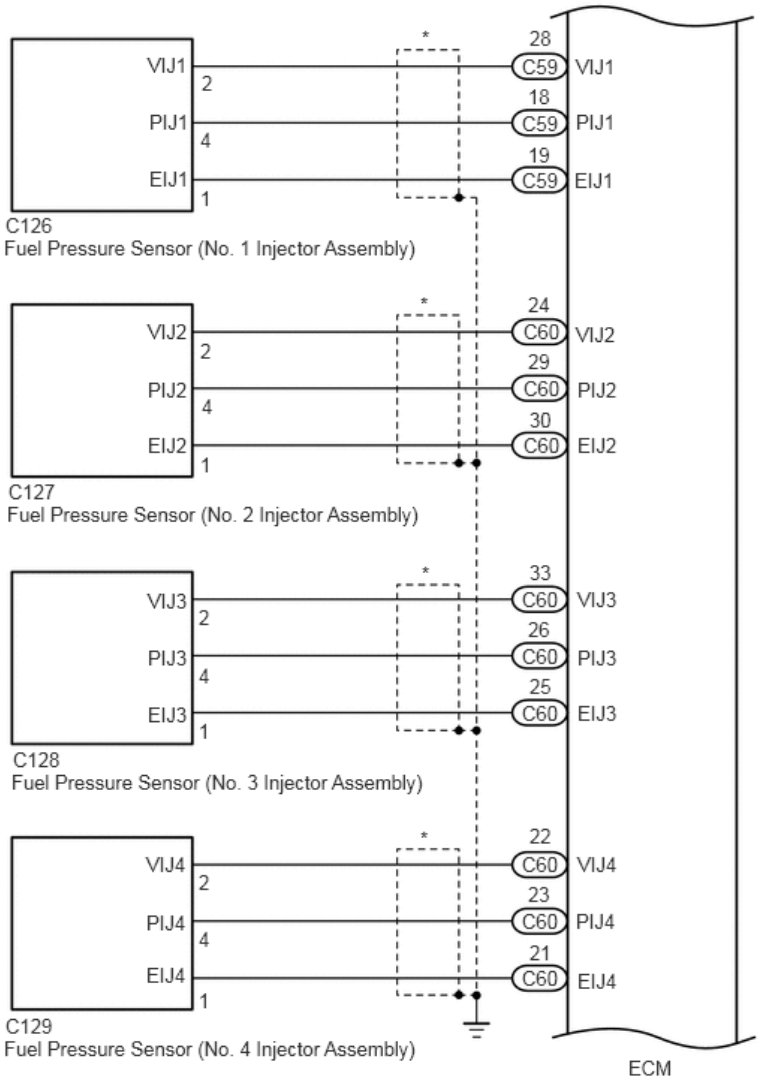


C93
Nozzle Vane Position Sensor

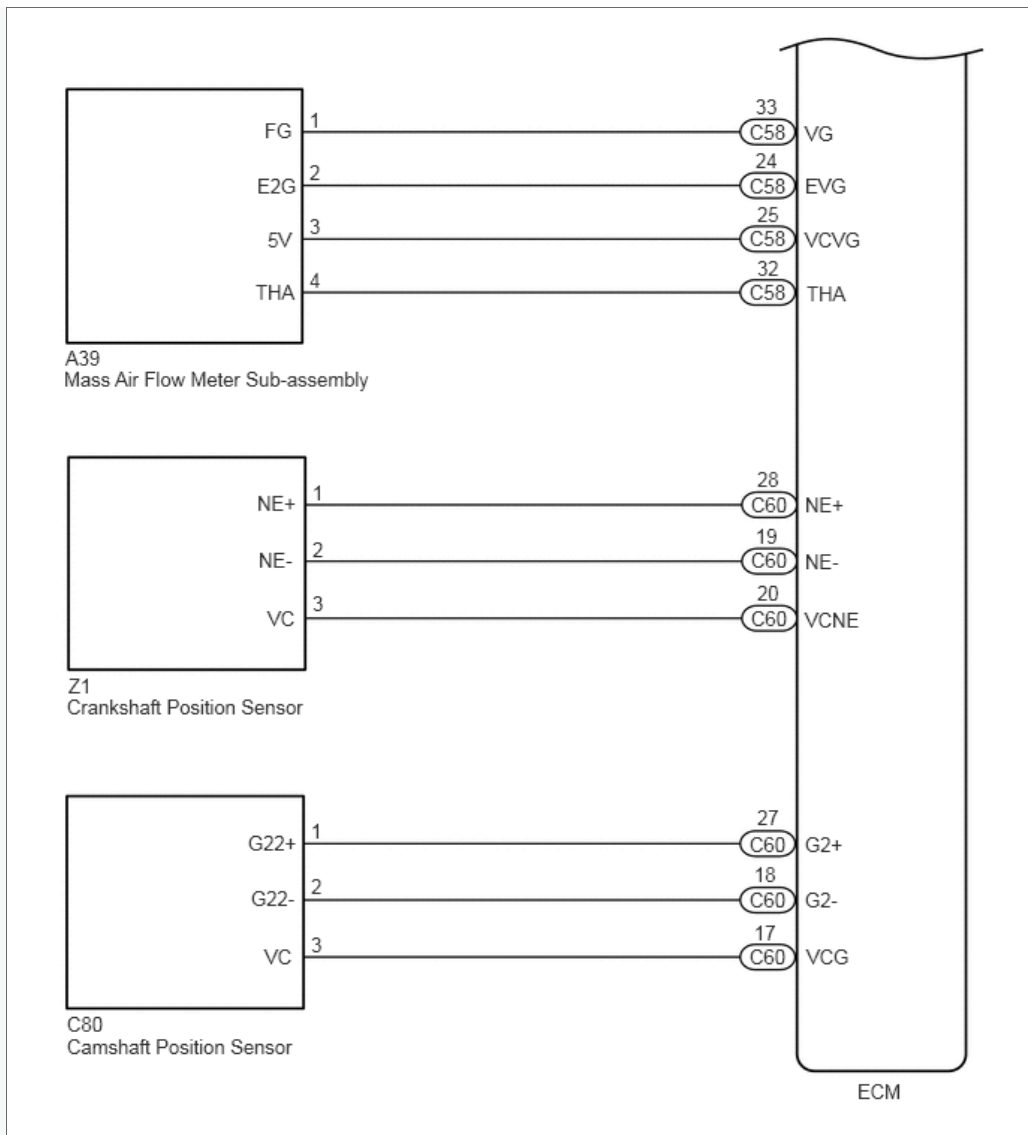


A55
Clutch Stroke Sensor

ECM



*: Shielded



PRECAUCIÓN / AVISO / SUGERENCIA

AVISO:

- Compruebe los fusibles de los circuitos relacionados con este sistema antes de realizar el siguiente procedimiento de inspección.
- Después de reemplazar la ECM, la nueva ECM necesita registro (Haga clic aquí [Motor / Sistema híbrido>1GD-FTV CONTROL DEL MOTOR>SISTEMA ECD \(para i-ART\)>REGISTRO](#)) e inicialización (Haga clic aquí [Motor / Sistema híbrido>1GD-FTV CONTROL DEL MOTOR>SISTEMA ECD \(para i-ART\)>INICIALIZACIÓN](#)).

PROCEDIMIENTO

1. COMPROBAR LA CONEXIÓN ENTRE GTS Y ECM

- Conecta el GTS al DLC3.
- Gire el interruptor de encendido a la posición ON.
- Enciende el GTS.
- Verifique la comunicación entre el GTS y el ECM.

PISTA:

Puede comprobarse utilizando el elemento "Motor" de la Lista de datos.

Resultado:

Resultado	Proceda a
La comunicación no es posible.	A
La comunicación es posible	B

A

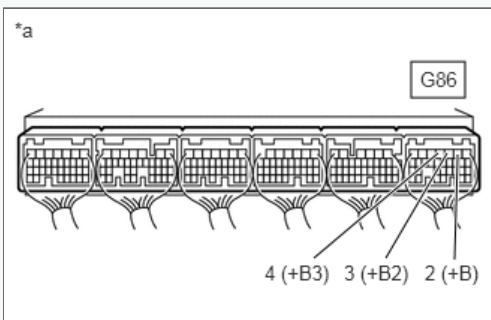
2. COMPROBAR EL VOLTAJE DE LOS TERMINALES (FUENTE DE ALIMENTACIÓN DE LA ECM)

B

CONTINÚE CON LA SIGUIENTE ÁREA SOSPECHOSA QUE SE MUESTRA EN LA TABLA DE SÍNTOMAS DEL PROBLEMA

Haga clic aquí: Motor / Sistema híbrido > CONTROL DEL MOTOR 1GD-FTV > SISTEMA ECD (para i-ART) > TABLA DE SÍNTOMAS DE PROBLEMAS

2. COMPROBAR EL VOLTAJE DE LOS TERMINALES (FUENTE DE ALIMENTACIÓN DE LA ECM)



*a Componente con arnés conectado (a la ECM)

- a. Gire el interruptor de encendido a la posición ON.
- b. Mida el voltaje según el/los valor(es) de la tabla siguiente.

Voltaje estándar:

Conexión del probador	Condición	Condición especificada
G86-2 (+B) - Tierra del cuerpo	Interruptor de encendido activado	11 a 14 V
G86-3 (+B2) - Toma de tierra del cuerpo	Interruptor de encendido activado	11 a 14 V
G86-4 (+B3) - Toma de tierra del cuerpo	Interruptor de encendido activado	11 a 14 V

PISTA:

Si el resultado no es el especificado, ya que no fluye corriente a los terminales +B, +B2 y +B3 del ECM, es posible que el sistema no arranque.

Resultado:

Proceda a
DE ACUERDO
NG

DE ACUERDO

3. COMPROBAR LA CONEXIÓN ENTRE EL GTS Y EL ECM (SENSOR DE POSICIÓN DEL ÁRBOL DE LEVAS)

NG

IR AL CIRCUITO DE ALIMENTACIÓN DE LA ECM

Haga clic aquí: Sistema de motor/híbrido > CONTROL DEL MOTOR 1GD-FTV > SISTEMA ECD (para i-ART) > Circuito de alimentación de la ECM

3. COMPROBAR LA CONEXIÓN ENTRE EL GTS Y EL ECM (SENSOR DE POSICIÓN DEL ÁRBOL DE LEVAS)

- a. Desconecta el conector del sensor de posición del árbol de levas.

- b. Gire el interruptor de encendido a la posición ON.
- do. Enciende el GTS.
- d. Verifique la comunicación entre el GTS y el ECM.
PISTA:
 Puede comprobarse utilizando el elemento "Motor" de la Lista de datos.

Resultado:

Resultado	Proceda a
La comunicación es posible	A
La comunicación no es posible.	B

- mi. Vuelva a conectar el conector del sensor de posición del árbol de levas.

A

SUSTITUIR EL SENSOR DE POSICIÓN DEL ÁRBOL DE LEVAS

Haga clic aquí [Motor / Sistema híbrido > CONTROL DEL MOTOR 1GD-FTV > SENSOR DE POSICIÓN DEL ÁRBOL DE LEVAS > EXTRACCIÓN](#)

B

4. COMPROBAR LA CONEXIÓN ENTRE EL GTS Y EL ECM (SENSOR DE PRESIÓN ABSOLUTA DEL MÚLTIPLE)

4. COMPROBAR LA CONEXIÓN ENTRE EL GTS Y EL ECM (SENSOR DE PRESIÓN ABSOLUTA DEL MÚLTIPLE)

- a. Desconecte el conector del sensor de presión absoluta del colector.
- b. Gire el interruptor de encendido a la posición ON.
- do. Enciende el GTS.
- d. Verifique la comunicación entre el GTS y el ECM.
PISTA:
 Puede comprobarse utilizando el elemento "Motor" de la Lista de datos.

Resultado:

Resultado	Proceda a
La comunicación es posible	A
La comunicación no es posible.	B

- mi. Vuelva a conectar el conector del sensor de presión absoluta del colector.

A

SUSTITUIR EL SENSOR DE PRESIÓN ABSOLUTA DEL MÚLTIPLE

Click here [Engine / Hybrid System>1GD-FTV ENGINE CONTROL>MANIFOLD ABSOLUTE PRESSURE SENSOR>REMOVAL](#)

B

5.CHECK CONNECTION BETWEEN GTS AND ECM (MASS AIR FLOW METER SUB-ASSEMBLY)

5.CHECK CONNECTION BETWEEN GTS AND ECM (MASS AIR FLOW METER SUB-ASSEMBLY)

- a. Disconnect the mass air flow meter sub-assembly connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.
HINT:
 It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the mass air flow meter sub-assembly connector.

A

REPLACE MASS AIR FLOW METER SUB-ASSEMBLY

Click here [Engine / Hybrid System>1GD-FTV ENGINE CONTROL>MASS AIR FLOW METER>REMOVAL](#)

B

6.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

6.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

- a. Disconnect the No. 1 injector assembly connector.
b. Turn the ignition switch to ON.
c. Turn the GTS on.
d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the No. 1 injector assembly connector.

A

REPLACE NO. 1 INJECTOR ASSEMBLY

Click here [Engine / Hybrid System>1GD-FTV FUEL>FUEL INJECTOR>REMOVAL](#)

B

7.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

7.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

- a. Disconnect the No. 2 injector assembly connector.
b. Turn the ignition switch to ON.
c. Turn the GTS on.
d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the No. 2 injector assembly connector.

A

REPLACE NO. 2 INJECTOR ASSEMBLY

[Click here](#)Engine / Hybrid System>1GD-FTV FUEL>FUEL INJECTOR>REMOVAL

B

8.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

8.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

- a. Disconnect the No. 3 injector assembly connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the No. 3 injector assembly connector.

A

REPLACE NO. 3 INJECTOR ASSEMBLY

[Click here](#)Engine / Hybrid System>1GD-FTV FUEL>FUEL INJECTOR>REMOVAL

B

9.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

9.CHECK CONNECTION BETWEEN GTS AND ECM (FUEL PRESSURE SENSOR)

- a. Disconnect the No. 4 injector assembly connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the No. 4 injector assembly connector.

A

REPLACE NO. 4 INJECTOR ASSEMBLY

[Click here](#)Engine / Hybrid System>1GD-FTV FUEL>FUEL INJECTOR>REMOVAL

B

10.CHECK CONNECTION BETWEEN GTS AND ECM (ELECTRIC EGR CONTROL VALVE ASSEMBLY)

10.CHECK CONNECTION BETWEEN GTS AND ECM (ELECTRIC EGR CONTROL VALVE ASSEMBLY)

- a. Disconnect the electric EGR control valve assembly connector.

- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.
HINT:
It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the electric EGR control valve assembly connector.

A

REPLACE ELECTRIC EGR CONTROL VALVE ASSEMBLY

Click here [Engine / Hybrid System > 1GD-FTV EMISSION CONTROL > EGR VALVE > REMOVAL](#)

B

11.CHECK CONNECTION BETWEEN GTS AND ECM (ACCELERATOR PEDAL POSITION SENSOR)

11.CHECK CONNECTION BETWEEN GTS AND ECM (ACCELERATOR PEDAL POSITION SENSOR)

- a. Disconnect the accelerator pedal position sensor connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.
HINT:
It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the accelerator pedal position sensor connector.

A

REPLACE ACCELERATOR PEDAL SENSOR ASSEMBLY

Click here [Engine / Hybrid System > 1GD-FTV ENGINE CONTROL > ACCELERATOR PEDAL > REMOVAL](#)

B

12.CHECK CONNECTION BETWEEN GTS AND ECM (DIESEL THROTTLE BODY ASSEMBLY)

12.CHECK CONNECTION BETWEEN GTS AND ECM (DIESEL THROTTLE BODY ASSEMBLY)

- a. Disconnect the diesel throttle body assembly connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.
HINT:
It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A

Result	Proceed to
Communication is not possible	B

- e. Reconnect the diesel throttle body assembly connector.

A

REPLACE DIESEL THROTTLE BODY ASSEMBLY

Click here [Engine / Hybrid System > 1GD-FTV ENGINE CONTROL > DIESEL THROTTLE BODY > REMOVAL](#)

B

13.CHECK CONNECTION BETWEEN GTS AND ECM (CRANKSHAFT POSITION SENSOR)

13.CHECK CONNECTION BETWEEN GTS AND ECM (CRANKSHAFT POSITION SENSOR)

- a. Disconnect the crankshaft position sensor connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the crankshaft position sensor connector.

A

REPLACE CRANKSHAFT POSITION SENSOR

Click here [Engine / Hybrid System > 1GD-FTV ENGINE CONTROL > CRANKSHAFT POSITION SENSOR > REMOVAL](#)

B

14.CHECK CONNECTION BETWEEN GTS AND ECM (NOZZLE VANE POSITION SENSOR)

14.CHECK CONNECTION BETWEEN GTS AND ECM (NOZZLE VANE POSITION SENSOR)

- a. Disconnect the nozzle vane position sensor connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the nozzle vane position sensor connector.

A

REPLACE TURBOCHARGER NOZZLE VANE CONTROL ACTUATOR

B

15.CHECK CONNECTION BETWEEN GTS AND ECM (CLUTCH STROKE SENSOR)

15.CHECK CONNECTION BETWEEN GTS AND ECM (CLUTCH STROKE SENSOR)

- a. Disconnect the clutch stroke sensor connector.
- b. Turn the ignition switch to ON.
- c. Turn the GTS on.
- d. Check the communication between the GTS and ECM.

HINT:

It can be checked using the "Engine" item of the Data List.

Result:

Result	Proceed to
Communication is possible	A
Communication is not possible	B

- e. Reconnect the clutch stroke sensor connector.

A

REPLACE MASTER CYLINDER ASSEMBLY

B

16.CHECK HARNESS AND CONNECTOR

16.CHECK HARNESS AND CONNECTOR

- a. Disconnect the camshaft position sensor connector.
- b. Disconnect the manifold absolute pressure sensor connector.
- c. Disconnect the mass air flow meter sub-assembly connector.
- d. Disconnect the No. 1 injector assembly connector.
- e. Disconnect the No. 2 injector assembly connector.
- f. Disconnect the No. 3 injector assembly connector.
- g. Disconnect the No. 4 injector assembly connector.
- h. Disconnect the electric EGR control valve assembly connector.
- i. Disconnect the accelerator pedal sensor assembly connector.
- j. Disconnect the diesel throttle body assembly connector.
- k. Disconnect the crankshaft position sensor connector.
- l. Disconnect the nozzle vane position sensor connector.
- m. Disconnect the clutch stroke sensor connector.
- n. Disconnect the ECM connectors.
- o. Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
G86-29 (VCPA) - Body ground and other terminals	Always	10 kΩ or higher
G86-30 (VCP2) - Body ground and other terminals	Always	10 kΩ or higher
C59-28 (VIJ1) - Body ground and other terminals	Always	10 kΩ or higher
C60-24 (VIJ2) - Body ground and other terminals	Always	10 kΩ or higher
C60-33 (VIJ3) - Body ground and other terminals	Always	10 kΩ or higher

Tester Connection	Condition	Specified Condition
C60-22 (VIJ4) - Body ground and other terminals	Always	10 kΩ or higher
C59-29 (VCVL) - Body ground and other terminals	Always	10 kΩ or higher
C59-31 (VCEG) - Body ground and other terminals	Always	10 kΩ or higher
C57-28 (VCPM) - Body ground and other terminals	Always	10 kΩ or higher
C59-30 (VNVC) - Body ground and other terminals	Always	10 kΩ or higher
C58-25 (VCVG) - Body ground and other terminals	Always	10 kΩ or higher
C60-17 (VCG) - Body ground and other terminals	Always	10 kΩ or higher
C60-20 (VCNE) - Body ground and other terminals	Always	10 kΩ or higher
C86-23 (VCCL) - Body ground and other terminals	Always	10 kΩ or higher
G86-2 (+B) - Body ground and other terminals	Always	10 kΩ or higher
G86-3 (+B2) - Body ground and other terminals	Always	10 kΩ or higher
G86-4 (+B3) - Body ground and other terminals	Always	10 kΩ or higher

- p. Reconnect the clutch stroke sensor connector.
- q. Reconnect the nozzle vane position sensor connector.
- r. Reconnect the crankshaft position sensor connector.
- s. Reconnect the diesel throttle body assembly connector.
- t. Reconnect the accelerator pedal sensor assembly connector.
- u. Reconnect the electric EGR control valve assembly connector.
- v. Reconnect the No. 4 injector assembly connector.
- w. Reconnect the No. 3 injector assembly connector.
- x. Reconnect the No. 2 injector assembly connector.
- y. Reconnect the No. 1 injector assembly connector.
- z. Reconnect the mass air flow meter sub-assembly connector.
- aa. Vuelva a conectar el conector del sensor de presión absoluta del colector.
- ab. Vuelva a conectar el conector del sensor de posición del árbol de levas.
- C.A. Vuelva a conectar los conectores de la ECM.

Resultado:

Proceda a
DE ACUERDO
NG

DE ACUERDO

REEMPLAZAR LA ECM

Haga clic aquí [Motor / Sistema híbrido > CONTROL DEL MOTOR 1GD-FTV > ECM > EXTRACCIÓN](#)

NG

REPARAR O REEMPLAZAR EL MAZO DE CABLES O EL CONECTOR