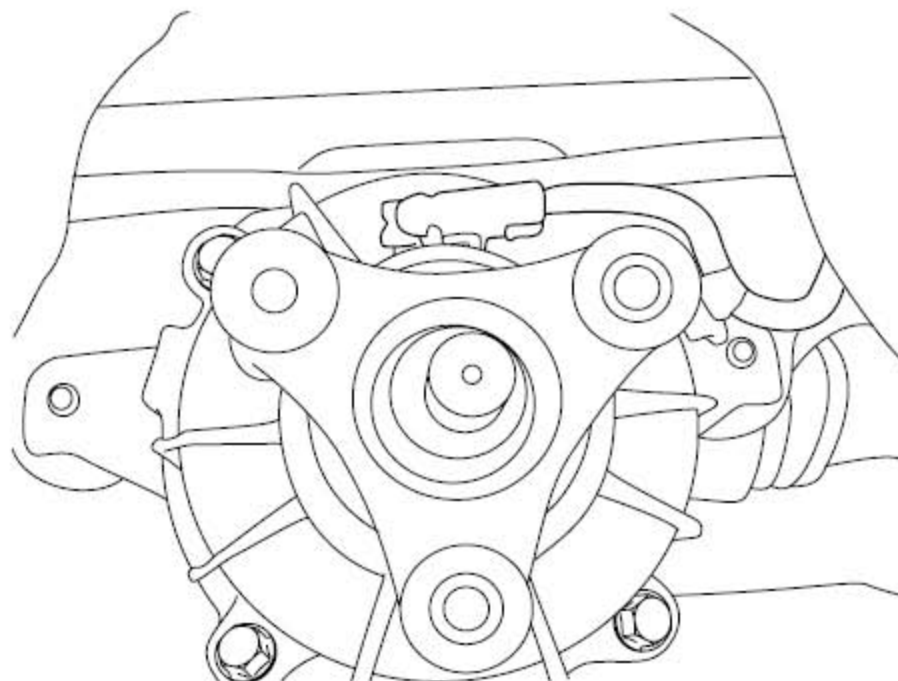


P1728 EMC-OPEN/SHORT TO BATTERY

COMPONENT LOCATION

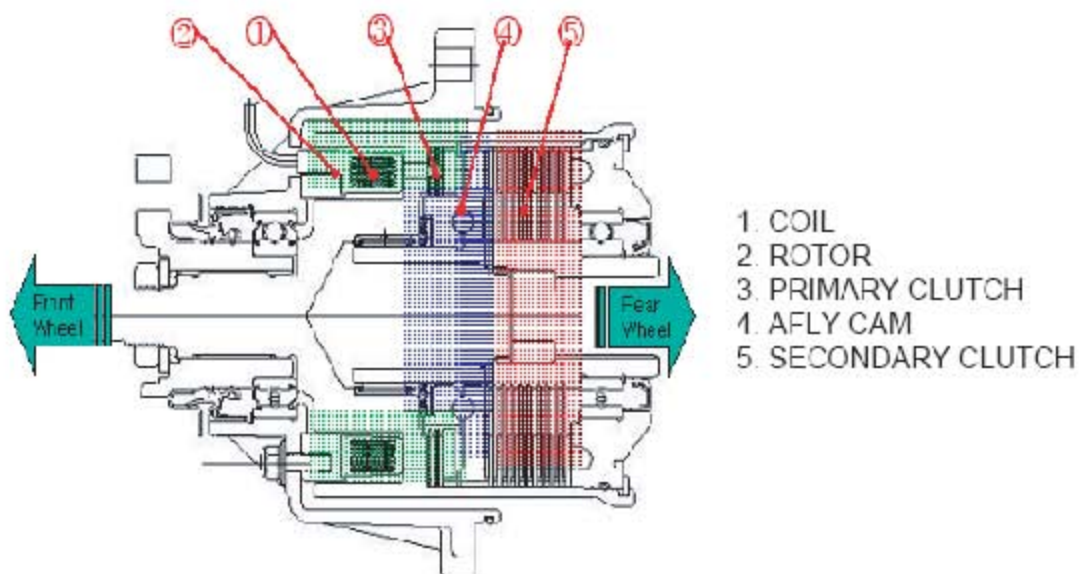


GENERAL DESCRIPTION

Vehicle uses 2WD(2 wheel drive) for driving at normal speed, but sometimes it uses 4WD (4 wheel drive) according to driving condition. (cornering or acceleration). EMC(Electric Magnetic Clutch) distributes proper torque to front wheel by controlling amount of current inside EMC coil.

That time power pressing the multi plate clutch by apply cam is changed by a rate of EMC duty. after multi plate clutch start slip the force for acceleration at front/rear wheel is controlled at a range of 100:0 ~ 50 : 50.

ITM system has 4WD-LOCK function that can make driving force to 50:50 by compulsion according to driver's intention.



1. COIL
2. ROTOR
3. PRIMARY CLUTCH
4. FLY CAM
5. SECONDARY CLUTCH

DTC DESCRIPTION

This DTC code is related to the EMC and is set if control harness has an open or short to battery source. If failure is detected TCCU prohibits the ITM control and vehicle is controlled with 2WD by intercepting EMC current.

DTC DETECTING CONDITION

Item	Detecting Condition	Possible Cause
DTC Strategy	Short/ Open to Battery	<ul style="list-style-type: none"> • Power supply malfunction
Enable Conditions	Ignition cycle required	
Threshold Value	25 occurrences in a row mature	<ul style="list-style-type: none"> • EMC,TCCU connector looseness and poor terminal to wire connection
Diagnostic Time	1 sec	
MIL on condition	0.5 Sec	<ul style="list-style-type: none"> • EMC circuit open or short to battery • Faulty EMC motor • Faulty TCCU
Fail Safe	EMC Error will turn ITM off. The ECU will not send current to the clutch coil	

SIGNAL WAVEFORM & DATA

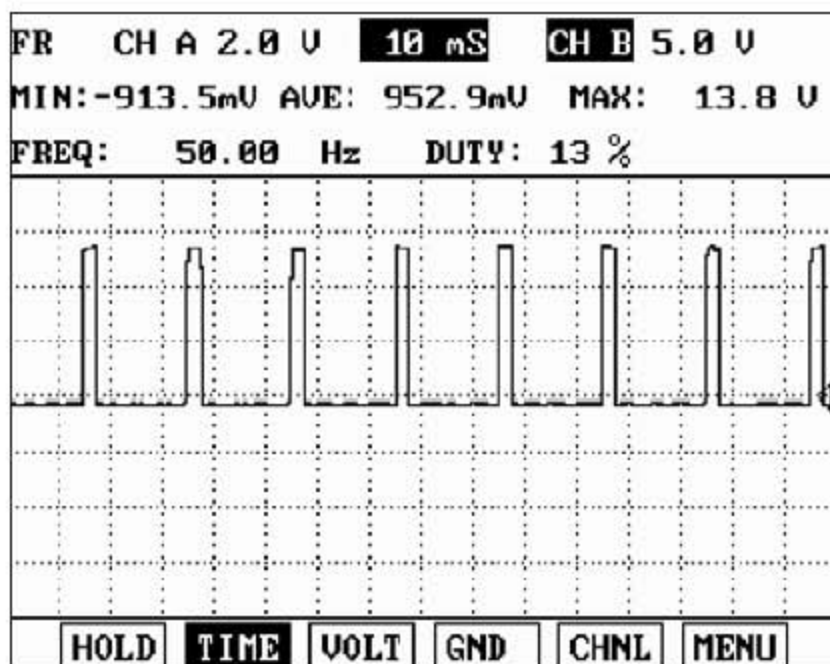


FIG.1)

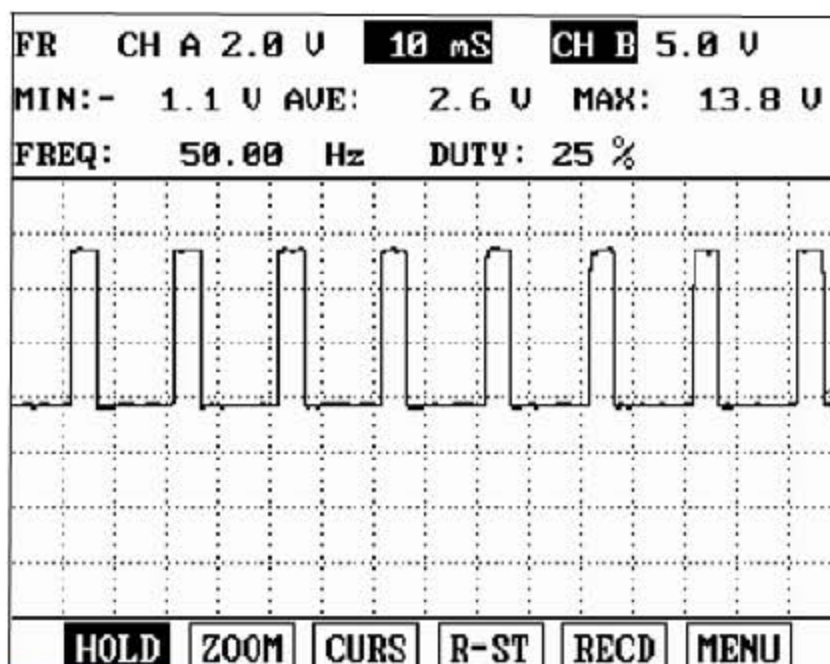


FIG.2)

FIG.1) EMC Signal : Idling .

FIG.2) EMC Signal : Throttle Valve Open .

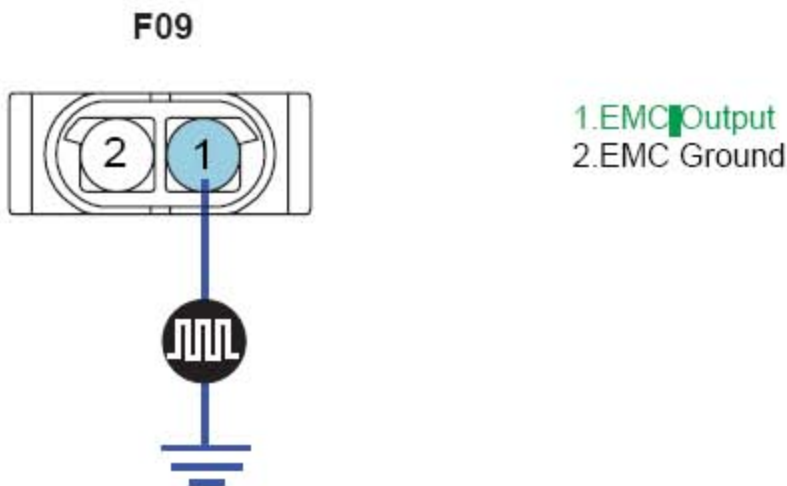
TERMINAL AND CONNECTOR INSPECTION

- 1). Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
- 2). Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
- 3). Has a problem been found?
 - ▶ Repair as necessary and go to "Verification of Vehicle Repair" procedure.
 - ▶ Go to "EMC Signal Inspection " procedure.

EMC SIGNAL INSPECTION

- 1). Ignition ON, Engine : ON.
- 2). TCCU, EMC connector : Connect.
- 3). Monitor signal waveform between terminal 1 of EMC harness connector and chassis ground.
- 4). Shift to N Range.

Specification : Signal Waveform & Data



CAUTION

The above value is only for reference.
The actual value may differ from it according to various engine condition.

5). Is EMC Signal display near the specified value?

YES

- ▶ Fault is intermittent caused by poor contact in the sensor's and/or TCCU's connector or was repaired and TCCU memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

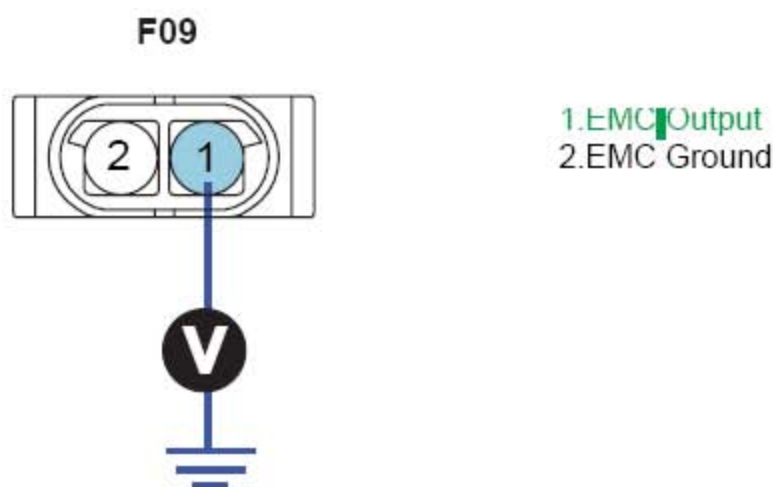
NO

- ▶ Go to " EMC wiring battery short Inspection " procedure.

EMC WIRING BATTERY SHORT INSPECTION

- 1). IG "OFF" & ENG "OFF".
- 2). Electric Magnet Valve Clutch, TCCU connector : Disconnect.
- 3). IG "ON".
- 4). Measure voltage between terminal 1 of EMC harness connector and chassis ground.

Specification : 0 V



CAUTION

The above value is only for reference.
The actual value may differ from it according to various engine condition.

5). Is voltage display near the specified value?

YES

- ▶ Go to " EMC harness open Inspection " procedure.

NO

- ▶ Check for short to battery in EMC harness.
- ▶ Repair as necessary and then go to "Verification of Vehicle Repair" procedure.

EMC HARNESS OPEN INSPECTION

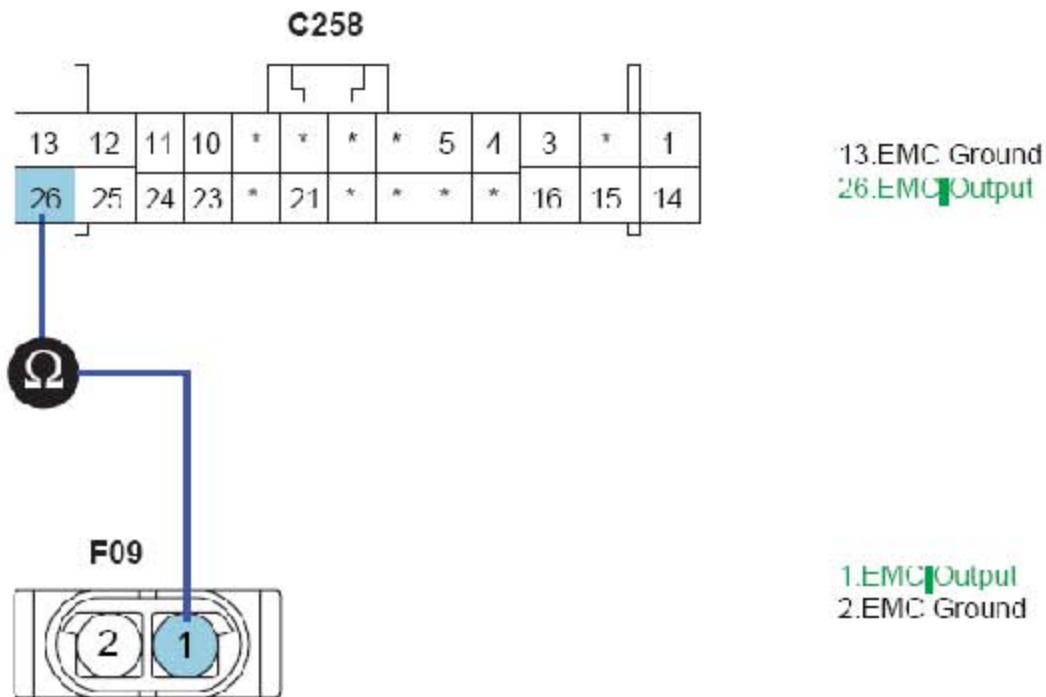
- 1). Ignition OFF, Engine "OFF".
- 2). Electric Magnet Valve Clutch, TCCU connector : Disconnect.
- 3). Measure resistance between terminal 1 or 2 of Electric Magnet Valve Clutch harness connector and terminal 26 or 13 of TCCU harness connector.

Specification : 1Ω below

CAUTION

The above value is only for reference.

The actual value may differ from it according to various engine condition.



- 4). Is resistance display near the specified value?

YES

- ▶ Go to "Component inspection" procedure.

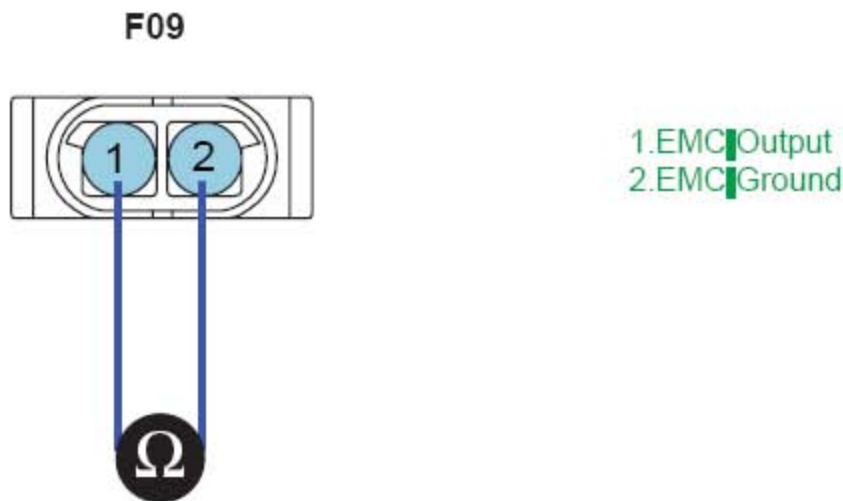
NO

- ▶ Check for open in EMC harness.
- ▶ Repair as necessary and then go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION

- 1). IG "OFF" & ENG "OFF".
- 2). EMC connector : Disconnect.
- 3). Measure the resistance(Component side) between terminals "1" and "2" of the "Electric Magnet Valve Clutch".

Specification : Approx. 1.8 ~ 2.2 Ω



- 4). Is resistance display near the specified value?

YES

- ▶ Substitute with a known-good "TCCU" and check for proper operation. If the problem is corrected, replace "TCCU" and then go to "Verification of Vehicle Repair" procedure.

NO

- ▶ Substitute with a known-good "EMC coil" and check for proper operation. If the problem is corrected, replace "EMC coil" and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR

- 1). Connect scan tool and select "Diagnostic Trouble Codes(DTCs)" mode.
- 2). Using scantool, Clear DTC.
- 3). Operate the vehicle within DTC Enable conditions in General information.
- 4). Are any DTCs present ?

YES

- ▶ Go to the applicable troubleshooting procedure.

NO

- ▶ System is performing to specification at this time.