

## SYSTEM DESCRIPTION

### 1. GENERAL

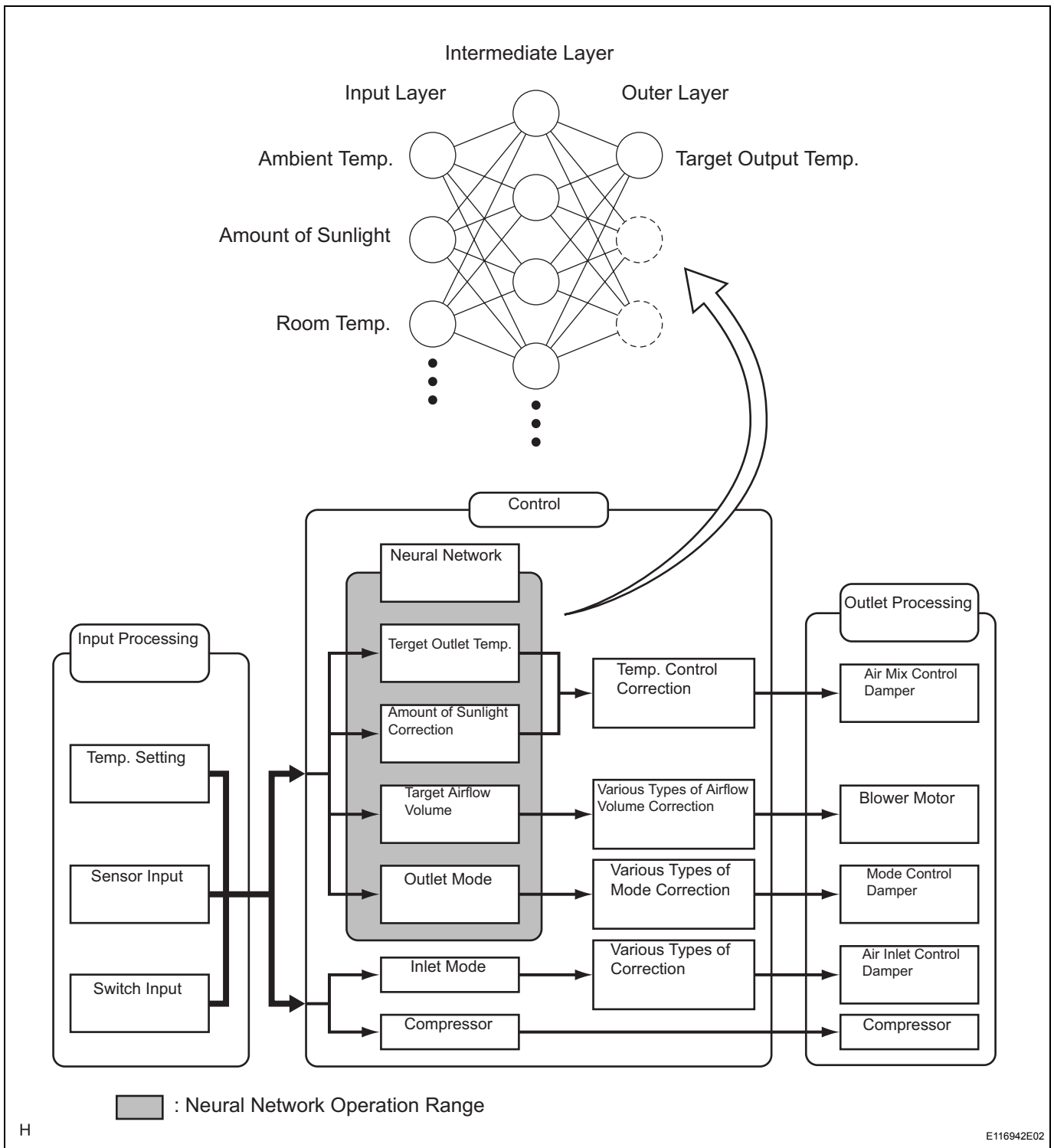
- (a) The air conditioning system has the following control.

Control	Outline
Neural Network Control	This control is capable of effecting complex control by artificially simulating the information processing method of nervous system of living organisms in order to establish a complex input / output relationship that is similar to a human brain.
Outlet Air Temperature Control	In compliance with the temperature set at the temperature control switch, the neural network control calculates the outlet temperature based on the input signals from various sensors.
	The temperature setting for the driver and front passenger is controlled independently in order to provide a separate vehicle interior temperature for the right and left side. Thus, air conditioning that accommodates the occupants' preferences has been realized.
Blower control	Controls the blower motor in accordance with ten airflow volume that has been calculated by the neural network control based on the input signals from various sensors.
Air Outlet Control	Automatically switches the outlets in accordance with the airflow volume that has been calculated by the neural network control based on the input signals from various sensors.
	In accordance with the engine coolant temperature, outside air temperature, amount of sunlight, required blower outlet temperature, and vehicle speed conditions, this control automatically switches the blower outlet to the FOO / DEF mode to prevent window from becoming fogged when the outside air temperature is low.
Air Inlet Control	automatically controls the air inlet control damper in accordance with the calculation of the required outlet air temperature.
	Drives the servomotor (for air inlet) according to the operation of the air inlet control switch and fixes the dampers in the FRESH or RECIRC position.
Compressor Control	This control turns OFF the magnetic clutch of the A/C compressor when the blower motor is turned OFF at the time, the engine coolant temperature is below a predetermined value, an abnormal refrigerant pressure has been input, or the discharge temperature of the evaporator is below a predetermined value.
	Air Conditioning ECU turns the compressor off if the engine coolant temperature becomes abnormally hot (115°C (239°F) or above) when driving under a high load.
Rear Window Defogger Control	Switches the rear defogger and outside rear mirror heaters* <sup>1</sup> , on for 15 minutes when the rear defogger switch is switched on. Switches them off if the switch is pressed while they are operating.
Outer Temperature Indicator Control	Based on the signals from the ambient temperature sensor, this control calculates the outside temperature, which is then corrected in Air Conditioning ECU, and show in the multi information display* <sup>2</sup> / multi display* <sup>3</sup> .
Self- Diagnosis	The DTC (Diagnostic Trouble Code) is stored in the memory when the air Conditioning ECU detects an abnormality in the air conditioning system.

\*1: Models with XLS and Limited Grades

\*2: Models without Multi Display

\*3: Models with Multi Display



**5. SELF-DIAGNOSIS**

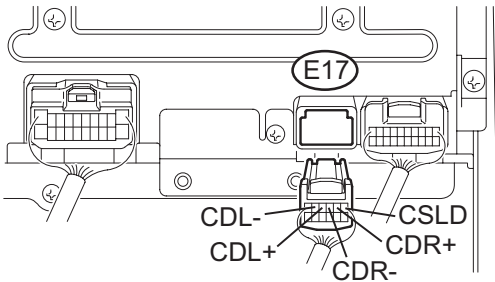
(a) Air Conditioning ECU has a self-diagnosis function. It stores any operation failures in the air conditioning system memory in the form of DTC (Diagnostic Trouble Code).

- There are two methods for reading DTCs. One is to use a intelligent tester, and the other is to read the DTC on the heater control panel switch.
- DTCs are shown on the center display or multi display of the multi-information display, and on the intelligent tester.

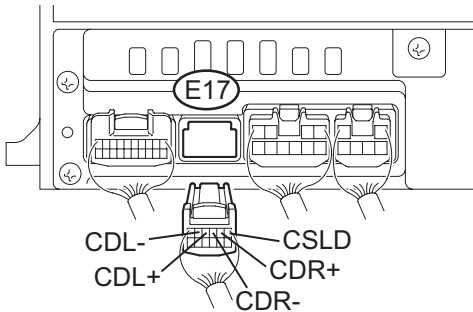
**INSPECTION PROCEDURE**

**1 CHECK HARNESS AND CONNECTOR (RADIO RECEIVER - TAPE PLAYER)**

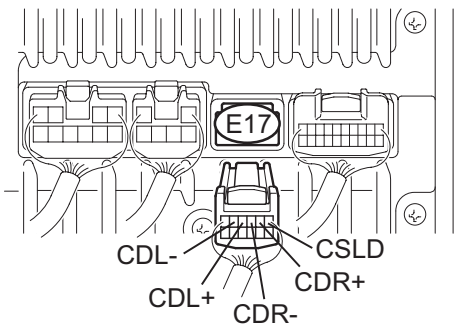
**Radio Receiver (12 Speaker)  
Wire Harness View:**



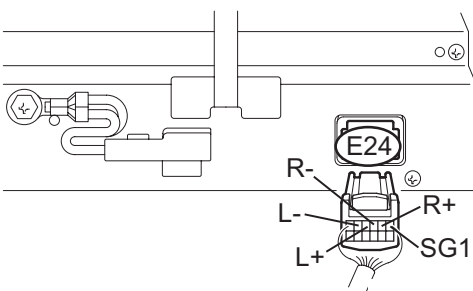
**Radio Receiver (9 Speaker, 6 CD Type)  
Wire Harness View:**



**Radio Receiver (9 Speaker, 1 CD Type)  
Wire Harness View:**



**Tape Player Wire Harness View:**



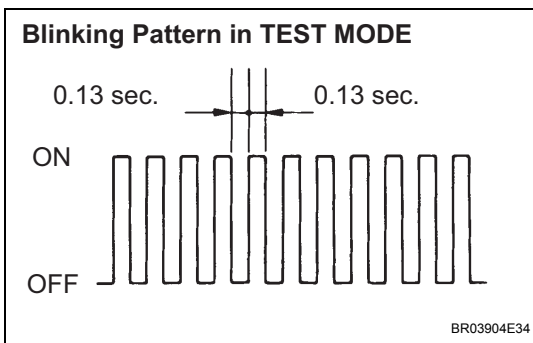
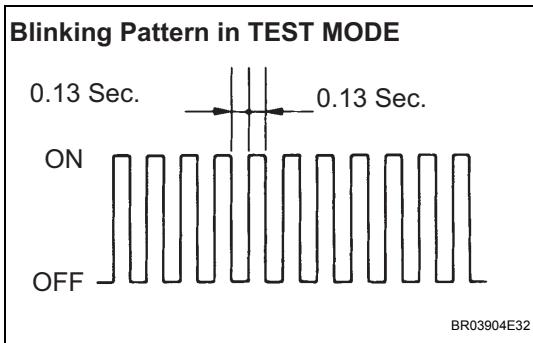
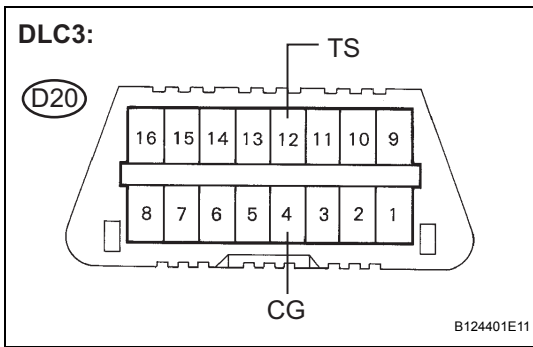
- (a) Disconnect the radio receiver E17 connector and tape player E24 connector.
- (b) Measure the resistance according to the value(s) in the table below.

**Standard resistance**

Tester Connection	Condition	Specified Condition
CDL+ - L+	Always	Below 1 Ω
CDL- - L-	Always	Below 1 Ω
CDR+ - R+	Always	Below 1 Ω
CDR- - R-	Always	Below 1 Ω
CSLD - SG1	Always	Below 1 Ω
CDL+ - Body ground	Always	10 kΩ or higher
CDL- - Body ground	Always	10 kΩ or higher
CDR+ - Body ground	Always	10 kΩ or higher
CDR- - Body ground	Always	10 kΩ or higher

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

AV



(3) Using SST, connect terminals TS and CG of the DLC3.

**SST 09843-18040**

(4) Turn the ignition switch on (IG).

(5) Check that the ABS and VSC warning lights are blinking in TEST MODE.

**HINT:**

If the ABS and VSC warning lights do not blink, inspect the ABS warning light circuit and/or VSC warning light circuit.

Trouble area	See procedure
ABS warning light circuit (Remains on)	<a href="#">BC-202</a>
ABS warning light circuit (Does not come on)	<a href="#">BC-206</a>
VSC warning light circuit (Remains on)	<a href="#">BC-208</a>
VSC warning light circuit (Does not come on)	<a href="#">BC-212</a>
TS and CG terminal circuit	<a href="#">BC-237</a>

(6) Check the ABS sensor.

**HINT:**

Check that the ABS warning light is blinking in TEST MODE and perform the check.

**11. ACCELERATION SENSOR CHECK (WHEN USING SST CHECK WIRE:)**

(a) Keep the vehicle in the stationary condition on a level surface for 1 second or more.

**HINT:**

Acceleration sensor check can be performed with the following master cylinder pressure sensor check.

**12. MASTER CYLINDER PRESSURE SENSOR CHECK (WHEN USING SST CHECK WIRE:)**

(a) Leave the vehicle in a stationary condition and release the brake pedal for 1 second or more, and quickly depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more for 1 second or more.

(b) Check that the ABS warning light stays ON for 3 seconds.

**HINT:**

- Ensure that the ABS warning light comes on.
- While the ABS warning light stays on, continue to depress the brake pedal with a force of 98 N (10 kgf, 22 lbf) or more.
- The ABS warning light comes on for 3 seconds every time the brake pedal operation above is performed.

Item	Outline
Combination Meter (Ready Indicator Light)	<ul style="list-style-type: none"> <li>• Illuminates when the main switch is on.</li> </ul>
Combination Meter (Buzzer)	<ul style="list-style-type: none"> <li>• If the ECM or distance control ECU detects an automatic cancel signal while the vehicle is operating under cruise control, this buzzer sounds only once to inform the driver.</li> </ul>
Combination Meter (LCD)	<ul style="list-style-type: none"> <li>• While the system is in the vehicle-to-vehicle distance control mode, the combination meter receives signals from distance control ECU, in order to display the system conditions.</li> </ul>
Steering Angle Sensor	<ul style="list-style-type: none"> <li>• Detects the angle and direction of steering and transmits its signal to skid control ECU and distance control ECU.</li> </ul>
Vehicle Speed Sensor (4)	<ul style="list-style-type: none"> <li>• Detects the rotation speed of four wheels and transmits its signal to skid control ECU.</li> </ul>
Yaw Rate & Deceleration Sensor	<ul style="list-style-type: none"> <li>• Detects the yaw rate of the vehicle and transmits its signal to skid control ECU and distance control ECU.</li> </ul>
Rain Sensor	<ul style="list-style-type: none"> <li>• This sensor detects raindrops, and when the wiper operates at LO or HI, it requests the ECM to provide a cruise control cancel signal.</li> </ul>
Brake Actuator	<ul style="list-style-type: none"> <li>• Actuates the brakes in accordance with the signals from skid control ECU.</li> </ul>
Brake Actuator (Skid Control ECU)	<ul style="list-style-type: none"> <li>• Receives four vehicle speed sensor signals and outputs a vehicle speed signal to the combination meter.</li> <li>• While the system is in the vehicle-to-vehicle distance control mode, skid control ECU actuates the brake actuator in accordance with the brake request signal received from distance control ECU.</li> <li>• Upon receiving a signal from distance control ECU, skid control ECU sounds a VSC warning buzzer.</li> </ul>
VSC Warning Buzzer	<ul style="list-style-type: none"> <li>• This buzzer sounds upon receiving a signal from skid control ECU.</li> </ul>
ECM	<ul style="list-style-type: none"> <li>• Controls the cruise control system in accordance with the signals from the switches, sensors, skid control ECU and distance control ECU.</li> <li>• If the ECM detects a malfunction in the cruise control system, it will output DTCs (Diagnostic Trouble Codes).</li> </ul>
Throttle Control Motor	<ul style="list-style-type: none"> <li>• Upon receiving a signal from the ECM, the throttle control motor actuates the throttle valve.</li> </ul>
Distance Control ECU	<ul style="list-style-type: none"> <li>• While the system is in the vehicle-to-vehicle distance control mode, distance control ECU detects the follow up vehicle based on a signal from the laser sensor. Then, distance control ECU calculates the acceleration or deceleration rate in order to attain the target vehicle-to-vehicle distance, and outputs a request signal to the ECM and skid control ECU.</li> </ul>

### 3. LIMIT CONTROL

#### (a) Low speed limit

The lowest possible limit of the speed setting range is set at approximately 45 km/h (28 mph). The cruise control system cannot be set when the driving vehicle speed is below the low speed limit. Cruise control operation will be automatically canceled when the vehicle speed goes below the low speed limit (45 km/h (28 mph)) while the cruise control is in operation.

#### (b) High speed limit (Constant speed control mode)

The highest possible limit of the speed setting range is set at approximately 200 km/h (125 mph). The cruise control system cannot be set when the driving vehicle speed is over the high speed limit. Speed up using +/-REC with the cruise control main switch assembly also cannot be set beyond the high speed limit.

## PROBLEM SYMPTOMS TABLE

### ENTRY LOCK / UNLOCK FUNCTION

Symptom	Suspected area	See page
Entry unlock does not operate.	1. Check for DTCs in the smart key system.	<a href="#">DL-177</a>
	2. Power door lock control system	<a href="#">DL-8</a>
	3. See "ID code matching inside the cabin cannot be performed" in this table.	-
	4. Courtesy light switch circuit (Front)	<a href="#">DL-101</a>
	5. Courtesy light switch circuit (Rear)	<a href="#">DL-104</a>
	6. Lock position switch circuit (Driver door)	<a href="#">DL-15</a>
	7. Lock position switch circuit (Front passenger door)	<a href="#">DL-18</a>
	8. Lock position switch circuit (Rear passenger door LH)	<a href="#">DL-21</a>
	9. Lock position switch circuit (Rear passenger door RH)	<a href="#">DL-24</a>
	10. Touch sensor circuit	<a href="#">DL-211</a>
	11. Antenna circuit	<a href="#">DL-215</a>
	12. Replace the door oscillator.	-
	13. Replace the body ECU.	-
	14. Replace the certification ECU.	-
Entry lock does not operate.	1. Check for DTCs in the smart key system.	<a href="#">DL-177</a>
	2. Power door lock control system	<a href="#">DL-8</a>
	3. See "ID code matching inside the cabin cannot be performed" in this table.	-
	4. Courtesy light switch circuit (Front)	<a href="#">DL-101</a>
	5. Courtesy light switch circuit (Rear)	<a href="#">DL-104</a>
	6. Lock position switch circuit (Driver door)	<a href="#">DL-15</a>
	7. Lock position switch circuit (Front passenger door)	<a href="#">DL-18</a>
	8. Lock position switch circuit (Rear passenger door LH)	<a href="#">DL-21</a>
	9. Lock position switch circuit (Rear passenger door RH)	<a href="#">DL-24</a>
	10. Trigger (Lock) switch circuit	<a href="#">DL-228</a>
	11. Antenna circuit	<a href="#">DL-215</a>
	12. Replace the body ECU.	-
	13. Replace the certification ECU.	-
Luggage compartment does not open (when the key is outside the vehicle).	1. Check for DTCs in the smart key system.	<a href="#">DL-177</a>
	2. Power door lock control system	<a href="#">DL-8</a>
	3. Check if any function is cancelled due to customization.	<a href="#">DL-156</a>
	4. Operate the luggage compartment SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	5. Check operation of the cabin oscillator in diagnostic mode.	<a href="#">DL-171</a>
	6. Luggage oscillator circuit	<a href="#">DL-217</a>
	7. Luggage compartment open switch circuit	<a href="#">DL-222</a>
	8. Replace the body ECU.	-
	9. Replace the certification ECU.	-

DTC No.	Detection Item	Suspected Trouble Area	MIL	Memory	See page
P0300	Random / Multiple Cylinder Misfire Detected	1. Open or short in engine wire harness 2. Connector connections 3. Vacuum hose connection 4. Ignition system 5. Injector 6. Fuel pressure 7. Mass Air Flow (MAF) meter 8. Engine Coolant Temperature (ECT) sensor 9. Cylinder compression 10. Valve clearance 11. Valve timing 12. PCV hose connection 13. PCV hose 14. ECM 15. Air induction system	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0301	Cylinder 1 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0302	Cylinder 2 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0303	Cylinder 3 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0304	Cylinder 4 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0305	Cylinder 5 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0306	Cylinder 6 Misfire Detected	Same as DTC P0300	Comes on or flashes	DTC stored	<a href="#">ES-183</a>
P0327	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)	1. Short in knock sensor 1 circuit 2. Knock sensor 1 3. ECM	Comes on	DTC stored	<a href="#">ES-197</a>
P0328	Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor)	1. Open in knock sensor 1 circuit 2. Knock sensor 1 3. ECM	Comes on	DTC stored	<a href="#">ES-197</a>
P0332	Knock Sensor 2 Circuit Low Input (Bank 2)	1. Short in knock sensor 2 circuit 2. Knock sensor 2 3. ECM	Comes on	DTC stored	<a href="#">ES-197</a>
P0333	Knock Sensor 2 Circuit High Input (Bank 2)	1. Open in knock sensor 2 circuit 2. Knock sensor 2 3. ECM	Comes on	DTC stored	<a href="#">ES-197</a>
P0335	Crankshaft Position Sensor "A" Circuit	1. Open or short in Crankshaft Position Sensor (CKP) circuit 2. CKP sensor 3. Sensor plate (CKP sensor plate) 4. ECM	Comes on	DTC stored	<a href="#">ES-203</a>
P0339	Crankshaft Position Sensor "A" Circuit Intermittent	Same as DTC P0335	Does not come on	DTC stored	<a href="#">ES-203</a>

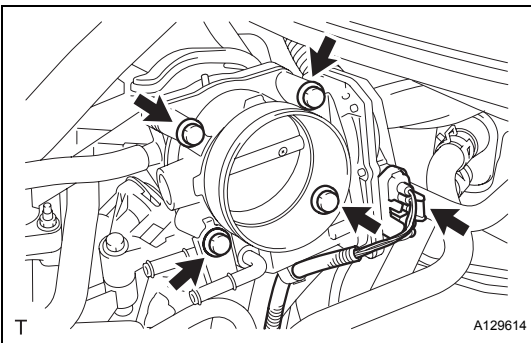
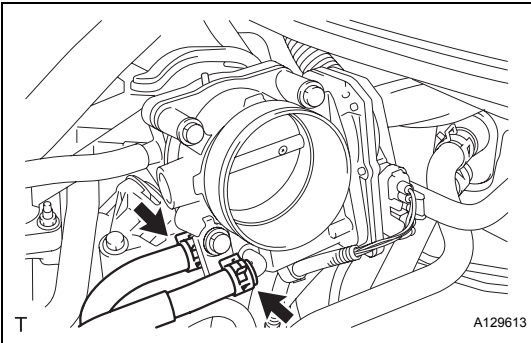
DTC No.	Detection Item	Suspected Trouble Area	MIL	Memory	See page
P043E	Evaporative Emission System Reference Orifice Clog Up	1. Pump module 2. Connector / wire harness (between pump module and ECM) 3. Leakage from EVAP system 4. ECM	Comes on	DTC stored	<a href="#">ES-236</a>
P043F	Evaporative Emission System Reference Orifice High Flow	1. Pump module 2. Connector / wire harness (between pump module and ECM) 3. Leakage from EVAP system 4. ECM	Comes on	DTC stored	<a href="#">ES-236</a>
P0441	Evaporative Emission Control System Incorrect Purge Flow	1. Purge VSV 2. Purge VSV circuit (between purge VSV and ECM) 3. Leakage from EVAP line (between purge VSV and intake manifold) 4. EVAP line clogged (between purge VSV and canister) 5. ECM	Comes on	DTC stored	<a href="#">ES-242</a>
P0450	Evaporative Emission Control System Pressure Sensor / Switch	1. Pump module (including pressure sensor) 2. ECM	Comes on	DTC stored	<a href="#">ES-249</a>
P0451	Evaporative Emission Control System Pressure Sensor Range / Performance	1. Pump module (including pressure sensor) 2. Connector / wire harness (between pump module and ECM) 3. ECM	Comes on	DTC stored	<a href="#">ES-249</a>
P0452	Evaporative Emission Control System Pressure Sensor / Switch Low Input	1. Pump module (including pressure sensor) 2. Connector / wire harness (between pump module and ECM) 3. ECM	Comes on	DTC stored	<a href="#">ES-249</a>
P0453	Evaporative Emission Control System Pressure Sensor / Switch High Input	1. Pump module (include pressure sensor) 2. Connector / wire harness (between pump module and ECM) 3. ECM	Comes on	DTC stored	<a href="#">ES-249</a>



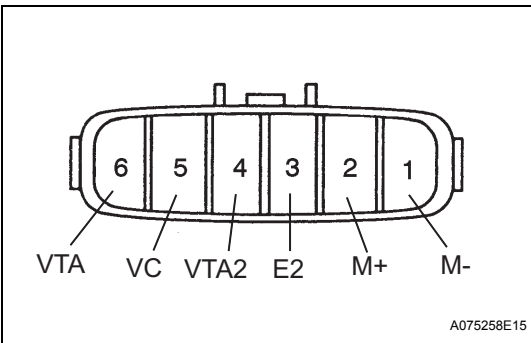
ES

## REMOVAL

1. DRAIN ENGINE COOLANT (See page [CO-7](#))
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
3. REMOVE V-BANK COVER SUB-ASSEMBLY (See page [FU-12](#))
4. REMOVE AIR CLEANER CAP WITH AIR CLEANER HOSE (See page [FU-12](#))
5. SEPARATE WATER BY-PASS HOSE
  - (a) Disconnect the 2 water by-pass hoses from the throttle w/ motor body assembly.



6. REMOVE THROTTLE WITH MOTOR BODY ASSEMBLY
  - (a) Disconnect the throttle w/ motor body assembly connector.
  - (b) Remove the 4 bolts and throttle w/ motor body assembly from the intake air surge tank.
  - (c) Remove the throttle body gasket from the intake air surge tank.



## INSPECTION

1. INSPECT THROTTLE WITH MOTOR BODY ASSEMBLY
  - (a) Measure the resistance between the terminals.

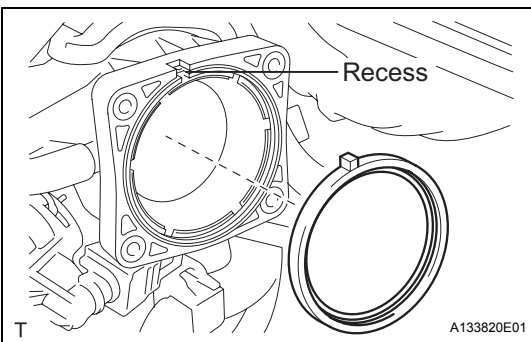
**Resistance**

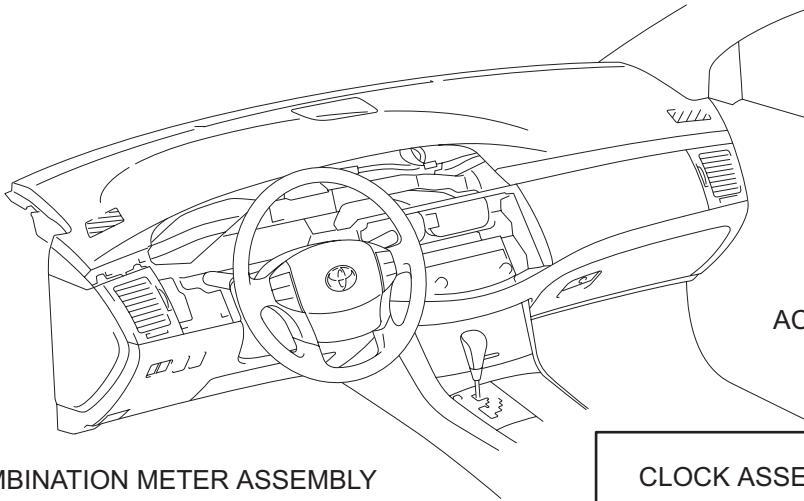
Tester Connection	Condition	Specified Condition
2 (M+) - 1 (M-)	20°C (68°F)	0.3 to 100 Ω
5 (VC) - 3 (E2)	20°C (68°F)	1.2 to 3.2 kΩ

If the result is not as specified, replace the throttle body assembly.

## INSTALLATION

1. INSTALL THROTTLE WITH MOTOR BODY ASSEMBLY
  - (a) Install a new throttle body gasket to the intake air surge tank.



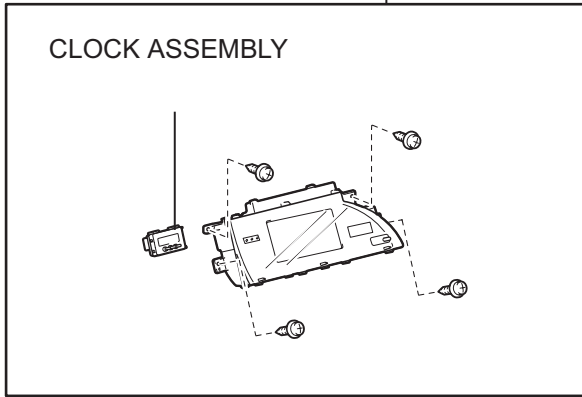
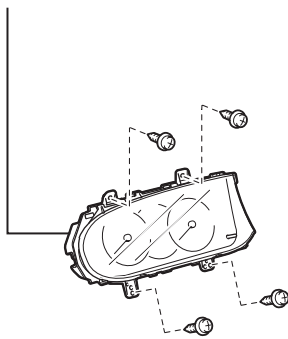


ACCESSORY METER ASSEMBLY

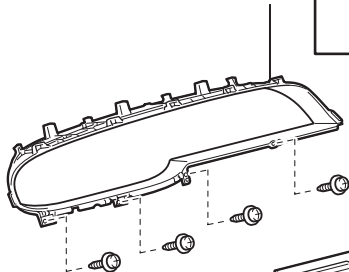
COMBINATION METER ASSEMBLY

CLOCK ASSEMBLY

INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY



INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.1



INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.2

**W/ SMART KEY SYSTEM:**

INSTRUMENT PANEL SUB-ASSEMBLY



**W/O SMART KEY SYSTEM:**

INSTRUMENT PANEL SUB-ASSEMBLY



INSTRUMENT PANEL FINISH PLATE

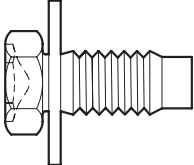
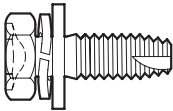
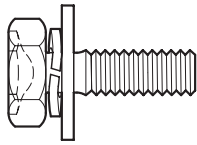
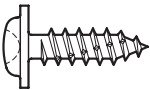
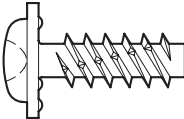
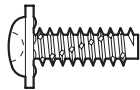
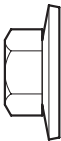
INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY CENTER

IP

## REMOVAL

### 1. BOLT, SCREW AND NUT TABLE

(a) The table of the bolt, screw and nut.

Code	Shape	Code	Shape	Code	Shape
<A>	 <p><math>\varphi = 8</math> (0.32) L = 20 (0.79)</p> <p>90119-A0011</p>	<B>	 <p><math>\varphi = 6</math> (0.24) L = 18 (0.71)</p> <p>90080-11664</p>	<C>	 <p><math>\varphi = 6</math> (0.20) L = 16 (0.63)</p> <p>90080-11736</p>
<D>	 <p><math>\varphi = 5</math> (0.20) L = 16 (0.63)</p> <p>90080-16097</p>	<E>	 <p><math>\varphi = 5</math> (0.20) L = 14 (0.55)</p> <p>90167-A0005</p>	<F>	 <p><math>\varphi = 5</math> (0.20) L = 14 (0.55)</p> <p>90167-50002</p>
<G>	 <p><math>\varphi = 6</math> (0.24)</p> <p>90080-18071</p>				

P

B131638E02

#### HINT:

All bolts, screws and nuts relevant to installing and removing the instrument panel are shown along with their alphabet code in the table below.

### 2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

#### CAUTION:

Wait for 90 seconds after disconnecting the cable to prevent the airbag working.

### 3. REMOVE STEERING WHEEL COVER LOWER NO.2 (See page [RS-304](#))

### 4. REMOVE STEERING WHEEL COVER LOWER NO.3 (See page [RS-304](#))

### 5. REMOVE STEERING PAD (See page [RS-304](#))

### 6. REMOVE STEERING WHEEL ASSEMBLY (See page [SR-36](#))

### 7. REMOVE STEERING COLUMN COVER (See page [SR-36](#))

### 8. REMOVE TURN SIGNAL SWITCH ASSEMBLY (See page [SR-36](#))

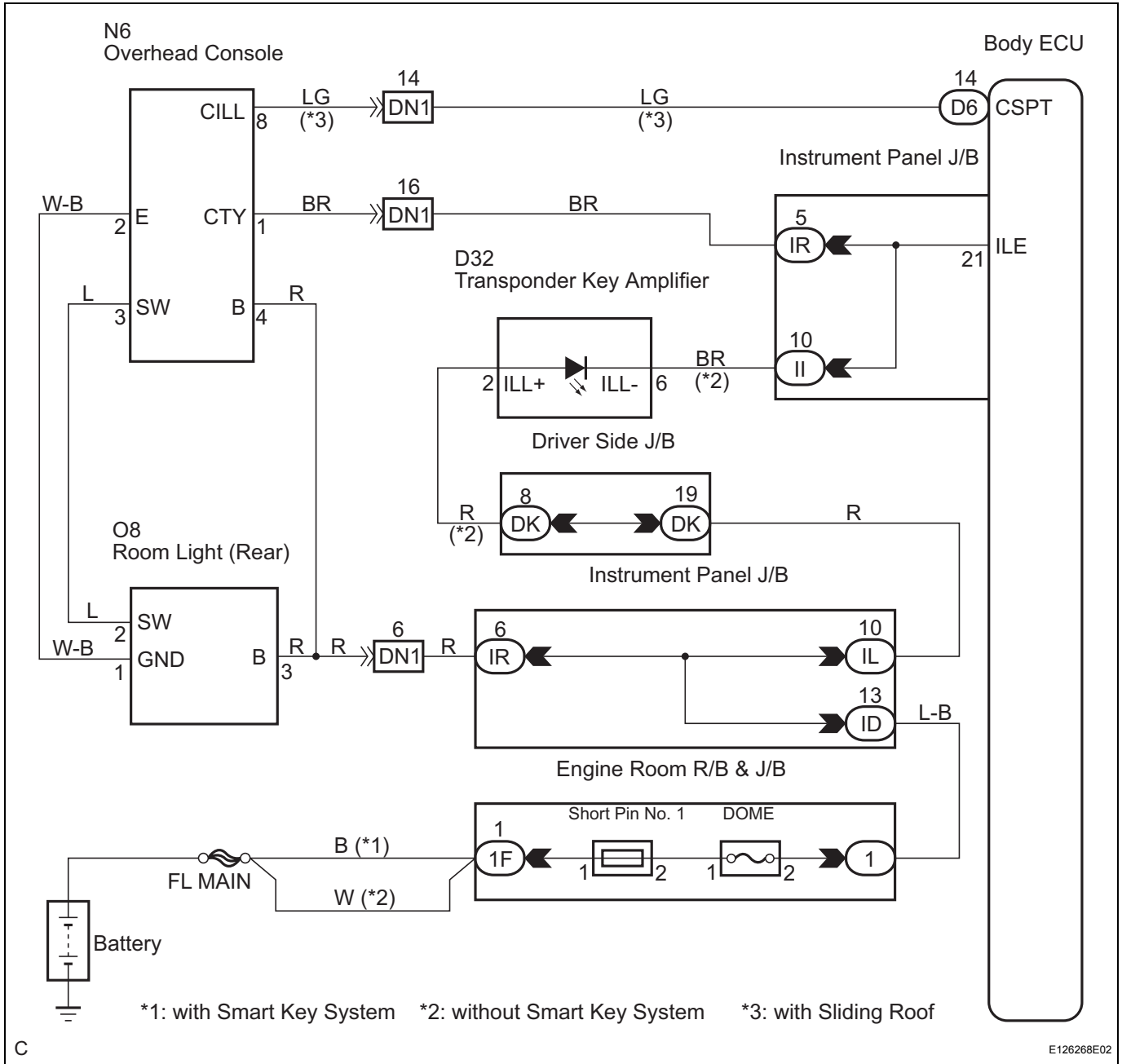
# ILLUMINATION CIRCUIT

## DESCRIPTION

The multiplex network body ECU controls the following illumination lights.

1. Ignition key cylinder light (w/o Smart Entry System)
2. Front interior light installed in personal light assembly

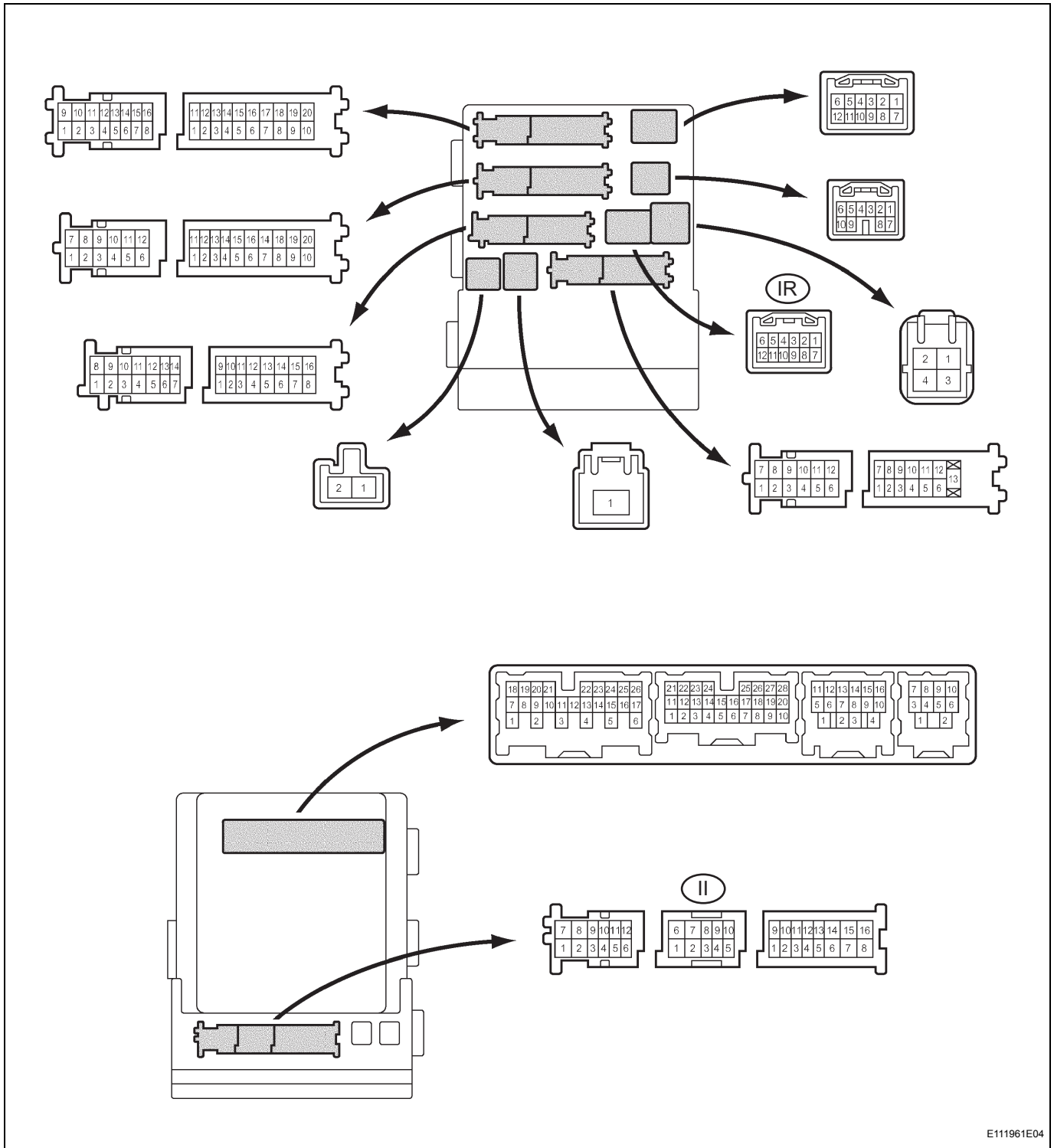
## WIRING DIAGRAM



## INSPECTION PROCEDURE

1. PERFORM ACTIVE TEST BY INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.

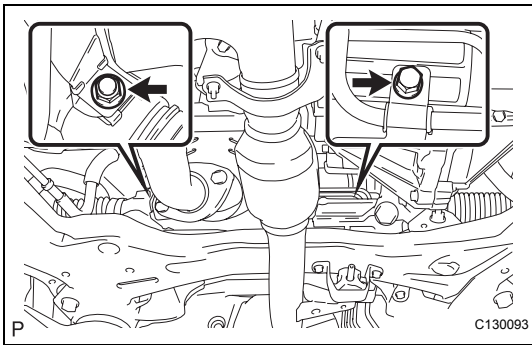


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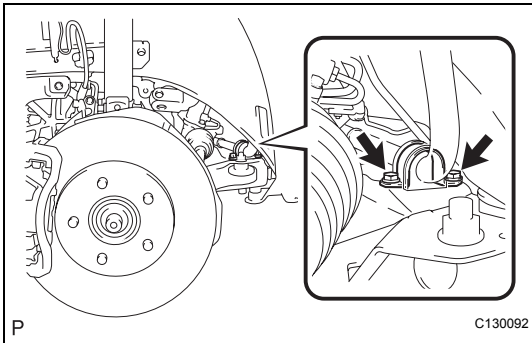
**Standard voltage**

Tester Connection	Condition	Specified Condition
II-10 - Body ground	All door is closed → Front or rear door is open	10 to 14 V → Below 1 V
IR-5 - Body ground	All door is closed → Front or rear door is open	10 to 14 V → Below 1 V

**NG** REPAIR OR REPLACE HARNESS OR CONNECTOR (EACH ILLUMINATE CIRCUIT)



- (c) Install the pressure feed tube clamp with the 2 bolts.  
**Torque: 9.8 N\*m (100 kgf\*cm, 87 in.\*lbf)**



- 3. INSTALL FRONT STABILIZER BRACKET NO.1 LH**  
 (a) Install the stabilizer bar bush No.1 to the stabilizer bar.  
 (b) Install the front stabilizer bracket No.1 LH with the 2 bolts.  
**Torque: 19 N\*m (194 kgf\*cm, 14 ft.\*lbf)**

- 4. INSTALL FRONT STABILIZER BRACKET NO.1 RH**  
**HINT:**  
 Perform the same procedure as for the LH side.

- 5. INSTALL FRONT STABILIZER LINK ASSEMBLY LH**

- 6. INSTALL FRONT STABILIZER LINK ASSEMBLY RH**  
**HINT:**  
 Perform the same procedure as for the LH side.

- 7. CONNECT TIE ROD ASSEMBLY LH**

- (a) Connect the tie rod assembly LH to the steering knuckle LH with the castle nut.

**Torque: 49 N\*m (500 kgf\*cm, 36 ft.\*lbf)**

- (b) Install a new cotter pin.

**NOTICE:**

**If the holes for the cotter pin are not aligned, tighten the nut up to 60° further.**

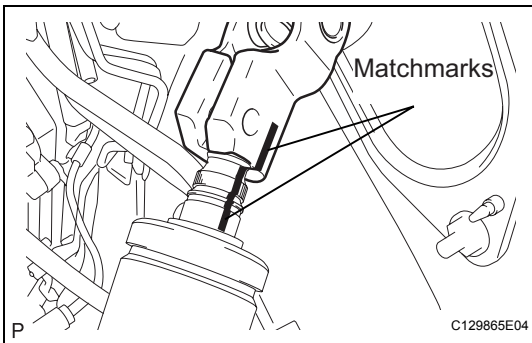
- 8. CONNECT TIE ROD ASSEMBLY RH**

**HINT:**

Perform the same procedure as for the LH side.

- 9. CONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY**

- (a) Align the matchmarks on the steering intermediate shaft assembly and the power steering gear assembly.



# Engine Immobiliser System without Smart Key System

