

STEERING SYSTEM

PRECAUTION

NOTICE:

When disconnecting the negative (-) battery terminal, initialize the following systems after the terminal is reconnected.

System Name	See procedure
Lighting System (Adaptive Front-Lighting System)	LI-17
Power Window Control System	WS-12
Power Back Door System	ED-33
Sliding Roof System	RF-22 and RF-4

SR**1. HANDLING PRECAUTIONS FOR STEERING SYSTEM**

- (a) Care must be taken when replacing parts. Incorrect replacement could affect the performance of the steering system and result in a driving hazard.

2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

- (a) The RX330 is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (See page [RS-1](#)).

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help you find the cause of the problem. The numbered suspect are as indicate the priority of the likely cause of the problem. Check each part in the order shown. If necessary, repair or replace these parts.

STEERING SYSTEM

SR

Symptom	Suspected area	See page
Herd steering	1. Tires (improperly inflated)	TW-1
	2. Power steering fluid level (Low)	PS-2
	3. Drive belt (Loose)	EM-22
	4. Front wheel alignment (Incorrect)	SP-2
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	SP-24
	7. Steering column (Binding)	-
	8. Power steering vane pump	PS-8
	9. Power steering link	PS-19
Poor return	1. Tires (Improperly inflated)	TW-1
	2. Front wheel alignment (Incorrect)	SP-2
	3. Steering column (Binding)	-
	4. Power steering link	PS-19
Excessive play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	SP-24
	3. Intermediate shaft, Universal joint, Sliding yoke (Worn)	-
	4. Front wheel bearing (Worn)	AH-5
	5. Power steering link	PS-19
Abnormal noise	1. Power steering fluid level (Low)	PS-2
	2. Steering system joints (Worn)	-
	3. Power steering link	PS-19

HINT:

When the problem occurs in the power tilt and telescopic steering system, refer to the DI section.

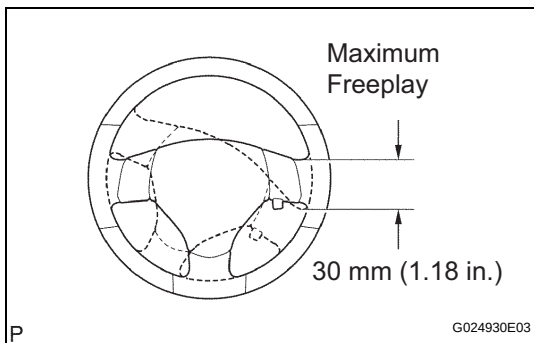
ON-VEHICLE INSPECTION

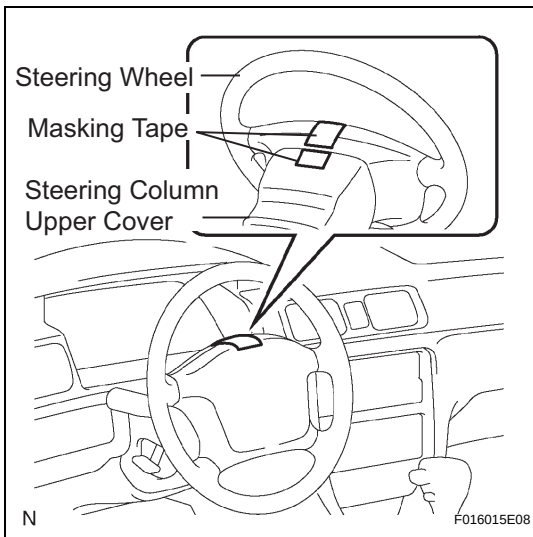
1. CHECK STEERING WHEEL FREEPLAY

- Stop the vehicle and face the tires straight ahead.
- Turn the steering wheel gently right and left by hand, and check the steering wheel freeplay.

Maximum freeplay:

30 mm (1.18 in.)

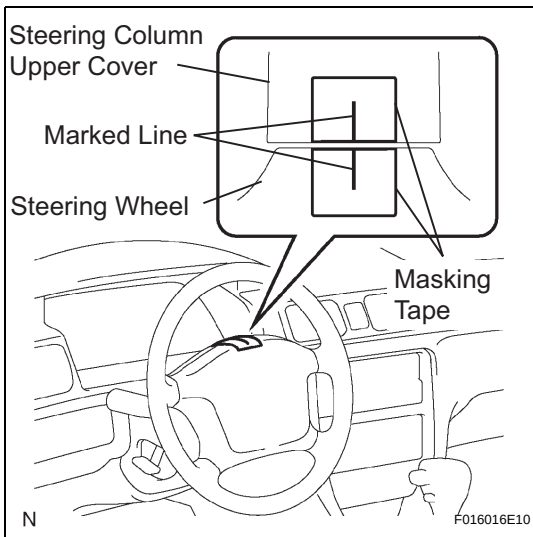




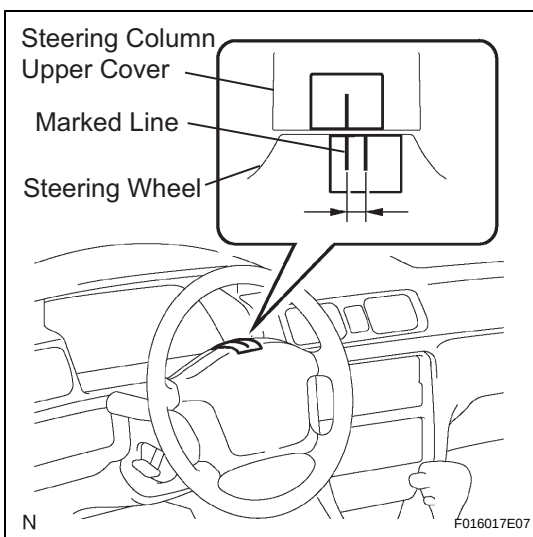
REPAIR

1. STEERING OFF CENTER REPAIR PROCEDURE

- (a) Inspect steering wheel off center.
 - (1) Apply masking tape on the top center of the steering wheel and steering column upper cover.
 - (2) Drive the vehicle in a straight line for 100 meters at a constant speed of 35 mph (56 km/h), and hold the steering wheel to maintain the course.



- (3) Draw a line on the masking tape as shown in the illustration.



- (4) Turn the steering wheel to its straight position.

HINT:

Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

- (5) Draw a new line on the masking tape or the steering wheel as shown in the illustration.
- (6) Measure the distance between the 2 lines on the masking tape of the steering wheel.
- (7) Convert the measured distance to steering angle.

HINT:

Measured distance 1 mm (0.04 in.) = Steering angle approximately 1 deg.

HINT:

Make a note of the steering angle.

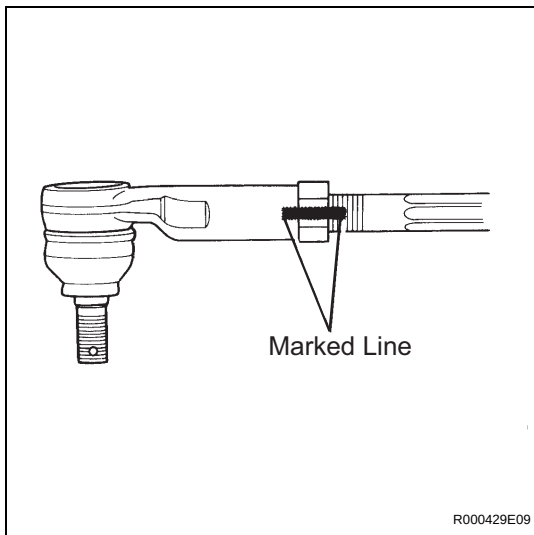
- (b) Adjust steering angle.

NOTICE:

The adjustment method for steering angle is different depending on the models. Check whether it is type A or B.

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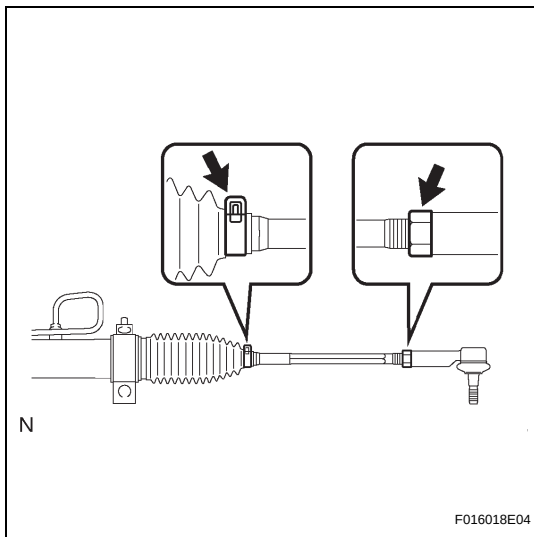
SR



- (1) Draw a line on the RH and LH tie rod and rack ends where it can easily be seen.
- (2) Using a paper gauge, measure the distance from RH and LH tie rod ends to the rack end screws.

HINT:

- Measure the RH side and LH side.
- Make a note of the measured values.



- (3) Remove the RH and LH boot clips from the rack boots.
- (4) Loosen the RH and LH lock nuts.
- (5) Turn the RH and LH rack end by the same amount (but in different directions) according to the steering angle.

HINT:

1 turn 360 deg. of rack end (1.5 mm(0.059 in.) horizontal movement) - 12 deg. of steering angle.

- (6) Tighten the RH and LH lock nuts by the specified torque.

Torque: 74 N*m (750 kgf*cm, 54 ft.*lbf)

NOTICE:

Make sure that the difference in length between RH and LH tie rod ends and rack end screws are within 1.5 mm (0.059 in.).

- (7) Install the RH and LH boot clips.

POWER TILT AND POWER TELESCOPIC STEERING COLUMN SYSTEM

PRECAUTION

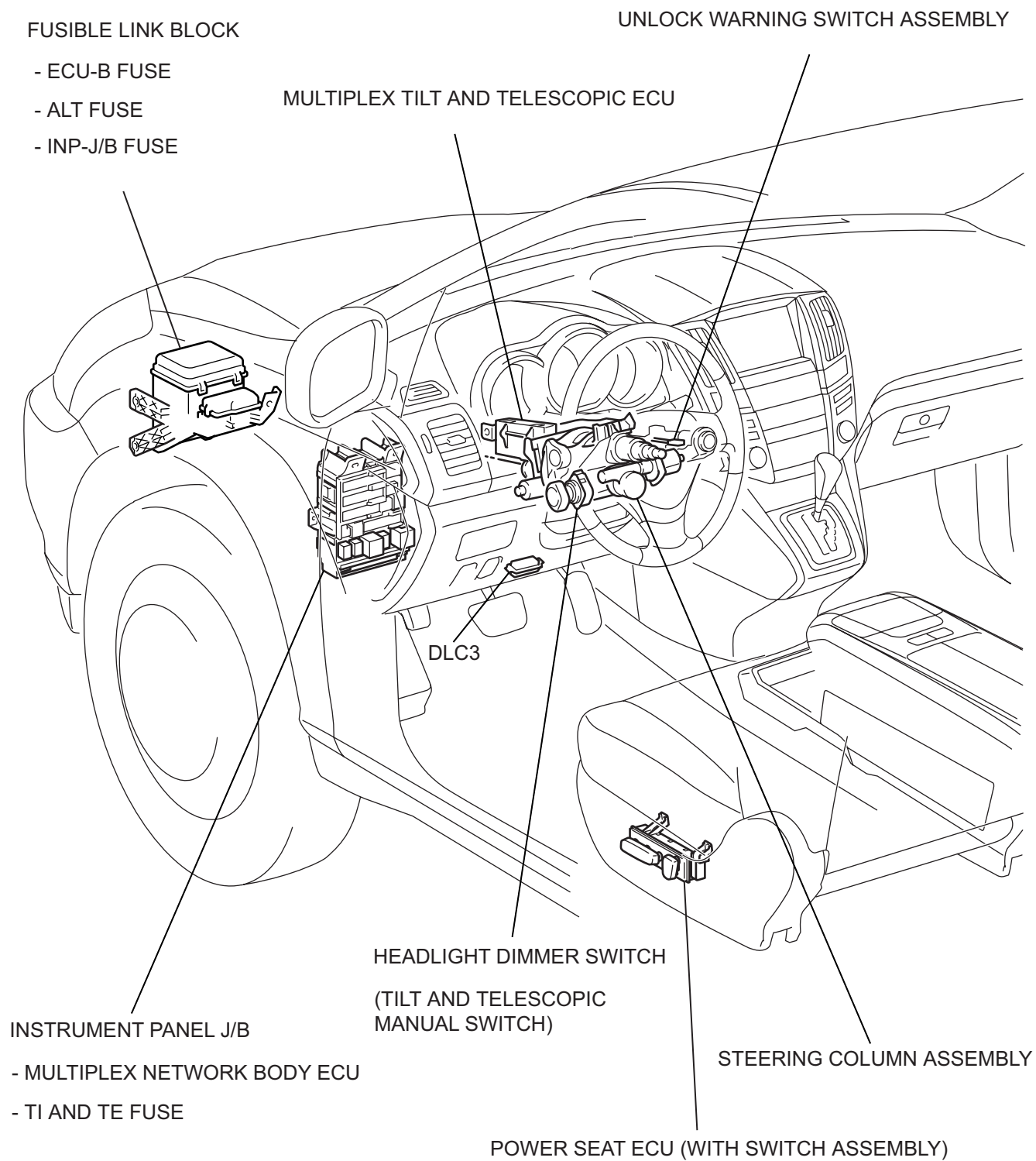
NOTICE:
When disconnecting the negative (-) battery terminal,
initialize the following systems after the terminal is
reconnected.

SR

System Name	See procedure
Lighting System (Adaptive Front-Lighting System)	LI-17
Power Window Control System	WS-12
Power Back Door System	ED-33
Sliding Roof System	RF-22 and RF-4

PARTS LOCATION

SR



SYSTEM DESCRIPTION

1. MANUAL OPERATION

- (a) The tilt position and the telescopic position can be adjusted as desired by operating the tilt and telescopic switch.

2. AUTO AWAY / RETURN FUNCTION

- (a) When the ignition key is removed, the steering column moves forward away from the driver and also tilts up for easy exit and entry.
- (b) When the ignition key is inserted in the ignition switch, the steering column returns to the previously set position.
- (c) The auto away / return function can be prohibited by using a intelligent tester.

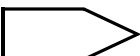
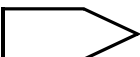
3. DRIVING POSITION MEMORY FUNCTION

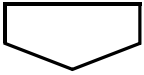
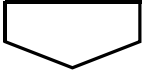
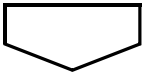
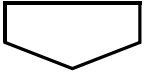
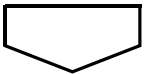
- (a) The steering column moves to the previously set position by pressing the driving position memory switches.

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HOW TO PROCEED WITH TROUBLESHOOTING

The intelligent tester can be used during steps 4, 7, 9 and 10.

SR**1** VEHICLE BROUGHT TO WORKSHOP**2** CUSTOMER PROBLEM ANALYSIS**3** CHECK MULTIPLEX COMMUNICATION SYSTEM**4** CHECK AND CLEAR DTCs**5** PROBLEM SYMPTOM CONFIRMATION SYMPTOM DOES NOT OCCUR (GO TO STEP 6) SYMPTOM OCCURS (GO TO STEP 7)**6** SYMPTOM SIMULATION**7** DTC CHECK NORMAL CODE (GO TO STEP 7) MALFUNCTION CODE (GO TO STEP 8)**8** PROBLEM SYMPTOMS TABLE GO TO STEP 10

9 DTC CHART**10** CIRCUIT INSPECTION**11** IDENTIFICATION OF PROBLEM**12** REPAIR**13** CONFIRMATION TEST

END

SR

CUSTOMIZE PARAMETERS

HINT:
The following can be customized.

- NOTICE:
- Be sure to record the current value before customizing.
 - When troubleshooting, be careful as customizing could turn off the function. (Example: If the wireless operation does not function, check that it has not been turned off by customizing.)

TILT & TELESCO

DISPLAY (ITEM)	DEFAULT	CONTENTS	SETTING
AUTO TILT AWAY (Auto Away / Return Function)	ON	ON / Off of the auto away / return function.	ON / OFF

PROBLEM SYMPTOMS TABLE

The power tilt and power telescopic steering column system uses the multiplex communication system, so check its diagnostic system before proceeding to troubleshooting. The table below will be useful in troubleshooting these electrical systems. The numbered suspect areas indicate the likelihood of the cause in descending order. Inspect each part in the order shown, and replace if found faulty.

- If the instruction "Proceed to next circuit inspection shown on the chart" is given in the flow chart on the following pages, proceed to the circuit with the next highest number in the table to continue the check.
- If the problem still occurs even though there is no abnormality in the related circuits, check and replace the multiplex tilt and telescopic ECU.

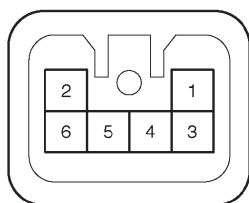
POWER TILT AND POWER TELESCOPIC STEERING COLUMN SYSTEM

Symptom	Suspected area	See page
Both tilt and telescopic: Manual, auto away / return and memory functions	1. Multiplex communication system	MP-6
	2. ECU power source circuit	SR-32
	3. Un-lock warning switch circuit	SR-16
	4. Actuator power source circuit	SR-35
	5. Tilt position sensor or tilt motor circuit	SR-23
	6. Telescopic position sensor or telescopic motor circuit	SR-28
Tilt only: Manual, auto away / return and memory functions	1. Tilt position sensor or tilt motor circuit	SR-23
Telescopic only: Manual, auto away / return and memory functions	1. Telescopic position sensor or telescopic motor circuit	SR-28
Both tilt and telescopic: Only tilt and telescopic manual switch does not operate	1. Tilt & telescopic manual switch circuit	SR-20
Both auto away and return: Only auto away / return function does not operate	1. Check status of auto away function using intelligent tester	-
	2. Multiplex communication system	MP-6
	3. Ignition switch	ST-17
	4. Un-lock warning switch circuit	SR-16
Auto away only: Only auto away function does not operate	1. Un-lock warning switch circuit	SR-16
	2. Ignition switch	ST-17
Auto return only: Only auto away function does not operate	1. Un-lock warning switch circuit	SR-16
	2. Ignition switch	ST-17
Only memory function does not operate	1. Multiplex communication system	MP-6

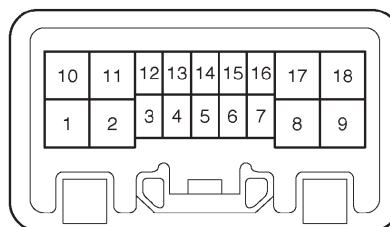
TERMINALS OF ECU

1. MULTIPLEX TILT AND TELESCOPIC ECU:

Connector A:



T4



N

F044288E05

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition (V)
TEM+ (A-2) - GND (T4-11)	-- W-B	Telescopic motor output	- Un-lock warning switch ON - Telescopic contracted	10 to 14
			Telescopic is not operating	Below 1
VCE (A-3) - E2 (A-5)	-	Telescopic sensor power source	IG switch ON	8 to 16
TES (A-4) - E2 (A-5)	-	Telescopic sensor signal	Telescopic is operating	pulse generation HI: 8 to 16 LOW: 0
E2 (A-5) - Body Ground	--Body Ground	Telescopic sensor ground	Always	Below 1
TEM- (A-6) - GND (T4-11)	-- W-B	Telescopic motor output	- Un-lock warning switch ON - Telescopic extended	10 to 14
			Telescopic is not operating	Below 1
TIM- (T4-1) - GND (T4-11)	G - W-B	Tilt motor output	- Un-lock warning switch ON - Tilt down	10 to 14
			Tilt is not operating	Below 1
+B (T4-2) - GND (T4-11)	Y - W-B	Motor power source	Always	10 to 14
MSW (T4-3) - GND (T4-11)	W - W-B	Manual switch signal	- IG switch ON - Tilt up by manual switch	1.67 to 2.13
			- IG switch ON - Tilt down by manual switch	0.54 to 0.74
			- IG switch ON - Telescopic contracted by manual switch	1.08 to 1.40
			- IG switch ON - Telescopic extended by manual switch	2.22 to 2.77
			Manual switch is not operating	Below 0.2
VC (T4-4) - GND (T4-11)	LG - W-B	Manual switch power source	IG switch ON	4.9 to 5.1
VCI (T4-6) - E1 (T4-17)	L - BR	Tilt sensor power source	IG switch ON	8 to 16
TIS (T4-7) - E1 (T4-17)	R - BR	Tilt sensor signal	Tilt is operating	Pulse generation HI: 8 to 16 LOW: 0
IG (T4-8) - GND (T4-11)	Y - W-B	IG signal / IG power source	IG switch ON	10 to 14
			IG switch OFF	Below 1
ECUB (T4-9) - GND (T4-11)	SB - W-B	ECU power source	Always	10 to 14
TIM+ (T4-10) - GND (T4-11)	B - W-B	Tilt motor output	- Un-lock warning switch ON - Tilt up	10 to 14
			Tilt is not operating	Below 1
GND (T4-11) - Body Ground	W-B - Body Ground	ECU ground	Always	Below 1

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition (V)
E1 (T4-17) - Body Ground	BR - Body Ground	Tilt sensor ground	Always	Below 1

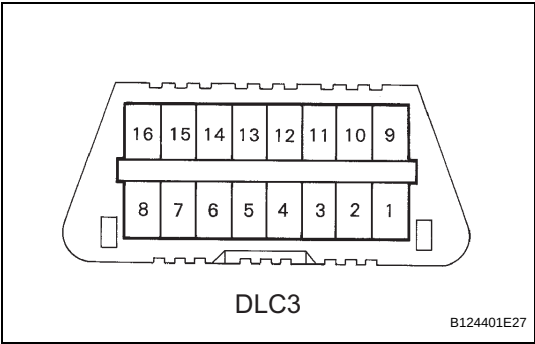
DIAGNOSIS SYSTEM

1. DESCRIPTION

- (a) When troubleshooting a vehicle with the diagnostic system, the only difference from the usual troubleshooting procedure is connecting the intelligent tester to the vehicle and reading various data output from the vehicle's multiplex tilt and telescopic ECU.
- The multiplex tilt and telescopic ECU records DTCs when the computer detects a malfunction in the computer itself or in its circuits.
- To check the DTCs, connect the intelligent tester to the DLC3 on the vehicle. The intelligent tester enables you to erase the DTCs, activate the several actuators and check freeze frame data and various from of steering data.

2. DLC3 CHECK

- (a) The multiplex tilt and telescopic ECU follows the ISO 9141-2 communication protocol. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



Terminal No.	Connection	Voltage or Resistance	Condition
4	Chassis Ground	↔ Body Ground 1 Ω or less	Always
5	Signal Ground	↔ Body Ground 1 Ω or less	Always
7	Bus + Line	Pulse generation	During transmission
16	Battery Positive	↔ Body Ground 10 - 14 V	Always

- HINT:**
- If the display shows "UNABLE TO CONNECT TO VEHICLE" after connecting the intelligent tester cable to the DLC3 and turning the ignition switch to the ON position, there is a problem either with the vehicle or tester.
- If communication is normal when connecting the tester to another vehicle, inspect the DLC3 on the original vehicle.
 - If communication is still not possible when connecting the tester to another vehicle, the problem is probably on the tester itself, so consult the Service Department Listed in the tester's operator's manual.

DTC CHECK / CLEAR

1. CHECK DTC

- (a) Prepare the intelligent tester .
- (b) Connect the intelligent tester to the DLC3 at the lower part of the instrument panel.
- (c) Turn the ignition switch to the ON position and turn the intelligent tester on.
- (d) Use the intelligent tester to check the DTCs and the freeze frame data, and note or print the result (See the operator's manual for operating instructions.).
- (e) See page [SR-15](#). to confirm the details of the DTCs.

2. CLEAR DTC

- (a) The following procedures clear the DTCs and freeze frame data.
 - When using the intelligent tester:
Operate the intelligent tester. (See the operator's manual for operating instructions.).
 - When not using the intelligent tester:
Disconnect the battery terminals.

FAIL-SAFE CHART**1. FAIL-SAFE FUNCTION**

- (a) The ECU stops operating the multiplex tilt and telescopic steering column when a changed signal is not input to the ECU while the unit is in operation.

HINT:

Each motor has a built in position sensor.

- (b) The ECU temporarily stops operating the tilt or telescopic steering column when the power supply to the ECU decreases to approx. 8+-1 V or less while the unit is in operation.

HINT:

When the power supply returns to normal within 10 seconds after the signal to operate the tilt or telescopic steering column is input to the ECU, the ECU starts operating the unit. When the power supply returns to normal after 10 seconds or more elapses, the ECU starts operating it the next time the tilt or telescopic steering column operational signal input to the ECU.

- (c) If the communication of ECU related to this system is interrupted, the ECU effects the controls listed below.

Tilt and telescopic operation	Multiplex network body ECU	Power seat ECU	Multiplex communication interruption
Manual	○ (IG switch ON position)	○	○ (IG switch ON position)
Auto away / return	X	○	X
Position memory (Memorize)	X	X	X
Position memory (Play back)	○ (IG switch ON position)	X	X

DATA LIST / ACTIVE TEST**1. DATA LIST**

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch to the ON position.
- (c) Operate the intelligent tester according to the steps on the display and select "DATA LIST".

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
T & T AUTO AWAY	Auto away and return function / ON or OFF	ON: Auto away and return function is allowed OFF: Auto away and return function is restrained	-
TILT POS	Current tilt position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TELSC POS	Current telescopic position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TILT RETURN POS	Memorized tilt return position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TELSC RETURN POS	Memorized telescopic return position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
T & T MEM 1	Tilt and telescopic memory position 1 / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-
TILT MEM 1 POS	Tilt data of memory position 1 / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TELSC MEM 1 POS	Telescopic data of memory position 1 / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
T & T MEM 2	Tilt and telescopic memory position 2 / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-
TILT MEM 2 POS	Tilt data of memory position 2 / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TELSC MEM 2 POS	Telescopic data of memory position 2 / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
TELSC MEM 3 POS	Telescopic data of memory position 3 / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
UP LIMIT	Uppermost tilt position / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-
UP LIMIT POS	Uppermost tilt position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
DOWN LIMIT	Lowermost tilt position / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-
DOWN LIMIT POS	Lowermost tilt position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
SHORT LIMIT	Shortest telescopic position / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-

SR

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SHORT LIMIT POS	Shortest telescopic position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
LONG LIMIT	Longest telescopic position / NOT MEM or MEM	NOT MEM: Position is not memorized MEM: Position is memorized	-
LONG LIMIT POS	Longest telescopic position data / min.: 0000 H (0 edge), max.: FFFF H (65535 edge)	7000 - 9000 H (28672 - 36864 edge)	-
UP SW	Tilt up input by manual switch / ON or OFF	ON: Tilt up is activated by manual switch OFF: Tilt up is not activated by manual switch	-
UP SW (MPX)	Communication state of tilt up input by manual switch / ON or OFF	ON: Tilt up is activated by manual switch OFF: Tilt up is not activated by manual switch	-
DOWN SW	Tilt down input by manual switch / ON or OFF	ON: Tilt down is activated by manual switch OFF: Tilt down is not activated by manual switch	-
DOWN SW (MPX)	Communication state of tilt down input by manual switch / ON or OFF	ON: Tilt down is activated by manual switch OFF: Tilt down is not activated by manual switch	-
SHORT SW	Telescopic short input by manual switch / ON or OFF	ON: Telescopic short is activated by manual switch OFF: Telescopic short is not activated by manual switch	-
SHORT SW (MPX)	Communication state of telescopic short input by manual switch / ON or OFF	ON: Telescopic short is activated by manual switch OFF: Telescopic short is not activated by manual switch	-
LONG SW	Telescopic long input by manual switch / ON or OFF	ON: Telescopic long is activated by manual switch OFF: Telescopic short is not activated by manual switch	-
LONG SW (MPX)	Communication state of telescopic long input by manual switch / ON or OFF	ON: Telescopic long is activated by manual switch OFF: Telescopic short is not activated by manual switch	-
T & T MANUAL SW	Voltage data of manual switch / min.: 0 V, max.: 5 V	Neutral position: Below 0.2 V Tilt up: 1.67 - 2.13 V Tilt down: 0.54 - 0.74 V Telescopic contract: 1.08 - 1.40 V Telescopic Extend: 2.22 - 2.77 V	-
POWER VOLTAGE	Voltage data of power supply / min.: 0 V, max.: 20 V	Actual power supply voltage 10 - 14 V	-
FREEZ SPD INFO	Vehicle speed data / 0 km/h (0ph), max.: 255 km/h (158 mph)	Available only for vehicles with the freeze frame data	-
IG SW (MPX)	Communication state of ignition switch / ON or OFF	ON: Communication is normal OFF: Communication is interrupted	-
IG SW	Input state of ignition switch / ON or OFF	ON: Input signal is normal OFF: Input signal is interrupted	-
KEYSW (MPX)	Communication state of un-lock warning switch / ON or OFF	ON: Communication is normal OFF: Communication is interrupted	-
BODY 1 ECU INFO	Communication state of body ECU signal/ ON or Interruption	ON: Communication is normal Interruption: Input signal is interrupted	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SEAT ECU INFO	Communication state of seat ECU signal/ ON or Interruption	ON: Communication is normal Interruption: Input signal is interrupted	-

2. ACTIVE TEST LIST

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch to the ON position.
- (c) Following the display on intelligent tester, perform the "ACTIVE TEST".

SR

Item	Vehicle Condition / Test Details	Diagnostic Note
TILT	Tilt operation / UP or DOWN	-
TELESCO	Telescopic operation / LONG or SHORT	-

DIAGNOSTIC TROUBLE CODE CHART

If a DTC is displayed, check the circuit for that code listed in the table below. For the details of each code, refer to the "See page" in the DTC chart.

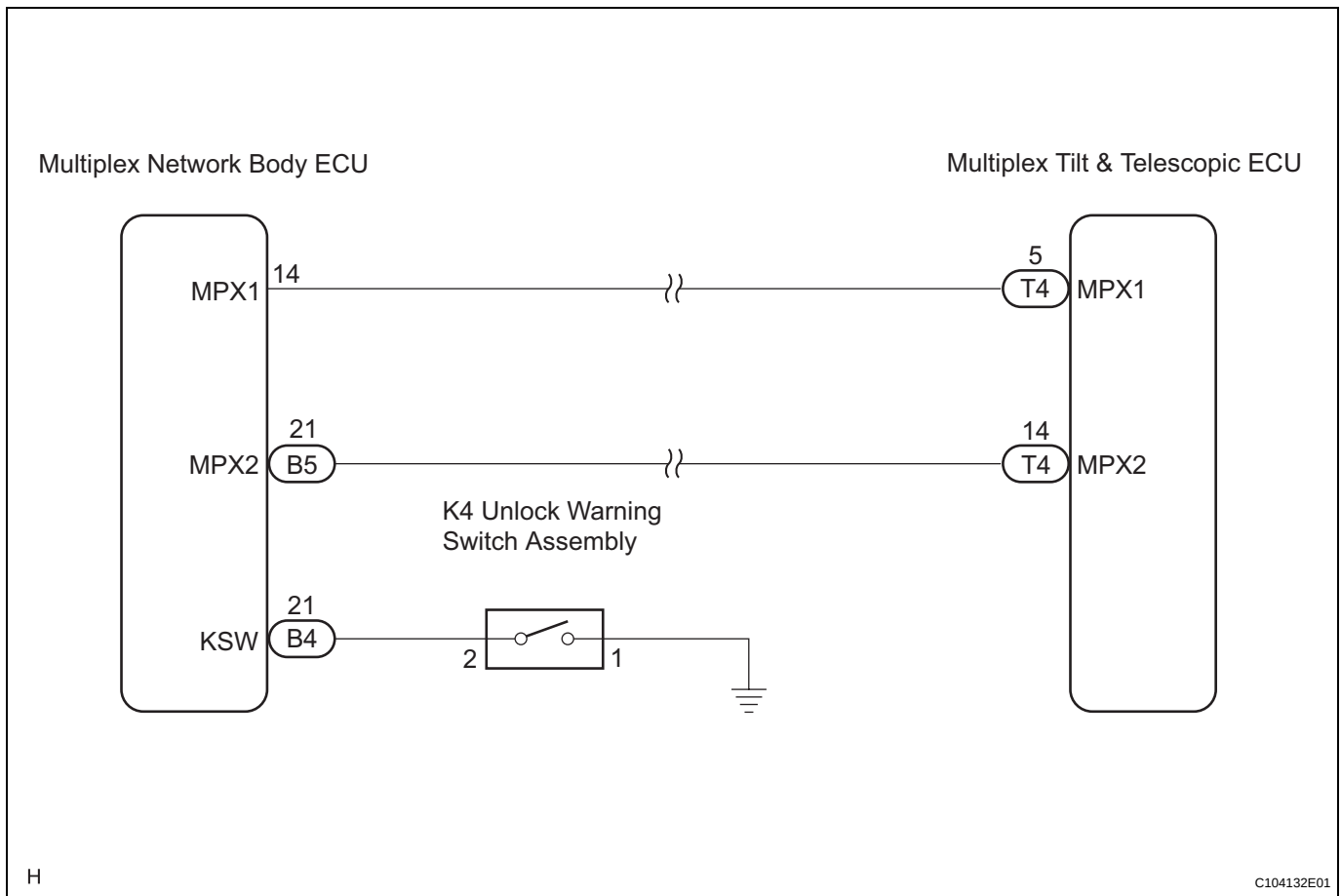
POWER TILT AND POWER TELESCOPIC STEERING COLUMN SYSTEM

DTC No.	Detection Item	Trouble Area	See page
B2602	Key Unlock Warning Switch Circuit Malfunction	1. Un-lock warning switch assembly 2. Un-lock warning switch circuit 3. Multiplex network body ECU 4. Multiplex tilt and telescopic ECU	SR-16
B2603	Tilt and Telescopic Manual Switch Circuit Malfunction	1. Tilt and telescopic manual switch 2. Tilt and telescopic manual switch circuit 3. Multiplex tilt and telescopic ECU	SR-20
B2610	Tilt Position Sensor or Tilt Motor Circuit Malfunction	1. Tilt steering gear assembly w/ motor 2. Actuator power source circuit 3. Tilt position sensor or tilt motor circuit 4. Multiplex tilt and telescopic ECU	SR-23
B2611	Telescopic Position Sensor or Telescopic Motor Circuit Malfunction	1. Tilt steering gear assembly w/ motor 2. Actuator power source circuit 3. Telescopic position sensor or telescopic motor circuit 4. Multiplex tilt and telescopic ECU	SR-28
B2620	ECU Power Source Circuit Malfunction	1. Battery 2. ECU power source circuit 3. Multiplex tilt and telescopic ECU	SR-32
B2621	Communication Interruption	1. Multiplex communication system 2. Multiplex network body ECU 3. Power seat ECU 4. Multiplex tilt and telescopic ECU	SR-34

DTC**B2602****Key Unlock Warning Switch Circuit Malfunction****DESCRIPTION**

A signal (ON or OFF) is sent from the driver side J/B ECU to the multiplex tilt and telescopic ECU via the communication bus when the ignition key is inserted into the key cylinder. The multiplex tilt and telescopic ECU uses this signal to operate the auto away or auto return function.

DTC No.	Detection Item	Trouble Area
B2602	A signal (OFF) is sent to the multiplex tilt and telescopic ECU when the ignition switch is turned to the ON position.	• Unlock warning switch assembly • Unlock warning switch circuit • Multiplex network body ECU • Multiplex tilt and telescopic ECU

SR**WIRING DIAGRAM****1****CHECK OTHER DTC OUTPUT****HINT:**

The power tilt and telescopic steering column system uses the multiplex communication system, so check its diagnostic system before proceeding to troubleshooting.

- (a) Check if the power tilt and telescopic steering column system DTC B2621 is output.

Result

DTC Condition	Proceed to
No output	A
B2621 is output	B

HINT:

- If DTC B2621 besides B2602 is output, perform troubleshooting for this DTC first.
- DTC B2621 indicates a communication interruption.

B

REPAIR CIRCUIT INDICATED BY OUTPUT
CODE

A

2

READ VALUE OF INTELLIGENT TESTER

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn the intelligent tester on.
- Select "KEY SW (MPX)" from the Data List.
- Check the communication state on the tester screen.

TILT & TELESCOPIC

Item	Measurement Item/Range (Display)	Normal Condition
KEY SW (MPX)	Communication state of unlock warning switch/ON or OFF	ON: Communication is normal OFF: Communication is interrupted

OK:

"ON" is displayed.

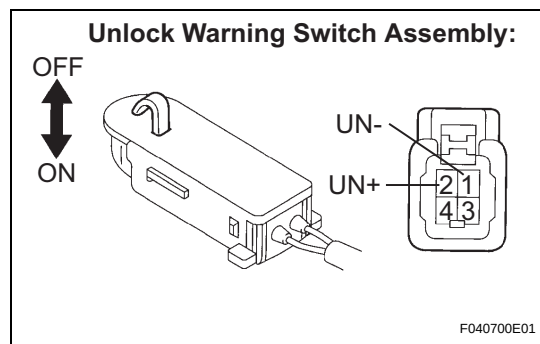
OK

REPLACE MULTIPLEX TILT AND
TELESCOPIC ECU

NG

3

INSPECT UNLOCK WARNING SWITCH ASSEMBLY



- Disconnect the K4 connector from the unlock warning switch assembly.
- Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection (Terminal No.)	Condition	Specified Condition
UN+ (2) - UN- (1)	Unlock warning switch OFF (Ignition key is removed)	10 k Ω or higher
UN+ (2) - UN- (1)	Unlock warning switch ON (Ignition key is inserted)	Below 1 Ω

NG

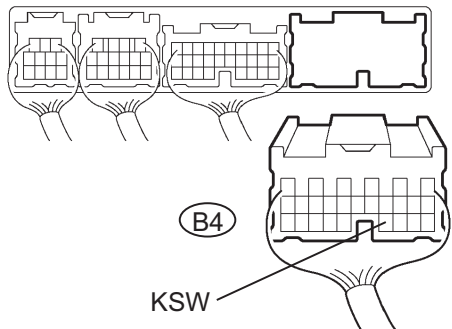
REPLACE UNLOCK WARNING SWITCH
ASSEMBLY

OK

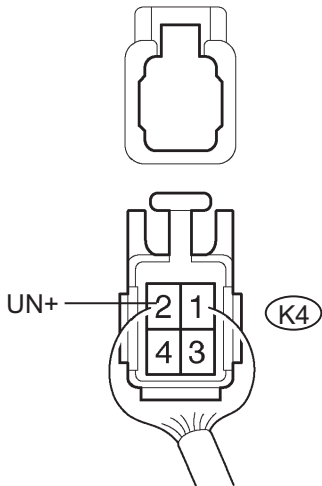
4

**CHECK HARNESS AND CONNECTOR (BETWEEN BODY ECU AND UNLOCK WARNING
SWITCH ASSEMBLY)**

Multiplex Network Body ECU:



Unlock Warning Switch Assembly:



N

F044880E01

- (a) Disconnect the B4 connector from the multiplex network body ECU.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection (Terminal No.)	Condition	Specified Condition
KSW (B4-21) - UN+ (K4-2)	Always	Below 1 Ω
KSW (B4-21) - Body ground	Always	10 k Ω or higher

NG

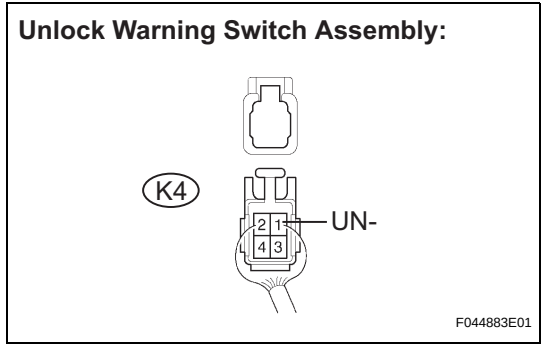
**REPAIR OR REPLACE HARNESS OR
CONNECTOR**

OK

SR

5

CHECK HARNESS AND CONNECTOR (BETWEEN UNLOCK WARNING SWITCH ASSEMBLY AND BODY GROUND)



(a) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
UN- (K4-1) - Body ground	Always	Below 1 Ω

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

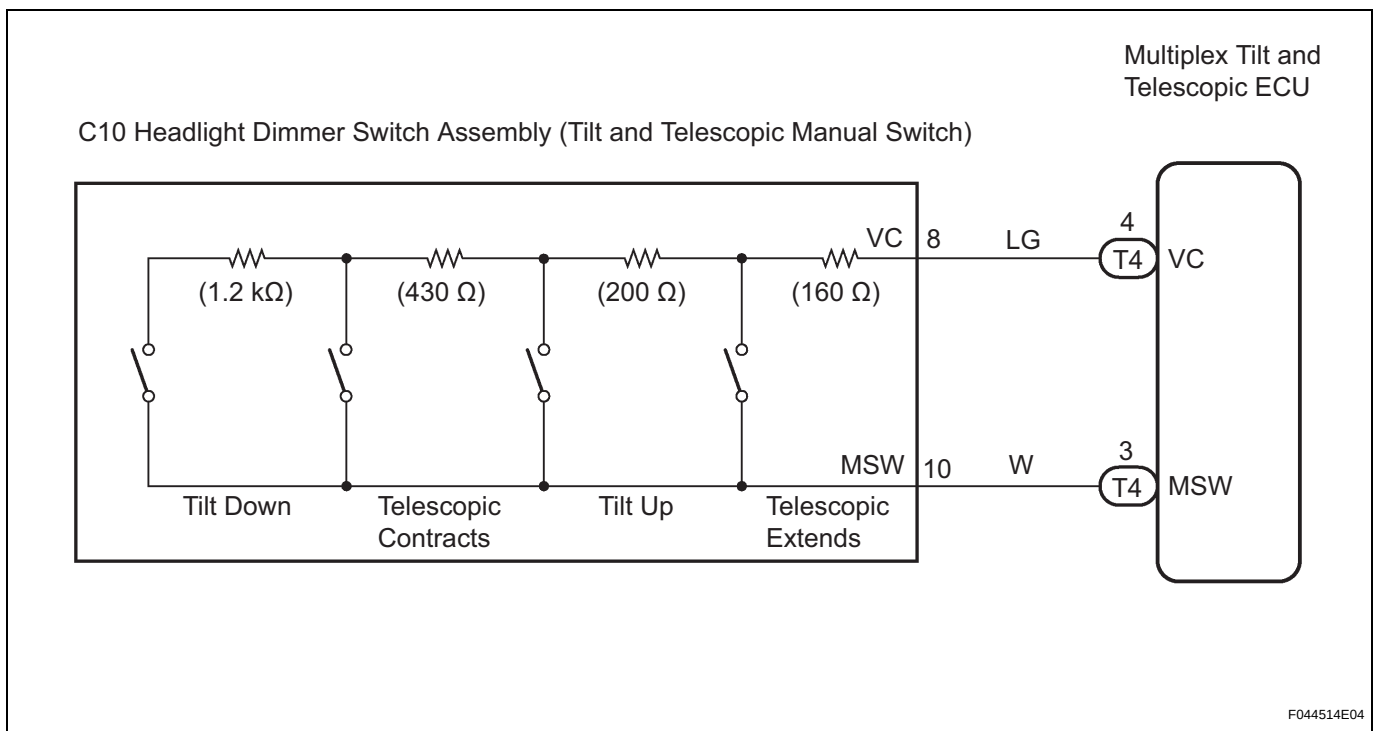
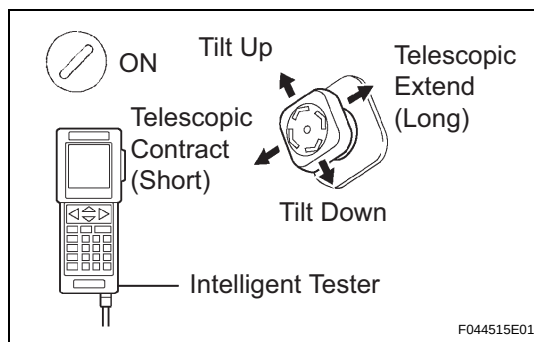
DTC

B2603

Tilt and Telescopic Manual Switch Circuit Malfunction**DESCRIPTION**

Different voltage values are input to the multiplex tilt and telescopic ECU by operating the manual switch. The multiplex tilt and telescopic ECU then judges which motor and in which direction that motor should be moved based on the voltage value.

DTC No.	Detection Item	Trouble Area
B2603	Abnormal voltage value, which is not within the specification, is input to the multiplex tilt and telescopic ECU when being operated by the manual switch.	• Tilt and telescopic manual switch • Tilt and telescopic manual switch circuit • Multiplex tilt and telescopic ECU

WIRING DIAGRAM**1****READ VALUE OF INTELLIGENT TESTER**

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn on the intelligent tester.
- Select "T & T MANUAL SW" from the DATA LIST.
- Read voltages on the tester screen when operating the manual switch.

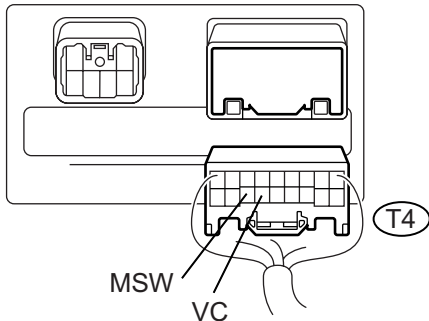
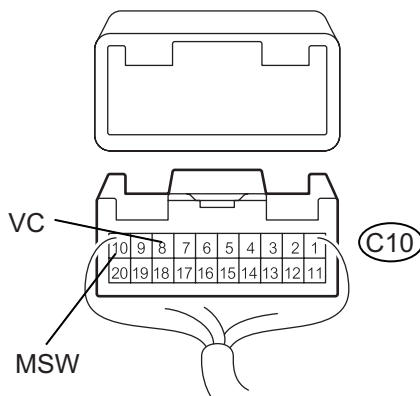
Voltage

Manual switch position	Specified value
Neutral	Below 0.2 V
Tilt up	1.67 to 2.13 V
Tilt down	0.54 to 0.74 V

Manual switch position	Specified value
Telescopic contract	1.08 to 1.40 V
Telescopic extend	2.22 to 2.77 V

Result

Proceed to	Result
A	Switch voltages in all directions are within the standard.
B	Switch voltages in certain directions are outside the standard.
C	Switch voltages in all directions are outside the standard.

A**REPLACE MULTIPLEX TILT AND
TELESCOPIC ECU****B****REPLACE HEADLIGHT DIMMER SWITCH
ASSEMBLY****C****2****CHECK HARNESS AND CONNECTOR (TILT AND TELESCOPIC ECU - TILT AND
TELESCOPIC SWITCH)****Multiplex Tilt and Telescopic ECU:****Headlight Dimmer Switch Assembly:**

H

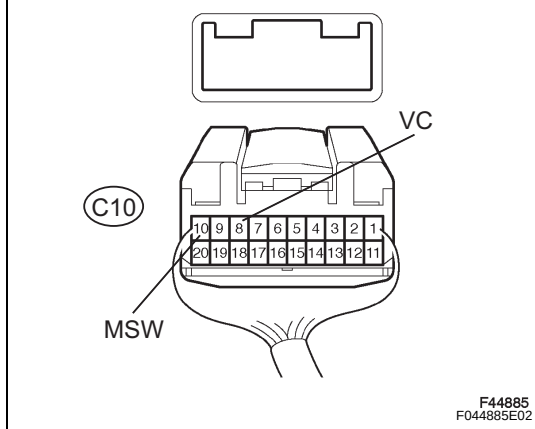
C104131E03

- Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
- Disconnect the C10 connector from the headlight dimmer switch assembly.
- Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
VC (T4-4) - VC (C10-8)	Always	Below 1 Ω
MSW (T4-3) - MSW (C10-10)	Always	Below 1 Ω
VC (C10-8) - Body ground	Always	10 k Ω or higher
MSW (C10-10) - Body ground	Always	10 k Ω or higher

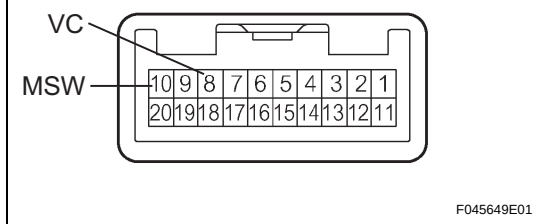
NG**REPAIR OR REPLACE HARNESS OR
CONNECTOR****OK**

3 INSPECT MULTIPLEX TILT AND TELESCOPIC ECU (VC TERMINAL VOLTAGE)**Headlight Dimmer Switch Assembly:**

- (a) Reconnect the T4 connector to the multiplex tilt and telescopic ECU.
(b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection (Terminal No.)	Condition	Specified value
VC (C10-8) - MSW (C10-10)	IG switch ON	4.9 to 5.1 V

NG**REPLACE MULTIPLEX TILT AND
TELESCOPIC ECU****OK****4 INSPECT HEADLIGHT DIMMER SWITCH ASSEMBLY (TILT AND TELESCOPIC MANUAL SWITCH)****Headlight Dimmer Switch Assembly
Connector:**

- (a) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection	Condition (Manual switch position)	Specified value
VC - MSW	Tilt up	360 Ω
	Tilt down	1,990 Ω
	Telescopic contract	790 Ω
	Telescopic extend	160 Ω

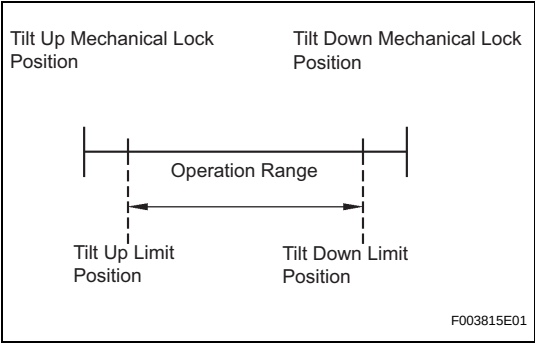
NG**REPLACE HEADLIGHT DIMMER SWITCH
ASSEMBLY****OK****REPLACE MULTIPLEX TILT AND TELESCOPIC ECU****SR**

DTC	B2610	Tilt Position Sensor or Tilt Motor Circuit Mal-function
-----	-------	---

DESCRIPTION

The tilt motor is operated by the power source voltage supplied from the multiplex tilt and telescopic ECU and makes the steering column tilt up and down. The tilt position sensor (Hall IC) in the tilt motor detects the tilt angle of the steering column and outputs a signal to the CPU based on that tilt.

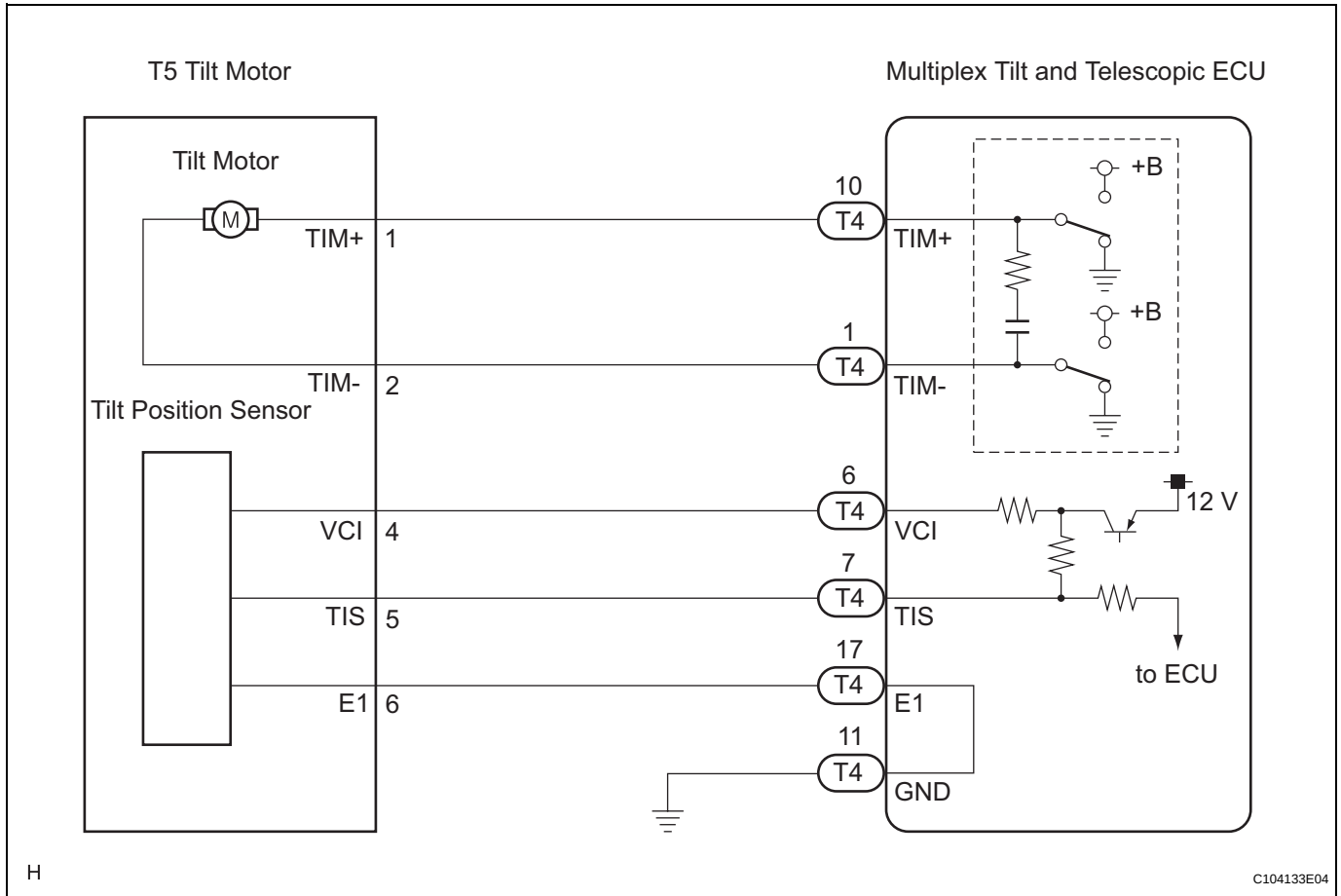
SR



HINT:
Limit positions can be confirmed on the screen of the intelligent tester.

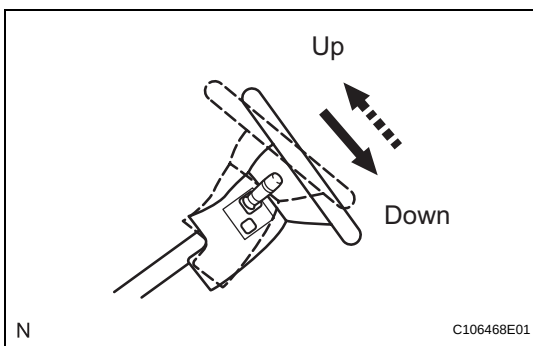
DTC No.	Detection Item	Trouble Area
B2610	Tilt operation stops within the operation range while operating.	• Tilt steering gear assembly w/ motor • Actuator power source circuit • Tilt position sensor or tilt motor • Multiplex tilt and telescopic ECU

WIRING DIAGRAM



SR

1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER



- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn the intelligent tester on.
- Select "TILT & TELESCOPIC".
- Select "TILT", and perform the test using the intelligent tester.
- Check that the steering wheel tilts up (down) when the Active Test is carried out.

OK:

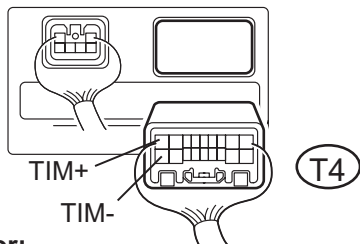
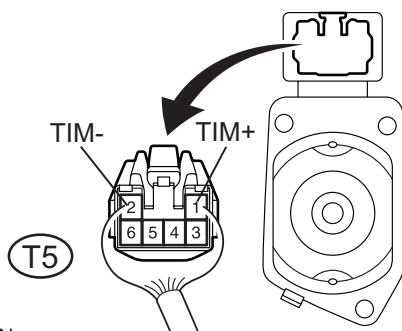
Steering wheel tilts up (down).

OK

Go to step 4

NG

2

CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND TILT MOTOR)**Multiplex Tilt and Telescopic ECU:****Tilt Motor:**

N

C106478E09

- Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
- Disconnect the T5 connector from the tilt motor.
- Measure the resistance according to the value(s) in the table below.

Resistance

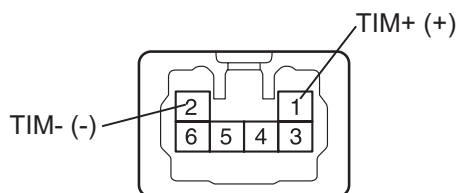
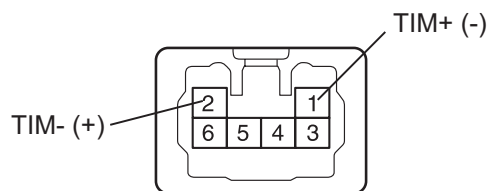
Tester connection (Terminal No.)	Condition	Specified value
TIM+ (T4-10) - TIM+ (T5-1)	Always	Below 1 Ω
TIM- (T4-1) - TIM- (T5-2)	Always	Below 1 Ω
TIM+ (T4-10) - Body ground	Always	10 k Ω or higher
TIM- (T4-1) - Body ground	Always	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3

INSPECT TILT MOTOR**Tilt Motor Connector:****Tilt Motor Connector:**

N

C106479E01

- Connect the positive battery terminal to terminal TIM+ and the negative battery terminal to terminal TIM- of the tilt motor connector. Then confirm that the steering wheel tilts up.

OK:**Steering wheel tilts up.**

- Connect the negative battery terminal to terminal TIM+ and the positive battery terminal to terminal TIM- of the tilt motor connector. Then confirm that the steering wheel tilts down.

OK:**Steering wheel tilts down.**

NG

REPLACE STEERING COLUMN ASSEMBLY

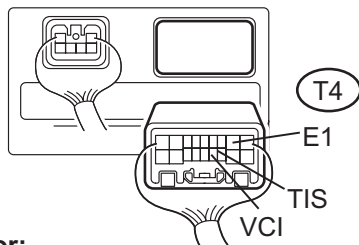
OK

REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

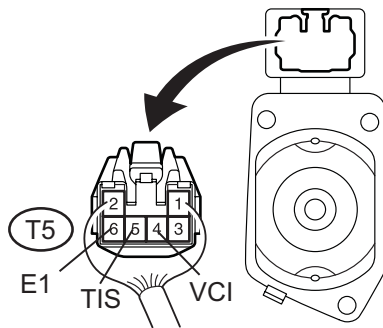
4 CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND TILT POSITION SENSOR)

SR

Multiplex Tilt and Telescopic ECU:



Tilt Motor:



N

C106478E10

- Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
- Disconnect the T5 connector from the tilt motor.
- Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
VCI (T4-6) - VCI (T5-4)	Always	Below 1 Ω
TIS (T4-7) - TIS (T5-5)	Always	Below 1 Ω
E1 (T4-17) - E1 (T5-6)	Always	Below 1 Ω
VCI (T4-6) - Body ground	Always	10 k Ω or higher
TIS (T4-7) - Body ground	Always	10 k Ω or higher
E1 (T4-17) - Body ground	Always	10 k Ω or higher

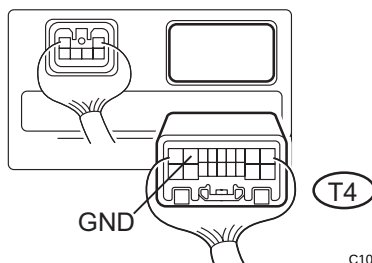
NG

REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

5 CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND BODY GROUND)

Multiplex Tilt and Telescopic ECU:



N

C106463E41

- Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
GND (T4-11) - Body ground	Always	Below 1 Ω

NG

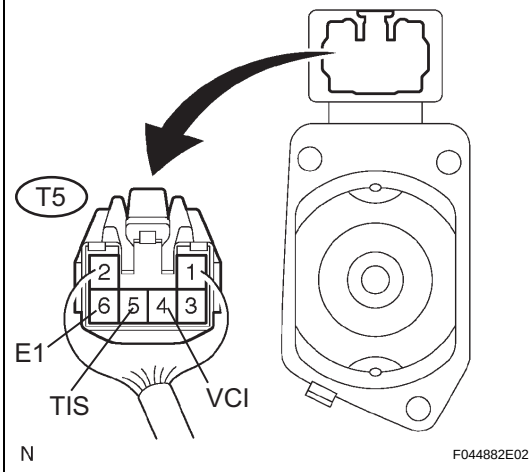
REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

6

INSPECT MULTIPLEX TILT AND TELESCOPIC ECU (VCI, TIS TERMINAL VOLTAGE)

Tilt Motor:



- (a) Reconnect the T4 connector to the multiplex tilt and telescopic ECU.
- (b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection (Terminal No.)	Condition	Specified value
VCI (T5-4) - E1 (T5-6)	Ignition switch on	8 to 16 V
TIS (T5-5) - E1 (T5-6)	Ignition switch on	8 to 16 V

NG

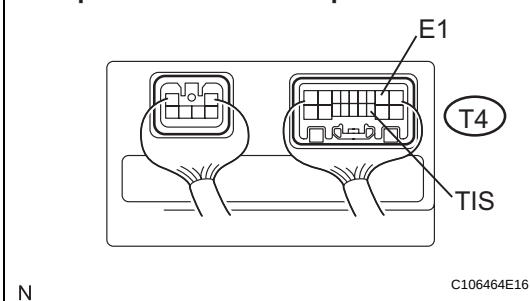
REPLACE MULTIPLEX TILT AND
TELESCOPIC ECU

OK

7

INSPECT TILT POSITION SENSOR

Multiplex Tilt and Telescopic ECU:



- (a) Reconnect the T5 connector to the tilt motor.
- (b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection (Terminal No.)	Condition	Specified value
TIS (T4-7) - E1 (T4-17)	Steering tilts up or tilts down	8 to 16 V (Pulse HI)
		0 V (Pulse LOW)

NG

REPLACE STEERING COLUMN ASSEMBLY

OK

REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

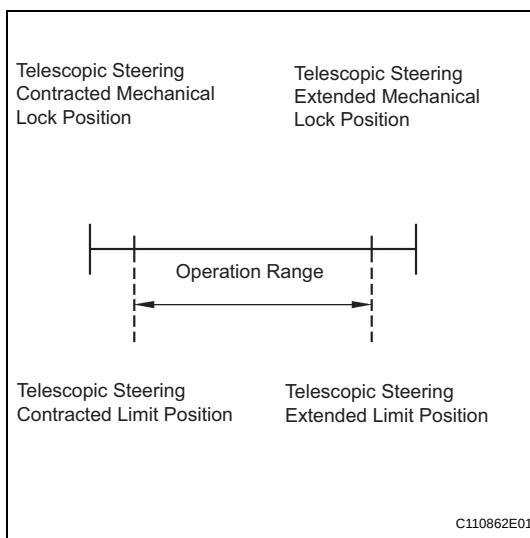
DTC

B2611

Telescopic Position Sensor or Telescopic Motor Circuit Malfunction**DESCRIPTION**

The telescopic motor is operated by the power source voltage supplied from the multiplex tilt and telescopic ECU and makes the steering column slide forward and backward. The telescopic position sensor (Hall IC) in the telescopic motor detects the sliding position in the forward and backward directions of the steering column and outputs a signal to the CPU based on that sliding amount.

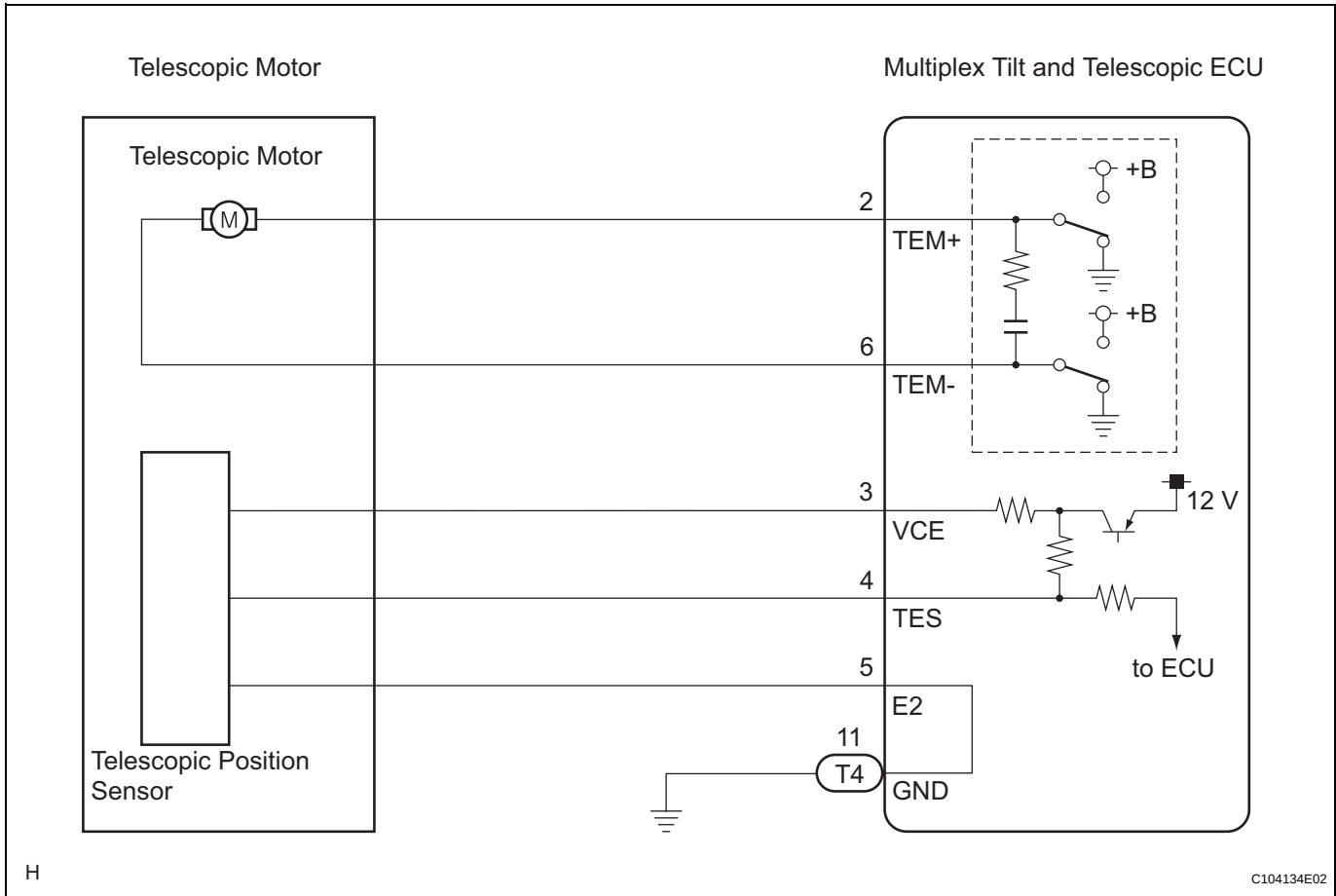
SR

**HINT:**

Limit positions can be confirmed on the screen of the intelligent tester.

DTC No.	Detection Item	Trouble Area
B2611	Telescopic operation stops within the defined range.	• Tilt steering gear assembly w/ motor • Actuator power source circuit • Telescopic position sensor or telescopic motor circuit • Multiplex tilt and telescopic ECU

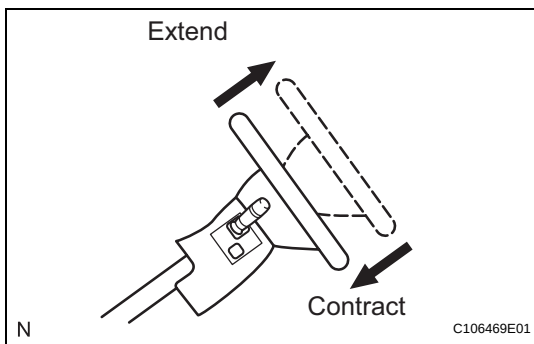
WIRING DIAGRAM



HINT:

The wire harness between the multiplex tilt and telescopic ECU and telescopic motor is provided with the steering column assembly.

1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER



- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn the intelligent tester on.
- Select "TILT & TELESCOPIC".
- Select "TELESCO", and perform the test using the intelligent tester.
- Check that the steering column contracts (extends) when the Active Test is carried out.

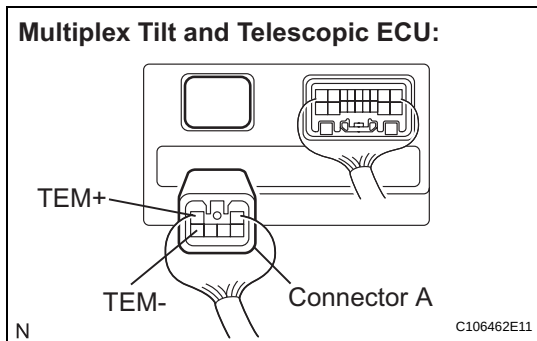
OK:

Steering column contracts (extends).

OK

Go to step 3

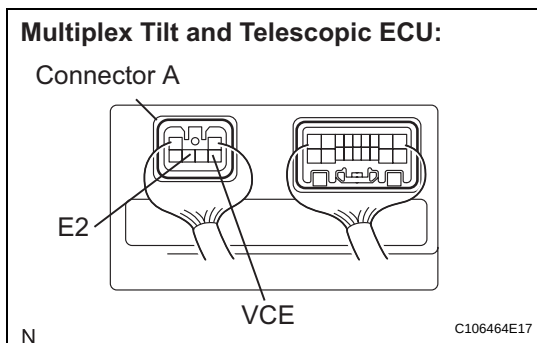
NG

2 INSPECT TELESCOPIC MOTOR

- (a) Disconnect connector A from the multiplex tilt and telescopic ECU.
- (b) Connect the positive battery terminal to terminal TEM+ and the negative battery terminal to terminal TEM- of the telescopic motor connector. Then confirm that the steering column contracts.

OK:**Steering column contracts.**

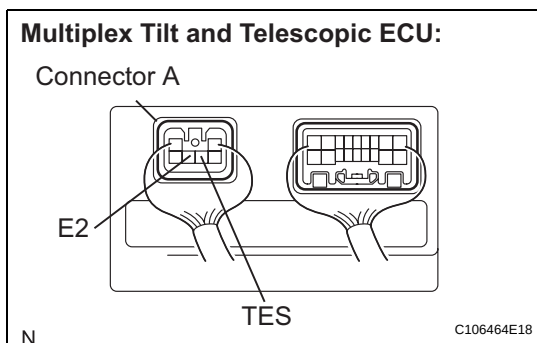
- (c) Connect the negative battery terminal to terminal TEM+ and the positive battery terminal to terminal TEM- of the telescopic motor connector. Then confirm that the steering column extends.

OK:**Steering column extends.****NG****REPLACE STEERING COLUMN ASSEMBLY****OK****REPLACE MULTIPLEX TILT AND TELESCOPIC ECU****3 INSPECT MULTIPLEX TILT AND TELESCOPIC ECU (VCE TERMINAL VOLTAGE)**

- (a) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection	Condition	Specified value
VCE - E2	Ignition switch on	8 to 16 V

NG**Go to step 5****OK****4 INSPECT TELESCOPIC POSITION SENSOR**

- (a) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection	Condition	Specified value
TES - E2	Telescopic steering contracts or extends	8 to 16 V (Pulse HI)
		0 V (Pulse LOW)

NG**REPLACE STEERING COLUMN ASSEMBLY**

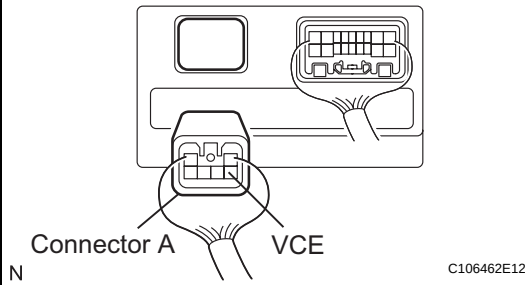
OK

REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

SR

5 CHECK HARNESS AND CONNECTOR (TILT AND TELESCOPIC ECU - TELESCOPIC
POSITION SENSOR)

Multiplex Tilt and Telescopic ECU:



- (a) Disconnect connector A from the multiplex tilt and telescopic ECU.
- (b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection	Condition	Specified value
VCE - Body ground	Always	10 k Ω or higher

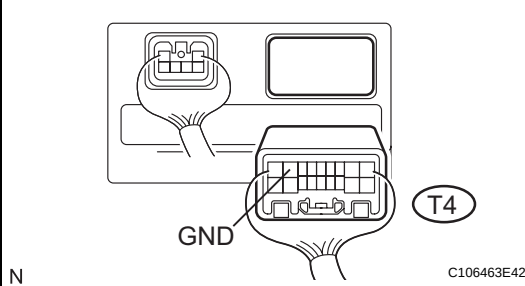
NG

REPLACE STEERING COLUMN ASSEMBLY

OK

6 CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND
BODY GROUND)

Multiplex Tilt and Telescopic ECU:



- (a) Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
- (b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
GND (T4-11) - Body ground	Always	Below 1 Ω

NG

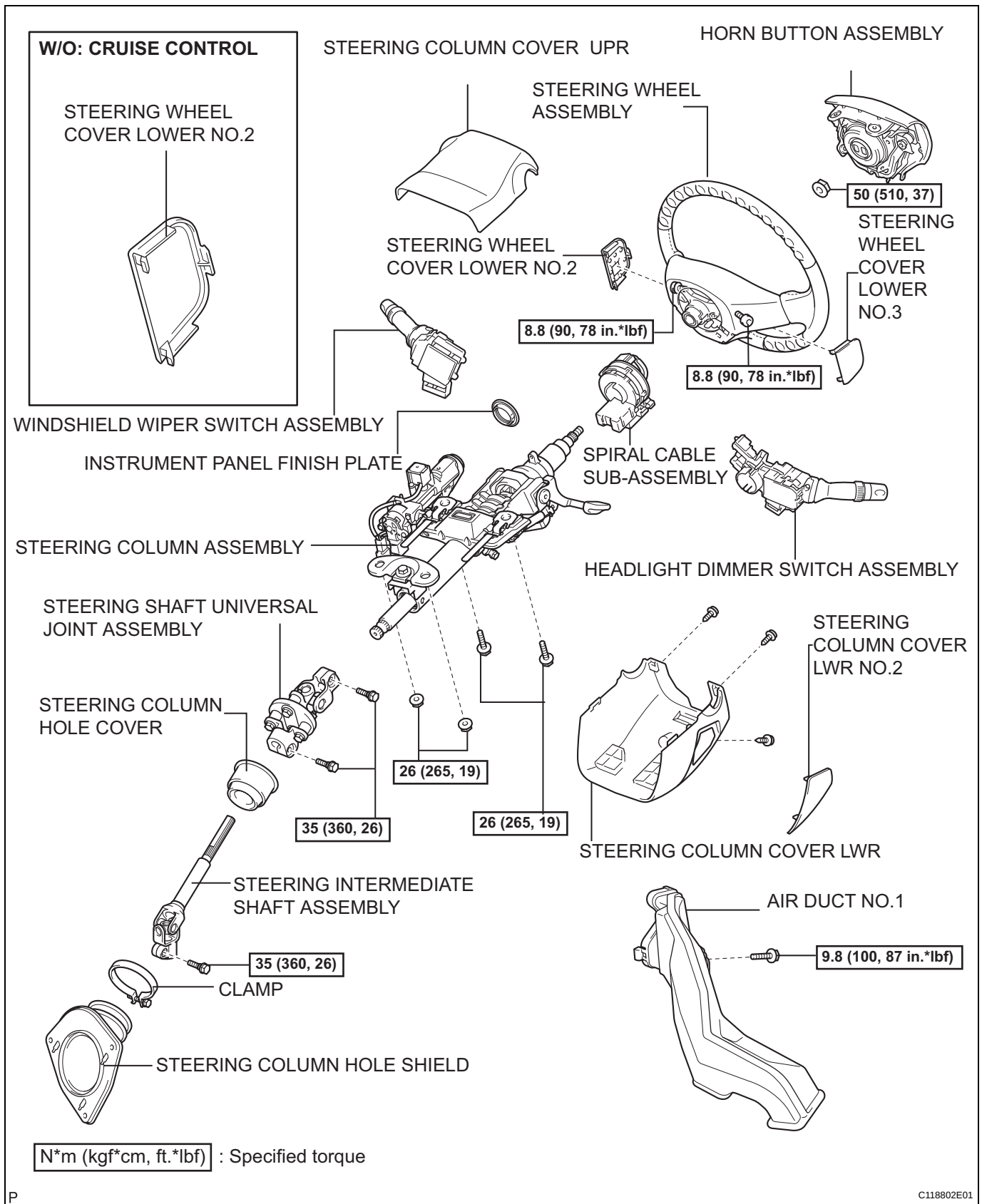
REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

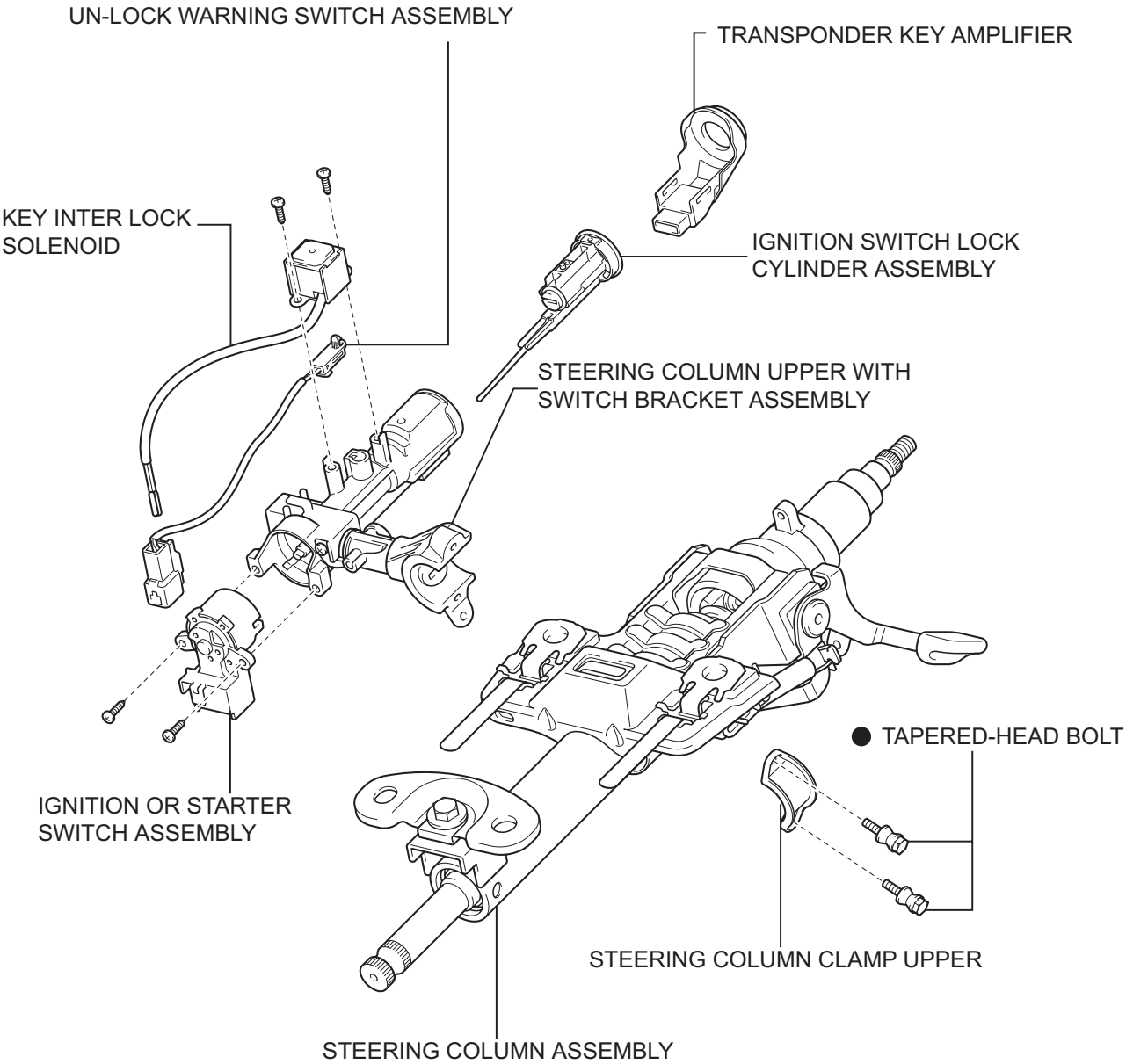
REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

STEERING COLUMN ASSEMBLY (for Manual Tilt)

COMPONENTS



SR



● Non-reusable part

DTC

B2620

ECU Power Source Circuit Malfunction

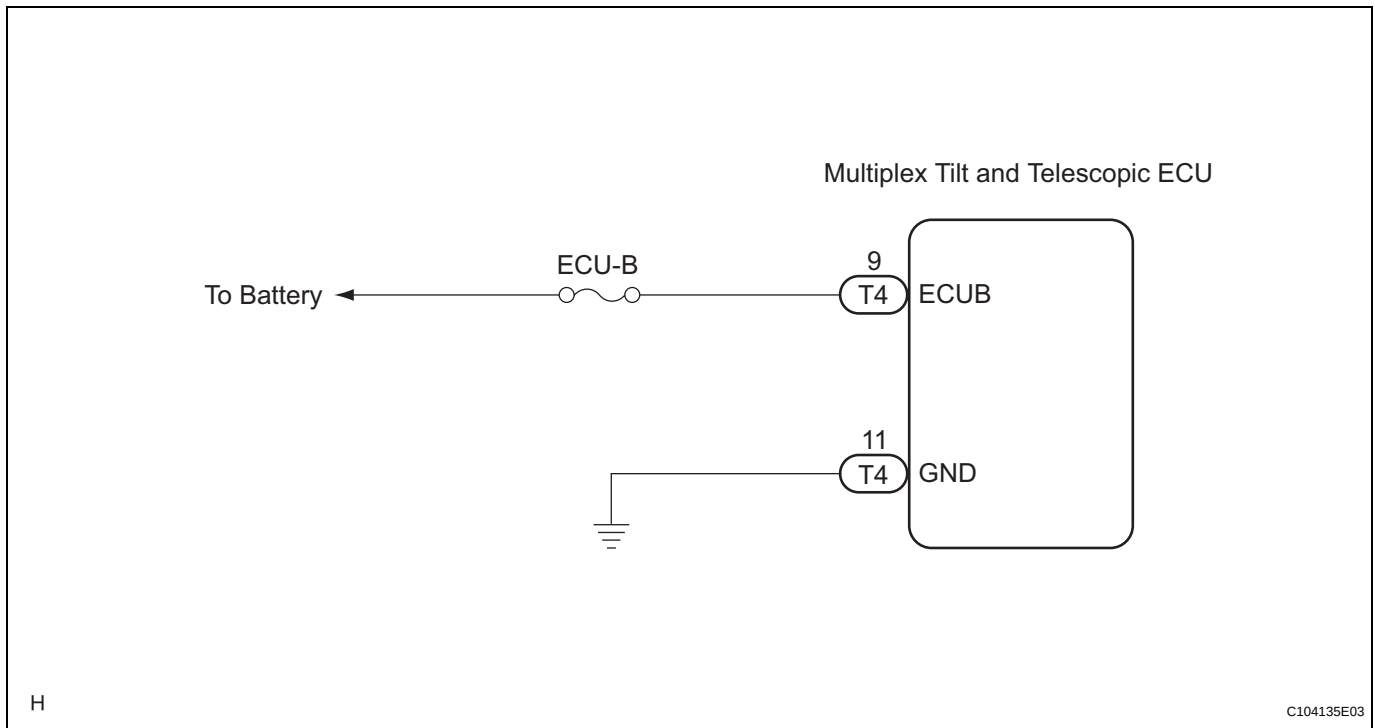
DESCRIPTION

The ECU power source circuit supplies positive voltage to the multiplex tilt and telescopic ECU.

DTC No.	Detection Item	Trouble Area
B2620	The voltage of the ECU power source drops to 8 V or less and continues for 10 seconds or more.	- Battery - ECU power source circuit - Multiplex tilt and telescopic ECU

SR

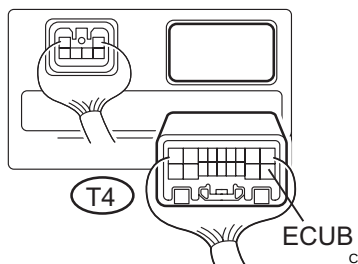
WIRING DIAGRAM



1

CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND BATTERY)

Multiplex Tilt and Telescopic ECU:



N

C106463E43

- (a) Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
- (b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection (Terminal No.)	Condition	Specified value
ECUB (T4-9) - Body ground	Always	10 to 14 V

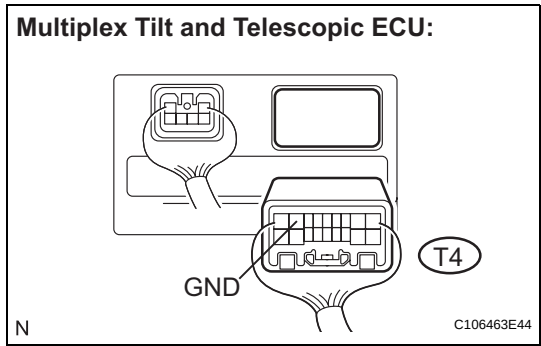
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2

CHECK HARNESS AND CONNECTOR (BETWEEN TILT AND TELESCOPIC ECU AND BODY GROUND)



(a) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
GND (T4-11) - Body ground	Always	Below 1 Ω

NG

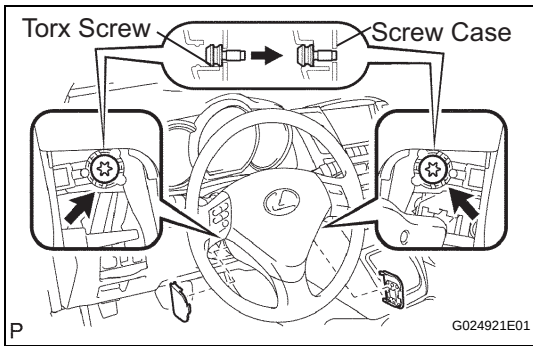
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

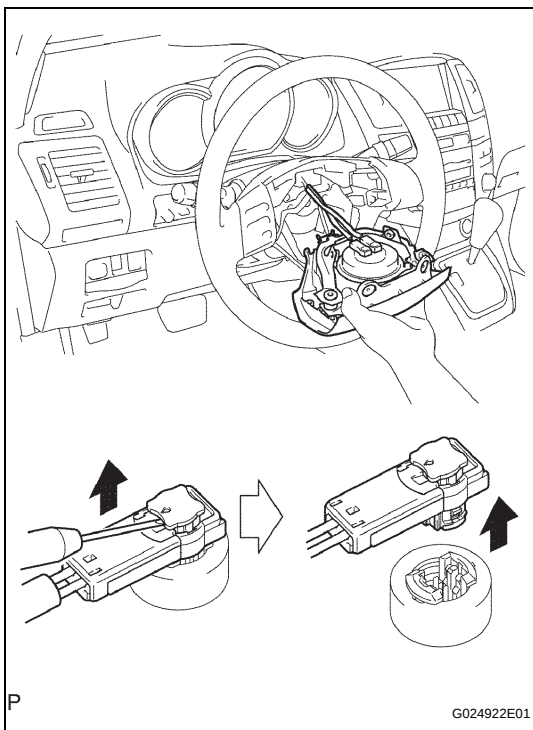
REPLACE MULTIPLEX TILT AND TELESCOPIC ECU

REMOVAL

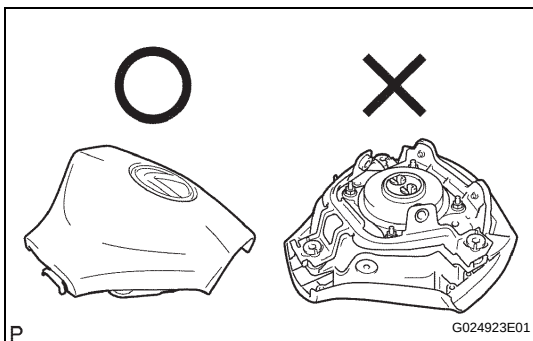
1. **PRECAUTION** (See page [RS-387](#))
2. **SEPARATE BATTERY NEGATIVE TERMINAL** (See page [RS-387](#))
3. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD**
4. **REMOVE STEERING WHEEL COVER LOWER NO.2**
5. **REMOVE STEERING WHEEL COVER LOWER NO.3**
6. **REMOVE HORN BUTTON ASSEMBLY**



- (a) Using a "torx" socket wrench, loose the 2 "torx" screws until the groove along the screw circumference is caught on the screw case.



- (b) Pull out the horn button assembly from the steering wheel and disconnect the airbag connector.



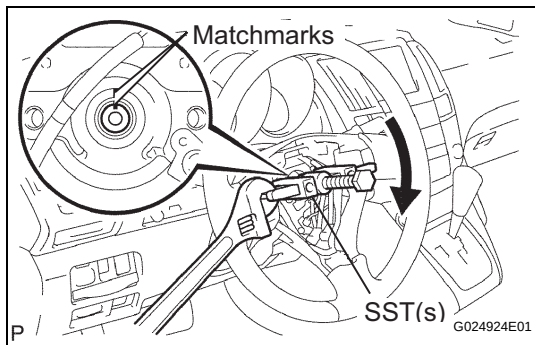
- (c) Disconnect the terminal.

NOTICE:

When removing the horn button assembly, take care not to pull the air bag wire harness.

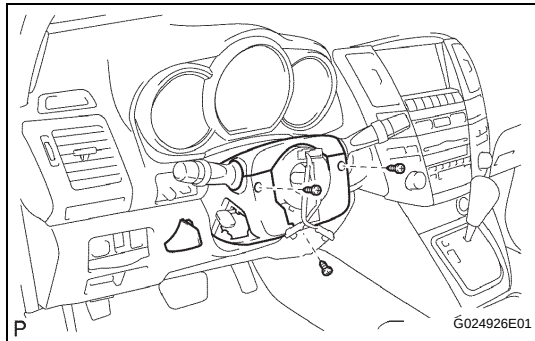
CAUTION:

- When placing the horn button assembly down, keep the upper surface of the horn button assembly facing upward.
- Never disassemble the horn button assembly.



7. REMOVE STEERING WHEEL ASSEMBLY

- Remove the steering wheel assembly set nut.
- Place matchmarks on the steering wheel assembly and main shaft assembly.
- Using SST(s), remove the steering wheel assembly.
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)



8. REMOVE STEERING COLUMN COVER

- Remove the steering column cover LWR No.2
- Remove the 3 screws and steering column cover UPR and LWR.

9. REMOVE SPIRAL CABLE SUB-ASSEMBLY (See page RS-399)

10. REMOVE HEADLIGHT DIMMER SWITCH ASSEMBLY (See page LI-228)

11. REMOVE WINDSHIELD WIPER SWITCH ASSEMBLY (See page WW-49)

12. REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-6)

13. REMOVE INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LOWER (See page IP-11)

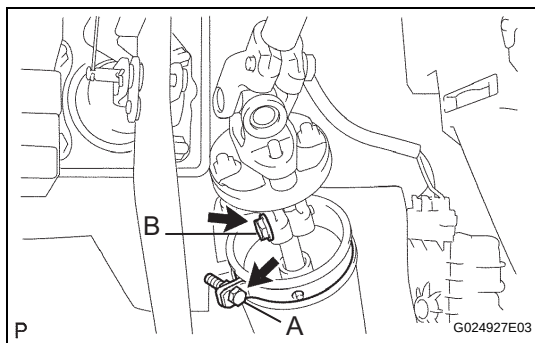
14. REMOVE INSTRUMENT PANEL AIRBAG ASSEMBLY LOWER NO.1 (See page RS-403)

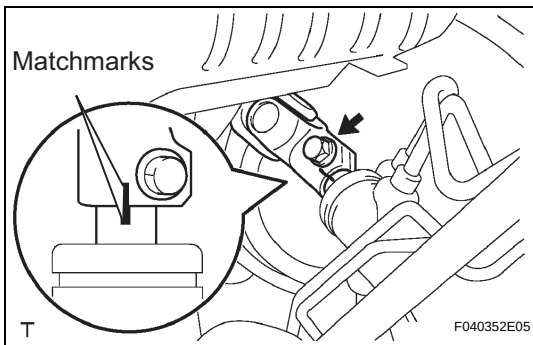
15. REMOVE AIR DUCT NO.1

- Remove the bolt.
- Release the 3 claw fittings and remove the air duct No.1.

16. SEPARATE STEERING INTERMEDIATE SHAFT ASSEMBLY

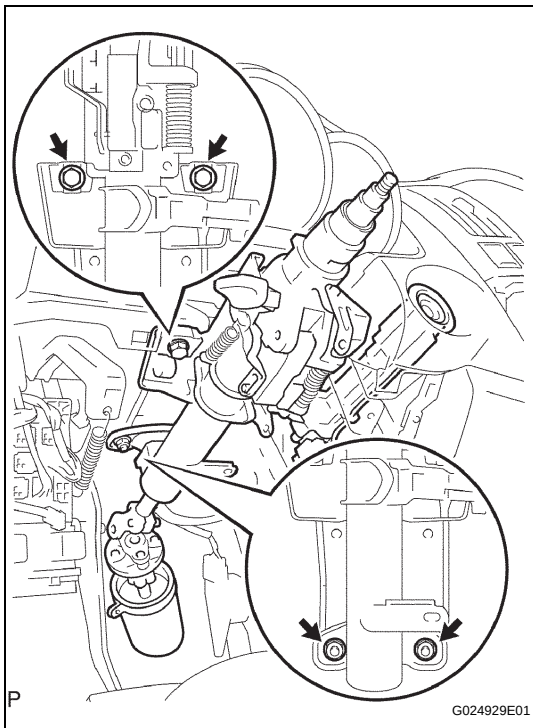
- Loosen the bolt A and remove the clamp from the steering column hole shield.
- Separate the steering column hole cover No.2 from the steering column hole shield.
- Loosen the bolt B.





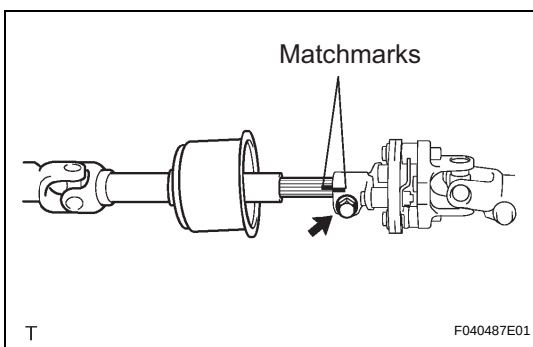
- (d) Put matchmarks on the steering intermediate shaft sub-assembly and steering gear assembly.
- (e) Remove the bolt and separate the steering intermediate shaft sub-assembly.

17. REMOVE INSTRUMENT PANEL FINISH PLATE



18. REMOVE STEERING COLUMN ASSEMBLY

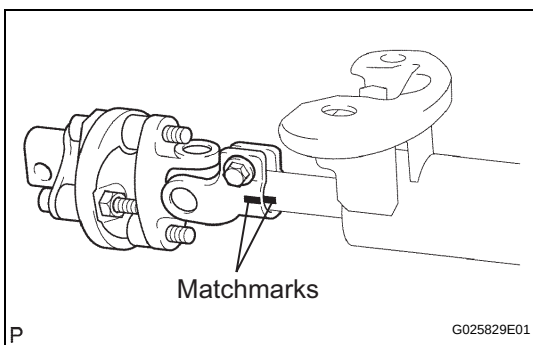
- (a) Disconnect the connectors and wire harness clamps.
- (b) Remove the 2 bolts, 2 nuts steering column assembly from the instrument panel reinforcement assembly.



19. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

- (a) Put matchmarks on the steering intermediate shaft sub-assembly and steering shaft universal joint assembly.
- (b) Remove the bolt and steering intermediate shaft sub-assembly.

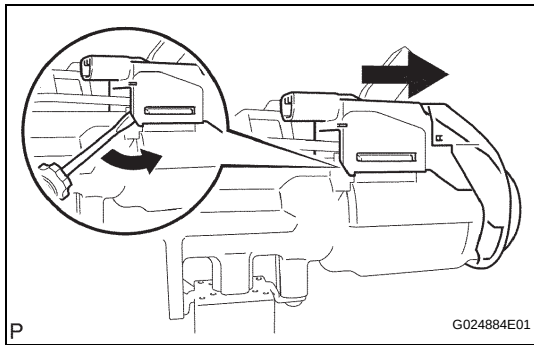
20. REMOVE STEERING COLUMN HOLE COVER



21. REMOVE STEERING SHAFT UNIVERSAL JOINT ASSEMBLY

- (a) Put matchmarks on the steering shaft universal joint assembly and steering main shaft assembly.
- (b) Remove the bolt and steering shaft universal joint assembly from the steering main shaft assembly.

SR



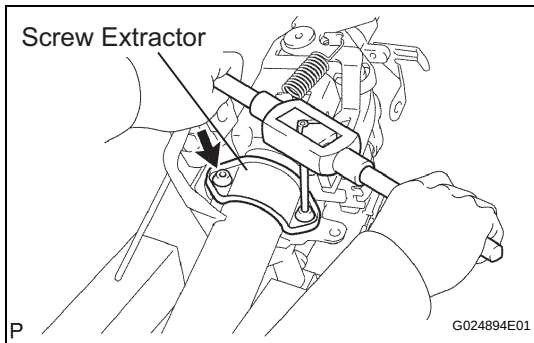
DISASSEMBLY

1. REMOVE TRANSPONDER KEY AMPLIFIER

- Widen the claw hung on the upper bracket by approx. 1.0 mm(0.039 in.) using a screwdriver.
- Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

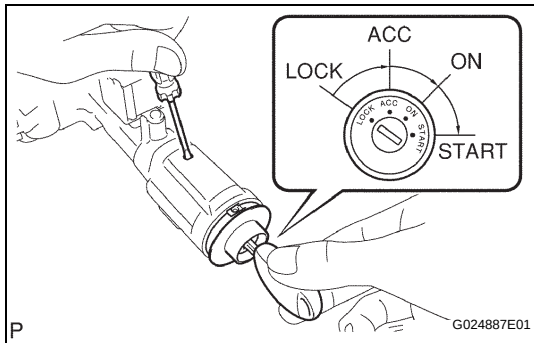
NOTICE:

Do not use excessive force to prevent the case from being damaged.



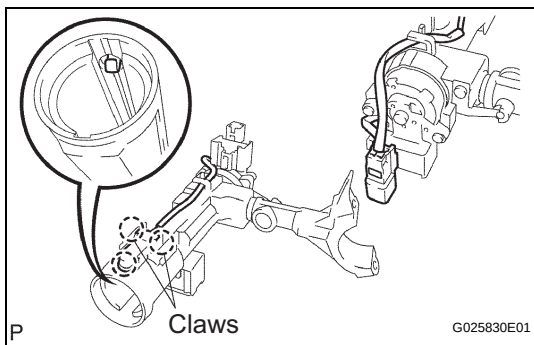
2. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Using a centering punch, mark the center of the 2 tapered-head bolts.
- Using a 3-4 mm (0.12 - 0.16 in.) drill, drill a hole in the 2 bolt heads.
- Using a screw extractor, remove the 2 bolts and steering column upper w/ switch bracket assembly.



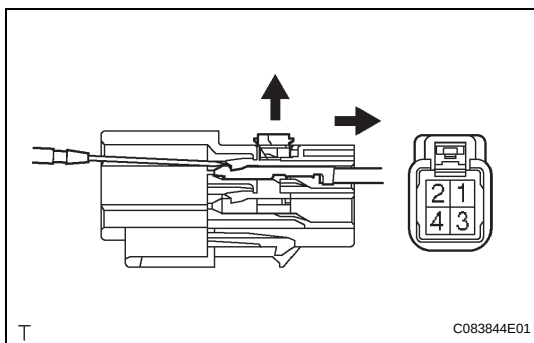
3. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- Put the ignition switch lock cylinder assembly in the ACC position.
- Push down the stop pin with a screwdriver, and pull out the cylinder assembly.



4. REMOVE UN-LOCK WARNING SWITCH ASSEMBLY

- Separate the un-lock warning switch assembly connector from the ignition or starter switch assembly.
- Remove the un-lock warning switch assembly by pushing up the center part and disengaging the 2 claws.



- Disengage the secondary locking device.
- Using a small screwdriver, disengage the locking lug of the terminals 3 and 4, and pull the terminals out from the un-lock warning switch assembly rear side.

5. REMOVE KEY INTER LOCK SOLENOID

- Remove the 2 screws and solenoid from the steering column bracket assembly.

6. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY

- (a) Remove the 2 screws and ignition or starter switch assembly from the steering column bracket assembly UPR.

DTC**B2621****Communication Interruption****DESCRIPTION**

The multiplex tilt and telescopic ECU forms a network with the ECUs of other systems through the communication bus. Each ECU informs the other ECUs that it is connected to the network by outputting a specified signal (periodical signal) onto the communication bus on a regular schedule. The multiplex tilt and telescopic ECU detects the connection of each ECU based on this signal.

DTC No.	Detection Item	Trouble Area
B2621	Periodical signal from the specified ECU has stopped.	• Multiplex communication system • Multiplex network body ECU • Power seat ECU • Multiplex tilt and telescopic ECU

SR**1****READ VALUE OF INTELLIGENT TESTER (TILT AND TELESCOPIC ECU - MULTIPLEX NETWORK BODY ECU)**

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn on the intelligent tester.
- Select "BODY1 ECU INFO" from the DATA LIST.
- Check the signal communication state of the multiplex network body ECU on the tester screen.

Standard:**"OK" is displayed.****NG****REPLACE MULTIPLEX NETWORK BODY ECU****OK****2****READ VALUE OF INTELLIGENT TESTER (MULTIPLEX TILT AND TELESCOPIC ECU - POWER SEAT ECU)**

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and turn on the intelligent tester.
- Select "SEAT ECU INFO" from the DATA LIST.
- Check the signal communication state of the power seat ECU on the tester screen.

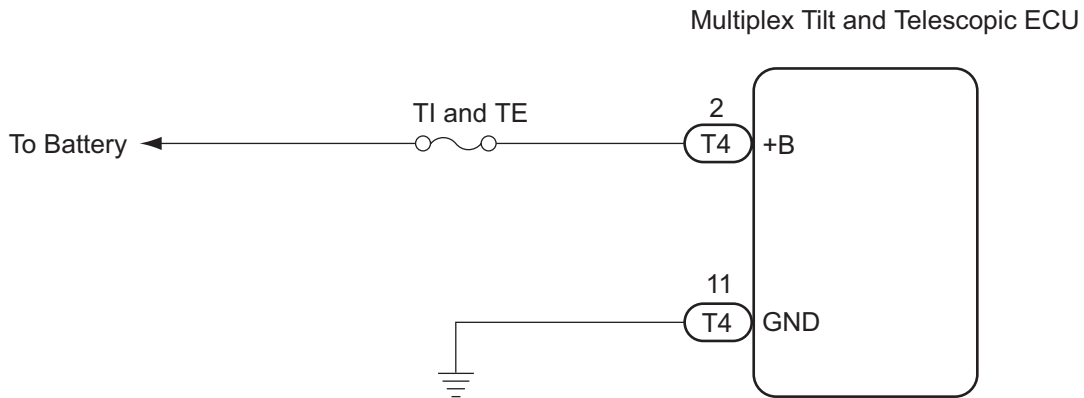
Standard:**"OK" is displayed.****NG****REPLACE POWER SEAT ECU****OK****REPLACE MULTIPLEX TILT AND TELESCOPIC ECU**

Actuator Power Source Circuit

DESCRIPTION

This is the power source for the motors.

WIRING DIAGRAM



1 INSPECT FUSE (TI AND TE FUSE)

- (a) Remove the TI and TE fuse from the instrument panel J/B.
- (b) Check the continuity of the TI and TE fuse.

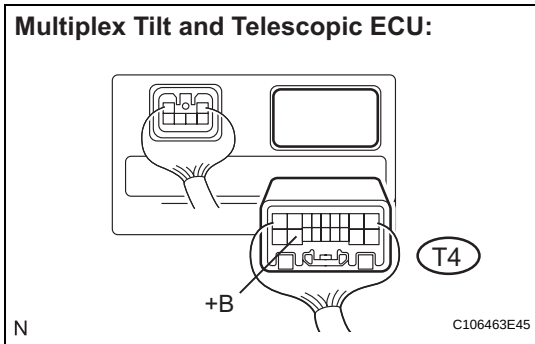
OK:

There is continuity.

NG

REPLACE FUSE

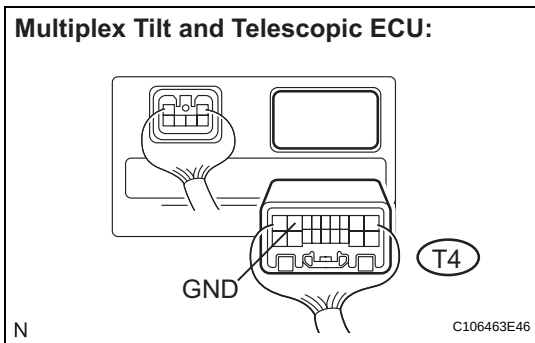
OK

2 CHECK HARNESS AND CONNECTOR (BETWEEN MULTIPLEX TILT AND TELESCOPIC ECU AND BATTERY)**Multiplex Tilt and Telescopic ECU:**

- (a) Disconnect the T4 connector from the multiplex tilt and telescopic ECU.
(b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester connection (Terminal No.)	Condition	Specified value
+B (T4-2) - Body ground	Always	10 to 14 V

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****3 CHECK HARNESS AND CONNECTOR (BETWEEN MULTIPLEX TILT AND TELESCOPIC ECU AND BODY GROUND)****Multiplex Tilt and Telescopic ECU:**

- (a) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection (Terminal No.)	Condition	Specified value
GND (T4-11) - Body ground	Always	Below 1 Ω

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE****SR**

REASSEMBLY

1. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY

- Install the ignition or starter switch assembly to the steering column bracket assembly UPR with the 2 screws.

2. INSTALL KEY INTER LOCK SOLENOID

- Install the solenoid to the steering column bracket assembly with the 2 screws.

3. INSTALL UN-LOCK WARNING SWITCH ASSEMBLY

- Install the un-lock warning switch assembly.
- Connect the terminals 3 and 4 of the un-lock warning switch assembly connector.
- connect the un-lock warning switch assembly connector to the ignition or starter switch assembly.

4. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- Make sure the ignition switch lock cylinder assembly is in the ACC position.
- Install the ignition switch lock cylinder assembly.

5. INSPECT STEERING LOCK OPERATION

- Check that the steering lock mechanism is activated when the key is inserted and turned to the ACC position.

INSTALLATION

1. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Temporarily install the steering column upper w/ switch bracket assembly and steering column upper clamp with 2 new tapered-head bolts.
- Tighten the 2 tapered-head bolts until the bolt heads break off.

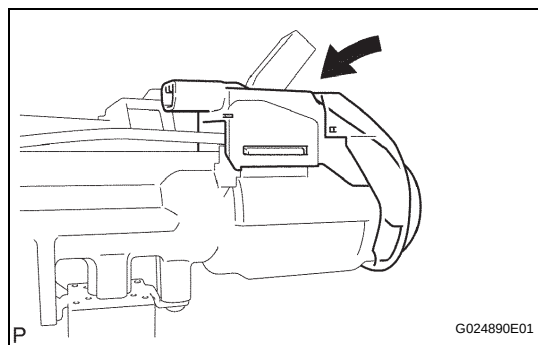
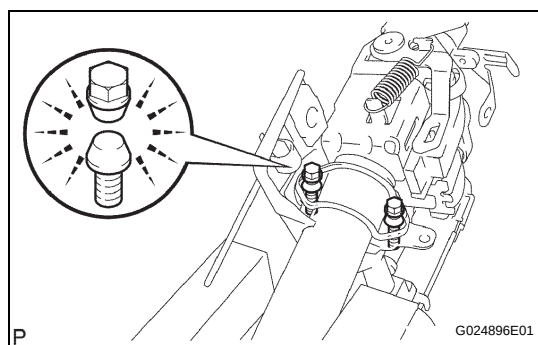
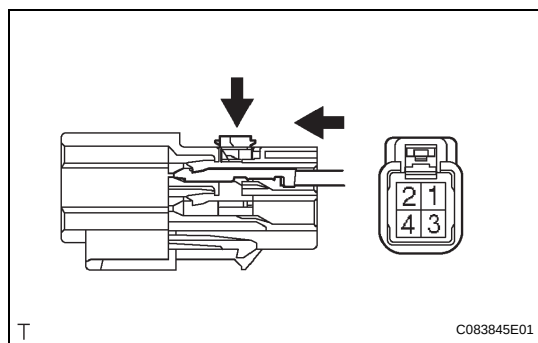
2. INSTALL TRANSPONDER KEY AMPLIFIER

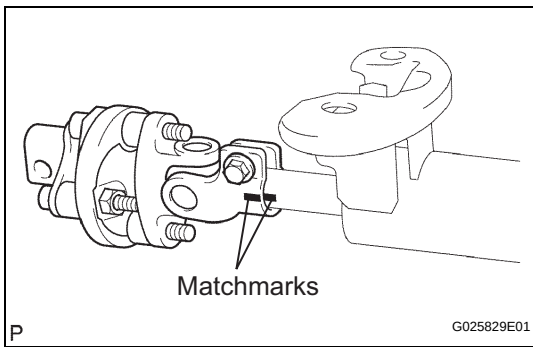
- Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
- Push the transponder key amplifier up and connect it to the upper bracket.

NOTICE:

Do not to push the amplifier up with excessive force.

SR

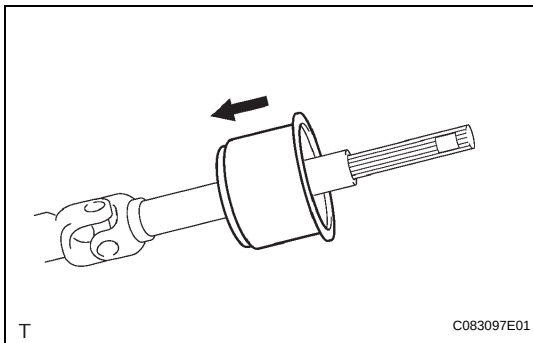




3. INSTALL STEERING SHAFT UNIVERSAL JOINT ASSEMBLY

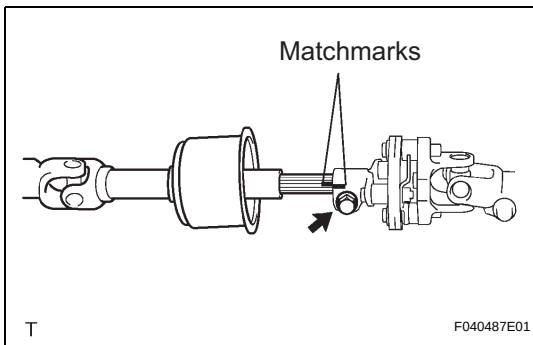
- Align the matchmarks on the steering universal joint assembly and steering main shaft assembly.
- Install the steering universal joint assembly with the bolt.

Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)



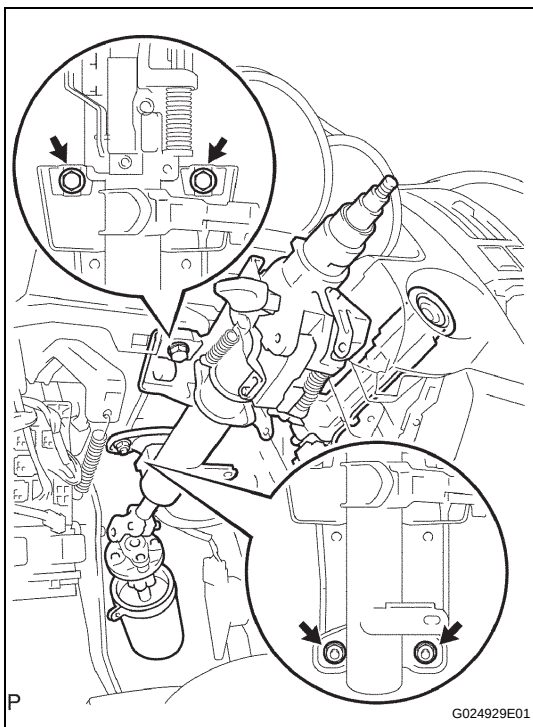
4. INSTALL STEERING COLUMN HOLE COVER

- Install the steering column hole cover sub-assembly No.2 to the steering intermediate shaft sub-assembly.



5. TEMPORARILY TIGHTEN STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the steering intermediate shaft sub-assembly and steering main shaft assembly.
- Temporarily install the steering intermediate shaft sub-assembly with the bolt.

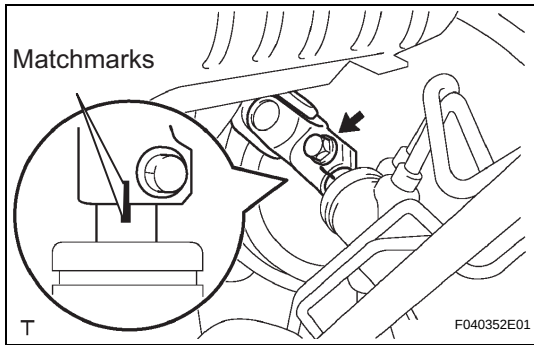


6. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column assembly with the 2 bolts and 2 nuts.

Torque: 26 N*m (265 kgf*cm, 19 ft.*lbf)

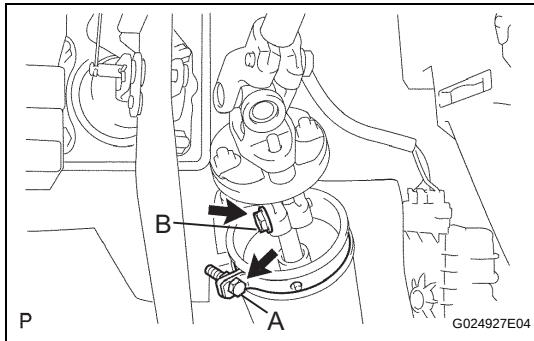
- Connect the connectors.
- Connect the wire harness clamps to the steering column tube.



7. CONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the intermediate shaft sub-assembly and steering gear assembly.
- Install the bolt.

Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)



- Tighten the bolt B.

Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)

- Install the steering column hole cover No.2 to the steering hole shield.
- Install the clamp to the steering column hole shield and tighten the bolt A.

8. INSTALL AIR DUCT NO.1

- Install the air duct No.1 with the bolt.

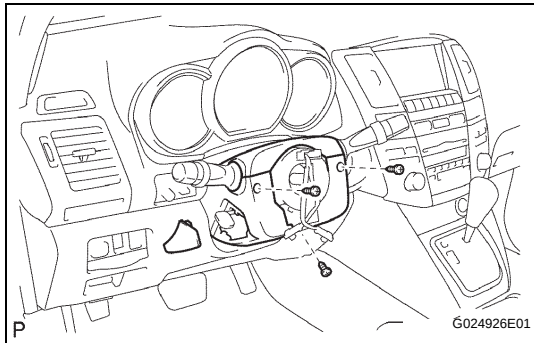
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

9. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

10. INSTALL SPIRAL CABLE SUB-ASSEMBLY (See page RS-399)

11. INSTALL STEERING COLUMN COVER

- Install the steering column cover UPR and LWR with the 3 screws.
- Install the steering column cover LWR No.2.



12. CENTER SPIRAL CABLE

- Check that the ignition switch is off.
- Check that the battery negative terminal is disconnected.

NOTICE:

Wait at least 90 seconds after removing the battery terminal before starting the operation.

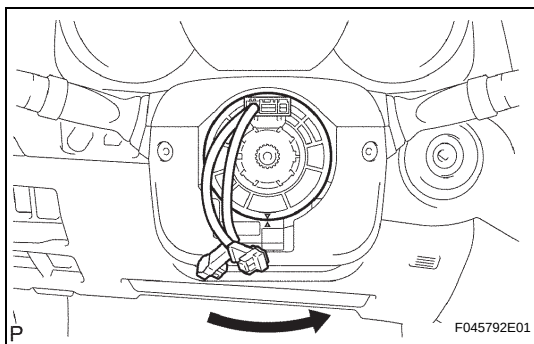
- Turn the cable counterclockwise by hand until becomes hard to turn.
- Then rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

The cable will rotate about 2.5 turns to both the left and right.

13. INSTALL STEERING WHEEL ASSEMBLY

- Align the matchmarks on the steering wheel assembly and steering main shaft assembly.



- (b) Install the steering wheel assembly set nut.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)

14. INSPECT STEERING WHEEL CENTER POINT

15. INSPECT HORN BUTTON ASSEMBLY (See page [RS-389](#))

16. INSTALL HORN BUTTON ASSEMBLY

NOTICE:

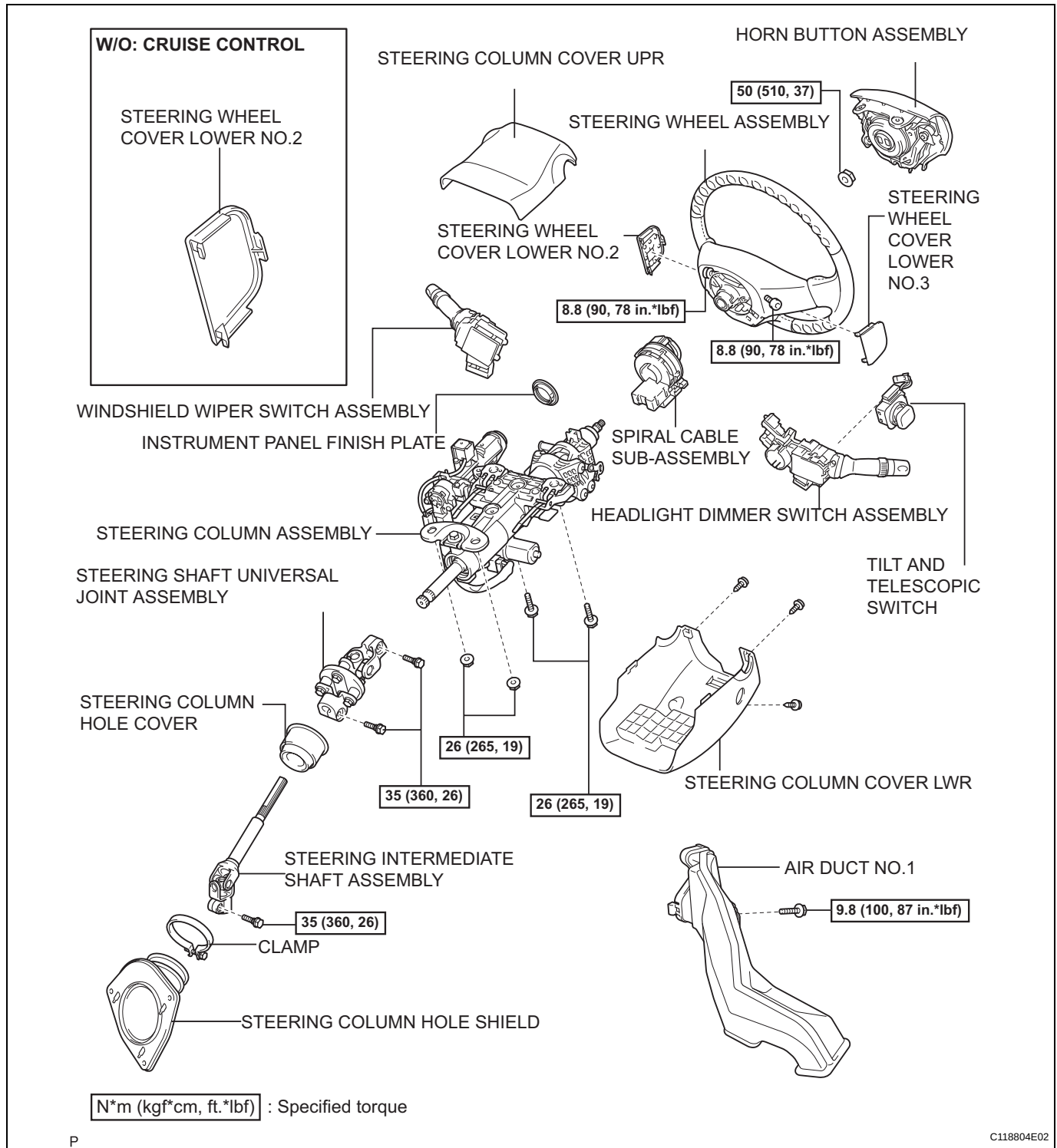
- Never use airbag parts removed from another vehicle. When replacing parts, replace with new ones.
- Make sure the wheel pad is installed with the specified torque.
- If the wheel pad is dropped or there are cracks, dents or other defects in the case or connector, replace the wheel pad with a new one.
- When installing the wheel pad, take care so that the wiring does not interfere with other parts and that they are not pinched between other parts.

- (a) Connect the terminal.
- (b) Connect the airbag connector.
- (c) Install the steering wheel pad after confirming that the circumference groove of the "torx" screws is caught on the screw case.
- (d) Using a "torx" socket wrench, torque the 2 screws.
Torque: 8.8 N*m (90 kgf*cm, 78 in.*lbf)

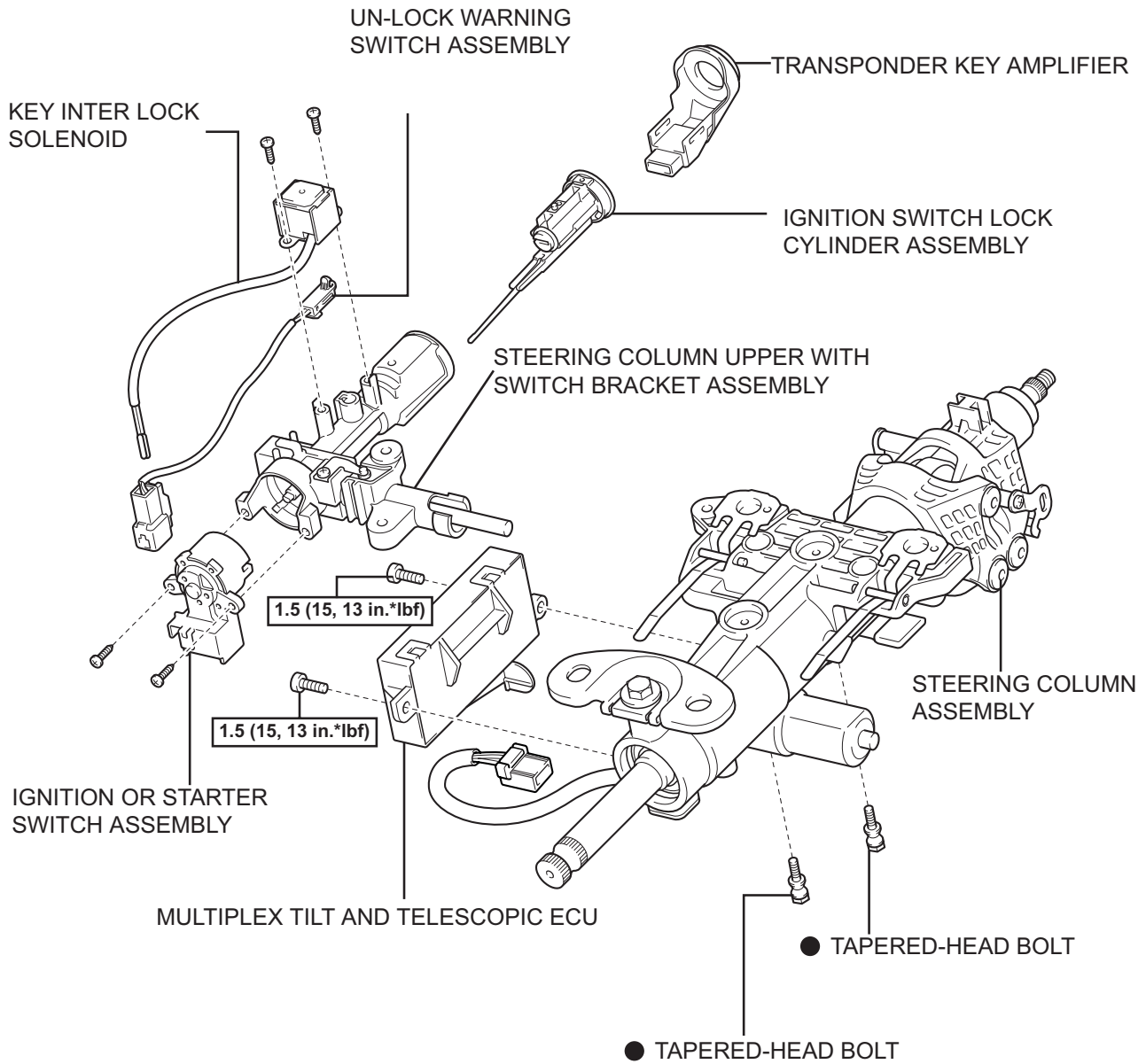
17. INSPECT SRS WARNING LIGHT (See page [RS-401](#))

STEERING COLUMN ASSEMBLY (for Power Tilt and Power Telescopic)

COMPONENTS



SR



$\boxed{\text{N*m (kgf*cm, ft.*lbf)}}$: Specified torque

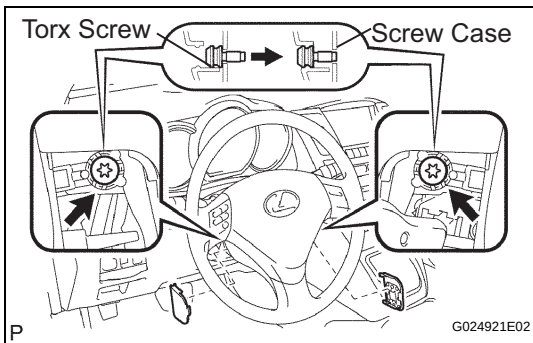
● Non-reusable part

REMOVAL

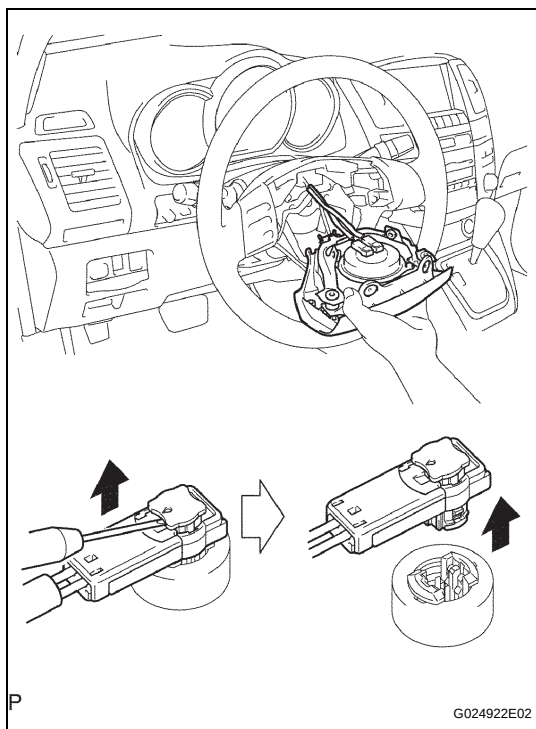
1. **PRECAUTION** (See page [RS-387](#))
2. **SEPARATE BATTERY NEGATIVE TERMINAL**
 - (a) With the ignition key in the key cylinder and the ignition switch off (LOCK), perform tilt-down and telescoping operation by adjusting the tilt and telescopic switch. Disconnect the negative terminal of the battery with the ignition key cylinder.

CAUTION:

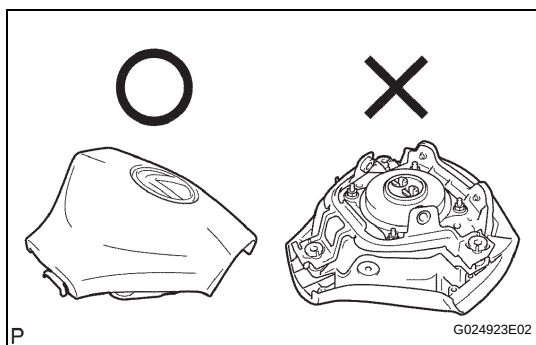
 - **Start the overhaul of the steering column assembly at least 90 seconds after disconnecting the negative terminal of the battery.**
 - **Be sure to disconnect the negative terminal of the battery properly so that the following procedure can be performed without any problem.**
 - (b) Remove the ignition key from the key cylinder.
3. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD**
4. **REMOVE STEERING WHEEL COVER LOWER NO.2**
5. **REMOVE STEERING WHEEL COVER LOWER NO.3**
6. **REMOVE HORN BUTTON ASSEMBLY**
 - (a) Using a "torx" socket wrench, loosen the 2 "torx" screws until the groove along the screw circumference is caught on the screw case.



SR



- (b) Pull out the horn button assembly from the steering wheel and disconnect the airbag connector.



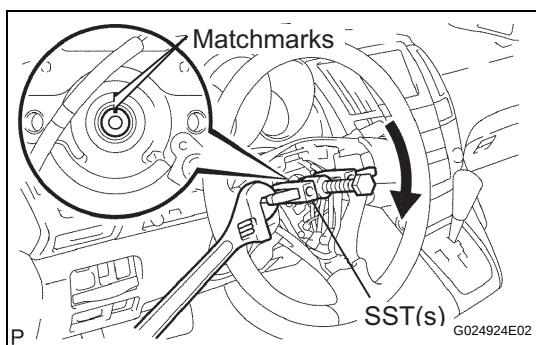
- (c) Disconnect the terminal.

NOTICE:

When removing the horn button assembly, take care not to pull the airbag wire harness.

CAUTION:

- When placing the horn button assembly down, keep the upper surface of the horn button assembly facing upward.
- Never disassemble the horn button assembly.



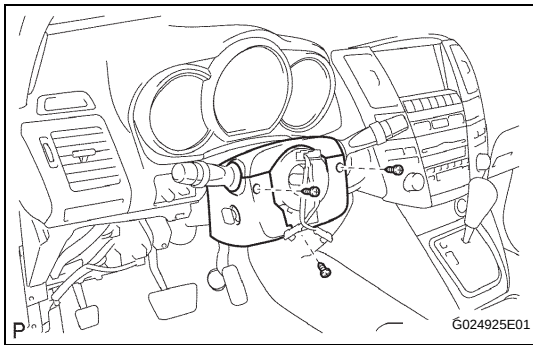
7. REMOVE STEERING WHEEL ASSEMBLY

- Remove the steering wheel assembly set nut.
- Place matchmarks on the steering wheel assembly and main shaft assembly.
- Using SST(s), remove the steering wheel assembly.
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

8. REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-6)

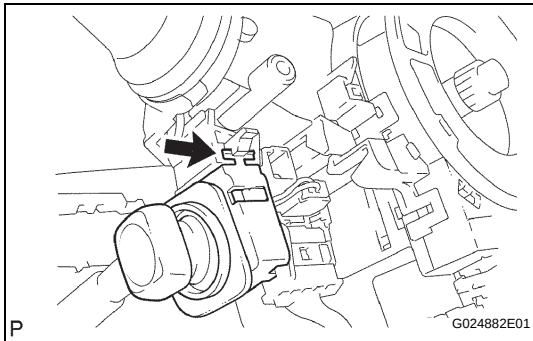
9. REMOVE INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LOWER (See page IP-11)

10. REMOVE INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1 (See page RS-403)



11. REMOVE STEERING COLUMN COVER

- (a) Remove the 3 screws and steering column cover UPR and LWR.



12. REMOVE TILT AND TELESCOPIC SWITCH

- (a) Disconnect the connectors.
- (b) Using a screwdriver, disengage the claw and pull out the tilt and telescopic switch.

NOTICE:

Pushing the claw too hard will break the claw.

HINT:

Tape the screwdriver tip before use.

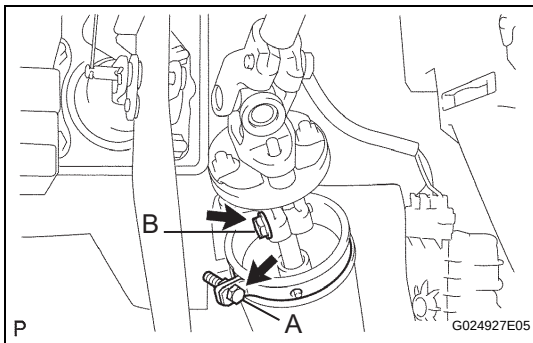
13. REMOVE SPIRAL CABLE SUB-ASSEMBLY (See page RS-399)

14. REMOVE HEADLIGHT DIMMER SWITCH ASSEMBLY (See page LI-228)

15. REMOVE WINDSHIELD WIPER SWITCH ASSEMBLY (See page WW-49)

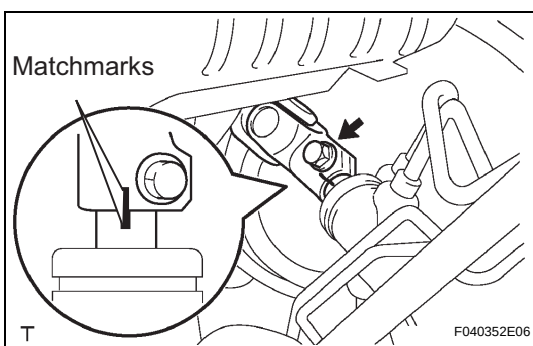
16. REMOVE AIR DUCT NO.1

- (a) Remove the bolt, disengage the 3 claw fittings and remove the air duct No.1.



17. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY

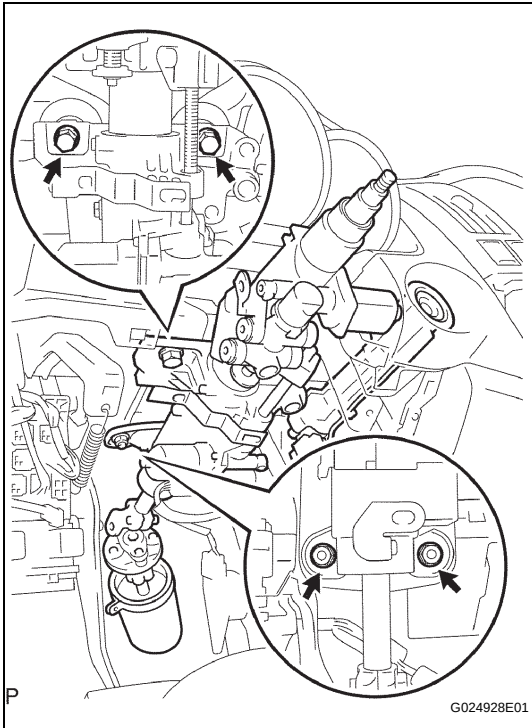
- (a) Loosen the bolt A and remove the clamp from the steering column hole shield.
- (b) Separate the steering column hole cover No.2 from the steering column hole shield.
- (c) Loosen the bolt B.



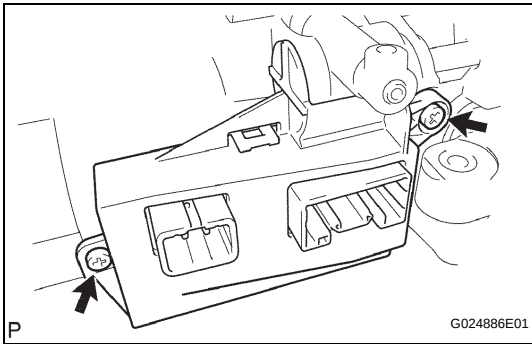
- (d) Place matchmarks on the steering intermediate shaft sub-assembly and steering gear assembly.
- (e) Remove the bolt and separate the steering intermediate shaft sub-assembly.

18. REMOVE INSTRUMENT PANEL FINISH PLATE

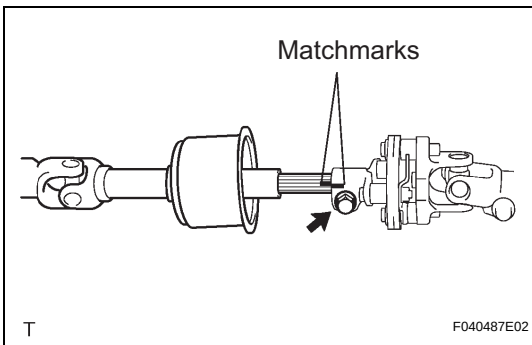
SR

**19. REMOVE STEERING COLUMN ASSEMBLY**

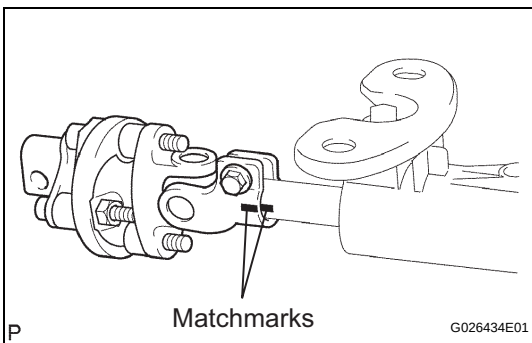
- Disconnect the connectors and wire harness clamps.
- Remove the 2 bolts, 2 nuts and steering column assembly from the instrument panel reinforcement assembly.

**20. REMOVE MULTIPLEX TILT AND TELESCOPIC ECU**

- Disconnect the connectors from the multiplex tilt and telescopic ECU.
- Using a socket wrench (+), remove the 2 screws and multiplex tilt and telescopic ECU.

**21. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY**

- put matchmarks on the steering intermediate shaft sub-assembly and steering shaft universal joint assembly.
- Remove the bolt and steering intermediate shaft sub-assembly.

22. REMOVE STEERING COLUMN HOLE COVER**23. REMOVE STEERING SHAFT UNIVERSAL JOINT ASSEMBLY**

- Put matchmarks on the steering shaft universal joint assembly and steering main shaft assembly.
- Remove the bolt and steering shaft universal joint assembly from the steering main shaft assembly.

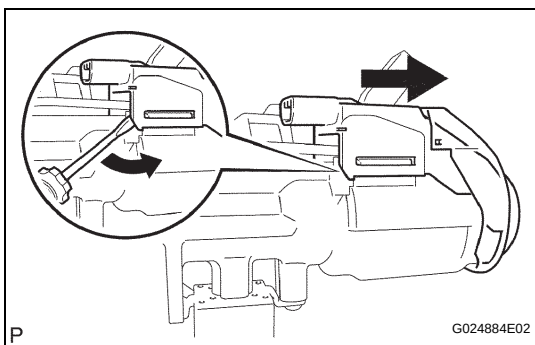
DISASSEMBLY

1. REMOVE TRANSPONDER KEY AMPLIFIER

- Widen the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.
- Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

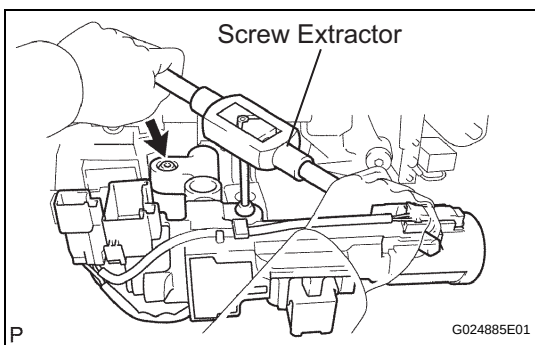
NOTICE:

Do not use excessive force.



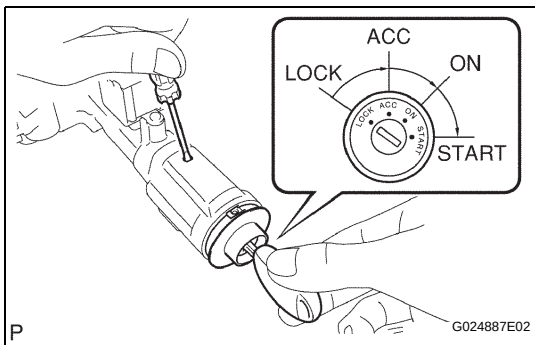
2. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Using a centering punch, mark the center of the 2 tapered-hand bolts.
- Using a 3 - 4 mm (0.12 - 0.16 in.) drill, drill a hole in the 2 bolt heads.
- Using a screw extractor, remove the 2 bolts and steering column upper w/ switch bracket assembly.



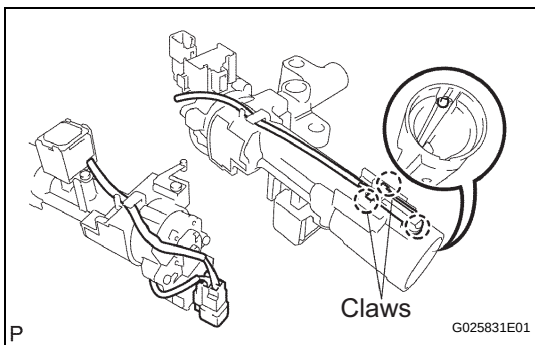
3. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- Put the ignition switch lock cylinder assembly in the ACC position.
- Push down the stop pin with a screwdriver, and pull out the cylinder assembly.



4. REMOVE UN-LOCK WARNING SWITCH ASSEMBLY

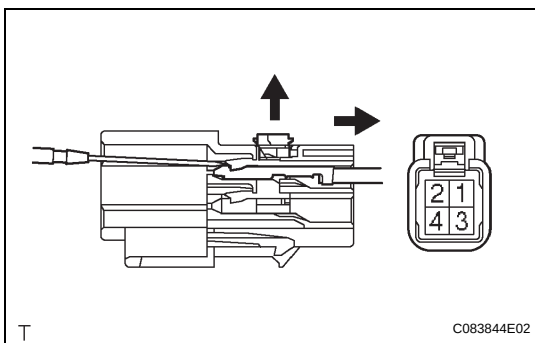
- Separate the un-lock warning switch assembly connector from the ignition or starter switch assembly.
- Remove the un-lock warning switch assembly by pushing up the center part and disengaging the 2 claws.



- Disengage the secondary locking device.
- Using a small screwdriver, disengage the locking lug of the terminals 3 and 4, and pull the terminals out from the un-lock warning switch assembly rear side.

5. REMOVE KEY INTER LOCK SOLENOID

- Remove the 2 screws and solenoid from the steering column bracket assembly.



6. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY

- (a) Remove the 2 screws and ignition or starter switch assembly from the steering column bracket assembly UPR.

REASSEMBLY

1. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY

- Install the ignition or starter switch assembly to the steering column bracket assembly UPR with the 2 screws.

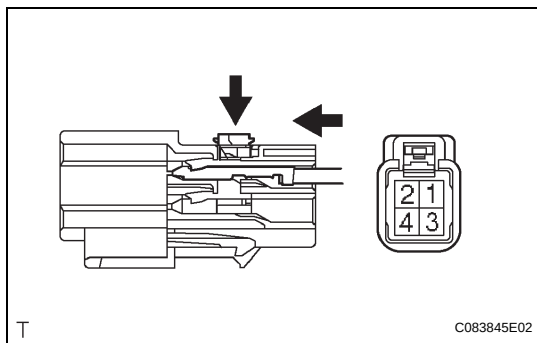
2. INSTALL KEY INTER LOCK SOLENOID

- Install the solenoid to the steering column bracket assembly with the 2 screws.

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3. INSTALL UN-LOCK WARNING SWITCH ASSEMBLY

- Install the un-lock warning switch assembly.
- Connect the terminals 3 and 4 of the un-lock warning switch assembly connector.
- Connect the un-lock warning switch assembly connector to the ignition or starter switch assembly.



4. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY

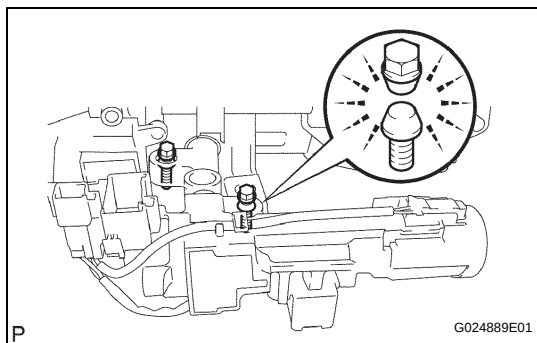
- Make sure the ignition switch lock cylinder assembly is in the ACC position.
- Install the ignition switch lock cylinder assembly.

5. INSPECT STEERING LOCK OPERATION

- Check that the steering lock mechanism is activated when the key is removed.
- Check that the steering lock mechanism is deactivated when the key is inserted and turned to the ACC position.

6. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Temporarily install the steering column upper w/ switch bracket assembly and steering column upper clamp with 2 new tapered-head bolts.
- Tighten the 2 tapered-head bolts until the bolt heads break off.

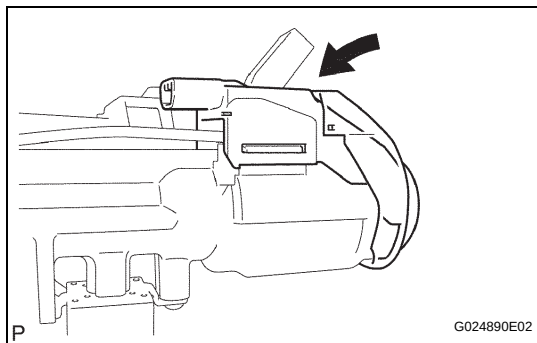


7. INSTALL TRANSPONDER KEY AMPLIFIER

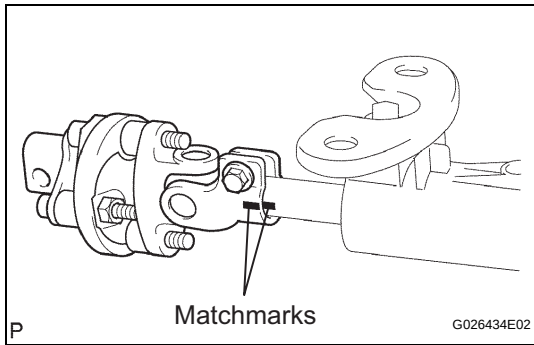
- Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
- Push the transponder key amplifier up and connect it to the upper bracket.

NOTICE:

Do not push the amplifier up with excessive force.



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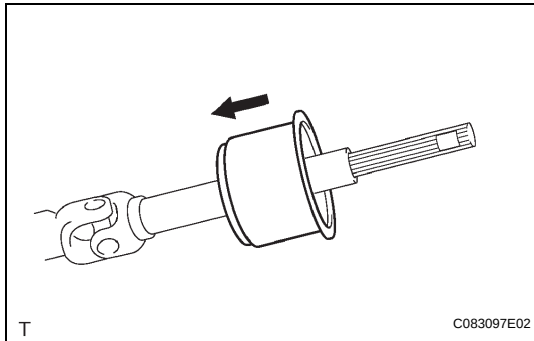
INSTALLATION

1. INSTALL STEERING SHAFT UNIVERSAL JOINT ASSEMBLY

- Align the matchmarks on the steering universal joint assembly and steering main shaft assembly.
- install the steering universal joint assembly with the bolt.

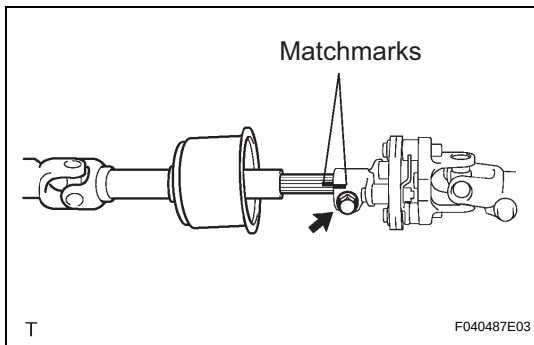
Torque:

35 N*m (360 kgf*cm, 26 ft.*lbf)



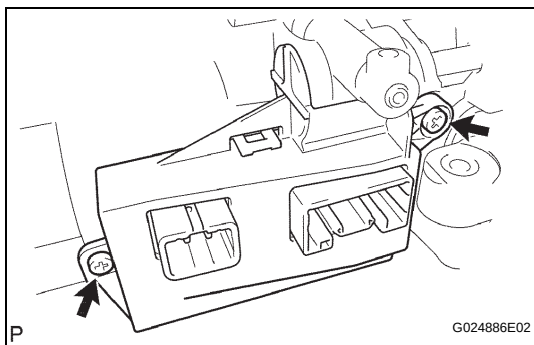
2. INSTALL STEERING COLUMN HOLE COVER

- Install the steering column hole cover sub-assembly No.2 to the steering intermediate shaft sub-assembly.



3. TEMPORARILY TIGHTEN STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the steering intermediate shaft sub-assembly and steering main shaft assembly.
- Temporarily install the steering intermediate shaft sub-assembly with the bolt.



4. INSTALL MULTIPLEX TILT AND TELESCOPIC ECU

- Using a socket wrench (+), install the 2 screws.

Torque: 1.5 N*m (15 kgf*cm, 13 in.*lbf)

- Connect the connectors to the multiplex tilt and telescopic ECU.

NOTICE:

- The wire harness between the telescopic motor and ECU has same shape connectors at both ends.
- When installing them, connect the connectors with the same color.

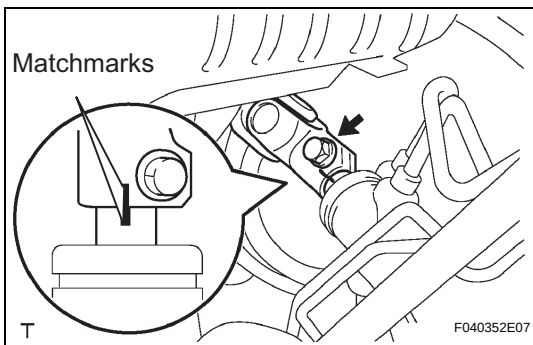


5. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column assembly with the 2 bolts and 2 nuts.

Torque: 26 N*m (265 kgf*cm, 19 ft.*lbf)

- Connect the connectors.
- Connect the wire harness clamps to the steering column tube.

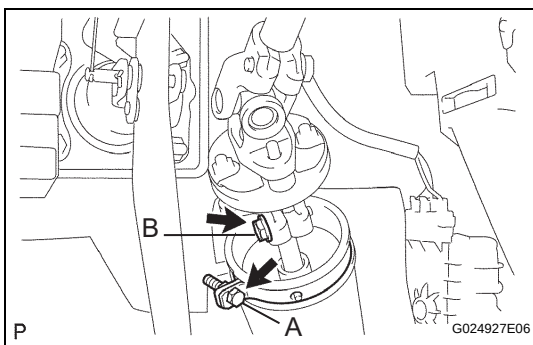


6. CONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the intermediate shaft sub-assembly and steering gear assembly.

- Install the bolt.

Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)



- Tighten the bolt B.

Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)

- Install the steering column hole cover No.2 to the steering hole shield.
- Install the clamp to the steering column hole shield and tighten the bolt A.

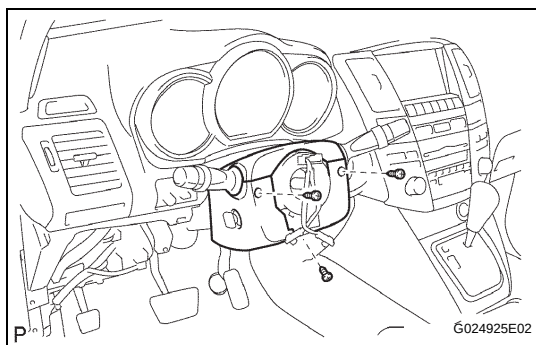
7. INSTALL AIR DUCT NO.1

- Install the air dust No.1 with the bolt.

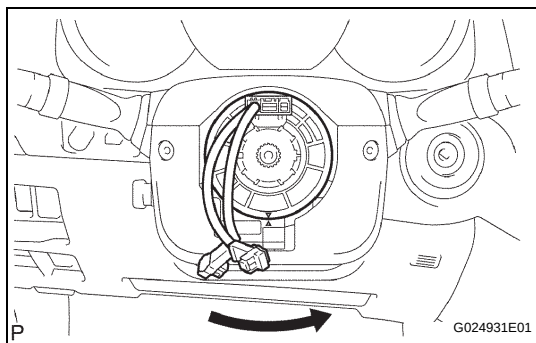
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

8. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

9. INSTALL SPIRAL CABLE SUB-ASSEMBLY (See page [RS-399](#))

**10. INSTALL STEERING COLUMN COVER**

- (a) Install the steering column cover UPR and LWR with the 3 screws.

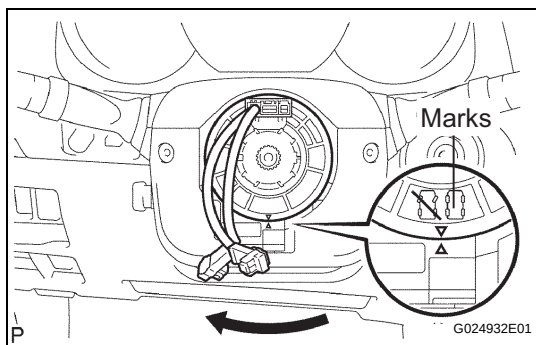
**11. CENTER SPIRAL CABLE**

- (a) Check that the ignition switch is off.
 (b) Check that the battery negative terminal is separated.

NOTICE:

Wait at least 90 seconds after removing the battery terminal before starting the operation.

- (c) Turn the cable counterclockwise by hand until it becomes hard to turn.



- (d) rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

The cable will rotate about 2.5 turns to both the left and right.

12. INSTALL STEERING WHEEL ASSEMBLY

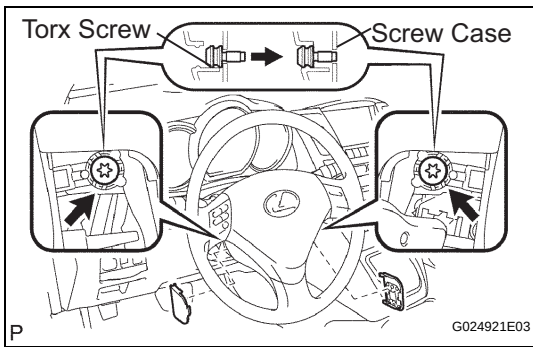
- (a) Align the matchmarks on the steering wheel assembly and steering main shaft assembly.
 (b) Install the steering wheel assembly set nut.

Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)

13. INSPECT STEERING WHEEL CENTER POINT**14. INSPECT HORN BUTTON ASSEMBLY (See page [RS-389](#))****15. INSTALL HORN BUTTON ASSEMBLY****NOTICE:**

- Never use airbag parts removed from another vehicle. when replacing parts, replace with new ones.
- Make sure the wheel pad is installed with the specified torque.
- If the wheel pad is dropped or there are cracks, dents or other defects in the case or connector, replace the wheel pad with a new one.
- when installing the wheel pad, take care so that the wiring does not interfere with other parts and that they are not pinched between other parts.

- (a) Connect the terminal.
 (b) Connect the airbag connector.

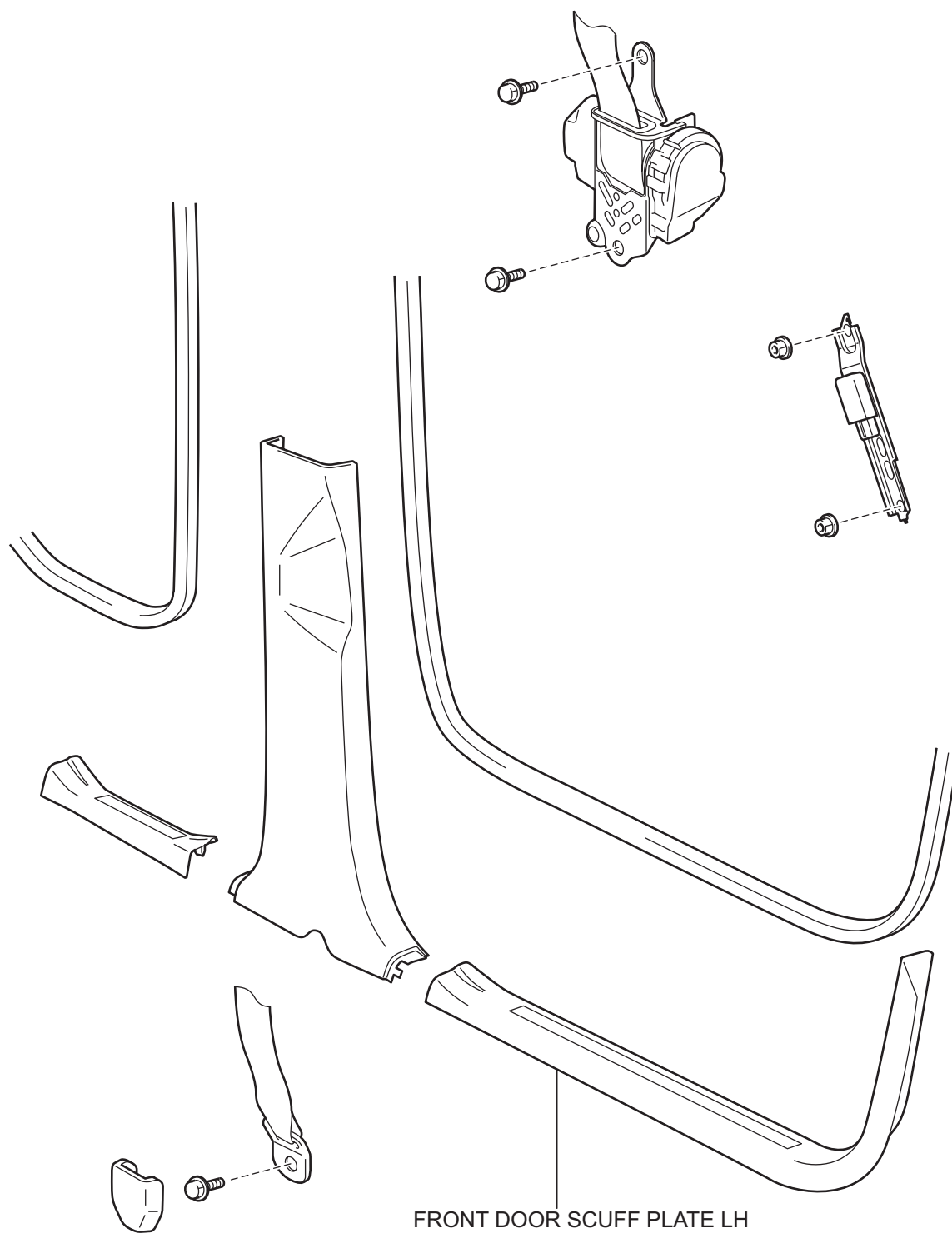


- (c) Install the steering wheel pad after confirming that the circumference groove of the "torx" screws is caught on the screw case.
- (d) Using a "torx" socket wrench, torque the 2 screws.
Torque: 8.8 N*m (90 kgf*cm, 78 in.*lbf)

16. INSPECT SRS WARNING LIGHT (See page [RS-401](#))

MULTIPLEX TILT AND TELESCOPIC ECU

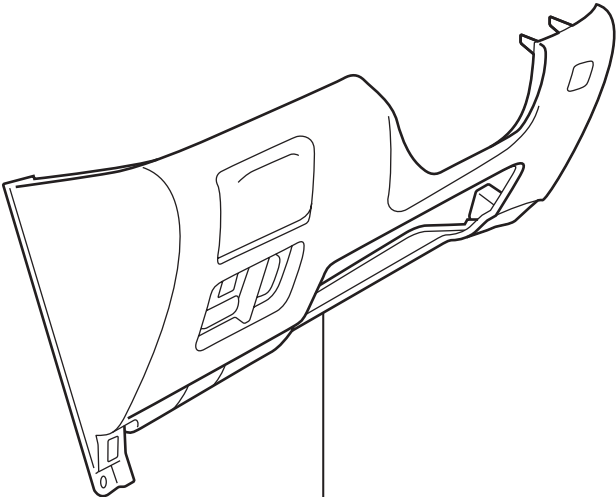
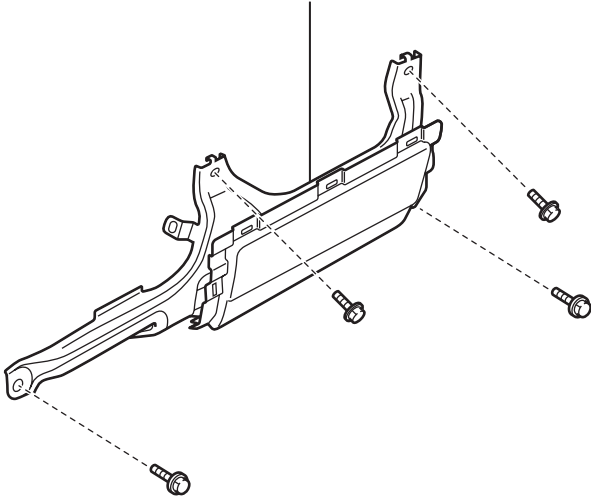
COMPONENTS



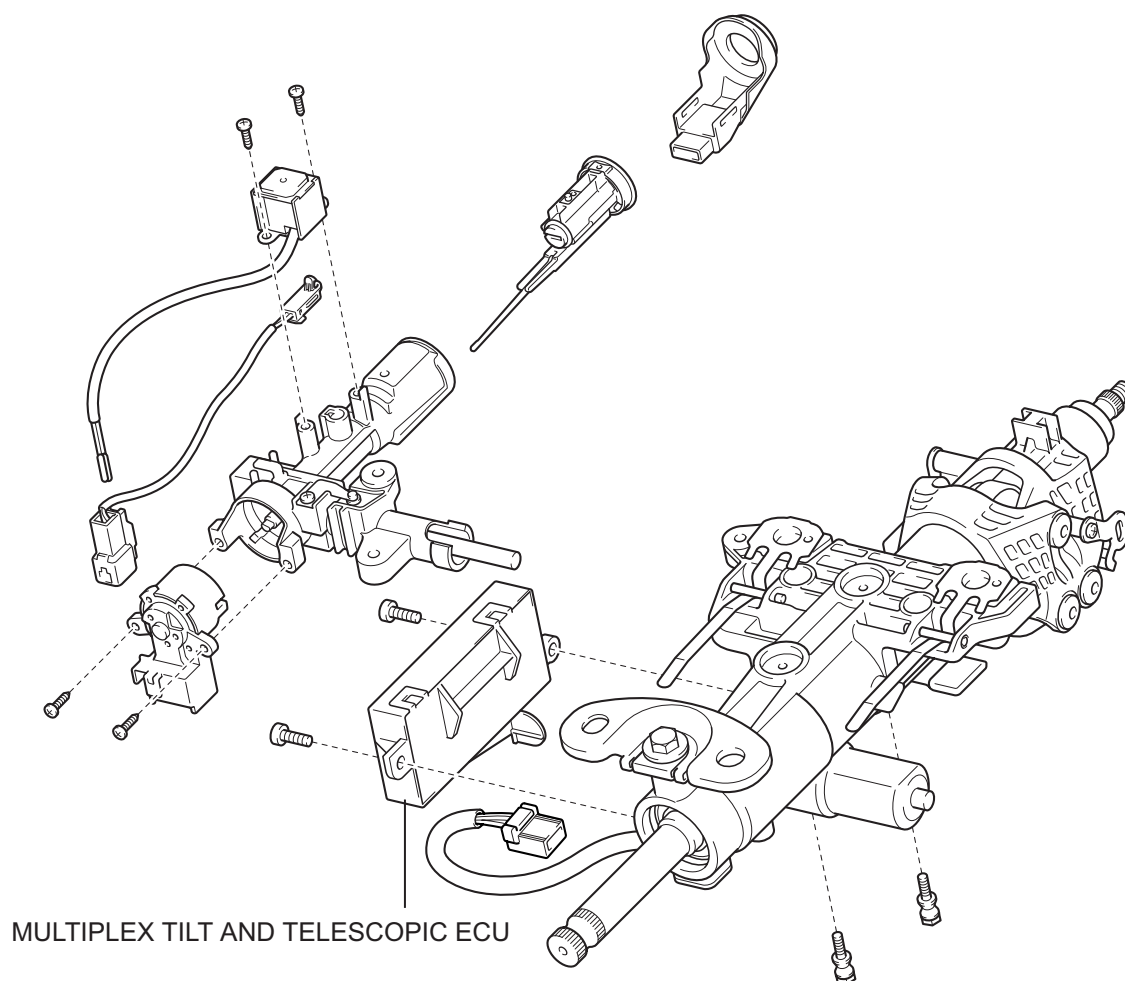
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INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1



INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LOWER



REMOVAL

1. **PRECAUTION** (See page [RS-387](#))
2. **SEPARATE BATTERY NEGATIVE TERMINAL** (See page [RS-387](#))
3. **REMOVE FRONT DOOR SCUFF PLATE LH** (See page [IR-6](#))
4. **REMOVE INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LOWER** (See page [IP-11](#))
5. **REMOVE INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1** (See page [RS-403](#))
6. **REMOVE MULTIPLEX TILT AND TELESCOPIC ECU**
 - (a) Disconnect the connectors from the multiplex tilt and telescopic ECU.
 - (b) Using a socket wrench (+), remove the 2 screws and multiplex tilt and telescopic ECU.

INSTALLATION

1. INSTALL MULTIPLEX TILT AND TELESCOPIC ECU

- (a) Using a socket wrench (+), install the 2 screws.
- (b) Connect the connectors to the multiplex tilt and telescopic ECU.

NOTICE:

- The wire harness between the telescopic motor and ECU has same shape connectors at both ends.
- When installing them, connect the connectors with the same color.

2. INSTALL INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1

3. INSTALL INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY LOWER

4. INSTALL FRONT DOOR SCUFF PLATE LH

5. INSPECT SRS WARNING LIGHT (See page [RS-401](#))