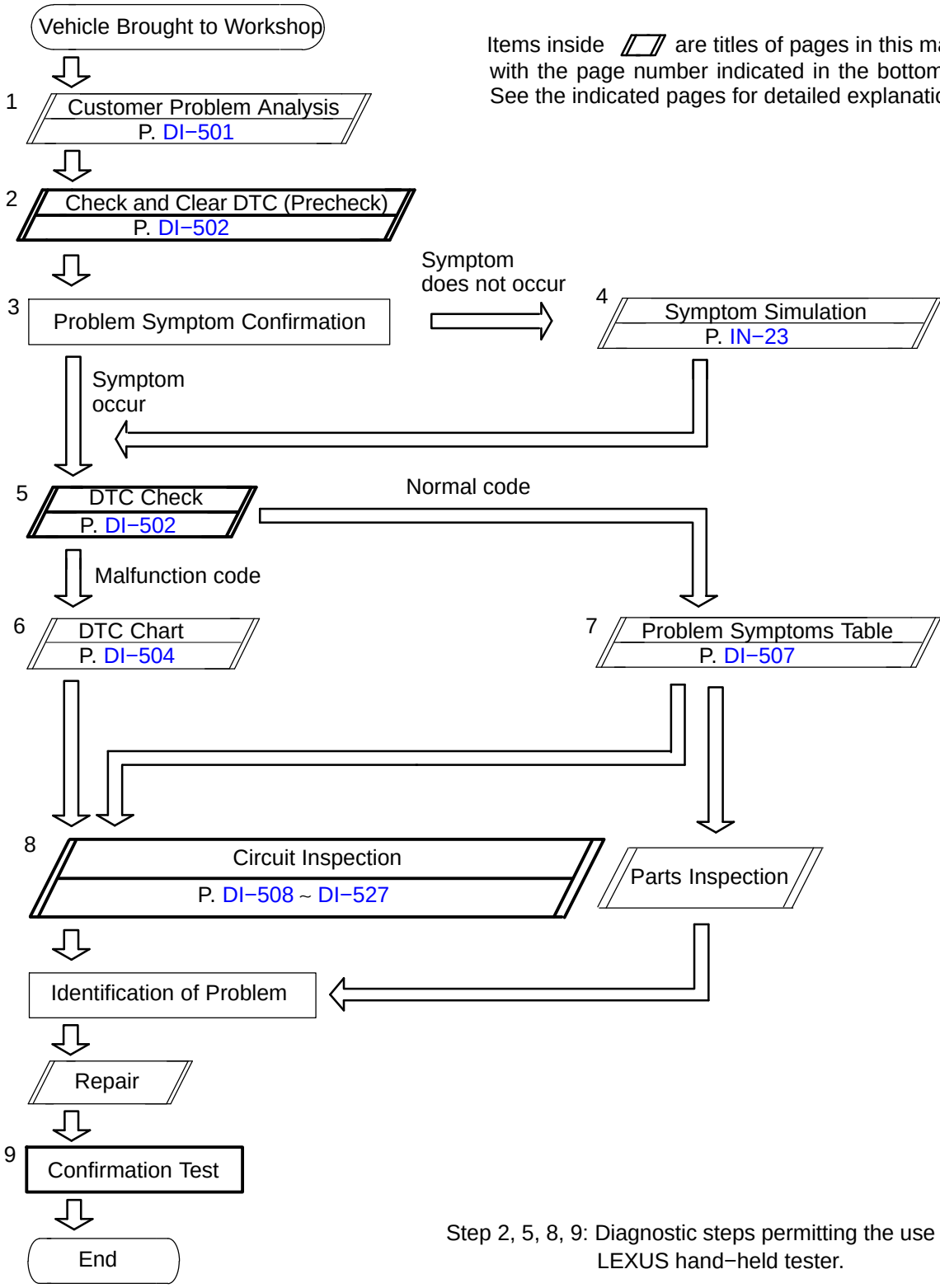
POWER TILT AND POWER TELESCOPIC STEERING COLUMN

DI237−11

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.



Items inside ▱ are titles of pages in this manual with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.

Step 2, 5, 8, 9: Diagnostic steps permitting the use of the LEXUS hand−held tester.

DI238–04

CUSTOMER PROBLEM ANALYSIS CHECK

POWER TILT AND POWER TELESCOPIC STEERING SYSTEM CHECK SHEET

Inspector's Name :

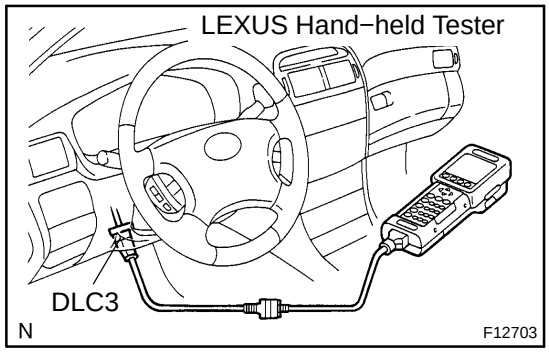
Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km miles

Date Problem First Occurred	/ /
Frequency Problem Occurs	☐ Continuous ☐ Intermittent (times a day)

Symptoms	Manual Function does not Operate	☐ Both Tilt and Telescopic ☐ Tilt only ☐ Telescopic only
	Auto Away/Return Function does not Operate	☐ Both Auto Away and Auto Return ☐ Auto Away only ☐ Auto Return only

DTC Check	1st Time	☐ Normal Code ☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code ☐ Malfunction Code (Code)

DI239−12



PRE−CHECK

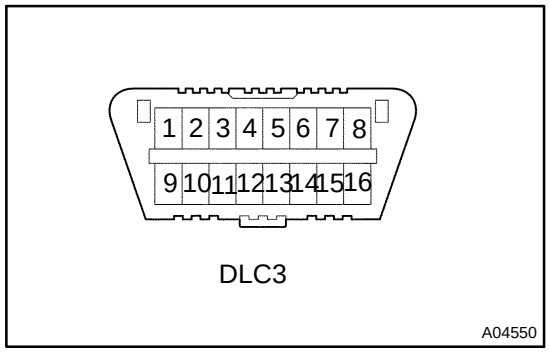
1. DESCRIPTION

(a) DIAGNOSIS SYSTEM

When troubleshooting multiplex OBD (M−OBD) vehicles, the only difference from the usual troubleshooting procedure is that you connect the LEXUS hand−held tester to vehicle, and read off various data output from the vehicle's power tilt and power telescopic ECU.

The power tilt and power telescopic ECU records the applicable DTCs when the computer detects a malfunction in the computer itself or its circuit.

To check the DTCs, connect a LEXUS hand−held tester to DLC3 on the vehicle. The LEXUS hand−held tester enables you to erase the DTCs and activate the several actuators and check freeze frame data and various forms on steering data.



(b) DATA LINK CONNECTOR 3 (DLC3)

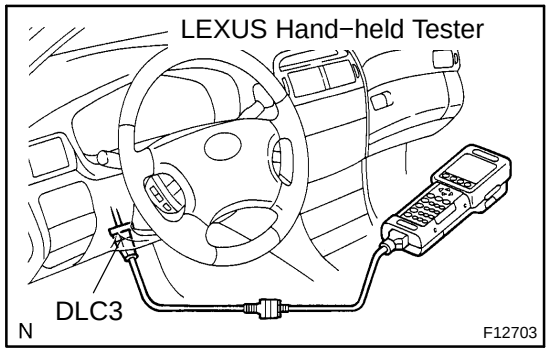
The power tilt and power telescopic ECU uses ISO 14230 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 14230 format.

Terminal No.	Connection	Voltage or Resistance	Condition
7	Bus + Line	Pulse generation	During transmission
4	Chassis Ground	↔ Body Ground 1 Ω or less	Always
16	Battery Positive	↔ Body Ground 9 − 14 V	Always

HINT:

If your display shows "UNABLE TO CONNECT TO VEHICLE" when you have connected the cable of LEXUS hand−held tester to DLC3, turned the ignition switch ON and operated the LEXUS hand−held tester, there is a problem on the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself, so consult the service department listed in the tester's operator's manual.



2. DIAGNOSIS INSPECTION

(a) Check the DTC.

(1) Prepare the LEXUS hand–held tester.

(2) Connect the LEXUS hand–held tester to DLC3 at the lower of the instrument panel.

(3) Turn the ignition switch ON and turn the LEXUS hand–held tester switch ON.

(4) Use the LEXUS hand–held tester to check the DTCs and freeze frame data, note or print them (See the operator's manual for operating instructions.).

(5) See page DI–504 to confirm the details of the DTC.

(b) Clear the DTC.

The following actions will erase the DTC and freeze frame data.

- When using the LEXUS hand–held tester:
  Operating the LEXUS hand–held tester to erase the DTCs (See the operator's manual for operating instructions.).
- When not using the LEXUS hand–held tester:
  Disconnecting the battery terminals.

DI1T7−10

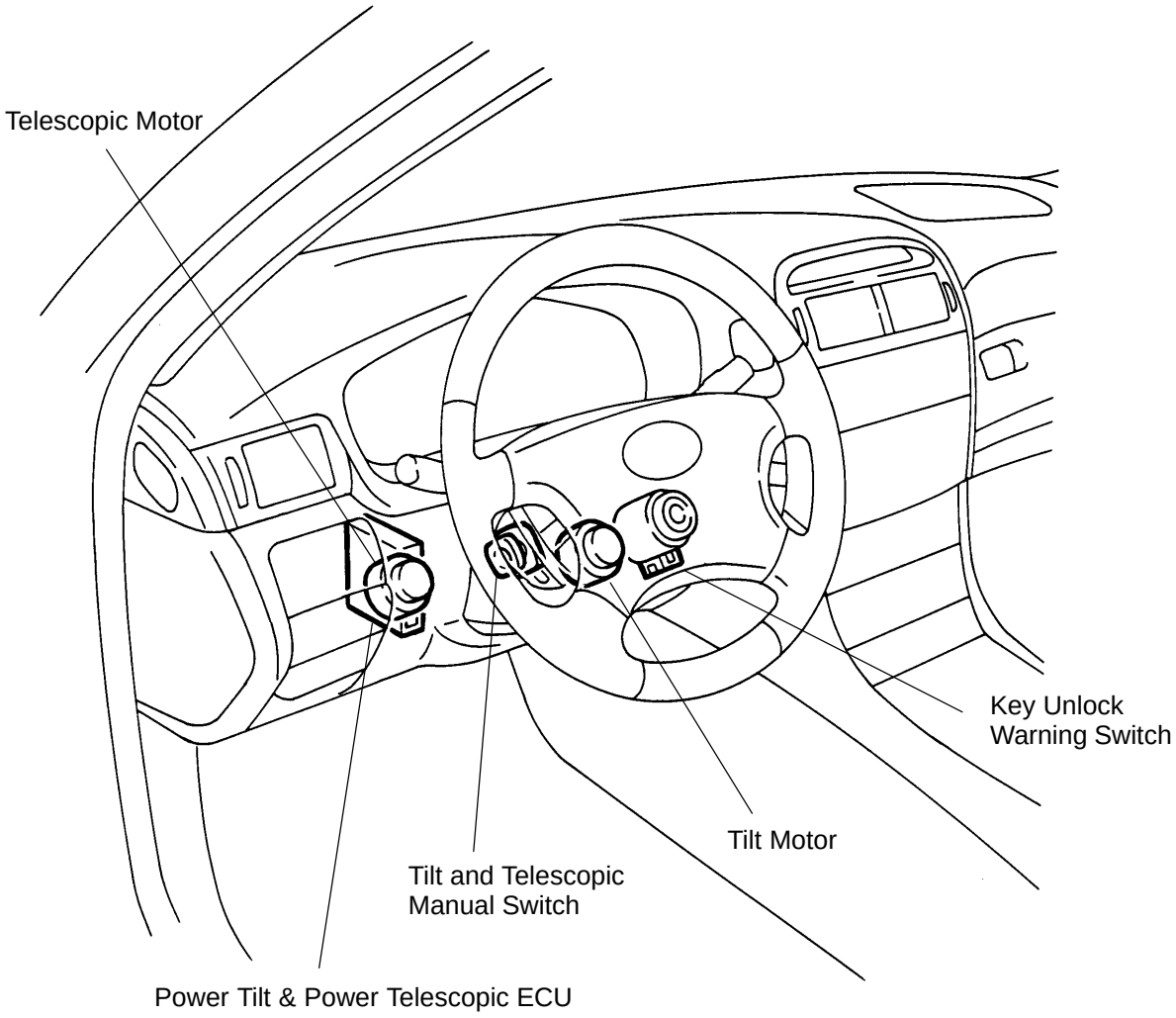
DIAGNOSTIC TROUBLE CODE CHART

If a DTC is displayed during the DTC check, check the circuit for that code listed in the table below. For details of each code, turn to the page referred to under the ”See page” for the respective ”DTC No.” in the DTC chart.

DTC No. (See Page)	Detection Item	Trouble Area
B2602 (DI−508)	Key unlock warning switch malfunction	• Key unlock warning switch
B2610 (DI−509)	Tilt position sensor or tilt motor malfunction	• Sensor power source circuit • Actuator power source circuit • Tilt motor circuit • Power tilt and power telescopic ECU
B2611 (DI−511)	Telescopic position sensor or telescopic motor malfunction	• Sensor power source circuit • Actuator power source circuit • Telescopic motor circuit • Power tilt and power telescopic ECU
B2620 (DI−513)	ECU power source circuit malfunction	• Battery • ECU power source circuit • Power tilt and power telescopic ECU
B2621 (DI−515)	Communication interruption	• Multiplex communication system • Power tilt and power telescopic ECU

DI753–04

PARTS LOCATION



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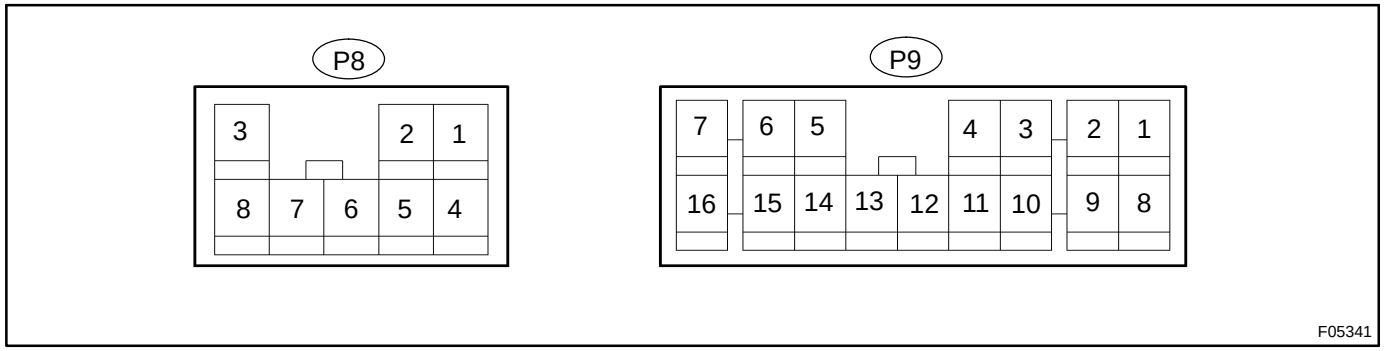
DI754−05

TERMINALS OF ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
A2 (P9−1) − COM2 (P9−9)	B − G	IG switch ON, telescopic extended or contracted by manual switch	190 − 230 (AC)
+B (P9−4) − GND (P8−6)	L−W − W−B	Always	10 − 14 (DC)
A1 (P9−7) − COM1 (P9−15)	B − G	IG switch ON, tilt up or down by manual switch	190 − 230 (AC)
B2 (P9−8) − COM2 (P9−9)	W − G	IG switch ON, telescopic extended or contracted by manual switch	190 − 230 (AC)
S5V2 (P9−12) − SG2 (P9−10)	W−R − W−L	IG switch ON	4.5 − 5.5 (DC)
S5V1 (P9−13) − SG1 (P9−14)	B−L − B−O	IG switch ON	4.5 − 5.5 (DC)
B1 (P9−16) − COM1 (P9−15)	W − G	IG switch ON, tilt up or down by manual switch	190 − 230 (AC)
ECUB (P8−1) − GND (P8−6)	R−B − W−B	Always	10 − 14 (DC)
IG (P8−4) − GND (P8−6)	R−L − W−B	IG switch ON	10 − 14 (DC)
		IG switch LOCK	Below 1 (DC)

NOTICE:

To distinguish trouble and replace it, take necessary electrical shock prevention operation.

DI23D–11

PROBLEM SYMPTOMS TABLE

This system uses the multiplex communication system, so check diagnosis system of the multiplex communication system before you proceed with troubleshooting.

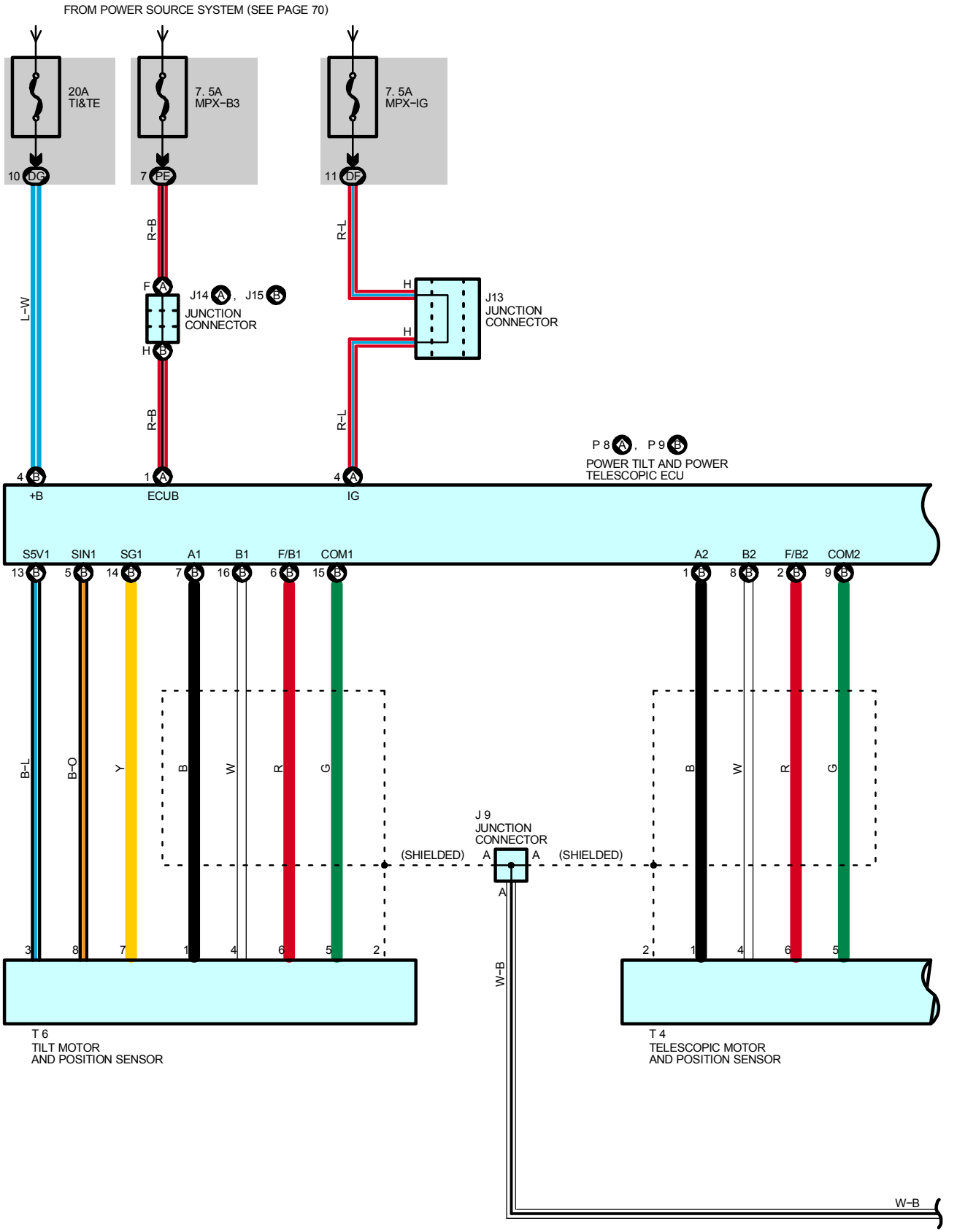
The table below will be useful for you in troubleshooting these electrical systems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

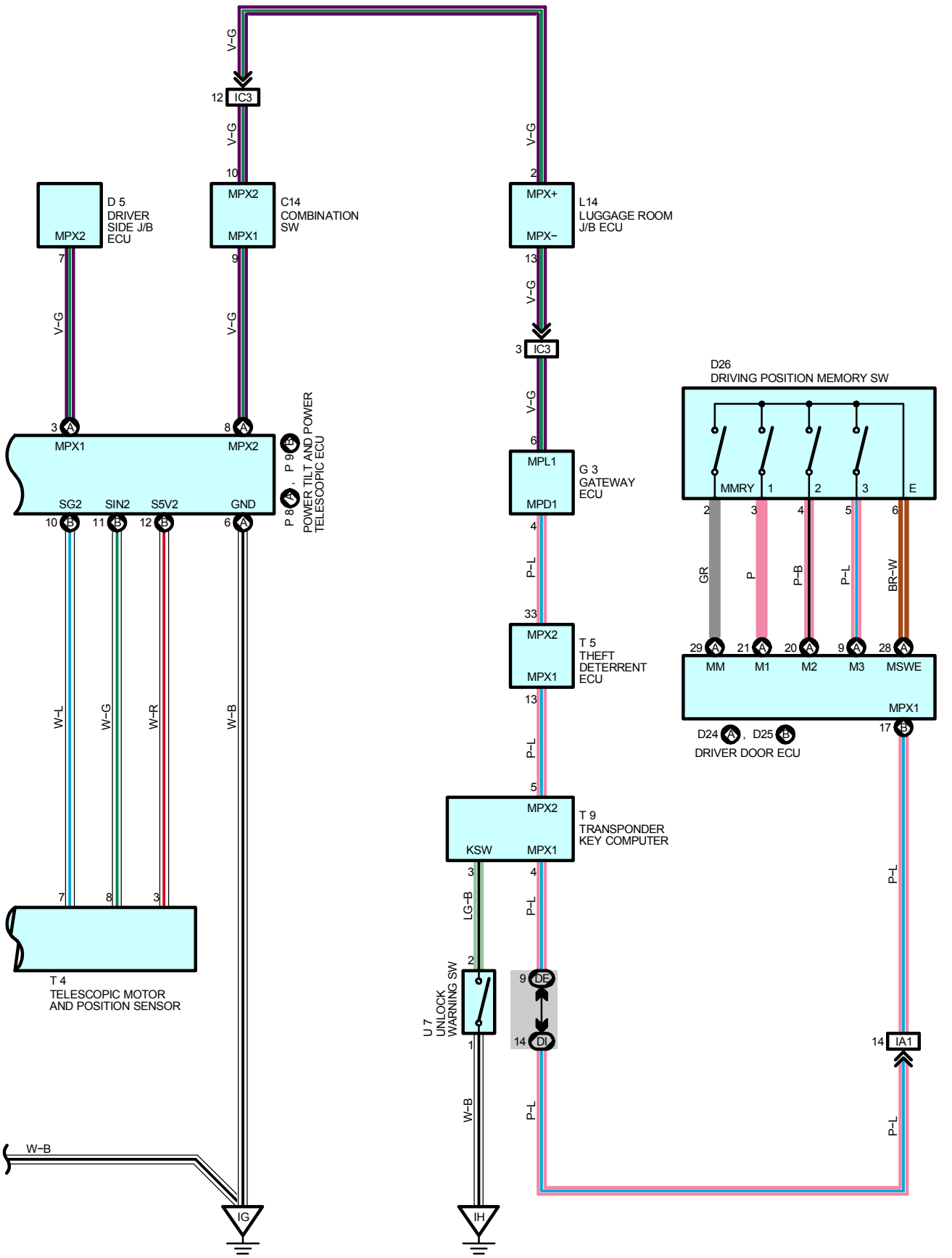
If the instruction ”Proceed to next circuit inspection shown on the chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.

If the problem still occurs even though there are no abnormalities in any of the other circuits, then check and replace ECU.

Symptom	Suspect Area	See page
Both tilt and telescopic: Manual, auto away/return and memory functions • Do not operate • Stop part way • Do not stop	3. ECU power source circuit 4. Key unlock warning switch 5. Actuator power source circuit 6. Sensor power source circuit 7. Tilt motor circuit 8. Telescopic motor circuit 9. Power tilt and power telescopic ECU	DI–517 BE–25 DI–519 DI–522 DI–524 DI–527 IN–34
Tilt only: Manual, auto away/return and memory functions • Do not operate • Stop part way • Do not stop	1. Sensor power source circuit 2. Tilt motor circuit 3. Power tilt and power telescopic ECU	DI–522 DI–524 IN–34
Telescopic only: Manual, auto away/return and memory functions • Do not operate • Stop part way • Do not stop	1. Sensor power source circuit 2. Telescopic motor circuit 3. Power tilt and power telescopic ECU	DI–522 DI–527 IN–34
Both tilt and telescopic: Only tilt and telescopic manual switch function does not operate	1. Tilt and telescopic manual switch circuit 2. Power tilt and power telescopic ECU	DI–1009 IN–34
Tilt only: Only tilt and telescopic manual switch function does not operate	1. Tilt and telescopic manual switch circuit 2. Power tilt and power telescopic ECU	DI–1009 IN–34
Telescopic only: Only tilt and telescopic manual switch function does not operate	1. Tilt and telescopic manual switch circuit 2. Power tilt and power telescopic ECU	DI–1009 IN–34
Both away and return: Only auto away/return function does not operate	1. Check status of auto away function using LEXUS hand–held tester 2. Ignition switch 3. Key unlock warning switch 4. Power tilt and power telescopic ECU	– BE–25 BE–25 IN–34
Only away: Only auto away/return function does not operate	1. Key unlock warning switch 2. Ignition switch 3. Power tilt and power telescopic ECU	BE–25 BE–25 IN–34
Only return: Only auto away/return function does not operate	1. Key unlock warning switch 2. Ignition switch 3. Power tilt and power telescopic ECU	BE–25 BE–25 IN–34

POWER TILT AND POWER TELESCOPIC




V–G
12 IC3
V–G
10
MPX2
C14
COMBINATION
SW
MPX1
D 5
DRIVER
SIDE J/B
ECU
MPX2
7
V–G
9
V–G
3
8
MPX1
MPX2
P 9
P 8
POWER TILT AND POWER
TELESCOPIC ECU
SG2
SIN2
S5V2
GND
10
11
12
6
W–L
W–G
W–R
W–B
7
8
3
T 4
TELESCOPIC MOTOR
AND POSITION SENSOR
W–B
IG
V–G
2
MPX+
L14
LUGGAGE ROOM
J/B ECU
MPX–
13
V–G
3 IC3
V–G
6
MPL1
G 3
GATEWAY
ECU
MPD1
4
P–L
33
MPX2
T 5
THEFT
DETERRENT
ECU
MPX1
13
P–L
5
MPX2
T 9
TRANSPONDER
KEY COMPUTER
KSW
MPX1
3
4
LG–B
P–L
2
9 DE
14 DI
U 7
UNLOCK
WARNING SW
1
W–B
P–L
IH
D26
DRIVING POSITION MEMORY SW
MMRY
1
2
3
E
2
3
4
5
6
GR
P
P–B
P–L
BR–W
29
21
20
9
28
MM
M1
M2
M3
MSWE
MPX1
D24 , D25
DRIVER DOOR ECU
17
P–L
14 IA1
P–L

POWER TILT AND POWER TELESCOPIC

SYSTEM OUTLINE

This system provides the automatic tilt and telescopic mechanisms using the motor drive and ECU control, allowing variable steering movement in the back and forth, and vertical directions. This makes it possible to set the steering to the desired steering position and move the steering to a position where the driver can easily get off the vehicle, allowing easier seating. Additionally, by linking the power seat and remote control mirror, an optimal driving position corresponding to the driver's needs can be stored into the memory.

1. AUTO RETURN OPERATION

When the ignition key is inserted into the key cylinder, the signal is input to the tilt and telescopic ECU through communication control of the J/B ECU and door ECU etc. This activates the ECU to automatically return the steering to the position set before the ignition key has been removed.

2. AUTO AWAY OPERATION

When the ignition key is turned from ON to OFF and removed from the key cylinder, the signal is input to the tilt and telescopic ECU through communication control of the J/B ECU and door ECU etc. This activates the ECU to automatically move the steering to the top tilt step position and maximum telescopic retract position.

3. MANUAL OPERATION

If the TILT and TELESCOPIC SW is operated when the ignition key is inserted in the ignition key cylinder, the signal is sent to the power tilt and power telescopic ECU by the multiplex communication. As a result of that, the power tilt and power telescopic ECU controls the motor to adjust the telescopic position or the tilt position at will.

4. DRIVING POSITION MEMORY FUNCTION

The pulse signals detected by the tilt and telescopic sensors are input to the ECU. This makes it possible to store and recall the desired driving position through communication control of the J/B ECU and door ECU etc.

SERVICE HINTS

P8 (A), P9 (B) POWER TILT AND POWER TELESCOPIC ECU

(B) 4, (A) 1−GROUND : Always approx. **12** volts
(A) 4−GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position
(A) 6−GROUND : Always continuity

○ : PARTS LOCATION

Code	See Page	Code	See Page	Code	See Page
C14	46	J9	47	P9 B	48
D5	47	J13	47	T4	49
D24 A	50	J14 A	47	T5	49
D25 B	50	J15 B	47	T6	49
D26	50	L14	51	T9	49
G3	47	P8 A	48	U7	49

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
DE	29	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
DF		
DG		
DI	31	Floor No.2 Wire and Driver Side J/B (Left Kick Panel)
PE	36	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IA1	58	Front Door LH Wire and Floor No.2 Wire (Left Kick Panel)
IC3	58	Instrument Panel Wire and Floor No.2 Wire (Cowl Side Panel LH)

: GROUND POINTS

Code	See Page	Ground Points Location
IG	58	Left Side of Instrument Panel
IH	58	Right Side of Shift Lever