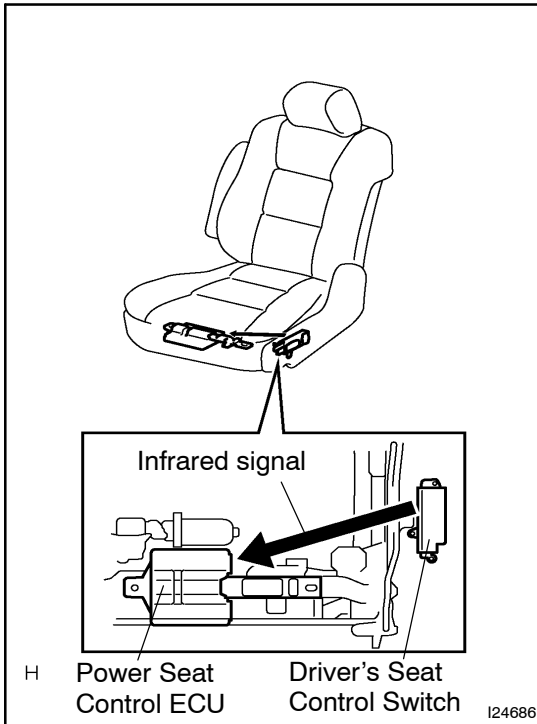




## PRE-CHECK

### 1. POWER SEAT CONTROL SYSTEM FOR DRIVER'S SEAT

#### (a) Description

This system sends a signal from the driver's seat control switch to the power seat control ECU when manual operation for seat position is performed.

#### HINT:

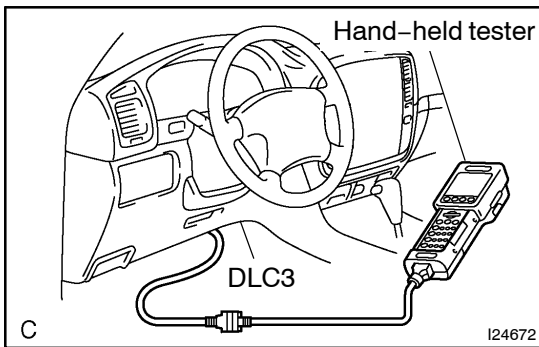
Indicator, etc. that indicates such as operating conditions does not exist at the infrared signal transmission and reception part.

#### (b) Fail-safe function

When infrared data communication is blocked by an object placed under the seat, etc. or the driver's seat control switch has an abnormality, the system enters fail-safe functions and only slide operation (back and forward) can be operated.

#### (c) Clean the infrared light reception and emission part

Extreme dirt on the power seat control ECU and on the reception and emission part of the infrared signal of the driver's seat control switch does not allow to send and to receive the signal. In this case, wipe the lens with a soft cloth.



### 2. DIAGNOSIS SYSTEM

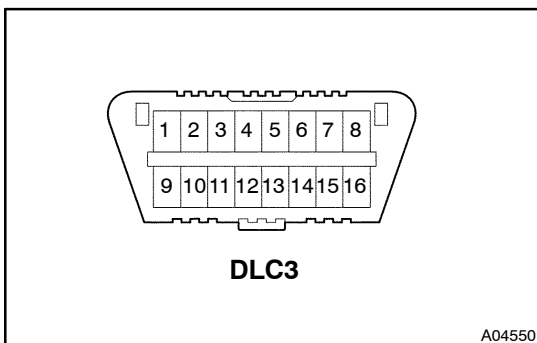
#### (a) Description

ECU data of this system can be read from DLC3 of the vehicle.

Therefore when there seems to be a trouble on this system, use hand-held tester to check and troubleshoot it.

#### (b) Check the DLC3.

The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



| Terminal No. | Connection/Specified Condition         | Condition |
|--------------|----------------------------------------|-----------|
| 4            | Chassis Ground ↔ Body Ground/1 or less | Always    |
| 13           | TC ↔ Body Ground/9 – 14 V              | Always    |

**HINT:**

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

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication does not function when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

**3. DATA LIST****HINT:**

By the DATA LIST displayed on the Hand-held tester, you can read the value of the switch, sensor, actuator and so on without removing any parts. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

- Turn the ignition switch OFF.
- Connect the hand-held tester to DLC3.
- Turn the ignition switch ON.
- According to the display on tester, read the "DATA LIST".

**POWER SEAT CONTROL ECU:**

| Item              | Condition                            | Normal Condition         | Diagnostic Note |
|-------------------|--------------------------------------|--------------------------|-----------------|
| RECLIN SW REAR    | Reclining rear switch<br>free → ON   | OFF → ON                 | –               |
| RECLIN SW FRONT   | Reclining front switch<br>free → ON  | OFF → ON                 | –               |
| F VTCL SW DOWN    | Front vertical switch<br>free → DOWN | OFF → ON                 | –               |
| F VTCL SW UP      | Front vertical switch<br>free → UP   | OFF → ON                 | –               |
| R VTCL SW DOWN    | Rear vertical switch<br>free → DOWN  | OFF → ON                 | –               |
| R VTCL SW UP      | Rear vertical switch<br>free → UP    | OFF → ON                 | –               |
| SLIDE SW REAR     | Slide switch<br>free → REAR          | OFF → ON                 | –               |
| SLIDE SW FRONT    | Slide switch<br>free → FRONT         | OFF → ON                 | –               |
| SLIDE SW RR (W/H) | Slide switch<br>free → REAR          | OFF → ON                 | –               |
| SLIDE SW FR (W/H) | Slide switch<br>free → FRONT         | OFF → ON                 | –               |
| POWER VOLTAGE     | Ignition switch ON                   | Battery positive voltage | –               |
| MOTOR STATUS      | –                                    | STANDBY/MOVING/LOCK      | –               |
| IG SW             | Ignition switch ON                   | OFF → ON                 | –               |

## DIAGNOSTICS – POWER SEAT CONTROL SYSTEM

|                 |                                                                 |               |   |
|-----------------|-----------------------------------------------------------------|---------------|---|
| KEY UNLOCK SW   | Ignition switch ON                                              | OFF → ON      | – |
| D-DOOR WARN SW  | Door (door courtesy switch)<br>CLOSE → OPEN                     | OFF → ON      | – |
| PNP SW          | PNP switch<br>except P → P                                      | OFF → ON      | – |
| PKBS SW         | Parking brake switch<br>OFF → ON                                | OFF → ON      | – |
| M2 SW           | Memory switch (M2)<br>free → ON                                 | OFF → ON      | – |
| M1 SW           | Memory switch (M1)<br>free → ON                                 | OFF → ON      | – |
| SET SW          | Memory switch (SET)<br>free → ON                                | OFF → ON      | – |
| SLIDE POS       | –                                                               | –4096 – 4096  | – |
| RECLIN POS      | –                                                               | –4096 – 4096  | – |
| F VTCL POS      | –                                                               | –4096 – 4096  | – |
| R VTCL POS      | –                                                               | –4096 – 4096  | – |
| MEM M1 SW       | Store (M1)<br>None → Exist                                      | NOT MEM → MEM | – |
| MEM M2 SW       | Store (M2)<br>None → Exist                                      | NOT MEM → MEM | – |
| SEAT MEM M1     | Store seat position (M1)<br>None → Exist                        | NOT MEM → MEM | – |
| SEAT MEM M2     | Store seat position (M2)<br>None → Exist                        | NOT MEM → MEM | – |
| D-MIRR MEM M1   | Store driver side mirror position<br>(M1) None → Exist          | NOT MEM → MEM | – |
| D-MIRR MEM M2   | Store driver side mirror position<br>(M2) None → Exist          | NOT MEM → MEM | – |
| P-MIRR MEM M1   | Store front passenger side mirror<br>position (M1) None → Exist | NOT MEM → MEM | – |
| P-MIRR MEM M2   | Store front passenger side mirror<br>position (M2) None → Exist | NOT MEM → MEM | – |
| SLIDE MEM POS 1 | Stored slide position (M1)                                      | –4096 – 4096  | – |
| RECLN MEM POS 1 | Stored reclining position (M1)                                  | –4096 – 4096  | – |
| F VTCL MEM POS1 | Stored front vertical position (M1)                             | –4096 – 4096  | – |
| R VTCL MEM POS1 | Stored rear vertical position (M1)                              | –4096 – 4096  | – |
| SLIDE MEM POS 2 | Stored slide position (M2)                                      | –4096 – 4096  | – |
| RECLN MEM POS 2 | Stored reclining position (M2)                                  | –4096 – 4096  | – |
| F VTCL MEM POS2 | Stored front vertical position (M2)                             | –4096 – 4096  | – |
| R VTCL MEM POS2 | Stored rear vertical position (M2)                              | –4096 – 4096  | – |
| D-MIR MEM POS 1 | Stored driver side outer mirror<br>position (M1)                | 0 – 65535     | – |
| P-MIR MEM POS 1 | Stored front passenger side outer<br>mirror position (M1)       | 0 – 65535     | – |
| D-MIR MEM POS 2 | Stored driver side outer mirror<br>position (M2)                | 0 – 65535     | – |
| P-MIR MEM POS 2 | Stored front passenger side outer<br>mirror position (M2)       | 0 – 65535     | – |

**MIRROR CONTROL ECU:**

| Item            | Condition                                                          | Normal Condition | Diagnostic Note |
|-----------------|--------------------------------------------------------------------|------------------|-----------------|
| MIRR POS SW R   | Mirror switch position RIGHT<br>OFF → ON                           | OFF → ON         | –               |
| MIRR POS SW L   | Mirror switch position LEFT<br>OFF → ON                            | OFF → ON         | –               |
| MIRR POS SW DWN | Mirror switch DOWN<br>OFF → ON                                     | OFF → ON         | –               |
| MIRR POS SW UP  | Mirror switch UP<br>OFF → ON                                       | OFF → ON         | –               |
| MIRR SEL SW     | Mirror switch select direction                                     | MID (P)/D (P)    | –               |
| REV POS SW      | Shift lever position<br>except R → R                               | OFF → ON         | –               |
| ACC (MPX)       | Ignition switch ON (ACC)                                           | ON               | –               |
| IG (MPX)        | Ignition switch ON                                                 | ON               | BEAN signal     |
| D MIR POS SEN V | Driver side outer mirror VERTICAL<br>position (LSB 0.01953 V)      | 0 – 5            | –               |
| D MIR POS SEN H | Driver side outer mirror HORIZON<br>position (LSB 0.01953 V)       | 0 – 5            | –               |
| P MIR POS SEN V | Passenger side outer mirror VER-<br>TICAL position (LSB 0.01953 V) | 0 – 5            | –               |
| P MIR POS SEN H | Passenger side outer mirror HO-<br>RIZON position (LSB 0.01953 V)  | 0 – 5            | –               |

**4. ACTIVE TEST****HINT:**

Performing ACTIVE TEST using the Hand-held tester allows the relay, and so on to operate without removing any parts. Performing ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

DATA LIST can be displayed during ACTIVE TEST.

- Turn the ignition switch OFF.
- Connect the Hand-held tester to DLC3.
- Turn the ignition switch ON.
- According to the display on tester, perform the "ACTIVE TEST".

**POWER SEAT CONTROL ECU:**

| Tester Display | Item (Condition)         | Parameter  | Parameter<br>(Min. – Max.) | Step (Unit) | Diagnostic Note                                                                                                        |
|----------------|--------------------------|------------|----------------------------|-------------|------------------------------------------------------------------------------------------------------------------------|
| RECLINING      | Seat reclining operation | FRONT/REAR | –                          | –           | Confirm that the vehicle is parked./Caution: This test causes vehicle parts to move. Watch your hands and feet.        |
| F VERTICAL     | Front vertical operation | UP/DOWN    | –                          | –           | Confirm that the vehicle is parked./Caution: This test causes vehicle parts to move. Please watch your hands and feet. |

## DIAGNOSTICS – POWER SEAT CONTROL SYSTEM

|            |                         |            |   |   |                                                                                                                        |
|------------|-------------------------|------------|---|---|------------------------------------------------------------------------------------------------------------------------|
| R VERTICAL | Rear vertical operation | UP/DOWN    | – | – | Confirm that the vehicle is parked./Caution: This test causes vehicle parts to move. Please watch your hands and feet. |
| SLIDE      | Seat slide operation    | FRONT/REAR | – | – | Confirm that the vehicle is parked./Caution: This test causes vehicle parts to move. Please watch your hands and feet. |

**MIRROR CONTROL ECU:**

| Tester Display | Item (Condition)                                 | Parameter  | Parameter (Min. – Max.) | Step (Unit) | Diagnostic Note |
|----------------|--------------------------------------------------|------------|-------------------------|-------------|-----------------|
| D MIRR UP/DN   | Driver side outer mirror UP or DOWN operation    | UP/DOWN    | –                       | –           | –               |
| D MIRR R/L     | Driver side outer mirror RIGHT or LEFT operation | LEFT/RIGHT | –                       | –           | –               |
| P MIRR UP/DN   | Passenger side outer mirror UP or DOWN operation | UP/DOWN    | –                       | –           | –               |
| P MIRR R/L     | Driver side outer mirror RIGHT or LEFT operation | LEFT/RIGHT | –                       | –           | –               |