

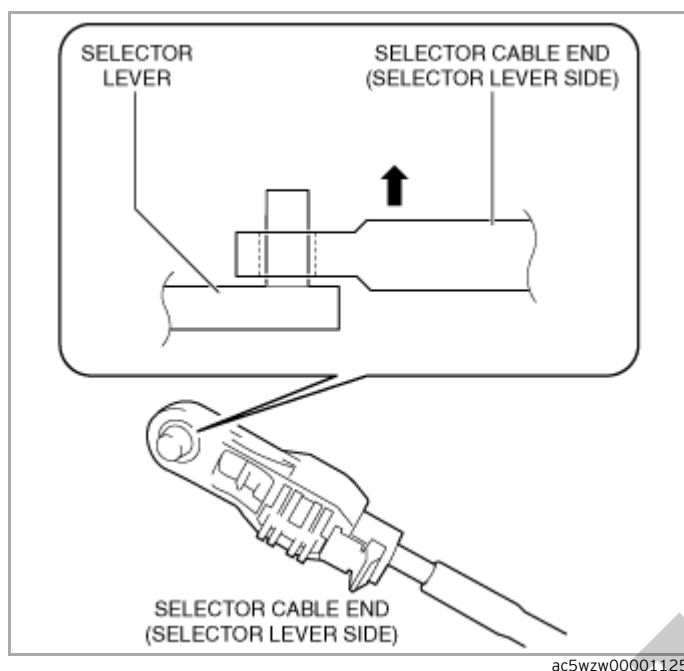
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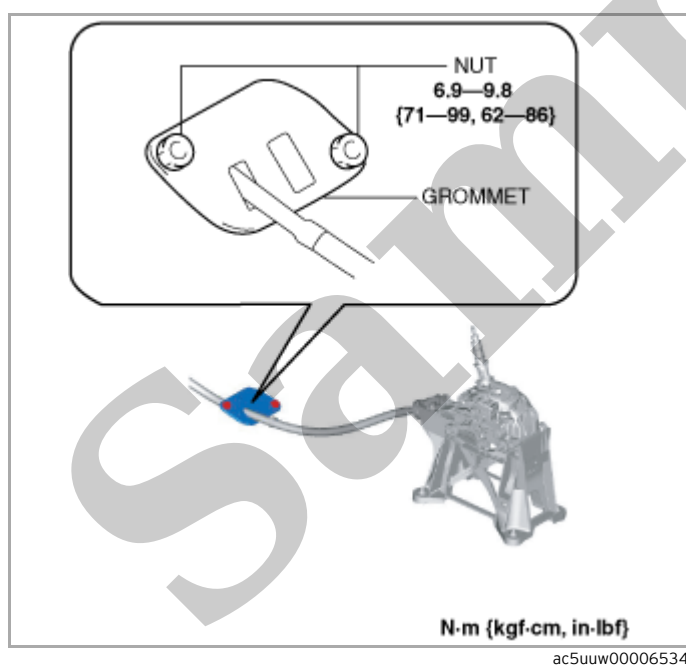
## 2013 MAZDA MX-5 / Miata Roadster Coupe OEM Service and Repair Workshop Manual

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(11) Disconnect the selector cable end (selector lever side) from the selector lever. (See [Selector Cable \(Selector Lever Side\) Installation Note.](#))



5. Disconnect the grommet as shown in the figure and remove the nuts.



6. Pull out the selector cable from inside the cabin and remove it.

7. Install in the reverse order of removal.

## Selector Cable (Selector Lever Side) Installation Note

1. Verify that the selector lever is in the P position.

# INDICATOR REMOVAL/INSTALLATION

SM2898485

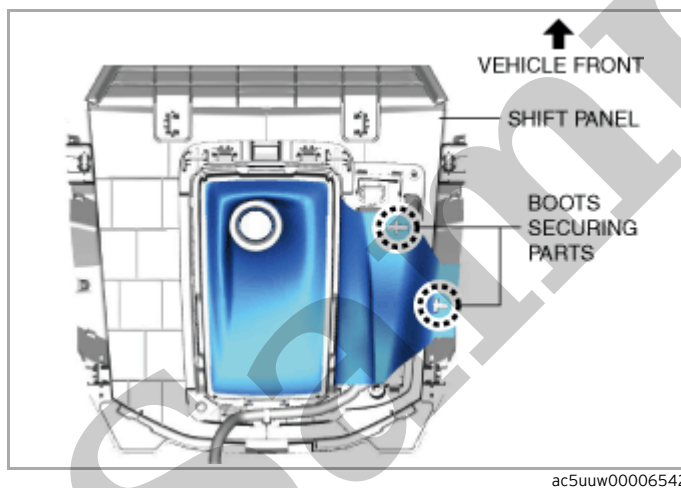
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1.Disconnect the negative battery terminal. (See [NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.](#))

2.Remove the following parts.

- (1)Console side panel (See [CONSOLE SIDE PANEL REMOVAL/INSTALLATION.](#))
- (2)Switch panel (See [SWITCH PANEL REMOVAL/INSTALLATION.](#))
- (3)Selector lever knob (See [SELECTOR LEVER COMPONENT REMOVAL/INSTALLATION.](#))
- (4)Shift panel (See [SHIFT PANEL REMOVAL/INSTALLATION.](#))

3.Turn over the removed shift panel and remove the boots from the boots securing parts shown in the figure.



4.Remove in the order indicated in the table.

5.Install in the reverse order of removal.

# SHIFT-LOCK SOLENOID INSPECTION

SM2898486

id05180029810

**Note**

- The shift-lock solenoid is built into the selector lever component.

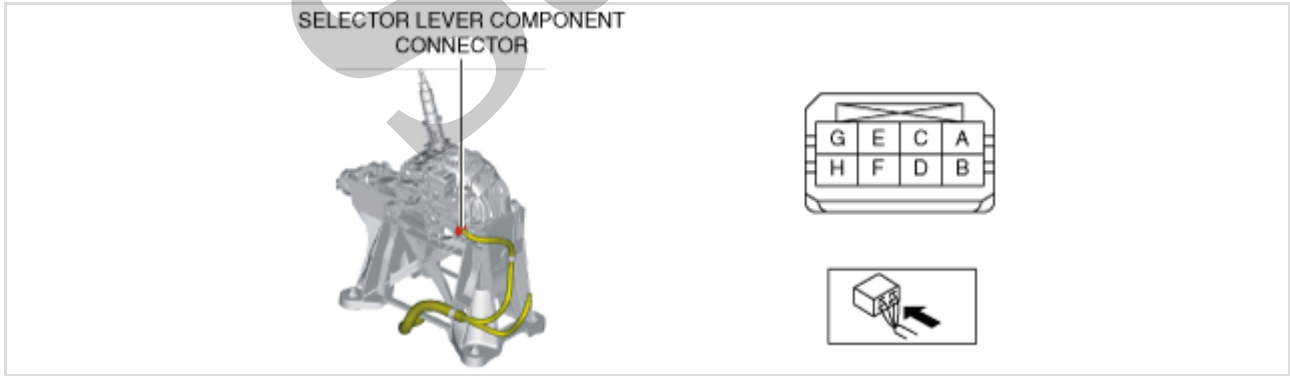
1.Disconnect the negative battery terminal. (See [NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.](#))

2.Remove the following parts:

- (1)Selector lever knob (See [SELECTOR LEVER COMPONENT REMOVAL/INSTALLATION.](#))
- (2)Console side panel (See [CONSOLE SIDE PANEL REMOVAL/INSTALLATION.](#))
- (3)Switch panel (See [SWITCH PANEL REMOVAL/INSTALLATION.](#))
- (4)Cup holder (See [CUP HOLDER REMOVAL/INSTALLATION.](#))
- (5)Shift panel (See [SHIFT PANEL REMOVAL/INSTALLATION.](#))
- (6)Front console box (See [FRONT CONSOLE BOX REMOVAL/INSTALLATION.](#))
- (7)Side wall (See [SIDE WALL REMOVAL/INSTALLATION.](#))
- (8)Rear console (See [REAR CONSOLE REMOVAL/INSTALLATION.](#))

3.Reconnect the negative battery terminal. (See [NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.](#))

4.Verify that the voltages of each of the selector lever component terminals are as indicated in the table.



ac5uuw00005828

**Shift-lock solenoid specification**

| Terminal | Connected to    | Test condition                   | Voltage (V) |
|----------|-----------------|----------------------------------|-------------|
| A        | IG1 relay       | Ignition switched ON (engine on) | B+          |
|          |                 | Except above                     | Below 1.0   |
| D        | Start stop unit | Under any condition              | Below 1.0   |

# NOT P POSITION SWITCH INSPECTION

SM2898488

id05180030000

## Note

- The not P position switch is built into the selector lever component.

1. Disconnect the negative battery terminal. (See [NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.](#))

2. Remove the following parts:

(1) Selector lever knob (See [SELECTOR LEVER COMPONENT REMOVAL/INSTALLATION.](#))

(2) Console side panel (See [CONSOLE SIDE PANEL REMOVAL/INSTALLATION.](#))

(3) Switch panel (See [SWITCH PANEL REMOVAL/INSTALLATION.](#))

(4) Cup holder (See [CUP HOLDER REMOVAL/INSTALLATION.](#))

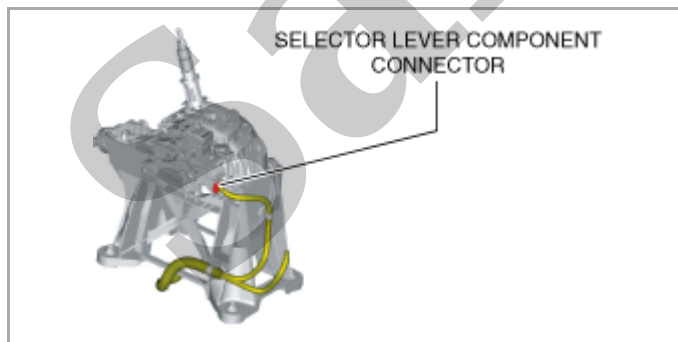
(5) Shift panel (See [SHIFT PANEL REMOVAL/INSTALLATION.](#))

(6) Front console box (See [FRONT CONSOLE BOX REMOVAL/INSTALLATION.](#))

(7) Side wall (See [SIDE WALL REMOVAL/INSTALLATION.](#))

(8) Rear console (See [REAR CONSOLE REMOVAL/INSTALLATION.](#))

3. Disconnect the selector lever component connector.



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4. Verify that the continuity between selector lever component terminals B and G.

Time lag

| Measurement conditions | Specification (s) |
|------------------------|-------------------|
| N to D selected        | 0.4–0.7           |
| N to R selected        |                   |

Automatic Transaxle [GW6A-EL, GW6AX-EL]

| Item |                                                                   | Specification                             |
|------|-------------------------------------------------------------------|-------------------------------------------|
| ATF  | Type                                                              | ATF FZ                                    |
|      | Capacity (approx. quantity)                                       | 8.0 L {8.5 US qt, 7.0 Imp qt}             |
|      | Added amount if ATF is drained from drain plug (approx. quantity) | 3.5–4.9 L {3.7–5.1 US qt, 3.1–4.3 Imp qt} |

Line pressure

| Measurement conditions |                        | Specification (kPa {kgf/cm <sup>2</sup> , psi}) |
|------------------------|------------------------|-------------------------------------------------|
| Idling                 | R position             | 500–700 {5.10–7.13, 72.6–101.0}                 |
|                        | D and M (1GR) position | 330–470 {3.37–4.79, 47.9–68.1}                  |
| Stalling               | R position             | 1,790–2,100 {18.26–21.41, 259.7–304.5}          |
|                        | D and M (1GR) position | 970–1,170 {9.90–11.93, 141.0–169.6}             |

Stall speed

| Measurement conditions | Specification (rpm) |
|------------------------|---------------------|
| R position             | 1,800–2,400         |
| D position             | 2,200–3,100         |
| M position             |                     |

Time lag

| Measurement conditions | Specification (s) |
|------------------------|-------------------|
| N to D selected        | 0.4–0.7           |
| N to R selected        |                   |

# DTC INSPECTION [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]

SM2898493

id0602a681300

## CMDTC Self Test

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- (1)Select "Self Test".
- (2)Select "All CMDTCs".

3.Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See **DTC TABLE [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]**.)

### Note

- Snapshot data appears at the top of the help screen when the displayed DTC is selected.
- Snapshot data stores the currently detected DTC data.

4.After completion of repairs, clear all DTCs stored in the module. (See **CLEARING DTC [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]**.)

## ODDTC Self Test

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- (1)Select "Self Test".
- (2)Select "Modules".
- (3)Select "EPS".

3.Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See **DTC TABLE [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]**.)

| Snapshot data item | Unit                                                    | Data contents                                                                                                                                                                                                                                                                     | Data read/use method                                                                                                                                                                                                                                                                                                             | Corresponding data monitor items |
|--------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| RPM_STATUS         | Engine Stop/<br>Under 1500rpm/<br>Over 1500rpm/<br>FAIL | Engine RPM status                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>The EPS control module constantly receives the ignition switch status sent via CAN signal from the instrument cluster.</li> <li>If a DTC is detected, the EPS control module records the ignition switch status when the DTC was detected, and it is displayed in the M-MDS.</li> </ul>   | TACHOMTR *2                      |
| SHIFT_STATUS       | P/N<br>D/<br>R/<br>FAIL                                 | Shift position status                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>The EPS control module constantly receives the selector lever position sent via CAN signal from the instrument cluster.</li> <li>If a DTC is detected, the EPS control module records the selector lever position when the DTC was detected, and it is displayed in the M-MDS.</li> </ul> | -                                |
| STR_ANG            | °                                                       | Steering wheel angle                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                | STR_ANG                          |
| STR_ANG_EST        | °                                                       | Steering wheel estimated absolute angle                                                                                                                                                                                                                                           | -                                                                                                                                                                                                                                                                                                                                | STR_AB_EST                       |
| STR_ROT_SPD        | °/s                                                     | Steering wheel rotation speed                                                                                                                                                                                                                                                     | -                                                                                                                                                                                                                                                                                                                                | STR_ROT_SPD                      |
| STR_TRQ_S_M        | Nm                                                      | Steering shaft torque (Main)                                                                                                                                                                                                                                                      | -                                                                                                                                                                                                                                                                                                                                | STR_TRQ_S_M                      |
| STR_TRQ_S_S        | Nm                                                      | Steering shaft torque (Sub)                                                                                                                                                                                                                                                       | -                                                                                                                                                                                                                                                                                                                                | STR_TRQ_S_S                      |
| TOTAL_DIST         | km, ft, mi                                              | Accumulated total traveled distance from completion of vehicle until EPS control module detects DTC (Odometer value in instrument cluster)                                                                                                                                        | <p>The distance traveled when the EPS control module detected a DTC can be calculated by performing the following procedure.</p> <ol style="list-style-type: none"> <li>Verify the odometer value in the instrument cluster.</li> <li>Verify the snapshot data item TOTAL_DIST.</li> <li>Subtract 2 from 1.</li> </ol>           | -                                |
| TOTAL_TIME         | hh:mm:ss* 1                                             | <p>Accumulated total elapsed time since vehicle completion until EPS control module detects a DTC</p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>When the ROOM removed, and the ignition is switched off, the time is not included in the elapsed time.</li> </ul> | <p>The elapsed time when the EPS control module detected a DTC can be calculated by performing the following procedure.</p> <ol style="list-style-type: none"> <li>Verify the PID item TOTAL_TIME of the instrument cluster.</li> <li>Verify the snapshot data item TOTAL_TIME.</li> <li>Subtract 2 from 1.</li> </ol>           | TOTAL <sub>2</sub> TIME          |
| VPWR               | V                                                       | Power supply                                                                                                                                                                                                                                                                      | -                                                                                                                                                                                                                                                                                                                                | VPWR                             |
| VSPD               | KPH, MPH                                                | Vehicle speed                                                                                                                                                                                                                                                                     | -                                                                                                                                                                                                                                                                                                                                | VSPD                             |
| VSPD_STATUS        | Stop/<br>0 - 10km/h/<br>Over 10km/h/<br>FAIL            | Vehicle speed status                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>The EPS control module constantly receives the vehicle speed sent via CAN signal from the instrument cluster.</li> <li>If a DTC is detected, the EPS control module records the vehicle speed when the DTC was detected, and it is displayed in the M-MDS.</li> </ul>                     | SPEEDOMTR                        |

\*1:The seconds may be indicated after the decimal point.

| Step | Inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Results | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <b>INSPECT CHARGING SYSTEM</b> <ul style="list-style-type: none"> <li>Are the generator and drive belt tension normal? (See <b>GENERATOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]</b>.) (See <b>GENERATOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b>.) (See <b>GENERATOR INSPECTION [SKYACTIV-D 2.2]</b>.) (See <b>GENERATOR INSPECTION [SKYACTIV-G 2.5T]</b>.) (See <b>DRIVE BELT INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]</b>.) (See <b>DRIVE BELT INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b>.) (See <b>DRIVE BELT INSPECTION [SKYACTIV-D 2.2]</b>.) (See <b>DRIVE BELT INSPECTION [SKYACTIV-G 2.5T]</b>.)</li> </ul> | Yes     | Go to the next step.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No      | Replace the generator and/or drive belt if necessary.<br>Go to Step 3.<br>(See <b>GENERATOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]</b> .)<br>(See <b>GENERATOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)<br>(See <b>GENERATOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2]</b> .)<br>(See <b>GENERATOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T]</b> .)<br>(See <b>DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]</b> .)<br>(See <b>DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)<br>(See <b>DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-D 2.2]</b> .)<br>(See <b>DRIVE BELT REMOVAL/INSTALLATION [SKYACTIV-G 2.5T]</b> .) |
| 2    | <b>INSPECT WHETHER MALFUNCTION IS CAUSED BY POOR CONNECTION OF EPS CONTROL MODULE OR PIN DEFORMATION</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Inspect connection of the EPS control module and wiring harness.</li> <li>Disconnect the EPS control module connector.</li> <li>Inspect whether malfunction is caused by bent or poorly connected EPS control module connector pin.</li> <li>Are the connector connection, connector pins, and wiring harness normal?</li> </ul>                                                                                                                                                                                | Yes     | Go to the next step.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No      | Repair or replace the faulty connector wiring harness, then go to the next step.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3    | <b>VERIFY THAT THE SAME DTC IS NOT PRESENT</b> <ul style="list-style-type: none"> <li>Make sure to reconnect all disconnected connectors.</li> <li>Using the M-MDS, clear the DTC from the EPS control module. (See <b>CLEARING DTC [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]</b>.)</li> <li>Using the M-MDS, perform the EPS control module DTC inspection. (See <b>DTC INSPECTION [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]</b>.)</li> <li>Is the same Pending DTC present?</li> </ul>                                                                                                                                                                                                | Yes     | Replace the EPS control module, then go to the next step.<br>(See <b>STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION</b> .)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No      | Go to the next step.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Sample