

INSTRUMENT CLUSTER INSPECTION

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Speedometer inspection

Using a speedometer tester

Caution

- When only the front or the rear wheels are driven using a speedometer tester, the DSC HU/CM may determine that the vehicle speed signal is in error and the engine cannot be stopped by the normal operation. If the engine cannot be stopped, perform an emergency engine stop operation. (See **SERVICE CAUTIONS.**)

1. Adjust the tire pressure to the specification.
2. Using a speedometer tester, verify that the tester reading is as indicated in the following table.

European (L.H.D. U.K.), General (L.H.D. R.H.D.) specs., Australian specs.

| Speedometer tester indication (km/h) | Allowable range (km/h) |
|--------------------------------------|------------------------|
| 20 | 20—25 |
| 40 | 40—45 |
| 60 | 61—66 |
| 80 | 81—86 |
| 100 | 102—107 |
| 120 | 122—129 |
| 140 | 142—150 |
| 160 | 163—170 |
| 180 | 183—181 |
| 200 | 204—211 |
| 220 | 224—232 |
| 240 | 244—253 |

U.K. specs.

| Speedometer tester indication (mph) | Allowable range (mph) |
|-------------------------------------|-----------------------|
| 10 | 10—13 |
| 20 | 20—23 |
| 30 | 30—33 |
| 40 | 40—43 |
| 50 | 51—54 |
| 60 | 61—64 |
| 70 | 71—75 |
| 80 | 81—86 |
| 90 | 91—96 |
| 100 | 102—106 |
| 110 | 112—116 |
| 120 | 122—127 |
| 130 | 132—137 |
| 140 | 142—148 |
| 150 | 153—158 |

General (L.H.D. R.H.D.) specs.,

| Speedometer tester indication (km/h) | Allowable range (km/h) |
|--------------------------------------|------------------------|
| 20 | 18—22 |
| 40 | 38—42 |
| 60 | 58—62 |
| 80 | 78—82 |
| 100 | 98—102 |
| 120 | 117—123 |
| 140 | 137—143 |
| 160 | 157—163 |
| 180 | 177—183 |
| 200 | 197—203 |
| 220 | 216—224 |

| Speedometer tester indication (km/h) | Allowable range (km/h) |
|--------------------------------------|------------------------|
| 240 | 236—244 |

3. Verify that the speedometer reading is within the range indicated in the table.
 - If the speedometer does not operate or the indication is not within the allowable range, inspect the DTC inspection for the following control module and the related wiring harnesses.
 - PCM
 - TCM (ATX)
 - DSC HU/CM
 - If the PCM, TCM (ATX), DSC HU/CM, and related wiring harnesses are normal, replace the instrument cluster.

Using the M-MDS

1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "SPDMTR", verify that the displayed information is as indicated in the table.

European (L.H.D. U.K.), General (L.H.D. R.H.D.) specs., Australian specs.

| M-MDS display | Instrument cluster display |
|---------------|---|
| 60 km/h | Speedometer needle moves to approx. 61—66 km/h {38—41 mph}. |
| 120 km/h | Speedometer needle moves to approx. 122—129 km/h {75.9—80.1 mph}. |
| Off | Speedometer needle moves to the bottommost position. |

General (L.H.D. R.H.D.) specs.,

| M-MDS display | Instrument cluster display |
|---------------|---|
| 60 km/h | Speedometer needle moves to approx. 58—62 km/h {36—39 mph}. |
| 120 km/h | Speedometer needle moves to approx. 117—123 km/h {72.8—76.4 mph}. |
| Off | Speedometer needle moves to the bottommost position. |

- If the speedometer does not operate or the indication is not within the allowable range, inspect the DTC inspection for the following control module and the related wiring harnesses.
 - PCM
 - TCM (ATX)
 - DSC HU/CM
- If the PCM, TCM (ATX), DSC HU/CM, and related wiring harnesses are normal, replace the instrument cluster.

Tachometer inspection

Caution

- **If the engine speed exceeds the allowable range, the engine could be damaged. Therefore, when inspecting the tachometer, do not allow the engine speed to exceed the allowable range indicated on the tachometer.**

1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "TACHOMTR", verify that the displayed information is as indicated in the table.

| M-MDS display | Instrument cluster display |
|---------------|----------------------------|
|---------------|----------------------------|

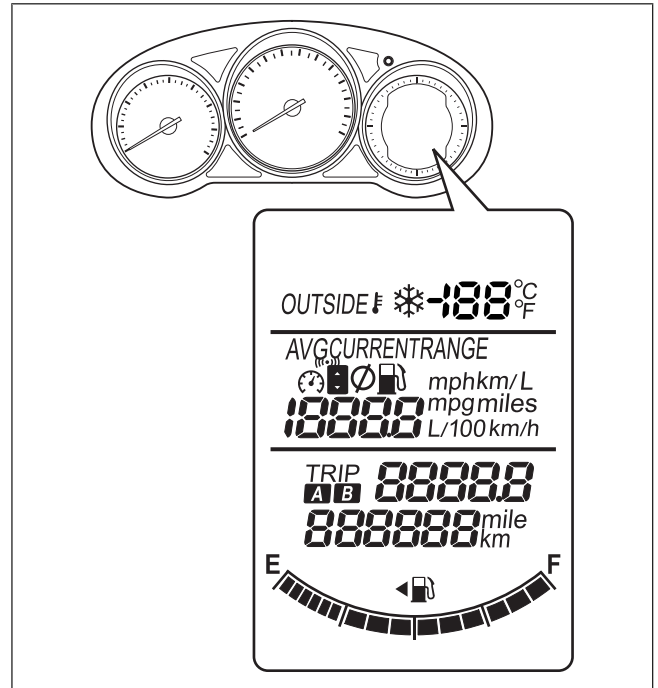
| | |
|----------|---|
| 3000 RPM | Tachometer needle moves to approx. 3,050 rpm. |
| 6000 RPM | Tachometer needle moves to approx. 6,100 rpm. |
| Off | Tachometer needle moves to bottommost position. |

- If the tachometer does not operate or the indication is not within the allowable range, inspect the DTC inspection for the following control module and the related wiring harnesses.
— PCM
- If the PCM and related wiring harnesses are normal, replace the instrument cluster.

Fuel Gauge/LCD Inspection

Without TFT LCD display

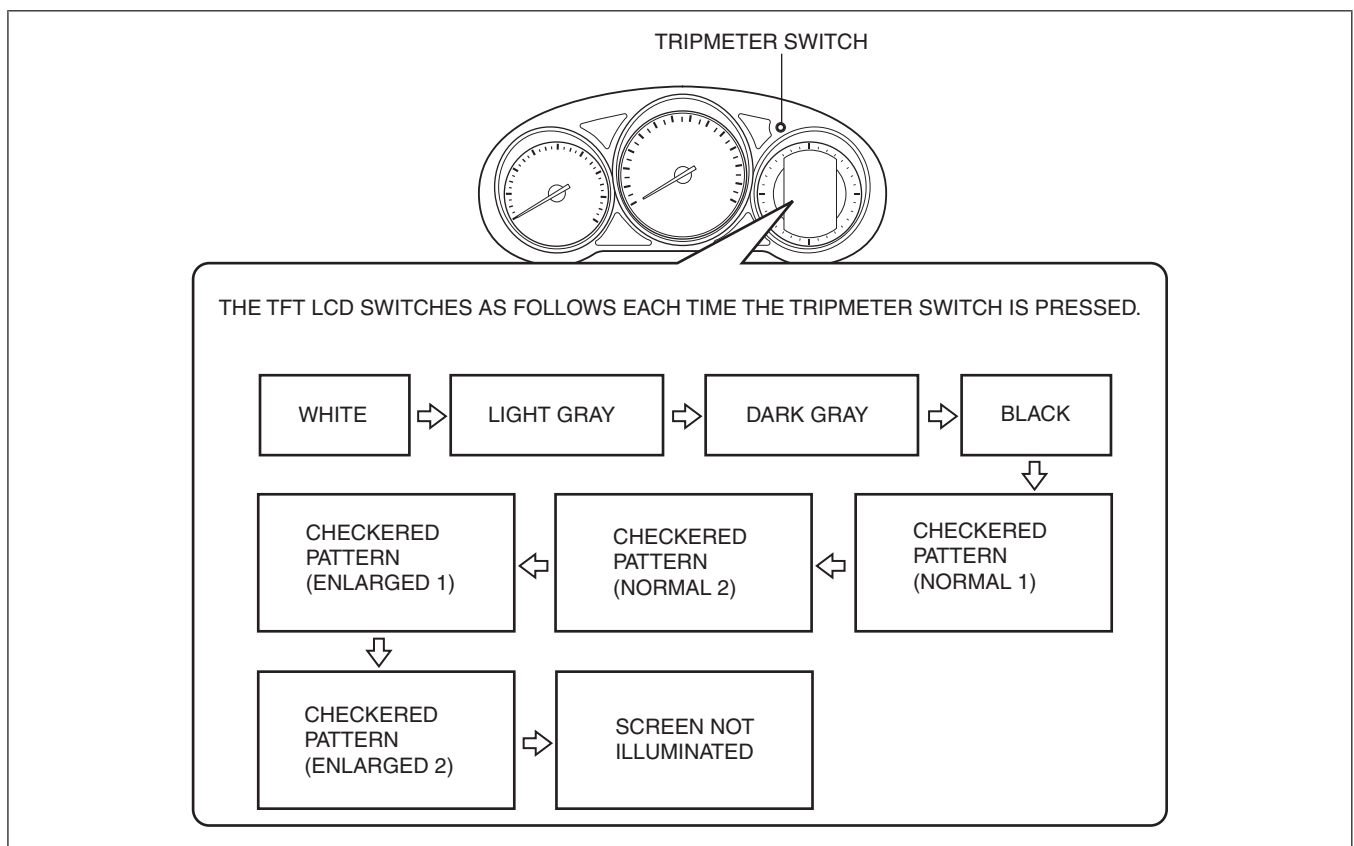
1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "LCD_SEG", verify that the LCD is illuminated.
 - If there are any non-illuminated area, replace the instrument cluster.



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With TFT LCD display

1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "LCD_SEG", verify that the LCD is illuminated.



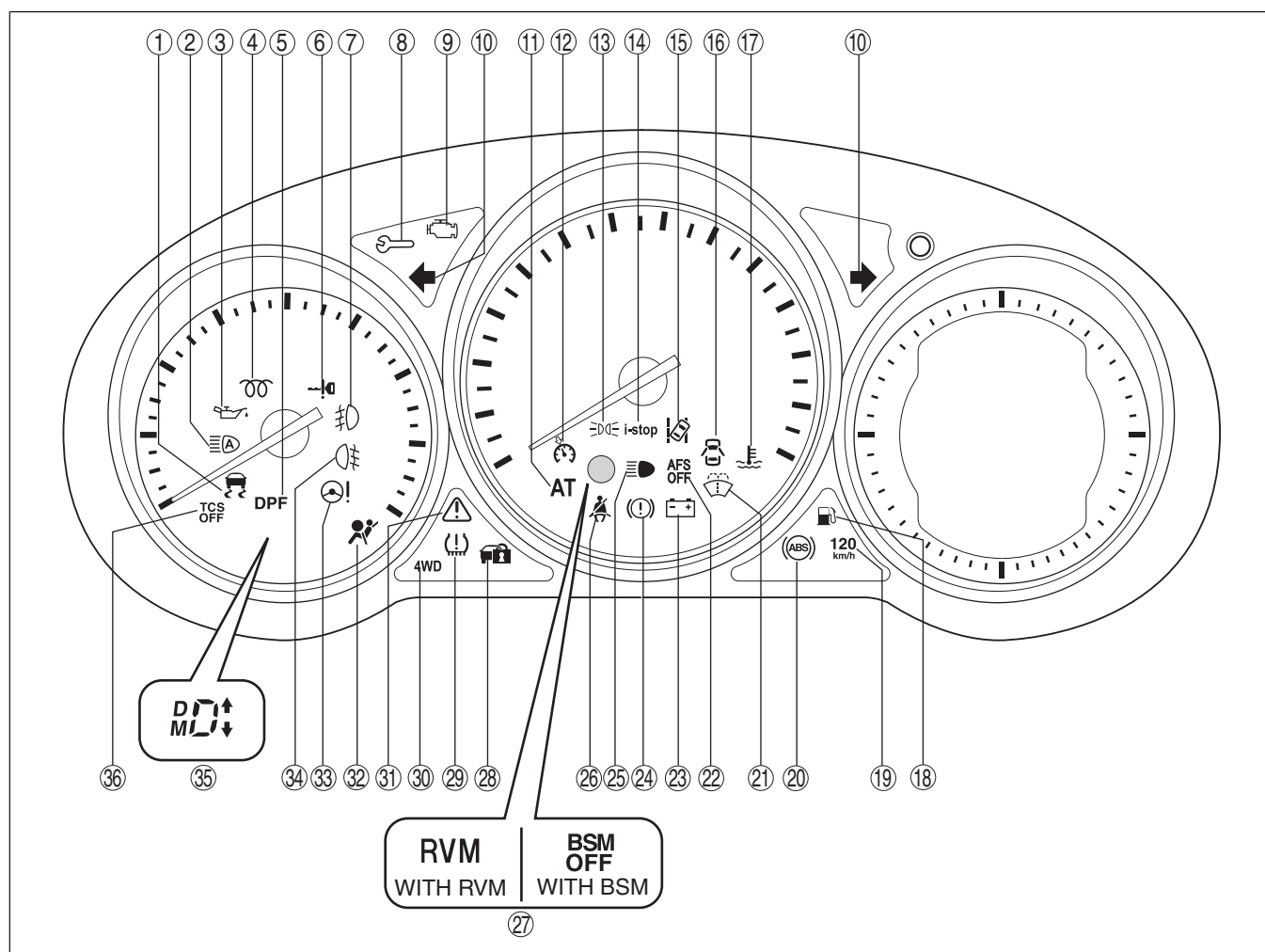
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- If there are any non-illuminated area, replace the instrument cluster.

Warning/Indicator Light Illumination Inspection















1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "WL+IL", verify that the warning/indicator lights in the following table are illuminated.
 - If any of the warning/indicator lights are not displayed, replace the instrument cluster.

Without TFT LCD display

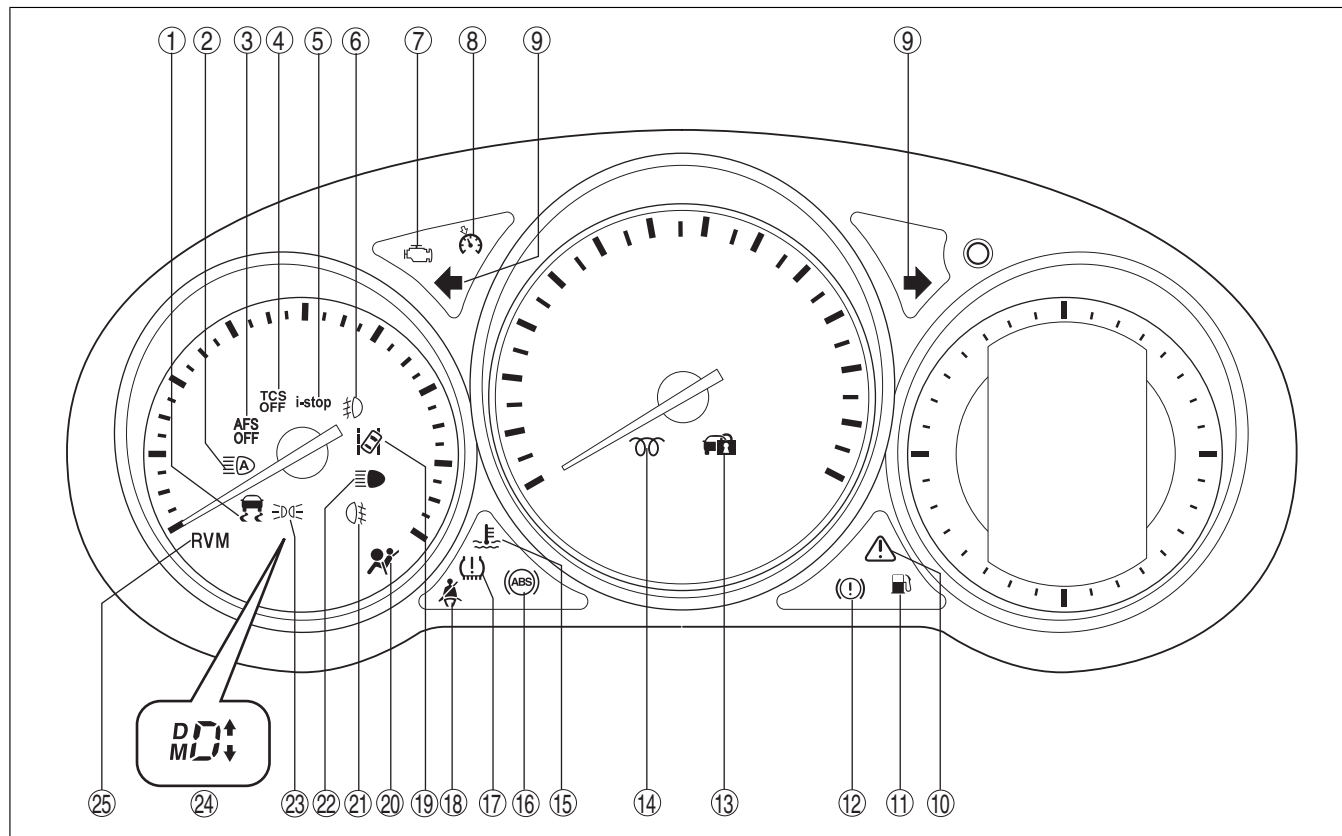


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| No. | Warning/ Indicator lights | Name | Comment |
|-----|------------------------------|---|-----------------------------|
| 1 | | TCS/DSC indicator light | — |
| 2 | | High beam control (HBC) system indicator light (green)/high beam control system (HBC) warning light (amber) | With HBC System |
| 3 | | Engine oil warning light | — |
| 4 | | Glow indicator light | SKYACTIV-D 2.2 |
| 5 | DPF | Diesel particulate filter indicator light | SKYACTIV-D 2.2 |
| 6 | | KEY warning light (red)/indicator light (green) | — |
| 7 | | Front fog light indicator light | With front fog light |
| 8 | | Wrench indicator light | SKYACTIV-D 2.2 |
| 9 | | Check engine light | — |
| 10 | | Turn signal/hazard warning indicator lights | — |
| 11 | AT | Automatic transaxle warning light | ATX |
| 12 | | Cruise main indicator light (amber)/cruise set indicator light (green) | With cruise control system |
| 13 | | Lights-on indicator light | — |
| 14 | i-stop | i-stop warning light (amber)/indicator light (green) | With i-stop system |
| 15 | | Lane departure warning system (LDWS) indicator light (green)/lane departure warning system (LDWS) warning light (amber) | With LDWS |
| 16 | | Door-ajar warning light | — |
| 17 | | High engine coolant temperature warning light (red)/low engine coolant temperature indicator light (blue) | — |
| 18 | | Low fuel warning light | — |
| 19 | 120 km/h | 120 km/h warning light | With 120 km/h warning light |
























| No. | Warning/ Indicator lights | Name | Comment |
|-----|---|--|--|
| 20 |  | ABS warning light | — |
| 21 |  | Low washer fluid level warning light | — |
| 22 |  | AFS OFF indicator light | With AFS |
| 23 |  | Charging system warning light | — |
| 24 |  | Brake system warning light | — |
| 25 |  | Headlight high-beam indicator light | — |
| 26 |  | Seat belt warning light | — |
| 27 | RVM | Rear vehicle monitoring (RVM) system warning light (amber)/ Indicator light (green) | With rear vehicle monitoring system |
| | BSM OFF | BSM OFF indicator light | With BSM |
| 28 |  | Security indicator light | With immobilizer system |
| 29 |  | Tire pressure monitoring system warning light | With TPMS |
| 30 | 4WD | 4WD warning light | 4WD |
| 31 |  | Master warning light | — |
| 32 |  | Air bag/front seat belt pretensioner system warning light | — |
| 33 |  | Power steering malfunction indicator light | — |
| 34 |  | Rear fog light indicator light | With rear fog light |
| 35 |  | Shift position indicator/gear position indicator | ATX |
| | | Gear shift indicator | MTX (with gear shift indicator) |
| 36 | TCS OFF | TCS OFF indicator light | — |

With TFT LCD display



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| No | Warning/ Indicator lights | Name | Comment |
|----|---|-------------------------|---------|
| 1 |  | TCS/DSC indicator light | — |

| No | Warning/ Indicator lights | Name | Comment |
|----|---|---|-------------------------------------|
| 2 |  | High beam control system (HBC) indicator light (green)/high beam control (HBC) system warning light (amber) | With HBC System |
| 3 |  | AFS OFF indicator light | With AFS |
| 4 |  | TCS OFF indicator light | — |
| 5 |  | i-stop warning light (amber)/indicator light (green) | With i-stop system |
| 6 |  | Front fog light indicator light | With front fog light |
| 7 |  | Check engine light | — |
| 8 |  | Cruise main indicator light (amber)/cruise set indicator light (green) | With cruise control system |
| 9 |  | Turn signal/hazard warning indicator lights | — |
| 10 |  | Master warning light | — |
| 11 |  | Low fuel warning light | — |
| 12 |  | Brake system warning light | — |
| 13 |  | Security indicator light | — |
| 14 |  | Glow indicator light | SKYACTIV-D 2.2 |
| 15 |  | High engine coolant temperature warning light (red)/low engine coolant temperature indicator light (blue) | — |
| 16 |  | ABS warning light | — |
| 17 |  | Tire pressure monitoring system warning light | With TPMS |
| 18 |  | Seat belt warning light | — |
| 19 |  | Lane departure warning system (LDWS) indicator light (green)/warning light (amber) | With LDWS |
| 20 |  | Air bag/front seat belt pretensioner system warning light | — |
| 21 |  | Rear fog light indicator light | With rear fog light |
| 22 |  | Headlight high-beam indicator light | — |
| 23 |  | Lights-on indicator light | — |
| 24 |  | Shift position indicator/gear position indicator | ATX |
| | | Gear shift indicator | MTX (with gear shift indicator) |
| 25 | RVM | Rear vehicle monitoring (RVM) system warning light (amber)/indicator light (green) | With rear vehicle monitoring system |

Alarm Inspection

1. Connect the M-MDS to the DLC-2.
2. After vehicle identification, select the following from the M-MDS initialization screen.
 - (1) "Data logger"
 - (2) "Module"
 - (3) "IC"
3. Using "ALARM", verify that the buzzer sounds.
 - If the buzzer does not sound, replace the instrument cluster.