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## 2013 Mazda 3 Service and Repair Manual

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# JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [GW6A-EL, GW6AX-EL]

SM2898410

id05032010190

| TROUBLESHOOTING ITEM | Judder upon torque converter clutch (TCC) operation |
|---|---|
| DESCRIPTION | • Vehicle jolts when TCC is engaged. |
| POSSIBLE CAUSE | 1. Signal malfunction<br>— APP sensor malfunction<br>— CKP sensor malfunction<br>2. Torque converter malfunction |

## Diagnostic procedure

| Step | Inspection | Results | Action |
|---|---|---|---|
| 1 | VERIFY MALFUNCTION SYMPTOM<br>• Is the malfunction symptom at the same level compared to a vehicle of the same model? | Yes | Symptom troubleshooting is completed. |
| | | No | Go to the next step. |
| 2 | INSPECT SIGNAL PARTS FOR MALFUNCTION<br>• Inspect the value at the following PCM PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)<br>— APP (APP sensor)<br>— RPM (CKP sensor)<br>• Is there any malfunction? | Yes | Repair or replace any malfunctioning parts according to the inspection result. |
| | | No | Replace the automatic transaxle. (See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-G 2.5T)].) (See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-D 2.2)].) (See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-G 2.5T)].) (See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-D 2.2)].) |

# EXCESSIVE SHIFT SHOCK IS FELT WHEN UPSHIFTING AND DOWNSHIFTING [GW6A-EL, GW6AX-EL]

SM2898412

id05032010210

| | |
|---|---|
| TROUBLESHOOTING ITEM | Excessive shift shock is felt when upshifting and downshifting |
| DESCRIPTION | • Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting.<br>• During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting. |
| POSSIBLE CAUSE | 1. Insufficient TCM learning<br>2. Signal malfunction<br>— APP sensor malfunction<br>3. Poor installation or worn of engine mount, suspension<br>4. Engine control system malfunction |

## Diagnostic procedure

Note

• If a DTC is stored in the PCM, the malfunction may be resolved by repairing the malfunctioning location.

| Step | Inspection | Results | Action |
|---|---|---|---|
| 1 | VERIFY MALFUNCTION SYMPTOM<br>• Is the malfunction symptom (shift shock/shifting time) at the same level compared to a vehicle of the same model? | Yes | Symptom troubleshooting is completed. |
| | | No | Go to the next step. |
| 2 | PERFORM INITIAL LEARNING<br>• Perform the initial learning. (See INITIAL LEARNING [GW6A-EL, GW6AX-EL].)<br>• Does the symptom disappear? | Yes | Symptom troubleshooting is completed. |
| | | No | Go to the next step. |
| 3 | PERFORM ON-BOARD DIAGNOSTIC TO VERIFY HYDRAULIC PRESSURE SWITCH OPERATION PRESSURE<br>• Is the operation pressure normal? | Yes | Go to the next step. |
| | | No | Replace the control valve body. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) |
| 4 | INSPECT SIGNAL PARTS FOR MALFUNCTION<br>• Inspect the value at the following PCM PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)<br>— APP (APP sensor)<br>• Is there any malfunction? | Yes | Repair or replace any malfunctioning parts according to the inspection result. |
| | | No | Go to the next step. |

# TRANSAXLE OVERHEATS [GW6A-EL, GW6AX-EL]

SM2898416

id05032010260

| TROUBLESHOOTING ITEM | Transaxle overheats |
|---|---|
| DESCRIPTION | • Burnt smell emitted from the transaxle.<br>• Smoke is emitted from the transaxle. |
| POSSIBLE CAUSE | 1. Signal malfunction<br>— APP sensor malfunction<br>— Brake switch malfunction<br>— CKP sensor malfunction<br>— ECT sensor malfunction<br>2. ATF malfunction<br>3. Oil cooler malfunction<br>4. Control valve body malfunction |



## Diagnostic procedure

| Step | Inspection | Results | Action |
|---|---|---|---|
| 1 | INSPECT SIGNAL PARTS FOR MALFUNCTION<br>• Inspect the value at the following PCM PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)<br>— APP (APP sensor)<br>— BOO (Brake switch)<br>— ECT (ECT sensor)<br>— RPM (CKP sensor)<br>• Is there any malfunction? | Yes | Repair or replace any malfunctioning parts according to the inspection result. |
| | | No | Go to the next step. |
| 2 | INSPECT ATF LEVEL<br>• Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [GW6A-EL, GW6AX-EL].)<br>• Is there any malfunction? | Yes | Adjust the ATF level to the specification.<br>(See AUTOMATIC TRANSAXLE FLUID (ATF) ADJUSTMENT [GW6A-EL, GW6AX-EL].) |
| | | No | Go to the next step. |
| 3 | VISUALLY INSPECT OIL COOLER<br>• Visually inspect the oil cooler.<br>• Is there any malfunction? | Yes | Repair or replace any malfunctioning parts according to the inspection result.<br>(See OIL COOLER REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL (SKYACTIV-G 2.5T)].)<br>(See OIL COOLER REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL (SKYACTIV-D 2.2)].) |
| | | No | Go to the next step. |

| Step | Inspection | Results | Action |
|---|---|---|---|
| 3 | DETERMINE IF MALFUNCTION IS DUE TO TCC SOLENOID VALVE OPERATION MALFUNCTION OR AUTOMATIC TRANSAXLE INTERNAL MALFUNCTION<br>• Verify the malfunction symptom.<br>• Does the engine stall in the D or M position? | Yes | Replace the control valve body.<br>(See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) |
| | | No | Replace the automatic transaxle.<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-G 2.5T)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-D 2.2)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-G 2.5T)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-D 2.2)].) |

# SLOW ENGAGING AFTER OPERATING SELECTOR LEVER FROM N TO D POSITION [GW6A-EL, GW6AX-EL]

SM2898420

id05032010450

| | |
|---|---|
| TROUBLESHOOTING ITEM | Slow engaging after operating selector lever from N to D position |
| DESCRIPTION | • When depressing the accelerator pedal just after operating the selector lever from N to D position with the ATF temperature at 60 °C {140 °F} or more, it takes 3 s or more to engage.<br>• Malfunction symptom only occurs once when accelerating from a standstill.<br>• Engagement after operating the selector lever from N to R position is normal.<br>• Engagement when shifting gears while driving is normal.<br>• DTCs are not stored. |
| POSSIBLE CAUSE | 1. Low clutch piston malfunction<br>2. Low clutch hydraulic system sealing malfunction |

## Diagnostic Procedure

| Step | Inspection | Results | Action |
|---|---|---|---|
| 1 | VERIFY MALFUNCTION SYMPTOM<br>• Is the malfunction symptom at the same level compared to a vehicle of the same model (GW6A-EL, GW6AX-EL vehicles)? | Yes | Complete the symptom troubleshooting. |
| | | No | Go to the next step. |
| 2 | VERIFY DTCs<br>• Are any DTCs detected? | Yes | Repair the malfunctioning location according to the applicable DTC troubleshooting.<br>(See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].) |
| | | No | Go to the next step. |
| 3 | PERFORM INITIAL LEARNING AND N TO D RANGE LEARNING<br>• Perform the initial learning. (See INITIAL LEARNING [GW6A-EL, GW6AX-EL].)<br>• Perform the N to D position learning using the following procedure:<br>(1) Set the ATF temperature to 30 °C {86 °F} or more.<br>(2) Shift the selector lever to N position.<br>(3) Shift the selector lever to D position and wait for 5 s or more.<br>(4) Shift the selector lever to N position and wait for 5 s or more.<br>(5) Perform steps (3) to (4) 10 times.<br>• Has the malfunction symptom been eliminated? | Yes | Complete the symptom troubleshooting. |
| | | No | Replace the automatic transaxle.<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-G 2.5T)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6A-EL (SKYACTIV-D 2.2)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-G 2.5T)].)<br>(See AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION [GW6AX-EL (SKYACTIV-D 2.2)].) |

# MANUAL SHIFT MODE INDICATION DOES NOT ILLUMINATE IN M POSITION/MANUAL SHIFT MODE INDICATION ILLUMINATES IN D POSITION [GW6A-EL, GW6AX-EL]

SM2898423

id05032011360

| | |
|---|---|
| TROUBLESHOOTING ITEM | Manual shift mode indication does not illuminate in M position/Manual shift mode indication illuminates in D position |
| DESCRIPTION | • Manual shift mode indication in instrument cluster does not illuminate in M position or manual shift mode indication in instrument cluster in P, R, N and D positions with the ignition switched ON (engine off or on). |
| POSSIBLE CAUSE | 1. Instrument cluster malfunction |

## Diagnostic procedure

| Step | Inspection | Results | Action |
|---|---|---|---|
| 1 | INSPECT INSTRUMENT CLUSTER FOR MALFUNCTION<br>• Inspect the instrument cluster. (See INSTRUMENT CLUSTER INSPECTION.)<br>• Is there any malfunction? | Yes | Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.) |
| | | No | Symptom troubleshooting is completed. |

# DOWN SWITCH REMOVAL/INSTALLATION [FW6A-EL, FW6AX-EL]

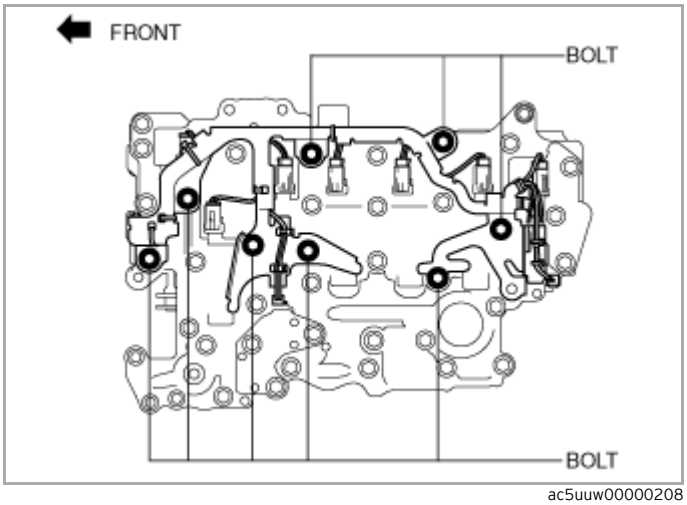
SM2898426

id0517h211230

**Note**

**• The down switch is built into the selector lever component.**

1.If the down switch is replaced, replace the selector lever component. (See SELECTOR LEVER COMPONENT REMOVAL/INSTALLATION.)



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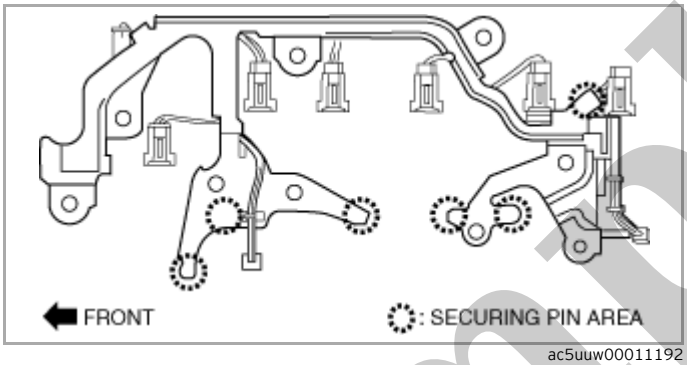
Caution

• Because there are solenoid valve securing pins in the areas circled with a dotted line shown in the figure. Always verify that the solenoid valve securing pins are on the control valve body when installing the coupler component.



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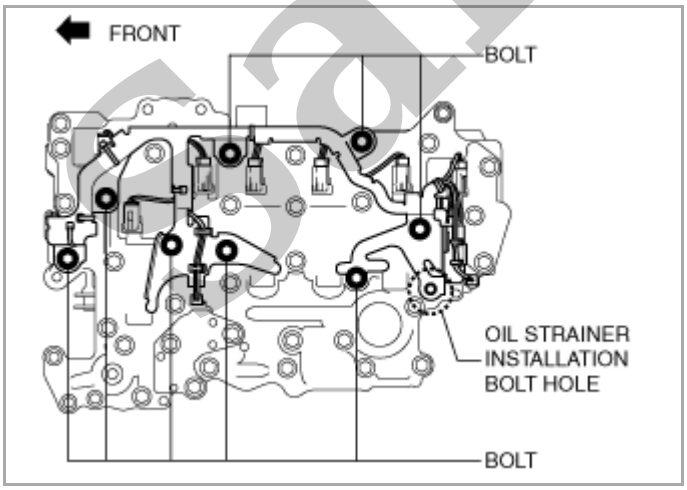
10.Temporarily install the coupler component so that the oil strainer installation bolt hole does not deviate.



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11.After verifying that the oil strainer installation bolt hole is not deviated, install the coupler component.

Caution

• After assembling the coupler component, verify that shift solenoids No.1, 2, 3, 4, the pressure control solenoid, and the TCC control solenoid cannot be pulled out from the control valve body.