

## 2012 - Mazda6 - Transmission/ Transaxle

### NO.18 EXCESSIVE SHIFT SHOCK IS GIVEN WHEN UPSHIFTING AND DOWNSHIFTING [AY6A-EL]

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| 18             | Excessive shift shock is given when upshifting and downshifting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DESCRIPTION    | <ul style="list-style-type: none"><li>Excessive shift shock is felt when depressing the accelerator pedal at upshifting.</li><li>During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| POSSIBLE CAUSE | <ul style="list-style-type: none"><li>Shift shock may worsen when the fail-safe is operating. The shift shock may worsen if the APP sensor, input/turbine speed sensor, or VSS signal malfunctions.<ul style="list-style-type: none"><li>Clutch slippage, burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake)<ul style="list-style-type: none"><li>Line pressure low, high</li><li>Incorrect accelerator opening signal</li><li>VSS malfunction</li><li>Input/turbine speed sensor malfunction</li><li>TFT sensor malfunction</li><li>Shift solenoid C malfunction</li><li>Shift solenoid D malfunction</li><li>Shift solenoid E malfunction</li><li>Line pressure control solenoid malfunction</li><li>Shift solenoid F malfunction</li><li>Body ground and sensor ground malfunction</li><li>Control valve body malfunction</li><li>Not within ATF amount</li></ul></li><li>Poor hydraulic operation (Malfunction in range change)</li></ul></li></ul> |

#### Diagnostic procedure

| STEP | INSPECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ACTION |                                                                       |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------|
| 1    | <b>INSPECT TCM FOR POOR GROUND</b> <ul style="list-style-type: none"> <li>Inspect for continuity between the TCM terminal A9 and battery negative terminal.</li> <li>Is there continuity?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No     | Repair open ground circuit.                                           |
| 2    | <b>INSPECT TCM INPUT/ OUTPUT SIGNALS FOR MALFUNCTION</b> <ul style="list-style-type: none"> <li>Perform the PID/DATA Monitor Record Procedure and access following PCM and TCM PIDs while excessive shift shock condition.</li> </ul> <p>(See <b>PCM INSPECTION [MZI 3.7 V6]</b>.)</p> <p>(See <b>ON-BOARD DIAGNOSTIC SYSTEM PID/ DATA MONITOR INSPECTION [AY6A-EL]</b>.)</p> <p><b>PCM PIDs:</b></p> <ul style="list-style-type: none"> <li>APP1</li> <li>APP2</li> </ul> <p><b>TCM PIDs:</b></p> <ul style="list-style-type: none"> <li>SSF</li> <li>LPS</li> <li>TSS</li> <li>OSS</li> </ul> <ul style="list-style-type: none"> <li>Are they normal?</li> </ul> | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No     | Repair or replace malfunctioning part according to inspection result. |
| 3    | <b>VERIFY IF MALFUNCTION CAUSE IS SHIFT SOLENOIDS OR TRANSAXLE (INCLUDING CONTROL VALVE BODY)</b> <ul style="list-style-type: none"> <li>Stop the engine.</li> <li>Inspect the following solenoid. <ul style="list-style-type: none"> <li>Shift solenoid C</li> </ul> <p>(See <b>SHIFT SOLENOID C INSPECTION [AY6A-EL]</b>.)</p></li> <li>Shift solenoid D</li> <p>(See <b>SHIFT SOLENOID D INSPECTION [AY6A-EL]</b>.) <li>Shift solenoid E</li> <p>(See <b>SHIFT SOLENOID E INSPECTION [AY6A-EL]</b>.) </p></p></ul>                                                                                                                                              | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No     | Inspect the coupler component.                                        |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        | If normal, replace the control valve body.                            |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        | (See <b>TORQUE CONVERTER REMOVAL/ INSTALLATION [AY6A-EL]</b> .)       |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                               |
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|   | <ul style="list-style-type: none"> <li>▪ Line pressure control solenoid<br/>(See <a href="#">LINE PRESSURE CONTROL SOLENOID INSPECTION [AY6A-EL]</a> .)</li> <li>• Are they normal?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                               |
| 4 | <b>VERIFY IF MALFUNCTION CAUSE IS TRANSAXLE (INCLUDING CONTROL VALVE BODY) OR ATF FLUID LEVEL</b> <ul style="list-style-type: none"> <li>• Inspect the ATF condition.</li> <li>• Are a metal specks found?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 | <p>Yes If large amount of metal specks are found, replace the transaxle.</p> <p>(See <a href="#">AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [AY6A-EL]</a> .)</p> <p>If a large amount of metal specks are not found, replace the control valve body.</p> <p>(See <a href="#">CONTROL VALVE BODY REMOVAL/ INSTALLATION [AY6A-EL]</a> .)</p> | <p>No Perform the "AUTOMATIC TRANSAXLE FLUID (ATF) LEVEL ADJUSTMENT" procedure.</p> <p>(See <a href="#">AUTOMATIC TRANSAXLE FLUID (ATF) LEVEL ADJUSTMENT [AY6A-EL]</a> .)</p> |
| 5 | <ul style="list-style-type: none"> <li>• Verify test results. <ul style="list-style-type: none"> <li>▪ If normal, return to the diagnostic index to service any additional symptoms.</li> <li>▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> <li>• If the vehicle is repaired, troubleshooting completed.</li> <li>• If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.</li> </ul> </li> </ul> </li> </ul> |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                               |

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| DESCRIPTION    | <ul style="list-style-type: none"><li>• Excessive shift shock is felt when depressing the accelerator pedal at upshifting.</li><li>• During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| POSSIBLE CAUSE | <ul style="list-style-type: none"><li>• Shift shock may worsen when the fail-safe is operating. The shift shock may worsen if the APP sensor, input/turbine speed sensor, or VSS signal malfunctions.<ul style="list-style-type: none"><li>▪ Clutch slippage, burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake)<ul style="list-style-type: none"><li>• Line pressure low, high</li><li>• Incorrect accelerator opening signal</li><li>• VSS malfunction</li><li>• Input/turbine speed sensor malfunction</li><li>• TFT sensor malfunction</li><li>• Shift solenoid C malfunction</li><li>• Shift solenoid D malfunction</li><li>• Shift solenoid E malfunction</li><li>• Line pressure control solenoid malfunction</li><li>• Shift solenoid F malfunction</li><li>• Body ground and sensor ground malfunction</li><li>• Control valve body malfunction</li><li>• Not within ATF amount</li></ul></li><li>▪ Poor hydraulic operation (Malfunction in range change)</li></ul></li></ul> |

#### Diagnostic procedure

| STEP | INSPECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ACTION |                                                                       |
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| 1    | <b>INSPECT TCM FOR POOR GROUND</b> <ul style="list-style-type: none"> <li>Inspect for continuity between the TCM terminal A9 and battery negative terminal.</li> <li>Is there continuity?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No     | Repair open ground circuit.                                           |
| 2    | <b>INSPECT TCM INPUT/ OUTPUT SIGNALS FOR MALFUNCTION</b> <ul style="list-style-type: none"> <li>Perform the PID/DATA Monitor Record Procedure and access following PCM and TCM PIDs while excessive shift shock condition.</li> </ul> <p>(See <b>PCM INSPECTION [MZI 3.7 V6]</b> .)</p> <p>(See <b>ON-BOARD DIAGNOSTIC SYSTEM PID/ DATA MONITOR INSPECTION [AY6A-EL]</b> .)</p> <p><b>PCM PIDs:</b></p> <ul style="list-style-type: none"> <li>APP1</li> <li>APP2</li> </ul> <p><b>TCM PIDs:</b></p> <ul style="list-style-type: none"> <li>SSF</li> <li>LPS</li> <li>TSS</li> <li>OSS</li> </ul> <ul style="list-style-type: none"> <li>Are they normal?</li> </ul> | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No     | Repair or replace malfunctioning part according to inspection result. |
| 3    | <b>VERIFY IF MALFUNCTION CAUSE IS SHIFT SOLENOIDS OR TRANSAXLE (INCLUDING CONTROL VALVE BODY)</b> <ul style="list-style-type: none"> <li>Stop the engine.</li> <li>Inspect the following solenoid. <ul style="list-style-type: none"> <li>Shift solenoid C</li> </ul> <p>(See <b>SHIFT SOLENOID C INSPECTION [AY6A-EL]</b> .)</p> <li>Shift solenoid D</li> <p>(See <b>SHIFT SOLENOID D INSPECTION [AY6A-EL]</b> .)</p> <li>Shift solenoid E</li> <p>(See <b>SHIFT SOLENOID E INSPECTION [AY6A-EL]</b> .)</p> </li></ul>                                                                                                                                             | Yes    | Go to the next step.                                                  |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No     | Inspect the coupler component.                                        |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | If normal, replace the control valve body.                            |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | (See <b>TORQUE CONVERTER REMOVAL/ INSTALLATION [AY6A-EL]</b> .)       |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                 |
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| 5 | <ul style="list-style-type: none"> <li>• Verify test results. <ul style="list-style-type: none"> <li>▪ If normal, return to the diagnostic index to service any additional symptoms.</li> <li>▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> <li>• If the vehicle is repaired, troubleshooting completed.</li> <li>• If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.</li> </ul> </li> </ul> </li> </ul> |                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                 |