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2012 MAZDA MX-5 / Miata OEM Service and Repair Workshop Manual

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DTC No.	Check engine light	Automatic transaxle warning light/Automat ic transaxle warning indication	Description	Fail-safe function	Drive cycle	Self test type*1	Memory function	Page
U0121:00	Illumination	-	Communicati on error to DSC HU/CM	×	1	С, О	×	(See DTC
U0131:00	-	_	Communicati on error to EPS control module	×	1	С, О	×	U0073:00, U0100:00, U0121:00, U0131:00,
U0155:00	Illumination	_	Communicati on error to instrument cluster	×	1	С, О	×	U0155:00, U0214:00 [TCM (FW6A- EL, FW6AX-
U0214:00	-	-	Communicati on error to start stop unit	×	1	C, O	×	EL)].)
U0442:00	-	_	Invalid data received from PCM (local CAN between TCM and PCM)	×	1	c, o	×	(See DTC U0442:00 [TCM (FW6A- EL, FW6AX- EL)].)

*1 :C: CMDTC self test, O: KOEO self test

DTC P0715:00 [TCM (GW6A-EL, GW6AX-EL)]

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DTC P0715:00	Turbine/input shaft speed sensor/sensor output range malfunction		
DETECTION CONDITION	 Under the following conditions, the difference between engine speed signal and turbine/input shaft speed signal is 400 rpm or more for 1 s: Engine is running. Turbine/input shaft speed sensor is 9,000 rpm or less. The gear shift position is in the neutral condition. 		
FAIL-SAFE FUNCTION	 Set to TCC control. Inhibits learning control. Inhibits manual mode. Inhibits neutral idle control. Inhibits AAS. Inhibits 5GR and 6GR. Inhibits shift down when the accelerator pedal is depressed. 		
POSSIBLE CAUSE	Turbine/input shaft speed sensor malfunction		
SYSTEM WIRING DIAGRAM	Not applicable		

STEP	INSPECTION		ACTION
1	RECORD VEHICLE STATUS WHEN DTC WAS DETECTED TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture of the PC function. • Record the freeze frame data/snap shot data.	_	Go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, replace the control valve body. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) Go to the next step.
	repair information availability. • Is any related repair information available?	No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AXEL].)

STEP	INSPECTION		ACTION
5	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, replace the control valve body. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) Go to the next step.
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].)
6	 VERIFY DTC TROUBLESHOOTING COMPLETED Clear the DTC using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) Perform the following procedure to ensure that the DTC has been resolved: 1. Drive the vehicle for 1 s or more under the following condition: Vehicle speed: 30 km/h {19 mph} or more Porform the DTC inspection using the M-MDS 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].)
	 Perform the DTC inspection using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) Are any DTCs present? 	No	DTC troubleshooting completed.



DTC P0732:00 [TCM (GW6A-EL, GW6AX-EL)]

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DTC P0732:00	2GR incorrect ratio
DETECTION CONDITION	 In D position, 2GR, the following phenomenon occurs: — There is difference between turbine/input shaft speed and output shaft speed sensor speed for 230 to 1,980 ms (varies with ATF temperature and ECT) during shift-up. — There is difference between turbine/input shaft speed and output shaft speed sensor speed for 1,500 to 3,900 ms (varies with ATF temperature) while driving without shifting.
FAIL-SAFE FUNCTION	 Inhibits malfunctioning gear. Limits engine torque. Inhibits learning control. Inhibits manual mode. Inhibits neutral idle control. Inhibits AAS.
POSSIBLE CAUSE	 ATF is less than specified value Clutch burnt Shift solenoid malfunction ATF leakage from clutch circuit Control valve body malfunction
SYSTEM WIRING DIAGRAM	Not applicable

STEP	INSPECTION		ACTION
1	VERIFY DTC OUTPUT STATUS • Are any the following DTCs displayed? — P0746:00, P0751:00, P0752:00, P0756:00, P0757:00, P0761:00, P0762:00, P0766:00, P0767:00, P0771:00, P0772:00, P1738:00, P1784:00	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].) Go to the next step.
• Inspe AUTON FLUID	INSPECT ATF LEVEL • Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [GW6A-EL, GW6AX-EL].)	Yes	Adjust the ATF level to the specification, then go to the next step. (See AUTOMATIC TRANSAXLE FLUID (ATF) ADJUSTMENT [GW6A-EL, GW6AX-EL].)
	• Is there any malfunction?	No	Go to the next step.

STEP	INSPECTION		ACTION	
		Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].)	
3	PERFORM ON-BOARD DIAGNOSTIC TEST TO SPECIFY MALFUNCTIONING PART • Perform the on-board diagnostic test. (See ON- BOARD DIAGNOSTIC TEST MODE [TCM (GW6A-EL, GW6AX-EL)].) • Are any DTCs present?	No	ATF amount in Step 2 is correct: • 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)].) ATF amount adjusted in Step 2: • Drive the vehicle to check it, and if there is no problem then the DTC troubleshooting is complete.	



DTC P0741:00 [TCM (GW6A-EL, GW6AX-EL)]

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Caution

• Because the clutch in the automatic transaxle may be damaged, always replace the automatic transaxle even if a pending code (does not recur) has been detected.

DTC P0741:00	TCC control solenoid stuck off
DETECTION CONDITION	 Under the following conditions, difference in slip amount over 5 s compared to target slip amount is 200 rpm or more, and TCC feedback hydraulic pressure is 200 kPa {2.04 kgf/cm², 29.0 psi} or more occurs: Selector lever position is D position. No electrical malfunction in TCC control solenoid During TCC or TCC feedback There is no difference between vehicle speed signal from DSC HU/CM and output shaft speed sensor signal. Engine is running. ATF temperature is -25 °C {-13 °F} or more. Turbine/input shaft speed sensor and output shaft speed sensor DTC is not recorded.
FAIL-SAFE FUNCTION	 Inhibits TCC control. Inhibits learning control. Inhibits manual mode. Inhibits neutral idle control. Inhibits AAS.
POSSIBLE CAUSE	 TCC control solenoid malfunction ATF leakage from clutch circuit TCC clutch burnt Control valve body malfunction Pressure control solenoid malfunction
SYSTEM WIRING DIAGRAM	Not applicable

STEP	INSPECTION	ACTION	
	RECORD VEHICLE STATUS WHEN DTC WAS DETECTED TO UTILIZE WITH REPEATABILITY VERIFICATION Note		
1	-	Go to the next step.	
	• Recording can be		
	facilitated using the		
	screen capture of the		
	PC function.		
	 Record the freeze frame data/snap shot data. 		

STEP	INSPECTION		ACTION
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
	availability. • Is any related repair information available?	No	Perform repair or diagnosis according to the available repair information.
4	INSPECT ATF LEVEL Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION	Yes	(See AUTOMATIC TRANSAXLE FLUID (ATF) ADJUSTMENT [GW6A-EL
4	[GW6A-EL, GW6AX- EL].) • Is there any malfunction?	No	(See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL,
5	PERFORM ON-BOARD DIAGNOSTIC TEST • Perform the following procedure to ensure that the DTC has been resolved: 1. Start the engine. 2. Verify that the ATF temperature is 55 °C {131 °F} or more. • Perform the on-board diagnostic test. (See ON-BOARD DIAGNOSTIC TEST MODE [TCM (GW6A-EL, GW6AX-EL)].) • Are any the following DTCs displayed? — P0751:00, P0843:00	Yes	 Replace the automatic transaxle, then drive the vehicle to check it, and if there is no problem then the DTC troubleshooting is complete. (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)].) ATF amount adjusted in Step 4: Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL].) No DTCs are displayed: Drive the vehicle to check it, and if there is no problem then the DTC troubleshooting is complete. If a DTC other than the one indicated on the left is displayed: Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC
6	RE-PERFORM ON-BOARD DIAGNOSTIC TEST • Perform the following procedure to ensure that the DTC has been resolved: 1. Start the engine. 2. Verify that the ATF temperature is 55 °C {131 °F} or more. • Perform the on-board	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].)
	or Perform the on-board diagnostic test. (See ON-BOARD DIAGNOSTIC TEST MODE [TCM (GW6A-EL, GW6AX-EL)].) or Are any DTCs present?	No	DTC troubleshooting completed.

STEP	INSPECTION		ACTION
	PERFORM ON-BOARD DIAGNOSTIC TEST • Perform the following procedure to ensure that the DTC has been resolved:	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL])
4	 Start the engine. Verify that the ATF temperature is 55 °C {131 °F} or more. Perform the on-board diagnostic test. (See ON-BOARD DIAGNOSTIC TEST MODE [TCM (GW6A-EL, GW6AX-EL)].) Are P0752:00 present? 	No	No DTCs are displayed: • Drive the vehicle to check it, and if there is no problem then the DTC troubleshooting is complete. If a DTC other than the one indicated on the left is displayed: • Go to the applicable DTC inspection. (See ONBOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)])
5	RE-PERFORM ON-BOARD DIAGNOSTIC TEST • Perform the following procedure to ensure that the DTC has been resolved: 1. Start the engine. 2. Verify that the ATF temperature is 55 °C {131 °F} or more. • Perform the on-board diagnostic test. (See ON-BOARD DIAGNOSTIC TEST MODE [TCM (GW6A-EL, GW6AX-EL)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].) DTC troubleshooting completed.



DTC P0756:00 [TCM (GW6A-EL, GW6AX-EL)]

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DTC P0756:00	Shift solenoid No.2 stuck off
DETECTION CONDITION	 Under the following conditions, shift solenoid No.2 stuck-off detected by combination of gear ratio malfunction and oil pressure switch pattern malfunction: Engine is running. ATF temperature is 20 °C {68 °F} or more. There is no difference between vehicle speed signal from DSC HU/CM and output shaft speed sensor signal. Turbine/input shaft speed sensor and output shaft speed sensor DTC is not recorded.
FAIL-SAFE FUNCTION	 Inhibits malfunctioning gear. Limits engine torque. Inhibits learning control. Inhibits manual mode. Inhibits neutral idle control. Inhibits AAS.
POSSIBLE CAUSE	ATF is less than specified valueShift solenoid No.2 malfunction
SYSTEM WIRING DIAGRAM	Not applicable

STEP	INSPECTION		ACTION
1	VERIFY DTC OUTPUT STATUS • Is the DTC P1738:00 also present?	Yes	Go to the applicable DTC inspection. (See DTC P1738:00 [TCM (GW6A-EL, GW6AX-EL)].)
		No	Go to the next step.
	RECORD VEHICLE STATUS WHEN DTC WAS DETECTED TO UTILIZE WITH REPEATABILITY VERIFICATION		
	Note		
2	 Recording can be facilitated using the screen capture of the PC function. Record the freeze frame data/snap shot data. 	_	Go to the next step.