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2013 Mazda 2 Service and Repair Manual

Go to manual page

DTC No.	Check engine light	Automatic transaxle warning light/Automatic transaxle warning indication	Description	Fail-safe function	Drive cycle	Self test type*1	Memory function	Page
P0877:00	Illumination	Illumination/Indication	Oil pressure switch No.4 (Oil pressure switch B) stuck on	×	2	C	×	(See DTC P0877:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0878:00	Illumination	Illumination/Indication	Oil pressure switch No.4 (Oil pressure switch B) stuck off	×	2	C	×	(See DTC P0878:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0882:00	Illumination	–	TCM power supply voltage low	×	1	C	×	(See DTC P0882:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0883:00	Illumination	–	TCM power supply voltage high	×	1	C, O	×	(See DTC P0883:00 [TCM (GW6A-EL, GW6AX-EL)].)
P1728:00	–	–	Clutch slippage	×	2	C	×	(See DTC P1728:00 [TCM (GW6A-EL, GW6AX-EL)].)
P1738:00	–	Illumination/Indication	Automatic transaxle internal malfunction	×	2	C	×	(See DTC P1738:00 [TCM (GW6A-EL, GW6AX-EL)].)
P1784:00	–	Illumination/Indication	Hi cut valve stuck off/R-3-5 cut valve stuck on	×	2	C	×	(See DTC P1784:00 [TCM (GW6A-EL, GW6AX-EL)].)
P2530:00	–	–	Ignition switch stuck off	–	1	C	×	(See DTC P2530:00 [TCM (GW6A-EL, GW6AX-EL)].)
P2855:00	–	–	Low clutch hydraulic circuit/sealing malfunction	–	2	C	×	(See DTC P2855:00 [TCM (GW6A-EL, GW6AX-EL)].)
U0073:00	–	–	CAN system communication error (HS CAN)	×	1	C, O	×	(See DTC U0073:00, U0100:00, U0121:00, U0131:00, U0155:00, U0214:00 [TCM (GW6A-EL, GW6AX-EL)].)

Item	Unit/Condition	Test condition	Specification (Reference)	Output part name
DGP_SPD	KPH {MPH}	Displays vehicle speed with trailing wheels since the differential protection control operated due to excessive rotation difference between left/right drive wheels		–
ECT	°C {°F}	Displays ECT		ECT sensor
ECU_A	°C {°F}	Displays ECU internal temperature A		ECU internal temperature sensor A
ECU_B	°C {°F}	Displays ECU internal temperature B		ECU internal temperature sensor B
ECU_C	°C {°F}	Displays ECU internal temperature C		ECU internal temperature sensor C
GEAR_RA	Ratio	Selector lever in 1GR at D position	Approx. 3.5526	• Shift solenoid No.1 • Shift solenoid No.2 • Shift solenoid No.3 • Shift solenoid No.4
		Selector lever in 2GR at D position	Approx. 2.0228	
		Selector lever in 3GR at D position	Approx. 1.4522	
		Selector lever in 4GR at D position	Approx. 1.0000	
		Selector lever in 5GR at D position	Approx. 0.7084	
		Selector lever in 6GR at D position	Approx. 0.5993	
GEAR_SEL	1/2/3/4/5/6	Selector lever in 1GR at D position	1	• Shift solenoid No.1 • Shift solenoid No.2 • Shift solenoid No.3 • Shift solenoid No.4
		Selector lever in 2GR at D position	2	
		Selector lever in 3GR at D position	3	
		Selector lever in 4GR at D position	4	
		Selector lever in 5GR at D position	5	
		Selector lever in 6GR at D position	6	
HI_TEMP	–	Displays ATF high temperature mode determination amount. (ATF temperature 132 °C {270 °F} or more)		–
HTM_DIS	km {MILE}	Displays traveled distance after determining the ATF high temperature mode. (ATF temperature 132 °C {270 °F} or more)		–
LINEDES	kPa {kgf/cm ^{2}, psi}	Idle at P position after warm-up	Approx. 500 kPa {5.10 kgf/cm ^{2}, 72.5 psi}	–
LN_C_CLUTCH	kPa {kgf/cm ^{2}, psi}	Displays hydraulic control learning value data		–
LN_O_CLUTCH	kPa {kgf/cm ^{2}, psi}	Displays hydraulic control learning value data		–
LN_OV_SCOPE	–	Displays hydraulic control learning value data		–
LN_T_CLUTCH	kPa {kgf/cm ^{2}, psi}	Displays hydraulic control learning value data		–

Item	Unit/Condition	Test condition	Specification (Reference)	Output part name
OP_SW4	Off/On	Selector lever at P position	Off	Oil pressure switch No.4
		Selector lever at R position	Off	
		Selector lever at N position	Off	
		Selector lever in 1GR at D position	Off	
		Selector lever in 2GR at D position	Off	
		Selector lever in 3GR at D position	Off	
		Selector lever in 4GR at D position	On	
		Selector lever in 5GR at D position	On	
		Selector lever in 6GR at D position	On	
OP_SW4_OFF	kPa {kgf/cm ^{2}, psi}	After performing on-board diagnostic test mode	More than 50 kPa {0.51 kgf/cm ^{2}, 7.3 psi} (0 kPa {0 kgf/cm ^{2}, 0 psi} before performing on-board diagnostic test mode)	Oil pressure switch No.4
OP_SW4_ON	kPa {kgf/cm ^{2}, psi}	After performing on-board diagnostic test mode	Less than 260 kPa {2.65 kgf/cm ^{2}, 37.7 psi} (0 kPa {0 kgf/cm ^{2}, 0 psi} before performing on-board diagnostic test mode)	Oil pressure switch No.4
OSS	RPM	Vehicle stopped	0 RPM	Output shaft speed sensor
		Vehicle speed 30 km/h {19 mph} in 4GR at D position	Approx. 1000 RPM	
RPM	RPM	Displays engine speed		PCM
SC_STATE	Not Active/Active	The shift control execution condition is displayed.		–
SE_TYPE	No valid data/Bf_1st Af_2nd/Bf_1st Af_3rd/Bf_1st Af_4th/Bf_1st Af_5th/Bf_1st Af_6th/Bf_2nd Af_1st/Bf_2nd Af_3rd/Bf_2nd Af_4th/Bf_2nd Af_5th/Bf_2nd Af_6th/Bf_3rd Af_1st/Bf_3rd Af_2nd/Bf_3rd Af_4th/Bf_3rd Af_5th/Bf_3rd Af_6th/Bf_4th Af_1st/Bf_4th Af_2nd/Bf_4th Af_3rd/Bf_4th Af_5th/Bf_4th Af_6th/Bf_5th Af_1st/Bf_5th Af_2nd/Bf_5th Af_3rd/Bf_5th Af_4th/Bf_5th Af_6th/Bf_6th Af_1st/Bf_6th Af_2nd/Bf_6th Af_3rd/Bf_6th Af_4th/Bf_6th Af_5th	The gear shift position before shifting gears is displayed. **Note** **Bf indicates gear position before shifting** **Af indicates gear position after shifting** **(Example of display) Bf_1st Af_2nd** **• Bf_1st:Gear position at 1st gear before shifting** **• Af_2nd:Gear position at 2nd gear after shifting**		–
SHIFT_CTRL	DEFAULT/MANUAL/C_CONTROL/HIGH_TEMP/D_MANUAL/FAIL_SAFE	D position normal mode	DEFAULT	–
		M position manual mode	MANUAL	
		Cruise control (cruise control system)	C_CONTROL	
		Automatic transaxle protection mode (ATF high temperature mode)	HIGH_TEMP	
		D position direct mode	D_MANUAL	
		Fail-safe mode	FAIL_SAFE	
SS_ON-OFF	Off/On	On/off solenoid is off.	Off	On/off solenoid
		On/off solenoid is on.	On	

Item	Unit/Condition	Test condition	Specification (Reference)	Output part name
SSLU	A	Vehicle stopped at P position	Approx. 0 A	TCC control solenoid
		Vehicle stopped at R position	Approx. 0 A	
		Vehicle stopped at N position	Approx. 0 A	
		Under the following conditions: • Driving in D position 1GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	
		Under the following conditions: • Driving in D position 2GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	
		Under the following conditions: • Driving in D position 3GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	
		Under the following conditions: • Driving in D position 4GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	
		Under the following conditions: • Driving in D position 5GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	
		Under the following conditions: • Driving in D position 6GR • Accelerator pedal opening angle is approx. 10 %	Approx. 430 mA	

Item	Unit/Condition	Test condition	Specification (Reference)	Output part name
SSP	A	Vehicle stopped at P position	Approx. 980 mA	Pressure control solenoid
		Vehicle stopped at R position	Approx. 930 mA	
		Vehicle stopped at N position	Approx. 980 mA	
		Under the following conditions: • Driving in D position 1GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	
		Under the following conditions: • Driving in D position 2GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	
		Under the following conditions: • Driving in D position 3GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	
		Under the following conditions: • Driving in D position 4GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	
		Under the following conditions: • Driving in D position 5GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	
		Under the following conditions: • Driving in D position 6GR • Accelerator pedal opening angle is approx. 10 %	Approx. 400–800 mA	

Item	Unit/Condition	Test condition	Specification (Reference)	Output part name
TS_SE	No valid data/Bf_1st Af_2nd/Bf_1st Af_3rd/Bf_1st Af_4th/Bf_1st Af_5th/Bf_1st Af_6th/Bf_2nd Af_1st/Bf_2nd Af_3rd/Bf_2nd Af_4th/Bf_2nd Af_5th/Bf_2nd Af_6th/Bf_3rd Af_1st/Bf_3rd Af_2nd/Bf_3rd Af_4th/Bf_3rd Af_5th/Bf_3rd Af_6th/Bf_4th Af_1st/Bf_4th Af_2nd/Bf_4th Af_3rd/Bf_4th Af_5th/Bf_4th Af_6th/Bf_5th Af_1st/Bf_5th Af_2nd/Bf_5th Af_3rd/Bf_5th Af_4th/Bf_5th Af_6th/Bf_6th Af_1st/Bf_6th Af_2nd/Bf_6th Af_3rd/Bf_6th Af_4th/Bf_6th Af_5th	Displays gear position before/after shifting when AT slip occurred. Note Bf indicates gear position before shifting Af indicates gear position after shifting (Example of display) Bf_1st Af_2nd • Bf_1st:Gear position at 1st gear before shifting • Af_2nd:Gear position at 2nd gear after shifting		–
TS_VS	KPH {MPH}	Displays vehicle speed before/after shifting when AT slip occurred.		–
TSS	RPM	Vehicle stopped at D position	0 RPM	Turbine/input shaft speed sensor
		Engine speed 1,000 rpm at P position	900–1,100 RPM	
UPSHIFT_REV	Off/On	Shift-up due to engine request is not recorded. (Shift up request can be reset by clearing the DTCs.)	Off	–
		Shift-up due to engine request is recorded.	On	
VPWR	V	Displays TCM power supply voltage		• Battery • TCM
VSS	KPH {MPH}	Displays vehicle speed		Output shaft speed sensor

DTC P2530:00 [TCM (GW6A-EL, GW6AX-EL)]

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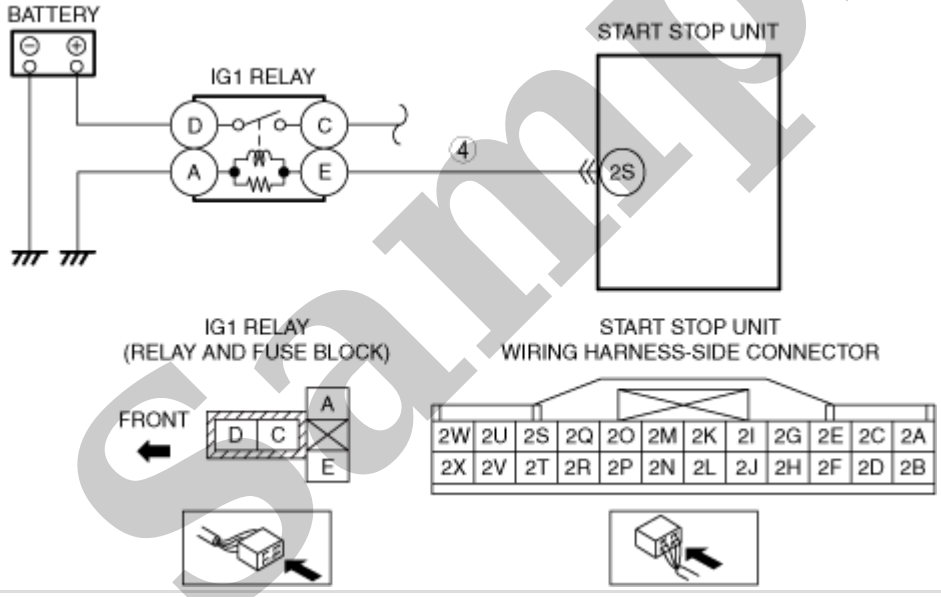
DTC P2530:00	Ignition switch stuck off
DETECTION CONDITION	• If the IG ON time count of the instrument cluster proceeds 5 s under the following condition: — Ignition switch signal off
FAIL-SAFE FUNCTION	Not applicable
POSSIBLE CAUSE	• Start stop unit malfunction — Ignition switch signal output stuck off • Wiring harness malfunction — Short or open signal in ignition switch — Ignition switch signal terminal (start stop unit terminal 2S) malfunction • Control valve body malfunction — Ignition switch signal terminal (start stop unit terminal 2S) pin deformity



Diagnostic procedure

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.

STEP	INSPECTION		ACTION
4	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 10 s or more under the following conditions: • Battery voltage: 8 V or more • Vehicle speed: 45 km/h {28 mph} or more • Perform the DTC inspection using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [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)].)
		No	DTC troubleshooting completed.

DTC P1738:00 [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 P1738:00	Automatic transaxle internal malfunction
DETECTION CONDITION	• Malfunction location cannot be determined based on combination of gear ratio malfunction and oil pressure switch pattern malfunction.
FAIL-SAFE FUNCTION	• Inhibits learning control. • Inhibits manual mode. • Inhibits neutral idle control. • Inhibits AAS.
POSSIBLE CAUSE	• ATF is less than specified value • Automatic transaxle internal malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY DTC OUTPUT STATUS • Are any the following DTCs displayed? — P0729:00, P0731:00, P0732:00, P0733:00, P0734:00, P0735:00, P0736:00	Yes	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)].)
		No	Go to the next step.
2	INSPECT ATF LEVEL • Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [GW6A-EL, GW6AX-EL].) • Is there any malfunction?	Yes	Adjust the ATF level to the specification, then go to the next step. (See AUTOMATIC TRANSAXLE FLUID (ATF) ADJUSTMENT [GW6A-EL, GW6AX-EL].)
		No	Go to Step 5.