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2013 MAZDA 2 OEM Service and Repair Workshop Manual

[Go to manual page](#)

DTC P1784:00 [TCM (GW6A-EL, GW6AX-EL)]

SM2898359

id0502o990520

DTC P1784:00	Hi cut valve stuck off/R-3-5 cut valve stuck on
DETECTION CONDITION	• Under the following conditions, hi cut valve stuck-off or R-3-5 cut valve stuck-on 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 neutral idle control.
POSSIBLE CAUSE	• ATF is less than specified value • Hi cut valve malfunction • R-3-5 cut valve malfunction • Clutch burnt
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

STEP	INSPECTION		ACTION
1	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, go to the next step.
		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	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)].)

DTC P073D:00 [TCM (GW6A-EL, GW6AX-EL)]

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DTC P073D:00	Neutral incorrect ratio
DETECTION CONDITION	• In P or N position, the following phenomenon occurs: — Speed ratio is 0.5 or less for 2 s while vehicle is stopped in P or N position.
FAIL-SAFE FUNCTION	Not applicable
POSSIBLE CAUSE	• Clutch stuck • Turbine/input shaft speed sensor malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY DTC OUTPUT STATUS • Are any the following DTCs displayed? — P0706:00, P707:00, P708:00, P0715:00, P0716:00, P0717:00	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)] .)
		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)] .)

DTC U0074:00 [TCM (GW6A-EL, GW6AX-EL)]

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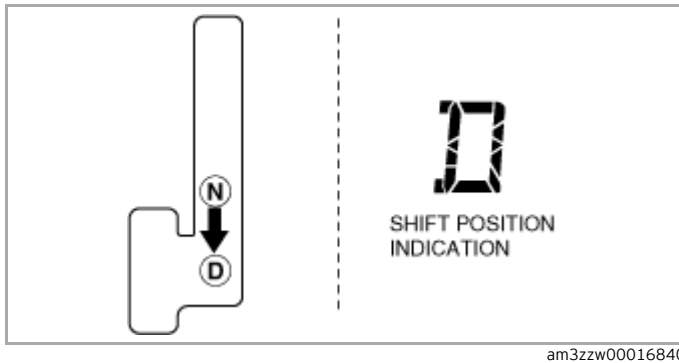
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DTC U0074:00	CAN system communication error (local CAN between TCM and PCM)
DETECTION CONDITION	- Under the following condition, a communication error (local CAN between TCM and PCM) occurs: - Battery voltage is 10 V or more.
FAIL-SAFE FUNCTION	- Set 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	- CAN communication line malfunction between TCM and PCM (local CAN between TCM and PCM) - PCM DTC is stored. - TCM malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	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, go to the next step.
		No	Go to the next step.

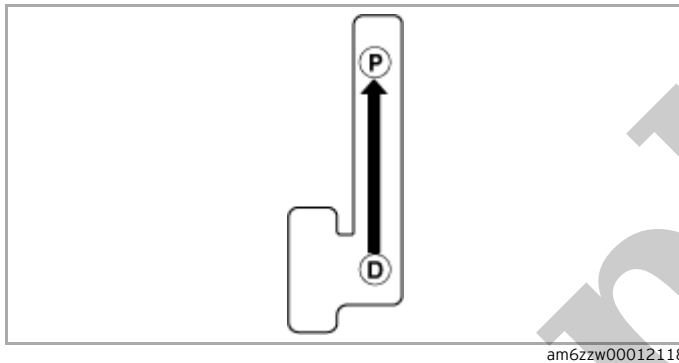
STEP	INSPECTION		ACTION
4	VERIFY DTC TROUBLESHOOTING COMPLETED • Clear the DTC using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) • Perform the following procedure to ensure that the DTC has been resolved: — Switch the ignition ON (engine off or on). • Perform the DTC inspection using the M-MDS. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) • Is the same Pending DTC present?	Yes	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL/INSTALLATION [GW6A-EL, GW6AX-EL] .)
		No	Go to the next step.
5	VERIFY NO DTC IS PRESENT • 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.



Note

- Approx. 30 s is required until the shift position indication flashes. In addition, shift shock occurs a few times during stand-by.

(5) After the shift position indication flashes 3 times, shift the selector lever to the P position.



10. Release the brake pedal.

11. Perform the DTC inspection using the M-MDS. (See **ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)]**.)

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection. (See **ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)]**.)

Repair order form and malfunction symptom check sheet

Date/time	Repair order	Check with customer	Diagnosis	Repair	Explanation to customer
In-charge					

Customer statement (When? What? What time(s)? Where it occurs. Warning light illumination? Can anyone replicate problem?)

Vehicle body number:	Registration date:	Date of malfunction occurrence:	Odometer reading	km (mile)
Engine (SOHC/DOHC/RE/DE) (Cab /EGL/ Turbo/ Miller cycle/ LPG/Direct injection)				
Transmission (MT/HAT/EC-AT/CVT)				

Environmental conditions					Driving conditions					Pattern of use				
Weather	Ambient temp.	Drive scenario	Grade	Occurrence frequency	Fuel	Warm-up condition	Driving operation	Driving posture	Load	Accelerator opening angle	Shift position	Eng RPM	Vehicle speed	Pattern of use
Sunny Cloudy Rain Snow High wind Wind gusts N/A Other	-10°C (14°F) or less -10~10°C (14~32°F) 10~15°C (50~59°F) 15~20°C (59~68°F) 20~25°C (68~77°F) 25~30°C (77~86°F) 30~35°C (86~95°F) 35~40°C (95~104°F) 40~45°C (104~113°F) 45°C (113°F) or more N/A Other	Departure Traffic jam Standard city street Suburban Highway Unpaved road Dry road surface Wet road surface Snow bound road Icy road Other	Flat Upgrade Downgrade Grade N/A Other	Occasional 2-3 times/day 4-5 times/day Very frequently Once/week 2-3 times/week 4-5 times/week Once/month 2-3 times/month 4-5 times/month Other	Regular High Oct. Diesel LPG Other Fuel gauge F E	Cold Hot/warm Fully warmed N/A Other Water temp. gauge H C	When starting Accelerating Rising after (min after stopping) Idling Racing Accel. from stop Normal driving Deceleration Braking Soft braking Clutch disengage Sudden accel. Light accel. Shifting (km/h (mph) → km/h (mph)) Other	Vehicle stopped Straight driving Reversing Right turn Left turn Other	Headlights on Exhaust lights on A/C (C/F) A/C (F/C) Blower: 1 step Blower: 2 steps Blower: 3 steps Blower: 4 steps Power steering lock to lock Rear defrost on Wipers on Audio on Other	0/8 1/8 2/8 3/8 4/8 5/8 6/8 7/8 8/8	1 2 3 4 5 6 N R P R N D S L H M (km/h (mph))	Idle Less than 1,000 Less than 1,500 Less than 2,000 Less than 2,500 Less than 3,000 Less than 3,500 Less than 4,000 Less than 4,500 Less than 5,000 Less than 5,500 Less than 6,000 Less than 6,500 7,000 or more	5 km/h (3 mph) 10 km/h (6 mph) 20 km/h (12 mph) 30 km/h (19 mph) 40 km/h (25 mph) 50 km/h (31 mph) 60 km/h (37 mph) 70 km/h (43 mph) 80 km/h (50 mph) 90 km/h (56 mph) 100 km/h (62 mph) 110 km/h (68 mph) 120 km/h (74 mph) 130 km/h (80 mph) 140 km/h (87 mph) 150 km/h (93 mph) 160 km/h (99 mph)	Work Minor use Trips Other Between ENG. start → Stop Distance, time Approx. km (mile) Hrs. No. of occupants Load condition kg Other

OTC, measured data (fuel pressure, intake manifold vacuum, throttle sensor, electronic brake, air flow, electronic valve, other), maintenance, repair, accident history, installation of commercial devices

Reading DTCs Procedure

CMDTC self test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TCM".

Note

- Freeze frame data/snapshot data appears at the top of the help screen when the displayed DTC is selected.

Freeze frame data

- The freeze frame data consists of data for vehicle and transaxle control system operation conditions when malfunctions in the transaxle control system are detected and stored in the TCM.
- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.

Snapshot data

- The data for all DTCs currently detected is stored.

Recorded DTC timing

- For DTCs with one drive cycle, data is recorded during the malfunction determination period.
- For DTCs with two drive cycles, data is recorded during non-determination (1st diagnosis) periods.

3. Then, select the "Retrieve CMDTCs" and perform procedures according to the directions on the M-MDS screen.
4. Verify the DTC according to the directions on the screen.

— If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

5. After completion of repairs, clear all DTCs stored in the TCM. (See [Clearing DTCs Procedures.](#))

KOEO self test

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TCM".

3. Then, select the "KOEO On Demand Self Test" and perform procedures according to directions on the M-MDS screen.
4. Verify the DTC according to the directions on the M-MDS screen.

— If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

5. After completion of repairs, clear all DTCs stored in the TCM. (See [Clearing DTCs Procedures.](#))

Freeze frame data table

—: Not applicable

Freeze frame data item	Unit	Description	Corresponding PID/DATA monitor item
LOAD	%	Calculated engine load	—

9. Verify that no DTCs are displayed.

Sample

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
P0732:00	–	–	2GR incorrect ratio	×	2	C	×	(See DTC P0732:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0733:00	–	–	3GR incorrect ratio	×	2	C	×	(See DTC P0733:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0734:00	–	–	4GR incorrect ratio	×	2	C	×	(See DTC P0734:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0735:00	–	–	5GR incorrect ratio	×	2	C	×	(See DTC P0735:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0736:00	–	Illumination/Indication	Gear reverse incorrect ratio	×	2	C	×	(See DTC P0736:00 [TCM (GW6A-EL, GW6AX-EL)].)
P073D:00	–	–	Neutral incorrect ratio	–	2	C	×	(See DTC P073D:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0741:00	Illumination	Illumination/Indication	TCC control solenoid stuck off	×	2	C	×	(See DTC P0741:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0743:00	Illumination	Illumination/Indication	TCC control solenoid circuit malfunction	×	1	C, O	×	(See DTC P0743:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0746:00	Illumination	Illumination/Indication	Pressure control solenoid stuck off	×	2	C	×	(See DTC P0746:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0748:00	Illumination	Illumination/Indication	Pressure control solenoid circuit malfunction	×	1	C, O	×	(See DTC P0748:00 [TCM (GW6A-EL, GW6AX-EL)].)
P0751:00	Illumination	Illumination/Indication	Shift solenoid No.1 stuck off	×	2	C	×	(See DTC P0751:00 [TCM (GW6A-EL, GW6AX-EL)].)