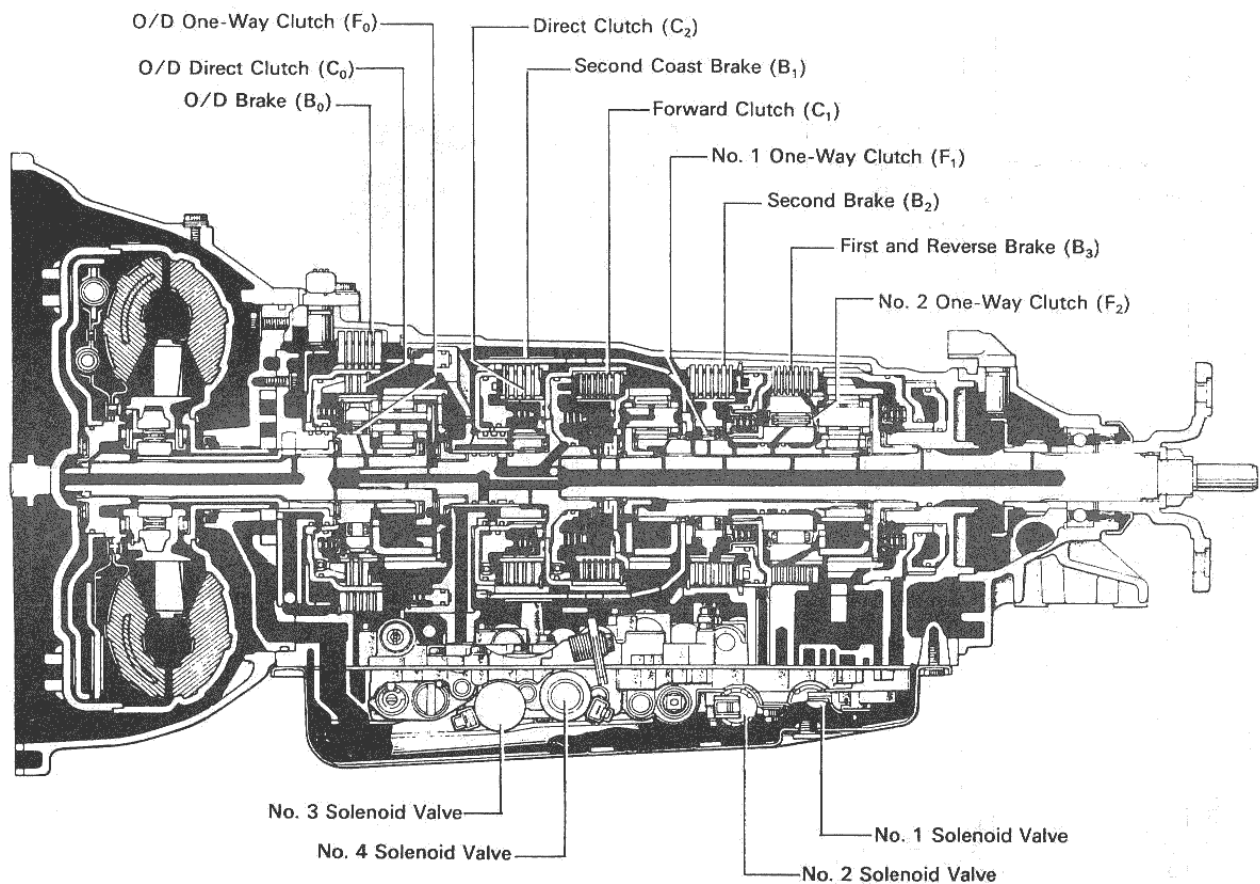


Toyota Soarer / SC400 Automatic Transmission Diagnostics



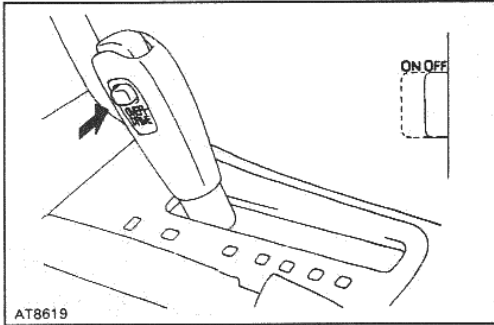
The 1UZFE (V8) Automatic transmission trouble codes are accessed via the “Normal” engine diagnostics. (IE: TE1 and E1 connected together.)

The following procedures show how to enter the diagnostics modes for the Automatic transmissions used in the SC300 and SC400. (The TT procedure is identical!)

Since the transmission also relies on a throttle position sensor, brakes and the selected gear, a test procedure for those items is also shown below. (See “Check Terminal TT diagnostics”.)

DIAGNOSIS SYSTEM

The electronically controlled transmission system has built-in self-diagnostic functions. If the malfunction occurs in the system, the ECM stores the malfunction code in memory and the O/D OFF (Overdrive OFF) indicator light blinks to inform the driver. The diagnostic trouble code stored in memory can be read out by the following procedure.



O/D OFF INDICATOR LIGHT INSPECTION AX098-0E

1. Turn the ignition switch to ON.
2. Check if the O/D OFF indicator light lights up when the O/D main switch is pushed out to OFF and goes off when the O/D main switch is pushed in to ON.

HINT:

- If the O/D OFF indicator light does not light up or stay on all the time, carry out the check for "O/D OFF Indicator Light Circuit" on page AT-110.
- If the O/D OFF indicator light blinks, a trouble code is stored in the ECM memory.

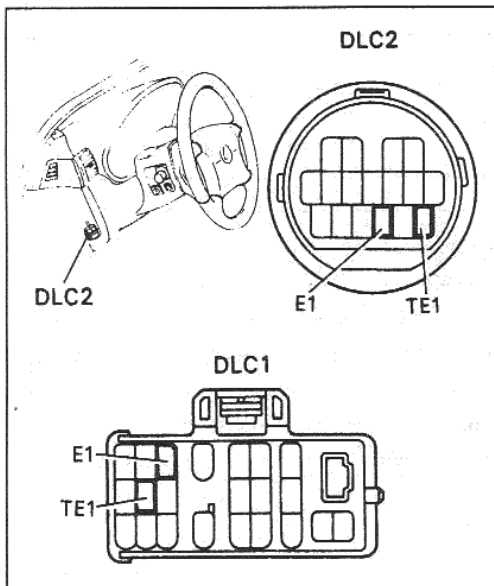


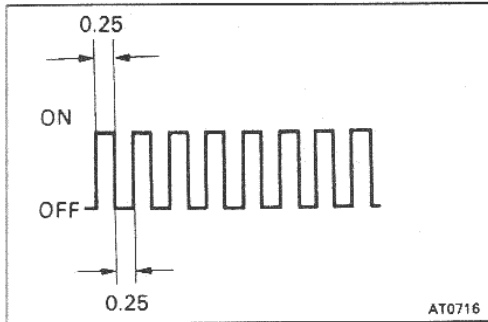
Figure 1

DIAGNOSTIC TROUBLE CODE CHECK AX0A3-0E

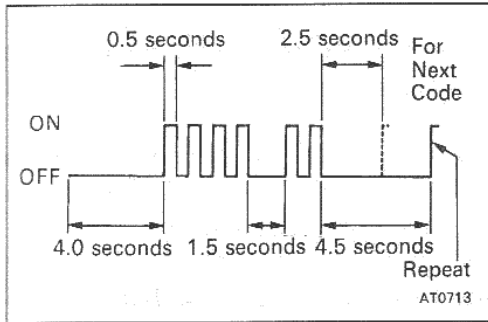
1. Turn the ignition switch ON, but do not start the engine.
2. Push in the O/D main switch to ON.
HINT: Warning and diagnostic trouble codes can be read only when the O/D main switch is ON. If it is OFF, the O/D OFF indicator lights up continuously and will not blink.

3. Using SST, connect terminals TE1 and E1 of the DLC 2 or DLC1.
SST 09843-18020

Figure 1 Automatic Transmission Diagnosis Procedure (part 1)



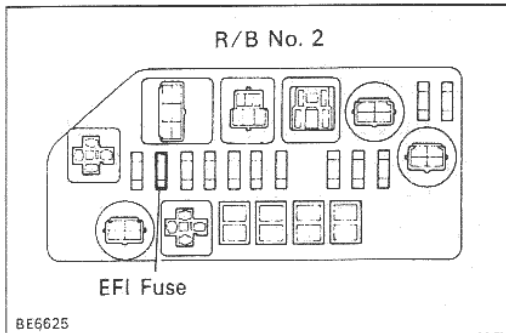
4. Read the diagnostic trouble code indicated by the number of times the O/D OFF indicator light blinks. HINT: If the system is operating normally, the light will blink 2 times per second.



The malfunction code is indicated as shown in the illustration at left (Diagnostic trouble code "42" is shown as an example).

HINT: When 2 or more trouble codes are stored in memory, the lower-numbered code is displayed first. If no diagnostic trouble code is output, or if a diagnostic trouble code is output even though no diagnostic trouble code output operation is performed, check the TE1 terminal circuit on page AT-116.

Figure 2 Automatic Transmission Diagnosis Procedure (part 2)



CANCELING DIAGNOSTIC TROUBLE CODE AX09T-00

After repair of the trouble area, the diagnostic trouble code retained in the ECM memory must be canceled out by removing the EFI fuse for 10 seconds or more, with the ignition switch off.

Check that the normal code is output after connecting the fuse.

Figure 3 Cancellation of Automatic Transmission Trouble Codes.

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the diagnostic trouble code check, check the circuit listed for that code in the table below and proceed to the page given.




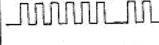


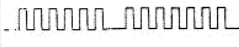
DTC No.	Blinking Pattern	Circuit	DTC Detection Condition
42	 BE3934	No.1 vehicle speed sensor	All conditions below are detected 500 times or more continuously. (2 trip detection logic)*3 (a) No No.1 vehicle speed sensor signal in 16 No.2 vehicle speed sensor signal pulses. (b) Vehicle speed: 5.6 MPH (9 km/h) or more for 4 secs. or more (c) Park/neutral position switch: OFF (Other than P to N position)
46	 BE3934	No.4 solenoid valve	All conditions below detected for 1 sec. or more. (2 trip detection logic)*3 (a) ECM output duty signal to No.4 solenoid in 90% or higher duty ratio. (b) Current to No.4 solenoid: 330 ± 100 mA or less
61	 BE3936	No.2 vehicle speed sensor	All conditions below are detected 500 times or more continuously. (2 trip detection logic)*3 (a) No No.2 vehicle speed sensor signal in 4 No.1 vehicle speed sensor signal pulses. (b) Vehicle speed: 5.6 MPH (9km/h) or more for 4 secs.or more (c) Park/neutral position switch: OFF (Other than P or N position)
62	 BE3936	No.1 solenoid valve	(1) Solenoid resistance of 8 Ω or less is detected (*) 8 times or more when No.1 solenoid is energized. (2) Solenoid resistance of 100 kΩ or more is detected (*) 8 times or more when No.1 solenoid is not energized. (*) If the above failures are detected less than 8 times, the ECM memorizes the malfunction code but the O/D OFF indicator light does not blink.
63	 BE3936	No.2 solenoid valve	(1) Solenoid resistance of 8 Ω or less is detected (*) 8 times or more when No.2 solenoid is energized. (2) Solenoid resistance of 100 kΩ or more is detected (*) 8 times or more when No.2 solenoid is not energized. (*) If the above failures are detected less than 8 times, the ECM memorizes the malfunction code but the O/D OFF indicator light does not blink.
64	 BE-3936	No.3 solenoid circuit	All conditions below are detected for 1 sec. or more. (2 trip detection logic)*3 (a) ECM outputs duty signal to No.4 solenoid in 90% or higher duty ratio. (b) Current to No.3 solenoid: 450 ± 100 mA or less
67	 BE3936	O/D direct clutch speed sensor	All conditions below are detected for 4 secs. or more. (2 trip detection logic)*3 (1) Gear position: 1st, 2nd or 3rd (b) T/M input shaft RPM: 100 rpm or more (c) T/M output shaft RPM: less than 300 rpm (d) Park/neutral position switch: OFF (Other than P or N position)

Figure 4 1UZFE Automatic Transmission trouble codes.

The following codes are specific to the SC300 automatic transmission!

DIAGNOSTIC TROUBLE CODE CHART

If a malfunction code is displayed during the diagnostic trouble code check, check the circuit listed for that code in the table below and proceed to the page given.






DTC No.	Blinking Pattern	Circuit	Diag. Trouble Code Detection Condition
42	 BE3934	No.1 vehicle speed sensor	All conditions below are detected 500 times or more continuously. 2 trip detection logic*3 (a) No No.1 vehicle speed sensor signal in 16 No.2 vehicle speed sensor signal. (b) Vehicle speed: 5.6 MPH (9 km/h) or more for 4 secs. or more (c) Park/neutral position switch: OFF (Other than P or N position)
61	 BE3936	No.2 vehicle speed sensor	All conditions below are detected 500 times or more continuously. 2 trip detection logic*3 (a) No No.2 vehicle speed sensor signal in 4 No.1 vehicle speed sensor signal. (b) Vehicle speed: 5.6 MPH (9 km/h) or more for 4 secs. or more (c) Park/neutral position switch: OFF (Other than P or N position)
62	 BE3936	No. 1 solenoid valve	(a) Solenoid resistance of 8 Ω or less is detected (*) 8 times or more when No. 1 solenoid is energized. (b) Solenoid resistance of 100 kΩ or more is detected (*) 8 times or more when No. 1 solenoid is not energized. (*) If the above failures are detected less than 8 times, the ECM memorizes the malfunction code but the O/D OFF indicator light does not blink.
63	 BE3936	No. 2 solenoid valve	(a) Solenoid resistance of 8 Ω or less is detected (*) 8 times or more when No. 2 solenoid is energized. (b) Solenoid resistance of 100 kΩ or more is detected (*) 8 times or more when No. 2 solenoid is not energized. (*) If the above failures are detected less than 8 times, the ECM memorizes the malfunction code but the O/D OFF indicator light does not blink.
64		No. 3 solenoid valve	(a) Solenoid resistance is 8 Ω or lower (short circuit) when solenoid energized. (b) Solenoid resistance is 100 kΩ or higher (open circuit) when solenoid is not energized. (*) ECM memorizes diag. trouble code 64 if above (a) or (b) condition is detected once or more, but ECM does not start O/D OFF indicator light blinking.

Figure 5 SC300 (3 litre) Automatic Transmission trouble codes.

Obviously, the SC300 auto transmission is NOT identical to the SC400 transmission. Where the TT transmission fits in is anybody's guess.

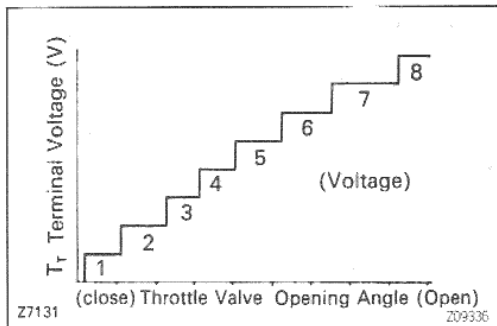
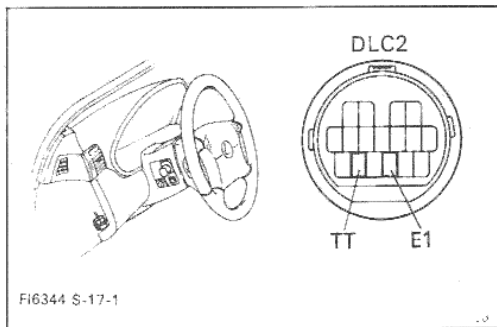
There are no electronic diagnostics for the manual transmission (SC300). This is curious, as monitoring of the vehicle speed sensor/s is a component that would have been testable. (And, is a relatively common source of trouble!)

The following diagnostic applies to the SC400, SC300, and the Twin Turbo Soarers. It tests most of the possible switch inputs to the automatic ECU, as well as the sub throttle position sensor.

CHECK TERMINAL TT OUTPUT VOLTAGE

When a voltmeter is connected to the DLC1, the following items can be checked.

1. Throttle position sensor signal
2. Brake signal
3. Shift position signal



1. VOLTMETER CONNECTION

Connect the positive (+) probe of the voltmeter to terminal TT and the negative (-) probe to terminal E1 of the DLC2.

HINT: If a voltmeter with small internal resistance is used, the correct voltage will not be indicated, so use a voltmeter with an internal resistance of at least 10 k Ω /V.

2. TURN IGNITION SWITCH TO ON (DO NOT START THE ENGINE)

3. CHECK THROTTLE POSITION SENSOR SIGNAL

Check if the voltage changes from approximately 0 V to approximately 8 V when the accelerator pedal is gradually depressed from the fully closed position.

4. CHECK BRAKE SIGNAL (LOCK-UP CUT SIGNAL)

- (a) Open the throttle valve fully to apply approximately 8 V to terminal TT.
- (b) In this condition, check terminal TT voltage when the brake pedal is depressed and released.

TT terminal voltage:

- 0 V (When brake pedal is depressed)
- 8 V (When brake pedal is released)

5. START ENGINE

6. CHECK SHIFT POSITION SIGNAL

(VEHICLE SPEED ABOVE 60 KM/H OR 37 MPH)

Check up-shifting together with terminal TT voltage. HINT: Check for light shocks from up-shifting and for changes in the tachometer.

Gear Position	Terminal TT output voltage
1st Gear	Below 0.5 V
2nd Gear	1.5~2.6 V
3rd Gear	3.5~4.6 V
3rd Lock-up	4.5~5.9 V
O/D	5.5~6.9 V
O/D Lock-up	6.5~7.9 V

Figure 6 Terminal TT diagnostics.