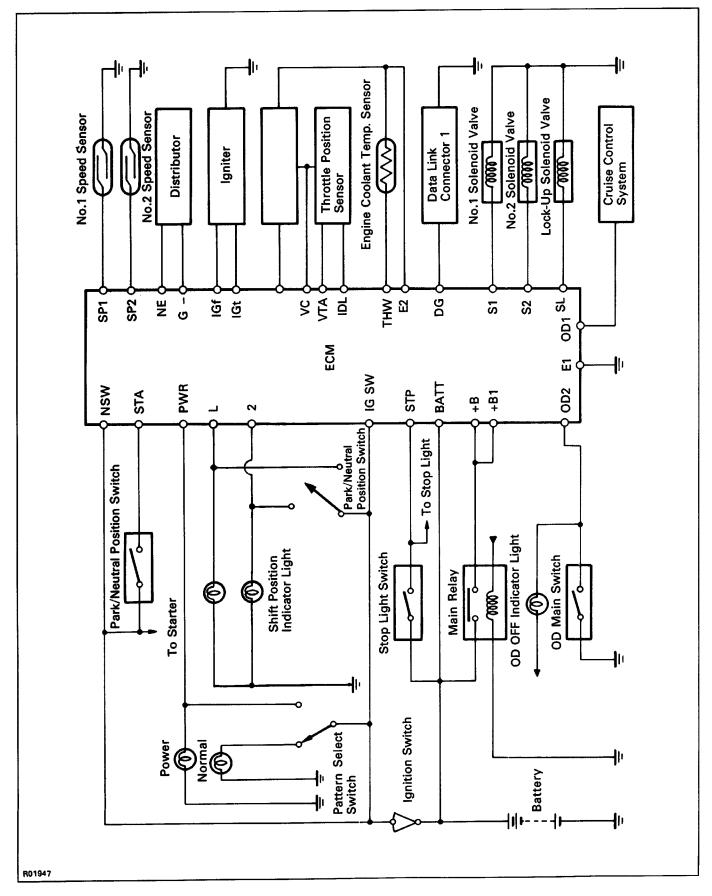
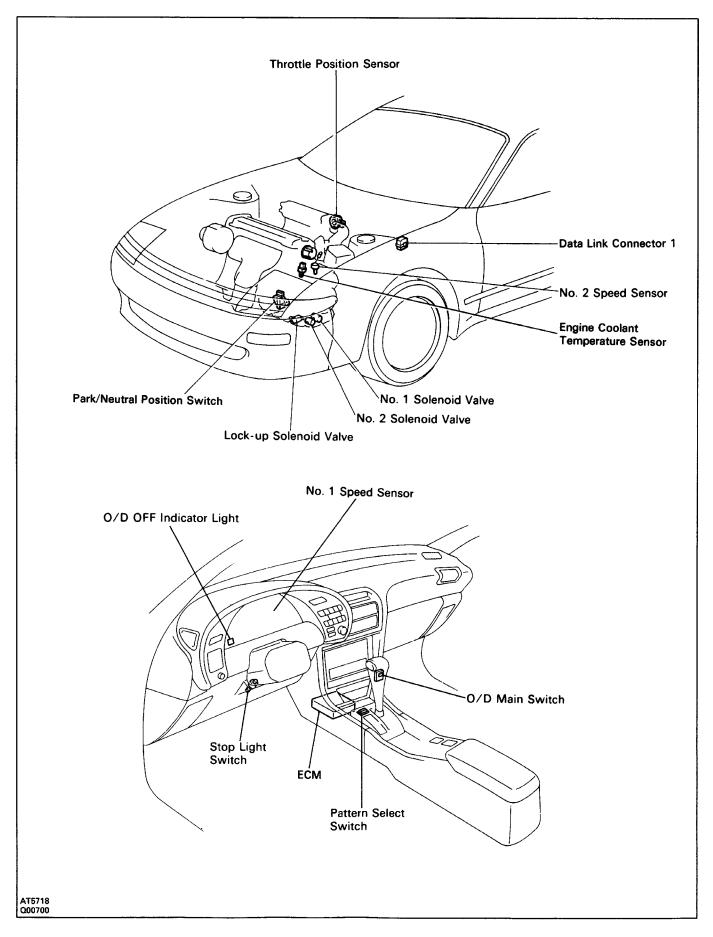
Electronic Control System (A241 E) ELECTRONIC CONTROL CIRCUIT

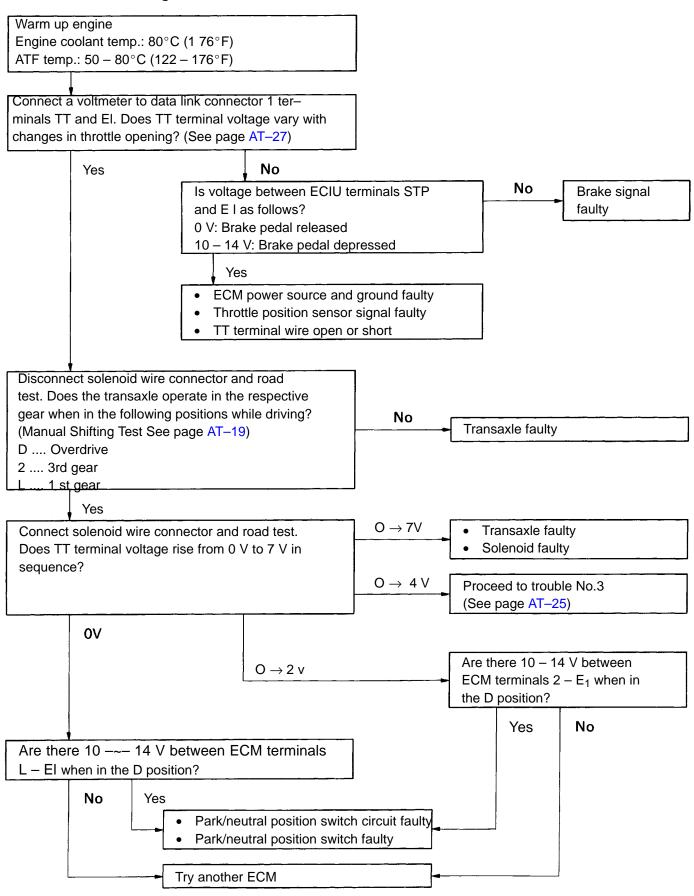


ELECTRONIC CONTROL COMPONENTS

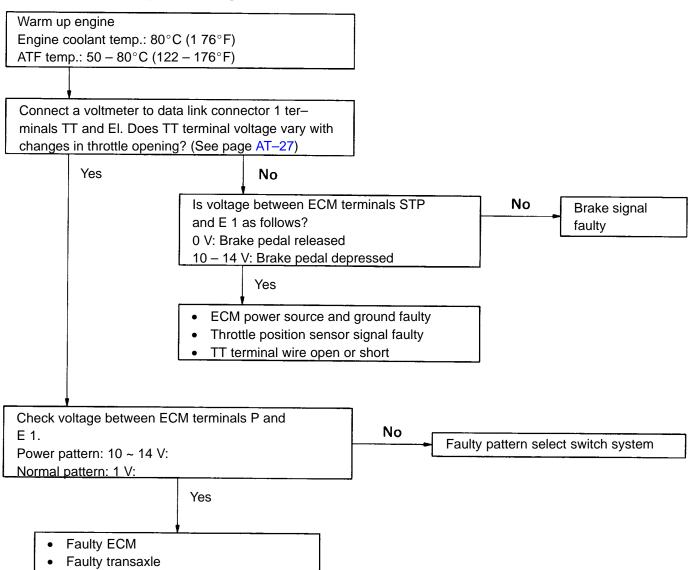


TROUBLESHOOTING FLOW-CHART

Trouble No.1 No shifting

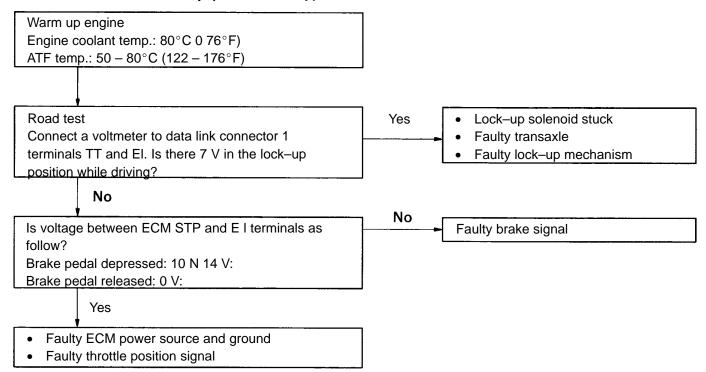


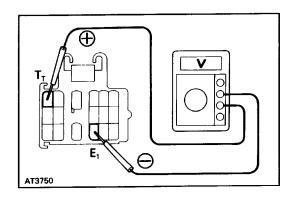
Trouble No.2 Shift point too high or too low



Trouble No. 3 No up-shift to overdrive (After warm-up) Road test while shifting manually with solenoid Faulty transaxle wire connector disconnected. Is there overdrive up-shift in the D position when shifting from L to 2 to D? (See page AT-19) Yes Connect solenoid wire connector, and while $0 \rightarrow 7 \text{ V}$ Faulty transaxle Faulty solenoid driving does TT terminal voltage rise from 0 V to 7 V i n sequence? $0 \to 4 \ V$ 0 V Are there 10 – 14 V between $0 \rightarrow 2 V$ ECM terminals 2 and E₁ when in the D position? Yes No Are there 10 ~ 14 V between ECM terminals L and E₁ when in the D position? No Yes Faulty park/neutral position switch circuit Faulty park/neutral position switch Try another ECM No Is voltage between terminals O D2 and E, as Faulty 0/D switch harness follows? Faulty O/D swtich O/D switch turn ON: 10 ~14 v: 0/D switch turn OFF: 0 V: Yes Yes Is voltage between terminals 4D, and E₁ as Try another ECM follows? Approx. 5 V No Yes Is voltage between ECM terminals OD₁ and Faulty cruise control ECU El normal with the cruise control ECU connector pulled out? No Faulty ECM Faulty cruise control wire harness

Trouble No.4 No lock-up (After warm-up)





Solution of the state of the st

INSPECTION OF TT TERMINAL VOLTAGE

- 1. INSPECT THROTTLE POSITION SENSOR SIGNAL
 - (a) Turn the ignition switch to ON. Do not start the engine.
 - (b) Connect a voltmeter to terminals TT and E₁.

(c) While slowly depressing the accelerator pedal, check that TT terminal voltage rises in sequence. If the voltage does not change in proportion to the throttle opening angle, there is a malfunction in the throttle position sensor or circuit.

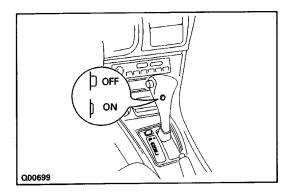
2. INSPECT BRAKE SIGNAL

- (a) Depress the accelerator pedal until the TT terminal indicates 6V.
- (b) Depress the brake pedal and check the voltage reading from the TT terminal.

Brake pedal depressed 0 V

Brake pedal released6 V

If not as indicated, there is a malfunction in either the stop light switch or circuit.



T _τ terminal (V)	Gear position	
0	1st	
2	2nd	
4	3rd	
6	0/D	
7	O/D Lock up	

3. INSPECT EACH UP-SHIFT POSITION

(a) Warm up the engine.

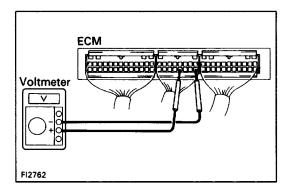
Engine coolant temperature: 80°C (176°F)

- (b) Turn the 0/D switch to "ON".
- (c) Place the pattern select switch in "Normal" and the shift lever into the D position.
- (d) During a road test (above 10 km/h or6 mph) check that voltage at the TT terminal is as indicated below for each up–shift position.

If the voltage rises from 0 V to 7 V in the sequence shown, the control system is okay.

The chart on the left shows the voltmeter reading and corresponding gears.

HINT: Determine the gear position by a light shock or change in engine rpm when shifting.

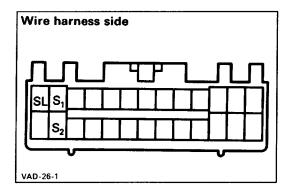


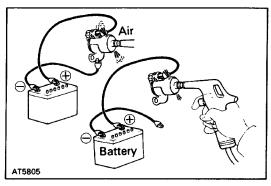
INSPECTION OF ELECTRONIC CONTROL COMPONENTS

- 1. INSPECT VOLTAGE OF ECM CONNECTOR
 - (a) Turn on the ignition switch.
 - (b) Do not disconnect ECM connector. Measure the voltage at each terminal.

131211109 262524232 Vd-64-2	2 S ₁ SL 2 8 7 6 5 4 3 2 1 8 2 2 1 2 0 1 9 1 8 1 7 1 6 1 5 1 4 1 6 SP ₂ S ₂ E ₁	T _T THW VC 7 6 5 4 3 2 1 15 14 13 12 1 1 1 0 9 TE ₁ IDL VTA E ₂	SPD OD ₂ B/K BATT 1110987654321 2221201918171615141312 NSW OD ₁ +B ₁ +B			
Terminal	Measuring _cond	dition	Voltage (V)			
S ₁ – E ₁	Ignition switch turned ON		10–14			
S ₂ , SL – E ₁	Ignition switch turned ON		10–14			
P – E ₁	PW R pattern		10–14			
Γ Εη	NORM pattern		Under 1			
ST P - E ₁	Brake pedal is depressed		10–14			
317-61	Brake pedal is released		Under 1			
THW – E ₂	Engine coolant temp. 80°C (1 76°F	·)	0.3–0.8			
IDL – E ₂	Throttle valve fully closed		Under 0.5			
IDL – E ₂	Throttle valve open		4.5–5.5			
\/TA	Throttle valve fully closed		Under 0.5			
VTA – E ₂	Throttle valve open		4.5–5.5			
VC – E ₂			4.5–5.5			
OD ₂ – E ₁	· · · <u></u>	10–14				
0/D main switch turned ON		10–14				
OD ₂ – E ₁ 0/D main switch turned OFF		Under 1				
000 5	Cruise control	Standing still	Under 1			
SPD-E₁	main switch OFF	Vehicle moving	Repeat : 0 ↔ 10 - 4			
05 -	Standing still		Under 1			
SP ₂ – E ₁ Vehicle moving		Repeat : 0 ↔ 4.5 – 5.5				

Terminal	Measuring condition	Voltage (V)		
NSW - E ₁	P, N position	10–14		
NSW - E ₁	R, D, 2, L position	Under 1		
2 – E ₁	2 position	10–14		
2-51	Except 2 position	Under 1		
L – E ₁	L position	10–14		
L - E ₁	Except L position	Under 1		
+B, +B – E ₁	Ignition switch turned ON	10–14		
BATT – E ₁	All conditions	10–14		





2. INSPECT SOLENOIDS

- (a) Disconnect the connector from ECM.
- (b) Measure the resistance between S_1 S_2 , S_L and body ground.

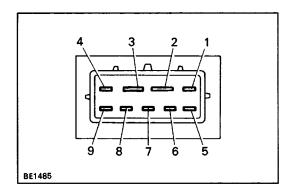
Resistance: $11 - 15\Omega$

(c) Apply battery positive voltage to each terminal. Check that an operation noise can be heard from the solenoid.

3. CHECK SOLENOID SEALS

If there is foreign material in the solenoid valve, there will be no fluid control even with solenoid operation. Check No.1, No.2 and lock—up solenoid valves.

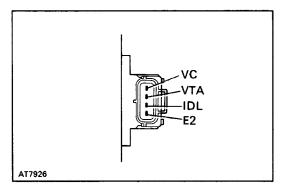
- Applying 490 kPa (5 kgf/cm², 71 psi) of compressed air, check that the solenoid valves do not leak the air.
- When battery positive voltage is supplied to the solenoids, check that solenoid valves open.

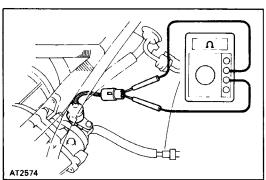


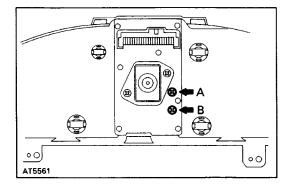
4. INSPECT PARK/NEUTRAL POSITION SWITCH

Using an ohmmeter, check the continuity of the terminals for each switch position shown in the table below.

Terminal Range	2	3	6	1	5	7	8	9	4
Р	0-	0	0-	φ					
R			0-		9				
N	0-	0	0-			-0			
D			0-				0		
2			0-					0	
L			0-						9







5. INSPECT THROTTLE POSITION SENSOR

Using an ohmmeter, check the resistance between each terminal.

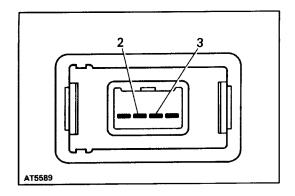
Termina	Throttle valve condition	Resistance (kΩ)	
IDL – E2	Fully closed	0-0.1	
	Open	Infinity	
vc – E2	_	3–7	
Vt,a – E2	Fully closed	0.2-0.8	
V 1,a – E2	Fully open	3.2–10	

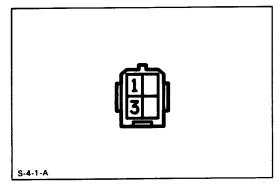
6. INSPECT NO.2 SPEED SENSOR

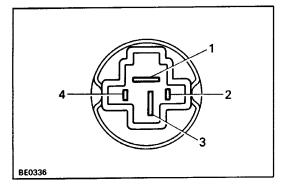
- (a) Remove the air cleaner assembly.
- (b) Jack up a front wheel on one side.
- (c) Connect an ohmmeter between the terminals.
- (d) Spin the wheel and check that the meter needle deflects from 0 to ∞ Ω .

7. INSPECT NO.1 SPEED SENSOR IN COMBINATION METER

- (a) Remove the combination meter.
- (b) Connect an ohmmeter between terminals A and B.
- (c) Revolve the meter shaft and check that the meter needle repeatedly deflects from 0Ω to ∞ Ω .







8. INSPECT PATTERN SELECT SWITCH

Inspect that there is continuity between terminals 2 and 3.

HINT: As there are diodes inside, be careful of the tester probe polarity.

Terminal	2	3
Pattern	-	
POWER	0	9
NORMAL		

9. INSPECT O/D MAIN SWITCH

Inspect that there is continuity between terminals 1 and 3.

S/W	Terminal	1	3
position			
ON			
OFF		0	0

10. INSPECT STOP LIGHT SWITCH

Inspect that there is continuity between terminals 1 and 3.

Terminal S/W position	1	3
OFF (Release brake pedal)	•	
ON (Depress brake pedal)	0—	- 0