

Tuesday, September 11, 2012  
6:18 PM

# Idle Control System

## System Troubleshooting Guide

**NOTE:**

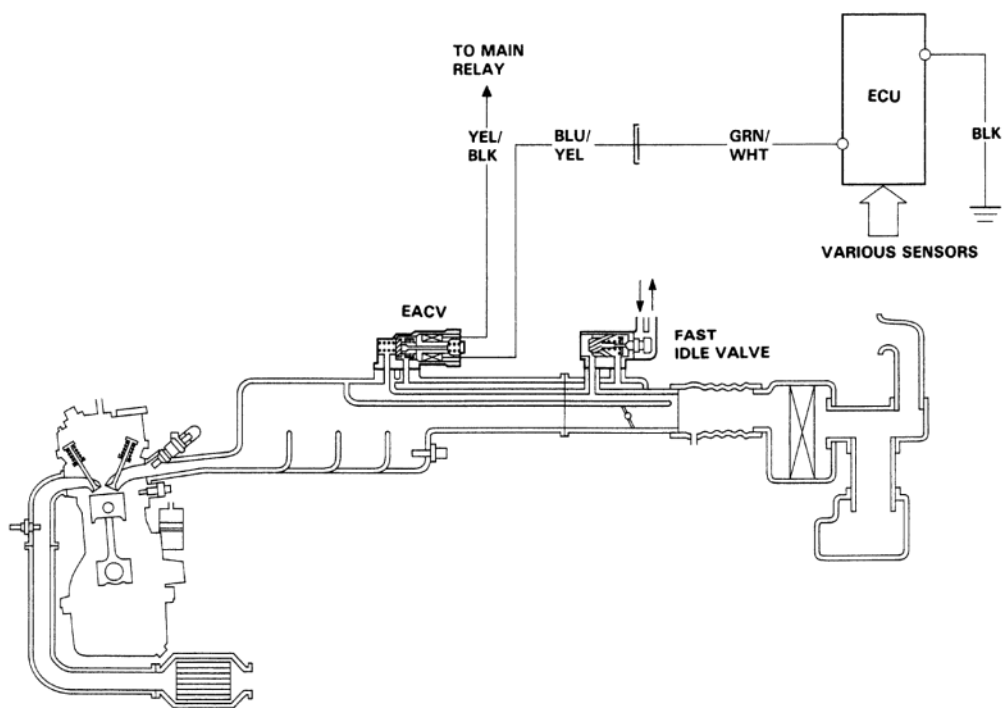
- Across each row in the chart, the sub systems that could be sources of a symptom are ranked in the order they should be inspected, starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next system ②, etc.
- If the idle speed is out of specification and the Check Engine light does not blink CODE 14, go to inspection described on page 11-85.

PAGE	SUB SYSTEM	IDLE ADJUSTING SCREW	EACV	AIR CONDITIONING SIGNAL	ALTER-NATOR FR SIGNAL	A/T SHIFT POSITION SIGNAL	M/T CLUTCH SWITCH SIGNAL	STARTER SWITCH SIGNAL	BRAKE SWITCH SIGNAL	P/S OIL PRESSURE SWITCH SIGNAL	FAST IDLE VALVE	HOSES AND CONNECTIONS
	SYMPTOM	102	86	88	90	92	94	96	98	100	101	—
	DIFFICULT TO START ENGINE WHEN COLD										①	
	WHEN COLD FAST IDLE OUT OF SPEC (1,000–2,000 rpm)	③	②								①	
	ROUGH IDLE		②									①
	WHEN WARM RPM TOO HIGH	③	①							③	②	③
WHEN WARM RPM TOO LOW	Idle speed is below specified rpm (no load)	②	①									
	Idle speed does not increase after initial start up.		①									
	On models with automatic transmission, the idle speed drops in gear		②			①						
	Idle speeds drops when air conditioner is ON		②	①								
	Idle speed drops when steering wheel is turning		②							①		
	Idle speed fluctuates with electrical load		②		③							①
FREQUENT STALLING	WHILE WARMING UP	②	①									
	AFTER WARMING UP	①	②									
	FAILS EMISSION TEST											①



## System Description

The idle speed of the engine is controlled by the Electronic Air Control Valve (EACV). The valve changes the amount of air bypassing into the intake manifold in response to electric current sent from the ECU. When the EACV is activated, the valve opens to maintain the proper idle speed.

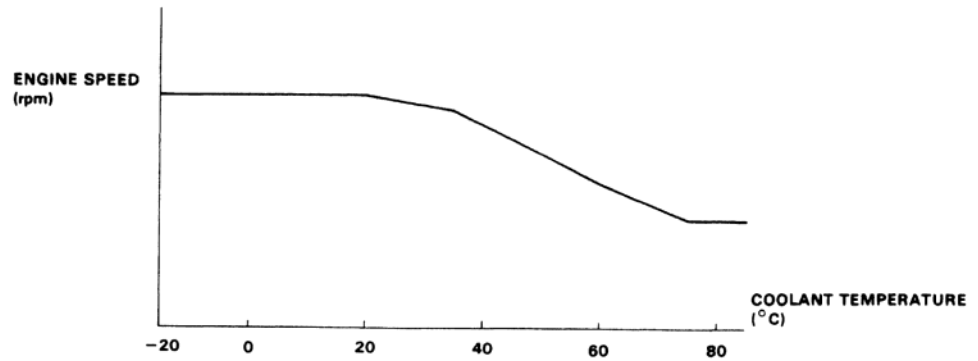


(cont'd)

## Idle Control System

### System Description (cont'd)

1. After the engine starts, the EACV opens for a certain time. The amount of air is increased to raise the idle speed about 150 - 300 rpm.
2. When the coolant temperature is low, the EACV is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to the coolant temperature.



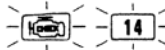
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1. When the idle speed is out of specification and the Check Engine light does not blink CODE 14, check the following items:
  - Adjust the idle speed (page 11-102)
  - Air conditioning signal (page 11-88)
  - Alternator FR signal (page 11-90)
  - A/T shift position signal (page 11-92)
  - M/T clutch switch signal (page 11-94)
  - Starter switch signal (page 11-96)
  - Brake switch signal (page 11-98)
  - P/S oil pressure switch signal (page 11-100)
  - Fast idle valve (page 11-101)
  - Hoses and connections
  - EACV and its mounting O-rings
  
2. If the above items are normal, substitute a known-good EACV and readjust the idle speed (page 11-102).
  - If the idle speed still cannot be adjusted to specification (and the Check Engine light does not blink CODE 14) after EACV replacement, substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

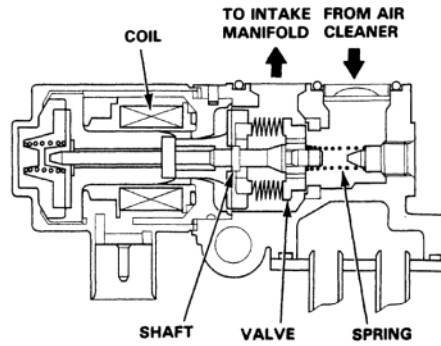
# Idle Control System

## Troubleshooting Flowchart — EACV



Self-diagnosis Check Engine light indicates code 14: A problem in the Electric Air Control Valve (EACV) circuit.

The EACV changes the amount of air bypassing the throttle body in response to a current signal from the ECU in order to maintain the proper idle speed.



— Check Engine light has been reported on.  
— With service check connector jumped (page 11-22), CODE 14 is indicated.

Do the ECU Reset Procedures (page 11-23).

Start the engine.

Is Check Engine light on and does it indicate CODE 14?

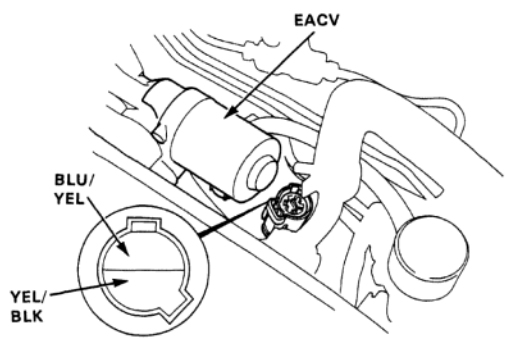
NO  
With the engine running and the accelerator pedal released, disconnect the 2P connector from the EACV.

YES  
Remove the 2P connector from the EACV.

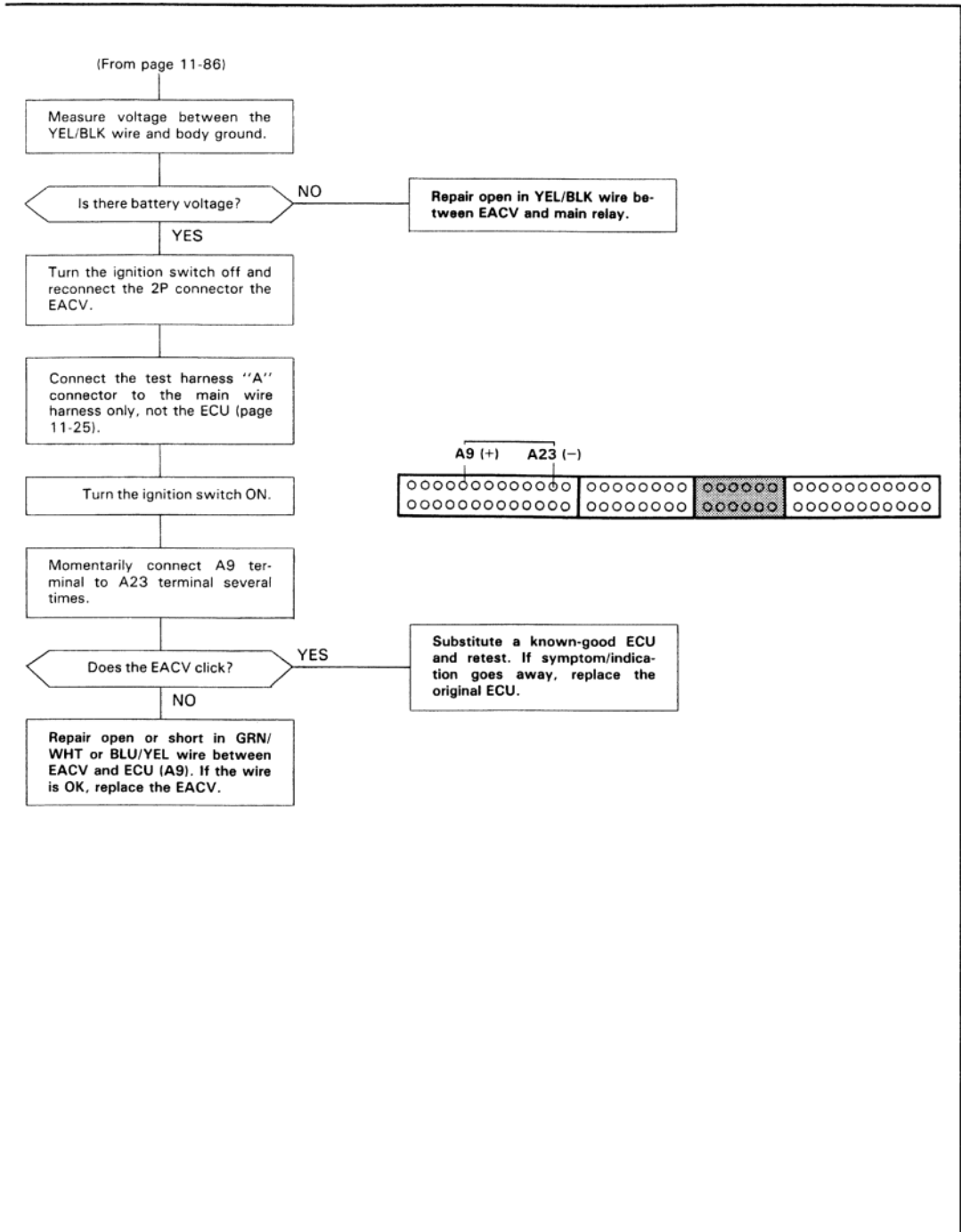
Is there a reduction in engine rpm?

NO  
Substitute a known-good EACV and retest.

YES  
Intermittent failure, system is OK at this time (test driving may be necessary). Check for poor connection or loose wires at C409 (located at left side under dash), C304 (located at left shock tower), C115 (EACV) and ECU.



(To page 11-87)



# Idle Control System

## Troubleshooting Flowchart — Air Conditioning Signal

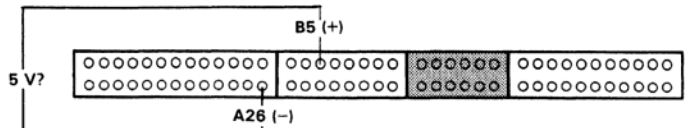
This signals the ECU when there is a demand for cooling from the air conditioning system.

**Inspection of Air Conditioning Signal.**

Connect the test harness between the ECU and connector. Disconnect "B" connector from the main wire harness only, not the ECU (page 11-25).

Turn the ignition switch ON.

Measure voltage between B5 (+) terminal and A26 (-) terminal.

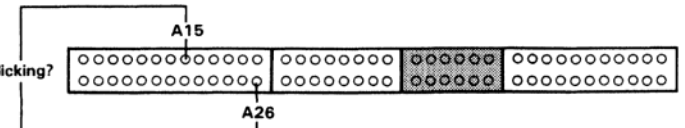


Is there approx. 5 V?

NO  
Substitute a known-good ECU and re-check. If prescribed voltage is now available, replace the original ECU.

YES  
Reconnect "B" connector to the main wire harness.

Momentarily connect A15 terminal to A26 terminal several times.



Is there a clicking noise from the A/C compressor clutch?

Clicking?

NO  
Connect the BLK/RED terminal of the 4P connector on the A/C clutch relay to body ground.



YES  
Start the engine.

Blower switch ON.

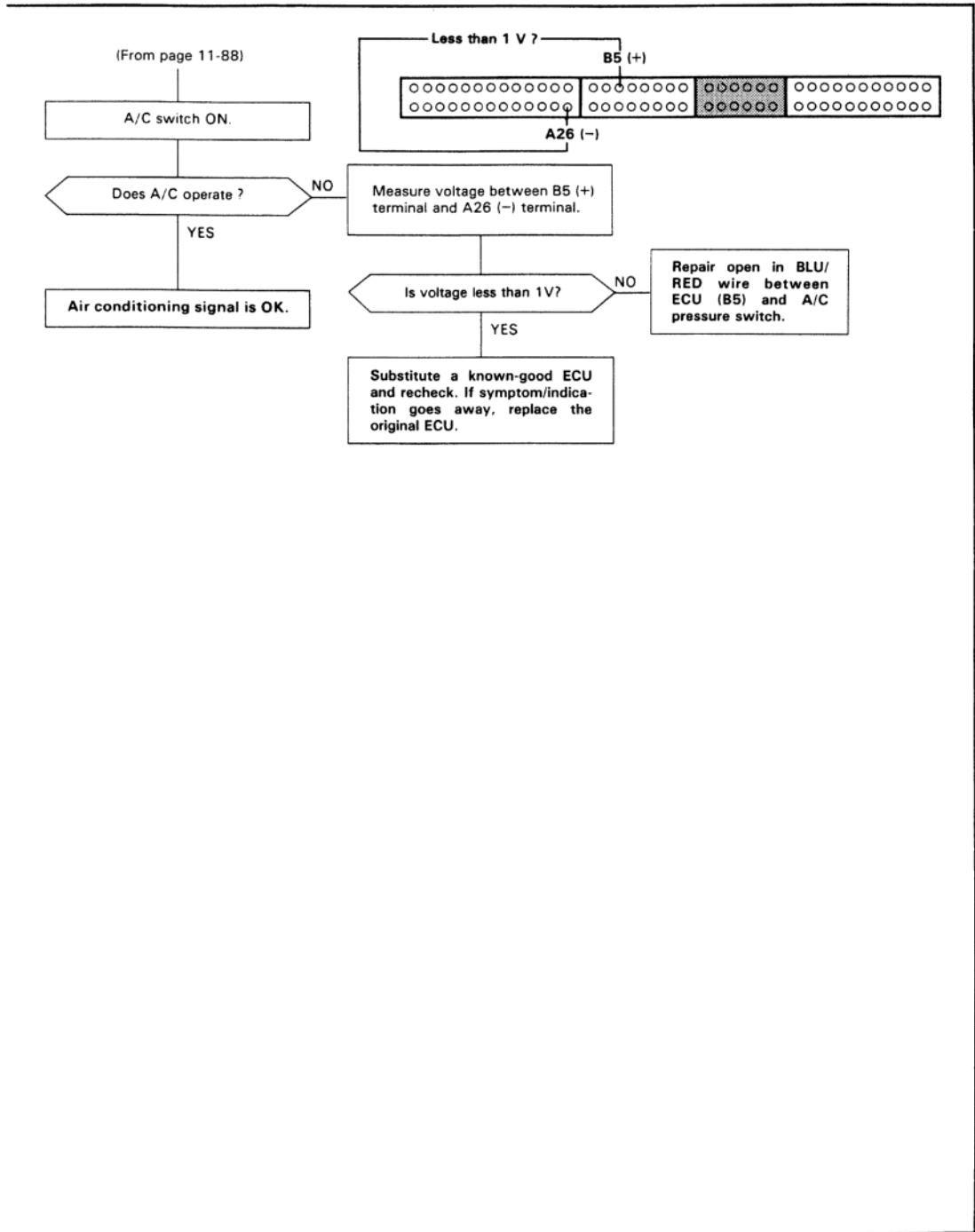
NO  
Is there a clicking noise from the A/C compressor clutch?

NO  
See Air conditioner inspection (section 22).

YES  
Repair open in BLK/RED wire between ECU (A15) and A/C clutch relay.

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# Idle Control System

## Troubleshooting Flowchart — Alternator FR Signal

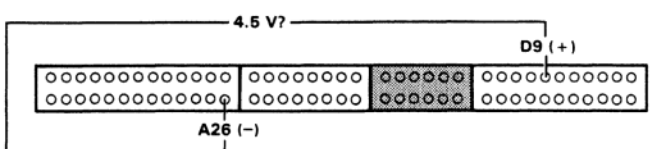
This signals the ECU when the alternator is charging.

**Inspection of Alternator FR signal.**

Connect the test harness between the ECU and connector. Disconnect "D" connector from the main wire harness only, not the ECU (page 11-25).

Turn the ignition switch ON.

Measure voltage between D9 (+) terminal and A26 (-) terminal.



Is there approx. 4.5 V?

NO — Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

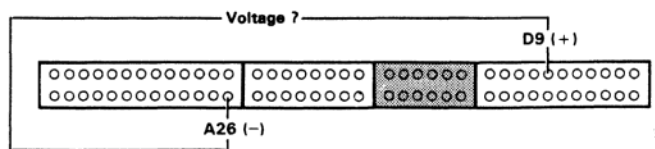
YES

Turn the ignition switch OFF.

Reconnect "D" connector to the main wire harness.

Warm up engine to normal operating temperature (cooling fan comes on).

Measure voltage between D9 (+) terminal and A26 (-) terminal.



Does the voltage decrease when headlights and rear defogger are turned on?

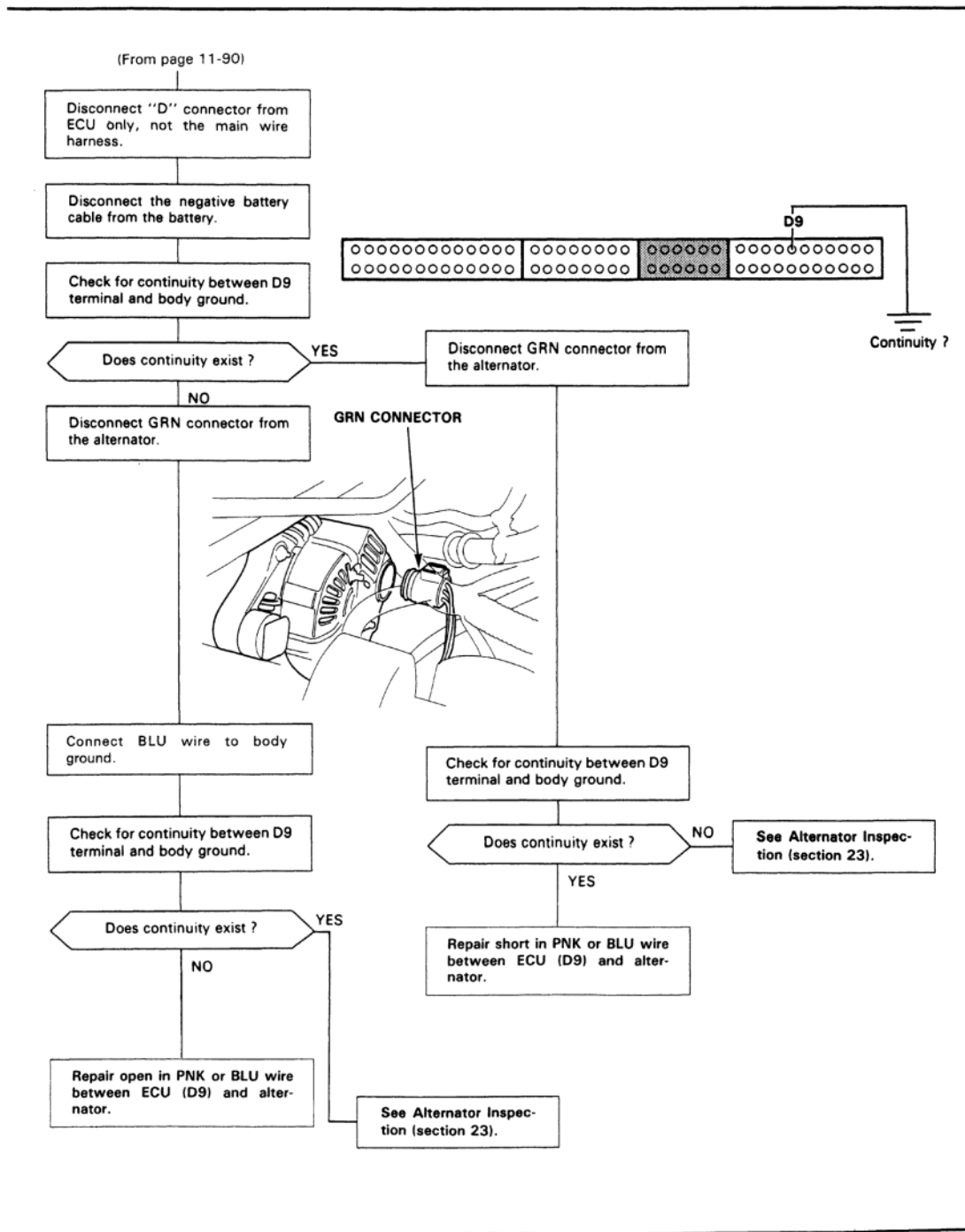
NO — Stop the engine.

YES

Do the ECU Reset Procedure (page 11-23).

**Alternator FR signal is OK.**

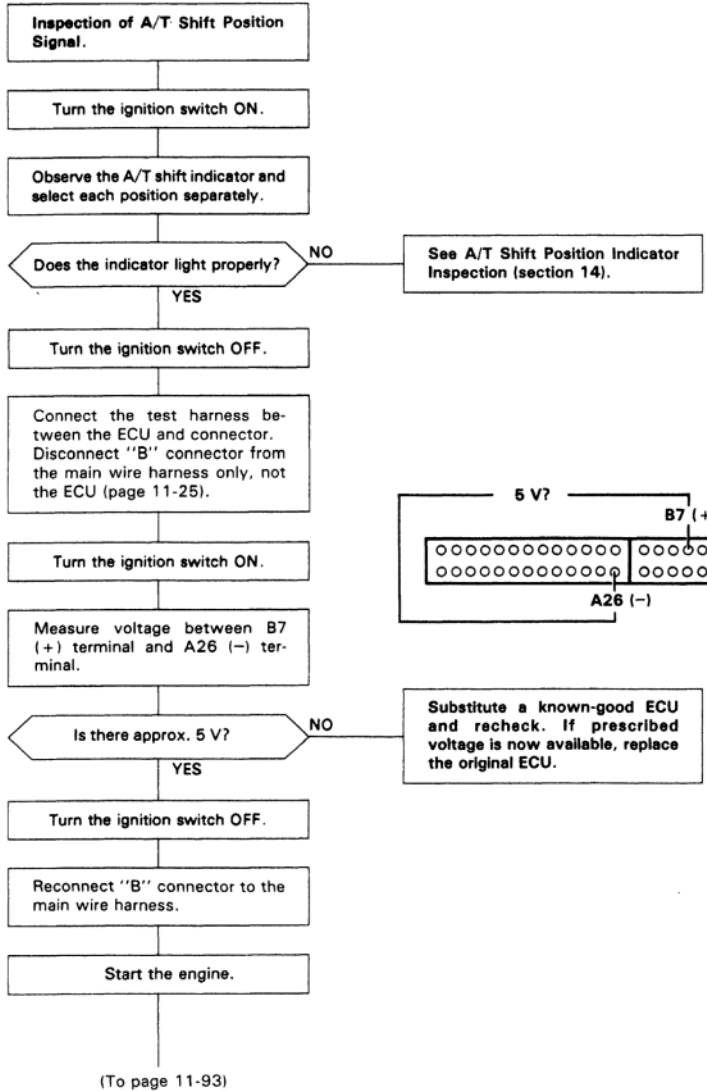
(To page 11-91)

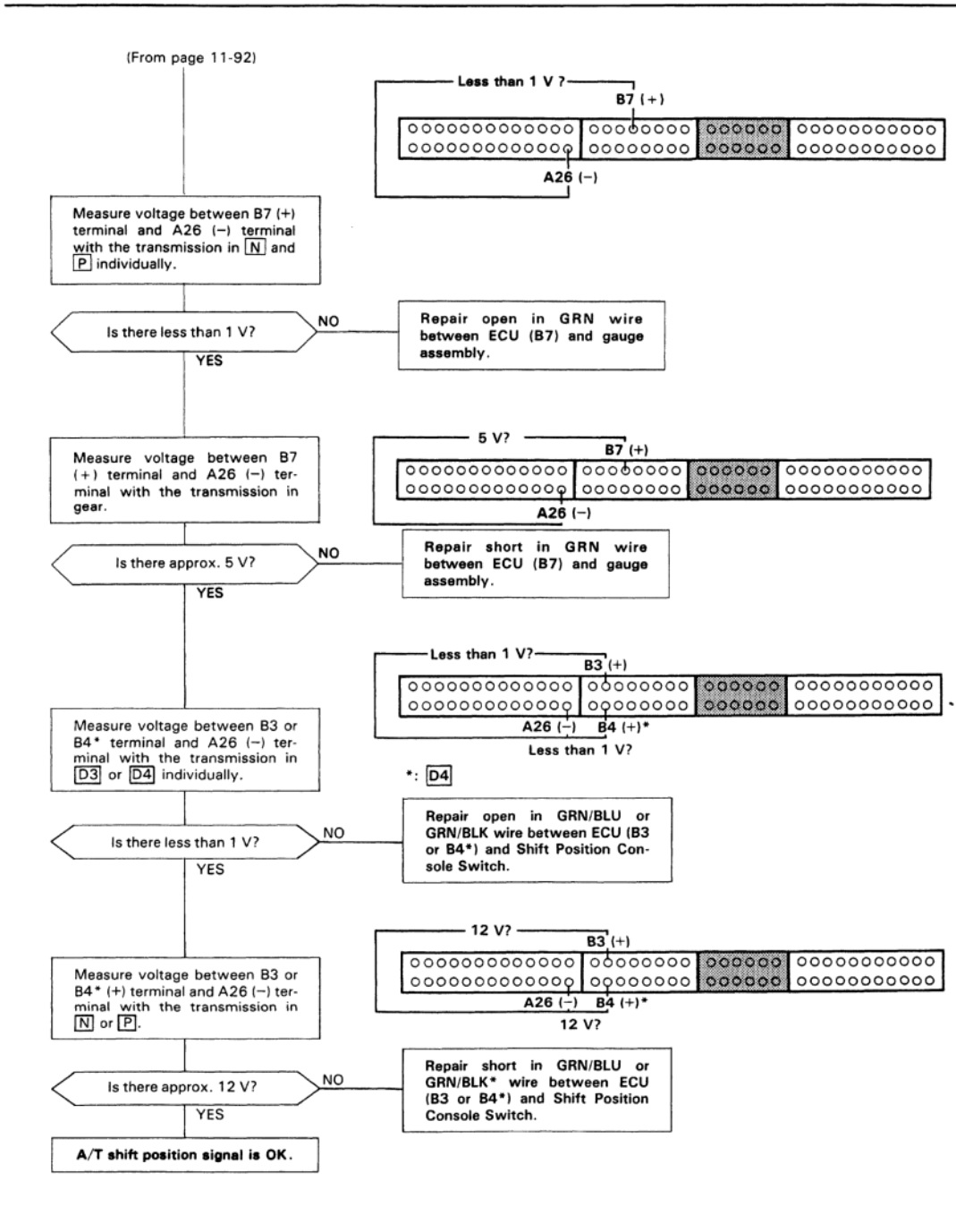


# Idle Control System

## Troubleshooting Flowchart — A/T Shift Position Signal

This signals the ECU when the transmission is in Neutral or Park.





# Idle Control System

## Troubleshooting Flowchart — M/T Clutch Switch Signal (D15Z1 engine) —

This signals the ECU when the clutch is engaged.

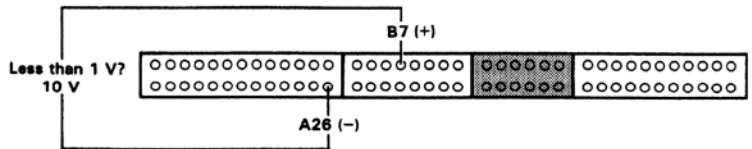
Inspection of clutch switch signal.

Connect the test harness between the ECU and connector (page 11-25).

Turn the ignition switch ON.

Measure voltage between B7 (+) terminal and A26 (-) terminal.

Is voltage less than 1 V?

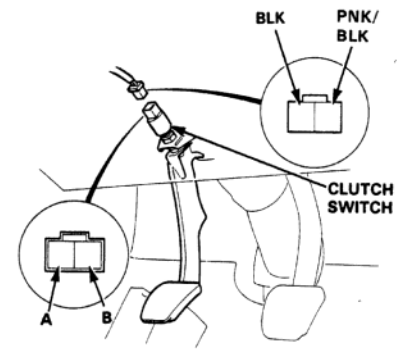


Less than 1 V?  
10 V

NO Turn the ignition switch OFF.

Disconnect the 2P connector from the clutch switch.

Check for continuity between the A terminal and B terminal on the clutch switch.



Does continuity exist? NO Replace the clutch switch.

YES Turn the ignition switch ON.

Measure voltage between PNK/BLK (+) terminal and body ground.

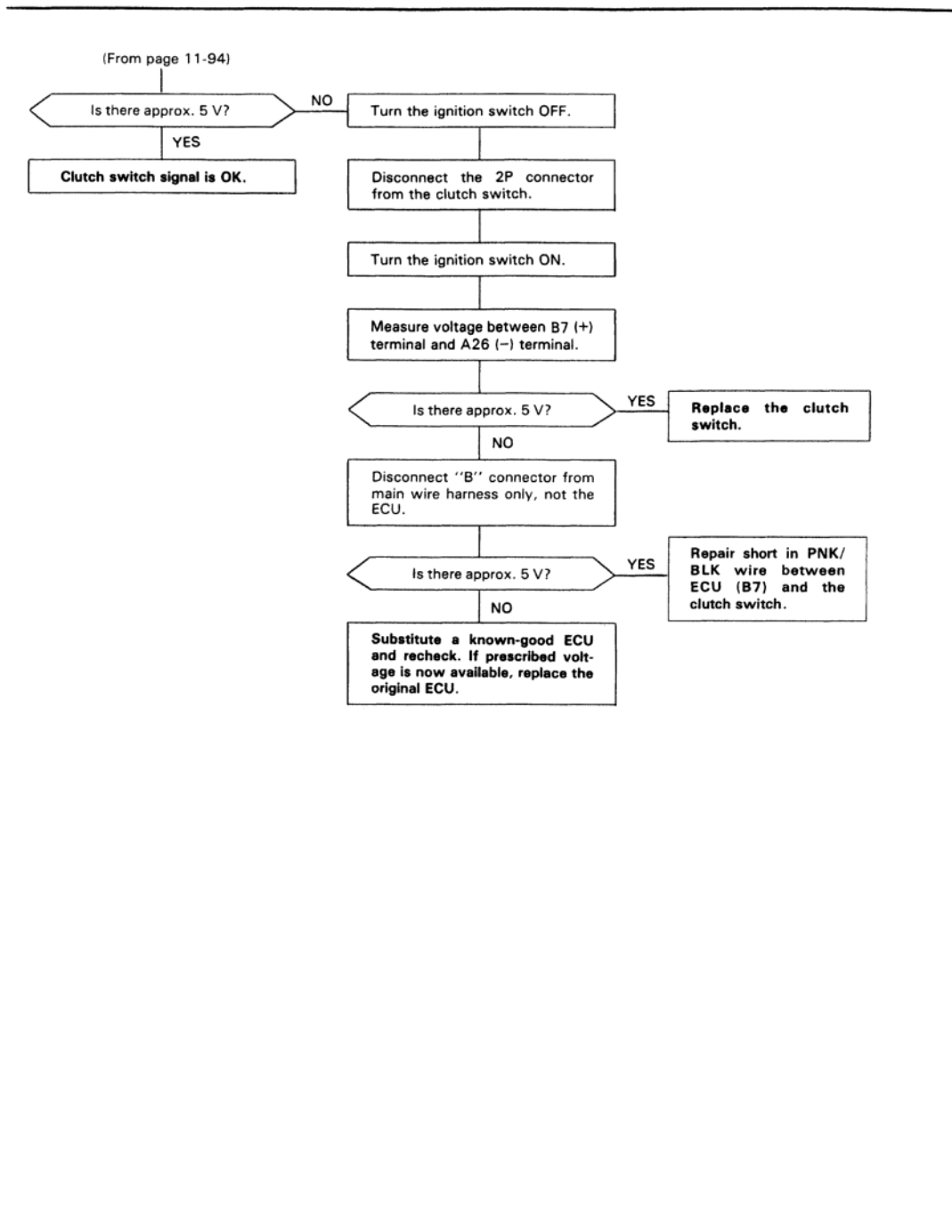
Is there approx. 5 V? NO Repair open in PNK/BLK wire between ECU (B7) and the clutch switch.

YES Repair open in BLK wire between the clutch switch and G301.

YES  
Depress the clutch pedal.

Measure voltage between B7 (+) terminal and A26 (-) terminal.

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# Idle Control System

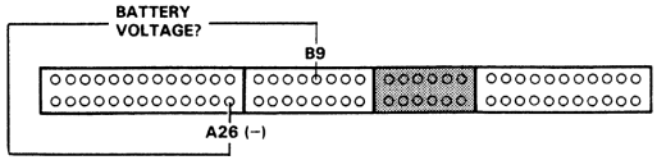
## Troubleshooting Flowchart — Starter Switch Signal

This signals the ECU when the engine is cranking.

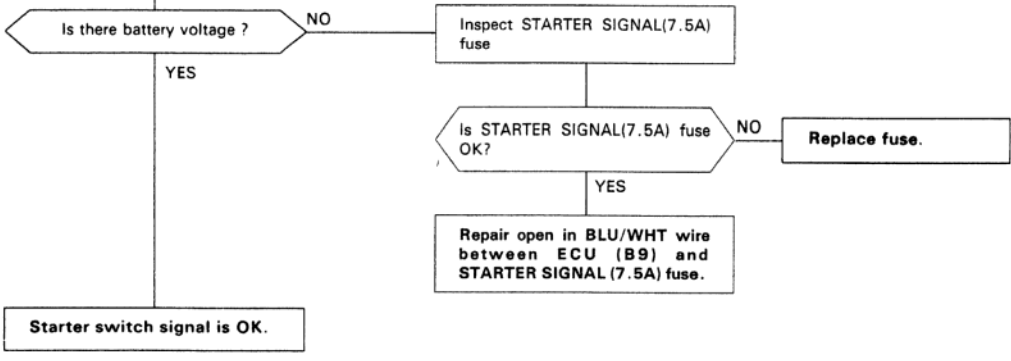
**Inspection of Starter Switch Signal.**

Connect the test harness between the ECU and connector (page 11-25).

Measure voltage between B9 (+) terminal and A26 (-) terminal with the ignition switch in the start position.



- NOTE:**
- M/T: Clutch pedal must be depressed.
  - A/T: Transmission in **[N]** or **[P]**.





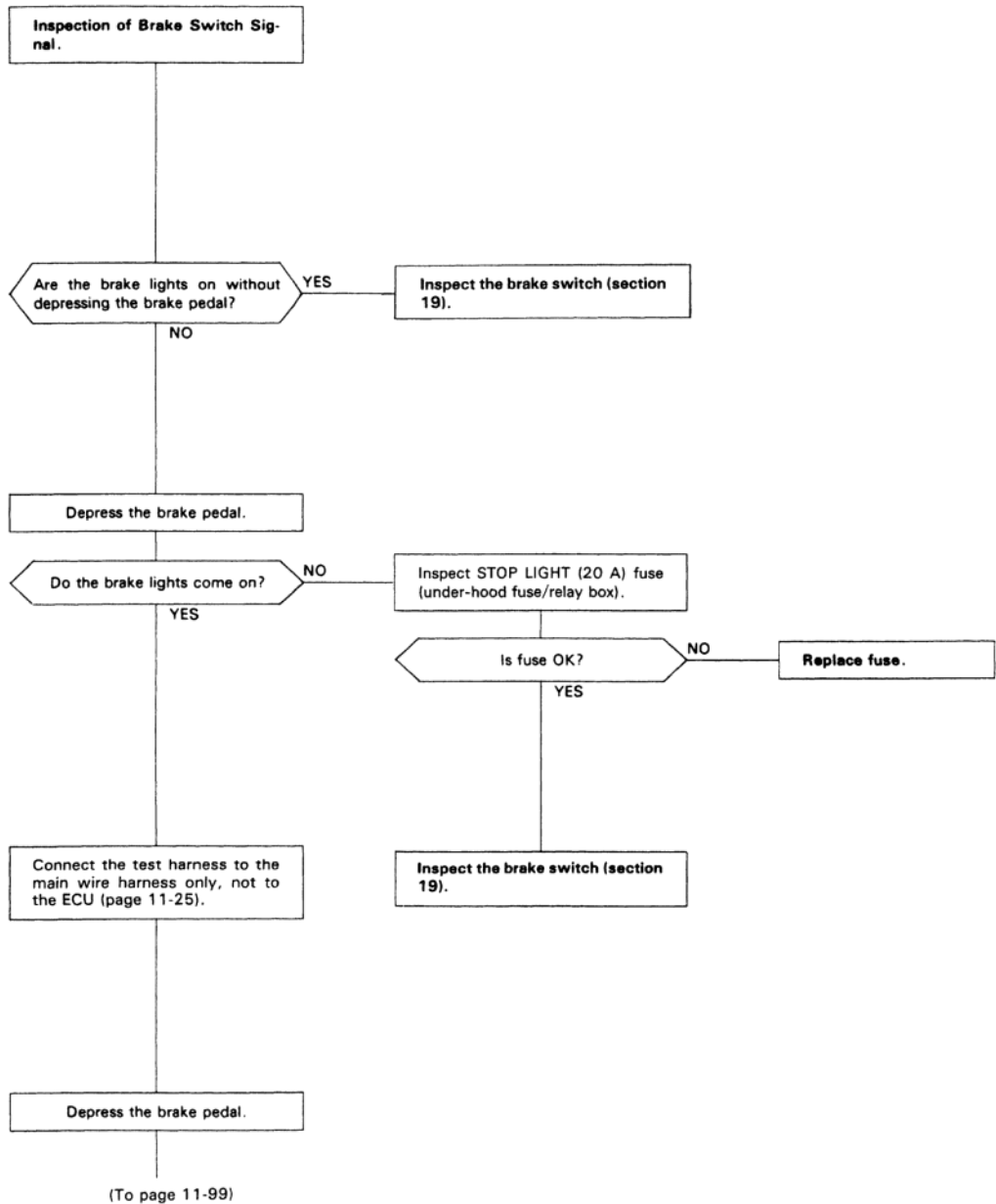


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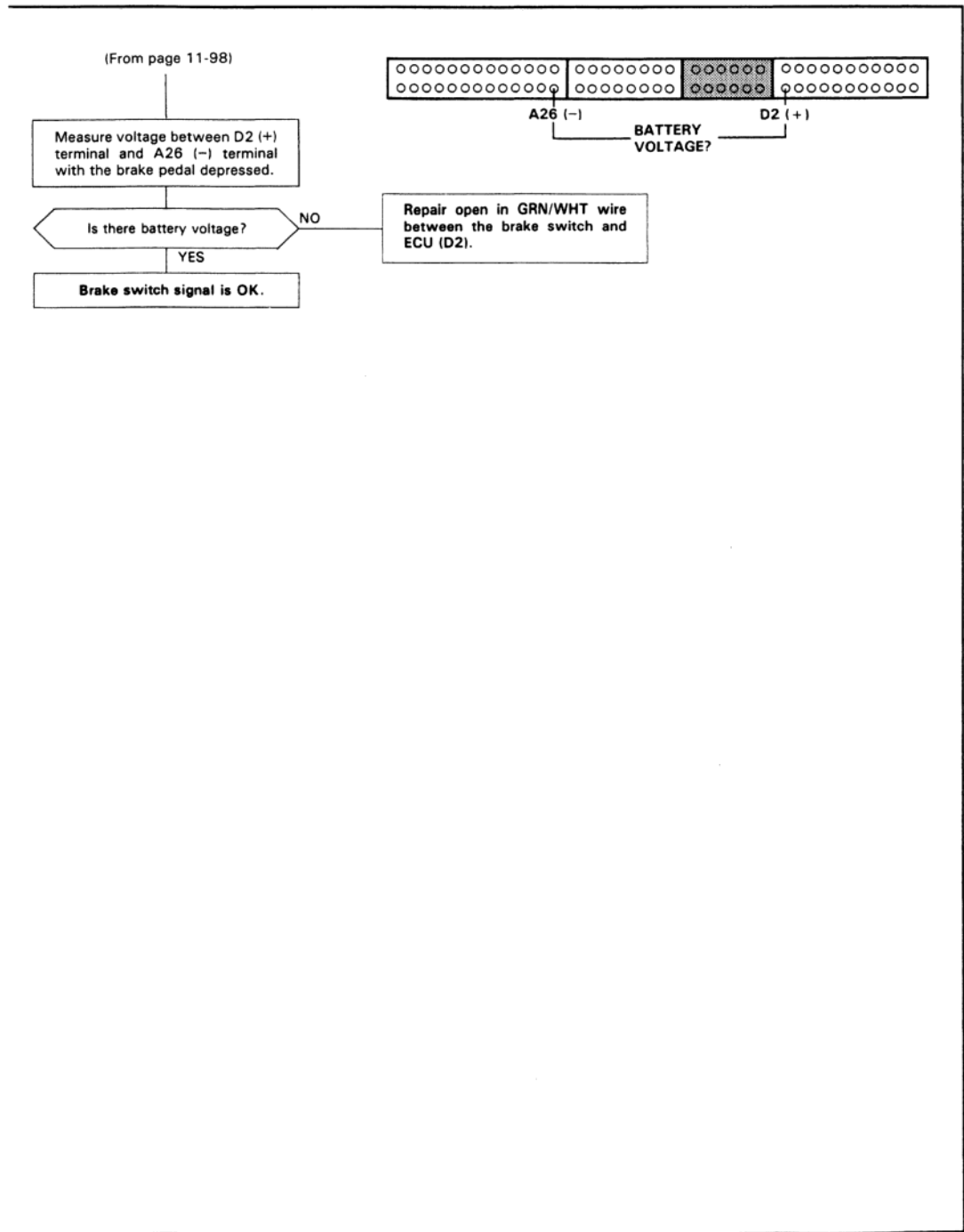
# Idle Control System

## Troubleshooting Flowchart — Brake Switch Signal

This signals the ECU when the brake pedal is depressed.



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# Idle Control System

## Troubleshooting Flowchart — P/S Oil Pressure Signal

This signals the ECU when the power steering load is high.

**Inspection of P/S Oil Pressure Signal**

Connect the test harness between the ECU and connector (page 11-25).

Turn the ignition switch ON.

Measure voltage between B8 (+) terminal and A26 (-) terminal.

Is there more than 1V?

YES

Disconnect the 2P connector from the P/S oil pressure switch.

Connect BRN/RED terminal to BLK terminal.

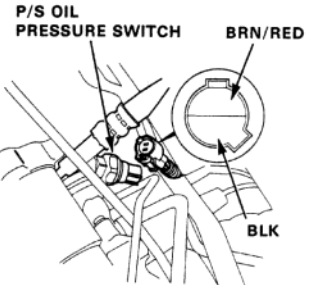
Is there more than 1V?

NO

Replace P/S oil pressure switch.

YES

Repair open in BRN/RED wire between ECU (B8) and P/S oil pressure switch or BLK wire between P/S oil pressure switch and G302.



Is there battery voltage?

NO

Disconnect the 2P connector from the P/S oil pressure switch.

Is there battery voltage?

YES

Replace P/S oil pressure switch.

NO

Repair short in BRN/RED wire between ECU (B8) and P/S oil pressure switch. If wire is OK, substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

Is there battery voltage?

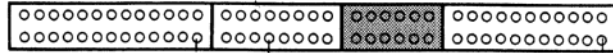
YES

P/S oil pressure signal is OK.

Start the engine.

Turn steering wheel slowly.

Measure voltage between B8 (+) terminal and A26 (-) terminal while steering wheel is turning.



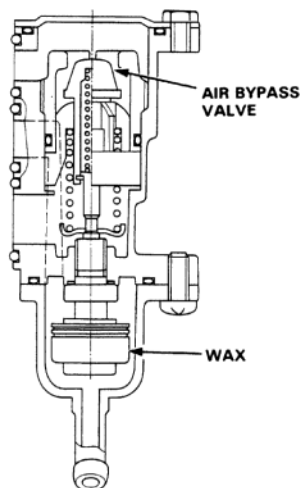
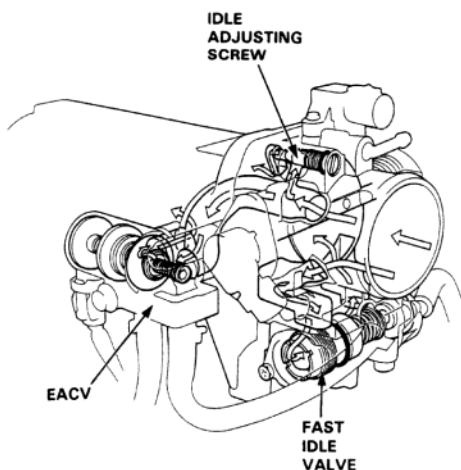
More than 1V?



## Fast Idle Valve

### Description

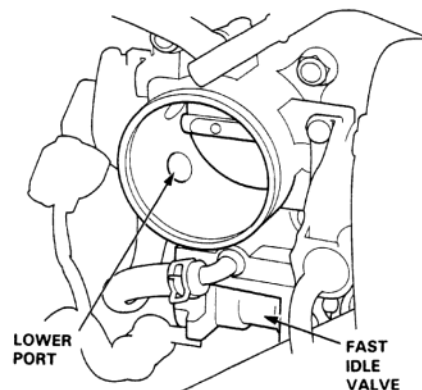
To prevent erratic running when the engine is warming up, it is necessary to raise the idle speed. The fast idle air bypass valve is controlled by a thermowax plunger. When the engine is cold, the engine coolant surrounding the thermowax contracts the plunger, allowing additional air to be bypassed into the intake manifold so that the engine idles faster. When the engine reaches operating temperature, the valve closes, reducing the amount of air bypassing into the manifold.



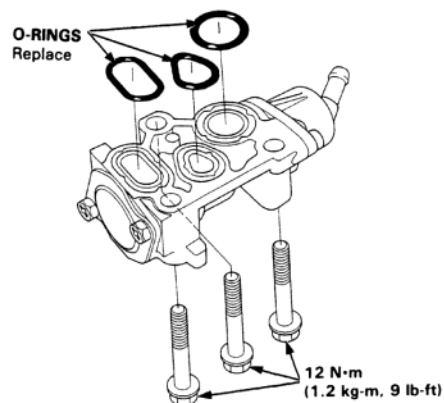
### Inspection

NOTE: The fast idle valve is factory adjusted; it should not be disassembled.

1. Remove the intake air duct from the throttle body.
2. Start the engine.
3. Put your finger over the lower port in throttle body and make sure that there is air flow with the engine cold (coolant temperature below 30°C, 86°F).



- If not, replace the fast idle valve and retest.



4. Warm up the engine (cooling fan comes on).
5. Check that the valve is completely closed. If not, air suction can be felt at the lower port in the throttle body.
  - If any suction is felt, the valve is leaking. Replace the fast idle valve and recheck.

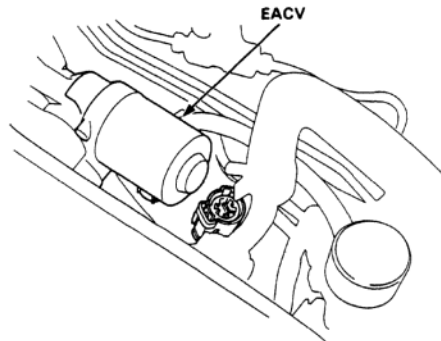
# Idle Control System

## Idle Speed Setting

### Inspection/Adjustment

NOTE: (CANADA) Pull the parking brake lever up. Start the engine, then check that the headlights are off.

1. Start the engine and warm it up to normal operating temperature (the cooling fan comes on).
2. Connect a tachometer.
3. Disconnect the 2P connector from the EACV.



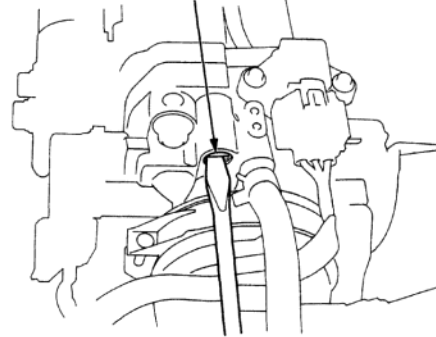
4. Start the engine with the accelerator pedal slightly depressed. Stabilize the rpm at 1000, then slowly release the pedal until the engine idles.
5. Check idling in no-load conditions: headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

#### Idle speed should be:

Manual	D15Z1 engine: 420 ± 50 rpm Others: 420 ± 50 rpm
Automatic	420 ± 50 rpm (in <b>N</b> or <b>P</b> )

Adjust the idle speed, if necessary, by turning the idle adjusting screw.

### IDLE ADJUSTING SCREW



6. Turn the ignition switch OFF.
7. Reconnect the 2P connector on the EACV, then remove BACK UP fuse in the under-hood fuse/relay box for 10 seconds to reset the ECU.
8. Restart and idle the engine with no-load conditions for one minute, then check the idle speed.

NOTE: (CANADA) Pull the parking brake lever up. Start the engine, then check that the headlights are off.

#### Idle speed should be:

Manual	D15Z1 engine: 600 ± 50 rpm Others: 670 ± 50 rpm
Automatic	700 ± 50 rpm (in <b>N</b> or <b>P</b> )

9. Idle the engine for one minute with headlights (Hi) ON and check the idle speed.

#### Idle speed should be:

Manual	D15Z1 engine: 700 ± 50 rpm Others: 750 ± 50 rpm
Automatic	750 ± 50 rpm (in <b>N</b> or <b>P</b> )

10. Turn the headlights and rear defogger off. Idle the engine for one minute with heater fan switch at HI and air conditioner on, then check the idle speed.

#### Idle speed should be:

Manual	D15Z1 engine: 810 ± 50 rpm Others: 810 ± 50 rpm
Automatic	810 ± 50 rpm (in <b>N</b> or <b>P</b> )

NOTE: If the idle speed is not within specification, see System Troubleshooting Guide on page 11-82.