

Air Intake System

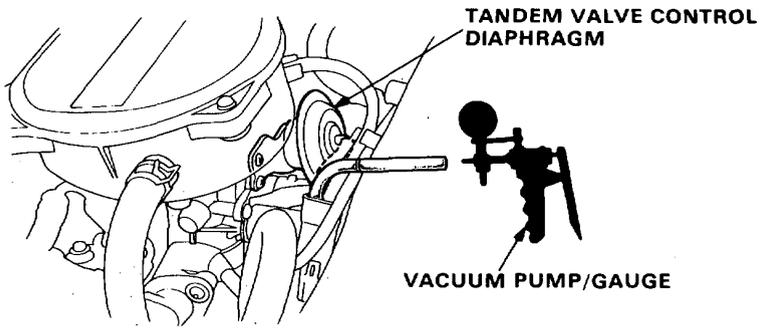
Tandem Control System [1.5 l]

Troubleshooting Flowchart

Inspection of Tandem Control System

Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum gauge to the hose.

Start engine and allow to idle.
NOTE: Coolant temperature must be below 70°C (160°F).



Is there vacuum?

YES

Disconnect the 2P connector from the tandem valve control solenoid valve.

Is there vacuum?

YES

Replace the solenoid valve.

NO

Turn the ignition switch OFF.

Disconnect "B" connector from ECU.

Check for continuity to ground on the ORN wire.

Is there continuity to ground?

YES

Repair short to ground at ORN wire between ECU (B2) and the 2P connector.

NO

Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

Raise engine speed to,
• Manual: 3,000 min⁻¹ (rpm)
• Automatic: 2,000 min⁻¹ (rpm)

Is there vacuum?

NO

Disconnect the 2P connector from the tandem valve control solenoid valve.

YES

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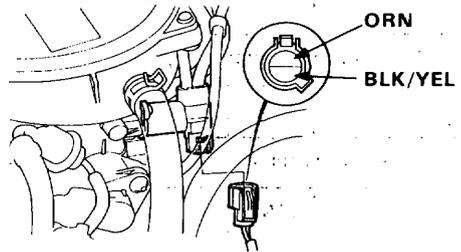
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Measure voltage between BLK/YEL (+) terminal and ORN (-) terminal at 3,000 min⁻¹ (rpm)



Is there battery voltage ? YES

Remove the solenoid valve from the throttle body and check the port for blockage. If the port is OK, replace the solenoid valve.

NO

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

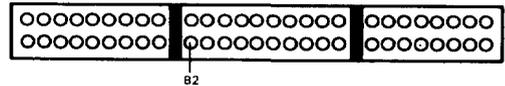
Is there battery voltage ? NO

Repair open in BLK/YEL wire between the 2P connector and No. 14 fuse.

YES

Turn the ignition switch OFF.

Connect the ECU test harness between the ECU and connector (page 6-75).



Check for continuity of ORN wire between ECU (B2) and the 2P connector.

Does continuity exist ? NO

Repair open in ORN wire between ECU (B2) and the 2P connector.

YES

Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

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(cont'd)

Air Intake System

Tandem Control System [1.5 l] (cont'd)

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

Slowly open the throttle.

Is there vacuum ?

NO

Substitute a known-good ECU and recheck. If symptom goes away, replace the original ECU.

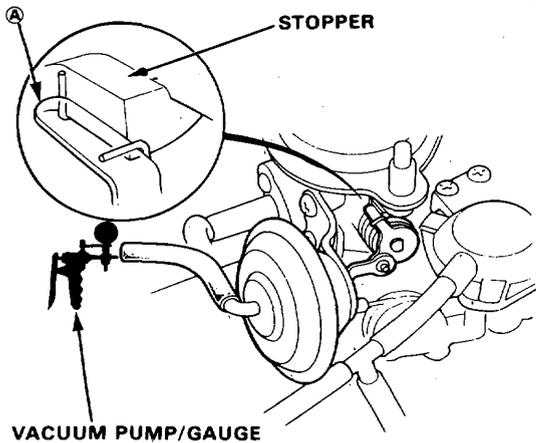
YES

Tandem control system is OK.



Tandem Valve Control Diaphragm Testing

1. Check the tandem valve shaft for binding or sticking.
2. Check the bypass valve for smooth movement.
 - If any fault is found, clean the linkage and shafts with carburetor cleaner.
3. Disconnect the vacuum hose from the tandem valve control diaphragm and connect a vacuum pump to the diaphragm.
4. Apply vacuum and check that Ⓐ of the tandem valve is in close contact with the stopper when the tandem valve is fully open.



- If any fault is found, replace the tandem valve control diaphragm.