Progressive Power Steering (PPS)
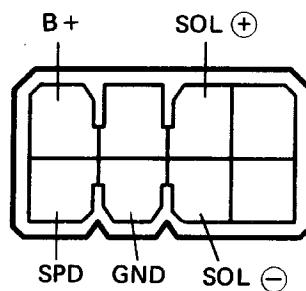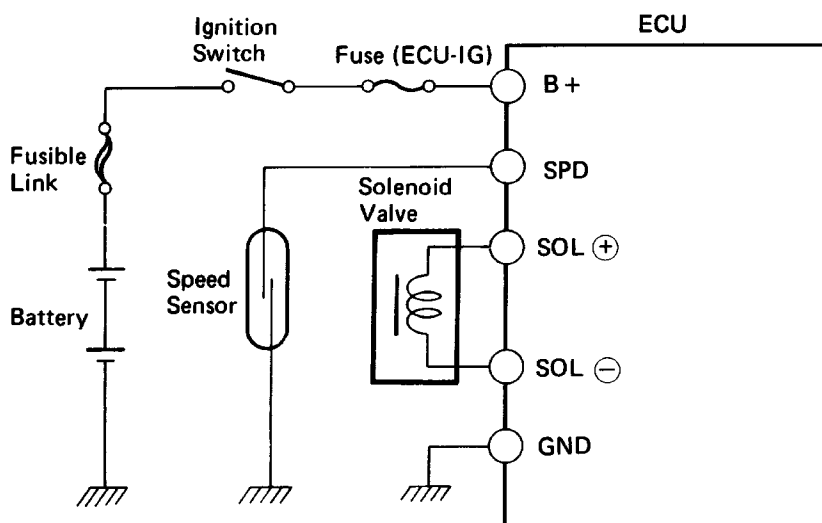## DESCRIPTION AND ELECTRONIC CIRCUIT

Ignition Switch
Fusible Link

Power Steering Pump

Battery

Solenoid Valve

Speed Sensor

ECU

Gear Housing

Ignition Switch
Fuse (ECU-IG)

ECU

B +

SPD

Solenoid Valve

SOL ⊕

Fusible Link

Speed Sensor

SOL ⊖

Battery

GND

B +   SOL ⊕

SPD   GND   SOL ⊖
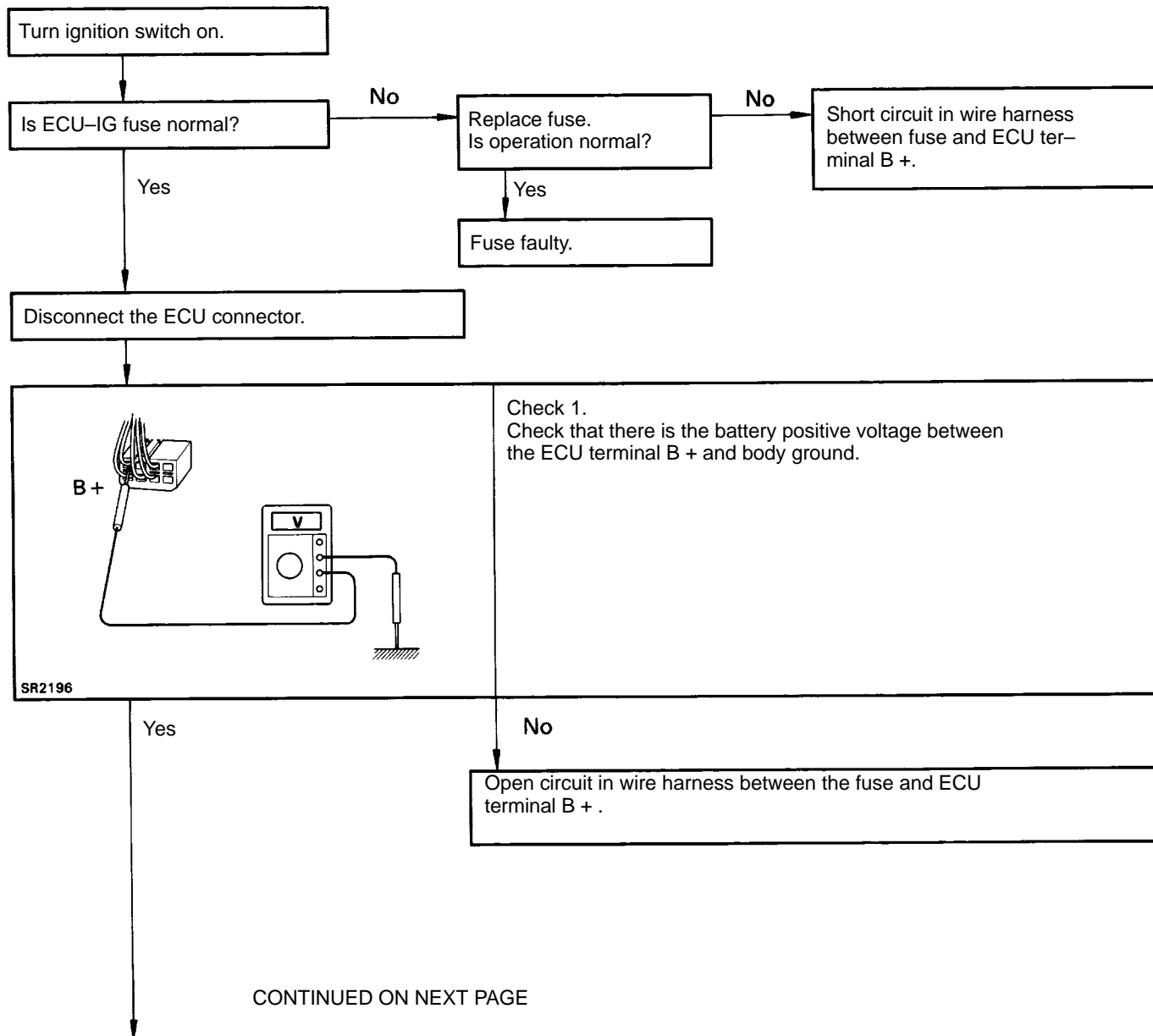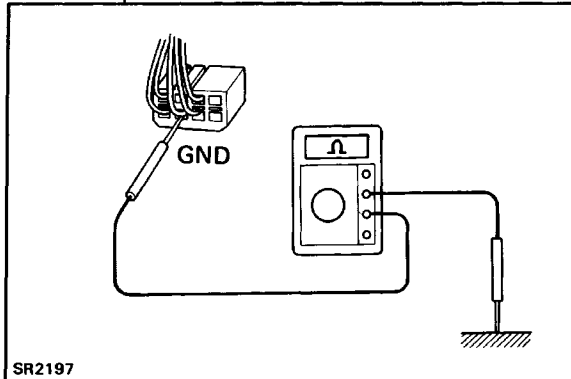
SR2473
B8578
G-7-2
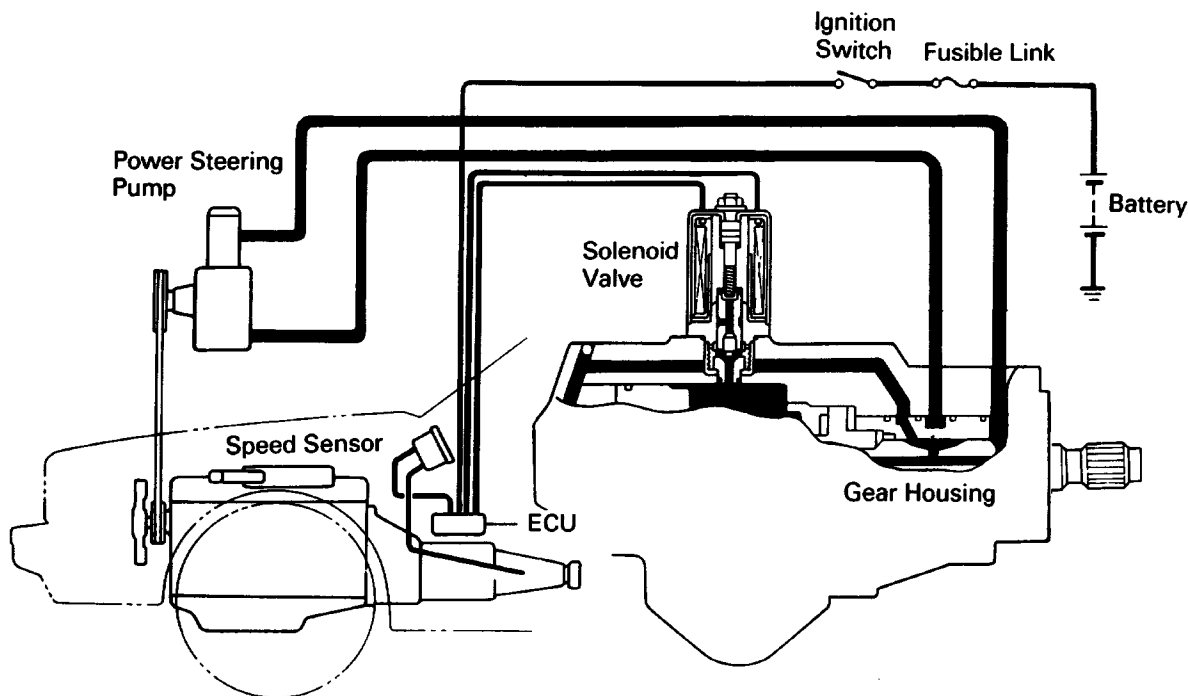
TROUBLESHOOTING

Trouble
- Hard steering at idle or low–speed driving.
- Steering too sensitive during high–speed driving.

Preliminary Check
- Check tire pressure.
- Check lubrication of suspension and steering linkage.
- Check front wheel alignment.
- Check steering system joint and suspension arm ball joint.
- Check for bent steering column.
- Check that all connectors are secure.
- Check PS pump fluid pressure. (See page SR–41)

```
┌─────────────────────────┐
│ Turn ignition switch on.│
└─────────────────────────┘
             │
             ▼
┌─────────────────────────┐  No  ┌──────────────────────┐  No  ┌──────────────────────────────┐
│ Is ECU–IG fuse normal?  │─────▶│ Replace fuse.         │─────▶│ Short circuit in wire harness│
└─────────────────────────┘      │ Is operation normal?  │      │ between fuse and ECU ter–    │
             │ Yes               └──────────────────────┘      │ minal B +.                   │
             │                              │ Yes               └──────────────────────────────┘
             │                              ▼
             │                   ┌──────────────────────┐
             │                   │ Fuse faulty.          │
             │                   └──────────────────────┘
             ▼
┌─────────────────────────────┐
│ Disconnect the ECU connector.│
└─────────────────────────────┘
             │
             ▼
```

B +

Check 1.
Check that there is the battery positive voltage between
the ECU terminal B + and body ground.

SR2196

Yes | No

┌──┐
│ Open circuit in wire harness between the fuse and ECU │
│ terminal B + .   │
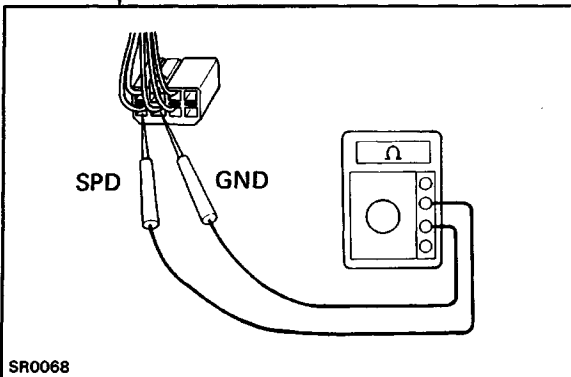└──┘

Check 2.
Check that there is continuity between the ECU terminal
G ND and body ground.

SR2197

Yes   **No**

- Open circuit in wire harness between the ECU terminal
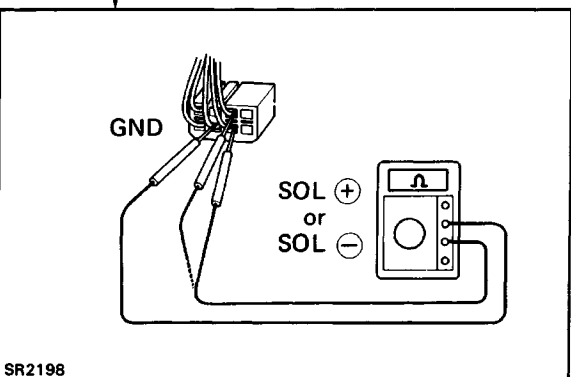 GND and body ground.
- Body ground faulty.

Check 3.
(a) Jack up the rear wheel on one side.
(b) Connect an ohmmeter between the ECU connector
terminals SPD and GND.
(c) Spin the rear wheel and check that the meter needle
deflects from 0 Ω to $\infty\Omega$.

SR0068

Yes   **No**

- Open or short circuit in wire harness between the ECU
  terminal SPD and speed sensor.
- Speed sensor faulty (See page BE–34).

Check 4.
Check that there is no continuity between terminals SOL
+ or SOL **–** and GND.

SR2198

Yes   **No**

- Short circuit in wire harness between the terminals SOL
  + and SOL **–** .
- Solenoid valve faulty.

SOL ⊖   SOL ⊕

SR0069

Check 5.
Measure the resistance between terminals SOL + and
SOL –.
Standard resistance: 6 – 11 Ω

Yes

No

- Open circuit in wire harness between the terminals SOL
  + and SOL –.
- Solenoid valve faulty.

Check 6.
Inspect ECU.

Bad

Replace ECU .

Open   Pressure Gauge

B8497

Check 7.
(a) Turn the steering wheel full lock position.
(b) Apply battery positive voltage between terminals
SOL + and SOL – and turn the solenoid ON and
OFF. Is there a change in gear housing fluid pres–
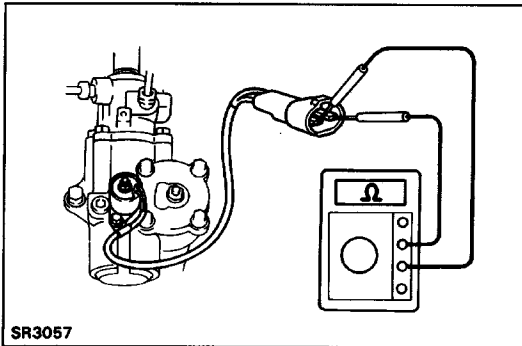sure when the solenoid is ON or OFF?

Yes

No

Steering gear housing
faulty.

- By–pass or return line clogged.
- Fluid level low.
- Solenoid valve faulty.

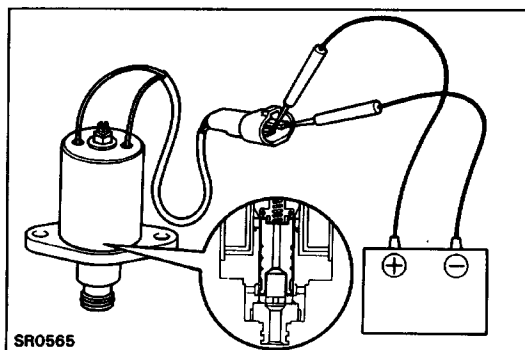# ELECTRONIC CONTROL SYSTEM
Solenoid Valve
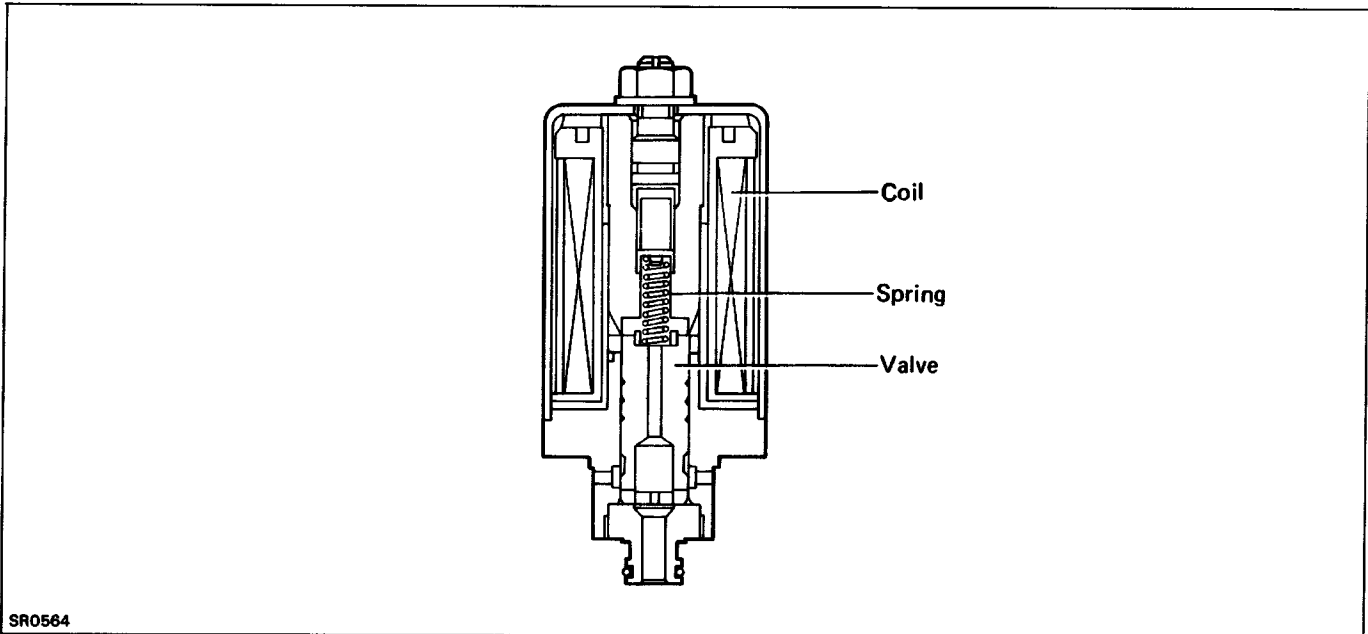
SR0564

SR3057

ON–VEHICLE INSPECTION
1. DISCONNECT WIRING CONNECTOR
2. MEASURE RESISTANCE
Measure the resistance between SOL **–** and SOL **+**.
Resistance: 6 – 11Ω
3. CONNECT WIRING CONNECTOR

SR0565

CHECK SOLENOID OPERATION
1. REMOVE SOLENOID VALVE FROM GEAR HOUSING
2. CHECK SOLENOID OPERATION
(a) Connect the battery positive terminal to the solenoid terminal SOL **+**.
(b) Connect the battery negative terminal to the sole–noid terminal SOL **–**.
Confirm that the needle valve has withdrawn about 2 mm (0.79 in.).
If not, replace the solenoid valve.

3. INSTALL SOLENOID VALVE TO GEAR HOUSING

4. BLEEDING OF POWER STEERING LINE

Power Steering ECU
INSPECTION OF ECU
1. JACK UP VEHICLE AND SUPPORT IT ON STANDS
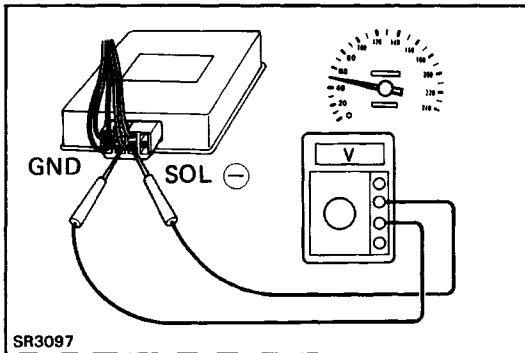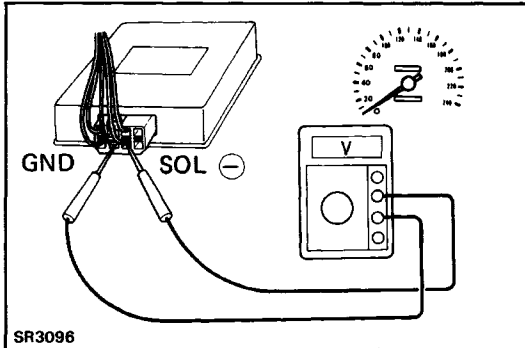**2. REMOVE CENTER CONSOLE**
HINT: Do not disconnect the ECU connector.

3. START ENGINE
4. MEASURE VOLTAGE OF ECU
(a) Using a voltmeter, measure the voltage between ECU terminals GND and SOL E) while the engine is idling.
Standard voltage: 0 – 0.05 V

(b) Place the transmission in gear and while running at about 50 km/h (31 mph), measure the voltage be–tween the ECU terminals GND and SOL E).
Standard voltage: Voltage measured in (a) above, plus 0.12 – 0.24 V
If no voltage, try another ECU.

5. INSTALL CENTER CONSOLE

6. LOWER VEHICLE