# INTAKE SYSTEM

## PARTS LOCATION

INTAKE AIR CONTROL VALVE

AIR CLEANER

ECM

ENGINE ROOM NO. 1 JUNCTION BLOCK, NO. 1 RELAY

- INTEGRATION RELAY (UNIT A: EFI MAIN RELAY)

- EFI MAIN FUSE

IT

VACUUM SWITCHING VALVE

VACUUM TANK
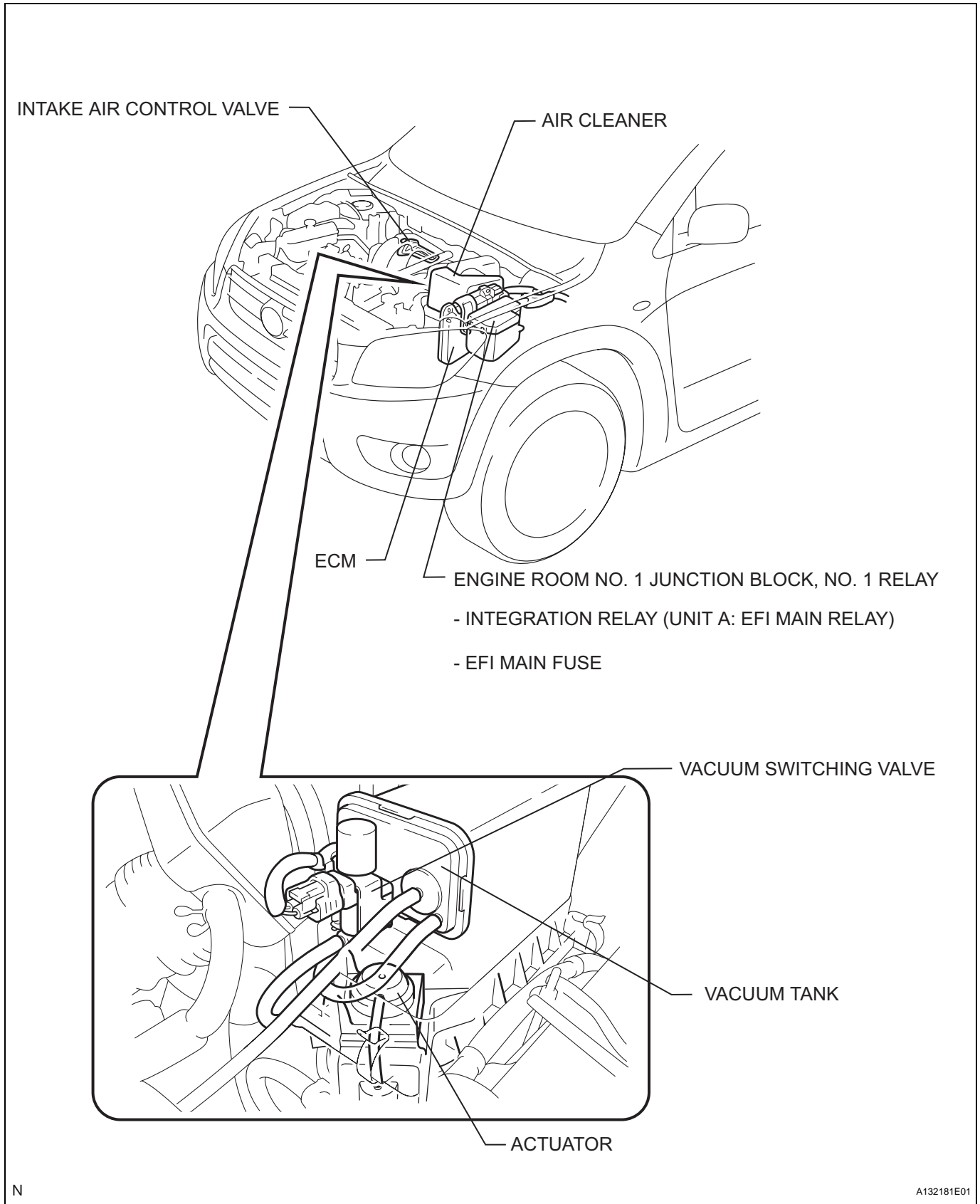
ACTUATOR

N

A132181E01

# SYSTEM DIAGRAM

## 1.   AIR INTAKE CONTROL SYSTEM DIAGRAM

- The system has a dual path design for air intake. An air intake control valve and actuator control the air flow path.
- When the engine is operating in the low to medium speed range, this control operates the air intake control valve to close one side of the air cleaner inlet.
- When the engine is operating in the high speed range, this control operates the air intake control valve to open both sides of the air cleaner inlet.
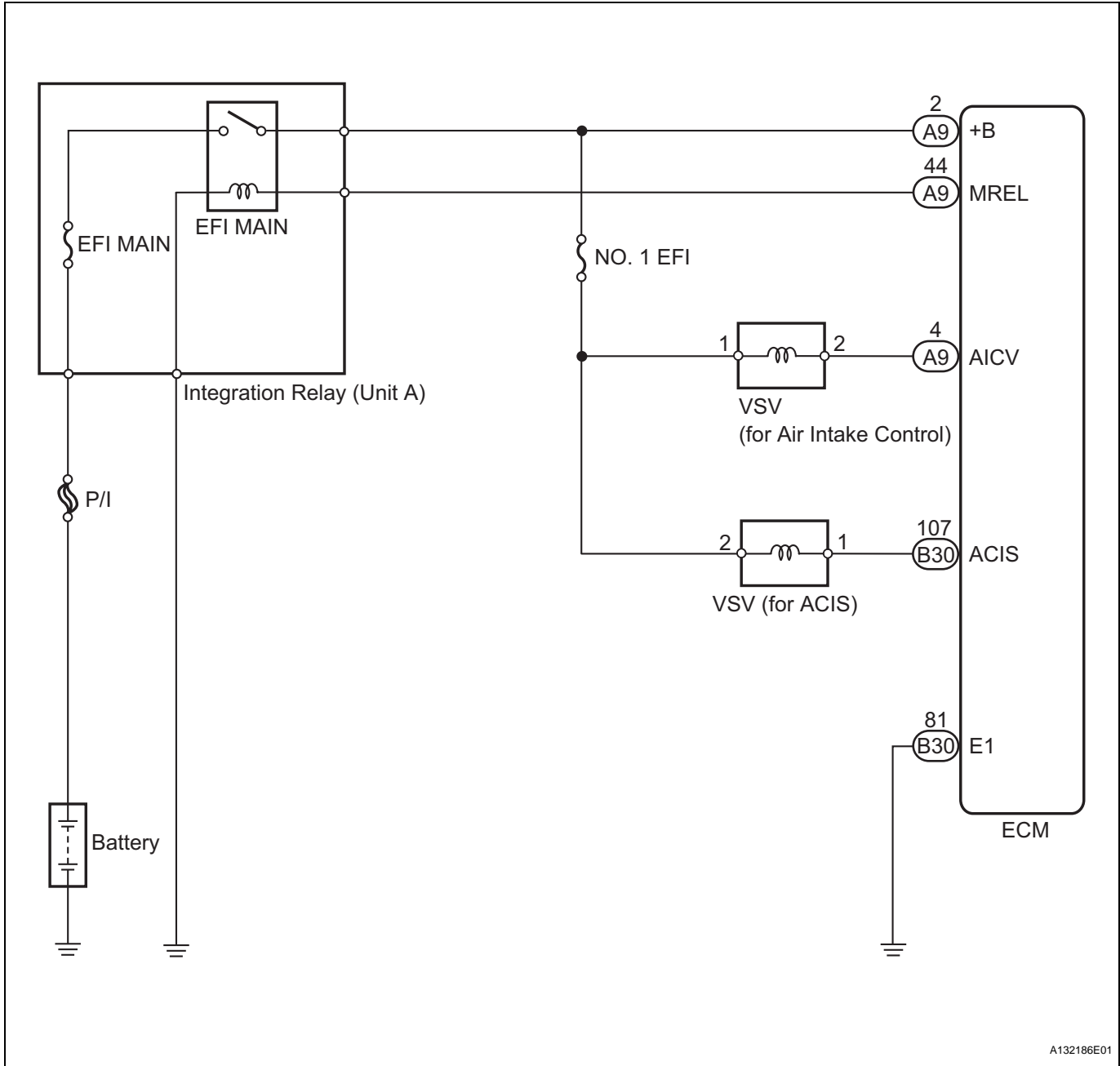
N                                                                                      A132182E02
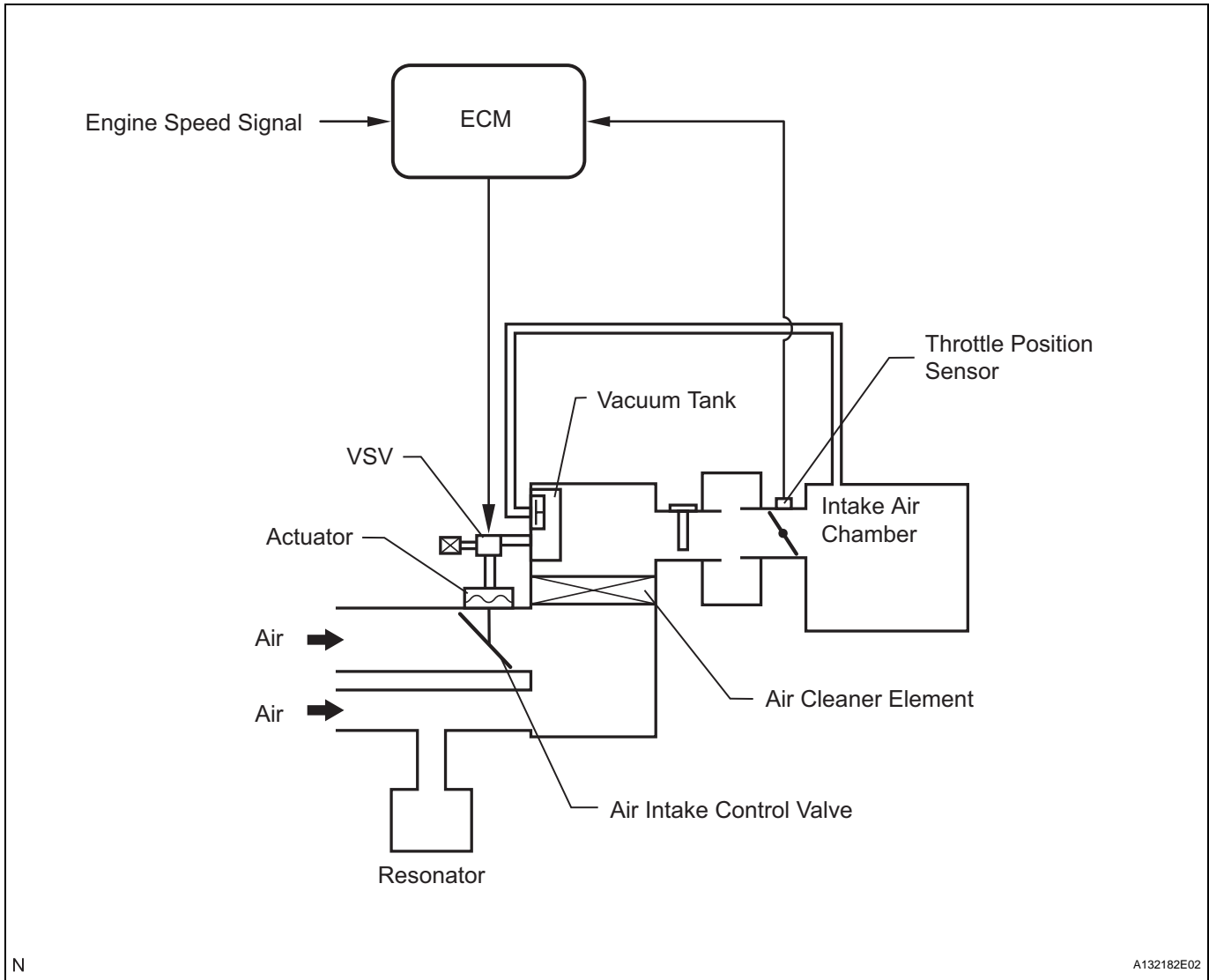
## 2.   ACOUSTIC CONTROL INDUCTION SYSTEM DIAGRAM

- The ACIS is realized by using a bulkhead to divide the intake manifold into 2 stages, with an intake air control valve in the bulkhead being opened and closed to vary the effective length of the intake manifold in accordance with the engine speed and throttle valve opening angle. This increases the power output in all ranges from low to high speed.
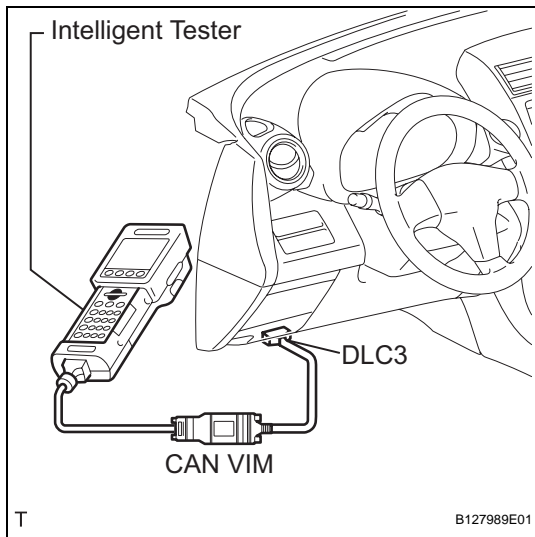
- When the intake control valve closes:
  While the engine is running at medium speed under high load, the ECM controls the actuator to close the control valve. As a result, the effective length of the intake manifold is lengthened and the intake efficiency, in the medium speed range, is improved due to the dynamic effect of the intake air, thereby increasing power output.
- When the intake control valve opens:
  Under any condition except when the engine is running at medium speed under high load, the ECM controls the actuator to open the control valve. When the control valve is open, the effective length of the intake air chamber is shortened and peak intake efficiency is shifted to the low to high engine speed range, thus providing greater output at low to high engine speeds.

IT

Engine Speed

ECM

Throttle Position Sensor

Actuator

Intake Air Control Valve

A132183E02
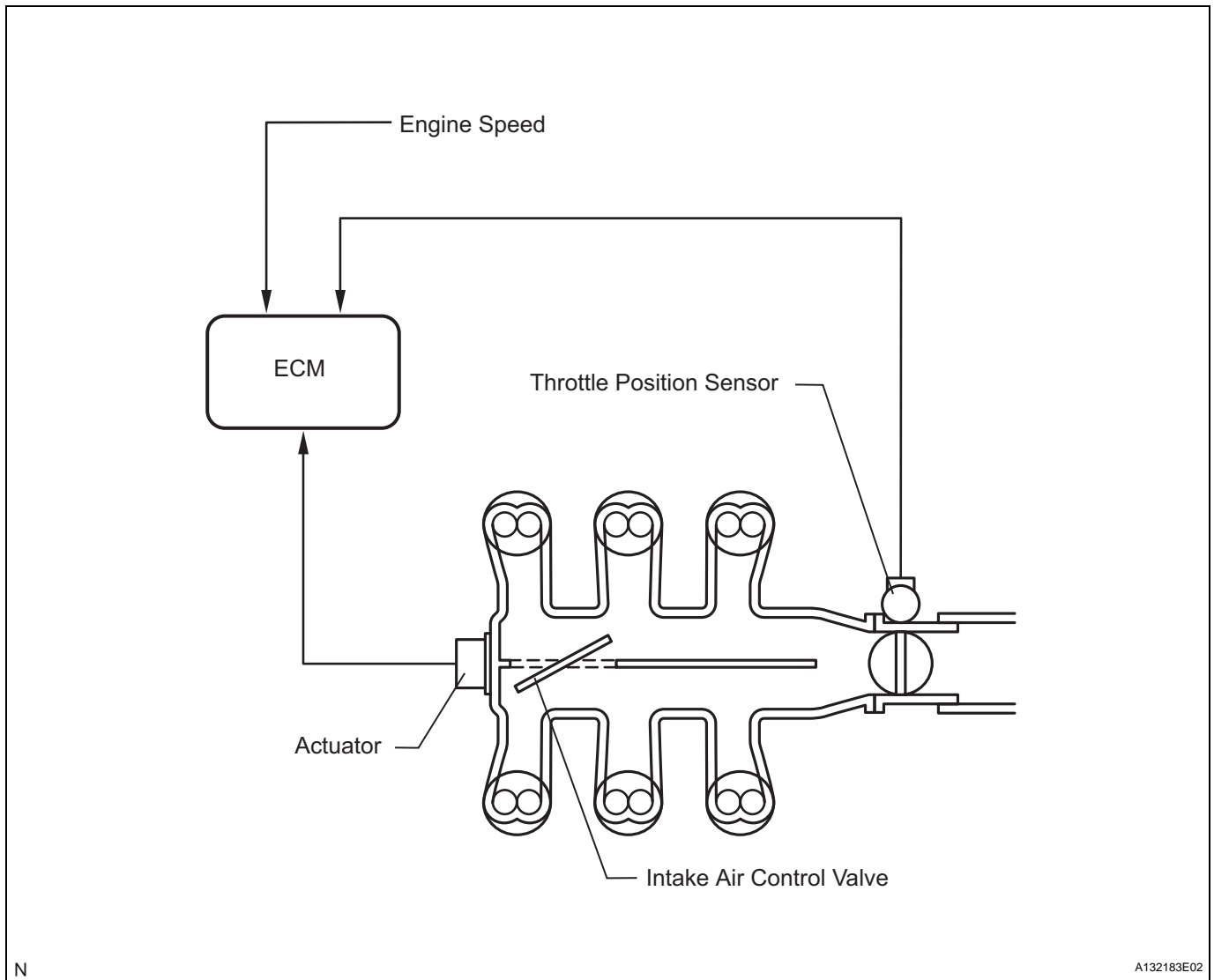
### 3. INTAKE SYSTEM WIRING DIAGRAM



A132186E01

# ON-VEHICLE INSPECTION
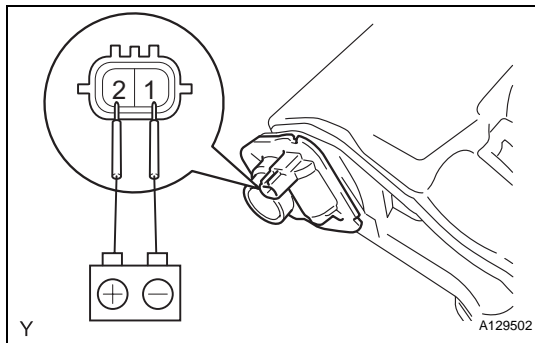
1. **INSPECT INTAKE AIR CONTROL VALVE ASSEMBLY**
   (a) Inspection procedure when using the intelligent tester.
      (1) Warm up the engine.
      (2) Stop the engine.
      (3) Connect the intelligent tester to the DLC3.
      (4) Turn the ignition switch ON.
      (5) Turn the tester ON.
      (6) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / INTAKE CONTROL VSV1. Press the right or left button.
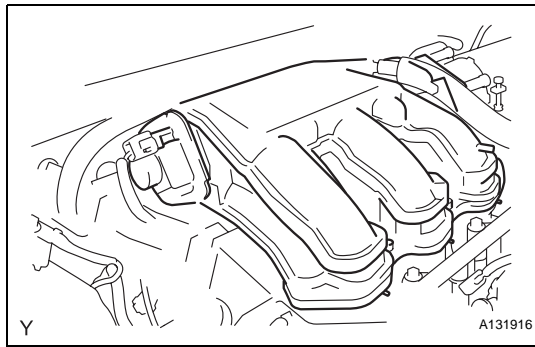


   (7) Make sure that a clicking sound is heard from the intake air control valve when current flows. If the result is not as specified, replace the intake air surge tank.



   (b) Inspection procedure when applying voltage between the terminals.
      (1) Disconnect the connector from the intake air control valve.
      (2) Apply battery voltage between terminals 1 (-) and 2 (+) of the intake air control valve. Check that a clicking sound is heard from the intake air control valve.
          If the result is not as specified, replace the intake air surge tank.

2. **INSPECT VACUUM SWITCHING VALVE**
   (a) Perform the Active Test to operate the VSV (see page ES-426).

IT

N          A132184E01
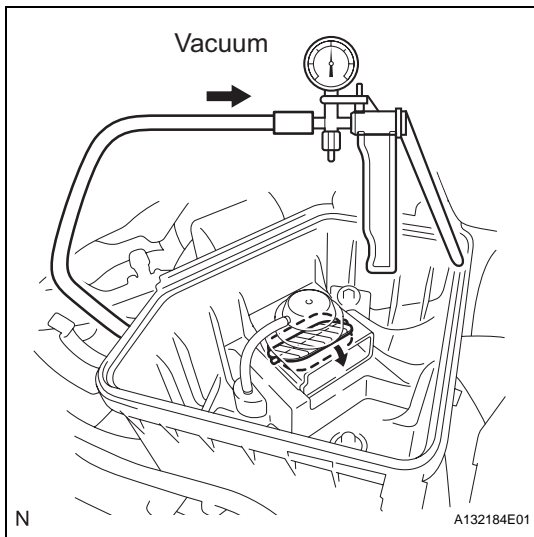
**3.    INSPECT AIR CLEANER ASSEMBLY**
(a)   Inspect the actuator.
    (1)   Apply 80 kPa (600 mmHg, 23.6 in. Hg) of vacuum to the actuator. Check if the valve rotates open, as shown in the illustration.
    (2)   Apply the vacuum for 1 minute. The actuator should continue to keep the valve open.
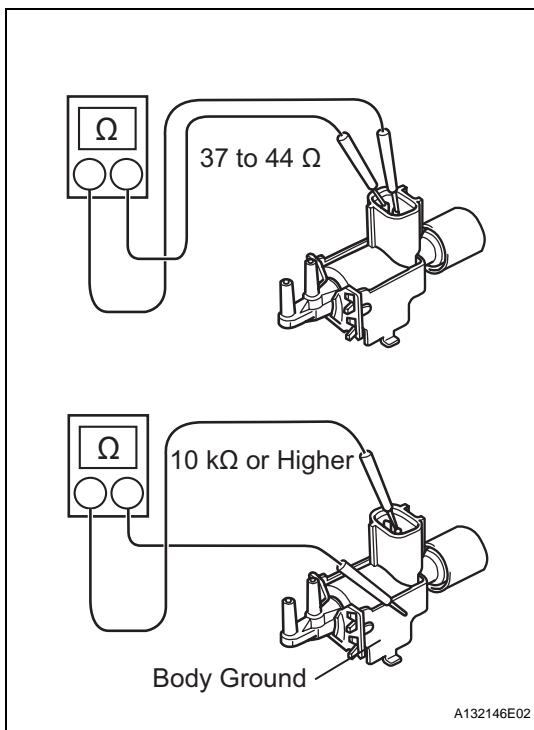If the result is not as specified, replace the air cleaner case assembly.



N          A132185E02
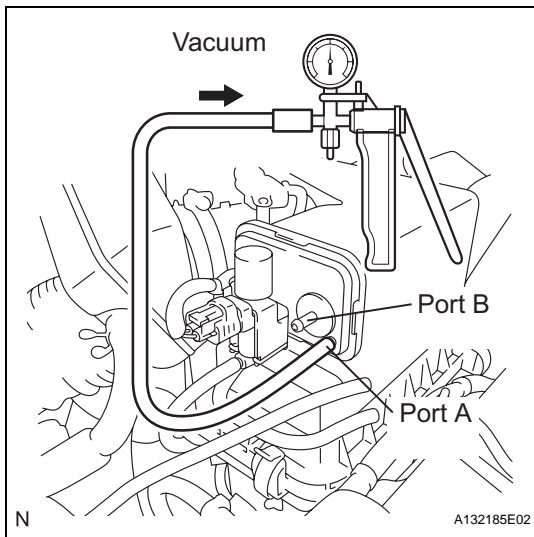
(b)   Inspect the vacuum tank.
    (1)   Connect the vacuum pump to port A.
    (2)   Apply a vacuum of 66.7 kPa (500 mmHg, 20 in. Hg) to the vacuum tank.
    (3)   1 minute after applying the vacuum, check that the pressure does not change.
(c)   Check that there is no ventilation when pressure is applied to port B, and that there is ventilation when a vacuum is applied to port B.
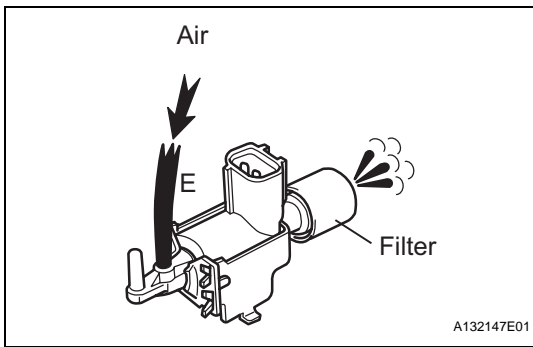If the result is not as specified, replace the air cleaner cap assembly.



Body Ground          A132146E02

**4.    INSPECT VACUUM SWITCHING VALVE**
(a)   Check the resistance of the VSV.
**Standard resistance**

| Tester Connection | Specified Condition |
|---|---|
| **1 - 2** | **37 to 44 Ω at 20°C (68°F)** |
| **1 - Body ground**<br>**2 - Body ground** | **10 kΩ or higher** |

If the result is not as specified, replace the VSV.

Air

E

Filter

A132147E01

(b) Check VSV operation.
 (1) Check that air flows from port E to the filter.



Air

F

E

Battery

A132148E02
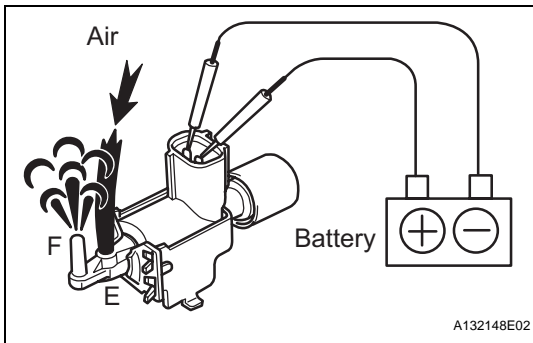
(2) Apply battery voltage across the terminals.
 Check that air flows from port E to port F.
 If the result is not as specified, replace the VSV.

IT