

## Intake manifold change-over

This test should only be performed if there is a performance deficiency.

The intake manifold switches from the long intake path to the short one at approx. 4700 RPM.

### Intake manifold change-over function, checking

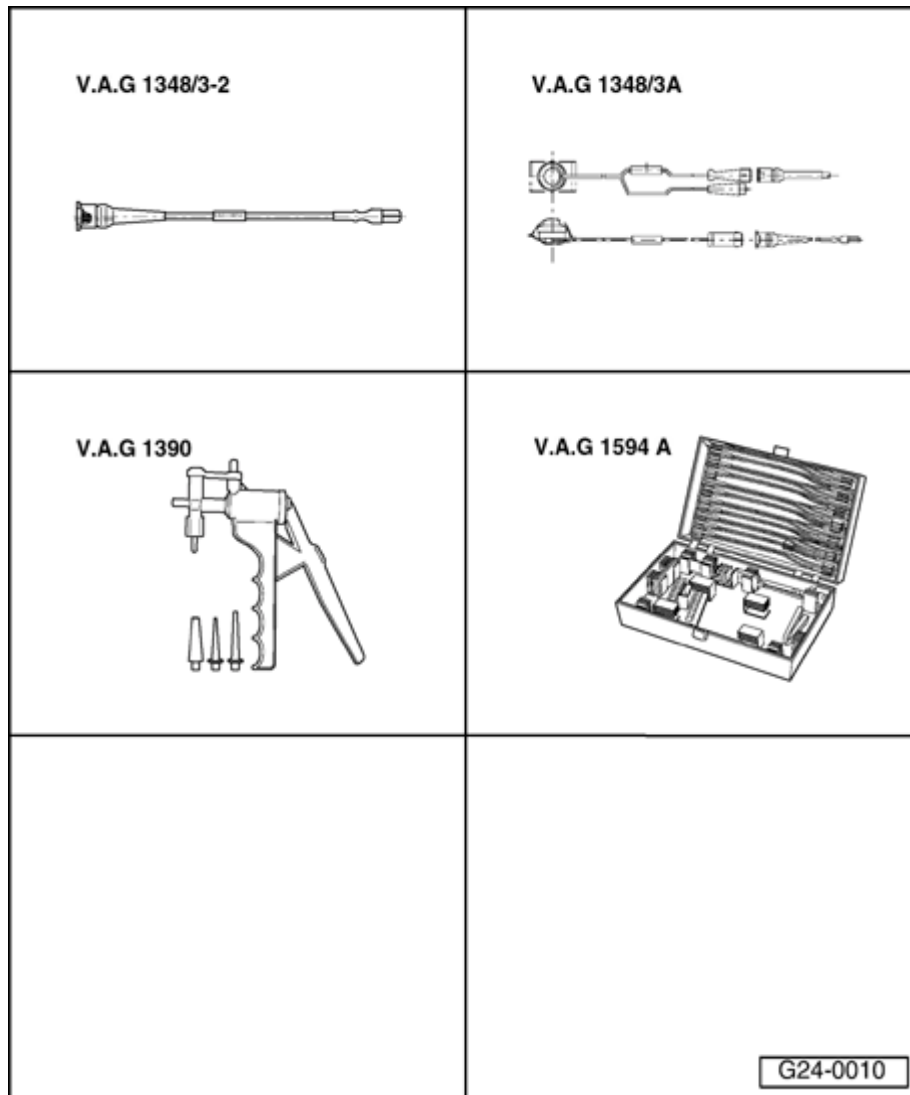
- Increase engine RPM significantly above 4700 RPM. This process should actuate the vacuum diaphragm for the intake manifold change-over. (Component location: on intake manifold front left, beneath ignition coils).

If the change-over does not occur, the following tests must be performed.

- Check Intake Manifold Change-Over Valve - N156- ⇒ [Page 01-56](#) ,if necessary, check activation valve ⇒ [Page 24-71](#) or page ⇒ [Page 24-74](#) ).
- Check vacuum system for proper seal ⇒ [Page 24-68](#) .
- Check vacuum lines for proper connection, sealing and continuity.

- Check whether the change-over mechanism moves easily (operate change-over linkage by hand).

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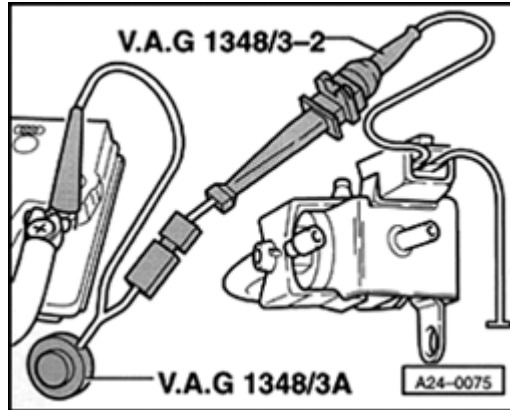


## Vacuum system, checking for proper seal

### Special Tools and Equipment

- ◆ VAG1348/3-2
- ◆ VAG1348/3A
- ◆ VAG1390
- ◆ VAG1594A

- Let vehicle run at idle for 2 to 3 minutes (vacuum build-up).
- Switch ignition off.
- Disconnect connector from Intake Manifold Change-Over Valve -N156-.



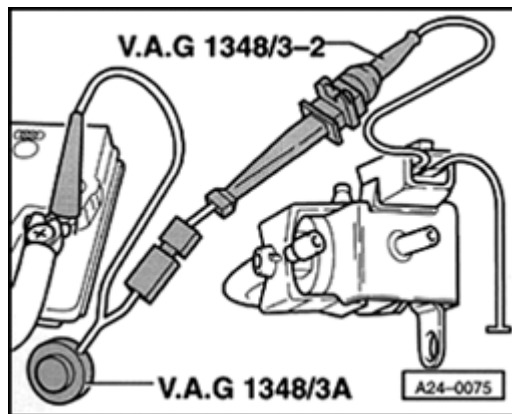
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- Connect one terminal of solenoid valve to engine Ground (GND) using an adapter cable and an alligator clip from VAG1594A connector test kit.
- Connect the second terminal of solenoid valve to B+ using VAG1348/3A remote control, VAG1348/3-2 adapter cable and assisting cable.
- Operate VAG1348/3A remote control for approx. 2 to 3 minutes, vacuum diaphragm must remain activated during this time.

If the vacuum diaphragm moves back, check vacuum reservoir as follows:

- Disconnect vacuum hoses from vacuum reservoir for intake manifold change-over.
- Connect VAG1390 hand vacuum pump to vacuum reservoir.
- Operate hand vacuum pump and observe change-over procedure.

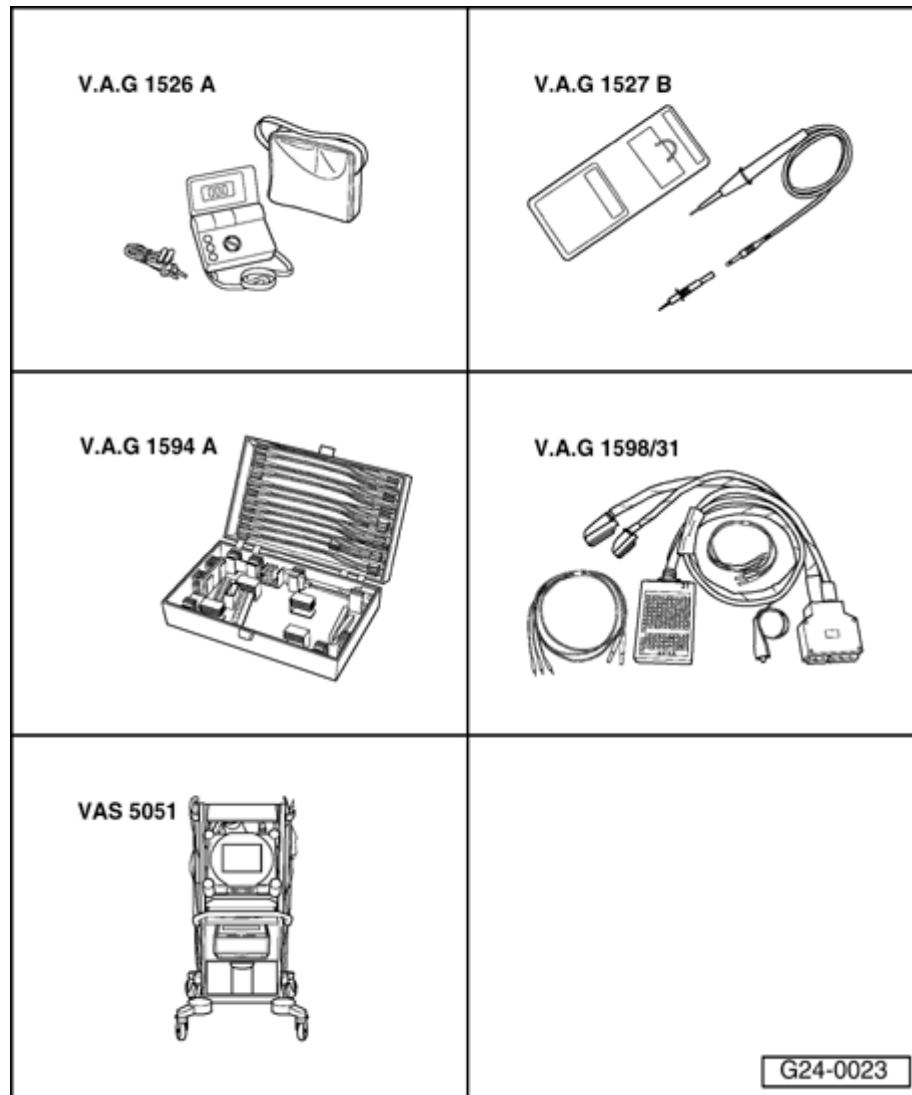
- Check vacuum reservoir for proper seal.  
(Vacuum reservoir must not return to rest position, as long as the hand vacuum pump is not vented.)
- Replace vacuum reservoir if necessary.
- If the vacuum diaphragm does not activate, check Intake Manifold Change-Over Valve - N156- for continuity as follows:



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- Connect one terminal of Intake Manifold Change-Over Valve -N156- to engine Ground (GND) using an adapter cable and an alligator clip from VAG1594A connector test kit.
- Connect the second terminal of Intake Manifold Change-Over Valve - N156- to B+ using VAG1348/3A remote control, VAG1348/3-2 adapter cable and assisting cable.
- Operate VAG1348/3A remote control.
- Check valve for throughput (disconnect vacuum hose and blow through).
- If necessary, replace intake manifold change-over valve.
- Check vacuum system for leaks if no malfunctions were detected for all previous tests.

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## Intake manifold change-over valve -N156-, checking

### Special Tools and Equipment

- ◆ VAG1526A
- ◆ VAG1527B
- ◆ VAG1594A
- ◆ VAG1598/31
- ◆ VAS5051 with VAG5051/1
- or
- ◆ VAG1551 with VAG1551/3B

Component location ⇒ Overview of component locations, page ⇒ [Page 24-5](#)

**Test requirement:**

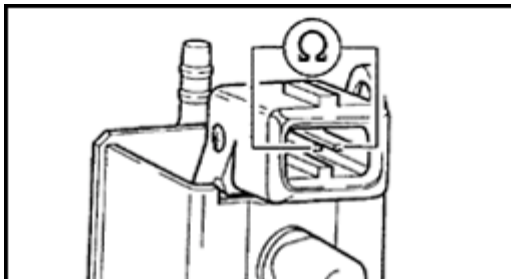
- Output Diagnostic Test Mode (DTM) performed
- Fuse for intake manifold change-over valve is OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

- Fuel Pump (FP) OK, checking ⇒ [Page 24-49](#) .

**Checking internal resistance**

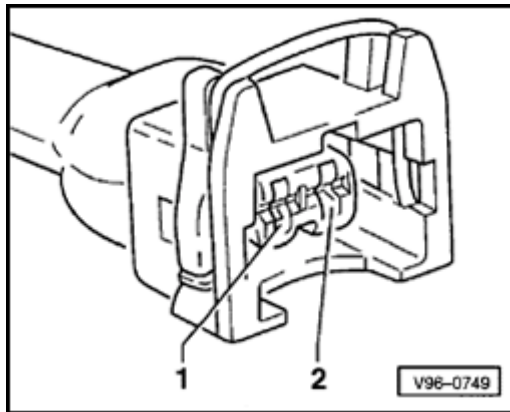
- Disconnect connector from Intake Manifold Change-Over Valve -N156-.
- Connect multimeter at valve for resistance measurement.
  - ◆ Specification: 25 to 35  $\Omega$
- Replace Intake Manifold Change-Over Valve -N156- if specified value is not obtained.



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### Checking voltage supply

- Disconnect connector from Intake Manifold Change-Over Valve -N156-.



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- Connect VAG1527B voltage tester as follows:

Harness connector	Measure to
Terminal	
1	Engine Ground (GND)

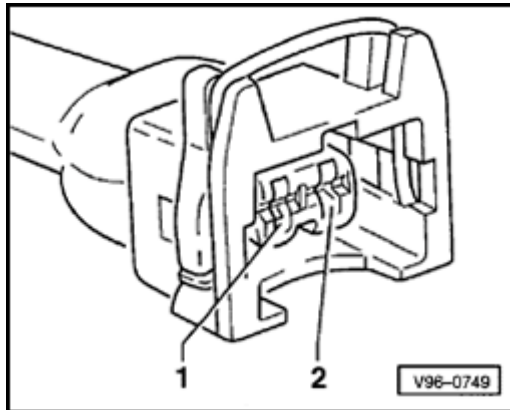
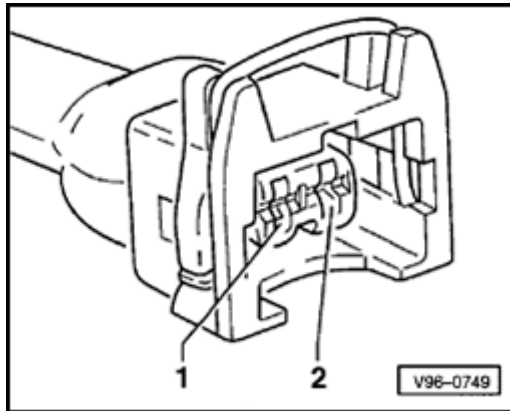
- Operate starter briefly.
  - ◆ LED must light up.

If LED does not light up:

- Check wire connection from terminal 1 to Fuel Pump (FP) relay via fuse for open circuit.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*





### Checking activation

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- Connect VAG1527B voltage tester between terminals 1 and 2
- Initiate output Diagnostic Test Mode ⇒ [Page 01-56](#) and activate the intake manifold change-over valve.
  - ◆ LED must blink.

If LED does not blink or if it remains constantly lit:

- Connect VAG1598/31 test box at wiring harness to ECM, do not connect ECM ⇒ [Page 24-17](#) .

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- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector	VAG1598/31 test box
Terminal	Socket
2	104

- Repair open circuit or short circuit if necessary.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

If wire connection is OK:

- Replace Engine Control Module (ECM) ⇒ [Page 24-21](#) .