

01-80



## Final control diagnosis

### Note:

- ◆ *Final control diagnosis can only be performed with the engine stopped and the ignition switched on.*
- ◆ *During final control diagnosis the individual control elements (except injectors) are actuated for approx. 1 minute or until ► key is pressed to select next control element.*
- ◆ *The control elements are checked acoustically or by means of touch.*
- ◆ *Final control diagnosis is terminated if the next step is not selected after an actuation time of approximately 1 minute, or if the engine is started or an engine speed pulse is detected.*
- ◆ *Prior to restarting the final control diagnosis, the engine must be started and the ignition switched off and on again.*

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**The final control diagnosis function actuates the following components in the stated sequence:**

1. Evaporative Emissions (EVAP) canister purge regulator valve -N80- (fuel tank breather valve)
2. Secondary air injection solenoid valve -N112-
3. Secondary air injection pump relay -J299-
4. Wastegate bypass regulator valve  
-N75-
5. Valve -2- for camshaft adjustment -N208-
6. Leak Detection Pump -V144-
7. Recirculating valve for turbocharger -N249-

8. Right Electro-Hydraulic engine mount solenoid valve -N145-

(on right in direction of travel)

9. Left Electro-Hydraulic engine mount solenoid valve -N144-

(on left in direction of travel)

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10. Valve -1- for camshaft adjustment -N205-
11. Vacuum pump for brake system
12. Fuel pump 2 relay -J49-  
(refer to note ⇒ [Page 01-95](#) )
13. Coolant fan actuation 2
14. Coolant fan actuation 1
15. Injector, cyl. 1 -N30-
16. Injector, cyl. 5 -N83-
17. Injector, cyl. 4 -N33-
18. Injector, cyl. 8 -N86-
19. Injector, cyl. 6 -N84-

20. Injector, cyl. 3 -N32-

21. Injector, cyl. 7 -N85-

22. Injector, cyl. 2 -N31-

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Locations of control elements ⇒ [Page 24-5](#)

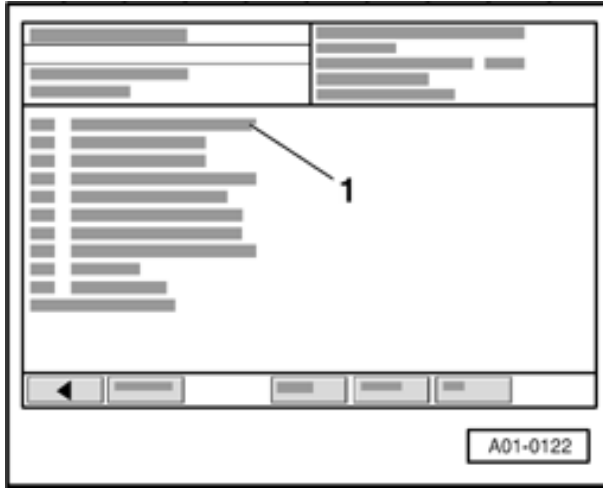
### Requirement

- Fuses for engine electronics OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

### Work sequence

- Connect vehicle diagnostic, testing and information system VAS 5051 and select vehicle system "01 - Engine electronics" from list. Ignition must be on.



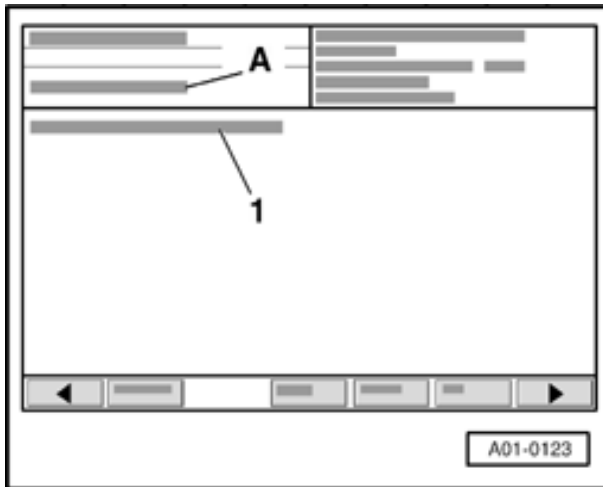
Indicated on VAS 5051:

- From list -1- select diagnostic function "03 - Final control diagnosis".

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## Actuation of EVAP canister purge regulator valve - N80- (fuel tank breather valve)



Indicated on VAS 5051:


A - Control element test waiting - Selection of next step required

1 - EVAP caniste purge regulator valve - N80-

- Touch   
key.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated intermittently (clicks) for approximately 1 minute unless next control element is selected beforehand by touching  key.

### **Note:**

*The two fuel pumps must run during the actuation period. The flow noise is clearly audible at the fuel pressure regulator. If the fuel pumps do not run, check*



*actuation* ⇒ [Page 24-86](#) .

If valve is not actuated (does not click):

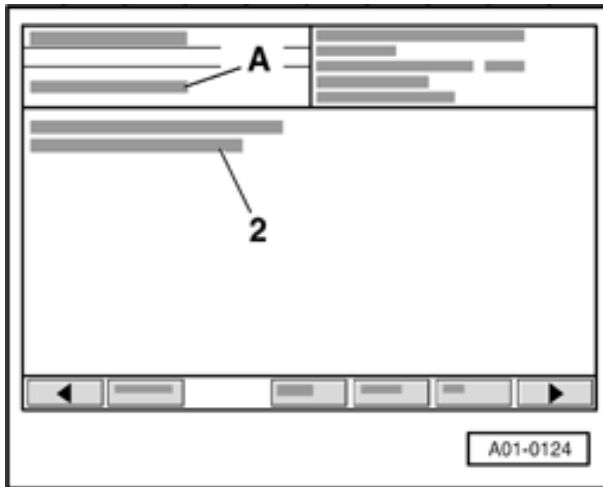
- Check EVAP caniste purge regulator valve -N80- ⇒ [Page 24-192](#) .

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## Actuation of Secondary air injection solenoid valve - N112-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

2 - Secondary air injection solenoid valve - N112-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check Secondary air injection solenoid valve -  
N112-:

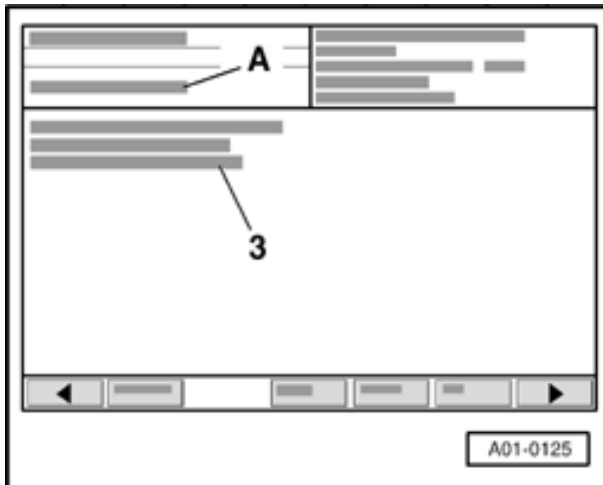
⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine  
Mechanical, Engine Code\(s\): BCY, Repair Group 26](#)

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## Actuation of Secondary air injection pump relay - J299-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

3 - Secondary air injection pump relay - J299-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ Secondary air injection pump relay -J299- (in relay carrier in plenum chamber electronics box, refer to wiring diagram) intermittently switches secondary air injection pump motor - V101- on and off for approx. 1 minute if next control element is not selected beforehand by touching ► key.

If secondary air injection pump motor does not run intermittently:

- Check Secondary air injection pump relay - J299-:

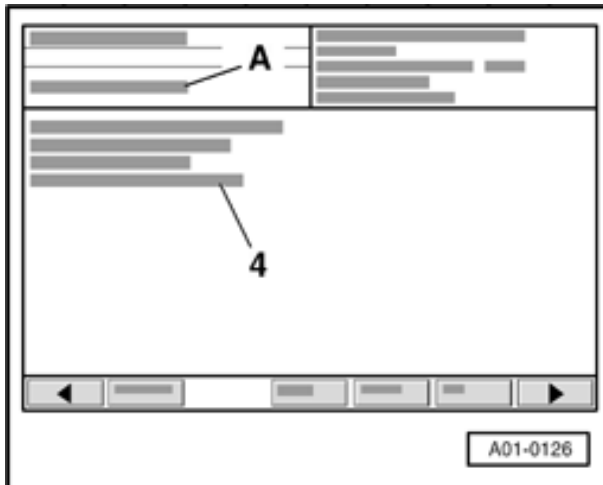
⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine Mechanical, Engine Code\(s\): BCY, Repair Group 26](#)

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## Actuation of Wastegate bypass regulator valve - N75-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

4 - Wastegate bypass regulator valve - N75

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

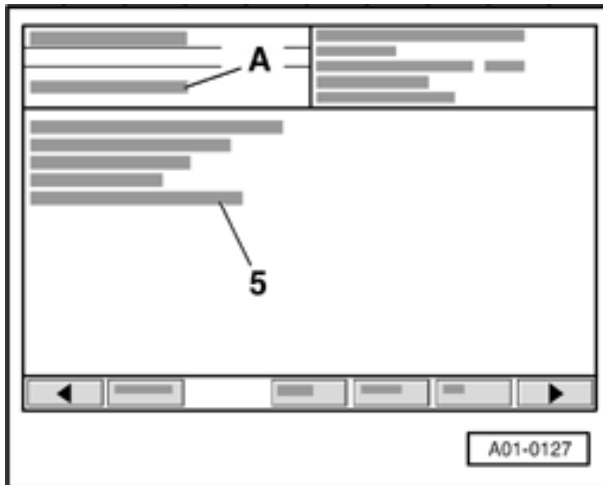
If valve is not actuated (does not click):

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## Actuation of Valve -2- for camshaft adjustment - N208-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

5 - Valve -2- for camshaft adjustment ⇒ - N208-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check camshaft adjustment  
valve:

⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine  
Mechanical, Engine Code\(s\): BCY, Repair Group 15](#)

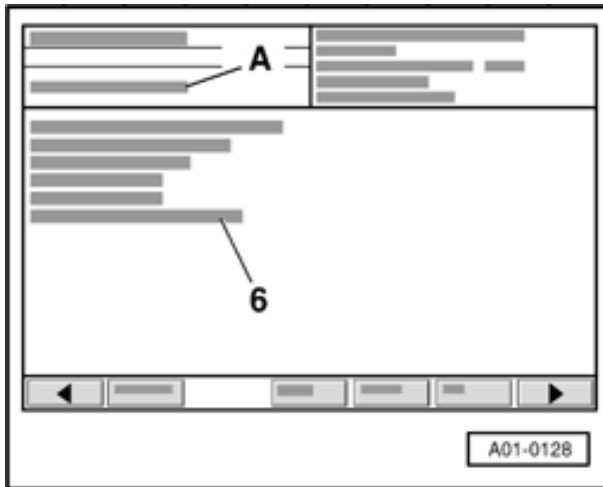


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## Diagnosis of Fuel System Leak Detection Pump (LDP) -V144- actuation

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

6 - Leak Detection Pump (LDP) - V144-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ Switching valve in the LDP is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check Leak Detection Pump (LDP -  
V144-:

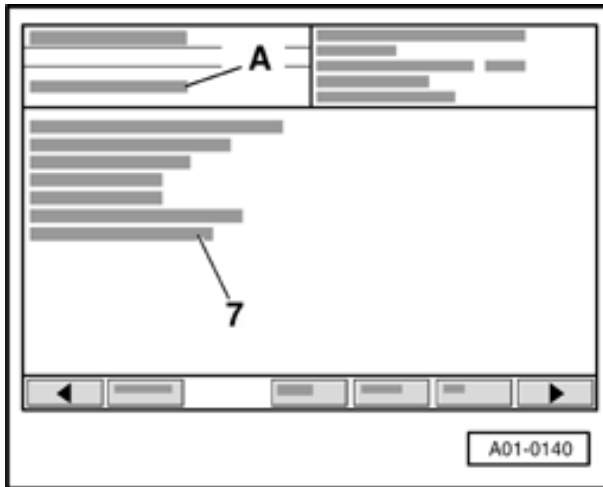
⇒ Repair Manual, Fuel Supply System, Repair Group  
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## Actuation of Recirculating valve for turbocharger - N249-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

7 - Recirculating valve for turbocharger - N249-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check Recirculating valve for turbocharger -  
N249-:

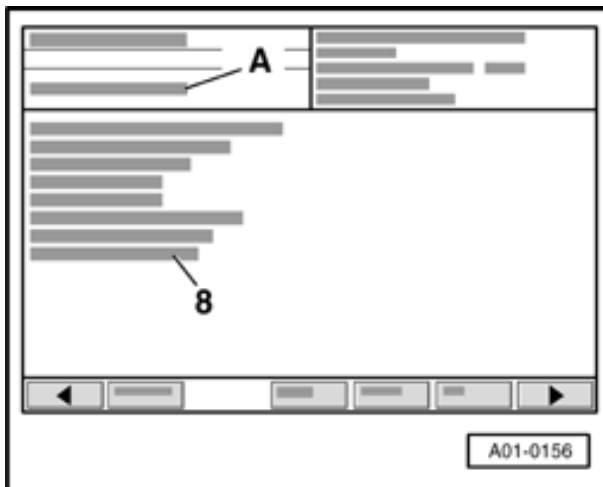
⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine -  
Mechanical, Engine Code\(s\): BCY, Repair Group 21](#)

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## Actuation of Right Electro-Hydraulic engine mount solenoid valve -N145-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

8 - Right Electro-Hydraulic engine mount solenoid valve -N145-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check engine mount solenoid valve:

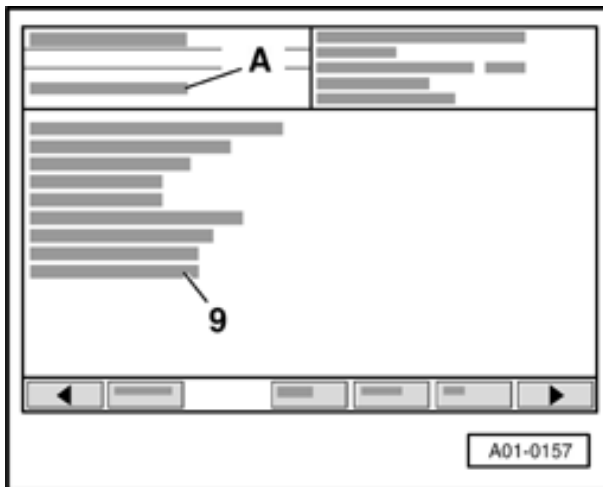
⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine Mechanical, Engine Code\(s\): BCY, Repair Group 10](#)

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## Actuation of Left Electro-Hydraulic engine mount solenoid valve -N144-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

9 - Left Electro-Hydraulic engine mount solenoid valve - N144

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check engine mount solenoid valve:

⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine Mechanical, Engine Code\(s\): BCY, Repair Group 10](#)

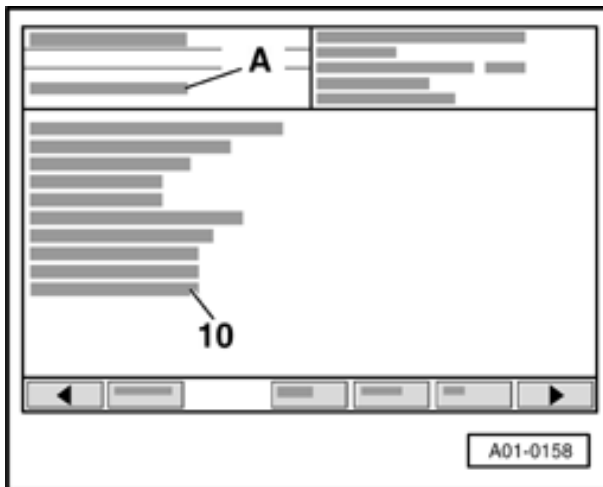


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## Actuation of Valve -1- for camshaft adjustment - N205-

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

10 - Valve -1- for camshaft adjustment ⇒ - N205-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ This valve is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check camshaft adjustment valve.

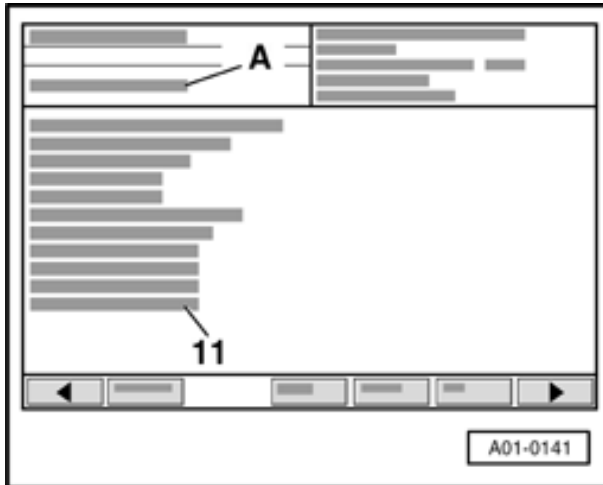
⇒ [Repair Manual, 4.2 Liter V8 5V BiTurbo Engine Mechanical, Engine Code\(s\): BCY, Repair Group 15](#)

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## Actuation of vacuum pump for brake system

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

11 - Vacuum pump for brake system

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ Pump is actuated (clicks) for approx. 1 minute if ► key is not touched beforehand to select next control element.

If valve is not actuated (does not click):

- Check vacuum pump for brake system:

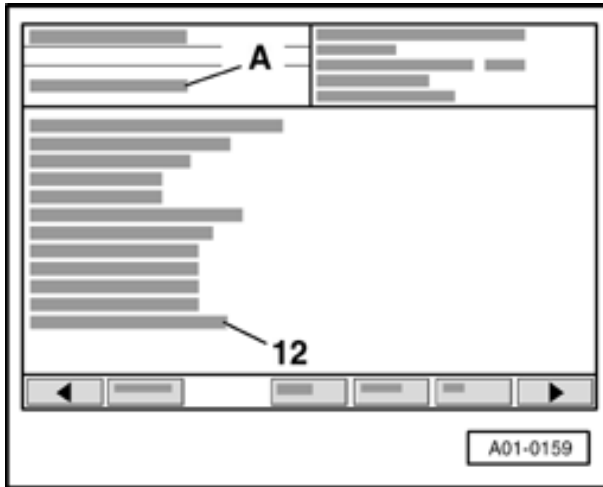
⇒ [Repair Manual, Brake System, Repair Group 47](#)

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## Actuation of Fuel pump 2 relay -J49-

- Touch ►  
key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

12 - Fuel pump 2 relay - J49-

- Touch ► key  
again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

**Note:**

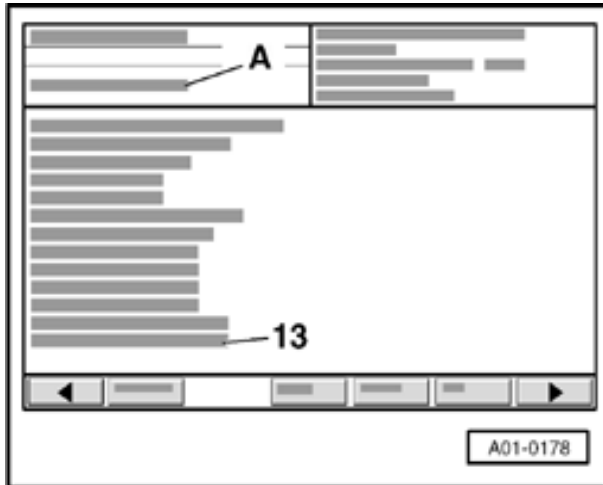
- ◆ *The Fuel pump relay 2 -J49- is not an actual component installed in the vehicle. The term "Fuel pump 2 relay -J49-" refers to the wiring from the engine control module to the fuel pump control module, via which the engine control module informs the fuel pump control module that full pump output is required. Refer also to ⇒ [Page 24-93](#) .*
- ◆ *During actuation of "Fuel pump 2 relay -J49-" the engine control module switches off the actual fuel pump relay.*

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## Actuation of coolant fan control 2

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

13 - Coolant fan actuation  
2

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ Coolant fan control module 2 -J671- (at front of engine compartment) slowly increases speed of coolant fan 2 (on left in direction of travel) once to maximum unless ► key is pressed beforehand to select next control element.

If fan does not start up:

- Check coolant fan and Coolant fan control module 2 -J671-.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

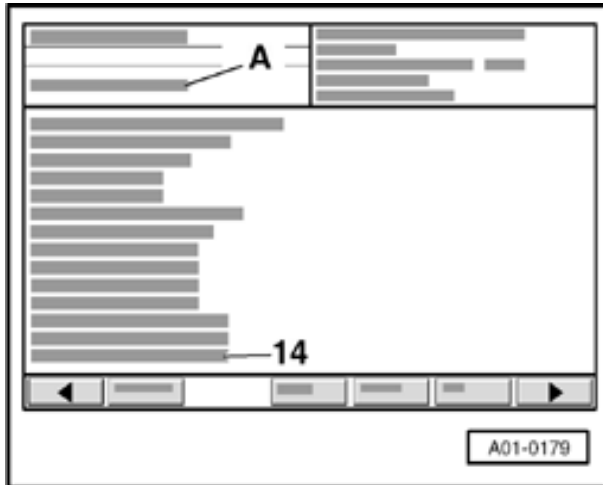


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## Actuation of coolant fan control 1

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

14 - Coolant fan actuation  
1

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

- ◆ Coolant fan control module -J293- (at front of engine compartment, directly at fan, on right in direction of travel) slowly increases speed of coolant fan (on right in direction of travel) once to maximum unless ► key is pressed beforehand to select next control element.

If fan does not start up:

- Check coolant fan and Coolant fan control module - J293-.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

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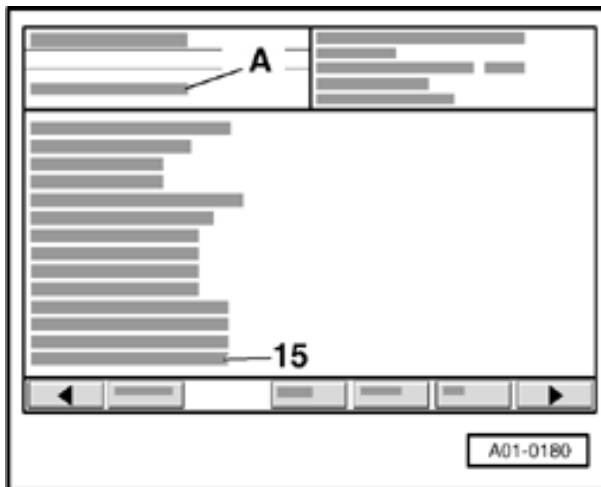


## Actuation of injectors

### Note:

- ◆ *Injectors are actuated in line with firing order: Cyl. 1, cyl. 5, cyl. 4, cyl. 8, cyl. 6, cyl. 3, cyl. 7, cyl. 2*
- ◆ *The following illustrates the procedure for the first two injectors (cylinders 1 and 5). The procedure for the remaining injectors (cylinders 4, 8, 6, 3, 7 and 2) is identical.*

- Touch ► key.



Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

15 - Injector, cylinder 1 - N30-

- Touch ► key again.

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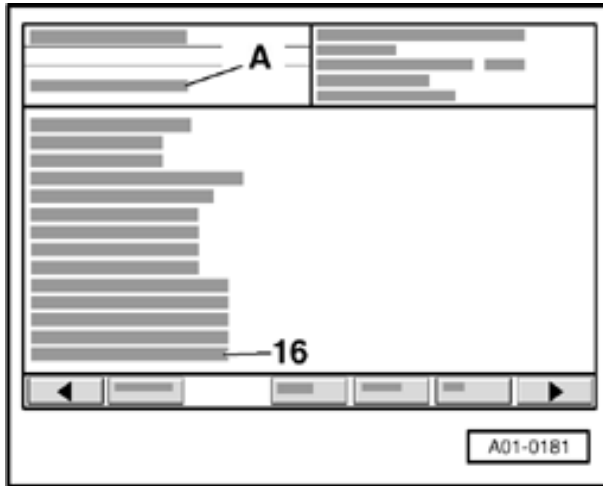
Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

◆ Injector must click five times after touching ► key.

- Touch ► key.

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Indicated on VAS 5051:

A - Control element test waiting - Selection of next step required

16 - Injector, cylinder 5 - N83-

- Touch ► key again.

Indicated on VAS 5051:

A - Control element test in progress - Selection of next step permitted

◆ Injector must click five times after touching ► key.

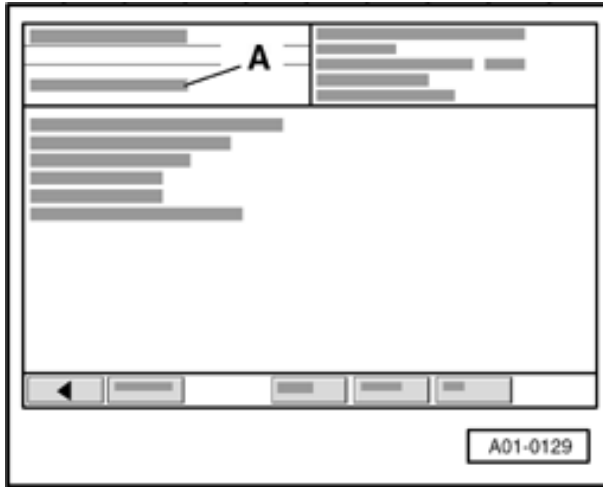
Continue until all eight injectors have been actuated.

If one of the injectors is not actuated (does not click):

- Check injectors ⇒ [Page 24-68](#) .

- Touch ► key.

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Indicated on VAS 5051:

A - Control element test  
over

- End function "03 - Final control diagnosis" by touching ◀ key.

**Note:**

*Prior to restarting final control diagnosis, engine must be started and ignition switched off and on again.*